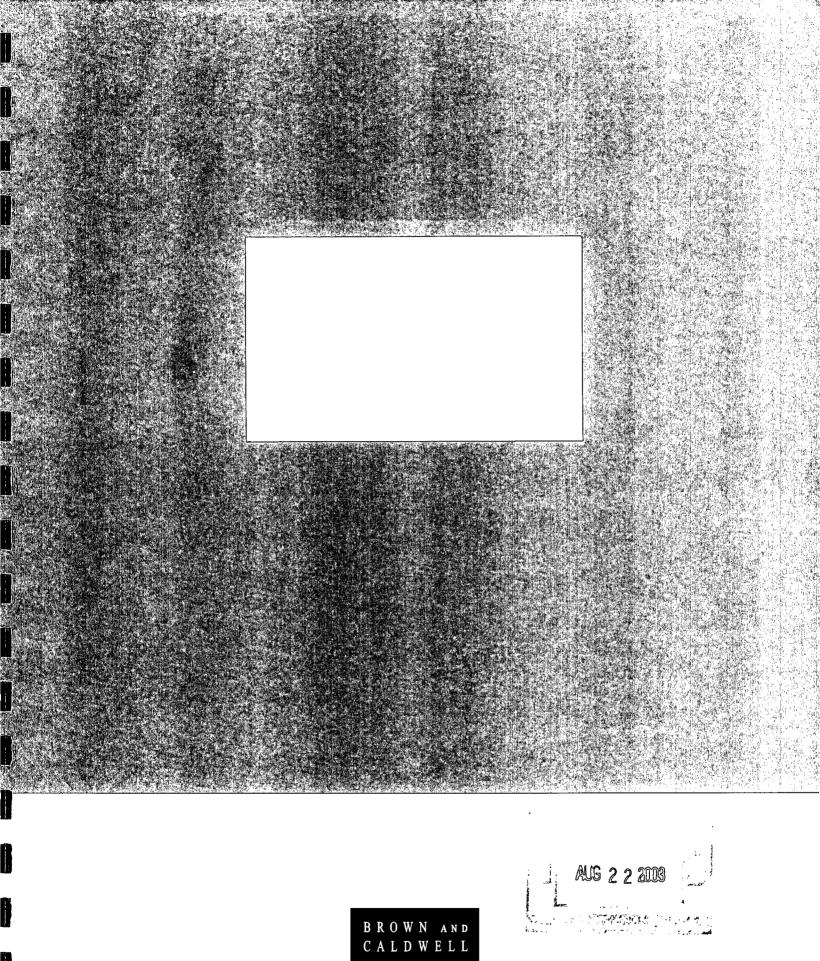
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MONITORING REPORTS

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Environmental Engineers & Consultants

MARCH 2003 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY

BJ SERVICES COMPANY, U.S.A.

AUGUST 6, 2003

MARCH 2003 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY BJ SERVICES COMPANY, U.S.A.

Prepared for

BJ Services Company, U.S.A. 11211 FM 2920 Tomball, Texas 77375

BC Project Number: 12832.018

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August 6, 2003

Brown and Caldwell

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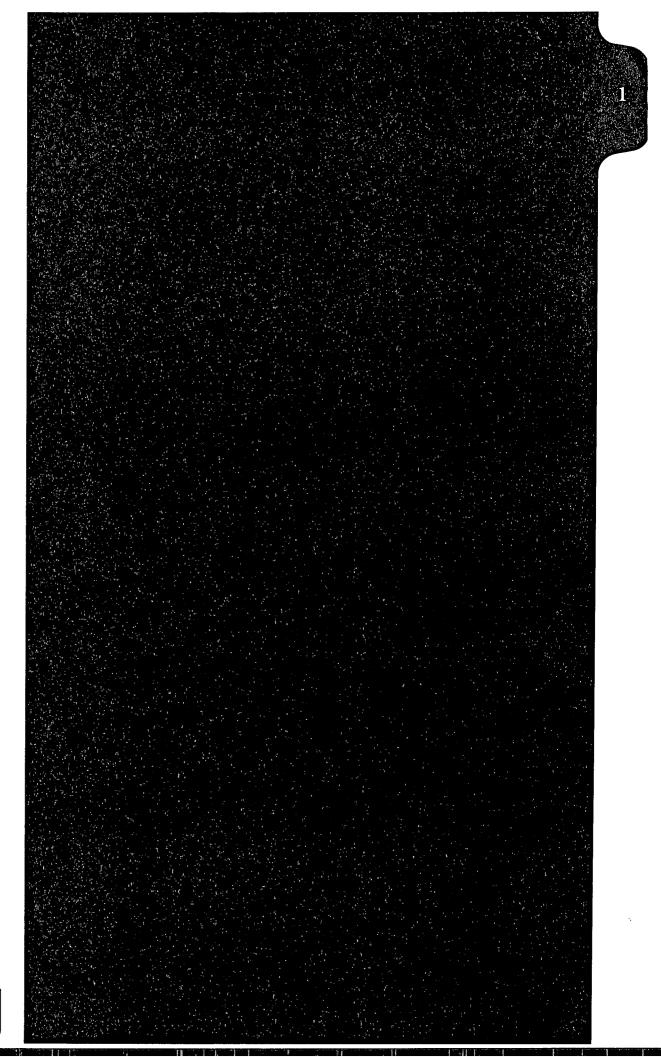
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BROWN AND CALDWELL

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BROWN AND CALDWELL

1.0 INTRODUCTION

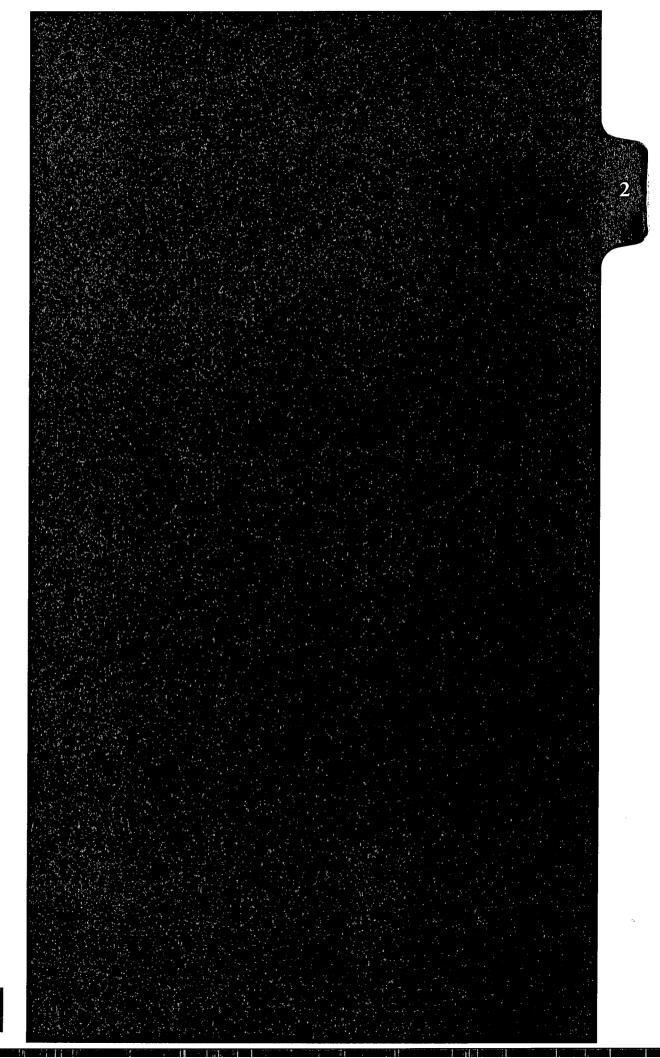
Brown and Caldwell conducted a quarterly groundwater sampling event at the BJ Services Company, U.S.A. (BJ Services) facility located at 2708 West County Road in Hobbs, New Mexico in March 2003. This report presents a description of the groundwater sampling field activities, a summary and evaluation of the analytical results, and an evaluation of remedial technologies applied at the facility. A groundwater potentiometric surface map and a hydrocarbon distribution map are included.

A layout of the facility is shown in Figure 1. The facility formerly operated an on-site fueling system. Subsurface impact near the former diesel fueling system was detected by the New Mexico Oil Conservation Division (NMOCD) during an on-site inspection on February 7, 1991. The fueling system was taken out of operation in July 1995. The NMOCD has required a quarterly groundwater monitoring program to assess the concentration of hydrocarbon constituents in groundwater as a result of the diesel fuel release.

A biosparging system was activated in November 1995 and expanded in March/April 1997 and February/March 1998 to remediate soil and groundwater at the former fuel island area of the facility. The biosparging system was deactivated on November 1, 2000 after achieving cleanup goals for groundwater. The confirmation soil sampling program specified in the NMOCD-approved Remedial Action Plan (RAP) for the facility was conducted in July 2001. The results of the confirmation soil sampling program were presented to NMOCD in the report for the June 2001 groundwater sampling event. In accordance with the RAP for the facility, four additional groundwater sampling events were conducted following the confirmation soil sampling event. Hydrocarbon concentrations in groundwater samples from applicable monitor wells remained below the target concentrations specified in the RAP during each of these sampling events, so a request to decommission the biosparging system was submitted to NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report for the facility.

BJ Services removed three field waste tanks from the facility on March 6-7, 1997. The ongoing groundwater monitoring program was expanded to address both the former fuel island and the former field waste tanks areas of the facility, as directed by NMOCD in correspondence dated January 21, 1999.

Table 1 presents a site chronology detailing the history of investigations into and the remediation of soil and groundwater impacts in the areas of the former fueling system and the former field waste tanks at the facility.



BROWN AND CALDWELL

2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled six monitor wells (MW-5, MW-10, MW-11A, MW-12D, MW-14, and MW-15) at the facility on March 6, 2003 to determine the concentrations of dissolved-phase hydrocarbons and/or chloride in groundwater and to evaluate general groundwater quality in the area of the facility. The monitor well locations are shown in Figure 1. In the March 2002 Groundwater Sampling Report for the facility, Brown and Caldwell recommended installation of a new monitor well (MW-16) to replace monitor well OW-4, which has gone dry. Brown and Caldwell plans to install monitor well MW-16 in April 2003 now that this activity has been approved by the NMOCD and access privileges have been granted by the off-site landowner.

The following subsections describe the field activities conducted by Brown and Caldwell during the March 2003 event and present the results from the associated groundwater analyses.

2.1 Groundwater Sampling Activities

Groundwater level measurements were obtained from all accessible monitor wells at the facility on March 6, 2003 prior to purging and sampling the subset of wells listed above. Groundwater levels were measured to the nearest 0.01 foot with a water-level indicator. Current and historical groundwater elevation data for each well are presented in Table 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with an overall hydraulic gradient of approximately 0.007 foot/foot. The groundwater elevation data presented in Table 2 indicate that groundwater levels have continued to decline in monitor wells at the facility since late 1995. A groundwater elevation map for March 6, 2003 is presented in Figure 2.

Monitor wells MW-5, MW-10, MW-11A, MW-14 and MW-15 were purged and sampled with previously unused disposable bailers and clean, previously unused nylon string. Three well volumes were purged from monitor wells MW-5, MW-11A, and MW-15. Monitor wells MW-10 and MW-14 were purged dry after removal of 0.5 gallons and 1.1 gallons of groundwater, respectively. A submersible pump fitted with disposable polyethylene tubing was used to purge

monitor well MW-12D until groundwater stabilization occurred, with stabilization defined as variation of less than 0.5°C for temperature, less than 0.1 unit for pH, and less than 10% for specific conductivity between three consecutive measurements of groundwater during the purging process. Monitor well MW-15 had stabilized after removal of three well volumes of groundwater from the well. The wells were sampled in general order of least impacted to most impacted (based on analytical results from the January 2003 and preceding sampling events) to further mitigate the potential for cross-contamination between the wells.

Field parameter measurements for pH, specific conductivity, oxidation-reduction (redox) potential, dissolved oxygen content, and temperature were collected from wells containing an adequate volume of water during and upon completion of well purging. Ferrous iron and dissolved oxygen were measured in monitor wells MW-5, MW-10, and MW-11A upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix A. Field parameter readings for each well sampled during the March 2003 event are summarized in Table 3.

With the exception of monitor well MW-12D, groundwater samples were collected by pouring recovered water from a bailer. For monitor well MW-12D, the groundwater sample was collected directly from the discharge line of the down-hole pump. Using these methods, each sample was transferred to laboratory-prepared, clean glass and/or plastic containers, sealed with Teflon[®]-lined lids, labeled, and placed on ice in an insulated cooler for delivery to Southern Petroleum Laboratory in Houston, Texas for analysis using standard chain-of-custody procedures.

Field measurement equipment was decontaminated prior to and following each use. Decontamination procedures consisted of washing with distilled water and a non-phosphate detergent, then rinsing with distilled water. The submersible pump used to sample monitor well MW-12D was decontaminated first by pumping distilled water with a non-phosphate detergent through it and then by rinsing it with distilled water using containers at the surface. Purge and decontamination waters were discharged to an on-site water reclamation system at the BJ Services facility.

2.2 Results of Groundwater Analyses

Groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12D, MW-14 and MW-15 were analyzed for chloride content using Method E325.3. Table 4 presents current and cumulative results for chloride analyses performed on groundwater samples collected at the facility. Chloride concentrations in monitor wells MW-5 and MW-12D in March 2003 remained less than the NMWQCC chloride standard of 250 milligrams per liter (mg/L). The March 2003 chloride concentration of 163 mg/L in downgradient monitor well MW-14 is also less than this standard, and is the lowest chloride concentration ever measured in this well. The chloride concentration of 272 mg/L in monitor well MW-15 exceeds the NMWQCC chloride standard. This is the first such exceedance in monitor well MW-15.

Groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12D were analyzed for gasoline-range total petroleum hydrocarbons (TPH-G) by EPA Method SW-8015B and for benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method SW-8021B. Analysis for diesel-range total petroleum hydrocarbons (TPH-D) was also performed on groundwater samples recovered from monitor wells MW-11A and MW-12D, but TPH-D analyses could not be performed for monitor wells MW-5 and MW-10 due to insufficient groundwater production from these wells. Current and cumulative analytical results for BTEX constituents, TPH-D, and TPH-G are presented in Table 5. Figure 3 presents a hydrocarbon distribution map for the March 2003 sampling event. All BTEX concentrations measured in groundwater during the March 2003 sampling event were less than applicable NMWQCC standards.

Analysis of groundwater from monitor wells MW-5, MW-10, MW-11A, and MW-12D for nitrate and sulfate (Method E300.0), dissolved methane (Method RSK 147), and alkalinity (Method E310.1) was performed to evaluate the potential for natural attenuation of hydrocarbons at the facility. The current and historical results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12, and MW-12D to assist in the evaluation of natural attenuation processes at the BJ Services facility are P:\Wp\BJSERV\12832\104r.doc

presented in Table 6. Groundwater alkalinity may also be indicative of natural attenuation processes. Groundwater alkalinity values measured in the four wells of interest during the March 2003 sampling event are as follows:

• MW-5 (upgradient, background well): 243 mg/L;

• MW-10: 273 mg/L;

MW-11A: 401 mg/L; and

• MW-12D: 241 mg/L.

Assuming adequate groundwater yield, analyses of groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12D, MW-14 and MW-15 for polynuclear aromatic hydrocarbons (PAHs, by Method 8310), RCRA metals and calcium, magnesium, potassium, and sodium (Methods 6010B and 7470A), carbonate and bicarbonate alkalinity (Method M2320B), fluoride (Method E300), hardness (Method E130.2), nitrate and sulfate (Method E300.0), dissolved methane (Method RSK 147) were performed in accordance with annual New Mexico Water Quality Control Commission (NMWQCC) requirements. Additional sampling for NMWQC constituents will be performed in June 2003 for analyses that could not be performed in March 2003 due to insufficient groundwater production from various wells at the facility. These parameters include the following:

- Hardness in monitor wells MW-10, MW-14, and MW-15:
- Methane in monitor wells MW-14 and MW-15:
- RCRA metals, calcium, magnesium, potassium, and sodium in monitor wells MW-10, MW-14, and MW-15; and
- PAHs in monitor wells MW-5, MW-10, MW-14, and MW-15.

Table 6 presents the analytical results for annual sampling and analysis of applicable wells for NMWQCC constituents. The March 2003 analytical results for geochemical parameters (i.e., carbonate, bicarbonate, hardness, fluoride, nitrate, sulfate, and cations) and RCRA metals are generally comparable to historic data for these parameters on a well-by-well basis. Groundwater from monitor well MW-11A displayed an elevated sodium content relative to previous sodium concentrations in the well. The March 2003 concentration of chloride in monitor well MW-11A is also elevated relative to pre-2003 concentrations in this well (see Table 4).

The laboratory analytical report and chain-of-custody documentation for the groundwater samples collected during the March 2003 sampling event are provided in Appendix B.

BROWN AND CALDWELL

3.0 EVALUATION OF REMEDIAL TECHNOLOGIES

The following subsections present evaluations of the remedial technologies applied at the former fueling system and former field waste tanks areas of the BJ Services facility in Hobbs, New Mexico.

3.1 Biosparging System at the Former Fueling System Area

Brown and Caldwell recommended installation of a biosparging system at the former fueling system area of the facility in the Remedial Action Plan (RAP) submitted to the NMOCD in May 1994. The NMOCD approved the RAP on August 11, 1994. The biosparging system was installed in August 1995, with expansions completed in April 1997 and March 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in applicable former fueling system area monitor wells. In accordance with the RAP, confirmation soil sampling activities were conducted at the former fueling system area in July 2001 to verify the effectiveness of the biosparging system in remediating vadose zone soils. The analytical results for these soil samples, as discussed in the report for the June 2001 groundwater sampling event, indicated that remediation goals for soil in this area had been achieved.

Following the confirmation soil sampling activities, hydrocarbon concentrations in groundwater remained below target cleanup goals for four successive quarters. In accordance with the RAP for the facility, a request to decommission the biosparging system was submitted to the NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report.

3.2 Natural Attenuation at the Former Field Waste Tanks Area

Natural attenuation is the primary remediation mechanism for the dissolved-phase hydrocarbon plume located in the area of the former field waste tanks (see Figure 1).

Plume behavior is the primary evidence of natural attenuation. Secondary evidence of natural attenuation can be obtained by the collection and evaluation of data relating to the concentrations of indigenous electron acceptors such as dissolved oxygen, nitrate, sulfate, and carbon dioxide. A plume is shrinking when the rate of hydrocarbon loading from a source area is less than the rate of natural degradation of hydrocarbons. Plume shrinkage in the absence of aggressive remediation is indicative of the occurrence of natural attenuation processes. Conversely, a plume is expanding if the rate of hydrocarbon loading from a source area is greater than the rate of natural degradation of hydrocarbons through natural attenuation processes.

The former field waste tanks in the eastern portion of the facility were removed in March 1997. Concentrations of total BTEX in monitor wells in the area of the former field waste tanks have been generally stable or declining subsequent to removal of these tanks. Sporadic increases in total BTEX concentrations between quarterly sampling events have been observed in monitor wells in this area since March 1997, however. These increases may be attributed to sporadic loading rates from the vadose zone in excess of the rate of natural attenuation in the area. The following subsections present primary and secondary evidence of natural attenuation of hydrocarbons in groundwater at the former field waste tanks area of the facility.

3.2.1 Primary Evidence

The benzene concentration in monitor well MW-10 has decreased from a maximum of 1.3 mg/L in August 1995 (prior to removal of the field waste tanks) to less than the NMWQCC standard of 0.01 mg/L for BTEX in the nine applicable groundwater sampling events between December 2000 and March 2003. Benzene has not been detected in monitor well MW-10 since September 2001. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-10 have generally undergone similar decreases over this time period.

Benzene concentrations at the monitor well MW-11/11A location have generally decreased from a maximum of 0.970 mg/L in December 1996 (prior to removal of the field waste tanks). The March 2003 benzene concentration of 0.0032 mg/L in monitor well MW-11A is less than the NMWQCC

standard for benzene. Benzene concentrations in MW-11A have been less than the NMWQCC standard for benzene during seven of the eight groundwater sampling events conducted since June 2001.

Concentrations of each BTEX constituent at the monitor well MW-12/12D location have been below analytical detection limits for the past seven sampling events.

3.2.2 Secondary Evidence

The following lines of geochemical evidence can also be used to suggest that intrinsic bioremediation (an important natural attenuation mechanism) of dissolved-phase hydrocarbons is occurring in the area of the former field waste tanks.

Dissolved oxygen may be utilized as an electron acceptor during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

Groundwater samples were collected primarily using bailers during the March 2003 sampling event due to low water levels in the wells. Measured dissolved oxygen concentrations in most wells at the facility were therefore artificially elevated. The use of bailers may cause groundwater samples to become oxygenated, thus precluding a meaningful comparison of dissolved oxygen data.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility when down-hole pumps were utilized has indicated that dissolved oxygen concentrations were typically depressed in hydrocarbon-impacted monitor wells relative to non-impacted wells at the facility (see the June 2001 Groundwater Sampling Report for BJ Services Hobbs, New Mexico Facility, for example).

2. Nitrate may be utilized as an electron acceptor during intrinsic bioremediation after dissolved oxygen is depleted. Therefore, nitrate concentrations may be depressed in areas where intrinsic bioremediation is occurring.

Nitrate was detected at a concentration of 2.75 mg/L in background monitor well MW-5 during the March 2003 sampling event. Although there was minimal to no hydrocarbon impact at former field waste tanks area wells MW-10, MW-11A, and MW-12D in March 2003 (see Table 4), nitrate was not detected in monitor wells MW-10 and MW-11A; nitrate was detected at a concentration of 0.705 mg/L in monitor well MW-12D. The depressed to non-detectable nitrate concentrations observed during this sampling event at former field

- waste tanks area wells MW-10, MW-11A, and MW-12D relative to the background nitrate concentration at the facility are likely due to residual effects of hydrocarbons in these areas.
- 3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors may become active. Ferrous iron is the reduction product of ferric iron, a common electron acceptor. Therefore, ferrous iron concentrations should increase in areas where intrinsic bioremediation is occurring.
 - A ferrous iron concentration of 0.0 mg/L was measured in background monitor well MW-5 during the March 2003 sampling event, but respective ferrous iron concentrations of 1.0 mg/L and 4.0 mg/L were measured in former field waste tanks area monitor wells MW-10 and MW-11A. The elevated ferrous iron concentrations in monitor wells MW-10 and MW-11A suggest that ferric iron has been used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area of the facility.
 - 4. Microbes that utilize sulfate may become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through the use of sulfate as an electron acceptor.
 - In March 2003, sulfate concentrations in the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D ranged from 170 mg/L to 290 mg/L, whereas the sulfate concentration in background monitor well MW-5 was measured at 110 mg/L. The fact that sulfate concentrations in the former source area monitor wells are greater than the sulfate concentration in the background monitor well suggests that sulfate is not being utilized as an electron acceptor in the former field waste tanks area.
 - 5. Methane is a reaction product generated during utilization of carbon dioxide as an electron acceptor, so its concentration may increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.
 - Dissolved methane was not detected in background monitor well MW-5 during the March 2003 groundwater sampling event. In the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D, dissolved methane concentrations ranged from 0.0031 mg/L to 0.0044 mg/L. The elevated dissolved methane concentrations in these wells relative to the background well suggest that utilization of carbon dioxide as an electron acceptor has occurred at the former field waste tanks area of the facility.
 - 6. Redox potential is a measure of chemical energy in groundwater. The redox potential of groundwater from background monitor well MW-5 was measured at 72.7 mV in March 2003. Respective redox potentials of –43.7 mV, –25.1 mV, and –76.9 mV were measured in the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D in March 2003. The negative redox values in the former field waste tanks area monitor wells as compared to the positive redox value in the background well at the facility provides additional evidence that natural attenuation of hydrocarbons has occurred in the area of the former field waste tanks.
 - 7. Alkalinity is expected to increase during natural attenuation processes as a result of the leaching of carbonates from mineral substrates by microbially-produced organic acids.

The alkalinity of groundwater from background monitor well MW-5 was measured at 243 mg/L in March 2003. An elevated alkalinity of 401 mg/L was measured in former field waste tanks area monitor well MW-11A, suggesting the occurrence of natural attenuation of hydrocarbons at this location.

The respective alkalinity values of 273 mg/L and 241 mg/L measured in monitor wells MW-10 and MW-12D are comparable to the alkalinity of 243 mg/L measured in background monitor well MW-5.

In conclusion, current nitrate and historic dissolved oxygen data suggest that these electron acceptors have been utilized during intrinsic bioremediation processes in the vicinity of the former field waste tanks area of the facility. Data for ferrous iron also indicates that utilization of ferric iron as an electron acceptor has occurred in this area of the facility. Current methane, redox, and alkalinity data provide further evidence that natural attenuation of hydrocarbons has occurred in this area.

It is recommended that monitoring for natural attenuation evaluation parameters continue in the former field waste tank area monitor wells MW-10, MW-11A, and MW-12D and in the background well, MW-5. Redox potential, dissolved oxygen content, ferrous iron content, and alkalinity serve as good indicators of the occurrence of intrinsic bioremediation of hydrocarbons, so it is also recommended that field testing for these parameters be continued in all wells to be sampled during upcoming groundwater monitoring events.



4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the March 2003 groundwater sampling event conducted at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- March 2003 benzene concentrations in all former field waste tanks area monitor wells are less than the NMWQCC standard of 0.01 mg/L for benzene. Based on generally decreasing hydrocarbon concentrations in these monitor wells over time and as substantiated by geochemical data, natural attenuation processes appear to be occurring in the vicinity of the former field waste tanks that were removed in March 1997.
- The chloride concentration measured in downgradient monitor well MW-14 during the March 2003 groundwater sampling event is less than the NMWQCC standard of 250 mg/L and is the lowest ever recorded during the monitoring history of this well. The March 2003 chloride concentration in monitor well MW-15 exceeded the NMWQCC chloride standard for the first time in the monitoring history of this well, however.

4.2 Recommendations

- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-10, MW-11A, and MW-12D. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters.
- Conduct additional sampling and analysis as necessary to complete the annual sampling requirements for NMWQCC parameters.
- Based on the recent approval from the NMOCD and the acquisition of access privileges, complete installation and sampling of an off-site monitor well (MW-16) to further investigate possible chloride impact to groundwater in the area of the facility.
- Upon approval from the NMOCD, decommission the biosparging system at the former fuel island area.

DISTRIBUTION

March 2003 Groundwater Sampling Report BJ Services Company, U.S.A. Hobbs, New Mexico

August 6, 2003

Final Distribution as follows:

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QUALITY CONTROL REVIEWER

Lynn Wright

Principal Geologist

BROWN AND CALDWELL Table

TABLES

Date	Activity
February 7, 1991	The New Mexico Oil Conservation Division (NMOCD) conducted an on-site inspection, including sampling of the on-site fresh water well.
August 6, 1991	The NMOCD requested submittal of an investigation work plan.
September 5, 1991	Roberts/Schornick and Associates, Inc. (RSA) submitted Technical Work Plan for soil and groundwater investigation to the NMOCD.
November 15, 1991	The NMOCD approved the Technical Work Plan submitted by RSA.
December 16, 1991	RSA sampled the fresh water well. The analytical results were submitted to the NMOCD.
February 21, 1992	Western sampled the fresh water well. The analytical results were submitted to the NMOCD.
July 29 - August 10, 1992	Brown and Caldwell conducted a soil and groundwater investigation according to the approved Technical Work Plan. The investigation included drilling and sampling nine soil borings, sampling six handaugured soil borings, installation and sampling of five monitor wells, and sampling of the fresh water well.
October 12, 1992	Brown and Caldwell submitted a Soil and Groundwater Investigation Report to the NMOCD.
December 2, 1992	The NMOCD requested the installation and sampling of four additional monitor wells, including a monitor well on an adjacent property.
April 13, 1993	Brown and Caldwell conducted a vapor extraction pilot test on the existing monitor wells.
April 15, 1993	Brown and Caldwell installed off-site monitor well MW-9.
April 22, 1993	Brown and Caldwell sampled off-site monitor well MW-9.
May 27, 1993	Brown and Caldwell submitted a letter report documenting the installation and sampling of off-site monitor well MW-9 to the NMOCD.
June 2, 1993	Brown and Caldwell conducted a short-term aquifer test using the fresh water well at the facility.
June 8, 1993	USTank Management, Inc. conducted a non-volumetric tank system tightness test on the diesel and unleaded gasoline aboveground storage tanks at the facility.
June 21, 1993	ENSR Consulting and Engineering (ENSR), the environmental consultant for the adjacent property owner on which off-site well MW-9 is located, submitted a request to sample monitor well MW-9.

July 15, 1993	ENSR split a groundwater sample collected from monitor well MW-9 with Brown and Caldwell.
July 30, 1993	USTank Management, Inc. submitted a tank tightness test report to Brown and Caldwell. The report indicated that both tanks and their associated piping passed.
August 16-19, 1993	Brown and Caldwell installed two additional downgradient monitor wells. Brown and Caldwell sampled each of the existing and newly installed monitor wells.
January 26, 1994	Brown and Caldwell performed a groundwater monitoring event; the existing monitor wells and the fresh water well were purged and sampled. The groundwater samples were analyzed for BTEX.
May 6, 1994	A Remedial Action Plan (RAP) was submitted to the NMOCD.
August 11, 1994	The RAP was approved by the NMOCD.
May 3, 1995	Brown and Caldwell conducted the May 1995 groundwater sampling event.
July 31, 1995	Brown and Caldwell conducted the July 1995 groundwater sampling event.
August 2-9, 1995	Installation of the biosparging system was initiated. Nineteen combined injection/extraction wells and three vacuum extraction wells were installed.
August 14-26, 1995	Remedial Construction Services, Inc. (RCS) constructed the initial design of the biosparging system.
September 19, 1995	Operation of the extraction portion of the biosparging system commenced.
November 13, 1995	Operation of the injection portion of the biosparging system commenced.
November 14, 1995	Brown and Caldwell conducted the November 1995 groundwater sampling event.
February 23, 1996	Brown and Caldwell conducted the February 1996 groundwater sampling event.
May 31, 1996	Brown and Caldwell conducted the May 1996 groundwater sampling event.
August 23, 1996	Brown and Caldwell conducted the August 1996 groundwater sampling event.
December 2, 1996	Brown and Caldwell conducted the December 1996 groundwater sampling event.

March 6-7, 1997	BJ Services removed three field waste tanks and associated hydrocarbon-impacted soil.
March 12, 1997	Brown and Caldwell conducted the March 1997 groundwater sampling event.
March 14, 1997	Vapor extraction well VE-4 was installed.
April 1997	Vapor extraction well VE-4 was connected to the vapor extraction system.
June 12, 1997	Brown and Caldwell conducted the June 1997 groundwater sampling event.
September 11-12, 1997	Brown and Caldwell conducted the September 1997 groundwater sampling event.
December 10, 1997	Brown and Caldwell conducted the December 1997 groundwater sampling event.
February 3-14, 1998	Air injection wells AI-20 through AI-24, vapor extraction wells VE-5 through VE-7, and monitor wells MW-11A and MW-12 were installed.
February 19, 1998	Operation of previously existing injection wells was suspended in preparation for start-up of new injection wells AI-20 through AI-24.
March 10, 1998	Operation of new air injection wells AI-20 through AI-24 and new vapor extraction wells VE-5 through VE-7 commenced.
March 23-24, 1998	Brown and Caldwell conducted the March 1998 groundwater sampling event.
March 24, 1998	Operation of previously existing injection wells and vapor extraction wells resumed.
June 23, 1998	Brown and Caldwell conducted the June 1998 groundwater sampling event.
September 30, 1998	Brown and Caldwell conducted the September 1998 groundwater sampling event.
December 9-10, 1998	Brown and Caldwell conducted the December 1998 groundwater sampling event.
January 21, 1999	The NMOCD requested submittal of a work plan by March 22, 1999 to perform additional groundwater delineation in the area of the former field waste tanks and the former AST/MW-6 area.
March 9-10, 1999	Brown and Caldwell conducted the March 1999 groundwater sampling event.
March 19, 1999	Brown and Caldwell submitted the work plan for groundwater delineation activities that was requested by the NMOCD.

May 19, 1999	The NMOCD approved the groundwater delineation work plan.
June 10, 1999	Brown and Caldwell performed sampling of existing monitor wells for the June /July 1999 groundwater sampling event.
July 2, 1999	Brown and Caldwell completed plugging and abandonment of monitor wells MW-2, MW-6, and MW-11; installed and developed monitor wells MW-12D and MW-13; and sampled monitor wells MW-12D and MW-13 to complete the June/July 1999 groundwater sampling event.
July 14, 1999	Brown and Caldwell redirected air discharge from the shallow injection well injection system to Lateral No. 1 and optimized air flow to injection wells AI-16 and AI-17 to apply increased remedial pressure to the eastern portion of the west plume.
September 13-14, 1999	Brown and Caldwell conducted the September 1999 groundwater sampling event.
December 9, 1999	Brown and Caldwell conducted the December 1999 groundwater sampling event.
March 9-10, 2000	Brown and Caldwell conducted the March 2000 groundwater sampling event and shut off air flow to biosparging system Lateral Nos. 4S, 5S, 6S, and 7S.
June 8, 2000	Brown and Caldwell conducted the June 2000 groundwater sampling event.
September 13, 2000	Brown and Caldwell conducted the September 2000 groundwater sampling event.
November 1, 2000	Brown and Caldwell deactivated the biosparging system.
December 7, 2000	Brown and Caldwell conducted the December 2000 groundwater sampling event.
January 2001	Brown and Caldwell installed and sampled monitor wells MW-14 and MW-15.
March 8-9, 2001	Brown and Caldwell conducted the March 2001 groundwater sampling event.
June 21-22, 2001	Brown and Caldwell conducted the June 2001 groundwater sampling event.
July 23, 2001	Brown and Caldwell collected soil samples from four soil borings installed at the former fueling system area of the facility to confirm the effectiveness of the biosparging system in remediating hydrocarbon impact to soil, as specified in the NMOCD-approved RAP.
September 10, 2001	Brown and Caldwell conducted the September 2001 groundwater sampling event.

December 6, 2001	Brown and Caldwell conducted the December 2001 groundwater sampling event.
February 26, 2002	Brown and Caldwell repaired the crushed well completion on monitor well MW-10.
February 28, 2002	NMOCD requested an evaluation of chloride content of groundwater at the facility.
March 11-12, 2002	Brown and Caldwell conducted the March 2002 groundwater sampling event. Groundwater samples from all water-producing wells at the facility were analyzed for chloride content.
May 21, 2002	Brown and Caldwell submitted the report for the March 2002 groundwater sampling event, including an evaluation of chloride content of groundwater at the facility and a recommendation for installation of a downgradient off-site well (MW-16) to replace off-site well OW-4, which has gone dry.
June 17-18, 2002	Brown and Caldwell conducted the June 2002 groundwater sampling event.
September 16, 2002	Brown and Caldwell conducted the September 2002 groundwater sampling event.
November 11, 2002	Brown and Caldwell submitted the June 2002 Groundwater Sampling Report and Biosparging System Closure Report.
January 9, 2003	Brown and Caldwell conducted the January 2003 groundwater sampling event.
March 6, 2003	Brown and Caldwell conducted the March 2003 groundwater sampling event.

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-1	3,647.53	8/10/1992	53.22	0.00	3,594.31	(1)
		2/9/1993	53.03	0.00	3,594.50	(-)
		8/18/1993	53.10	0.00	3,594.43	
		1/26/1994	53.31	0.00	3,594.22	
		5/3/1995	54.64	0.20	3,593.05	(2)
		7/31/1995	54.14	0.00	3,593.39	
		11/14/1995 2/23/1996	53.69 54.32	0.00	3,593.84	
	1	5/31/1996	54.32 54.14	0.00	3,593.21 3,593.39	
		8/23/1996	56.17	0.00	3,591.36	
		12/2/1996	55.27	0.00	3,592.26	
		3/12/1997	55.70	0.27	3,592.05	
		6/12/1997	55.08	0.02	3,592.47	
		9/12/1997	55.64	0.51	3,592.31	
		12/10/1997	55.46	0.00	3,592.07	PSH Sheen
		3/24/1998	55.81	0.00	3,591.72	PSH Sheen
		6/23/1998	56.38	0.06	3,591.20	
		9/30/1998	56.82	0.00	3,590.71	PSH Sheen
		12/9/1998	57.05 57.45	0.00	3,590.48	
		3/10/1999 6/10/1999	57.45 58.03	0.00	3,590.08	
		6/10/1999 7/2/1999	58.02 57.90	0.00 0.00	3,589.51	
		9/14/1999	57.90 58.14	0.00	3,589.63 3,589.39	
		12/9/1999	38.14	0.00	3,369.39	(3)
1		3/9/2000	58.99	0.00	3,588.54	(3)
,		06/00	20.77	-	5,500.54	
I		09/00	-	<u> </u>		
I		12/7/00	•	-	•	
		3/8/2001	60.35	0.00	3,587.18	
		6/21/01	60.99	0.00	3,586.54	•
		9/10/01	61.17	0.00	3,586.36	
		12/6/2001		not measured		
ı		03/11/02	62.11	0.00	3,585.42	
		6/17/02	62.53	0.00	3,585.00	
ŀ		9/16/2002	62.43	0.00	3,585.10	
		1/9/2003	62.61	0.00	3,584.92	
MW-2	3,644.84	3/6/2003 8/10/1992	62.72 52.82	0.00	3,584.81	/1)
1V1 VV -2	3,044.64	2/9/1993	49.60	0.00	3,592.02 3,595.24	(1)
		8/18/1993	49.71	0.00	3,595.13	
ļ		1/26/1994	49.97	0.00	3,594.87	1
			-	-	5,594.67	(4),(5)
MW-3	3,645.00	5/3/1995 8/10/1992	52.99		3,592.01	(4),(5) (1)
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993	52.99 52.72	0.00 0.00		
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993	52.99 52.72 52.82	0.00 0.00 0.00 0.00	3,592.01 3,592.28 3,592.18	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994	52.99 52.72 52.82 53.05	0.00 0.00 0.00 0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.95	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995	52.99 52.72 52.82 53.05 54.31	0.00 0.00 0.00 0.00 0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995	52.99 52.72 52.82 53.05 54.31 51.24	0.00 0.00 0.00 0.00 0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995	52.99 52.72 52.82 53.05 54.31 51.24 51.10	0.00 0.00 0.00 0.00 0.00 0.00 0.00	3.592.01 3.592.28 3.592.18 3.591.95 3.590.69 3.593.76 3.593.90	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 3/12/1997	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77 3,592.33	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.55 3,593.55 3,593.45 3,592.77 3,592.33 3,592.32	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996 3/12/1997 6/12/1997	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77 3,592.33 3,592.32 3,592.29	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996 3/12/1997 9/11/1997	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3.592.01 3.592.28 3.592.18 3.591.95 3.590.69 3.593.76 3.593.90 3.593.32 3.593.55 3.593.45 3.592.77 3.592.33 3.592.29 3.592.29	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1997 6/12/1997 9/11/1997 12/10/1997	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77 3,592.33 3,592.32 3,592.29	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 3/12/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.95 3,593.76 3,593.90 3,593.32 3,593.32 3,593.45 3,592.77 3,592.33 3,592.29 3,592.29 3,592.11 3,591.78	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 8/23/1996 8/23/1996 3/12/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.95 3,593.76 3,593.90 3,593.32 3,593.35 3,593.45 3,592.77 3,592.33 3,592.32 3,592.29 3,592.11 3,591.78 3,591.34	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996 3/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998 3/10/1999	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.72	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.18 3,591.95 3,593.76 3,593.76 3,593.32 3,593.55 3,593.45 3,592.77 3,592.32 3,592.32 3,592.29 3,592.11 3,591.78 3,591.34 3,590.28	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996 3/12/1997 9/11/1997 9/11/1997 12/10/1997 3/23/1998 9/30/1998 9/30/1998 12/9/1998 3/10/1999 6/10/1999	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.72 55.17	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.45 3,593.45 3,592.27 3,592.33 3,592.32 3,592.29 3,592.11 3,591.78 3,591.78 3,591.34 3,590.94 3,590.94 3,590.28 3,590.28 3,590.28	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1997 6/12/1997 6/12/1997 12/10/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998 3/10/1999 6/10/1999 7/2/1999	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.72 55.17 55.15	0.00 0.00	3.592.01 3.592.28 3.592.18 3.591.95 3.590.69 3.593.76 3.593.90 3.593.32 3.593.45 3.592.77 3.592.77 3.592.32 3.592.29 3.592.11 3.591.78 3.591.78 3.591.78 3.591.78 3.590.94 3.590.94 3.590.28 3.590.28 3.590.28 3.590.28 3.590.28	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 3/12/1997 6/12/1997 6/12/1997 3/12/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998 3/10/1999 6/10/1999 9/14/1999	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.36 54.36 54.36 55.17 55.15 55.15	0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.45 3,592.77 3,592.32 3,592.29 3,592.11 3,591.78 3,591.78 3,591.34 3,590.94 3,590.94 3,590.64 3,590.28 3,589.85 3,589.85 3,589.58	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 8/23/1996 8/23/1996 3/12/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1999 6/10/1999 7/2/1999 9/14/1999 12/9/1999	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.72 55.17 55.17 55.15 55.42 55.78	0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.45 3,592.37 3,592.33 3,592.32 3,592.32 3,592.31 3,591.34 3,591.34 3,590.94 3,590.94 3,590.28 3,589.83 3,589.83 3,589.85 3,589.58	
MW-3	3,645.00	5/3/1995 8/10/1992 2/9/1993 8/18/1993 1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 3/12/1997 6/12/1997 6/12/1997 3/12/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998 3/10/1999 6/10/1999 9/14/1999	52.99 52.72 52.82 53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.36 54.36 54.36 55.17 55.15 55.15	0.00 0.00	3,592.01 3,592.28 3,592.18 3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.45 3,592.77 3,592.32 3,592.29 3,592.11 3,591.78 3,591.78 3,591.34 3,590.94 3,590.94 3,590.64 3,590.28 3,589.85 3,589.85 3,589.58	

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

MW-J 3,645.00 12772000 571.5 0.00 13.587.81	Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
621701 \$8.34 0.00 3.586.66 3.691.01 126/20201 5.89.44 0.00 3.586.66 3.586.66 3.691.01 126/20201 5.90.04 0.00 3.585.96 3.685.97 3.692.001 3.685.97 3.692.001 3.685.97 3.692.001 3.685.97 3.692.001 3.685.97 3.692.001 3.685.97 3.692.001 3.685.97 3.692.001 3.685.97 3.692.001 3.685.97 3.692.001 3.692.001 3.685.97 3.692.001 3.692.001 3.685.97 3.692.001 3.692.001 3.694.97 3.692.001 3.692.001 3.694.97 3.692.001 3.692.001 3.694.97 3.692.001 3.	MW-3	3,645.00	12/7/2000	57.15	0.00		
991001 58.54 0.00 3.586.46 126/2001 59.04 0.00 3.585.50 61.702 69.04 0.00 3.585.50 61.702 69.04 0.00 3.585.50 61.702 69.04 0.00 3.585.50 61.702 69.04 0.00 3.585.50 61.702 69.04 0.00 3.585.50 61.702 69.04 0.00 3.585.50 61.702 69.04 61.702	cont.						
12/6/2001 59 04			1			,	
MW-4 3,645.28 ETO(1902) 59.80 0.00 3,585.50 19/2003 0.00 3,585.17 19/2003 0.00 3,585.20 19/2003 0.00 3,585.20 19/2003 0.00 3,585.20 0.00 3,585.20 0.00 3,585.20 0.00 3,585.20 0.00 3,585.20 0.00 3,585.20 0.00 3,585.20 0.00 3,585.20 0.00 3,585.20 0.00 3,594.90 0.00 3,594.60 0.00		-			1	*	
617/02 59 83 0.00 3.585.17					1		
MW-4 3.645.28 \$700.00		ŧ	1		1		
107/2003 60.01 0.00 3.584.99					1		
MW-4 3.645.28 8/10/1992 50.55 0.00 3.594.75 (1) 8/14/1993 50.55 0.00 3.594.75 (1) 8/14/1993 50.38 0.00 3.595.02 (1) 8/14/1993 50.98 0.00 3.595.02 (1) 8/14/1995 51.03 0.00 3.595.02 (1) 8/14/1995 51.03 0.00 3.595.03 (1) 8/14/1996 51.65 0.01 3.593.64 (1) 8/14/1996 51.65 0.01 3.593.64 (1) 8/14/1996 51.65 0.01 3.593.64 (1) 8/14/1996 51.65 0.01 3.593.64 (1) 8/14/1996 51.65 0.01 3.593.64 (1) 8/14/1997 52.00 0.00 3.593.80 (1) 8/14/1997 52.00 0.05 3.593.80 (1) 8/14/1997 52.00 0.15 3.592.80 (1) 8/14/1997 52.00 0.15 3.592.80 (1) 8/14/1998 53.00 0.25 3.592.99 PSH Sheen (1) 8/14/1999 53.00 0.00 3.593.80 (1) 8/14/1999 55.00 0.00 3.593.80 (1) 8/14/1999 55.00 0.00 3.593.80 (1) 8/14/1999 55.00 0.00 3.593.80 (1) 8/14/1999 55.00 0.00 3.593.80 (1) 8/14/1999 55.00 0.00 3.593.80 (1) 8/14/1999 55.00 0.00 3.593.80 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.593.13 (1) 8/14/1999 55.00 0.00 3.588.13 (1) 8/14/1999 55.00 0.00 3.588.13 (1) 8/14/1999 55.00 0.00 3.588.10 (1) 8/14/1999 55.30 0.00 3.588.							
MW-4							
20/1993 50.26 0.00 3.594.90	MW-4	3,645.28					(1)
1/26/1994 50,90 0.30 3,594 63			2/9/1993	50.26	0.00	3,595.02	. ,
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3/12/1997 54.44 0.00 3,593.28 6/12/1997 54.48 0.00 3,593.24 9/12/1997 54.29 0.00 3,593.43 12/10/1997 54.66 0.00 3,593.06 3/23/1998 55.05 0.00 3,592.67 6/23/1998 55.44 0.00 3,592.28 9/30/1998 55.65 0.00 3,592.07 12/9/1998 56.00 0.00 3,591.72 3/9/1999 56.45 0.00 3,591.27 6/10/1999 56.91 0.00 3,590.81 7/2/1999 56.93 0.00 3,590.79					0.00	3,593.74	
9/12/1997 54.29 0.00 3,593.43 12/10/1997 54.66 0.00 3,593.06 3/23/1998 55.05 0.00 3,592.67 6/23/1998 55.44 0.00 3,592.28 9/30/1998 55.65 0.00 3,592.07 12/9/1998 56.00 0.00 3,591.72 3/9/1999 56.45 0.00 3,591.27 6/10/1999 56.91 0.00 3,590.81 7/2/1999 56.93 0.00 3,590.79				54.44	0.00	3,593.28	
12/10/1997 \$4.66 0.00 3,593.06 3/23/1998 \$5.05 0.00 3,592.67 6/23/1998 \$5.44 0.00 3,592.28 9/30/1998 \$5.65 0.00 3,592.07 12/9/1998 \$6.00 0.00 3,591.72 3/9/1999 \$6.45 0.00 3,591.27 6/10/1999 \$6.91 0.00 3,590.81 7/2/1999 \$6.93 0.00 3,590.79							
3/23/1998 55.05 0.00 3,592.67 6/23/1998 55.44 0.00 3,592.28 9/30/1998 55.65 0.00 3,592.07 12/9/1998 56.00 0.00 3,591.72 3/9/1999 56.45 0.00 3,591.27 6/10/1999 56.91 0.00 3,590.81 7/2/1999 56.93 0.00 3,590.79							
6/23/1998 55.44 0.00 3,592.28 9/30/1998 55.65 0.00 3,592.07 12/9/1998 56.00 0.00 3,591.72 3/9/1999 56.45 0.00 3,591.27 6/10/1999 56.91 0.00 3,590.81 7/2/1999 56.93 0.00 3,590.79							
9/30/1998 55.65 0.00 3,592.07 12/9/1998 56.00 0.00 3,591.72 3/9/1999 56.45 0.00 3,591.27 6/10/1999 56.91 0.00 3,590.81 7/2/1999 56.93 0.00 3,590.79							
12/9/1998 56.00 0.00 3,591.72 3/9/1999 56.45 0.00 3,591.27 6/10/1999 56.91 0.00 3,590.81 7/2/1999 56.93 0.00 3,590.79							
3/9/1999 56.45 0.00 3,591.27 6/10/1999 56.91 0.00 3,590.81 7/2/1999 56.93 0.00 3,590.79							
6/10/1999 56.91 0.00 3,590.81 7/2/1999 56.93 0.00 3,590.79							
7/2/1999 56.93 0.00 3,590.79							
			9/14/1999	57.12	0.00	3,590.79	

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Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-5	3,647.72	12/9/1999	57.41	0.00	3,590.31	
cont.		3/9/2000	57.92	0.00	3,589.80	
		6/8/2000	58.32	0.00	3,589.40	
		9/13/2000	58.36	0.00	3,589.36	
		12/7/2000	58.71	0.00	3,589.01	
		3/8/2001	59.36	0.00	3,588.36	
	İ	6/21/01	59.94	0.00	3,587.78	
		9/10/01	59.85	0.00	3,587.87	
		12/6/2001	60.56	0.00	3,587.16	
		3/11/02	61.12	0.00	3,586.60	
	!	6/17/02	61.43	0.00	3,586.29	
		9/16/2002	61.52	0.00	3,586.20	
		1/9/2003	61.75	0.00	3,585.97	
		3/6/2003	61.90	0.00	3,585.82	
MW-6	3,644.74	2/9/1993	50.58	0.00	3,594.16	(1)
		8/18/1993	50.78	0.00	3,593.96	
		1/26/1994	51.00	0.00	3,593.74	
		5/3/1995	52.63	0.00	3,592.11	
		7/31/1995	51.90	0.00	3,592.84	
	1	11/14/1995	51.19	0.00	3,593.55	
		2/23/1996	52.10	0.00	3,592.64	
	-	5/31/1996	51.76	0.00	3,592.98	
	-	8/23/1996	51.63	0.00	3,593.11 3,591.89	
		12/2/1996 3/12/1997	52.85 53.55	0.00	3,591.19	
		6/12/1997	52.08	0.00	3,592.66	
	1	9/11/1997	53.72	0.00	3,591.02	
		12/10/1997	53.72	0.00	3,591.47	
		3/23/1998	53.56	0.00	3,591.18	
		6/23/1998	52.88	0.00	3,591.86	!
		9/30/1998	54.89	0.00	3,589.85	
		12/9/1998	54.57	0.00	3,590.17	
		3/10/1999	55.10	0.00	3,589.64	
		7/2/1999			-,,	(5),(6)
MW-7	3,644.55	2/9/1993	50.53	0.00	3,594.02	(1)
	Í	8/18/1993	50.74	0.00	3,593.81	
		1/26/1994	51.01	0.00	3,593.54	
		5/3/1995	52.25	0.00	3,592.30	
		7/31/1995	51.92	0.00	3,592.63	
		11/14/1995	51.48	0.00	3,593.07	
		2/23/1996	52.15	0.00	3,592.40	Ì
		5/31/1996	51.78	0.00	3,592.77	
		8/23/1996	52.02	0.00	3,592.53	
		12/2/1996	52.52	0.00	3,592.03	
		3/12/1997	52.99	0.00	3,591.56	
		6/12/1997	53.08	0.00	3,591.47	
		9/11/1997	53.00	0.00	3,591.55	
		12/10/1997	53.28	0.00	3,591.27	
		3/23/1998	53.59	0.00	3,590.96	
		6/23/1998	54.20	0.00	3,590.35	
		9/30/1998	54.54	0.00	3,590.01	
		12/9/1998	54.74	0.00	3,589.81	
		3/9/1999	55.15	0.00	3,589.40	
		6/10/1999	55.66	0.00	3,588.89	
		7/2/1999	55.73	0.00	3,588.82	
		9/13/1999	55.94	0.00	3,588.61	
		12/9/1999	56.38	0.00	3,588.17	
		3/9/2000 6/8/2000	56.74	0.00	3,587.81	
			57.17 57.40	0.00	3,587.38	
		9/13/2000 12/7/2000	57.40 57.77	0.00	3,587.15 3,586.78	
		f .	57.77 58.29	0.00	3,586.78	
		3/8/2001			· · · · · · · · · · · · · · · · · · ·	
		6/21/01 9/10/01	58.91 59.25	0.00	3,585.64	1
		12/6/2001	59.25 59.75	0.00	3,585.30 3,584.80	
		3/11/2002	59.75 60.03	0.00	3,584.80 3,584.52	
		6/17/02	60.39	0.00	3,584.52 3,584.16	
		9/16/2002	60.39	0.00	3,584.16	
		1/9/2003	60.53	0.00	3,584.02	

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Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-8	3,644.87	2/9/1993	50.48	0.00	3,594.39	(1)
	,	8/18/1993	50.67	0.00	3,594.20	(-)
	1	1/26/1994	50.96	0.00	3,593.91	
		5/3/1995	52.15	0.00	3,592.72	
		7/31/1995	51.77	0.00	3,593.10	
		11/14/1995	51.37	0.00	3,593.50	
		2/23/1996	52.17	0.00	3,592.70	
		5/31/1996	51.55	0.00	3,593.32	
		8/23/1996	51.92	0.00	3,592.95	
		12/2/1996	52.43	0.00	3,592.44	
		3/12/1997	52.93	0.00	3,591.94	
		6/12/1997	53.96	0.00	3,590.91	
		9/11/1997	52.73	0.00	3,592.14	
		12/10/1997	53.15	0.00	3,591.72	
		3/23/1998	53.51	0.00	3,591.36	
		6/23/1998	54.01	0.00	3,590.86	
		9/30/1998	54.35	0.00	3,590.52	
		12/9/1998	54.60	0.00	3.590.27	
		3/9/1999	55.00	0.00	3,589.87	
		6/10/1999	55.56	0.00	3,589.31	
		7/2/1999	55.57	0.00	3.589.30	
		9/13/1999	55.72	0.00	3,589.15	
		12/9/1999	-	-	-	(3)
		3/9/2000	56.52	0.00	3,588.35	(-)
		06/00	- -	-	-	
		09/00	-	_	-	
		12/00	-	_	-	
		3/8/2001	58.11	0.00	3,586.76	
		6/21/01	58.72	0.00	3,586.15	
		9/10/01	58.94	0.00	3,585.93	
		12/6/2001	20.51	not measured	3,505.55	
		3/11/2002	59.94	0.00	3,584.93	
		6/17/02	60.22	0.00	3,584.65	
		9/16/2002	60.24	0.00	3,584.63	
		1/9/2003	60.42	0.00	3,584.45	
		3/6/2003	60.52	0.00	3,584.35	
MW-9	3.644.78	4/22/1993	49.73	0.00	3,595.05	(1)
	3,0 , 0	7/15/1993	49.65	0.00	3,595.13	(-)
		8/18/1993	49.85	0.00	3,594.93	
		1/26/1994	50.02	0.00	3.594.76	
		5/3/1995	51.35	0.00	3,593,43	
		7/31/1995	50.97	0.00	3,593.81	
	-	11/14/1995	50.43	0.00	3,594.35	
		2/23/1996	51.12	0.00	3,593.66	1
		5/31/1996	50.89	0.00	3,593.89	
		8/23/1996	50.98	0.00	3,593.80	
		12/2/1996	51.58	0.00	3,593.80 3,593.20	
		3/12/1997	52.21	0.00	3,593.20 3,592.61	
		6/12/1997	52.10	0.05	3,592.68	PSH Sheen
		9/12/1997	51.95	0.00	3,592.83	PSH Sheer
		12/10/1997	52.37	0.00	3,592.83 3,592.41	PSH Sheer
		3/23/1998	52.68	0.00	3,592.41 3,592.10	PSH Sheer
		6/23/1998	53.08	0.00	3,592.10 3,591.70	PSH Sheer
		9/30/1998	53.39	0.00		PSH Sheer
		12/9/1998	53.68	0.01	3,591.40	ran aneer
		3/10/1999	53.68 54.15		3,591.10	Ì
		6/10/1999		0.00	3,590.63	
		7/2/1999	54.68 54.71	0.00	3,590.10	
		1		0.00	3,590.07	
		9/13/1999	54.71	0.00	3,590.07	(3)
		12/9/1999	- FF (0	- 0.00	2 500 00	(3)
		3/9/2000	55.69	0.00	3,589.09	1
		06/00	-	-	-	
		09/00	•		٠	
	ĺ	12/00]
		3/8/2001	57.03	0.00	3,587.75	1
		6/21/01	57.91	0.00	3,586.87	Į.
	ļ	9/10/01	57.95	0.00	3,586.83	
		12/6/2001		not measured		

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-9	3,644.78	3/11/2002	58.96	0.00	3,585.82	
cont.	,	6/17/02	59.14	0.00	3,585.64	
		9/16/2002		not measured		
		1/9/2003	59.34	0.00	3,585.44	
		3/6/2003	59.48	0.00	3585.3	
MW-10	3,644.47	8/18/1993	51.54	0.00	3,592.93	(1)
		1/26/1994 5/3/1995	51.90 52.97	0.00	3,592.57	
		7/31/1995	52.87	0.00 0.00	3,591.50 3,591.60	
		11/14/1995	52.51	0.00	3,591.96	
		2/23/1996	53.05	0.00	3,591.42	
		5/31/1996	52.79	0.00	3,591.68	
		8/23/1996	53.03	0.00	3,591.44	
		12/2/1996	53.41	0.00	3,591.06	
		3/12/1997	54.21	0.00	3,590.26	
		6/12/1997	53.99	0.00	3,590.48	
		9/12/1997	53.94	0.00	3,590.53	
		12/10/1997 3/23/1998	54.12 54.51	0.00 0.00	3,590.35 3,589.96	
		6/23/1998	55.12	0.00	3,589.35	
		9/30/1998	55.61	0.00	3,588.86	
		12/9/1998	55.80	0.00	3,588.67	
		3/9/1999	56.09	0.00	3,588.38	
		6/10/1999	56.60	0.00	3,587.87	
		7/2/1999	56.64	0.00	3,587.83	1
		9/14/1999	56.91	0.00	3,587.56	
		12/9/1999 3/10/2000	57.37 57.71	0.00 0.00	3,587.10	
		6/8/2000	58.08	0.00	3,586.76 3,586.39	
		9/13/2000	58.44	0.00	3,586.03	
		12/7/2000	58.89	0.00	3,585.58	
		3/9/2001	59.31	0.00	3,585.16	
		6/21/01	59.89	0.00	3,584.58	
		9/10/01	61.34	0.00	3,583.13	
		12/6/2001	60.65	0.00	3,583.82	
		3/11/2002	60.69	0.00	3,583.78	
		6/17/02 9/16/2002	60.98 61.00	0.00 0.00	3,583.49 3,583.47	
		1/9/2003	61.07	0.00	3,583.40	
		3/6/2003	61.19	0.00	3.583.28	
MW-11	3,643.78	8/18/1993	51.92	0.00	3,591.86	(1)
		1/26/1994	52.32	0.00	3,591.46	
		5/3/1995	53.38	0.00	3,590.40	
		7/31/1995	53.35	0.00	3,590.43	
		11/14/1995	52.96	0.00	3,590.82	
		2/23/1996 5/31/1996	53.50 53.25	0.00 0.00	3,590.28	
		8/23/1996 8/23/1996	53.25 53.49	0.00	3,590.53 3,590.29	1
		12/2/1996	53.49	0.00	3,589.99	
		3/12/1997	53.81	0.00	3,589.97	1
		6/12/1997	53.96	0.00	3,589.82	1
		9/12/1997	52.93	0.00	3,590.85]
		12/10/1997				(5),(6)
MW-11A	3,644.24	3/23/1998	54.79	0.00	3,589.45	(7)
		6/23/1998 9/30/1998	55.43	0.00	3,588.81	
		9/30/1998	55.96 56.13	0.00 0.00	3,588.28 3,588.11	1
		3/10/1999	56.43	0.00	3,587.81	1
		6/10/1999	56.94	0.00	3,587.30	
		7/2/1999	57.01	0.00	3,587.23	
		9/14/1999	57.36	0.00	3,586.88	
		12/9/1999	57.72	0.00	3,586.52	
	ĺ	3/9/2000	58.01	0.00	3,586.23	
		6/8/2000	58.40	0.00	3,585.84	
		9/13/2000 12/7/2000	58.84 59.29	0.00 0.00	3,585.40	
	-	3/8/2001	59.29 59.72	0.00	3,584.95 3,584.52	
		6/21/01	60.28	0.00	3,583.96	
		9/10/01	60.69	0.00	3,583.55	
		12/6/2001	60.88	0.00	3,583.36	

Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-11A	3,644.24	3/11/2002	61.42	0.00	3,582.82	
cont.		6/17/02	61.55	0.00	3,582.69	
		9/16/2002	61.59	0.00	3,582.65	
		1/9/2003	61.67	0.00	3,582.57	
100/12	2 / 11 20	3/6/2003	61.70	0.00	3,582.54	/ 5 \
MW-12	3.644.29	3/23/1998	54.72	0.00	3,589.57	(7)
		6/23/1998 9/30/1998	55.48 56.02	0.00 0.00	3,588.81 3,588.27	
		12/9/1998	56.17	0.00	3,588.12	
		3/10/1999	56.45	0.00	3,587.84	
		6/10/1999	56.97	0.00	3,587.32	
	;	7/2/1999	56.99	0.00	3,587.30	
		9/14/1999	57.41	0.00	3,586.88	
		12/9/1999	57.76	0.00	3,586.53	
		3/10/2000	58.08	0.00	3,586.21	
	-	6/8/2000	58.42	0.00	3,585.87	
		9/13/2000	58.85	0.00	3,585.44	
		12/7/2000 3/8/2001	59.31 59.76	0.00	3,584.98	
		6/21/01	59.76 60.29	0.00 0.00	3,584.53 3,584.00	
		9/10/01	60.79	0.00	3,583.50	
		12/6/2001		ng this and subsequent monito		
MW-12D	3,644.38	7/2/1999	57.13	0.00	3,587.25	(8)
	,	9/14/1999	57.74	0.00	3,586.64	
		12/9/1999	57.86	0.00	3,586.52	
		3/9/2000	58.24	0.00	3,586.14	
		6/8/2000	58.56	0.00	3,585.82	
'	l '	09/00	-	-	-	
		12/00 3/8/2001	•	-	•	
		6/21/01	-	-	-	
		9/10/01	_			
'		12/6/2001	61.30	0.00	3,583.08	
		3/11/2002	61.61	0.00	3,582.77	
		6/17/02	61.71	0.00	3,582.67	
		9/16/2002	61.75	0.00	3,582.63	
		1/9/2003	61.86	0.00	3,582.52	
		3/6/2003	61.91	0.00	3,582.47	
MW-13	3,645.52	7/2/1999 9/14/1999	56.60 56.92	0.00	3,588.92	(9)
		12/9/1999	57.28	0.00 0.00	3,588.60 3,588.24	
		3/10/2000	57.68	0.00	3,587.84	
		6/8/2000	58.04	0.00	3,587.48	
		9/13/2000	58.29	0.00	3,587.23	
,		12/7/2000	58.68	0.00	3,586.84	
İ		3/8/2001	59.19	0.00	3,586.33	
		6/21/01	59.80	0.00	3,585.72	
		9/10/01	60.03	0.00	3,585.49	
		12/6/2001	60.59	0.00	3,584.93	
		3/11/2002 6/17/02	60.94 61.28	0.00	3,584.58	
		9/16/2002	61.28	0.00 0.00	3,584.24 3,584.29	
		1/9/2003	61.38	0.00	3,584.14	
		3/6/2003	61.45	0.00	3,584.07	
MW-14	3,642.45	3/8/2001	61.07	0.00	3,581.38	
ļ		6/21/01	61.71	0.00	3,580.74	
		9/10/01	62.31	0.00	3,580.14	
		12/6/2001	62.80	0.00	3,579.65	
ļ		3/11/2002	62.70	0.00	3,579.75	
		6/17/02	62.65	0.00	3,579.80	
		9/16/2002 1/9/2003	62.55 62.59	0.00	3,579.90	
		3/6/2003	62.59 62.64	0.00 0.00	3,579.86 3,579.81	
MW-15	3,643.24	3/8/2001	59.79	0.00	3,579.61	
	0,0 (D.a.)	6/21/01	60.49	0.00	3,582.75	
,		9/10/01	61.02	0.00	3,582.22	
		12/6/2001	61.47	0.00	3,581.77	
		3/11/2002	61.65	0.00	3,581.59	
		6/17/02	61.68	0.00	3,581.56	
		9/16/2002	61.47	0.00	3,581.77	1

Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-15		1/9/2003	61.59	0.00	3,581.65	
cont.		3/6/2003	61.63	0.00	3,581.61	
OW-4	3,644.06	7/2/1999	58.18	0.00	3,585.88	(8)
	1	9/14/1999	58.63	0.00	3,585.43	. ,
		12/9/1999	58.92	0.00	3.585.14	
		3/9/2000	59.19	0.00	3.584.87	
		6/8/2000	59.56	0.00	3,584.50	
		9/13/2000	60.16	0.00	3,583.90	
		12/7/2000	61.15	0.00	3,582.91	
		3/8/2001	61.43	0.00	3,582.63	(10)
		6/21/01	61.48	0.00	3.582.58	. ,
		9/10/01	61.53	0.00	3,582.53	
		12/6/2001	well dry durit	ng this and subsequent monitor	ring events	1

⁽¹⁾ Top of casing elevations and groundwater elevations of all monitor wells were relative to an arbitrary datum of 100,00 feet prior to March 1997 and have been converted to Mean Sea Level (MSL).

^{(2) -} For wells having measurable thickness of free product, the groundwater elevation was calculated as follows:

Groundwater Elevation = (TOC elevation)-(depth to groundwater)+[(free product thickness)x(SG of free product)]

Note: The specific gravity (SG) of the free product is 0.82.

^{(3) -} Not measured.

⁽⁴⁾- Monitor well MW-2 could not be located after January 1994

⁽⁵⁾- Well plugged and abandoned July 2, 1999.

^{(6) -} Monitor well MW-11 could not be located after September 12, 1997.

⁽⁷⁾- TOC elevations for MW-11A and MW-12 estimated relative to TOC elevation for MW-10.

⁽⁸⁾⁻ TOC elevations for MW-12D and OW-4 estimated relative to TOC elevation for MW-12.

⁽⁹⁾- TOC elevation for MW-13 estimated relative to TOC elevation for MW-7.

⁽¹⁰⁾⁻Well dry (measured depth to water is below base of screen); true groundwater elevation is less than listed groundwater elevation.

Table 3
March 6, 2003 Field Screening Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Cumulative Gallons Removed	Hd	Temperature (°C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)
MW-5	1.3	7.46	18.37	1055	72.7	5.44	3.5	0.0
MW-10	0.5*	6.56	17.54	2611	-43.7	2.47	1.0	1.0
MW-11A	1.2	7.46	17.40	9181	-25.1	2.71	1.0	4.0
MW-12D	2.0	7.55	19.20	1094	-76.9	0.39	NM	NM
MW-14	* I. I	06.9	17.98	1654	69.5	7.49	NM	ΝM
MW-15	2.8	7.21	18.72	1517	54.3	5.08	NM	NM

Monitor wells MW-1, MW-8, and MW-9 not sampled.

Monitor well MW-2 not operative after January 1994; P&A'd 7/1/99.

Monitor well MW-6 P&A'd 7/1/99.

Monitor well MW-11 not operative after September 1997; P&A'd 7/1/99.

Monitor wells MW-12 and OW-4 were dry.

NM = Not Measured

* Well was purged dry using bailing techniques.

Cumulative Results(1) for Chloride(2) Analyses Hobbs, New Mexico Facility BJ Services Company, U.S.A. Table 4

Commis Data									Monito	Monitor Wells ⁽³⁾							
Sample Date	MW-1	MW-3	MW-4 MW-5 MW	MW-5	9-	MW-7	MW-8	6-WM	MW-10 MW-11	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
8/1/8	160	150	310	130	380	310	350	110	2,200	3,400	NP	NP	dN	ΝP	ďΝ	ďΝ	NS
8/23/96	130	140	100	66	210	250	360	140	2,000	2,900	dN	NP	ΝP	NP	NP	ďN	NS
3/23-24/98	212	206	126	151	183	223	364	164	2,390	SN	940	1,200	ΝΡ	NP	NP	ΝP	NS
3/9-10/99	163	156	142	155	411	238	274	123	1,160	SN	834	314	Νb	NP	ΝÞ	ŅP	NS
6/10-2/5/	NA	VΝ	NA	٧V	NP	NA	NA	NA	NA	NP	NA	NA	195	496	ďN	NP	266
3/9-10/00	258	961	961	196	dΝ	224	241	131	474	NP	1,290	327	117	376	dΝ	NP	258
1/14/2001	SN	SN	NS	SN	å	SN	SN	SN	SN	dN	SN	NS	SN	SN	368	219	NS
3/8-9/01	٧N	591	172	152	NP	224	250	127	879	NP	1,720	586	NS	276	327	NA	NS-D
6/21/2001	VΑ	٧N	NA	ΝA	ŊŊ	NA	NA	NA	NA	NP	NA	NA	SN	NA	222	222	NS-D
9/10/2001	ΝA	Ϋ́Α	NA	ΑN	ď	NA	ΝA	ΝA	Ϋ́	ďN	NA	NS-D	NA	NA	245	228	NS-D
9/18/2001	Ϋ́	ΝΑ	٧×	NA A	ģ	٧X	٧X	٧×	VΑ	ďN	NA	NS-D	79	NA	NA	NA	NS-D
12/6/2001	NA	Ϋ́Α	NA	Ϋ́Z	₽	NA	ΝΑ	NA	NA	МP	NA	NS-D	NA	NA	276	215	NS-D
3/11-12/02	177	172	183	127	ďN	188	241	011	861	dN	1,230	NS-D	9/	207	284	224	NS-D
6/18/2002	SN	٧N	٧Z	ΝΑ	ď	NA	SN	NS	NA	dN	NA	NS-D	NA	145	258	233	NS-D
9/16/2002	SN	SN	NS	121	ď	NS	SN	SN	1,030	ďN	1,550	NS-D	98	NS	293	246	NS-D
1/9/2003	NS	SN	SN	123	ğ	NS	SN	SN	525	dN	3,150	NS-D	95	NS	179	228	NS-D
3/6/2003	SN	NS	NS	116	ďN	NS	NS	NS	363	ΝP	2,900	NS-D	102	NS	163	272	NS-D

 $^{\rm th}$ - in mg/L.

(2) - NMWQCC standard for chloride is 250 mg/L.

(3) - MW-2 not operative after May 3, 1995; P&A'd 7/1/99.

MW-6 P&A'd 7/1/99.

MW-11 P&A'd 7/1/99.

MW-11A installed February 1998.

MW-12 installed February 1998.

MW-12D installed June 1999.

MW-13 installed June 1999.

MW-14 installed January 2001.

MW-15 installed January 2001.

NP = not present at time of sampling event.

NS = not sampled during applicable sampling event.

NA = not analyzed for chloride during applicable sampling event. NS-D = not sampled because well was dry during applicable sampling event.

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-С
Well	Date	Туре	Benzene		is per liter, ug/L	Ayrenes	milligrams pe	
MW-1	8/10/92	Regular	5550.0	12090.0	2160.0	7370.0	NA NA	NA
101 00 - 1	2/9/93	Regular	2100.0	6500.0	1300.0	7370.0	NA NA	NA NA
	8/19/93	Regular	3200.0	7300.0	1200.0	1	NA NA	NA NA
	1/27/94		1930.0	4580.0	672.0	3700.0	NA NA	NA NA
	5/3/95	Regular	NSP	4380.0 NSP	NSP	2390.0		
	8/1/95	Regular	ι.	1300.0		NSP	NA	NSP 5.7
	11/15/95	Regular	390.0 880.0	1800.0	230.0	800.0	NA NA	6.8
	2/23/96	Regular			300.0	970.0 2200.0	NA	
	5/31/96	Regular	1500.0	3700.0	620.0	l	NA NA	21
		Regular	1100.0	1700.0	380.0	990.0	NA	7.5
	8/23/96	Regular	1800.0	3300.0	570.0	2100.0	NA 100	17
	12/2/96	Regular	5600.0	9600.0	2100.0	9600.0	100	64
	3/12/97	Regular	5500.0	9700.0	2600.0	8200.0	22	62
	6/12/97	Regular	5300.0	34000.0	7500.0	27000.0	180	160
	9/12/97	Regular	1800.0	4400.0	1000.0	3000.0	23	21
	12/10/97	Regular	7600.0	12000.0	2800.0	8200.0	11	71
	3/24/98	Regular	4800.0	7200.0	1200.0	2400.0	4.2	38
	6/23/98	Regular	53.0	680.0	580.0	1400.0	1.4	9.2
	9/30/1998	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/1998	Regular	< 1.0	1.5	17.0	110.0	1.4	0.31
	3/10/1999	Regular	< 1.0	< 1.0	8.2	110.0	0.62	0.85
	3/10/1999	Duplicate	< 1.0	< 1.0	7.9	110.0	0.66	0.84
	6/10/1999	Regular	< 1.0	1.1	< 1.0	28.0	0.53	0.55
	6/10/1999	Duplicate	< 1.0	1.8	< 1.0	41.0	0.69	0.76
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	•	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	9.1	14	1.3
	6/8/2000	-	NS	NS	NS NS	NS	NS	NS
	9/13/2000	-	NS NS	NS NS	NS NS	NS	NS NS	NS NS
	12/7/2000 3/8/2001	- Dogular	NS 2.0	NS < 1	NS < 1	NS < 1	NS 0.40	NS 0.58
	6/21/2001	Regular	NS NS	NS	NS	NS	0.49 NS	0.58 NS
	9/10/2001		NS NS	NS NS	NS NS	NS NS	NS NS	NS NS
	12/6/2001	_	NS	NS	NS	NS NS	NS NS	NS NS
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	-	NS	NS NS	NS	NS	NS	NS
	9/16/2002	-	NS	NS	NS	NS	NS	NS
	1/9/2003	-	NS	NS	NS	NS	NS	NS
	3/6/2003	<u> </u>	NS	NS	NS	NS	NS	NS
MW-2 ¹	8/10/92	Regular	14.9	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	100.0	12.0	3.0	13.0	NA	NA
	1/27/94	Regular	<]	1.2	2.0	2.5	NA	NA
MW-3	8/10/92	Regular	304.9	2099.0	6760.0	1586.0	NA	NA
	2/9/93	Regular	130.0	< 10	< 10	190.0	NA	NA
	8/19/93	Regular	560.0	3100.0	630.0	1900.0	NA	NA
	1/27/94	Regular	1070.0	5380.0	510.0	3120.0	NA	NA
	5/4/95	Regular	770.0	3300.0	470.0	1800.0	NA	NA
	8/1/95	Regular	490.0	2900.0	890.0	1600.0	NA	14
	11/15/95	Regular	250.0	1000.0	180.0	440.0	NA	2.9
	2/23/96	Regular	120.0	810.0	170.0	560.0	NA	4
	5/31/96	Regular	670.0	3900.0	1200.0	2300.0	NA	15

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-G
Well	Date	Туре	Denzene		is per liter, ug/L	7 Trienes	milligrams pe	
	 	1	220.0			1500.0	· · · · · · · · · · · · · · · · · · ·	
MW-3	8/23/96	Regular	330.0	2200.0	590.0	1500.0	NA 0.80	12
(cont.)	12/2/96	Regular	220.0	1800.0	670.0	1000.0	0.89	7.4
	3/12/97	Regular	370.0	2000.0	960.0	1400.0	1.8	11
	6/12/97	Regular	860.0	4800.0	1700.0	2600.0	1.9	20
	9/11/97	Regular	770.0	3000.0	1600.0	1900.0	1.6	16
	12/10/97	Regular	240.0	740.0	500.0	450.0	0.59	5.3
	3/24/98	Regular	140.0	630.0	360.0	310.0	0.56	3.9
	6/23/98	Regular	100.0	720.0	350.0	490.0	0.40	4.9
	9/30/1998	Regular	42.0	470.0	450.0	530.0	1.0	3.8
	12/10/1998	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/1999	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/1999	Regular	1.7	3.1	<1.0	36.0	< 0.20	0.18
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.32	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/13/2000	Regular	< 1	<]	< 1	<]	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< l	0.42	< 0.1
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	<1	<1	<1	<1	<0.2	<0.1
	9/16/2002	-	NS NS	NS NS	NS NS	NS NS	NS NS	NS NS
	1/9/2003 3/6/2003	•	NS NS	NS NS	NS NS	NS NS	NS NS	NS NS
MW-4	8/10/92	Regular	2594.0	10360.0	2160.0	6740.0	NA NA	NA NA
1V1 VV -4	2/9/93	Regular	5200.0	15000.0	2200.0	10000.0	NA NA	NA NA
	8/19/93	Regular	3000.0	12000.0	< 2000	7000.0	NA NA	NA NA
	1/27/94	Regular	3000.0 NSP	NSP	NSP	7000.0 NSP	NA NA	NSP
	5/3/95	1		NSP		NSP	1	NSP
	l .	Regular	NSP	1	NSP 2500.0	1	. NA	
	8/1/95	Regular	5700.0	17000.0	3500.0	13000.0	NA	120
	11/15/95	Regular	490.0	1600.0	310.0	1100.0	NA	5.2
	2/23/96	Regular	360.0	2800.0	560.0	2500.0	NA	18
	5/31/96	Regular	84.0	830.0	280.0	1100.0	NA	6.2
	8/23/96	Regular	110.0	1400.0	430.0	1800.0	NA 	9.8
	12/2/96	Regular	190.0	2000.0	1800.0	7200.0	56	43
	3/12/97	Regular	220.0	1500.0	1500.0	4400.0	27	27
	6/12/97	Regular	47.0	270.0	360.0	950.0	2.5	6.2
	9/12/97	Regular	92.0	840.0	670.0	2100.0	15	7.6
	12/10/97	Regular	230.0	750.0	970.0	2300.0	3.7	16
	3/24/98	Regular	150.0	510.0	270.0	620.0	1.2	5.6
	6/23/98	Regular	160.0	890.0	590.0	1600.0	0.69	10
	9/30/1998	Regular	80.0	180.0	370.0	840.0	2.0	3.9
	12/10/1998	Regular	28.0	70.0	210.0	960.0	9.3	4.3
	12/10/1998	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
	3/10/1999	Regular	8.0	20.0	250.0	1400.0	13.0	13
	6/10/1999	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63
	9/14/1999	Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17
	12/9/1999	Regular	< 1	2.5	2.3	20.1	2	0.53

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-G
Well	Date	Type		microgran	ns per liter, ug/L		milligrams pe	er liter, mg/L
MW-4	3/10/2000	Regular	< 1	< 1	<]	3.6	2.6	0.15
(cont.)	6/8/2000	Regular	< 1	< 1	< 1	< 1	0.44	0.23
	9/13/2000	Regular	<]	< 1	< 1	< 1	0.61	< 0.1
	12/7/2000	Regular	< 1	< 1	1.3	<]	0.53	0.16
	3/8/2001	Regular	<]	<]	< 1	< 1	0.43	0.16
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	<]	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	<]	0.6	< 1
	3/12/2002	Regular	< 1	< 1	<]	< 1	< 0.2	< 0.1
	6/18/2002	Regular	<1	<1	<1	<]	<0.2	<0.1
	9/16/2002	-	NS	NS	NS	NS	NS	NS
	1/9/2003	_	NS	NS	NS	NS	NS	NS
	3/6/2003	-	NS	NS	NS	NS	NS	NS
MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/10/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	1/27/94	Regular	8.7	29.9	4.0	11.3	NA	NA
	5/3/95	Regular	3.7	5.3	0.9	4.6	NA	NA
	8/1/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	11/15/95	Regular	< 0.3	1.2	< 0.3	1.5	NA	NA
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	5/31/96	Regular	31.0	86.0	10.0	20.0	NA	NA
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	<]	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	<]	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/12/97	Regular	< 1	< }	< 1	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
	3/23/98	Regular	< 1	<]	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	6/10/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	9/14/1999	Regular	<1.0	<1.0	<1.0	<2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	<]	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
	6/8/2000	Regular	< 1	<]	< 1	< 1	< 0.2	< 0.1
	9/13/2000	Regular	< 1	< 1	< 1	< }	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	3/8/2001	Regular	< 1	<]	< 1	< 1	0.56	< 0.1
	6/21/2001	Regular	< 1	< 1	< 1	< 1	0.26	< 0.1
	9/10/2001	Regular	<]	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	0.49	< 0.1
	3/12/2002	Regular	< 1	<]	< 1	< 1	< 0.24	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.3 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	<]	< 1.0	< 0.1
	3/6/2003	Regular	< 1	< 1	< 1	<]	NA	< 0.1
MW-6 i	8/10/92	Regular	NS	NS	NS NS	NS	NA	NS NS

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-G
Well	Date	Туре	Benzene		is per liter, ug/L	Ayicites	milligrams po	
	2/9/93		7000.0			7200.0		
MW-6		Regular	7000.0	19000.0	3100.0	7200.0	NA NA	NA
(cont.)	8/19/93	Regular	8100.0	19000.0	3500.0	6400.0	NA	NA
	1/27/94	Regular	7960.0	20200.0	3830.0	6150.0	NA	NA
	5/4/95	Regular	11000.0	17000.0	2900.0	6000.0	NA	NA
	8/1/95	Regular	8300.0	12000.0	2500.0	5100.0	NA	60
	11/15/95	Regular	8900.0	17000.0	2900.0	5500.0	NA	57
	2/23/96	Regular	8100.0	10000.0	2300.0	4000.0	NA	58
	5/31/96	Regular	83.0	150.0	15.0	51.0	NA	0.57
	5/31/96	Duplicate	87.0	160.0	13.0	47.0	NA	0.52
	8/23/96	Regular	31.0	28.0	9.4	7.9	NA	0.46
	12/2/96	Regular	< 1	< 1	< 1	1.7	5.6	< 0.1
	3/12/97	Regular	12.0	< 5	6.8	18.0	12	< 0.5
	6/12/97	Regular	1900.0	1400.0	410.0	310.0	7.8	7.4
	9/11/97	Regular	11.0	1.3	3.4	< 1	1	< 0.1
	12/10/97	Regular	3.0	4.2	1.2	3.9	1.7	0.14
	3/23/98	Regular	3.6	< 1	4.0	< 1	< 0.2	< 0.1
	6/23/98	Regular	170.0	4.1	15.0	7.2	1.2	0.51
	9/30/1998	Regular	1000.0	420.0	140.0	270.0	4.0	3.3
	12/10/1998	Regular	7.6	6.6	1.7	5.8	2.0	< 0.1
	3/10/1999	Regular	2500.0	930.0	590.0	1400.0	11.0	13
MW-7	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	3.0	< 2	< 2	NA	NA
	1/27/94	Regular	1.1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	52.0	3.4	0.7	2.8	NA	NA
	8/1/95	Regular	22.0	2.2	0.9	2.8	NA	< 0.1
	11/15/95	Regular	8.4	0.8	< 0.3	0.9	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Duplicate	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	29.0	83.0	10.0	21.0	NA	0.25
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	<1	< 0.2	< 0.1
	1		< 1.0	1		< 1.0	< 0.20	
	9/30/1998	Regular		< 1.0	< 1.0	ł .	ł .	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	<1.0	<1.0	<1.0	<1.0	4.7	< 0.1
	6/10/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 5	< 5	< 5	< 5	1.8	< 0.5
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.66	< 0.1
	6/8/2000	Regular	< 1	< 1	<]	< 1	< 0.21	< 0.1
	9/13/2000	Regular	<]	< 1	< 1	< 1	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.29	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1
	6/21/2001	Regular	3.1	<]	< }	< 1	< 0.22	< 0.1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Comple	Comple	Dansana	Toluene	Ethylbanana	Xylenes	TPH-D	ТРН-G
Well	Sample Date	Sample Type	Benzene		Ethylbenzene ns per liter, ug/L	Aylenes	milligrams pe	
MW-7	}		< 1					< 0.1
	9/10/2001	Regular	< 1	< 1	< 1 < 1	< 1	< 0.33	
(cont.)	12/6/2001	Regular	< 1	< 1		< 1	1.3	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	NA	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	-	NS	NS	NS	NS NS	NS	NS
	1/9/2003	-	NS	NS	NS	NS NS	NS	NS
	3/6/2003		NS	NS	NS	NS	NS	NS NS
MW-8	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	<]	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	3.0	4.9	0.8	3.7	NA	NA
	8/1/95	Regular	3.1	1.2	0.5	1.6	NA	< 0.001
	8/1/95	Duplicate	3.6	1.5	0.5	1.5	NA	< 0.1
	11/15/95	Regular	< 0.3	0.5	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	1.8	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< }	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	< }	0.55	< 0.1
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	D!	NS	NS	NS	NS	NS 1.6	NS - 0.1
	3/8/2001	Regular	< 1 NS	<]	<] NC	<] NC	1.6	< 0.1
	6/21/2001 9/10/2001		NS NS	NS NS	NS NS	NS NS	NS NS	NS NS
	12/6/2001		NS NS	NS NS	NS NS	NS NS	NS NS	NS NS
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.38	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
	9/16/2002	-	NS	NS	NS	NS	NS	NS
	1/9/2003		NS	NS	NS	NS	NS	NS
	3/6/2003	-	NS	NS	NS	NS	NS	NS
MW-9	4/22/93	Regular	570.0	380.0	< 50	870.0	NA	NA
	7/15/93	Regular	121.0	7.3	3.0	458.0	NA	NA
	8/19/93	Regular	390.0	290.0	40.0	250.0	NA	NA
	1/27/94	Regular	327.0	357.0	51.1	293.0	NA	NA
	5/3/95	Regular	380.0	110.0	19.0	120.0	NA	NA
	8/1/95	Regular	660.0	410.0	91.0	310.0	NA	6.2
	11/15/95	Regular	240.0	24.0	11.0	140.0	NA	1.5

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	ТРН-D	ТРН-G
Well	Sample Date	Туре	Benzene		is per liter, ug/L	Aylenes	milligrams pe	
						1		
MW-9	11/15/95	Duplicate	170.0	18.0	10.0	120.0	NA	1.9
(cont.)	2/23/96	Regular	170.0	18.0	2.3	160.0	NA	4.3
	5/31/96	Regular	120.0	16.0	3.0	200.0	NA	NA
	8/23/96	Regular	82.0	13.0	6.0	270.0	NA	4
	8/23/96	Duplicate	76.0	14.0	4.8	250.0	NA	4.4
	12/2/96	Regular	61.0	< 25	< 25	210.0	2.6	2.8
	12/2/96	Duplicate	86.0	13.0	2.4	270.0	3.7	2.9
	3/12/97	Regular	30.0	48.0	420.0	880.0	8.2	19
	6/12/97	Regular	4.7	2.1	11.0	97.0	2.6	2.2
,	6/12/97	Duplicate	< 5	< 5	6.6	69.0	5.2	1.9
	9/12/97	Regular	2.1	2.3	2.1	120.0	1.2	1.9
	12/10/97	Regular	4.9	9.0	6.8	62.0	0.86	0.92
	3/24/98	Regular	< 1	< }	< 1	26.0	0.9	1
	6/23/98	Regular	2.4	22.0	10.0	36.0	< 0.2	0.25
	9/30/1998	Regular	1.1	5.5	21.0	59.0	0.27	0.27
	12/10/1998	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
	3/10/1999	Regular	< 1.0	< 1.0	5.7	68.0	< 0.2	0.22
	6/10/1999	Regular	< 1.0	1.8	1.8	71.0	< 0.20	0.43
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	<]	< 1	64.0	0.66	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	<]	< 1	< 1	< 1	1.4	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	1	<]	< 1	< 1	0.37	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
	9/16/2002	-	NS	NS	NS	NS	NS	NS
	1/9/2003		NS	NS	NS	NS	NS	NS
	3/6/2003	-	NS	NS	NS	NS	NS	NS
MW-10	8/19/93	Regular	190.0	460.0	< 200	240.0	NA	NA
	1/27/94	Regular	13.4	4.0	5.5	33.6	NA	NA
	5/4/95	Regular	980.0	15.0	11.0	84.0	NA	NA
	8/1/95	Regular	1300.0	32.0	32.0	100.0	NA	3.6
	11/15/95	Regular	1000.0	24.0	15.0	36.0	NA	1.7
	2/23/96	Regular	810.0	23.0	27.0	44.0	NA	2.4
	5/31/96	Regular	700.0	24.0	34.0	28.0	NA	2
	8/23/96	Regular	290.0	3.4	6.4	13.0	NA	1.4
	12/2/96	Regular	280.0	1.3	17.0	8.0	0.94	0.97
	3/12/97	Regular	110.0	< 5	17.0	< 5	0.61	0.57
	6/12/97	Regular	150.0	12.0	30.0	< 5	0.68	< 0.5
	9/12/97	Regular	87.0	2.3	26.0	2.7	0.76	0.33
	9/12/97	Duplicate	87.0	2.4	26.0	2.8	0.79	0.33
	12/10/97	Regular	41.0	9.8	12.0	7.7	1.1	0.28
	12/10/97	Duplicate	36.0	8.5	10.0	6.7	1.2	0.24
	3/23/98	Regular	36.0	< 5	5.9	< 5	1.6	< 0.5
	3/23/98	Duplicate	36.0	< 1	5.3	1.3	1.7	0.18

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	трн-G
Well	Date	Туре	Benzene		ns per liter, ug/L	Ayienes	milligrams po	
			27.0					
MW-10	6/23/98	Regular	37.0	< 5	< 5	< 5	2.1	< 0.5
(cont.)	9/30/1998	Regular	84.0	3.2	30.0	2.2	1.4	0.36
İ	12/10/1998	Regular	29.0	1.0	7.0	1.0	0.86	0.18
	3/9/1999	Regular	28.0	<5.0	5.8	<5.0	0.92	<0.5
	6/10/1999	Regular	17.0	<1.0	<1.0	<1.0	0.30	0.16
	9/14/1999	Regular	10.0	< 1.0	< 1.0	< 2.0	<0.20	< 0.10
	12/9/1999	Regular	23.0	<]	<]	1.2	0.44	0.16
	3/10/2000	Regular	300.0	4.3	6.6	43.2	1.2	0.85
	6/8/2000	Regular	78.0	1.7	7.2	9.0	0.67	0.74
	9/13/2000	Regular	23.0	1.5	1.1	2.9	1.6	0.41
	12/7/2000	Regular	7.2	< 1	< 1	< 1	1.5	0.15
	3/8/2001	Regular	3.4	1.1	< 1	<]	3.4	0.2
	6/22/2001	Regular	< 1	< 1	<]	< 1	1.2	<0.1
	9/10/01 and	Regular	2	< 1	< 1	< 1	2.3	<0.1
	9/18/01	Regulai	<u> </u>				2.5	VO.1
	12/6/2001	Regular				No Valid Data		
	3/12/2002	Regular	< 1	< 1	< 1	< 1	3.2	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	0.1	<0.082	3 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1
	3/6/2003	Regular	< 1	< 1	18	< 1	NA	< 0.1
MW-11	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA
	5/4/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	8/1/95	Regular	44.0	29.0	5.5	13.0	NA	0.2
	11/15/95	Regular	190.0	2.8	6.2	11.0	NA	0.4
	2/23/96	Regular	49.0	1.2	0.5	4.0	NA	0.25
	5/31/96	Regular	300.0	83.0	12.0	28.0	NA	0.8
	8/23/96	Regular	100.0	1.2	0.3	4.7	NA	0.26
	12/2/96	Regular	970.0	< 5	6.0	8.1	2	1.3
	3/12/97	Regular	130.0	< 5	13.0	5.8	0.42	< 0.5
	3/12/97	Duplicate	100.0	< 5	10.0	5.1	0.43	< 0.5
	6/12/97	Regular	150.0	23.0	19.0	< 5	1.1	0.55
	9/12/97	Regular	220.0	15.0	27.0	13.0	1	0.46
MW-11A	3/24/98	Regular	24.0	5.0	< 5	< 5	0.28	0.14
	6/23/98	Regular	9.9	< 5	< 5	< 5	< 0.2	< 0.5
	9/30/1998	Regular	9.3	3.7	2.2	7.0	<0.20	0.1
	12/10/1998	Regular	1.7	<1.0	<1.0	<1.0	<0.20	<0.1
	3/10/1999	Regular	<5	< 5	< 5	< 5	0.3	<0.5
	6/10/1999	Regular	<1.0	< 1.0	< 1.0	< 1.0	<0.20	<0.10
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/1999	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.10
	3/9/2000	Regular	1.2	< 1	< 1	<]	0.43	< 0.1
	6/8/2000	Regular	3.6	< 1	< 1	<]	0.43	< 0.1
	9/13/2000			< 1	< 1	1	ľ	
		Regular	1.4			< 1	0.36	< 0.1
	12/7/00	Regular	26	< 1	< 1	3.3	0.3	0.12
	3/8/01	Regular	12	< 5	< 5	< 5	2.2	< 0.5
	6/22/2001	Regular	1.5	< 1	< 1	< 1	1	< 0.1
	9/10/2001	Regular	7.9	< 1	< 1	< 1	1.1	< 0.1
	12/6/2001	Regular	<1	< 1	< 1	< 1	11	< 0.1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Monitor Well	Date	Type		<u> </u>	ns per liter, ug/L	•	milligrams pe	r liter, mg/L
MW-11A	3/12/2002	Regular	1.8	<]	< 1	1	1.6	< 0.1
(cont.)	6/18/2002	Regular	2.9	< 0.1	1.3	< 1	0.91	<0.1
, í	9/16/2002	Regular	9	< 0.11	41	< 0.082	1 J	0.2
	1/9/2003	Regular	12	<]	< 1	1.2	< 1.0	0.4
	3/6/2003	Regular	3.2	< 1	< 1	1.2	< 1	0.13
MW-12	3/24/98	Regular	100.0	11.0	6.0	8.0	0.29	0.41
·	6/23/98	Regular	88.0	< 5	< 5	< 5	< 0.2	< 0.5
	6/23/98	Duplicate	89.0	< 5	< 5	< 5	0.31	< 0.5
	9/30/1998	Regular	260.0	3.0	1.2	7.9	<0.20	0.62
	12/10/1998	Regular	160.0	< 1.0	< 1.0	1.2	0.21	0.36
	3/10/1999	Regular	160.0	1.1	< 1.0	2.9	0.38	0.45
ļ	6/10/1999	Regular	49.0	1.4	< 1.0	< 1.0	0.22	0.13
	9/14/1999	Regular	75.0	< 1.0	< 1.0	< 2.0	<0.20	0.23
	12/9/1999	Regular	64.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Regular	93.0	<]	<]	< 1	< 0.2	0.21
	3/10/2000	Duplicate	99.0	< 1	< 1	< 1	0.22	0.22
	6/8/2000	Regular	62.0	< 1	<]	<]	< 0.2	< 0.1
	9/13/2000	Regular	34.0	< 1	< 1	< 1	0.23	< 0.1
	12/7/2000	Regular	27	< 1	2.9	1.9	< 0.25	< 0.1
	3/8/2001	Regular	14	< 1	< 1	<]	2.1	0.1
	6/22/2001	Regular	12	< 1	<]	< 1	0.51	0.11
	9/10/2001		1	Well Dry (Not S	Sampled) During This	and Subseque	nt Monitoring Events	
MW-12D	7/2/1999	Regular	< 5	< 5	< 5	< 5	<0.20	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	<]	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.24	< 0.1
	6/8/2000	Regular	<]	< 1	< 1	<]	< 0.2	< 0.1
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	-	NS	NS	NS	NS	NS	NS
	6/22/2001	-	NS	NS	NS	NS	NS	NS
	9/18/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	<]	< 1	<]	< 1	< 0.2	< 0.1
	3/12/2002	Regular	<	< 1	< 1	<]	0.44	< 0.1
į	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.2 J	< 0.05
	1/9/2003	Regular	<]	< 1	< 1	<]	< 1	< 0.1
	3/6/2003	Regular	< 1	< 1	< 1	<]	< 1	< 0.1
MW-13	7/2/1999	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/1999	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/1999	Regular	430.0	16.0	410.0	40.9	0.46	3.2
	3/10/2000	Regular	88.0	2.8	200.0	1.3	1.9	0.99
	6/8/2000	Regular	6.0	< 1	63.0	3.3	1.1	0.91
	9/13/2000	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/2000	Regular	<1	<1	<1	<1	0.43	< 0.1
1	3/8/2001	Regular	<1	<1	1.2	<1	2	< 0.1
	6/22/2001	Regular	<]	< 1	< 1	< 1	0.31	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	4	- 1		l				
ļ	12/6/2001	Regular	<]	<]	< 1	< 1	< 0.2	< 0.1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xvienes	TPH-D	ТРН-G
Well	Date	Type		microgran	ns per liter, ug/L		milligrams p	er liter, mg/L
MW-13	6/18/2002	Regular	<1	<1	<1	<	0.3	<0.1
(cont.)	9/16/2002	-	NS	NS	NS	NS	NS	NS
	1/9/2003		NS	NS	NS	NS	NS	NS
	3/6/2003	-	NS	NS	NS	NS	NS	NS
MW-14	1/14/2001	Regular	< 1	< 1	< 1	<	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA .	NA
	3/6/2003	Regular	NA	NA	NA	NA	NA NA	NA
MW-15	1/14/2001	Regular	<]	<]	<]	<]	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA .	NA	NA	NA	NA
	3/6/2003	Regular	NA	NA	NA	NA	NA	NA
OW-4	6/10/1999	Regular	<1.0	<1.0	<1.0	4.4	< 0.2	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	3/9/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	0.25	< 0.1
	6/8/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.21	< 0.1
	9/13/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	12/7/2000			Well Dry (Not S	Sampled) During This	and Subseque	nt Monitoring Events	·

¹ Well plugged and abandoned 7/1/99

NA = Not Analyzed

NS = Not Sampled

NS-D = Not Sampled because well was dry

NSP = Not Sampled due to Phase-Separated Hydrocarbons

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
	3/23/1998	3.87	190	< 0.0012
	3/9/1999	< 0.1	195	< 0.0012
	6/10/1999	4.73	209	< 0.0012
	9/14/1999	4.3	210	< 0.0012
	12/9/1999	4.2	210	< 0.0012
	3/9/2000	5.3	260	< 0.0012
	6/8/2000	4.7	240	< 0.0012
	9/13/2000	3.93	200	< 0.0012
	12/7/2000	3.27	160	< 0.0012
MW-5	3/8/2001	3.24	180	< 0.0012
	6/21/2001	2.74	150	0.0017
	9/10/2001	NA ⁽²⁾	130	< 0.0012
	12/6/2001	2.38	120	< 0.0012
	3/12/2002	2.98	120	< 0.0012
	6/18/2002	2.56	110	0.002
	9/16/2002	2.4	105	0.002
	1/9/2003	2.1	97	0.002
	3/6/2003	2.75	110	< 0.0012
	3/23/1998	0.07	320	0.91
	6/23/1998	< 0.1	325	0.55
	9/30/1998	< 0.1	204	0.81
	12/10/1998	< 0.1	180	0.091
			142	
	3/9/1999	< 0.1	223 ⁽³⁾	0.035
	9/14/1999	< 0.10	160	0.0049
	12/9/1999	0.49	170	0.0039
MW-10	3/10/2000	0.1	160	0.0056
W W - 10	6/8/2000	< 0.1	150	0.031
	9/13/2000	< 0.1	160	0.031
	12/7/2000	< 0.1	190	0.17
	3/8/2001	< 0.1	270	< 0.0012
	6/22/2001	< 0.1	270	0.044
	9/10/2001	NA	NA	NA
	3/12/2002	< 0.1	230	NA 0.007
	6/18/2002	< 0.1	240	0.007
	9/16/2002	< 0.03	318	0.006

Table 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-10	1/9/2003	< 0.1	280	0.0024
(cont.)	3/6/2003	< 0.1	270	0.0031
	3/23/1998	< 0.05	190	0.14
	6/23/1998	< 0.1	225	0.11
	9/30/1998	0.4	196	0.043
	12/10/1998	0.7	188	0.033
	2/10/1000	< 0.1	164	0.004
	3/10/1999	< 0.1 ⁽⁴⁾	227 ⁽³⁾	0.094
	6/10/1999	< 0.1	181	0.0036
	9/13/1999	0.22	250	< 0.0012
	12/9/1999	< 0.1	290	0.0079
	3/9/2000	0.11	270	0.037
	6/8/2000	< 0.1	240	0.0069
MW-11A	9/13/2000	< 0.1	320	< 0.0012
	12/7/2000	< 0.1	260	0.0096
	3/8/2001	< 0.1	330	0.0028
ľ	6/22/2001	< 0.1	180	0.0074
	9/10/2001	NA	280	< 0.0012
	12/6/2001	< 0.1	240	0.0041
	3/12/2002	< 0.1	350	0.0044
	6/18/2002	< 0.1	560	0.0028
	9/16/2002	0.3	383	< 0.0012
	1/9/2003	< 0.5	290	0.0063
	3/6/2003	< 0.1	290	0.0044
	3/23/1998	< 0.05	240	< 0.0012
	6/23/1998	< 0.1	240	< 0.0012
	9/30/1998	< 0.1	168	< 0.0012
	12/10/1998	< 0.1	202	< 0.0012
	2/10/1000	< 0.1	137	10.0010
	3/10/1999	< 0.1 ⁽⁴⁾	193 ⁽³⁾	< 0.0012
MW-12	6/10/1999	< 0.1	217	< 0.0012
ľ	9/14/1999	< 0.10	230	< 0.0012
ľ	12/9/1999	< 0.1	180	< 0.0012
	3/10/2000	< 0.1	210	< 0.0012
	6/8/2000	< 0.1	220	< 0.0012
[9/13/2000	< 0.1	240	< 0.0012
	12/7/2000	< 0.1	260	< 0.0012

Table 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico

BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-12	3/8/2001	< 0.1	300	< 0.0012
(cont.)	6/22/2001	< 0.1	360	0.0021
	9/10/2001	Well Dry (Not Sample	d) During This and Subsequent	uent Monitoring Events
	9/18/2001	NA	190	< 0.0012
] [12/6/2001	< 0.1	200	< 0.0012
	3/12/2002	< 0.1	200	< 0.0012
MW-12D	6/18/2002	< 0.1	180	0.0012
	9/16/2002	0.06	172	< 0.0012
	1/9/2003	< 0.1	150	0.005
	3/6/2003	0.705	170	0.0038

^{(1) -} By EPA Method 300, except as noted

mg/L = milligrams per liter

^{(2) -} NA indicates not analyzed

^{(3) -} By EPA Method 375.4

^{(4) -} By EPA Method 353.3

^{(5) -} NS-D indicates not sampled (well dry)

Table 7
Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

									×	Monitor Wells(1)	(I)							
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	/-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Bicarbonate, as CaCO ₃	8/1/1995	380	430	490	290	029	440	360	570	520	999	NP ⁽³⁾	ď	άŽ	ξĀ	ąv.	ďΣ	NS(3)
(mgar)	8/23/1996	310	310	210	270	120	400	280	390	520	430	ğ	ž	å	ž	ğ	ğ	SN
	3/23-24/1998	286	214	175	247	081	309	260	306	557	SZ	319	451	Ē	Ž	Ž	Š	NS
	3/9-10/1999	92	309	981	283	586	358	317	333	278	SN	335	386	ž	d.	ž	ź	SX
	6/10/1999-7/2/1999	SN	SN	SN	SZ	å	SN	SN	SN	SZ	ğ	SZ	SN	200	520	ž	ž	316
	3/9-10/2000	80.1	248	160	253	ğ	301	362	279	455	Ē	703	402	244	240	ž	ž	1020
	1/14/2001	SN	SZ	SZ	SN	ğ	SN	SN	SN	SN	ź	SN	SN	SN	SN	374	250	SN
	3/8-9/2001	6'06	242	232	222	ģ	283	252	252	586	ğ	646	475	SZ	131	NA ⁽³⁾	SN	NS-D(3)
	3/11-12/2002	230	230	210	260	ż	790	340	760	784	ď	520	Q-SN	260	164	SN	SN	NS-D
	3/6/2003	NS	NS	NS	243	ğ	NS	SN	NS	273	Ę	401	Q-SN	241	SN	373	231	NS-D
Carbonate, as CaCO ₁ (mg/L)	\$661/1/8	< 10	< 10	< 10	> 10	< 10	< 10	< 10	01 >	01 >	10	gN	àż	ξ	ďN	ď	Ν	NS
	8/23/1996	< 10	< 10	01 >	01 >	01 >	< 10	01 >	v 10	- 0I ×	01 >	ž	ŝ	Š	ğ	S.	Ē	SN
	3/23-24/1998	-	~	~	-	-	~	-	~	-	SN	-		Ê	ď	ă	ğ	SN
	3/9-10/1999	⊽	▽	⊽	⊽	⊽	-	-	-		SN	-	-	<u>a</u>	ź	ž	ž	SN
	6/10/16661/01/9	SN	SN	SN	SN	ź	SN	SN	SN	SZ	å	SN	NS	⊽	⊽	ď	ž	⊽
	3/9-10/2000	<2>	7	7	\$	ğ	7	\$	7	٥	ž	2		۵	\$	Š	ž	^
	1/14/2001	SN	SZ	SZ	SZ	ğ	N.N.	Š	SZ	SZ	ğ	SN	SN	SN	SN	۵	۵	SN
	3/8-9/2001	7	7	7	^2	ż	7	^2	7	\$	ď	۵	7	SN	<2	¥ Z	SN	NS-D
	3/11-12/2002	₹	^>	۵.	\$	ž	7		۵	\$	ž	ζ.	NS-D	۲,	7	SN	SN	NS-D
	3/6/2003	SN	NS	NS	\$	ğ	NS	NS	NS	77	ğ	<2	NS-D	7	SN	3.03	7	NS-D
Hardness-Total, as CaCO,	3/23-24/1998	430	430		342	440	670	740	510	1,450	ž	1,000	1,600	e z	ž	dZ dz	å	SN
(mg/L)	3/9-10/1999	250	440		340	640	780	089	370	720	SN	1,150	460	ź	ğ	ž	ž	SZ
	3/9-10/2000	009	450		1,200	ģ	. 099	160	430	160	ž		200	260	540	ď	dZ	3,000
	3/8-9/2001	310	470	610	440	ğ	200	966	1,000	1,300	Ž		1,300	SN	670	Ϋ́Α	SZ	NS-D
	3/11-12/2002	420	420	450	420	ğ	ND(6)	£	Ω.	1,200	È		NS-D	330	750	SZ	SZ	NS-D
	3/6/2003	NS	NS	NS	069	ď	SN	SN	NS	NA	άz	ᅦ	NS-D	360	NS	NA	٧V	NS-D
Hydroxide (mg/L)	8/1/1695	v 10	01 >	01>	< 10	01 >	01 >	< 10	< 10	< 10	× 10	_	È	ž	ŝ	ž	ž	SN
	8/23/1996	oI >	o1 >	< 10	< 10	< 10	< 10	< 10	< 10	< 10	× 10		ğ	Ν	ď	Ê	ď	NS
Methane (mg/L)	3/23-24/1998	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	0.039	< 0.0012	16.0	SN		< 0.0012	Ž	ž	ž	물	NS
	3/9-10/1999	SN	SN	SN	<0.0012	SZ	SN	SN	SN	0.035	SZ		<0.0012	ž	ž	ā	호	SN
	6661/2/1-6661/01/9	SN	SX		SZ	ă	SZ	SN	SN	SZ	ź	¥ Z	¥ Z	0.0015	0.0017	Ž	Ž !	<0.0012
	3/9-10/2000	< 0.0012	< 0.0012		< 0.0012	d Z	< 0.0012	0.13	< 0 0012	0.0056	ž!	0.037	< 0.0012	<0.0012	<0.0012	ž ;	ž	<0.0012
	3/8-9/2001	<0.0012	<0.0012		<0.0012	Ž ,	<0.0012	<0.0012	<0.0012	<0.0012	ž į	8700.0	2100.02	2 2	2100.0	2 2	2 2	- S. V.
	3/11-12/2002	0.007 NS	<0.0012 NS	0.0024 NS	<0.0012	žž	NS N	S S	SN SN	0.0031	žŽ	0.0044	NS-D	0.0038	NS	Z Z	NA N	NS-D
Anions (mg/L)							<u>.</u>											
Chloride									See Table	-				1				
Elionide	8001/77-26/1	0.0	1.2	1.2	90	=	8.0	60	1.3	6.1	SN	2.9	4.2	ğ	₽	ď	ďΖ	SN
201001	3/9-101-99	1.54	1.46	5	138	1.79	1.56	1.44	1.84	4.93	SN	3.08	3.13	ğ	å	ğ	ž	NS
	6/10/16661/01/9	SZ	SN	SN	SZ	ź	SN	SN	SN	SN	È	SN	SN	1.83	2.22	Ž	ž	3.45
	3/9-10/2000	1.7	=	=	Ξ	ă	0.75	69.0	5.1	-	ž	-0>	1.7	1.3	1.7	ž	ž	3.8
	1/14/2001	SN	SN	SN	SZ	άZ	SZ	SN	SN	SN	ž	SZ	SN	SN :	SZ .	3.5	1.2	SN
	3/8-9/2001	E.	0.77	0.63	980	Ē	69.0	99.0	0.92	1.2	Ē ;	= ;	6. 5	ŝ:	9 ;	e z	C 2	O-SN
	3/11-12/2002	1.2	4.	1.2	4	Š	<u></u>	= :	5.	sc ,	ž!	7.1	2.52	4. (6.2	2 .	2 5	7-5N
	3/6/2003	NS	NS	NS		Ē	SN	SN	SZ	1.6	ž	1.4	G-SN	7-1	SZ	6.3	0.91	7-6vi

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Table 7
Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

						i i			Σ	Monitor Wells(1)	(c)							
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	9-MM	MW-7	MW-8	6-WM	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Nitrate (Nitrogen as N)	8/1/1995	4.7	9.6	15	82	1.3	9.2	=	38	< 0.1	5.5	ďΣ	ž	ą.	Š	å	ďX	SN
	8/23/1996	=	7.6	7.6	12	< 0.5	- 01	9.8	24	< > <	=	Ž	Ž	ğ	ď	ğ	ďΧ	NS
R	3/23-24/1998	1.78	3.07	2.59	3.87	69'0	3.92	1.84	4.27	0.07	SN	< 0.05	< 0.05	Ē	ğ	ź	Ž	NS
-	3/9-10/1999	0.7	2.1	5.6	۷ Z	0>	3.3	0.7	3.7	¥ Z	å	<0.1	-0°	Š	ğ	Ž	ž	SN
-	6/10/1999-7/2/1999	SZ ;	SZ	SZ .	SN	È	SZ	SZ	SN	SZ	ž	SN	SN	2.1	2.4	ž	Ž	3.96
	3/9-10/2000	0.33	2.9	3.7	53	ž	3.6	0.35	7.2	 	ź	0.11	-0	0 14	Ç.	Ē	ğ	36
	1/14/2001	v. Z	SZ	ž.	Š	ź	SZ	SZ	SZ	SZ	ŝ	SZ	SN	SN	SZ	4.5	88.	SN
-	3/8-9/2001	4.31	2.56	4 75	3 24	ŝ	2 8 2	0.664	7.9	<0.1	ğ	<0.1	- - - -	SZ	0>	¥Z	SN	NS-D
	3/11-12/2002	5.7	3.86	8.55	2.98	Ŝ.	3.23	0.607	6.34	-0×	ź	<0.1	NS-D	<0.1	<0.1	SN	SN	NS-D
	3/6/2003	NS	NS	NS	2.75	ďŽ	SN	NS	NS	<0.1	ďΝ	<0.1	NS-D	0.705	SN	5.82	3.67	NS-D
Sulfate	8/1/1995	150	150	210	230	6.7	180	160	150	130	230	Ž	å	åz	ĝ	ď	È	SN
	8/23/1996	130	150	150	140	85	80	160	180	120	130	ğ	ğ	ď	š	Ž	Ē	SN
	3/23-24/1998	130	180	091	190	230	310	250	230	320	SN	190	240	ğ	ď	ğ	å	SN
	3/9-10/1999	196	162	178	195	72	246	240	146	223	ď	227	193	ž	δN	å	å	SN
	6661/2/2-6661/01/9	SN	SZ	SN	SN	É	SN	SN	SN	SN	ģ	SN	SN	249	334	ş	ΝĎ	192
	3/9-10/2000	530	190	250	260	ğ	280	260	170	160	å	270	210	200	170	ş	È	200
	1/14/2001	SN	SN	SN	SX	å	SN	SX	SN	SN	ğ	SX	SN	SN	SN	180	130	SZ
	3/8-9/2001	210	170	180	180	ď.	260	240	150	270	ğ	330	300	SZ	380	Z	SN	NS-D
	3/11-12/2002	061	150	160	120	ĝ	240	250	130	230	ď	350	NS-D	200	380	SN	SN	NS-D
	3/6/2003	SZ	SZ	SN	011	ŝ	SN	SN	SN	270	Š	290	NS-D	170	SN	150	150	NS-D
Cations (mg/L)							: :											
		1									1	1						5.4
Calcium	8/1/1995	120	120	220	160	320	300	300	180	019	490	ž	ž	Z	<u>c</u>	ž !	ž !	S :
	8/23/1996	120	130	68	110	62	270	230	190	390	440	ž	<u>z</u>	Ž	È	Ż.	Ž.	SZ
	3/23-24/1998	129	122	79	601	94	208	215	142	417	SN	259	388	Ž	ž	ğ	È	SZ
	3/9-10/1999	80.2	129	8.06	911	14	233	197	122	214	Ē	308	148	å	Ż	ž	Ē	SN
	6/10/1999-7/2/1999	SN	SZ	ŝ	SN	å	SN	SN	SN	SN	N N	NS	SN	113	389	ŝ	ž	<u>+</u>
	3/9-10/2000	155	119	147	387	ž	167	215	110	171	ğ	229	180	78.1	122	ž	Ē	882
	1/14/2001	S.	SZ	SN	SN	å	SN	SN	SN	SN	a N	SN	SN	SN	SN	179	150	SN
	3/8-9/2001	8.98	148	214	157	ź	172	183	381	331	ď	466	338	SN	198	٧X	SN	NS-D
=	3/11-12/2002	112	121	130	143	Ž	QN.	QN	Q.	303	à	330	NS-D	120	225	SZ	SZ	NS-D
	3/6/2003	SN	NS	NS	288	å	NS	NS	NS	ΑN	ξ	470	NS-D	135	NS	Ϋ́Z	٧×	NS-D
Magnesium	\$661/1/8	34	36	28	27	27	42	49	43	130	130	ğ	ž	ě	ŝ	ž	ž	SN
	8/23/1996	120	32	21	<u>«</u>	28	40	88	44	84	120	å	ğ	d.	ž	ğ	a Z	SN
	3/23-24/1998	36	30	<u>«</u>	20	42	47	52	36	130	SN	96	801	ğ	È	ž	È	SZ
	3/9-10/1999	19.7	31.5	20.4	21.6	62.2	54.4	47.7	28.5	43	ž	101	32.1	Ž	Š	È	Ž	NS
	6661/2/2-6661/01/9	SZ	SN	SZ	SN	ź	SN	SN	SZ	SX	ž	SN	SN	16.6	83.9	ď	È	44.3
*=	3/9-10/2000	41.3	27.5	26.3	29.2	ģ	44.3	39.1	2.92	19	Ž	47.7	30.6	7.25	38.8	å	ž	74.5
	1/14/2001	SZ	SN	SN	SX	ž	SN	SN	SN	SN	ž	SN	SN	SN	SZ	87.5	28.3	SN
	3/8-9/2001	20.7	24.9	25.9	9'91	ž	41.1	37.4	28.2	95.1	ğ	93.4	95.3	SZ	52.3	Ϋ́	SN	NS-D
	3/11-12/2002	27.3	20.7	20.7	13	ğ	Q.	£	£	Ð	ž	103	NS-D	90.9	44.7	NS	NS	NS-D
	3/6/2003	SN	SN	SN	9.61	ź	SN	NS	NS	ΝA	ΝP	160	NS-D	6.74	NS	Ϋ́	ΑN	NS-D
Potassium	8/1/1995	2.4	2.6	3.5	4.2	3	3.4	\$	4.1	35	46	άX	ž	ž	å	ģ	È	SN
	8/23/1996	2.4		2.2	3.1	2.4	3.7	3.9	5.6	14	23	Ē	Ż	Ž	ž	È	È	SN
	3/23-24/1998	< 20	v > 20	< 20	< 20	< 20	< 20	< 20	< 20	20	SN	30	70	È	ž	ž	È	SN
	3/9-10/1999	3	4	3	4	4	6	4		15	N.	21	101	ďZ	N.	ď	å	SN

Table 7
Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

									Σ	Monitor Wells(1)	() ^S l							
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	9-MM	MW-7	MW-8	6-WM	MW-10	V-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Potassium	6/10/1999-7/2/1999	NS	NS	SN	SN	Ę	NS	SN	NS	SZ	ďΖ	SN	SN	99	9	ξ	å	e.
	3/9-10/2000	4.01	1.4	3.95	1975	È	86.9	4.53	4.08	18.3	ďŽ	18.6	104	9.07	2.84	ž	Ž	10.7
	1/14/2001	SN	SN	SN	SZ	ĝ	SZ	SN	SN	SN	ź	SZ	SN	SZ	SN	3.59	4.59	SN
	3/8-9/2001	Ç	2.56	2.76	2.25	å	5.15	2.94	3.84	19.5	ž	33.5	47.2	SZ	5 26	¥Z	SN	NS-D
	3/11-12/2002	2.82	4.05	2.79	3.55	ž	S.	Ę	Q.	Q.	ğ	41.5	NS-D	72	2.82	SN	SN	NS-D
	3/6/2003	NS	SN	NS	3.72	ď	NS	NS	NS	ΑN	ďZ	39.4	NS-D	55.6	NS	NA	٧Z	NS-D
Sodium	8/1/1995	100	93	140	110	130	96	76	86	099	2000	ğ	ź	ž	ź	ź	ź	SN
	8/23/1996	001	011	88	120	120	96	- 001	83	096	2600	å	ž	Ž	Ē	Š	ž	SN
	3/23-24/1998	113	126	109	130	001	65	ē		1090	SZ	312	381	ź	ž	ğ	ŝ	SN
	3/9-10/1999	126	135	124	155	141	110	115	122	958	ď	225	180	άŽ	Š	ď.	å	SN
	6/10/1999-7/2/1999	SN	SZ	SN	SZ	ď	SN	SN	SN	NS	Ŕ	SN	SN	121	165	NP	N _P	103
	3/9-10/2000	123	112	115	123	ž	1.56	95.4	1.66	181	ğ	809	129	103	14	å	ģ	97.3
	1/14/2001	SN	SN	SN	SN	å	SN	SN	NS	SN	å	SN	SZ	NS	SN	144	801	SN
	3/8-9/2001	141	124	135	147	ź	121		119	410	ğ	801	185	SN	142	NA	SN	NS-D
	3/11-12/2002	147	133	128	145	ğ	Q.	Š	Ç _N	ON	ď	099	NS-D	79.4	127	SN	SN	NS-D
	3/6/2003	NS	NS	NS	144	ďN	NS	NS	NS	٧×	ďZ	1550	NS-D	8.89	NS	NA	ΝΑ	NS-D
Metals (mg/L)			i															
Arsenic	8/1/1995	0.0076	0.0043	< 0.002	0 0059	0.028	0.0033	0.0034	0 0055	0.015	0.0086	ĝ	ď	ďΣ	Š	å	ď	SN
	8/23/1996	0.0078	9900.0	0.0059	0.0067	810.0	0 0036	0.0033	0.0044	0.028	0.011	ğ	ž	å	ź	ź	Ē	NS
	3/23-24/1998	0 007	0.007	800.0	0.007	0.013	< 0.005	< 0.005	0.005	0.035	SN	0.019	0.013	Ē	å	ģ	ź	SN
	3/9-10/1999	0.013	600'0	0.012	0.005	0.02	900'0	500.0	0.007	970.0	ă	0.036	990.0	ğ	Ē	ž	ğ	SZ
	6/10/1999-7/2/1999	SN	SN	SN	SN	ğ	SN	SN	SN	SN	ď	SN	SN	0.022	800.0	ž	ğ	<0.005
	3/9-10/2000	0.0178	0.00817	0.0178	0.0173	ş	0.00849	0.00953	0.00757	0.0474	ž	0.108	0.0948	0.0143	<0.005	ž	ğ	0.034
	1/14/2001	SN	SZ	SN	SZ	ź	SN	SN	SN	SN	ď	SN	SN	SN	SN	0.00511	<0.005	SN
	3/8-9/2001	0.0205	0.0094	0.0386	0.00974	ğ	0.00694	ΥZ	0.013	0.133	ž	80.0	0.0445	SN	0.00673	N.A	SZ	NS-D
	3/11-12/2002	0.00939	0.00889	1010.0	0 0 0 0 4	ž	S.	g	Q	0,286	ž	980'0	NS-D	0.0471	0.012	SN	SN	NS-D
	3/6/2003	SN	SN	SN	0.0125	ď	NS	NS	NS	Y _N	ğ	0.0387	NS-D	0.0491	NS	ΥN	Ϋ́ν	NS-D
Barium	8/1/1995	690'0	0.38	0.34	0.049	Ξ	690'0	0.075	680.0	0.37	0.2	Ē	ğ	È	ğ	<u>a</u>	Ē	SN
	8/23/1996	0.064	0.24	690'0	0.038	0.29	0.061	990:0	680.0	97.0	0.2	Ē	ź	ž	È	Ż	È	SN
	3/23-24/1998	0.11	0.182	0.044	0.044	0.208	0 0 0 6 9	0.074	990.0	0.287	SZ	0.163	0.157	È	È	È	ğ	SZ :
	3/9-10/1999	0.058	0.059	0.045	0.054	0.555	920.0	0.052	0.043	0.17	ğ	0.174	0.144	a Z	ž	ž	ā Ž	S
	6/10/1999-7/2/1999	SN	SN	SZ	SN	ż	SN	SN	SN	S	Ž	SZ	SZ	0.155	0.333	È	È	0.062
	3/9-10/2000	0.0917	0.108	0.0694	0.184	È	0.046	0.236	0.0419	0.281	Ž	0.872	0.245	0 0962	0.113	Ž	ž į	.49
	1/14/2001	SN	SN	SZ	SZ	ž!	SN	SN	SN	Se	ž	S 5	S 50	2 2	2 5	0.0833	5/0.0	C SIN
	3/8-9/2001	0.044	0.119	8/60'0	6,000	ž	0.043	71500		0.23	ž!	104.0	500.0	5500		2 2	2 5	2 2
	3/11-12/2002	90.0	0.0797	0.0805	0.0524	ž !	2 ;	ON S	Q ;	0.294	ž ;	0.348	2 2	0.0863	60 y	2 2	2 2	d-SN
	3/6/2003	SN	NS	SN	0.15	dN	£	S .	SZ	VZ.	7V	1631	G-ev F	- 1	2 5	Y .	5	J. Sir
Cadmium	8/1/1695	< 0.001	< 0.001	0.0052	< 0.001	< 0.001	< 0.001	> 0.001	100.0 >	< 0.001	< 0.001	ż	ž!	ž į	ž !	ž!	ž!	S S
-	8/23/1996	< 0.01	< 0.01	< 0.01	10'0 >	< 0.01	< 0.01	< 0.01	0.0 >	< 0.01	< 0.01	ž	ž	ž !	ž ;	ž!	ż :	S S
	3/23-24/1998	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	SN	< 0.005	< 0.005	a į	ž !	ž !	ž!	ž ;
	3/9-10/1969	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ž	<0.005	<0.005	ž	È	È !	ž :	SZ ?
	6/10/1999-7/2/1999	SN	SZ	SN	SN	å	SZ	SZ	SN	SZ	Ž	SN	SZ	<0.00>	<0.005	ž!	ž ;	<0.00>
	3/9-10/2000	<0.005	< 0.005	0.0178	<0.005	ž	<0.005	<0.005	<0.005	<0.005	ž	< 0.005	<0.005	<0.005	<0.005	Ž	Ž (500.00
	1/14/2001	SZ	SN	SN	SZ	Ž	SZ	SZ	SN	SZ	Ē ;	SN	SN	S S	SN	\$00.00	<0.005	S S
	3/8-9/2001	<0.005	<0.005	0.0121	<0.005	ž	<0.005	<0.005	<0.005	<00.00>	ž	c0.00>	<000.05	SZ.	50.003	42	SZ.	d-evi

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Table 7
Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

									Ψ	Monitor Wells ⁽¹⁾	(I)S							
Analyte (units)	Sample Date	MW-I	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10 MW-11 MW-11A	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Cadmium	3/11-12/2002	<0.005	<0.005	<0.005	<0.005	Ē	QN	QN	Q.Z	<0.005	æ	<0.005	Q-SN	<0.005	<0.005	SN	SN	Q-SN
	3/6/2003	NS	NS	NS	<0.005	NP	NS	NS	NS	NA	ďχ	<0.005	NS-D	<0.005	NS	NA	NA	NS-D
Chromium	8/1/1095	0 0 >	00 >	10.0 >	10.0 >	< 0.01	< 0.01	< 0.01	10'0 >	< 0.01	< 0.01	ĝ	ď	ď	ďΣ	NP	ďX	SN
-	8/23/1996	< 0.01	< 0.01	< 0.01	<001	0.049	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	ž	å	ź	dN	ž	ď	NS N
	3/23-24/1998	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	10'0>	< 0.01	SZ	< 0.01	< 0.01	Ē	ž	ğ	ž	NS
	3/9-10/1999	<0.01	<0.01	<0.01	10.0>	<0.01	<0.0>	10'0>	<0.01	10.0>	Ē	<0.01	<0.01	ď	ź	άz	ğ	SN
	6/10/1999-7/2/1999	SN	SN	SN	SN	ź	SN	SN	SN	SN	å	SN	SN	0.02	20'0	ž	å	100>
	3/9-10/2000	<0.01	<0.01	10.05	0.0248	ż	< 0.01	< 0.01	< 0.01	0.031	ŝ	0.0342	0.0124	10.0>	<0.01	ğ	N.	0.105
	1/14/2001	SN	SN	SN	SN	ź	SN	SN	SZ	SN	ž	SN	SN	SN	NS	<0.0>	<0.0>	SN
	3/8-9/2001	<0.01	10:0>	0.0104	0.0101	ď	<0.01	<0.01	0.013	60100	ġ	0.0392	0.0469	SN	0.0104	٧×	NS	NS-D
	3/11-12/2002	<0.01	10.0>	10 0>	<0.01	ŝ	- Q	Q.	Ę	0.0246	ğ	0.023	NS-D	10.0>	0.0114	SN	SN	NS-D
	3/6/2003	NS	NS	NS	0.0174	NP	NS	NS	SN	NA	ďN	0.0168	NS-D	0.01	NS	NA	N.	NS-D
Lead	8/1/1995	< 0.002	< 0.002	0.0044	< 0 002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.0025	NP	NP.	ΝP	NP	NP	ΝP	SN
	8/23/1996	< 0.002	< 0.002	< 0.002	< 0.002	< 0 002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	ğ	ģ	å	N.	ă	ď	SN
	3/23-24/1998	< 0.005	> 0 005	> 0 005	< 0.005	< 0.005	< 0 005	< 0.005	< 0.005	< 0.005	SN	< 0.005	< 0 005	ğ	ď.	ď	Νb	SN
	3/9-10/1999	<0.005	<0.005	<0.005	< 0.005	0.013	< 0.005	< 0.005	< 0.005	< 0.005	Ê	600.0	<00'0>	d Z	ď	ğ	NP	SN
	6661/2/1-6661/01/9	NS	SN	SN	SN	NP	SN	SN	SN	SN	å	SN	SN	<0.005	<0.005	å	ď	< 0.005
-	3/9-10/2000	<0.005	\$00'0>	<0.005	0.00565	ğ	< 0.005	< 0.005	< 0.005	19900'0	Ę	0.00595	< 0.005	<0.005	<0.005	æ	ğ	0.0355
	1/14/2001	SN	SN	SN	SN	ď	SZ	SZ	SN	SN	ğ	SZ	SN	SZ	SN	<0.005	<0.005	SZ
	3/8-9/2001	<0.005	<0.005	0.00602	<0.005	ď	<0.005	<0.00>	0 00597	0.0222	d Z	0.0119	0,00627	SN	<0.005	Y Z	SN	NS-D
	3/11-12/2002	<0.005	<0.005	<0.005	\$00.0>	ž	QN	£	Q.	0.0234	å	<0.005	NS-D	<0.005	<0.005	SN	NS	NS-D
!	3/6/2003	NS	NS	NS	<0.005	NP	NS	NS	NS	Ϋ́N	Ē	<0.005	NS-D	<0.005	SN	V.	NA V	NS-D
Mercury	8/1/1995	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0005	< 0.0002	< 0.0002	< 0.0002	< 0.0002	å	å	ğ	ž	ďχ	N	SZ
	8/23/1996	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	ğ	È	ď	dN	d.	ΔN	SN
	3/23-24/1998	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0003	< 0.0002	< 0.0002	SN	< 0.0002	< 0.0002	ď	ź	ž	ď	SZ
	3/9-10/1999	<0.0002	<0.0002	<0.0002	<0.0002	<0 0002	<0.0002	<0.0002	<0.0002	<0.0002	È	<0.0002	<0.0002	AN.	ğ	ž	å	SN
	6/10/1666-7/2/1666	SN	SN	SN	SN	å	SZ	SN	SX	SX	Ž	SZ	SN	<0.0002	<0.0002	ď	dN	<0.0002
-	3/9-10/2000	SN	SN	SN	SN	ž	<0.0002	<0.0002	<0.0002	<0.0002	å	<0.0002	<0.0002	<0.0002	<0.0002	ž	ď	<0.0002
	1/14/2001	SN	SN	SN	SN	å	SN	SN	SN	SN	È	SN	SN	SN	SN	<0.0002	<0.0002	SN
	3/8-9/2001	<0.0002	<0.0002	<0.0002	<0.0002	ĝ	<0.0002	<0.0002	<0.0002	<0.0002	ž	<0.0002	<0.0002	SZ	<0.0002	¥	SN	NS-D
	3/11-12/2002	<0.0002	<0.0002	<0.0002	0.000243	ź	Q.	Q	Q.	<0.0002	ž	<0.0002	NS-D	<0.0002	<0.0002	SN	SN	Q-SN
	3/6/2003	NS	SN	NS	<0.0002	ğ	NS	SN	SN	NA V	ž	<0.0002	NS-D	<0.0002	SN	VA V	VA V	NS-D
Selenium	8/1/1/8	<0.004	<0.004	<0 004	<0.004	<0.004	SN	SZ	S	SZ	SZ	£ !	ž :	Ē !	<u>2</u> ;	È :	<u> </u>	S S
	8/23/1996	<0.004	<0.004	<0.004	<0.004	<0.004	S	z.	S.	s s	ź	ž	ż	ž	ž	ž į	ž į	2 2
	3/23-24/1998	<0.005	<0.005	<0.005	<0.005	<0.005	\$00.00	C00.00 6	<0.005	500.00	2 2	500.00	500.05	ž 2	<u> </u>	ž 2	2 2	c y
	3/9-10/1999	500.0	0000	500.05	o vice	500 6	500.0	SOO O	Ne.	Ne Court	<u> </u>	ON'O	Ne	2 2		2	. 5	2
	6661/7/1-6661/01/0	5000	500 0	500.02	2000	ž	92000	5000	\$00.00	\$000\$	2	\$00.0>	>0 00	\$00.0>	<0.005	Ž	ž	<0.005
	1/14/2001	SZ	SN	SN	SN	Ę	NS	SZ	SN	SX	ž	NS	NS	SN	SN	<0.005	0.00523	SZ
	3/8-9/2001	<0.005	0.00702	0.00508	0.00587	ž	0.00617	<0.005	0.0054	<0.005	ź	<0.005	<0.005	SN	<0.005	Y.	SN	NS-D
	3/11-12/2002	0.00549	0 00625	<0.005	0.00558	ź	QV.	Q.	S.	<0.005	ğ	<0.005	NS-D	<0.005	<0.005	SN	SN	Q-SN
	3/6/2003	SN	SN	SN	<0.005	N P	NS	NS	NS	٧¥	ďΝ	<0.005	NS-D	<0.005	NS	٧A	ΑN	NS-D
PAHs (µg/L.)												· 						
							,	,	;	;		5	9	67	92	a _N	av	NZ.
Acenaphthene	8/1/1995	> 20	04 :	> 200	Ş	06 >	· ·	Ç ,	Ç ;	Ç ,	Ç ,	ž	ž	ž 2	2 9	2 2	2 2	ž
	8/23/1996	0 ×	0 >	< 30	\$ V	230	Ŷ	Ç,	Ç			Ž	Ž	1	2			

Table 7
Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

									Σ	Monitor Wells ⁽¹⁾	(3)							
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	9-WM	MW-7	MW-8	6-MM	MW-10		MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Acenaphthene	3/23-24/1998	< 10	<0.3	<0.3	<03	<0.3	<0.3	<0.3	<0.3	<0.3	NS	<0.3	<0.3	å	å	άZ	È	SN
	3/9-10/1999	< 0.1	< 0.1	<2.0	< 0.1	<2.0	<0.1	<0.1	< 0.1	< 0.1	ğ	< 0.1	< 0.1	Š	άŻ	ď	Ē	SN
·	6661/2/2-6661/01/9	SN	SN	SN	SZ	ž	SN	SN	SZ	SN	dN	SN	SN	-0>	< 1.0	N.	å	<0.1
	3/9-10/2000	0.28	10>	< 0.1	- O.	ΖŻ	- O	-0×	<0.1	< 0.1	ģ	V0.1	<0.1	<0.1	<0.1	Ž	å	<0.1
	1/14/2001	SN	SX	SN	SN	ΝP	SN	SN	SN	SN	ĝ	SN	SN	SN	SN	00	<u>6</u>	SN
	3/8-9/2001	<0.12	<0.13	<0.12	<0.1	ź	<0.13	<0.12	<0.12	<0.15	Ę	<0.13	<0.13	SN	<0.12	۲X	SN	NS-D
	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	ģ	Q.	ND	N ON	QN	ż	-0°	NS-D	- O V	0>	SN	SN	NS-D
	3/6/2003	NS	NS	NS	ΝA	å	NS	NS	NS	NA	NP	<0.1	NS-D	<0.1	NS	NA	NA	NS-D
Acenaphthylene	8/1/1995	< 50	01 >	> 500	< v	> 30	V	< > <	< 5	< 5	< 5	ź	ΝP	NP	ďN	ď	N	SN
	8/23/1996	> 10	× 10	< 30	ν. V	< 30	< 5	< > <	\$.	\$ \ \$	S.	ģ	Š	ź	ģ	ź	ź	SN
	3/23-24/1998	oI >	<0.1	<0°.1	CO.1	0.1	<0.1	<0.1	9	<0.1	SN	-0>	<0.1	ģ	ď	ď	å	SN
	3/9-10/1999	< 0.1	< 0.1	< 0.1	< 0.1	<2.0	0.0	€ 0.0	< 0.1	< 0.1	ź	< 0.1	< 0.1	ğ	ź	ă	ğ	SZ
	661/7/1-6661/01/9	SN	SN	SN	SZ	å.	SN	SN	SZ	SZ	å	SN	SN	V.0.1	0.1 >	Ν	ď	<0.1
	3/9-10/2000	16.0	< 0.1	< 0.1		ź	<0.1	V0.1	0>	4.0	ž	<0.1	<0.1	<0.1	8.1	ξŽ	ď.	<0.1
	1/14/2001	SZ	SZ	SN	SN	ģ	SN	SZ	SN	SN	ž	SN	SN	NS	SN	<0.1	<0.1	SN
=	3/8-9/2001	<0.12	<0.13	<0.12	<0.1	å	<0.13	<0.12	<0.12	0.71	ď	0.35	<0.13	NS	<0.12	N.	SN	NS-D
	3/11-12/2002	< 0.1	<0.11	< 0.1	1.0 ×	ź	ND	Š	S	Ę	ž	Ξ	NS-D	0.0	-0×	NS	SN	NS-D
	3/6/2003	SN	SN	SN	NA	ď	SN	NS	NS	NA	ΝĎ	<0.1	NS-D	<0.1	NS	NA	NA	NS-D
Anthracene	\$661/1/8	< 50	o1 >	> 500	< 5	< 30	< \$ >	\$ >	< 5	< \$	< 5	ğ	ğ	ď	ďΝ	ďΣ	ğ	SN
	8/23/1996	o1 >	01 >	< 30	5 .	< 30	٠ ٧	< 5	< > 5	\$ \ \	< ×	ž	ž	ě	å	ď	ğ	SN
	3/23-24/1998	01 >	<0>	0	0>	-0>		0>	Ç0>	<0.1	SN		<0.1	ď	ž	ď	ğ	SN
	3/9-10/1999	< 0.1	< 0.1	< 0.1	< 0.1	<2.0	0.0	<0.1	< 0.1	< 0.1	ğ	< 0.1	< 0.1	ź	ğ	Š	Ž	SN
	6/10/1999-7/2/1999	SN	SN	SN	SN	ź	SN	SN	SN	SN	å	Š	SN	<0.1	0.1 >	ż	å	0
	3/9-10/2000	0.12	< 0.1	< 0.1	-0×	ź	<0.1	0.0	<0.1	< 0.1	å	<0.1	<0.1	<0.1	-0>	ď	ź	<0.1
	1/14/2001	SN	SN	SN	SN	ą.	SN	SS	SN	SN	ğ	SX	SN	SN	SN	<0.1	<0.1 0.1	SN
	3/8-9/2001	<0.12	<0.13	<0.12	-0×	Ŋ	<0.13	<0.12	<0.12	<0.15	ğ	<0.13	<0.13	SN	<0.12	Ϋ́	SN	NS-D
	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	Ž	QN	£	S	2	ď.	<0.1	NS-D	<0.1	<0.1	SN	SN	Q-SN
	3/6/2003	SN	NS	NS	NA	ď	NS	SN	NS	NA	ΔN	<0.1	NS-D	<0.1	NS	ΝA	NA VA	NS-D
Benzo(a)anthracene	8/1/1995	< 50	< 10	< 500	< 5	< 30	\$>	< 5	\$ >	< \$	< S >	È	ž	È	ž	Ž	ž	SX
	8/23/1996	< 10	01 >	< 30	< \$	< 30	< S >	< >	< >	< \$	< >	ž	ž	È	ğ	ž	ğ	SN
	3/23-24/1998	o 10 10	- - -	1.0>	-0×	- O>	<0.1	<0°1	 	<0.1	SN	<0.1	<0.1	È	È	Ā	È	SN
	3/9-10/1999	< 0.1	< 0.1	0.2	< 0.1	<2.0	<0.1		< 0.1	< 0.1	ž	< 0.1	< 0.1	Ž	å	ž	È	SZ
	6/10/16661/01/9	SZ	SN	SN	SN	ž	SZ	SN	SZ	SN	ā.	SZ	SZ	- - 0	0.1 >	Ž	È	-0°
	3/9-10/2000	0.18	< 0.1	< 0.1	0	ź	<0.1	0	0.	× 0.1	Ž	-0°	-0 -		0	ž	ž	
	1/14/2001	SZ	SZ	SZ	SZ	è.	s s	SZ	SZ S	SN	ž į	SZ	SZ Ç	S 5	s s	- G	- 57 7	S S
	3/8-9/2001	<0.12	<0.13	<0.12	 0 V	ž	6 F	<0.12	71.0>	CI.15	ž :	÷ ;	2 4	S. S	71.05	X 2	S J	2 2 2
	3/11-12/2002	- 0°-	-0.1	< 0.1	- 0 >	È!	2 :	2 5	e s	2 :	ž	0 6	7. S. C. 2. Z.		o	2 Z	2 2	2.52
	3/6/2003	ž	SZ	ŝ	YZ.	ž	2	CN.	<u> </u>	, v.	,	,	T-CV	- 1	2 5	5	5	J. S. I
Benzo(k)fluoranthene	8/1/1995	< 50	o >	> 200	< > .	< 30	· ·	\$	s ·	\$	٠ ٧	ž į	ž į	ž	ž	ž	ž ž	S 2
	8/23/1996	v 10	0 >	× 30	\$ \ \	> 30	· ·	\$ *	ç,	ç	Ç :	ž	ž	ž!	ž į	ž į	ž	2 5
	3/23-24/1998	v 10	0>	<0.1	0.0	 0	-0.	 0 V	-0 -0 -	 0⊽	SZ	0.0	0	ž.	ž į	ž į	ž !	2 ;
	3/9-10/1999	< 0.1	< 0.1	0.2	< 0.1	<2.0	-0×	.0 1.0	- 0°1	× 0.1	È	< 0.1	- 0 ·	Ž	à '	ž !	ž ;	S S
	6661/2/2-6661/01/9	SZ	SN	SN	SX	Ž.	SZ	SZ	SZ	SN	Ż	SZ	SZ	0	0.	Ž !	ž !	- ·
	3/9-10/2000	< 0.1	< 0.1	< 0.1	- 0°	ž	× 0.1	× 0.1	< 0.1	< 0.1	ž	0 >	- O - !	7.0.5	0 5	ž	ž s	- i
	1/14/2001	SN	SN	SN	SX	ž	SZ	SZ	SZ	SZ	Ž	SZ	SZ	Š	SZ.	- - -		S ;
	3/8-9/2001	<0.12	<0.13	<0.12	<0.1	ģ	<0.13	<0.12	<0.12	<0.15	È	<0.13	<0.13	NS	<0.12	Y.	£	U-SN

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Table 7
Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

									Σ	Monitor Wells(1)	(ı) ^S i							
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	V-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Benzo(k)fluoranthene	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	Ę.	QN.	QN	QN	Q.	ďZ	<0.1	NS-D	<0.1	<0.1	NS	SN	Q-SN
	3/6/2003	NS	NS	SN	¥	È	SZ	SN	SN	¥Z	È	-0.1	NS-D	0.1	NS	٧×	Ϋ́Z	NS-D
Benzo(a)pyrene	8/1/1995	< 50	v 10	< 500	\$. V	< 30	\$ \	 \$ V	< > 2	\$ \ \$	\$ ·	ž	È	È	ž	ž	È	SZ
	8/23/1996	01 >	o 10	< 30	√ . ∨	× 30	۰ ک	\$. V	\$ \ \$	\$ v	\$ ·	Ē	ž	Ž	a. Ž	Ż	<u>a</u>	SZ :
	3/23-24/1998	010	- O V	0.0	7.00	 0 (- CO- V	1.0	S E	- O V	0 0	ž ž	ž ž	<u> </u>	ž 5	s z
	3/9-10/1999	T'0 ;	1.0 %	7.0		0, 1			- i	- ;	2 2	10,		ž (Ž ,	ž	ž	2 5
	6/10/1666-7/2/1666	S	s. Z	S.	SZ	ž :	vs.	S	S.	ž	Ž !	Š	S.		0 .	ž !	ž :	70.
	3/9-10/2000	- - - -	 	- C 0.1	- 1.0 >	ž		< 0.1		- 0°	Ē	-0 >	× 0.1	< 0.1	× 0.1	a Z	a. Z	- O V
	1/14/2001	SN	SN	SZ	SZ	ž	SN	SZ	SN	SN	ď	NS	SN	SN	SN	- 0>	- 0 -	Š
	3/8-9/2001	<0.12	<0.13	<0.12	-0°	ź	<0.13	<0.12	<0.12	<0.15	ź	<0.13	<0.13	SN	<0.12	Y Z	SN	NS-D
	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	å	Q	Q.	QN	QN	ž	<0.1	NS-D	<0.1	- O	SN	SN	NS-D
	3/6/2003	NS	NS	NS	NA	ΝĎ	SN	NS	NS	Ϋ́	ď	<0.1	NS-D	<0.1	NS	V.	NA	NS-D
Fluorene	8/1/1995	< 50	< 10	> 500	< \$	< 30	< >	< \$	< 5	5 >	< 5	NP	ĝ	ž	Ē	Y X	Y X	SN
	8/23/1996	ot >	ot >	< 30	< >	< 30	\$ >	< ×	~ \$ ~	< 5	< 5	ď	ģ	ğ	ď	Y.	٧	SN
-	3/23-24/1998	ot >	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	NS	<0.3	<0.3	Ν	å	Ϋ́	Y X	SZ
	3/9-10/1999	< 0.1	< 0.1	<2.0	< 0.1	<2.0	<0.1	<0.1	< 0.1	< 0.1	ď	< 0.1	< 0.1	ğ	ď	٧X	Y Y	SX
	6/10/1999-7/2/1999	SN	SN	SX	SN	ğ	SN	SN	SN	SN	ď	SN	SN	<0.1	0.1 >	Ϋ́	Ϋ́Z	-0×
	3/9-10/2000	25	< 0.1	98.0	<0.1	Ē	<0.1	-0×	1.5	-0°	Ν	<0.1	<0.1	<0.1	9.1	ΝA	٧ ٧	- °0>
	1/14/2001	SN	SN	SN	SN	ğ	SN	SN	SN	SN	ď	NS	SN	SN	SZ	<0.1	<0.1	SN
	3/8-9/2001	<0.12	<0.13	<0.12	-0>	ž	<0.13	<0.12	<0.12	<0.15	Ŋ	<0 13	<0.13	SN	<0.12	Ν	SN	Q-SN
	3/11-12/2002	< 0.1	0>	< 0.1	< 0.1	Ż	Q.	QN	S S	QV	ğ	0.1	NS-D	<0.1	0>	SN	SN	NS-D
	3/6/2003	SN	SN	SN	٧Z	ď	SN	SN	SZ	Y Z	ďΖ	<0.1	NS-D	<0.1	NS	ΝA	A'A	NS-D
Nanhthalene	8/1/1995	< \$	210	1700	<\$>	470	< S >	\$	15	92	< 5	Ē	ďN	ď	ğ	ğ	ğ	SN
	8/23/1996	230	110	440	\$ >	< 30	ن . ۷	y .	< 84	> 76	< 5	ď.	Ē	ž	ďZ	ď	ğ	SZ
	3/23-24/1998	130	23	< 0.1	- O >	< 0.1	< 0.1	< 0.1	4	øc.	SN	8.0	=	ž	ğ	ź	ż	SZ
	3/9-10/1999	10	œ	170	0.1	160	<0.1	1.0>	¢.0>	9	ğ	- 0 ∨	61	ď	ā	å	ž	SZ
	6661/2/1-6661/01/9	SN	SN	SN	SX	ŝ	SN	SN	SN	SN	ă	SN	SN	9.0	34	ž	ž	<0.1
	3/9-10/2000	2.4	V 0 −	0.44	0.1	ş	0.0	<0.1	0.42	1.5	Ž	0.12	0.26	<0.1	99	Ē	ž	-0°
	1/14/2001	SN	SN	SN	SX	ď	SN	SN	SN	SN	ž	SN	SN	SN	SZ	<0.1	-0°	SN
	3/8-9/2001	<0.12	<0.13	<0.12	00.	ğ	<0.13	<0.12	<0.12	0.15	Š	0.21	<0.13	SN	<0.12	٧Z	SN	NS-D
	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	ž	ND	Q.	ND	QN	ž	0.14	NS-D	<0.1	Ç.0.1	SN	SZ	NS-D
	3/6/2003	SN	SN	SN	NA	ΔŽ	NS	NS	SN	ΑN	ďΣ	<0.1	NS-D	<0.1	SN	٧Z	¥Z	NS-D
Phenanthrene	8/1/1995	< 50	< 10	< 500	\$>	< 30	< > 5	< \$	< S >	< 5	< 5	ž	ž	ďΖ	Ž	È	È	SN
	8/23/1996	< 10	ot >	< 30	<\$>	< 30	< > <	< \$	< \$	\$ ×	< >	ž	ď	ž	ž	ž	È	SZ
	3/23-24/1998	< 10	<0.1	0.0	-0	-0>	0.1	-0×	-0>	-0.0	SN	<0.1	- 0>	ž	È	ž	Ž	SZ :
	3/9-10/1999	< 0.1	< 0.1	7	< 0.1	<2.0	0.0	<0.	< 0.1	< 0.1	ž	< 0.1	1.0 ×	Ž	È	ž	Ž	s 2
	6/10/1666-1/2/1666	SN	SN	SN	SN	ă	SN	SN	SN	SN	ž	SN	SZ	< 0.1	0°1 >	ğ	Ž	<0.1
	3/9-10/2000	0.65	-0×	< 0.1	<0.1	ž	-0 -	-0>	<0.1	<0.0>	ž	<0.1	-0>	<0.1	0.22	ğ	Ž	-0>
	1/14/2001	SN	SN	SN	SN	ž	SZ	SN	SN	SN	ž	SN	SN	SN	SN	0.1	- - - -	SZ
•	3/8-9/2001	<0.12	<0.13	<0.12	-0°	ž	<0.13	<0.12	<0.12	<0.15	ă	<0.13	<0.13	SN	<0.12	٧	SZ	NS-D
	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	ž	£	Q	£	£	ž	-0°	NS-D	<0.1	-0	SN	SZ	NS-D
	3/6/2003	SN	NS	NS	NA	ďΖ	NS	NS	NS	Ϋ́	ž	<0.1	NS-D	<0.1	NS	٧×	Y _N	NS-D
Pyrene	8/1/1995	< 50	< 10	< 500	< 5	< 30	< \$ >	< >	< >	< > <	< ?	å	ď	ž	È	È	È	SZ
	8/23/1996	01 >	< 10	< 30	< 5	< 30	< \$	<\$>	< > <	< >	× ×	Ż	ž	ž	Ē.	ž	È :	SZ ;
	3/23-24/1998	< 10	0.0	<0.1		<0.1	-0×	T.0>	-0°	1 .0	SZ	0	0.	È	ž	Ē !	ž!	S S
	3/9-10/1999	< 0.1	< 0.1	0.4	< 0.1	<2.0	-0°1	<0.1	< 0.1	< 0.1	ž	×0.1	< 0.1	Z.	d.	Š	ž	S

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Table 7

Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

									Ĭ	onitor Well	(I) ^S							
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	9-MM	MW-7	MW-8	MM-9	MW-10 MW	Ę	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Pyrene	6/10/16661/01/9	SN	SN	SN	SN	ďN	SN	SN		NS	ďZ	SN	SN	< 0.1	0.1 >	N.	ΝP	<0.1
	3/9-10/2000	< 2	< 0.1	< 0.1	< 0.1	ğ	< 0.1	< 0.1	< 0.1	< 0.1	Ē	< 0.1	< 0.1	< 0.1	< 0.1	ź	å	< 0.1
	1/14/2001	SN	SN	SN	SN	ď	NS	SN	NS	SN	ž	SN	SN	SN	SN	<0.1	1.0>	NS
	3/8-9/2001	<0.12	<0.13	<0.12	< 0.1	ā	<0.13	<0.12	<0.12	<0.15	ž	<0.13	<0.13	SN	<0.12	Ϋ́	SN	US-D
	3/11-12/2002	1.0 ×	- O	- 0.1 NG	- 0 × N	ž	QZ Z	g ş	QN SIX	S S	å ž	0.0	U-SN	1.0>	J.0>	SN	SN	US-D
	31012,003	Š	SNI	e l	¥2.	Ž	2	S.	cv	¥ Z	Ž	20.1	NS-D	- (P	S.	ď.	ď.	NS-D
VOCs (µg/L)																		
Acetone	3/23-24/1998	SN	NS	SN	SN	NS	SN	SN	SN	SN	SN	<100	v01>	ďΝ	ğ	å	ď	SN
	6/10-1/5/99	SN	SN	SZ	SN	ğ	sN	SN	SN	SN	ź	SN	SZ	130	001×	ā	ďZ	<100
	6/10-2/2/1999	V	٧Z	Y V	¥ Z	ğ	NA VA	٧Z	Y Z	¥ Z	ź	Ϋ́	Ϋ́	٧	Ν	Ę	Z.	SN
	3/9-10/2000	Ϋ́Z	٧	Ϋ́N	Y X	ď	v Z	Y X	V V	¥ Z	ž	Y.	Ϋ́	٧X	Ϋ́	<100	<100	Q-SN
	3/11-12/2002	¥ Z	×z	Ϋ́Z	¥ Z	ğ	Y X	Y Y	Y Z	٧X	d.	 V Z	NS-D	ΝA	Y _N	SN	SN	NS-D
	3/6/2003	NS	SN	NS	NA A	ďN	NS	NS	NS	Vγ	ź	٧V	NS-D	VV	NS	ν¥	NA	NS-D
sec-Butylbenzene	3/23-24/1998	NS	SN	NS	SN	SN	SN	SN	SN	SN	SN	ż	Ż	Z.	ď	ż	ģ	٧X
	6/10-1/5/99	SZ	SN	SN	SN	Ē	SN	SN	SN	SN	ź	SZ	SN	< 5	٠,	Ē	ž	< 5
	6661/2/2-01/9	× Z	Y Z	¥ Z	¥ Y	Ē	Y Y	¥	٧×	¥ X	ź	¥ Z	Y.	NA	Ϋ́Z	ğ	ğ	SX
	3/9-10/2000	Ν	٧ 2	Ϋ́Z	٧X	ž	٧ 2	٧Z	Ϋ́Z	¥ Z	ž	¥ Z	AN AN	Ϋ́Z	Ϋ́Z	<5.0	<5.0	NS-D
	3/11-12/2002	ΥZ	NA V	YZ	¥	Ē	۷ ۷	¥ Z	Y.	¥ Z	ź	Y.	NS-D	Ϋ́	¥ Z	SN	SN	NS-D
	3/6/2003	NS	NS	NS	٧X	ğ	SN	SN	SN	ΝA	δ.	٧V	NS-D	ΝA	SN	ΝA	NA	NS-D
Isopropylhenzene	3/23-24/1998	SN	SN	NS	SZ	SN	SN	SZ	SN	SZ	SN	d. Z	a Z	ğ	å	ž	ą	SN
	6/10-7/2/99	SN	SN	SN	SN	ď	SN	SN	SN	SN	ź	SN	SN	< 5	<u>.</u>	Ē	ž	< 5
	6/10-7/2/1999	Y Z	Y Z	¥Z	¥ X	ž	Y V	Y.	¥ Z	¥ Z	Ž	٧Z	Y.	Y X	¥ Z	ğ	ž	SN
	3/9-10/2000	Ϋ́	٧×	× Z	Y X	ğ	٧	¥ Z	٧	¥ Z	ź	٧Z	Ν	٧X	¥ Z	<5.0	<5.0	NS-D
	3/11-12/2002	Ϋ́	¥ Z	Ϋ́	¥ Z	g Z	¥ Z	Y Y	¥ X	٧	ž	Y X	NS-D	ΝA	Ϋ́	SN	SN	NS-D
	3/6/2003	NS	NS	NS	ΑN	ΝÞ	NS	SN	SN	Ϋ́N	Š	Y A	NS-D	ΝA	SN	٧V	NA	NS-D
Naphthalene	3/23-24/1998	SN	SN	SN	SN	SN	SN	NS	SN	SN	SN	ž	ğ	å	È	ž	ź	SN
-	6/10-1/5/99	SN	SN	SN	SN	- dz	SN	SZ	SZ	SN	ž	SN	SN	< 5	190	ź	ž	< \$
	6/10-7/2/1666	٧X	Y.	Ϋ́	Y X	ĝ	Y X	¥ Z	Y X	¥ Z	ž	¥	Y X	Y V	٧×	ğ	Ž	SN
	3/9-10/2000	NA	Y X	Y X	٧	ž	¥ Z	٧	¥ X	٧	ž	Ϋ́Z	¥ Z	NA	٧X	<5.0	<5.0	NS-D
	3/11-12/2002	¥ Z	۷ ۲	¥ Z	¥ Z	ď	Y Z	¥ Z	¥ Z	¥	ĝ	¥ Z	NS-D	Ϋ́	¥ Z	SZ	SN	NS-D
	3/6/2003	SN	SN	SN	٧×	ž	SN	SZ :	SN	YZ :	ž į	V !	Q-SN	YN.	S S	YZ S	Y E	U-SN
n-Propylbenzene	3/23-24/1998	s s	s y	2 2	s s	e s	2 2	2 2	Z 2	s s	2 2	Z 2	2 2	Ž	L 8	ž §	2 2	2 5
	66/7/1-01/9	2 2	2 2	S 4	2 2	5 5	2 2	Z Z	2 Z	S AN	ž	X	- X	Z	¥ X	Ź	ž	SZ
	3/9-10/2000	×	×	ž	Z	ž	Z Z	¥Z	¥Z	Y Z	ž	¥Z	¥ Z	٧X	Ą	<5.0	<5.0	NS-D
	3/11-12/2002	٧Z	¥ Z	¥	¥2	ž	Y Z	Y Z	Y.	¥ _N	ž	¥ Z	NS-D	Y Z	V V	SN	SN	Q-SN
	3/6/2003	SN	SN	Š	¥	ĝ	SN	NS	NS	NA	ž	Y.	NS-D	NA	NS	ΝA	ΥN	NS-D
1,2,4-Trimethylbenzene	3/23-24/1998	SN	SN	SN	SN	SX	SN	SN	SN	SN	SN	Ē	Νp	ΔN	ďΣ	ď	άŽ	SN
	6/10-1/2/99	SN	SN	SN	NS	ž	SN	SN	SZ	SN	ĝ	SZ	SN	< \$	93	ŝ	È	< ?
	6/10-7/2/1999	٧	Y.	¥	¥	ğ	Y Z	¥ Z	Y Z	٧	ž	٧X	¥Z	٧Z	٧×	£	ğ	SN
-	3/9-10/2000	NA	Y.	NA V	Y X	ž	٧	٧X	¥Z	¥	ź	¥Z	¥	¥Z	٧×	<5.0	<5.0	NS-D
	3/11-12/2002	Y N	Ϋ́Z	٧Z	٧Z	ž	Y Z	¥Z	¥Z	Ϋ́	ž	¥ Z	NS-D	¥Z	¥ _N	SZ	SN	NS-D
	3/6/2003	SN	NS	NS	Ϋ́N	ž	SN	NS	SN	٧×	ž	¥	NS-D	NA V	SN	¥Z	٧×	NS-D
1,3,5-Trimethylbenzene	3/23-24/1998	SN	SZ	SN	SN	SZ	SN	SN	SN	SN	SN	ž	ž	ğ	Ē	<u>\$</u>	ž	NS.
	6/10-1/2/99	SN	NS	NS	NS	g Z	SN	NS	SN	SN	ž	NS	NS	Ş	93	ž	ž	°?

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Table 7
Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

									Σ	Monitor Wells ⁽¹⁾	(n)S							
Analyte (units)	Sample Date	MW-I	MW-3	MW-4	MW-5	9-MM	MW-7	MW-8	6-WM	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
1,3,5-Trimethylbenzene	6/10-7/7/1999	۸×	NA A	NA	NA	ě	NA	NA	NA	NA	ź	N.	N.A	Y'A	A'N	ğ	ďχ	SN
	3/9-10/2000	Y X	Ϋ́Z	¥Z	YZ.	ź	¥Z	Y Y	Y X	Y.	ĝ	¥ Z	Y.	NA	NA A	<5.0	<5.0	NS-D
	3/11-12/2002	٧X	YZ	Y Z	Ϋ́Z	ž	Y Y	Y Y	AN A	Y X	ź	¥ Z	NS-D	٧Z	X Z	SN	SN	NS-D
	3/6/2003	SZ	NS	SN	NA A	호	SN	NS	NS	NA	ž	NA	NS-D	NA	SX	NA	NA	NS-D
MTBE	3/23-24/1998	SN	SN	SZ	SN	SN	SZ	SZ	SZ	SN	SN	ğ	ž	ďZ	ž	Ē	ž	SN
	66/2/2-01/9	SN	SN	SN	SN	È	SN	NS	SN	SN	ź	SX	SN	o1 >	25	Ē	ğ	> 10
	6/10-7/2/1999	ΥN	Y Z	V.	Y A	ŝ	Z Z	ΑN	Y Y	Y Y	ŝ	NA V	Y.	NA	NA A	å	dN.	SN
	3/9-10/2000	٧X	Y Z	٧Z	VZ.	ź	¥ Z	٧X	¥ Z	¥ Z	ź	¥ Z	٧	N.	NA A	0.2>	<5.0	NS-D
	3/11-12/2002	¥ Z	¥ Z	YZ.	A N	ź	¥ Z	۷ 2	٧X	¥ Z	ž	¥ Z	NS-D	V Z	Y X	SN	SZ	NS-D
	3/6/2003	SN	SN	NS	٧Z	ź	NS	SN	SN	V	ź	A A	NS-D	٧٧	SN	NA	NA	NS-D
SVOCs (µg/L)																		
2.4-Dimethylphenol	8/1/1995	× 50	16	> 500	< \$	42	< 5	< 5	< 5	< 5	< \$ >	Ē	dN	dN	Ę	ďN	ě	SN
	8/23/1996	SN	SN	SN	SN	SN	SZ	SN	SZ	SZ	SN	å	ź	Ž.	ź	ž	'n	SN
	6/10-7/2/1999	SN	SN	SN	SX	ž	SN	SN	SN	SX	ź	SN	SN	< 5	98	ď	ŝ	\$
	3/9-10/2000	¥	NA NA	٧	Y Y	ŝ	¥ Z	٧X	¥ Z	Y X	ž	Y Z	٧	Y X	Y Z	ģ	å	SN
	3/11-12/2002	Y X	٧X	¥Z	٧Z	ž	¥ Z	۷ ۷	¥ Z	4 Z	ž	¥ Z	NS-D	٧Z	٧Z	SN	SN	NS-D
	3/6/2003	NS	SN	NS	ΝA	ź	NS	SN	NS	NA	Ē	νV	NS-D	V.V.	SN	ΥN	٧Z	NS-D
2-Methylnaphthalene	8/1/1995	280	62	1500	< 5	150	< 5	< 5	36	23	< 5	дN	ď	ΝĎ	ď	ď	È	SN
	8/23/1996	SZ	NS	SN	SN	SN	SZ	SN	SN	SN	SN	ğ	ż	d.	å	ž	ď	SN
=	6/10-7/2/1999	SN	SN	NS	SN	å	SN	SN	SN	SN	ŝ	SZ	SZ	< \$	53	È	ď	\$
	3/9-10/2000	Y Z	Ϋ́	٧X	Y V	ŝ	¥ Z	Y Z	Ϋ́	¥ Z	ž	Y X	Y Z	٧X	٧Z	å	ď	SN
	3/11-12/2002	Y Y	Y Z	Y.	٧	ž	٧	Ϋ́Z	¥ Z	¥Z	Ž	¥ Z	NS-D	٧X	٧Z	SN	SN	NS-D
	3/6/2003	NS	NS	NS	NA	N.	NS	SN	NS	NA	ą.	NA	NS-D	NA	SN	VΑ	NA	NS-D
2-Methylphenol	8/1/1995	< 50	98	< 500	< 5	< 30	< > <	~ < <	< \$	< > <	< >	ď	a.	ž	Š	ğ	ź	SN
	8/23/1996	SN	SN	SN	SN	SN	SN	SN	SN	SZ	SN	ż	ž	Š	ğ	å	ğ	SN
-	6/10-7/2/1999	SN	SN	SN	SN	ž	SX	SN	SN	SN	ž	SX	SN	< 5	< \$	ž	Š	\$
	3/9-10/2000	Ϋ́	Y V	¥Z	٧Z	ž	¥ Z	٧X	٧X	NA VA	ź	Y X	¥ Z	A'N	٧Z	ğ	È	SN
	3/11-12/2002	٧X	X V	Y.	٧X	ž	¥ Z	Y X	Y Y	Y Y	ž	¥ Z	NS-D	Y.	٧Z	SN	SN	NS-D
	3/6/2003	SX	SN	SN	ΝA	Ž	NS	NS	NS	NA	ź	NA NA	NS-D	NA	NS	Ϋ́	٧Z	NS-D
4-Methylphenol	8/1/1995	08 ×	< 20	× 800	x c ∨	150	∞ ∨	% 0 V	% ∨	8 0 V	∞ ∨	å	Ż	Ē	È	ž	È	SZ
	8/23/1996	SZ	SZ	SN	SN	SN	SZ	SZ	SZ	SN	SZ	È	ž	ğ	È	È	ŝ	SZ
	6661/2/2-01/9	SZ	SZ	SZ	SN	ž	SZ	SZ	SZ	SZ	Ž	SX	SZ	< > >	\$	È	å Ž	\$
	3/9-10/2000	Ϋ́	Ϋ́	¥ Z	YZ	ž	۷ ۲	٧X	¥ X	¥ Z	Ž	¥ Z	¥ Z	Y	Y	È.	È :	SN
	3/11-12/2002	¥ Z	¥ Z	¥ Z	∢ Z	Ē.	¥ Z	¥ !	Y S	∀ ;	2 :	 Z ;	Q-SN	Y ;	Y S	SZ ;	S.	Q-62.
	3/6/2003	SZ	NS	NS	V.	Ž	NS	SN	SN	¥Z	ž,	Y _N	O-SN	Y S	S S	Y S	NA S	7.5N
Bis(2-ethylhexyl)-phthalate	8/1/1995	750	< 20	10000	40	× 40	<7	<7	۲>	· ;	۲> :	å :	ž ;	ž ;	ž	ž	ž į	S Z
	8/23/1996	SZ	SZ.	SZ	s Z	SZ	SZ	SZ	Z.	ŝ	ŝ.	ž	Ž :	Z	ż	ž ;	2 ;	S. Y
-	6661/2/1-01/9	SZ	SN	SZ	SZ	ź	SN	SZ	SZ	SZ	Ē	SZ	SZ	\$	s :	dz !	Ž ;	€ ;
	3/9-10/2000	Y V	¥ Z	¥ Z	∀ Z	ž	¥ Z	¥ Z	Y Z	× Z	Ē	۲ ۲	Y Z	۲ ۲	ď Z	<u>2</u>	ż	ž į
	3/11-12/2002	Ϋ́N	Y.	ž	٧Z	ź	¥ Z	٧X	¥ Z	¥ Z	ž	× Z	NS-D	Y Z	۷ Z	SZ :	SZ	Q-SN
	3/6/2003	SN	SN	NS	٧×	Ž	SN	SN	SZ	¥N	ž	YN V	NS-D	Y _N	SN	YZ !	YA!	NS-D
Phenol	8/1/1995	× 50	ol >	< 500	<\$	< 30	\$>	< >	< >	8.7	\$	È	ž	Ż.	ĝ !	Ž ,	å :	S S
	8/23/1996	SZ	SS	SN	SN	SN	SZ	SN	SZ	SZ	SZ	È	Ž	ž	ž	È :	d !	z.
	6/10-7/2/1999	SN	SN	SZ	SZ	ž	SZ	SN	SN	SZ	Ē	SN	SZ	\$	9	ž	ž !	♥ ;
	3/9-10/2000	Y.	NA VA	Ϋ́	ΝA	å	Y.	¥X	NA VA	¥Z	ž	¥Z	NA	YZ	YZ Z	ž	d.	SZ

Page 8 of 9

Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs Hobbs, New Mexico Facility
BJ Services Company, U.S.A. Table 7

									Σ	onitor Wel	IS(1)							
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	6-WM	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
henol	3/11-12/2002	ΑN	ΝA	Ϋ́	٧X	ď	¥ N	NA A	Y.A	NA	ď	NA	NS-D	ΝA	Ϋ́	NS	SN	NS-D
	3/6/2003	SN	SN	SN	NA	È	SN	SN	SN	NA	dN	Ϋ́	NS-D	ΝΑ	SN	N.	٧×	NS-D

(1) - MW-2 not operative after May 3, 1995; MW-11 not operative after September 1997; MW-2, MW-6, and MW-11 P&A'd 7/1/99.

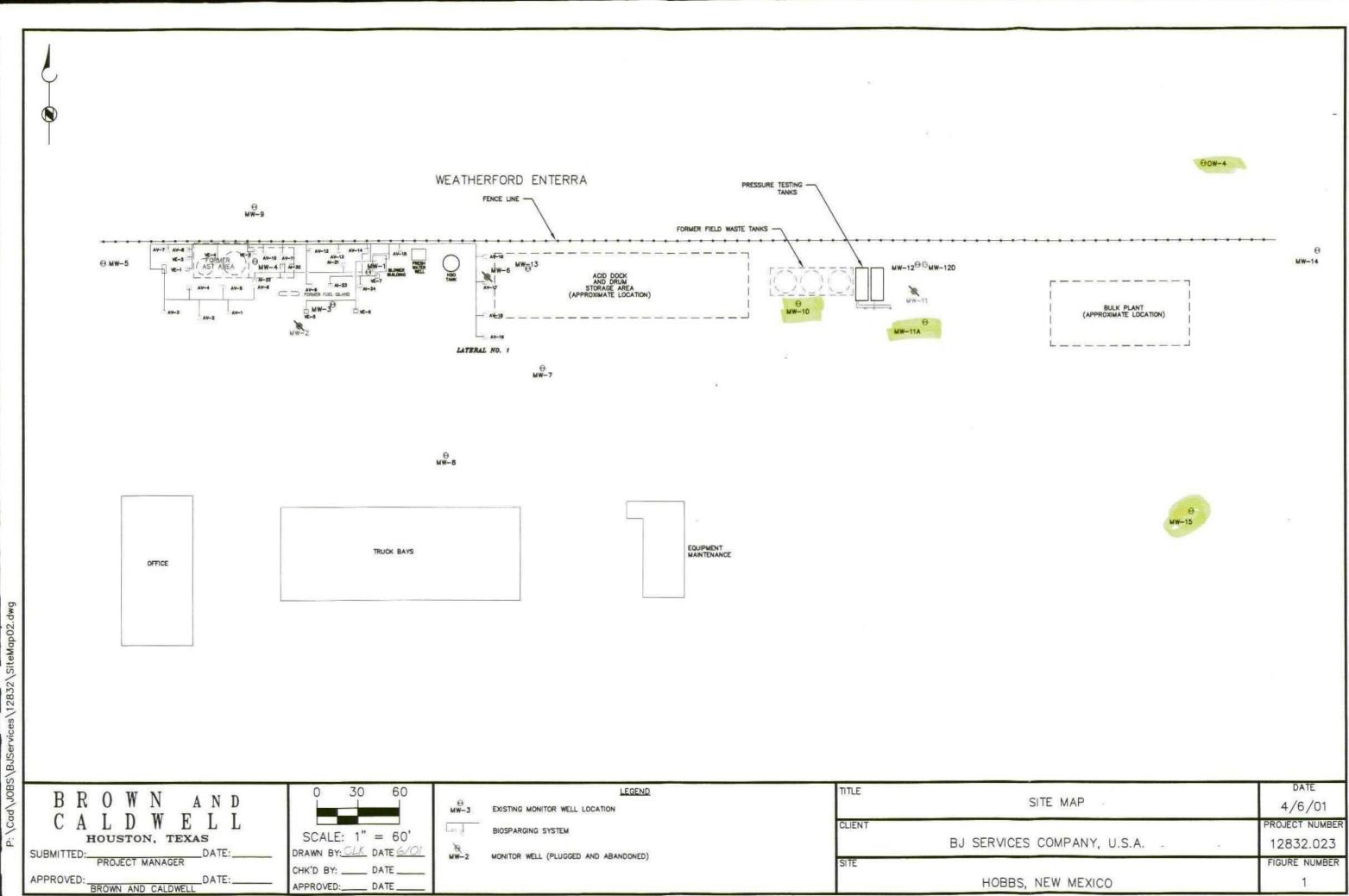
 $^{(2)}$ - NP = Well not present at time of sampling event.

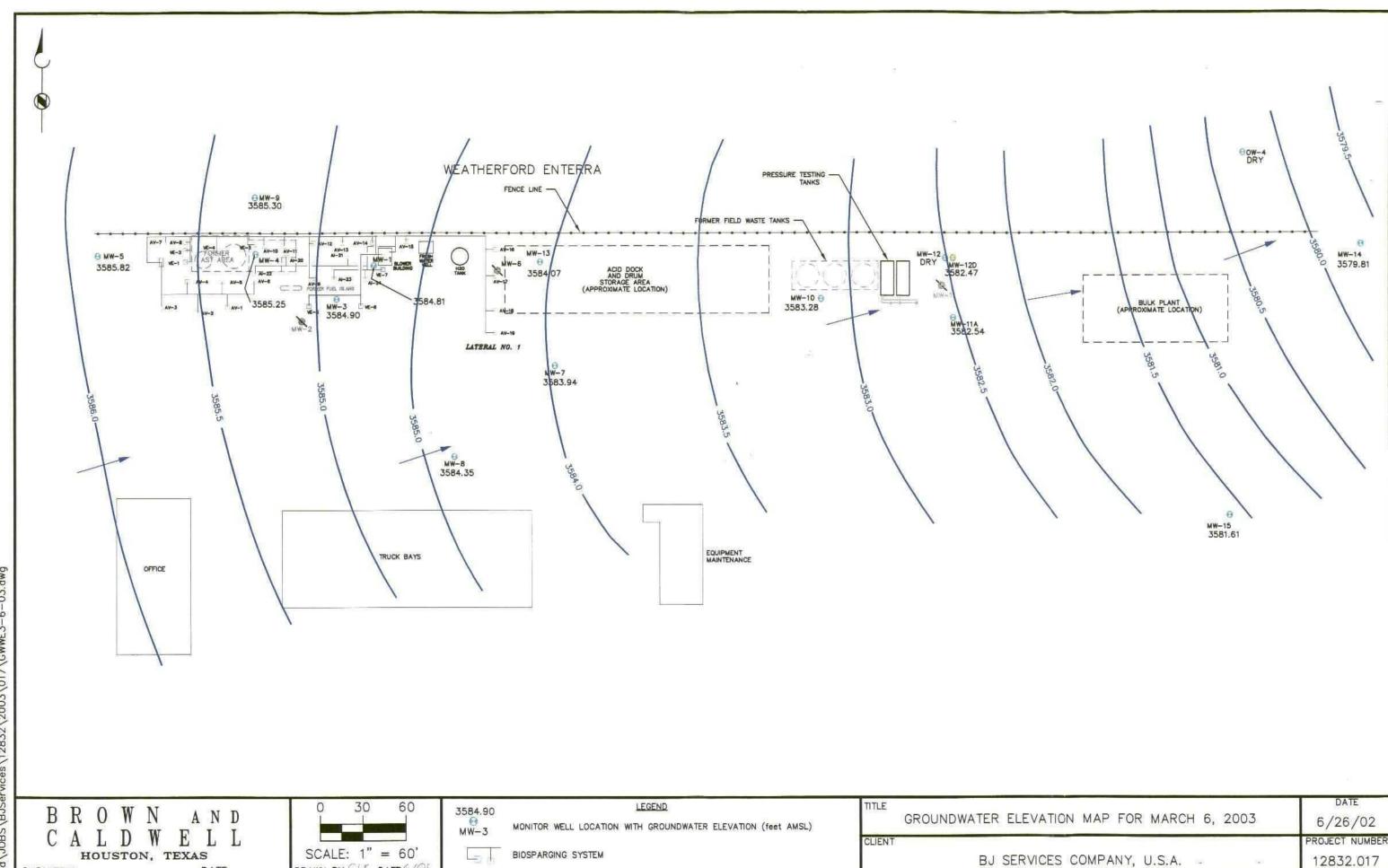
 $^{(3)}$ - NS = Well not sampled.

(4) - NA = Not Analyzed.

 $^{(6)}$ - NS-D = Well not sampled (dry well). $^{(6)}$ - ND = No data - sample aliquot not collected due to insufficient well yield.

BROWN AND CALDWELL **FIGURES**





SITE

HOBBS, NEW MEXICO

FIGURE NUMBER

2

GROUNDWATER FLOW DIRECTION

MONITOR WELL (PLUGGED AND ABANDONED)

P:\Cad\JOBS\BJServices\12832\2003\017\GWWE3-6-03.dwg

SUBMITTED: PROJECT MANAGER

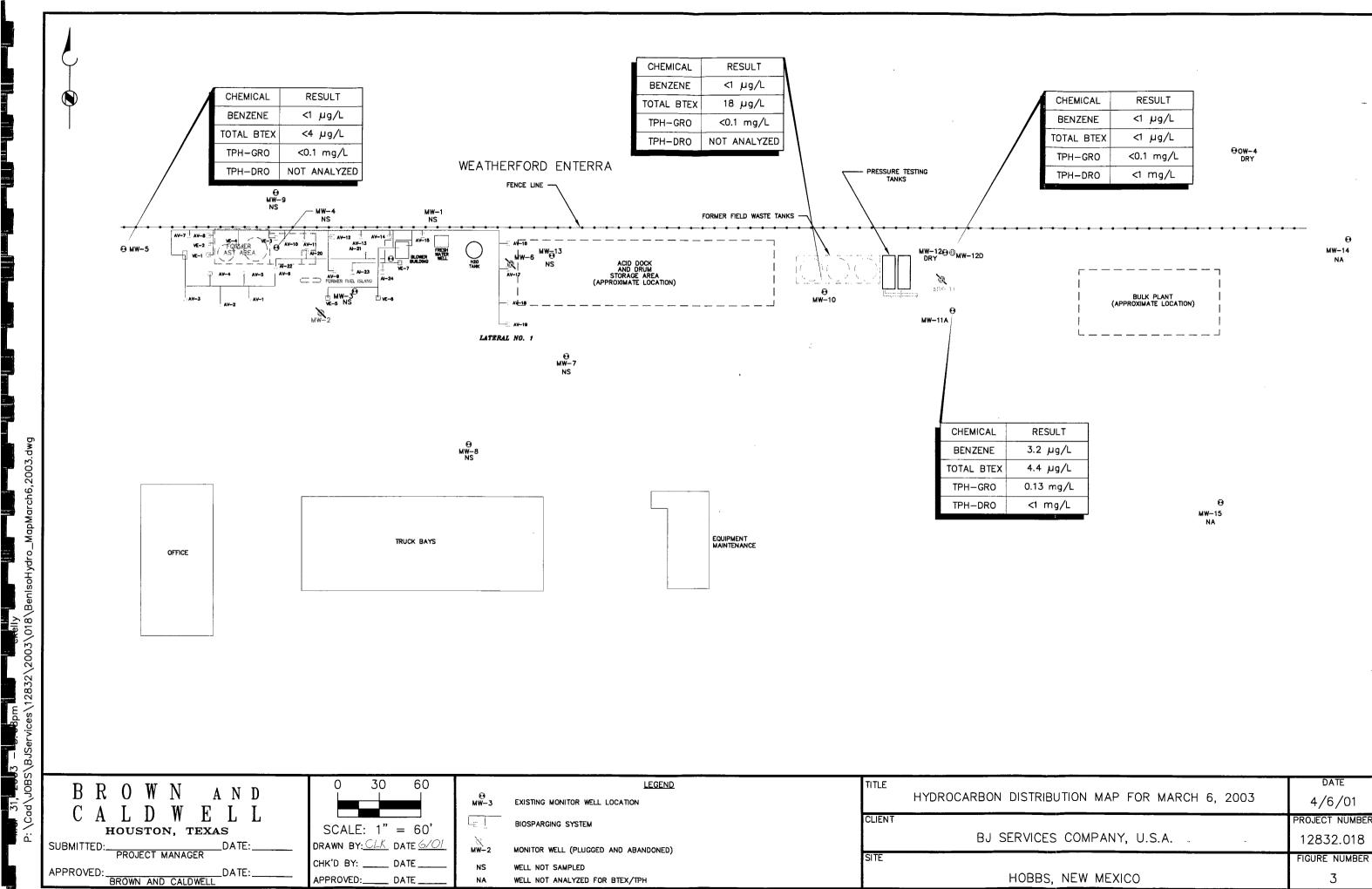
APPROVED: ____DATE:

DRAWN BY: CLK DATE 6/01

REV'D BY: OLK DATE 6/02

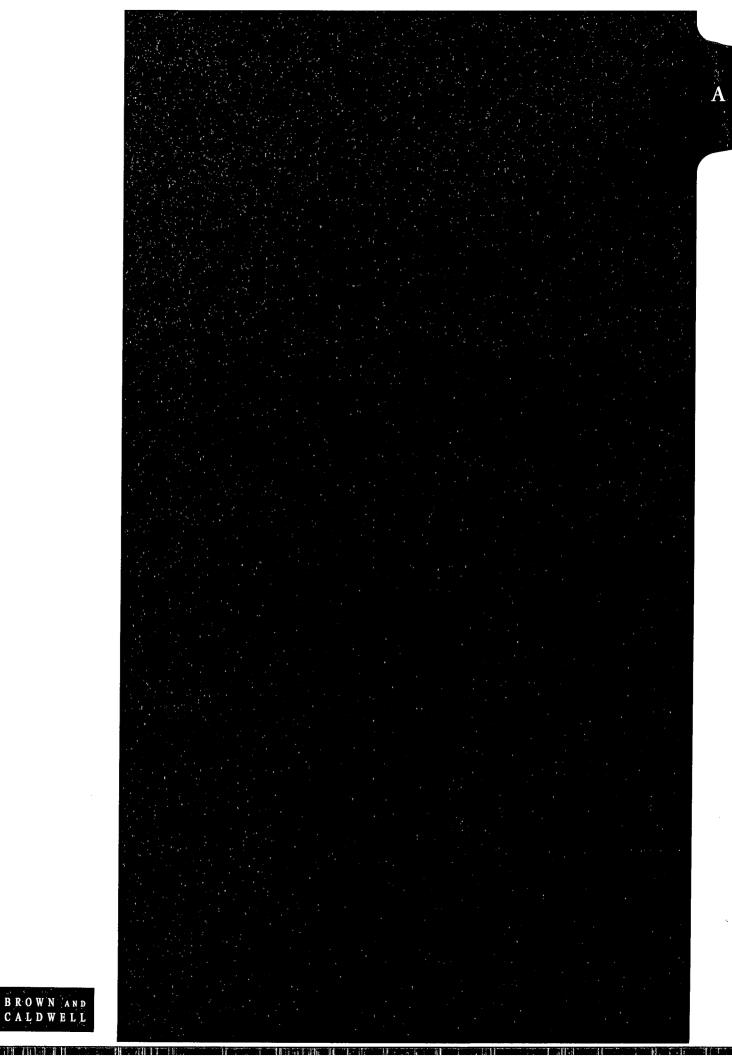
___ DATE_

MW-2



B R O W N AND C A L D W E L L **APPENDICES**

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APPENDIX A

Groundwater Sampling Forms

THE BRIDGE BY A COLUMN TO A COLUMN TO THE COLUMN THE CO

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MUJ5

1. PROJECT INFOR	832 Task Num	UB ber:	Date:	3	16/03	- To - 4 0 1	Time: 1593
Client: 15 J 50	riters		Perso	onnel: her:	aniful	uloese	MNT
Project Location:	1100035,1010		vvear	ner:	ירי נטב	t vanu,	Litar
2. WELL DATA		Type: M DVC	Ch Parinters C	Calu Caa			
Casing Diameter: L Screen Diameter: 1	inches	Type: PVC Type: PVC					
Total Depth of Well	.50 _{feet}	From: Top o					ther:
Depth to Static Water:	1.9 Deet	From: 🕰 Top o					
Depth to Product:	feet	From: 🕰 Top o	of Well Casing (TO)C) 🗅	Top of Protecti	ve Casing 🔘 O	ther:
Length of Water Column:	2.60 feet	Well Volume:	<i>.</i> 4 ga			rval (from GS):_ . well = 0.16 \$.gal/	D
3. PURGE DATA	2						
Purge Method: 🖸 Centrit	, Size: □ Blado fugal Pump □ Perista	ler Pump 🔲 2" Su altic Pump 🚨 Inerti				p	Equipment Model(s)
Materials: Pump Bailer	☐ Stainless ☐ PV			X Dispos	able	, \/c	1-610
Materials: Rope Tubing	☐ Polyethylene ☐	Polypropylene 🗆	Teflon® 🖸 Oth	er: \	4 lon	13	his de thirtish
Was well purged dry?	☐ Dedicated ☐ Pr		⊒ Field Cleaned	•		2	MAN JAWOTT Y
Time Cum. Gallons Removed	pH Temp	Spec. Cond.	ORP Dis	solved cygen	Turbidity	3. Other:	Comments
1550 00							-
15530.5	7.25 15.85	109D 8	3.2 5.	65		•	(00A)
759 12	7.96 18.3		775.	44	~		
130	7-10-10-0	10 3 3	2.1				
4. SAMPLING DAT	A					Geoc	hemical Analyses
Method(s): ⊠ Bailer, Size	e: □ Bladder F Pump □ Inertial Lift F	ump 🖾 2" Subme	ersible Pump C	1 4" Subm	ersible Pump	Ferro	ous Iron: 0,0 mg/L
Materials: Pump/Bailer	☐ Stainless ☐ PV	C Teflon®		VO. 5:		DO:	3.5 mg/L
Materials: Tubing/Rope	☐ Dedicated ☐ Pre☐ Polyethylene ☐	Polypropylene C	☐ Teflon® ☐ Ot	her:	1/1/2/		
	☐ Dedicated ☐ P					Nitral	te:mg/L
Depth to Water at Time of Sample ID:	Sampling:	15.60	7	□ Yes / Contain	No 7	Sulfa	te: mg/L
Duplicate Sample Collect				Somann	OIU	Alkal	inity: mg/L
5. COMMENTS							
		. <u>.</u>					
Note: Include comments such as	well condition, odor, p	resence of NAPL, or	r other items not	on the field	d data sheet.	. //	

FORM GW-1 (Rev 6/8/99 - wah)

Signature

BROWN AND CALDWELL

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MWID

	ECT INFO)		1 42		15	
	lumber: 128			ber: U	<u>5</u> _	Date: 3	11.01	(A) a disas	Time: 10' 10	}
Client:		avior.]	11/4/42	N /V	Personnel: Weather:	30'S	China	<u>K</u>	-
	.ocation:			150,00		vveamer	202	al mim		
2. WELL		2		Tuna: La						
	Diameter:	inch					teel Teflon®			
	pth of Well:							Other:		···
	Static Water:	T						tive Casing 🔾 🤇		
	Product:	•						tive Casing 🔲 (
	f Water Column		feet	Well Volume	12.37	gal	Screened Inte	erval (from GS):		_
							Note: 2-inc	ch well = 0.167 ga	Vft 4-inch well =	0.667 gal/ft
	GE DATA	. Siza 2	C) Blodd	er Pump 🗀 🤉	" Submersible	Pump [] 4" S	Submersible Pun	nn		
Purge M	ethod: Cent					Pump 🔲 4" S			Equipment M	odel(s)
Materials	s: Pump Bailer		ess □ PV0 ated □ Prep			aned Dispo	sable	1.	'S1-6/17]
Materials	s: Rope/Tubing					Other: N		2	-	
Was well	I purged dry?	_	□ No			gal		3		
Time	Cum. Gallons Removed	pН	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comme	nts
115	0.5	6.56	17.54	2411	43.7	2.47			greg w	2,4071
	102								0	Walt
										0 -
			1							
		 	 						 	
	ļ . 					+			 	
			-						 	
			1		<u> </u>					
			!							
4. SAMI	PLING DAT	•						Geo	chemical Analyses	3
Method(s): Bailer, Siz			ump 🗀 2" St ump 🚨 Other		np 🛚 4" Subr	mersible Pump	Ferr	ous Iron: 1. 7	_ mg/L
Material	s: Pump Bailer	☐ Stainle	ess 🖸 PV	C 🗆 Teflon	® □ Other:_			DO:	10	mg/L
Material	s: Tubing/Rope	☐ Polye	thylene 🔲	pared Off-Site Polypropylene	e □ Teflon®	aned 🔼 Disp 💪 Other:	almo .			'''9/'
1				epared Off-Site		eaned Dis		Nitra	ite:	mg/L
Depth to Sample	water at Time of the time of time of the time of the time of the time of the time of the time of the time of the time of the time of time of the time of time		9: Sample T	ima: 140	Field Filter	ed? 🗅 Yes		Sulfa	ate:	_ mg/L
<u> </u>	e Sample Collec		•	No ID:	-	# of Contain	iers	Alka	linity:	_ mg/L
	·									
b. COM	MENTS									
}										
Note: Include	comments such as	s well condit	ion, odor, pro	esence of NAF	PL, or other iter	ns not on the fie	eld data sheet.		~~	

FORM GW-1 (Rev 6/8/99 - wah)

Signature WWOIL

BROWN AND CALDWELL

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-IA

1. PROJECT INFORMATION Project Number: 12832 Task Number Client: (5) SX(VI(V)	er:_0/B_	Date: 3	6/03	The beets	Time: 1333
Client: 15) SAVI(W) Project Location: 10465, WM		Personnel: Weather:	305F	3 Wind	y dear
2. WELL DATA					
Casing Diameter: inches T	ype: ZPVC 🗆 Stai	nless 🗓 Galv. Stee	el 🗆 Teflon®	Other:	- · · · · · · · · · · · · · · · · · ·
Screen Diameter: inches T	ype: □ PVC □ Stai				
Total Depth of Well: <u>63.32</u> feet F	rom: Top of Well C	asing (TOC)	Top of Protecti	ive Casing 🔲 O	ther:
() -7	rom: Top of Well C				ther:
	rom: Top of Well C		Top of Protect	ive Casing 🔲 C	Other:
Length of Water Column: 2.12 feet V	Vell Volume: 0 32	gal S		erval (from GS): h well = 0.167 gal/	
3. PURGE DATA					
Purge Method: Baller, Size: 4 Deladder	Pump			np 	<u>Equipment Model(s)</u>
Stainless Deve				. la	Y5-610
Polyethylene D Po	olypropylene	o other: NV	ועטו	2.	7 - 1 - 4 - 6
Was well purged dry?	Pumping Rate:	, -		3.	
Time Cum. Gallons pH Temp	Spec. Cond. ORP	Dissolved Oxygen	Turbidity	Other:	Comments
13570.D					
1907 0.5 7.02 18.34 8	3909 66.1	3.32	_		Black color, sandy
1917 1.2 7.96 17.40	7/8/ -25.	1 2.71			
					i
4. SAMPLING DATA				Geoc	nemical Analyses
Method(s): Bailer, Size: Bladder Pur	np □ 2" Submersible Pr	ump □ 4" Subme	ersible Pump	Ferro	us Iron: 4.6 mg/L
Materials Pump Bailer	☐ Teflon® ☐ Other:			DO:	1.8
Motorcals: Tubing/Rope) Dedicated Dependent Prepai	red Off-Site	S & Ciner: NV	i eca		mg/L
d Dedicated d Prep	ared Off-Site	•		Nitrat	e:mg/L
Depth to Water at Time of Sampling: Sample ID: Sample Time	1/1/17	red? D Yes !	11	Sulfat	e:mg/L
Duplicate Sample Collected?		# O/ COMMINE	.i.s	Alkali	nity: mg/L
5. COMMENTS		_			
			-		
	A. =:	-			· .
Note: Include comments such as well condition, odor, prese	ence of NAPL, or other its	ems not on the field	data sheet.) 1	J.
FORM GW-1 (Rev 6/8/99 - wah)		_	Signature	murl	//

BROWN AND CALDWELL

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW12D

1. PROJECT INFORMATION	
Project Number: 12832 Task Number: 618 Date: 5/6/03	Time: \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Client: BT Servius Personnel: Fahulbesel Mi	
Project Location: Hobbes, WW Weather: 409 will all	<u> </u>
2. WELL DATA	
Casing Diameter: inches Type: x PVC	:
Screen Diameter: inches Type: APVC	
Total Depth of Well: 67-56 eet From: Top of Well Casing (TOC) Top of Protective Casing	
Depth to Static Water: 6 9 feet From: A Top of Well Casing (TOC) Top of Protective Casing	and the second s
Depth to Product: feet	Other:
Length of Water Column 25,67 feet Well Volume: 4-1 gal Screened Interval (from Note: 2-inch well = 0.	
3. PURGE DATA	3-1
☐ Bailer, Size: ☐ Bladder Pump 💆 2" Submersible Pump ☐ 4" Submersible Pump	
a centuraga rump a reinstante rump a other.	Equipment Model(s)
Materials: Rump/Baller ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned ☐ Disposable 1.	15/4/1)
Malerials: Rope (ubin)	
Was well purged dry? ☐ Yes 🛪 No Pumping Rate 💇 083 gal/min 3.	
Time Cum. Gallons pH Temp Spec. ORP Dissolved Turbidity Other	Comments
1236 (2.0)	7 -
12390.75 8.00 1853 1091 3.4 9.27 -	
1242 0.50 7.80 1861 1094 -65 1.68 - 62.	6 Cloan
1295 0.75 7.69 18.76 1092 -16.9 1.10 - 62.	17
1298 1.0 7.40 18.99 1092 -53.3 0.72	
1251 1.25 7.59 19.05 1093 - 57.2 0.65 - 67.1	6 -
1254 150 756 19.14 1094-670 0.46 - 1621	7
1257 1.75 7.56 19.14 1094 -70.7 0.44 - 62.19	1
4. SAMPLING, DATA 1.55 19.20 1094 - 76.9 0.39 - 62.12	Geochemical Analyses
Method(s): ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: ☐ 4" Submersible Pump	Ferrous Iron: mg/L
Materials: Pump/Bailer ♀ Stainless □ PVC □ Teflon® □ Other: □ Dedicated □ Prepared Off-Site ▶ Field Cleaned □ Disposable	DO mg/L
Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Dedicated Prepared Off-Site Field Cleaned Disposable	Nitrate: mg/L
Depth to Water at Time of Sampling: 62-17 Field Filtered? Yes Yes	Sulfate: mg/L
Sample ID: Mwill Sample Time: 1300 # of Containers: 14	
Duplicate Sample Collected? 🖸 Yes 🕱 No ID:	Alkalinity: mg/L
5. COMMENTS	
	· · · · · · · · · · · · · · · · · · ·
Note that the manual three parties and the same of MAGN	
Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet	-11

BROWN AND CALDWELL

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-14

1. PROJECT INFORT		NA		7/1	1/13		14.70			
Project Number: 12832 Client: 67 Senv		oer:_ <i>U\D</i> _		Date: 3/6 Personnel:	MALLE	abuloese	Time: (4° 26			
Project Location:	plobs, NM			Weather: 4)\$ 'f	Junely 10	tear			
2. WELL DATA										
Casing Diameter: Z		🦳	•		eel 🗆 Teflon®					
Total Depth of Well: 69.37 feet From: Top of Well Casing (TOC) Top of Protective Casing Other:										
Depth to Static Water: 62 60 feet From: Top of Well Casing (TOC) Top of Protective Casing Other:										
Depth to Product: Length of Water Column:	T	From: P To Well Volume:	" " \ _ A			erval (from GS):				
	-1-3 rect	vveir voidine		gai		ch well = 0.167 gal				
3. PURGE DATA	ze: 2 🔘 Bladde	erPump □ 2*	Submersible F	Pump □ 4".5	ubmersible Pun	np				
Purge Method: Centrifug	al Pump Peristal	tic Pump 🚨 In	nertial Lift Pum	Other:		<u>.</u>	Equipment Model(s)			
Materials: Pump/Bailer	Dedicated Prep	ared Off-Site	☐ Field Clear			1 	1-610			
	J Dedicated U Pre	pared On-Site	u Field Clea	ined Disp	osable	2				
Cum Gallons	Yes 🗆 No	Pumpin Spec.	g Rate:	gal/		3. Other:				
Removed	pH Temp	Cond.	ORP	Oxygen	Turbidity		Comments			
11-38 0-0				-1 C A			-0-			
 		1676	1544	1.07			gran slury			
11:50 6.1.1 6	90 17.98	1054	69.5	1.77						
										
4. SAMPLING DATA			<u></u>			Geoc	hemical Analyses			
Mothod(s):	7	•		p 🗆 4" Subm	nersible Pump	Ferro	ous Iron: mg/L			
Materials: Pump(Baile)	☐ Stainless ☐ PVC	☐ Teflon®	Other:	ned 🗴 Dispr		DO:	mg/L			
Materiale: Libina/Dane/	□ Polyethylene □ ! □ Dedicated □ Pre	., , ,	☐ Teflon®	Other:	posable	Nitra	te: mg/L			
Depth to Water at Time of S	Sampling:	- 		1/2	□ No	Sulfa	ite: mg/L			
Sample ID: MW 14	Sample Ti		21	# of Contain	ers:	Alkal				
Duplicate Sample Collected	? □ Yes @ X	NO ID:								
5. COMMENTS										
				- 100 - 1						
Note: Include comments such as we	ell condition, odor, pre	sence of NAPL	., or other item	s not on the fiel	d data sheet.	7	0-0			

FORM GW-1 (Rev 6/8/99 - wah)

Signature

B R O W N A N D C A L D W E L L

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-15

1. PROJECT INF	ORMATION			7			
	1832 Task Num	ber: 018		Date: 3	6/03		rime: 1525
Client: 65	Services,			Personnel:	MMATIF	abulvese	
Project Location:	ih	663, AT N		Weather:		J	
2. WELL DATA		7.14					
Casing Diameter:	Z inches	Type: 17(P)	/C ☐ Stainle		eel Diteflon@		
Screen Diameter:	Z inches	· · · · · · · · · · · · · · · · · · ·	/C ☐ Stainle				
Total Depth of Well:			op of Well Casi				her:
Depth to Static Water:		1	op of Well Casi				ther:
Depth to Product:			op of Well Cas				ther:
Length of Water Colum			.86			erval (from GS):	
						ch well = 0.16 gal/1	
3. PURGE DATA	n						
Purge Method: Ba	iler, Size: □ Bladd entrifugal Pump □ Perista	erPump □ 2' alticPump □ la	" Submersible f nertial Lift Pum	Pump □ 4" S p □ Other:	ubmersible Pur	mp 	Equipment Model(s)
Materials: Pump/Baile	Stainless PV	☐ Teflon®	Other:			\	1~/0/1
Materials: Rope/Jubin	□ Polyethylene □	Polypropylene	☐ Teflon® I	Other: NU		1. - 4.	1410
	Dedicated Pr	epared Off-Site	☐ Field Clea	aned 🔀 Distri	osable	2	
Was well purged dry?		,	ng Rate:		min	3	
Time Cum. Gallon Removed	pH Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
1527 00							
1880 0.5	7.46 18.67	1533	486	5.05	ر . ا		Clar
16334 1.0	7.36 18.71	1533	49:0	5.09	,		_
1536 1.5	7.27 18.7	1540	50.3	5.15		<u> </u>	
1538 2.0	7.23 185	1539	52.1	5./2		_	
1540 2.8	7.21 18.72	1517	54.3	5.08			
4. SAMPLING DA	ΔΤΔ					Const	hamical Analyses
Kof Bailer	7	ump 🗖 2" Su	ibmersible Pum	p 🖸 4" Subm	nersible Pump		hemical Analyses
	ltic Pump 🚨 Inertial Lift P	ump 🗆 Other	·	·		Ferro	us Iron: mg/L
Materials: Pump/Baile	ノ Li Dedicated Li Pre	pared Off-Site		ned & Dispo	1-00	DO:	mg/L
Materials: Tubing Rop	e Polyethylene Dedicated Pr	Polypropylene epared Off-Site	☐ Teflon® ☐ Field Cle	Other: No Disp	posable	Nitrat	e: mg/L
Depth to Water at Tim				d? 🗆 Yes	· /	Sulfat	te: mg/L
Sample ID. F · V	Sample I	ime: 154		# of Contain	iers:	Alkali	nity: mg/L
Duplicate Sample Col	ecieur Li Yes	, No ID:					
5. COMMENTS							
					- erraner la almentation		
Note: Include comments such	as well condition oder or	econce of NAD	I or other item	ie not on the fai	ld data sheet		
Note: modue comments such	, 45 мен санышап, одог, рг	esence of NAP	E, or other item	is not on the flet	u uata sneet.	Vacco +	1
FORM GW-1 (Rev 6/8/99	- wah)				Signature	WWW	<u>/</u>
	- ,				Signature		

BROWN AND CALDWELL

APPENDIX B

Laboratory Analytical Report



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Case Narrative for: Brown & Caldwell

Certificate of Analysis Number:

03021042

Report To:

Brown & Caldwell

Rick Rexroad 1415 Louisiana Suite 2509

Houston TX

77002-

ph: (713) 759-0999

fax: (713) 308-3886

Project Name:

BJ Hobbs/12832

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

The data in this report applies to the analysis of six water samples and a trip blank. These samples were received on March 7, 2003 and assigned analyses as designated on the chain-of-custody except as noted below.

SPL did not receive nitric acid-preserved bottles for hardness for samples MW-10, MW-14, and MW-15. Per Rick Rexroad of Brown & Caldwell, these analyses should not be assigned. Also, the bottle for DRO on sample MW-10 was not received. Therefore, this analysis could not be performed.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

A method blank and a Laboratory Control Sample (LCS) were included in each batch. The LCS recoveries were acceptable, and the target compounds were not detected in the blanks.

Any data flags or quality control exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Pat Lynch
Senior Project Manager

4/21/2003

Date



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03021042

Report To:

Fax To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana

Suite 2509 Houston

TX

77002-

ph: (713) 759-0999

fax: (713) 308-3886

Brown & Caldwell

Rick Rexroad

fax: (713) 308-3886

Project Name:

BJ Hobbs/12832

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

Client San	Client Sample ID		Matrix	Date Collected	Date Received	COCID	HOLD	
MW-5		03021042-01	Water	3/6/2003 3:59:00 PM	3/7/2003 10:00:00 AM	181713		
//W-10		03021042-02	Water	3/6/2003 2:57:00 PM	3/7/2003 10:00:00 AM	181713		
/W-10 /W-11A		03021042-03	Water	3/6/2003 2:17:00 PM	3/7/2003 10:00:00 AM	181713		
MW-12D		03021042-04	Water	3/6/2003 1:00:00 PM	3/7/2003 10:00:00 AM	181713		
MW-14		03021042-05	Water	3/6/2003 3:21:00 PM	3/7/2003 10:00:00 AM	181713		
1W-15 rip Blank 3/6/03		03021042-06	Water	3/6/2003 3:41:00 PM	3/7/2003 10:00:00 AM	181713		
rip Blank 3/6/03		03021042-07	Water	3/6/2003	3/7/2003 10:00:00 AM	181713		

enior Project Manager

4/21/2003

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-5	Collected: 03/06/2003 15:59	SPL Sample ID:	03021042-01

Client Sample ID	VIVV-5			Colle	ected: (3/06/2003 15	:59	SPL Sample I	D : 030	21042-01
				Site	: Hol	bbs, NM			· -	
Analyses/Method		Result		Rep.Limit		Dil. Factor C	UAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICA	ARBONATE				MCL	M232	0 B	Units: m	g/L	
Alkalinity, Bicarbona	ate	243		2		1		03/19/03 15:00	RA	1565187
ALKALINITY, CAR	BONATE				MCL	M232	0 B	Units: m	g/L	
Alkalinity, Carbonate	9	ND		2		1		03/19/03 15:00	T	1565201
CHLORIDE, TOTAL					MCL	E32	25.3	Units: m	a/L	
Chloride		116		2		2		03/19/03 11:00	RA	1565108
GASOLINE RANGI	ORGANICS				MCL	SW80	15B	Units: m	n/l	
Gasoline Range Org		ND		0.1		1		03/19/03 11:56		1562709
Surr: 1,4-Difluoro		99.0	%	74-121		1		03/19/03 11:56		1562709
Surr: 4-Bromofluc		79.0	%	55-150		1		03/19/03 11:56		1562709
HARDNESS, TOTA	I /TITRIMETRIC	· FDTA)			MCL	E13	30.2	Units: m	n/l	
Hardness (As CaCC		690		120	MOL	25	70.2	03/21/03 12:00		1568292
HEADSPACE GAS	ΔΝΔΙ ΥSIS				MCL	RSK	147	Units: m	n/l	
Ethane	AITALTOIO	ND		0.0025		1	171	03/17/03 12:27		1558987
Ethylene		ND		0.0032		1		03/17/03 12:27	ER	1558987
Methane		ND		0.0012		1		03/17/03 12:27	ER	1558987
ION CHROMATOG	RAPHY			10 10 VI WILL	MCL	E30	0.0	Units: m	a/L	
Fluoride		1.1		0.1		1		03/17/03 19:00	CV	1562629
Sulfate		110		4		20		03/17/03 21:19	CV	1562640
MERCURY, TOTAL					MCL	SW747	70A	Units: m	a/L	
Mercury		ND		0.0002		1		03/19/03 18:46		1564540
Prep Method	Prep Date			Prep Initials						
SW7470A	03/19/2003 14	4:00		MW						
METALS BY METH	OD 6010B. TOT	Δ1			MCL	SW601	IOB	Units: m	n/l	
Arsenic	02 00.02, 101	0.0125		0.005		1		03/20/03 21:56	NS	1567446
Lead		ND		0.005		1		03/20/03 21:56	NS	1567446
Selenium		ND		0.005		1		03/20/03 21:56	NS	1567446
Barium		0.15		0.005		1		03/20/03 12:29	EG	1565960
Cadmium		ND		0.005		1		03/20/03 12:29	EG	1565960
Calcium		288		0.1		1		03/20/03 12:29	EG	1565960
Chromium		0.0174		0.01		1		03/20/03 12:29	EG	1565960
Magnesium		19.6		0.1		1		03/20/03 12:29	EG	1565960
Potassium		3.72		2		1		03/20/03 12:29	EG	1565960
Silver		ND		0.01		1		03/20/03 12:29	EG	1565960

0.5

Qualifiers:

Sodium

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

144

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

03/20/03 12:29 EG

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

1565960



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-5 03021042-01 Collected: 03/06/2003 15:59 SPL Sample ID:

Site:	Hobbs.	NM.

				Site	Hol	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
Prep Method	Prep Date			Prep Initials					
SW3010A	03/13/2003 8:0	0		MW					
NITRATE NITROGEN	(AS N), TOTAL				MCL	E353.2	Units: m	g/L	
Nitrogen, Nitrate (As N)		2.75		0.1		1	03/07/03 17:31	CV	155289
PURGEABLE AROMA	ATICS		-		MCL	SW8021B	Units: ug	3/L	
Benzene		ND		1		1	03/19/03 11:56	D_R	156257
Ethylbenzene		ND		1		1	03/19/03 11:56	D_R	156257
Toluene		ND		1		1	03/19/03 11:56	D_R	156257
Xylenes, Total		ND		1		1	03/19/03 11:56	D_R	156257
Surr: 4-Bromofluorol	benzene	97.9	%	56-158		1	03/19/03 11:56	D_R	1562571
Surr: 1,4-Difluorober	nzene	103	%	46-160		1	03/19/03 11:56	D_R	1562571

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-10 Collected: 03/06/2003 14:57 03021042-02 SPL Sample ID:

Site:	Hobbs,	NM
-------	--------	----

			Site	e: Hot	obs, NM				
Analyses/Method	Result		Rep.Limit		Dil. Factor QU	AL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320	В	Units: m	g/L	
Alkalinity, Bicarbonate	273		2		1		03/19/03 15:00	RA	1565189
ALKALINITY, CARBONATE			1275	MCL	M2320	В	Units: m	g/L	
Alkalinity, Carbonate	ND		2		1		03/19/03 15:00		1565203
CHLORIDE, TOTAL			-	MCL	E325.	.3	Units: mg/L		
Chloride	363		5		5		03/19/03 11:00	RA	1565111
GASOLINE RANGE ORGANICS				MCL	SW8015	В	Units: m	g/L	
Gasoline Range Organics	ND		0.1		1		03/19/03 12:21	D_R	1562710
Surr: 1,4-Difluorobenzene	112	%	74-121		1		03/19/03 12:21	D_R	1562710
Surr: 4-Bromofluorobenzene	96.3	%	55-150		1		03/19/03 12:21	D_R	1562710
HEADSPACE GAS ANALYSIS				MCL	RSK14	17	Units: m	g/L	
Ethane	ND		0.0025		1		03/17/03 13:22	ER	1558989
Ethylene	ND		0.0032		1		03/17/03 13:22	ER	1558989
Methane	0.0031		0.0012		1		03/17/03 13:22	ER	1558989
ION CHROMATOGRAPHY			_	MCL	E300	.0	Units: m	g/L	
Fluoride	1.6		0.1		1		03/17/03 19:38	CV	1562632
Sulfate	270		10		50		03/17/03 21:57	CV	1562643
NITRATE NITROGEN (AS N), TO	ΓAL			MCL	E353.	.2	Units: m	g/L	
Nitrogen, Nitrate (As N)	ND		0.1		1		03/07/03 17:31	CV	1552894
PURGEABLE AROMATICS				MCL	SW8021	В	Units: ug	g/L	
Benzene	ND		1		1		03/19/03 12:21	D_R	1562572
Ethylbenzene	18		1		1		03/19/03 12:21	D_R	1562572
Toluene	ND		1		1		03/19/03 12:21	D_R	1562572
Xylenes,Total	ND		1		1		03/19/03 12:21	D_R	1562572
Surr: 4-Bromofluorobenzene	103	%	56-158		1		03/19/03 12:21	D_R	1562572
Surr: 1,4-Difluorobenzene	105	%	46-160		1		03/19/03 12:21	D_R	1562572

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-11A Collected: 03/06/2003 14:17 SPL Sample ID: 03021042-03

						<u> </u>		
			Site	: Hol	obs, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARE	ONATE			MCL	M2320 B	Units: m	g/L	
Alkalinity, Bicarbonate	401		2		1	03/19/03 15:00	RA	1565190
ALKALINITY, CARBO	NATE			MCL	M2320 B	Units: m	g/L	
Alkalinity, Carbonate	ND		2		1	03/19/03 15:00	RA	1565204
CHLORIDE, TOTAL			=	MCL	E325.3	Units: m	g/L	
Chloride	2900		50		50	03/19/03 11:00	RA	1565112
DIESEL RANGE ORGA	ANICS			MCL	SW8015B	Units: m	g/L	
Diesel Range Organics	ND		1		1	03/21/03 22:18	ER	1571634
Surr: n-Pentacosane	76.2	%	18-120		1	03/21/03 22:18	ER	1571634
Prep Method	Prep Date		Prep Initials					
SW3510C	03/08/2003 16:25		KL					
GASOLINE RANGE O	RGANICS			MCL	SW8015B	Units: m	q/L	
Gasoline Range Organic			0.1		1	03/19/03 12:46		1562711
Surr: 1,4-Difluoroben:	zene 112	%	74-121		1	03/19/03 12:46	D_R	1562711
Surr: 4-Bromofluorob	enzene 83.7	%	55-150		1	03/19/03 12:46	D_R	156271
HARDNESS, TOTAL (TITRIMETRIC, EDTA)			MCL	E130.2	Units: m	g/L	
Hardness (As CaCO3)	1500		120		25	03/21/03 12:00	CV	1568295
HEADSPACE GAS AN	ALYSIS			MCL	RSK147	Units: m	g/L	
Ethane	ND		0.0025		1	03/17/03 13:41	ER	1558992
Ethylene	ND		0.0032		1	03/17/03 13:41	ER	1558992
Methane	0.0044		0.0012		1	03/17/03 13:41	ER	1558992
ION CHROMATOGRA	PHY			MCL	E300.0	Units: m	g/L	
Fluoride	4.1		0.5		5	03/17/03 23:00	CV	1562648
Sulfate	290		10		50	03/17/03 22:09	CV	1562644
MERCURY, TOTAL	17-17-1			MCL	SW7470A	Units: m	g/L	
Mercury	ND		0.0002		1	03/19/03 18:48	MW	156454
Prep Method	Prep Date		Prep Initials					
SW7470A	03/19/2003 14:00		MW					
METALS BY METHOD	6010B, TOTAL			MCL	SW6010B	Units: m	g/L	
Arsenic	0.0387		0.005		1	03/20/03 22:01	NS	1567447
Lead	ND	-	0.005		1	03/20/03 22:01	NS	156744
Selenium	ND		0.005	-	1	03/20/03 22:01	NS	156744
Barium	0.297		0.005		1	03/20/03 12:36	EG	156596
Cadmium	ND		0.005		1	03/20/03 12:36	EG	156596
Calcium	470		0.1		1	03/20/03 12:36	EG	156596

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

THE HIR COLUMN THE THE THE THE THE TAX AND

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE

HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-11A

Collected: 03/06/2003 14:17

SPL Sample ID:

03021042-03

		Site:	Hobbs, NM			
Analyses/Method	Result	Rep.Limit	Dil. Factor QUAI	Date Analyzed	Analyst	Seq. #
Chromium	0.0168	0.01	1	03/20/03 12:36	EG	1565961
Magnesium	160	0.1	1	03/20/03 12:36	EG	1565961
Potassium	39.4	2	1	03/20/03 12:36	EG	1565961
Silver	ND	0.01	1	03/20/03 12:36	EG	1565961
Sodium	1550	5	10	03/20/03 12:44	EG	1565962

Prep Method	Prep Date	Prep Initials
SW3010A	03/13/2003 8:00	MW

TRATE NITROGEN (AS N), TOTAL			MCL	E353.2 Units: mg/L				
Nitrogen,Nitrate (As N)	ND		0.1		1	03/07/03 17:31	CV	1552895
POLYNUCLEAR AROMATIC HY	DROCARBO	ONS		MCL	SW8310	Units: uç	g/L	
Acenaphthene	ND		0.1		1	03/19/03 2:52	DL	1561994
Acenaphthylene	ND		0.1		1	03/19/03 2:52	DL	1561994
Anthracene	ND		0.1		1	03/19/03 2:52	DL	1561994
Benz(a)anthracene	ND		0.1		1	03/19/03 2:52	DL	1561994
Benzo(a)pyrene	ND		0.1		1	03/19/03 2:52	DL	1561994
Benzo(b)fluoranthene	ND		0.1		1	03/19/03 2:52	DL	1561994
Benzo(g,h,i)perylene	ND		0.1		1	03/19/03 2:52	DL	1561994
Benzo(k)fluoranthene	ND		0.1		1	03/19/03 2:52	DL	1561994
Chrysene	ND		0.1		1	03/19/03 2:52	DL	1561994
Dibenzo(a,h)anthracene	ND		0.1		1	03/19/03 2:52	DL	1561994
Fluoranthene	ND		0.1		1	03/19/03 2:52	DL	1561994
Fluorene	ND		0.1		1	03/19/03 2:52	DL	1561994
Indeno(1,2,3-cd)pyrene	ND		0.1		1	03/19/03 2:52	DL	1561994
Naphthalene	ND		0.1		1	03/19/03 2:52	DL	1561994
Phenanthrene	ND		0.1		1	03/19/03 2:52	DL	1561994
Pyrene	ND		0.1		1	03/19/03 2:52	DL	1561994
Surr: 1-Fluoronaphthalene	55.1	%	30-130		1	03/19/03 2:52	DL	1561994
Surr: Phenanthrene-d10	68.1	%	33-130		1	03/19/03 2:52	DL	1561994

Prep Method	<u>Prep Date</u>	Prep Initials	
SW3510C	03/08/2003 16:41	KL	

PURGEABLE AROMATICS				MCL	SW8021B	Units: ug	ı/L	
Benzene	3.2		1		1	03/19/03 12:46	D_R	1562573
Ethylbenzene	ND		1		1	03/19/03 12:46	D_R	1562573
Toluene	ND		1		1	03/19/03 12:46	D_R	1562573
Xylenes,Total	ND		1		1	03/19/03 12:46	D_R	1562573
Surr: 4-Bromofluorobenzene	99.9	%	56-158		1	03/19/03 12:46	D_R	1562573
Surr: 1,4-Difluorobenzene	107	%	46-160		1	03/19/03 12:46	D_R	1562573

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

						(713) 000-0901		
Client Sample ID MV	V-12D		Colle	cted: 0	03/06/2003 13:00	SPL Sample I) : 0302	21042-04
			Site	: Hol	obs, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICAR	BONATE			MCL	M2320 B	Units: mg	g/L	
Alkalinity, Bicarbonate	241		2		1	03/19/03 15:00	RA	1565191
ALKALINITY, CARBO	ONATE			MCL	M2320 B	Units: mg	a/L	
Alkalinity, Carbonate	ND		2		1	03/19/03 15:00		156520
CHLORIDE, TOTAL			The Part of Time of Asia	MCL	E325.3	Units: mg	a/L	
Chloride	102		2		2		RA	156511
DIESEL RANGE ORG	BANICS			MCL	SW8015B	Units: mg	n/L	
Diesel Range Organic			1		1	03/21/03 22:56	ER	157163
Surr: n-Pentacosan	** /	%	18-120		1	03/21/03 22:56	ER	157163
Prop Mothod	Prep Date		Prep Initials					
Prep Method	03/08/2003 16:25		riep initiais					
CACOLINE DANCE				MCL	SW8015B	lleite. m		
Gasoline Range Organ			0.1	MCL	1	Units: mg		156271
Surr: 1,4-Difluorober	10-	%	74-121		<u>'</u>	03/19/03 13:12		156271
Surr: 4-Bromofluoro			55-150	-	<u>'</u> 1	03/19/03 13:12		156271
HADDNESS TOTAL	/TITDIMETRIC FOTA			MCL	E130.2	Uniterm	-/1	
Hardness (As CaCO3)	(TITRIMETRIC, EDTA)	25	WICL	5	Units: mg		156829
HEADSPACE GAS A	NALVCIC			MCL	RSK147	Uniterm	~/!	
Ethane	ND		0.0025	MCL	1	Units: mg	ER	155899
Ethylene	ND		0.0023		<u>_</u>	03/17/03 13:55	ER	155899
Methane	0.0038		0.0012		1	03/17/03 13:55	ER	155899
ION CHROMATOGRA	ADUV			MCI	E200.0	Units: mg		
Fluoride	1.2		0.1	MCL	E300.0	03/17/03 20:03	CV	156263
Sulfate	170		4		20	03/17/03 22:22	CV	156264
MEDOLIDY TOTAL				1101	01474704	11-34		
MERCURY, TOTAL Mercury	ND		0.0002	MCL	SW7470A	Units: mg	g/L MW	156454
Wichouty			0.0002			00/10/00 10:01	10101	100404
Prep Method	Prep Date		Prep Initials					
SW7470A	03/19/2003 14:00		MW					
METALS BY METHO	D 6010B, TOTAL			MCL	SW6010B	Units: m	g/L	
Arsenic	0.0491		0.005		1	03/20/03 22:07	NS	156744
Lead	ND		0.005		1	03/20/03 22:07	NS	156744
Selenium	ND		0.005		1	03/20/03 22:07	NS	156744
Barium	0.1		0.005		1	03/20/03 12:52	EG	156596
Cadmium	ND		0.005		1	03/20/03 12:52	EG	156596
Calcium	135		0.1		1	03/20/03 12:52	EG	156596
		_						

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-12D

Collected: 03/06/2003 13:00

SPL Sample ID:

03021042-04

	Site:	: Н	obt	os. I	N٨	V
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Amalyse as (Marth and	Result	Rep.Limit	Dil Factor Ollal	Data Analyzad	Analyst	Con #
Analyses/Method	nesuit	пер.шпп	Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
Chromium	0.01	0.01	1	03/20/03 12:52	EG	1565963
Magnesium	6.74	0.1	1	03/20/03 12:52	EG	1565963
Potassium	55.6	2	1	03/20/03 12:52	EG	1565963
Silver	ND	0.01	1	03/20/03 12:52	EG	1565963
Sodium	68.8	0.5	1	03/20/03 12:52	EG	1565963

Prep Method	Prep Date	Prep Initials
SW3010A	03/13/2003 8:00	MW
	03/13/2003 8:00	

ITRATE NITROGEN (AS N), TOTAL				MCL	E353.2	E353.2 Units: mg/L		
Nitrogen, Nitrate (As N)	0.705 0.1 1 03/07/03 1		03/07/03 17:31	CV	1552896			
POLYNUCLEAR AROMATIC	HYDROCARB	ONS		MCL	SW8310	Units: uç]/L	
Acenaphthene	ND		0.1		1	03/19/03 3:29	DL	1561995
Acenaphthylene	ND		0.1		1	03/19/03 3:29	DL	1561995
Anthracene	ND		0.1		1	03/19/03 3:29	DL	1561995
Benz(a)anthracene	ND		0.1	-	1	03/19/03 3:29	DL	1561995
Benzo(a)pyrene	ND		0.1		1	03/19/03 3:29	DL	1561995
Benzo(b)fluoranthene	ND		0.1		1	03/19/03 3:29	DL	1561995
Benzo(g,h,i)perylene	ND		0.1		1	03/19/03 3:29	DL	1561995
Benzo(k)fluoranthene	ND		0.1		1	03/19/03 3:29	DL	1561995
Chrysene	ND		0.1		1	03/19/03 3:29	DL	1561995
Dibenzo(a,h)anthracene	ND		0.1		1	03/19/03 3:29	DL	1561995
Fluoranthene	ND		0.1		1	03/19/03 3:29	DL	1561995
Fluorene	ND		0.1		1	03/19/03 3:29	DL	1561995
Indeno(1,2,3-cd)pyrene	ND		0.1		1	03/19/03 3:29	DL	1561995
Naphthalene	ND		0.1		1	03/19/03 3:29	DL	1561995
Phenanthrene	ND		0.1		1	03/19/03 3:29	DL	1561995
Pyrene	ND		0.1		1	03/19/03 3:29	DL	1561995
Surr: 1-Fluoronaphthalene	48.3	%	30-130		1	03/19/03 3:29	DL	1561995
Surr: Phenanthrene-d10	63.6	%	33-130		1	03/19/03 3:29	DL	1561995

Prep Method	Prep Date	Prep Initials
SW3510C	03/08/2003 16:41	KL

PURGEABLE AROMATICS				MCL	SW8021B	Units: ug	g/L	
Benzene	ND		1		1	03/19/03 13:12	D_R	1562713
Ethylbenzene	ND		1		1	03/19/03 13:12	D_R	1562713
Toluene	ND		1		1	03/19/03 13:12	D_R	1562713
Xylenes,Total	ND		1		1	03/19/03 13:12	D_R	1562713
Surr: 4-Bromofluorobenzene	97.5	%	56-158		1	03/19/03 13:12	D_R	1562713
Surr: 1,4-Difluorobenzene	103	%	46-160		1	03/19/03 13:12	D_R	1562713

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-14 Collected: 03/06/2003 15:21 SPL Sample ID: 03021042-05

SILE. MUDDS, NW	Site:	Hobbs.	NM
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		OII.	- 1101	505, INVI		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed A	nalyst Seq. #
ALKALINITY, BICARBONATE		W. B. W. L. S.	MCL	M2320 B Units: mg/L		_
Alkalinity, Bicarbonate	373	2		1	03/19/03 15:00 R	A 1565192
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/l	_
Alkalinity, Carbonate	3.03	2		1	03/19/03 15:00 R	A 1565206
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/l	
Chloride	163	2		2	03/19/03 11:00 R	A 1565114
ION CHROMATOGRAPHY		74	MCL	E300.0	Units: mg/l	-
Fluoride	2.3	0.1		1	03/17/03 20:16 C	V 1562635
Sulfate	150	4		20	03/17/03 22:34 C	V 1562646
NITRATE NITROGEN (AS N), TO	OTAL		MCL	E353.2	Units: mg/l	_
Nitrogen, Nitrate (As N)	5.82	0.1		1	03/07/03 17:31 C	V 1552897

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

舞打魔病之前,打脏,对肛门,不够性,生生,无人,我们以来打开了。""我们,这个人,一个人,我们就有一个人,这个人,我们也不是一个人,我们也不是一个人,我们也不是



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-15

Nitrogen, Nitrate (As N)

Collected: 03/06/2003 15:41

SPL Sample ID:

03/07/03 17:31

03021042-06

1552898

		Site	e: Hob	obs, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq. #
ALKALINITY, BICARBONATE			MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	231	2		1	03/19/03 15:00 RA	1565193
ALKALINITY, CARBONATE			MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2		1	03/19/03 15:00 RA	1565207
CHLORIDE, TOTAL	,		MCL	E325.3	Units: mg/L	
Chloride	272	5		5	03/19/03 11:00 RA	1565115
ION CHROMATOGRAPHY		, , , , , , , , , , , , , , , , , , , ,	MCL	E300.0	Units: mg/L	
Fluoride	0.91	0.1		1	03/17/03 20:28 CV	1562636
Sulfate	150	4		20	03/17/03 22:47 CV	1562647
NITRATE NITROGEN (AS N), TO	TAL		MCL	E353.2	Units: ma/L	

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID Trip Blank 3/6/03

Collected: 03/06/2003 0:00

SPL Sample ID:

03021042-07

Site:	Hobbs,	NM
OILC.	IIODDD3,	

Analyses/Method	Result	F	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS		MCL	SW8	021B	Units: ug/L				
Benzene	ND		1		1		03/19/03 16:07	D_R	1564346
Ethylbenzene	ND		1		1		03/19/03 16:07	D_R	1564346
Toluene	ND		1		1		03/19/03 16:07	D_R	1564346
Xylenes, Total	ND		1		1		03/19/03 16:07	D_R	1564346
Surr: 4-Bromofluorobenzene	97.1	%	56-158		1		03/19/03 16:07	D_R	1564346
Surr: 1,4-Difluorobenzene	104	%	46-160		1		03/19/03 16:07	D_R	1564346

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

Quality Control Documentation



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

BJ Hobbs/12832

RunID:

Diesel Range Organics

Method: SW8015B WorkOrder:

03021042

Lab Batch ID:

26207

Method Blank

HP_V_030321A-1571637

mg/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

Analysis Date:

03/22/2003 0:13

Analyst:

Units:

03021042-03B

MW-11A

reparation Date:

03/08/2003 16:25

ER Prep By: ΚL

Method SW3510C

03021042-04B

MW-12D

Analyte	Result	Rep Limit
Diesel Range Organics	ND	1.0
Surr: n-Pentacosane	64.0	18-120

Laboratory Control Sample (LCS)

RunID:

HP V 030321A-1571636

Units:

mg/L

Analysis Date:

03/21/2003 23:34

Analyst: ER

Preparation Date: 03/08/2003 16:25 Prep By: KL

Method SW3510C

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	1.49	60	21	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03030291-01

BunID:

HP_V_030321A-1571632

Units:

mg/L

Analysis Date:

03/21/2003 21:02

Analyst: ER

Preparation Date: 03/08/2003 16:25 Prep By: ΚĻ

Method SW3510C

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
iesel Range Organics	ND	5	3.93	73.3	5	4.32	81.1	10.1	39	13	130

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell

BJ Hobbs/12832

Headspace Gas Analysis

Method: **RSK147** WorkOrder:

03021042

Lab Batch ID:

R79993

lunID:

Analysis Date:

Method Blank VARC_030317A-1558971

03/17/2003 11:03

Units:

Analyst:

mg/L

ER

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03021042-01D

MW-5

03021042-02D

MW-10

03021042-03D

MW-11A

03021042-04D

MW-12D

Analyte	Result	Rep Limit
Ethane	ND	0.0025
Ethylene	ND	0.0032
Methane	ND	0.0012

Sample Duplicate

Original Sample:

03021042-04

VARC_030317A-1558994

Units:

mg/L

Analysis Date:

RunID:

03/17/2003 13:55

Analyst:

ER

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Butane	ND	ND	0	50
Ethane	ND	ND	0	50
Ethylene	ND	ND	0	50
Isobutane	ND	ND	0	50
Methane	0.0038	0.00313	20	50
Propane	ND	ND	0	50
Propylene	ND	ND	0	50

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

the percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Hobbs/12832

nalysis:

Purgeable Aromatics

Method: SW8021B WorkOrder:

03021042

Lab Batch ID:

R80151

Method Blank

RunID: Analysis Date:

HP_U_030319A-1562565

03/19/2003 4:52

Units:

Analyst:

ug/L D_R

Lab Sample ID 03021042-01A

Samples in Analytical Batch:

Client Sample ID

03021042-02A

MW-5

03021042-03A

MW-10 MW-11A

03021042-04A

MW-12D

03021042-07A

Trip Blank 3/6/03

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes, Total	ND	1.0
Surr: 1,4-Difluorobenzene	102.4	46-160
Surr: 4-Bromofluorobenzene	97.8	56-158

Laboratory Control Sample (LCS)

RunID:

HP_U_030319A-1562564

Units:

ug/L

Analysis Date:

03/19/2003 4:01

Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	48.2	96	70	130
Ethylbenzene	50	47.6	95	70	130
Toluene	50	48.2	96	70	130
Xylenes,Total	150	144.1	96	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03030421-01

RunID:

HP_U_030319A-1564347

Units:

ug/L

Analysis Date:

03/19/2003 16:58

Analyst:

D_R

Ai	nalyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene		ND	20	17.7	88.5	20	17.4	87.0	1.75	21	32	164
thylbenzene		ND	20	17.4	85.8	20	17.1	84.3	1.78	19	52	142
Toluene		ND		17.8	88.6	20	17.4	86.4	2.46	20	38	159
Xylenes,Total		ND	60	53.7	88.8	60	52.8	87.3	1.70	18	53	144

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Hobbs/12832

nalysis:

Gasoline Range Organics

Method:

Analysis Date:

RuniD:

SW8015B

WorkOrder:

03021042

Lab Batch ID:

R80156

Method Blank

Units:

HP_U_030319C-1562708

mg/L

Lab Sample ID

Client Sample ID

03/19/2003 4:52

Analyst: D_R

03021042-01A

Samples in Analytical Batch:

MW-5

03021042-02A 03021042-03A MW-10

MW-11A

03021042-04A

MW-12D

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	99.0	74-121
Surr: 4-Bromofluorobenzene	78.3	55-150

Laboratory Control Sample (LCS)

RunID:

HP_U_030319C-1562707

Units:

mg/L

Analysis Date:

03/19/2003 4:26

Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.933	93	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03030421-02

RunID:

HP_U_030319C-1564422

mg/L

Analysis Date:

03/19/2003 17:49

D_R Analyst:

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
asoline Range Organics	ND	0.9	0.746	82.8	0.9	0.891	99.0	17.8	36	36	160

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and punding the reported RPD may differ from the distribution. bunding, the reported RPD may differ from the displayed RPD values but is correct as reported.



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell BJ Hobbs/12832

Polynuclear Aromatic Hydrocarbons

SW8310 Method:

WorkOrder:

03021042

Lab Batch ID:

26211

Method Blank

RunID:

2_030318A-1561985

Units:

Prep By:

ug/L

KL

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

Analysis Date:

reparation Date:

03/18/2003 19:34 03/08/2003 16:41

Surr: Phenanthrene-d10

Analyst: DL

Method SW3510C

03021042-03F 03021042-04F

MW-11A MW-12D

Result Rep Limit Analyte ND 0.10 Acenaphthene ND 0.10 Acenaphthylene Anthracene ND 0.10 Benz(a)anthracene ND 0.10 ND 0.10 Benzo(a)pyrene ND 0.10 Benzo(b)fluoranthene Benzo(g,h,i)perylene ND 0.10 Benzo(k)fluoranthene ND 0.10 Chrysene ND 0.10 0.10 ND Dibenzo(a,h)anthracene Fluoranthene ND 0.10 Fluorene ND 0.10 Indeno(1,2,3-cd)pyrene ND 0.10 Naphthalene ND 0.10 Phenanthrene ND 0.10 ND 0.10 Surr: 1-Fluoronaphthalene 49.5 30-130

Laboratory Control Sample (LCS)

33-130

RunID:

2_030318A-1561986

60.0

Units:

ug/L

Analysis Date:

03/18/2003 20:11

DL

Preparation Date: 03/08/2003 16:41 Analyst:

Prep By: KL Method SW3510C

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Acenaphthene	0.5	0.253	51	44	125
Acenaphthylene	0.5	0.245	49	42	122
Anthracene	0.5	0.211	42	41	126
Benz(a)anthracene	0.5	0.313	63	56	119
Benzo(a)pyrene	0.5	0.282	56	55	125
Benzo(b)fluoranthene	0.5	0.327	65	56	127
Benzo(g,h,i)perylene	0.5	0.321	64	49	125
Benzo(k)fluoranthene	0.5	0.324	65	54	125
Chrysene	0.5	0.32	64	50	144
Dibenzo(a,h)anthracene	0.5	0.359	72	52	130
Fluoranthene	0.5	0.277	55	49	126
Fluorene	0.5	0.251	50	44	130
Indeno(1,2,3-cd)pyrene	0.5	0.343	69	51	130

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell BJ Hobbs/12832

Method:

Polynuclear Aromatic Hydrocarbons

SW8310

WorkOrder:

03021042

Lab Batch ID:

26211

Laboratory Control Sample (LCS)

RunID:

2_030318A-1561986

Units:

ug/L

Analysis Date: Preparation Date:

03/18/2003 20:11 03/08/2003 16:41

DL Analyst:

Prep By: KL

Method SW3510C

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Naphthalene	0.5	0.258	52	50	130
Phenanthrene	0.5	0.276	55	47	128
Pyrene	0.5	0.328	66	55	137

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03030242-10

RunID:

2_030318A-1561987

Units:

ug/L Analyst: DL

Analysis Date: 03/18/2003 20:47

Preparation Date: 03/08/2003 16:41

Prep By: KL

Method SW3510C

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Acenaphthene	ND	0.5	0.0781	15.6 *	0.5	0.098	19.6 *	22.6	30	44	125
cenaphthylene	ND	0.5	0.0775	15.5 *	0.5	0.0921	18.4 *	17.1	30	42	122
Anthracene	ND	0.5	0.101	20.2 *	0.5	0.096	19.2 *	4.91	30	41	126
Benz(a)anthracene	ND	0.5	0.166	32.1 *	0.5	0.134	25.7 *	22.3	30	56	119
enzo(a)pyrene	ND	0.5	0.138	27.6 *	0.5	0.101	20.2 *	30.9 *	30	55	125
Senzo(b)fluoranthene	ND	0.5	0.151	30.3 *	0.5	0.113	22.5 *	29.4	30	56	127
Benzo(g,h,i)perylene	ND	0.5	0.12	24.1 *	0.5	0.0788	15.8 *	41.7 *	30	49	125
enzo(k)fluoranthene	ND	0.5	0.146	29.2 *	0.5	0.108	21.6 *	30.0 *	30	54	125
hrysene	ND	0.5	0.169	33.7 *	0.5	0.135	26.9 *	22.5	30	50	144
Dibenzo(a,h)anthracene	ND	0.5	0.144	28.8 *	0.5	0.0931	18.6 *	42.8 *	30	52	130
uoranthene	ND	0.5	0.153	27.7 *	0.5	0.13	23.0 *	18.4	30	49	126
uorene	ND	0.5	0.0975	16.5 *	0.5	0.115	20.0 *	18.9	30	44	130
Indeno(1,2,3-cd)pyrene	ND	0.5	0.13	26.0 *	0.5	0.0856	17.1 *	41.2 *	30	51	130
aphthalene	ND	0.5	0.0873	12.0 *	0.5	0.108	16.1 *	29.1	30	50	111
henanthrene	ND	0.5	0.128	22.7 *	0.5	0.124	21.8 *	3.92	30	47	128
Pyrene	ND	0.5	0.183	36.6 *	0.5	0.152	30.5 *	18.3	30	55	137

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

BJ Hobbs/12832

Method:

unID:

Metals by Method 6010B, Total

SW6010B

WorkOrder:

03021042

Lab Batch ID:

26335

Method Blank

TJA_030319C-1565954

Units:

ma/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

Analysis Date:

03/20/2003 11:51

Analyst:

EG

03021042-01E

MW-5

reparation Date:

03/13/2003 8:00

Prep By:

03021042-03E MW Method SW3010A

MW-11A

03021042-04E

MW-12D

Analyte	Result	Rep Limit
Barium	ND	0.005
Cadmium	ND	0.005
Calcium	ND	0.1
Chromium	ND	0.01
Magnesium	ND	0.1
Potassium	ND	2
Silver	ND	0.01
Sodium	ND	0.5

Laboratory Control Sample (LCS)

RunID:

TJA 030319C-1565955

Units:

mg/L Analyst: EG

Analysis Date:

03/20/2003 11:56

Preparation Date:

03/13/2003 8:00

Prep By: MW Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Barium	1	0.9993	100	80	120
Cadmium	1	1.078	108	80	120
Calcium	1	1.159	116	80	120
Chromium	1	1.05	105	80	120
Magnesium	1	1.073	107	80	120
Potassium	10	9.687	97	80	120
Silver	1	1.042	104	80	120
Sodium	1	1.076	108	80	120

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked:

03030442-01

unID:

TJA_030319C-1565957

Units:

mg/L EG

alysis Date: Preparation Date:

03/20/2003 12:10 03/13/2003 8:00

Analyst: Prep By:

Method

Analyte	Sample Result	PDS Spike Added	PDS Result	PDS % Recovery	PDSD Spike Added	PDSD Result	PDSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
arium	0.173	10	9.77	95.97	10	9.589	94.15	1.913	20	75	125
Cadmium	ND	10	10.1	101.0	10	10.03	100.3	0.7423	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

BJ Hobbs/12832

nalysis: Method:	Metals by Method 6010B, Tota SW6010B	I					WorkOrde Lab Batch		21042 35		
alcium	65.9	10	75.07	91.68	10	74.15	82.50	10.54	20	75	125
hromium	ND	10	9.96	99.60	10	9.859	98.59	1.019	20	75	125
Magnesium	43.2	10	52.27	90.71	10	51.81	86.04	5.276	20	75	125
otassium	ND	100	91.05	91.05	100	91.72	91.72	0.7376	20	75	125
ilver	ND	10	9.75	97.22	10	9.604	95.76	1.517	20	75	125
Sodium	64	10	73.03	89.89	10	72.45	84.02	6.752	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

 $N/C - Not \ Calculated - Sample \ concentration \ is \ greater \ than \ 4 \ times \ the \ amount \ of \ spike \ added. \ Control \ limits \ do \ not \ apply.$

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell BJ Hobbs/12832

Analysis:

Metals by Method 6010B, Total

Method:

SW6010B

WorkOrder:

Samples in Analytical Batch:

03021042

Lab Batch ID:

26335C-T

Method Blank

RunID:

TJAT_030320B-1567440

Units:

mg/L

Lab Sample ID

Client Sample ID

nalysis Date:

03/20/2003 21:20

Analyst:

NS

03021042-01E

MW-5

reparation Date:

03/13/2003 8:00

Prep By:

MW Method SW3010A

03021042-03E

MW-11A

03021042-04E

MW-12D

Analyte	Result	Rep Limit
Arsenic	ND	0.005
Lead	ND	0.005
Selenium	ND	0.005

Laboratory Control Sample (LCS)

RunID:

TJAT_030320B-1567441

Units:

mg/L

Analysis Date:

Preparation Date:

03/20/2003 21:25

Analyst: NS

03/13/2003 8:00

Prep By: MW Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Arsenic	1	1.051	105	80	120
Lead	1	1.057	106	80	120
Selenium	1	1.091	109	80	120

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

ample Spiked:

03030442-01

RunID:

TJAT_030320B-1567443

Units:

mg/L

Analysis Date: reparation Date:

03/20/2003 21:38 03/13/2003 8:00

Analyst:

NS Prep By:

Method

Analyte	Sample Result	PDS Spike Added	PDS Result	PDS % Recovery	PDSD Spike Added	PDSD Result	PDSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Arsenic	ND	10	10.04	100.4	10	9.939	99.39	0.9803	20	75	125
ead	ND	10	9.908	99.08	10	9.817	98.17	0.9224	20	75	125
elenium	ND	10	9.907	99.07	10	9.837	98.37	0.7061	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Hobbs/12832

Method:

ใ RunID:

Mercury, Total

SW7470A

WorkOrder:

Samples in Analytical Batch:

03021042

Lab Batch ID:

26425

Method Blank

HGLC_030319B-1564519

Units:

mg/L

Lab Sample ID

Client Sample ID

Analysis Date:

reparation Date:

03/19/2003 17:59 03/19/2003 14:00 Analyst: Prep By:

MW Method SW7470A

03021042-01E 03021042-03E

MW-5

03021042-04E

MW-11A MW-12D

Analyte	Result	Rep Limit
Mercury	ND	0.0002

Laboratory Control Sample (LCS)

RunID:

Analysis Date:

HGLC_030319B-1564520

MW

03/19/2003 18:01

Units:

mg/L Analyst: MW

Preparation Date: 03/19/2003 14:00

Prep By: MW Method SW7470A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Mercury	0.002	0.00208	104	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03030434-01

RunID:

HGLC_030319B-1564522

Units:

mg/L

Analysis Date:

03/19/2003 18:05

MW Analyst:

Preparation Date:

03/19/2003 14:00

MW Method SW7470A Prep By:

F	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Mercury		ND	0.002	0.002003	100.2	0.002	0.001951	97.53	2.665	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

he percent recoveries for QC samples are correct as reported. Due to significant figures and punding, the reported RPD may differ from the displayed RPD values but is correct as reported.



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell BJ Hobbs/12832

Method:

RunID:

Analysis Date:

Nitrate Nitrogen (as N), Total

E353.2

WorkOrder:

Samples in Analytical Batch:

Lab Batch ID:

03021042

R79715

Method Blank

WET_030307ZG-1552886

mg/L

Lab Sample ID

Client Sample ID

03/07/2003 17:31

CV

03021042-01H 03021042-02C MW-5

MW-10

03021042-03C

MW-11A

03021042-04C 03021042-05G

MW-12D

MW-14

03021042-06G

MW-15

Analyte Result | Rep Limit Nitrogen, Nitrate (As N) ND 0.10

Units:

Analyst:

Laboratory Control Sample (LCS)

RunID:

WET_030307ZG-1552888

Units: mg/L

Analysis Date:

03/07/2003 17:31

CV Analyst:

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen, Nitrate (As N)	5	4.994	100	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03021042-01

RunID:

WET_030307ZG-1552892

Units:

mg/L

Analysis Date:

03/07/2003 17:31

CV Analyst:

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
trogen,Nitrate (As N)	2.751	5	7.379	92.56	5	7.361	92.20	0.3897	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

he percent recoveries for QC samples are correct as reported. Due to significant figures and bunding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Hobbs/12832

Analysis: Method:

Ion Chromatography

03/17/2003 17:57

E300.0

WorkOrder:

Samples in Analytical Batch:

03021042

Lab Batch ID:

R80155

Method Blank

RunID: malysis Date: IC1_030317A-1562624

Units: Analyst:

mg/L CV

Lab Sample ID 03021042-01H

Client Sample ID

03021042-02C

MW-5 MW-10

03021042-03C

03021042-04C

MW-11A

MW-12D

03021042-05G 03021042-06G MW-14 MW-15

Analyte Result Rep Limit Fluoride ND 0.10 Sulfate ND 0.20

Laboratory Control Sample (LCS)

RunID:

IC1 030317A-1562625

Units: mg/L

Analysis Date:

03/17/2003 18:09

Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Fluoride	10	9.89	99	80	120
Sulfate	10	9.65	96	80	

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03021042-01

RunID:

IC1_030317A-1562630

Units:

mg/L

Analysis Date:

03/17/2003 19:13

Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
uoride	1.14	10	9.58	84.4	10	10.1	90.1	0	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell

BJ Hobbs/12832

nalysis: Method:

unID:

Analysis Date:

Ion Chromatography

E300.0

WorkOrder:

03021042

Lab Batch ID:

R80155A

Method Blank

IC1_030317A-1562624

03/17/2003 17:57

Units: n

Analyst:

mg/L

CV

Lab Sample ID 03021042-01H

Samples in Analytical Batch:

Client Sample ID

03021042-02C

MW-5 MW-10

03021042-03C

MW-10 MW-11A

03021042-04C 03021042-05G MW-12D

 Analyte
 Result
 Rep Limit

 Fluoride
 ND
 0.10

 Sulfate
 ND
 0.20

03021042-05G

MW-14 MW-15

Laboratory Control Sample (LCS)

RunID:

IC1_030317A-1562625

Units: mg/L

Analysis Date:

03/17/2003 18:09

Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Fluoride	10	9.89	99	80	120
Sulfate	10	9.65	96	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03021042-01

RunID:

IC1_030317A-1562641

Units:

mg/L

Analysis Date:

03/17/2003 21:31

Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
ulfate	107	200	324	109	200	318	106	2.80	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

Chloride, Total

Method:

E325.3

BJ Hobbs/12832

WorkOrder:

03021042

Lab Batch ID:

R80248

Method Blank

HuniD: galysis Date:

Chloride

Analyte

WET_030319Q-1565105

03/19/2003 11:00

Analyte

Units: Analyst:

mg/L RA

Lab Sample ID 03021042-01H

Client Sample ID

03021042-02C

Samples in Analytical Batch:

MW-10 MW-11A

MW-5

03021042-03G 03021042-04G

MW-12D

03021042-05G

MW-14

ND 1.0

03021042-06G

MW-15

Upper

Limit

110

Laboratory Control Sample (LCS)

RunID:

Analysis Date:

WET_030319Q-1565107

Result | Rep Limit

Units: mg/L

03/19/2003 11:00

RA Analyst:

Analyte	Spike	Result	Percent
	Added		Recovery

Chloride 233 226.9 97

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

225.1

Sample Spiked:

Sample

Result

116.2

03021042-01

MS

Spike

Added

100

RunID:

WET_030319Q-1565109

Units:

mg/L RA

100

Analysis Date:

03/19/2003 11:00

Analyst:

108.9

MS MS % MSD MSD MSD % **RPD** RPD Low High Result Recovery Spike Result Recovery Limit | Limit Limit Added

108.9

0

20

85

115

225.1

Lower

Limit

90

Qualifiers:

loride

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

he percent recoveries for QC samples are correct as reported. Due to significant figures and bunding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Hobbs/12832

Alkalinity, Bicarbonate

Method:

M2320 B

WorkOrder:

03021042

Lab Batch ID:

R80253

RunID:

WET_030319T-1565184

Units:

mg/L RA

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

Analysis Date:

03/19/2003 15:00

Analyst:

03021042-01H 03021042-02C

MW-5

03021042-03C

MW-10

03021042-04H

MW-11A MW-12D

Result Rep Limit Analyte Alkalinity, Bicarbonate ND

Method Blank

03021042-05G 03021042-06G MW-14 MW-15

Laboratory Control Sample (LCS)

RunID:

WET_030319T-1565186

Units: mg/L

Analysis Date:

03/19/2003 15:00

Analyst:

RΑ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Bicarbonate	98.9	95.95	97	90	110

Sample Duplicate

Original Sample:

03021042-01

WET_030319T-1565187

Units:

mg/L RA

Analysis Date:

RunID:

03/19/2003 15:00

Analyst:

Sample DUP RPD RPD Analyte Result Result Limit 243 244.4 0 20 Alkalinity, Bicarbonate

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

BJ Hobbs/12832

nalysis: Method:

unID:

Alkalinity, Carbonate

M2320 B

WorkOrder:

03021042

Lab Batch ID:

R80254

Method Blank

WET_030319U-1565198

Units:

mg/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

Analysis Date:

03/19/2003 15:00

Analyst: RA 03021042-01H 03021042-02C

MW-5

MW-10

03021042-03C

MW-11A

03021042-04H

MW-12D

Analyte Result Rep Limit Alkalinity, Carbonate ND 2.0

03021042-05G 03021042-06G MW-14 MW-15

Laboratory Control Sample (LCS)

RunID:

WET_030319U-1565200

Units:

Analysis Date:

03/19/2003 15:00

mg/L RA Analyst:

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit	
Alkalinity, Carbonate	98.9	95.95	97	90	110	

Sample Duplicate

Original Sample:

03021042-01

RunID:

WET_030319U-1565201

Units:

mg/L

Analysis Date:

03/19/2003 15:00

RA Analyst:

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Alkalinity, Carbonate	ND	ND	0	20

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

he percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

BJ Hobbs/12832

unID:

Hardness, Total (Titrimetric, EDTA)

Method: E130.2 WorkOrder:

03021042

Samples in Analytical Batch:

Lab Batch ID:

R80388

Method Blank

mg/L

Lab Sample ID

Client Sample ID

Analysis Date: 03/21/2003 12:00

WET_030321I-1568289

Analyst: CV

Units:

03021042-01E

MW-5

03021042-03E

MW-11A

03021042-04E

MW-12D

Analyte	Result	Rep Limit
Hardness (As CaCO3)	ND	5.0

Laboratory Control Sample (LCS)

RuniD:

WET_030321I-1568291

Units:

mg/L

Analysis Date:

03/21/2003 12:00

Analyst:

CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Hardness (As CaCO3)	289	286	99	94	108

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03021042-01

RunID:

WET_030321I-1568293

Units:

mg/L

Analysis Date:

03/21/2003 12:00

Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Hardness (As CaCO3)	688		1940	100	1250	1940	100	0	20	81	111

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

he percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

Sample Receipt Checklist And Chain of Custody



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Sample Receipt Checklist

Workorder: 03021042 Date and Time Received: 3/7/2003 10:00:00 AM		Received Carrier n	-	B edEx	
Temperature: 3		Chilled b		ater Ice	
1. Shipping container/cooler in good condition?	Yes 🗹	No 🗌	Not Present		
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3. Custody seals intact on sample bottles?	Yes	No 🗌	Not Present	V	
4. Chain of custody present?	Yes 🗸	No 🗌			
5. Chain of custody signed when relinquished and receiv	ed? Yes 🗹	No 🗌			
6. Chain of custody agrees with sample labels? Did not receive containers for DRO analysis for sample !	Yes 🗌	No 🗹			
7. Samples in proper container/bottle? Did not receive nitric acid-preserved bottles for hardness samples MW-10, MW-14, & MW-15.	Yes for	No 🗹			
8. Sample containers intact?	Yes 🔽	No 🗌			
9. Sufficient sample volume for indicated test?	Yes 🗹	No 🗌			
0. All samples received within holding time?	Yes 🗹	No 🗌			
11. Container/Temp Blank temperature in compliance?	Yes 🗸	No 🗌			
2. Water - VOA vials have zero headspace?	Yes 🗹	No 🗌	Not Applicab	ole 🗌	
13. Water - pH acceptable upon receipt?	Yes 🔽	No 🗌	Not Applicat	ble 🗔	
SPL Representative: Lynch, Pat	Contact Date &	Time: 3/7/20	03 3:09:00 PM	Л	
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HOUSTON LABORATORY 8880 INTERCHANGE DRIVE

HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03021042

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1415 Louisiana

Suite 2509

Houston

TX

77002-

ph: (713) 759-0999

fax: (713) 308-3886

Project Name:

me: BJ Hobbs/12832

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

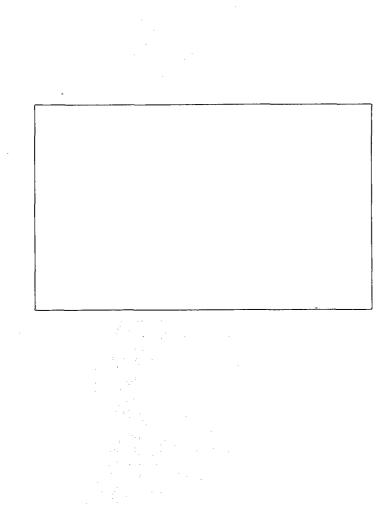
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BROWN AND CALDWELL

DECEMBER 2003 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY

BJ SERVICES COMPANY, U.S.A.

JULY 16, 2004

DECEMBER 2003 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY BJ SERVICES COMPANY, U.S.A.

Prepared for

BJ Services Company, U.S.A. 11211 FM 2920 Tomball, Texas 77375

BC Project Number: 12832.019

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July 16, 2004

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BROWN AND CALDWELL

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- C Oil & Gas Well Search
- D Historic Aerial Photographs
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BROWN AND CALDWELL

1.0 INTRODUCTION

Brown and Caldwell conducted a quarterly groundwater sampling event at the BJ Services Company, U.S.A. (BJ Services) facility located at 2708 West County Road in Hobbs, New Mexico on December 17-18, 2003. This report presents a description of the groundwater sampling field activities, a summary and evaluation of the analytical results, and an evaluation of remedial technologies applied at the facility. A groundwater potentiometric surface map and a hydrocarbon distribution map are included.

A layout of the facility is shown in Figure 1. The facility formerly operated an on-site fueling system. The New Mexico Oil Conservation Division (NMOCD) detected evidence of subsurface impact near the former diesel fueling system during an on-site inspection on February 7, 1991. The fueling system was taken out of operation in July 1995. The NMOCD has required a quarterly groundwater monitoring program to assess the concentration of hydrocarbon constituents in groundwater as a result of the diesel fuel release.

A biosparging system was activated in November 1995 and expanded in March/April 1997 and February/March 1998 to remediate soil and groundwater at the former fuel island area of the facility. The biosparging system was deactivated on November 1, 2000 after achieving cleanup goals for groundwater. The confirmation soil sampling program specified in the NMOCD-approved Remedial Action Plan (RAP) for the facility was conducted in July 2001. The results of the confirmation soil sampling program were presented to NMOCD in the report for the June 2001 groundwater sampling event. In accordance with the RAP for the facility, four additional groundwater sampling events were conducted following the confirmation soil sampling event. Hydrocarbon concentrations in groundwater samples from applicable monitor wells remained below the target concentrations specified in the RAP during each of these sampling events, so a request to decommission the biosparging system was submitted to NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report for the facility.

BJ Services removed three field waste tanks from the facility on March 6-7, 1997. The ongoing groundwater monitoring program was expanded to address both the former fuel island and the former field waste tanks areas of the facility, as directed by NMOCD in correspondence dated January 21, 1999.

Table 1 presents a site chronology detailing the history of investigations into and the remediation of hydrocarbon impacts to soil and groundwater in the areas of the former fueling system and the former field waste tanks at the facility, along with the history of investigations conducted by BJ Services regarding chloride impact to groundwater at and in the vicinity of its facility in Hobbs, New Mexico.

BROWN AND CALDWELL

2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled seven monitor wells (MW-5, MW-10, MW-11A, MW-12D, MW-14, MW-15, and MW-16) at the facility on December 18, 2003 to evaluate concentrations of dissolved-phase hydrocarbons and chloride in groundwater. The monitor well locations are shown in Figure 1. The following subsections describe the field activities conducted by Brown and Caldwell during the current groundwater sampling event and present the results from the associated groundwater analyses.

2.1 Groundwater Sampling Activities

Groundwater level measurements were obtained from all monitor wells at the facility prior to purging and sampling the wells listed above. Groundwater levels were measured to the nearest 0.01 foot with an electronic water-level indicator. Current and historical groundwater elevation data for each well are presented in Table 2. The groundwater elevation data presented in Table 2 indicate that groundwater levels have continued to decline in monitor wells at the facility since late 1995. A groundwater elevation map for December 17, 2003 is presented in Figure 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with hydraulic gradient ranging from 0.006 foot/foot (ft/ft) in the western portion of the facility to 0.010 ft/ft in the eastern portion of the groundwater monitoring area.

Monitor wells MW-12D and MW-16 were purged with a submersible pump and previously unused down-hole tubing. The remaining wells were purged with previously unused disposable bailers and clean, previously unused polyethylene rope. Three well volumes were purged from monitor wells MW-5 and MW-15. Monitor wells MW-10, MW-11A, and MW-14 were purged dry.

Low flow/low stress purging was performed prior to sampling of monitor wells MW-12D and MW-16 to maintain the water level at or near the static water level. Field parameter measurements for pH, specific conductivity, oxidation-reduction potential, dissolved oxygen, and temperature were collected during purging of these wells. Ferrous iron and dissolved oxygen concentrations

were measured in groundwater from monitor wells MW-5, MW-10, MW-11A and MW-12D upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix A and are summarized in Table 3.

Groundwater samples were obtained directly from the discharge line of the submersible pump or by pouring recovered water from a bailer into laboratory-prepared, clean glass or plastic containers, sealed with Teflon®-lined lids, labeled, and placed on ice in an insulated cooler for delivery to Southern Petroleum Laboratory in Houston, Texas for analysis using standard chain-of-custody procedures.

Field measurement equipment was decontaminated prior to and following each use. Decontamination procedures consisted of washing with distilled water and a non-phosphate detergent, then rinsing with distilled water. Purge and decontamination waters were discharged to an on-site water reclamation system at the BJ Services facility.

2.2 Results of Groundwater Analyses

Groundwater samples from monitor wells MW-14, MW-15, and MW-16 were analyzed for chloride content using Method E325.3. Table 4 presents current and cumulative results for chloride analyses performed on groundwater samples collected at the facility. The current chloride concentration in monitor well MW-14 remains less than the New Mexico Water Quality Control Commission (NMWQCC) chloride standard of 250 milligrams per liter (mg/L). The chloride concentrations in monitor wells MW-15 and MW-16 exceed the NMWQCC chloride standard.

Groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12D were analyzed for diesel- and gasoline-range total petroleum hydrocarbons (TPH-D and TPH-G) using EPA Method SW-8015B and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method SW-8021B. Current and cumulative analytical results for BTEX constituents, TPH-D, and TPH-G are presented in Table 5. Figure 3 presents a hydrocarbon distribution map for December

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18, 2003. All BTEX concentrations measured in groundwater during the current sampling event were less than applicable NMWQCC standards.

Analysis of groundwater from monitor wells MW-5, MW-10, MW-11A, and MW-12D for nitrate and sulfate (Method E300.0), dissolved methane (Method RSK 147), and alkalinity (Method E310.1) was performed to evaluate mechanisms for natural attenuation of hydrocarbons at the facility. Current and historical results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12, and MW-12D are presented in Table 6.

The laboratory analytical reports and chain-of-custody documentation for groundwater samples collected during the current sampling event are provided in Appendix B.

BROWN AND CALDWELL

3.0 EVALUATION OF REMEDIAL TECHNOLOGIES

Evaluations of remedial technologies applied at the former fueling system and former field waste tanks areas of the BJ Services facility in Hobbs, New Mexico are presented in Sections 3.1 and 3.2, respectively. Section 3.3 presents an evaluation of chloride impact to groundwater at and in the vicinity of the facility.

3.1 Biosparging System at the Former Fueling System Area

Brown and Caldwell recommended installation of a biosparging system at the former fueling system area of the facility in a Remedial Action Plan (RAP) submitted to the NMOCD in May 1994. The NMOCD approved the RAP on August 11, 1994. The biosparging system was installed in August 1995, with expansions completed in April 1997 and March 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in former fueling system area monitor wells. In accordance with the RAP, confirmation soil sampling activities were conducted at the former fueling system area in July 2001 to verify the effectiveness of the biosparging system in remediating vadose zone soils. The analytical results for these soil samples, as discussed in the report for the June 2001 groundwater sampling event, indicated that remediation goals for soil in this area had been achieved.

Following the confirmation soil sampling activities, hydrocarbon concentrations in groundwater remained below target cleanup goals for four successive quarters. In accordance with the RAP for the facility, a request to decommission the biosparging system was submitted to the NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report.

3.2 Natural Attenuation at the Former Field Waste Tanks Area

Natural attenuation is the primary remediation mechanism for the dissolved-phase hydrocarbon plume located in the area of the former field waste tanks (see Figure 1).

Plume behavior is the primary evidence of natural attenuation. Secondary evidence of natural attenuation can be obtained by collection and evaluation of data relating to the concentrations of indigenous electron acceptors such as dissolved oxygen, nitrate, sulfate, and carbon dioxide. A plume is shrinking when the rate of hydrocarbon loading from a source area is less than the rate of natural degradation of hydrocarbons. Plume shrinkage in the absence of aggressive remediation is indicative of the occurrence of natural attenuation processes. Conversely, a plume is expanding if the rate of hydrocarbon loading from a source area is greater than the rate of natural degradation of hydrocarbons through natural attenuation processes.

The former field waste tanks in the eastern portion of the facility were removed in March 1997. Concentrations of total BTEX in monitor wells in this area have been generally stable or declining subsequent to removal of these tanks. Sporadic increases in total BTEX concentrations between quarterly sampling events have been observed in monitor wells in this area since March 1997, however. These increases may be attributed to sporadic loading rates from the vadose zone in excess of the rate of natural attenuation in the area. The following subsections present primary and secondary evidence of natural attenuation of hydrocarbons in groundwater at the former field waste tanks area of the facility.

3.2.1 Primary Evidence

The benzene concentration in monitor well MW-10 has decreased from a maximum of 1.3 mg/L in August 1995 (prior to removal of the field waste tanks) to less than the NMWQCC standard of 0.01 mg/L for benzene in the 12 applicable groundwater sampling events from December 2000 to December 2003. Benzene has not been detected in monitor well MW-10 since September 2001, a span of eight consecutive quarterly groundwater sampling events. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-10 were non-detect during the current sampling event and have generally been non-detect since December 2000. Detectable concentrations of TPH-D in monitor well MW-10 have ranged from 0.3 mg/L to 3.4 mg/L. TPH-D concentrations in monitor well MW-10 have been less than 1 mg/L during the four most recent quarterly groundwater

sampling events. TPH-G has not been detected in monitor well MW-10 during the last 10 quarterly groundwater sampling events.

Benzene concentrations at the monitor well MW-11/11A location have generally decreased from a maximum of 0.970 mg/L in December 1996 (prior to removal of the field waste tanks). The current benzene concentration of 0.0034 mg/L in monitor well MW-11A is less than the NMWQCC standard for benzene. Benzene concentrations in MW-11A have been less than the NMWQCC standard for benzene during 10 of the 11 groundwater sampling events conducted from June 2001 through December 2003, including the last four consecutive quarterly groundwater sampling events. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-11A have been at low to typically non-detectable concentrations since March 1998. Detectable concentrations of TPH-D in monitor well MW-11A have ranged from 0.28 mg/L to 2.2 mg/L. TPH-G concentrations in monitor well MW-11A have been less than 1 mg/L in each of the last seven quarterly groundwater sampling events. TPH-G concentrations have been less than 1 mg/L throughout the monitoring history of well MW-11A.

Concentrations of each BTEX constituent at the monitor well MW-12/12D location have been below analytical detection limits for the past 11 sampling events. TPH-D has not been detected at this location since September 2002, and TPH-G has not been detected since June 2001.

3.2.2 Secondary Evidence

The following lines of geochemical evidence can also be used to suggest that intrinsic bioremediation (an important natural attenuation mechanism) of dissolved-phase hydrocarbons is occurring in the area of the former field waste tanks.

1. Dissolved oxygen may be utilized as an electron acceptor during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

Groundwater samples from monitor wells MW-5, MW-10 and MW-11A were collected using bailers during the current sampling event. The use of bailers may cause

groundwater samples to become oxygenated, thus precluding a meaningful comparison of dissolved oxygen data.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility when down-hole pumps were utilized has indicated that dissolved oxygen concentrations were typically depressed in hydrocarbon-impacted monitor wells relative to non-impacted wells at the facility (see the June 2001 Groundwater Sampling Report for BJ Services Hobbs, New Mexico Facility, for example).

2. Nitrate may be utilized as an electron acceptor during intrinsic bioremediation after dissolved oxygen is depleted. Therefore, nitrate concentrations may be depressed in areas where intrinsic bioremediation is occurring.

Nitrate was detected at a concentration of 2.5 mg/L in background monitor well MW-5 during the current sampling event. Although minimal to no hydrocarbon impact was detected at former field waste tanks area wells MW-10, MW-11A, and MW-12D during the current sampling event (see Table 5), nitrate was detected in monitor well MW-10 at a concentration of 0.28 mg/L; nitrate was not detected in monitor wells MW-11A or MW-12D. The depressed to non-detectable nitrate concentrations observed during the current sampling event at former field waste tanks area wells MW-10, MW-11A, and MW-12D relative to the background nitrate concentration at the facility are likely due to residual effects of hydrocarbons in these areas.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors may become active. Ferrous iron is the reduction product of ferric iron, a common electron acceptor. Therefore, ferrous iron concentrations should increase in areas where intrinsic bioremediation is occurring.

The elevated ferrous iron concentrations in monitor wells MW-10, MW-11A and MW-12D relative to background well MW-5 suggest that ferric iron has been used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area of the facility.

4. Microbes that utilize sulfate may become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through the use of sulfate as an electron acceptor.

During the current sampling event, sulfate concentrations in the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D ranged from 160 mg/L to 350 mg/L, whereas the sulfate concentration in background monitor well MW-5 was measured at 110 mg/L. The fact that sulfate concentrations in the former source area monitor wells are greater than the sulfate concentration in the background monitor well suggests that sulfate is not being utilized as an electron acceptor in the former field waste tanks area.

5. Methane is a reaction product generated during utilization of carbon dioxide as an electron acceptor, so its concentration may increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.

Dissolved methane was not detected in background monitor well MW-5 or in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D during the current groundwater sampling event. These data indicate that carbon dioxide is not presently being utilized as an electron acceptor at the former field waste tanks area of the facility.

6. Microbes produce fatty acids as a byproduct during degradation of hydrocarbons. These fatty acids react with carbonate mineral substrates to release carbonate into solution, causing alkalinity of groundwater to increase. Elevated alkalinity therefore suggests that natural attenuation of hydrocarbons is occurring.

Background monitor well MW-5 displayed an alkalinity of 234 mg/L during the current sampling event. Alkalinity was measured at respective concentrations of 279 mg/L and 386 mg/L in former field waste tanks area monitor wells MW-10 and MW-11A in December 2003. The elevated alkalinity values in monitor wells MW-10 and MW-11A may be a result of intrinsic bioremediation of residual hydrocarbons in these areas.

In conclusion, current nitrate and historic dissolved oxygen data suggest that these electron acceptors have been utilized during intrinsic bioremediation processes in the vicinity of the former field waste tanks area of the facility. Data for ferrous iron also indicates utilization of ferric iron as an electron acceptor in this area of the facility. Alkalinity data provide further evidence of natural attenuation of hydrocarbons at the former field waste tanks area.

It is recommended that monitoring for natural attenuation evaluation parameters continue during future sampling events of former field waste tank area monitor wells MW-10, MW-11A, and MW-12D and the background well, MW-5. Redox potential, dissolved oxygen content, ferrous iron content, and alkalinity serve as good indicators of the occurrence of intrinsic bioremediation of hydrocarbons, so testing for these parameters in all wells to be sampled during future groundwater monitoring events is recommended.

3.3 Chloride Evaluation

Based on NMOCD concerns regarding potential chloride impact to downgradient water wells, BJ Services investigated chloride impact to groundwater at and in the vicinity of its Hobbs, New Mexico facility. Figure 4 presents a map of chloride distribution in groundwater, based on the most recent chloride concentration datum available for each well (see Table 4). The data presented in Figure 4 suggest that the former field wastes tanks at the BJ Services facility may have served as a P:\Wp\BJSERV\12832\110r.doc

source of chloride impact to groundwater within the facility, based on exceedances of the NMWQCC chloride standard of 250 mg/L in this area. Previous groundwater sampling conducted by BJ Services at the on-site nested monitor well MW-12/MW-12D location indicated that the degree of chloride impact to groundwater decreased with depth within the uppermost aquifer at the facility (see Table 4).

Groundwater modeling conducted by Brown and Caldwell prior to installation of off-site monitor well MW-16 indicated an anticipated chloride concentration of less than 250 mg/L at the proposed downgradient monitor well MW-16 location east of the BJ Services facility, based on historic data that defined an eastward decrease in chloride concentrations within the BJ Services facility. Specifically, historic chloride concentrations in the area of monitor wells MW-11 and MW-11A, which are located in proximity to BJ Services' former field waste tanks, ranged from 834 mg/L to 3,400 mg/L whereas chloride concentrations in the area of monitor wells MW-14 and MW-15, which are located further east within the BJ Services facility, ranged from 123 mg/L to 368 mg/L.

Off-site monitor well MW-16 has been sampled four times since its installation in May 2003, with chloride concentrations in the well ranging from 823 mg/L to 983 mg/L. During the post-May 2003 time period, chloride concentrations in wells at the BJ Services facility have remained consistent with previous chloride data. Chloride concentrations in monitor wells MW-14 and MW-15, which are located in the eastern portion of the BJ Services facility, have ranged from 123 mg/L to 298 mg/L since May 2003, and chloride was detected at a concentration of 3,240 mg/L in monitor well MW-11A in October 2003. The elevated chloride concentrations detected in monitor well MW-16 suggest the presence of a separate, off-site source of chloride impact to groundwater east of the BJ Services facility. The previously documented eastward decrease in chloride concentrations within the BJ Services facility indicates that groundwater chloride concentrations would likely be at or below 250 mg/L at the eastern boundary of the BJ Services facility if there was no off-site source of chloride impact, as indicated in Figure 4.

To confirm the suspected off-site source of chloride impact, Brown and Caldwell conducted a search of NMOCD files relating to permitted oil & gas exploration and production activities in the

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"Use or disclosure of data contained on this sheet is subject to the restriction specified at the beginning of this document."

area (see Section 3.3.1). In addition, Brown and Caldwell obtained several historical aerial photographs depicting industrial development in the vicinity (see Section 3.3.2). Section 3.3.3 presents the results of a current water well search conducted by Brown and Caldwell to determine whether water wells are present downgradient of the BJ Services facility. Section 3.3.4 summarizes chloride impact to groundwater at and in the vicinity of the BJ Services Hobbs, New Mexico facility.

3.3.1 Oil & Gas Well Search

Brown and Caldwell performed a search of NMOCD files to determine whether permitted drilling activities have been conducted to the east of the BJ Services facility. This search, which is fully documented in Appendix C, indicates the presence of an active injection well located approximately 1/8-mile east/northeast of the northeast corner of the BJ Services facility (i.e., Well No. 4, as identified in Appendix C). Injection wells are used for disposal of oil-field wastes, including saltwater produced from subsurface formations. Waste fluids are typically delivered to an injection well site by truck or surface piping, and are usually stored in tanks, where separation of solids and oil from saltwater occurs. Waste materials are then injected under pressure into suitable geologic formations in the deep subsurface. The reported total depth of the active injection well located east/northeast of the BJ Services facility is 4,441 feet. Under this general operational scenario, mechanisms by which chloride impact to shallow groundwater can occur include one or more of the following:

- Spillage from trucks delivering oil-field wastes, including saltwater, to the injection well site;
- Leakage of oil-field wastes, including saltwater, from surface piping used for conveyance of wastes to the injection well site;
- Leakage of oil-field wastes, including saltwater, from storage/separation tanks at the injection well site; and
- Leakage of wastes from the injection well into the shallow subsurface during high-pressure injection activities.

The oil & gas well search presented in Appendix C also located 14 oil wells within an approximate ½-mile radius north, east, and south of the BJ Services facility. The oil & gas well search was not extended to the west of the BJ Services facility.

The high degree of oil & gas exploration and production activity in the area of the BJ Services facility and, in particular, the saltwater injection well located east of the facility suggest that off-site sources of chloride impact to groundwater are likely.

3.3.2 Historical Aerial Photographs

Appendix D contains a series of aerial photographs that show the BJ Services facility and its surroundings at the following times:

- 1997;
- 1986;
- 1977;
- 1966; and
- 1949.

The 1997 aerial photograph (Figure D-1) shows the rectangular BJ Services facility and the pie-shaped Weatherford Enterra facility located to its north. These facilities are located east and southeast of West County Road, which runs northward, then northeastward, through the area. The 1997 aerial photograph also shows an apparently non-vegetated area east of the BJ Services facility, near the monitor well MW-16 location (see also Figure 1). Field observations in October 2003 confirmed an area of stressed vegetation at this location. This area of stressed vegetation may be associated with operation of the nearby active injection well discussed in Section 3.3.1.

The 1986 aerial photograph is presented as Figure D-2. The BJ Services facility and the Weatherford Enterra facility are visible in Figure D-2. The 1986 aerial photograph shows the same non-vegetated area east of the BJ Services facility, near the monitor well MW-16 location, as was shown in the 1997 aerial photograph. The presence of numerous other non-vegetated areas,

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especially to the south and southeast of the BJ Services facility, suggests an increased level of oil & gas exploration and production activities in the area in 1986 relative to 1997. A surface impoundment or similar structure appeared to be present on property to the west of the BJ Services facility in 1986.

Figure D-3 is a 1977 aerial photograph of the area. The BJ Services facility is visible in Figure D-3, but the Weatherford Enterra facility had not been developed in 1977. The 1977 aerial photograph shows the same non-vegetated area east of the BJ Services facility, near the monitor well MW-16 location, as was shown in the 1997 and 1986 aerial photographs. The level of oil & gas exploration and production activities in the area in 1977 appears to be comparable to that suggested in the 1986 aerial photograph. Three to four settling basins or similar structures were present on the property to the west of the BJ Services facility in 1977.

The 1966 aerial photograph is presented as Figure D-4. The BJ Services facility had not been developed in 1966. The 1966 aerial photograph shows the same non-vegetated area east of the BJ Services facility, near the monitor well MW-16 location, as was shown in the 1997, 1986, and 1977 aerial photographs. The same settling basins or similar structures that were shown on the property to the west of the BJ Services facility in the 1977 aerial photograph are also visible in the 1966 aerial photograph.

The 1949 aerial photograph, which is presented as Figure D-5, shows the presence of settling basins or similar structures on the property immediately south or southeast of the eastern portion of the present-day BJ Services facility.

Thus, the historic aerial photographs presented in Appendix D document oil & gas-related exploration and production activities that have been conducted in the vicinity of the BJ Services facility over the past 55 years. At least three possible off-site sources of chloride impact to groundwater are indicated in these photographs. These possible off-site sources are as follows:

- The non-vegetated area east of the BJ Services facility, near the monitor well MW-16 location, as indicated in the 1997, 1986, and 1977 aerial photographs, may have been the location of an oil well and associated brine pits, and may be or have been associated with operation of the nearby active injection well;
- The surface impoundment and/or settling basins on the property located immediately west of the BJ Services facility, as indicated in the 1986, 1977, and 1966 aerial photographs, which may have been used for management of saltwater produced from local oil wells; and
- The settling basins or similar structures on the property immediately south or southeast of the eastern portion of the BJ Services facility, as indicated in the 1949 aerial photograph, which may also have may have been used for management of saltwater produced from local oil wells.

3.3.3 Water Well Search

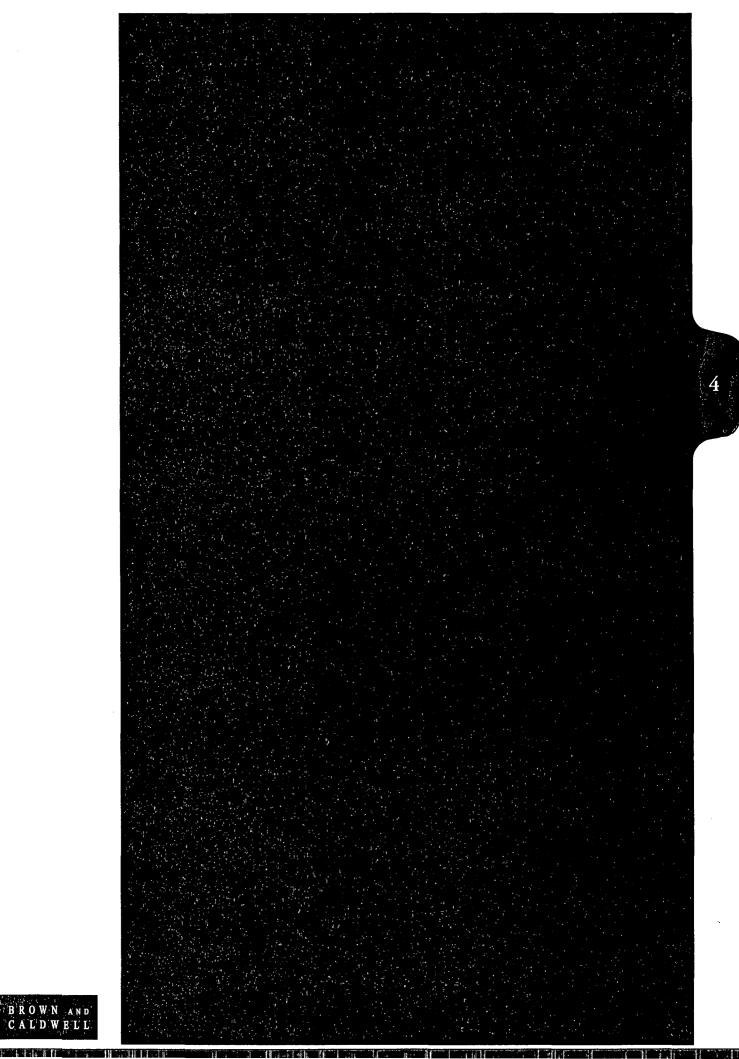
Brown and Caldwell obtained a current water well search within a 1-mile radius of the BJ Services facility to determine whether downgradient water wells are present east of the facility. This water well search, which is fully documented in Appendix E, indicates the presence of one generally downgradient water well. This well, which is identified as Well No. 4 in Appendix E, is owned by the City of Eunice and is located approximately ½ mile east/southeast of the BJ Services facility. This well is not currently used.

3.3.4 Summary

The historic and current eastward decreases in chloride concentrations within the BJ Services facility, as described herein, indicate that chloride concentrations in groundwater to the east of the BJ Services facility would likely be at or below 250 mg/L if an apparent off-site source of chloride impact was not present. The elevated chloride concentrations detected in off-site monitor well MW-16 are apparently attributable to one or more off-site sources. Potential sources of chloride impact east of the BJ Services facility include an active injection well and historic oil & gas exploration and production activities conducted in this area, as documented in NMOCD files and historic aerial photographs. There are no currently active water wells within a 1-mile radius downgradient of the BJ Services facility that are affected by this chloride impact. Based on these

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findings, further investigation by BJ Services into the occurrence of chloride at and in the vicinity of its Hobbs, New Mexico facility is unwarranted.



4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the December 2003 and previous groundwater sampling events at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Operation of the biospraging system installed in the area of the former fuel island at the facility has successfully remediated soil and groundwater impacts to meet performance requirements specified in the RAP for this portion of the facility.
- The substantial reduction in hydrocarbon concentrations in the vicinity of the former field waste tanks is attributable to natural attenuation of hydrocarbons, based on generally decreasing hydrocarbon concentrations in applicable monitor wells over time and as substantiated by geochemical data. Current benzene concentrations in all former field waste tanks area monitor wells are less than the NMWQCC standard of 0.01 mg/L for benzene. Benzene concentrations in all former field waste tanks area monitor wells have been less than the NMWQCC benzene standard of 0.01 mg/L during each of the last four quarterly groundwater sampling events.
- The chloride concentration measured in downgradient monitor well MW-14 during the current 2003 groundwater sampling event remains less than the NMWQCC standard of 250 mg/L. The chloride concentrations in monitor wells MW-15 and MW-16 exceed the NMWQCC chloride standard, however. Elevated chloride concentrations in groundwater east of the BJ Services facility are apparently attributable to one or more off-site sources. In the absence of these apparent sources, chloride impact attributable to the onsite source would likely be at or below the NMWQCC standard of 250 mg/L at the eastern boundary of the BJ Services facility.

4.2 Recommendations

- Upon approval from the NMOCD, decommission the biosparging system at the former fuel island area.
- Given that the removal of the former field waste tanks and associated impacted soil in March 1997 constituted effective source removal and that constituent concentrations in all applicable wells have been less than applicable NMWQCC standards for four consecutive quarterly groundwater sampling events, closure for the former field waste tanks area is recommended.

- Given that chloride impact to groundwater attributable to the BJ Services facility at concentrations exceeding the NMWQCC standard of 250 mg/L appears to be limited to the BJ Services facility and there is no current downgradient usage of groundwater within 1 mile of the facility, BJ Services should discontinue sampling and analysis pertaining to chloride impact to groundwater within the uppermost aquifer at and in the vicinity of its Hobbs, New Mexico facility.
- Given that BJ Services has demonstrated compliance with regard to hydrocarbon impacts
 at the former fuel island and former field waste tanks source area and with regard to
 chloride issues, granting of overall site closure by NMOCD, with no additional
 groundwater monitoring activities, is recommended.

DISTRIBUTION

December 2003 Groundwater Sampling Report BJ Services Company, U.S.A. Hobbs, New Mexico

July 16, 2004

Final Distribution as follows:

1 copy to: State of New Mexico

Energy, Minerals, and Natural Resources Department

Oil Conservation Division 1220 South Saint Francis Drive Santa Fe, New Mexico 87505

Attention: Mr. Wayne Price

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1625 N. French Dr. Post Office Box 1980 Hobbs, New Mexico 88240

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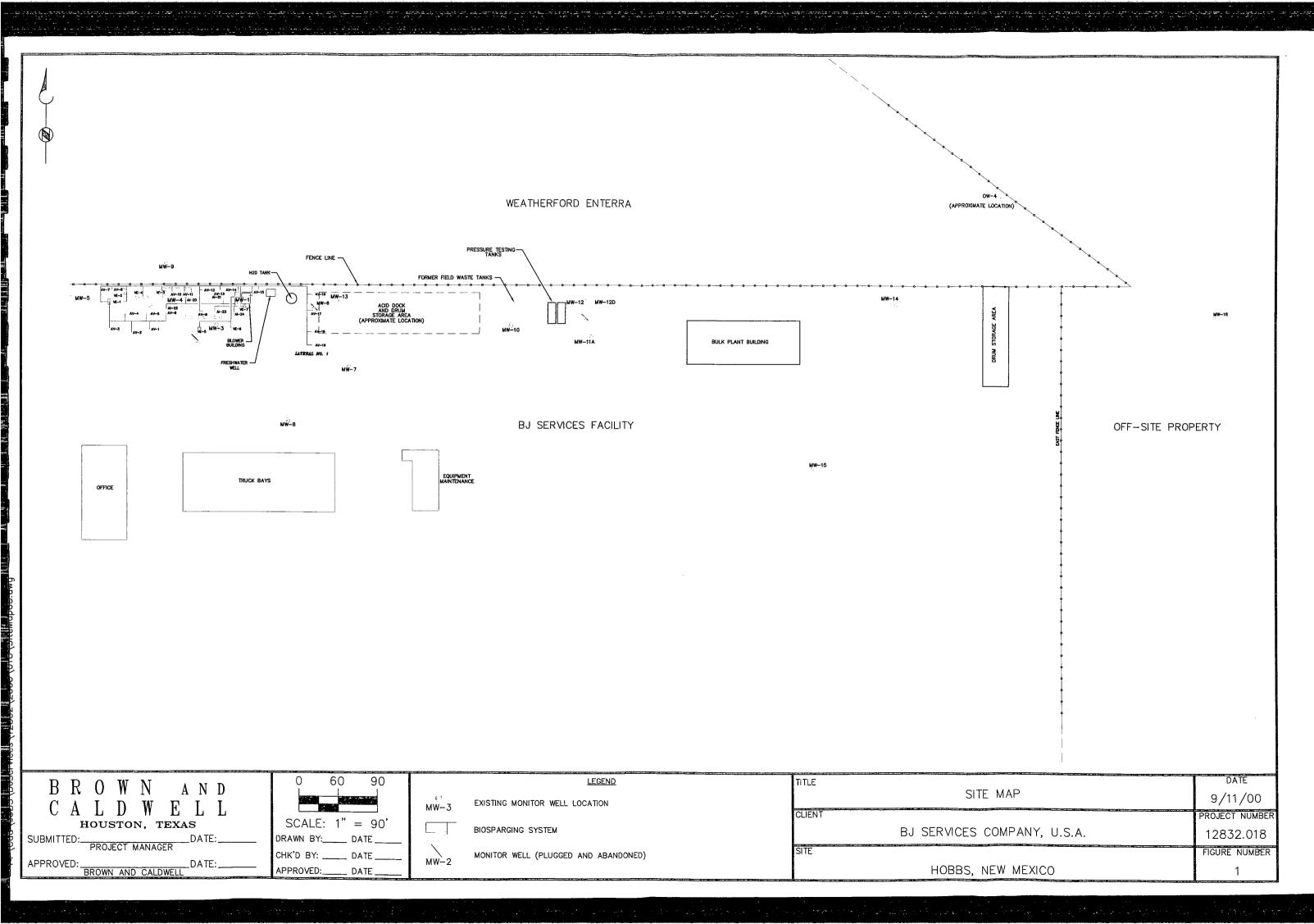
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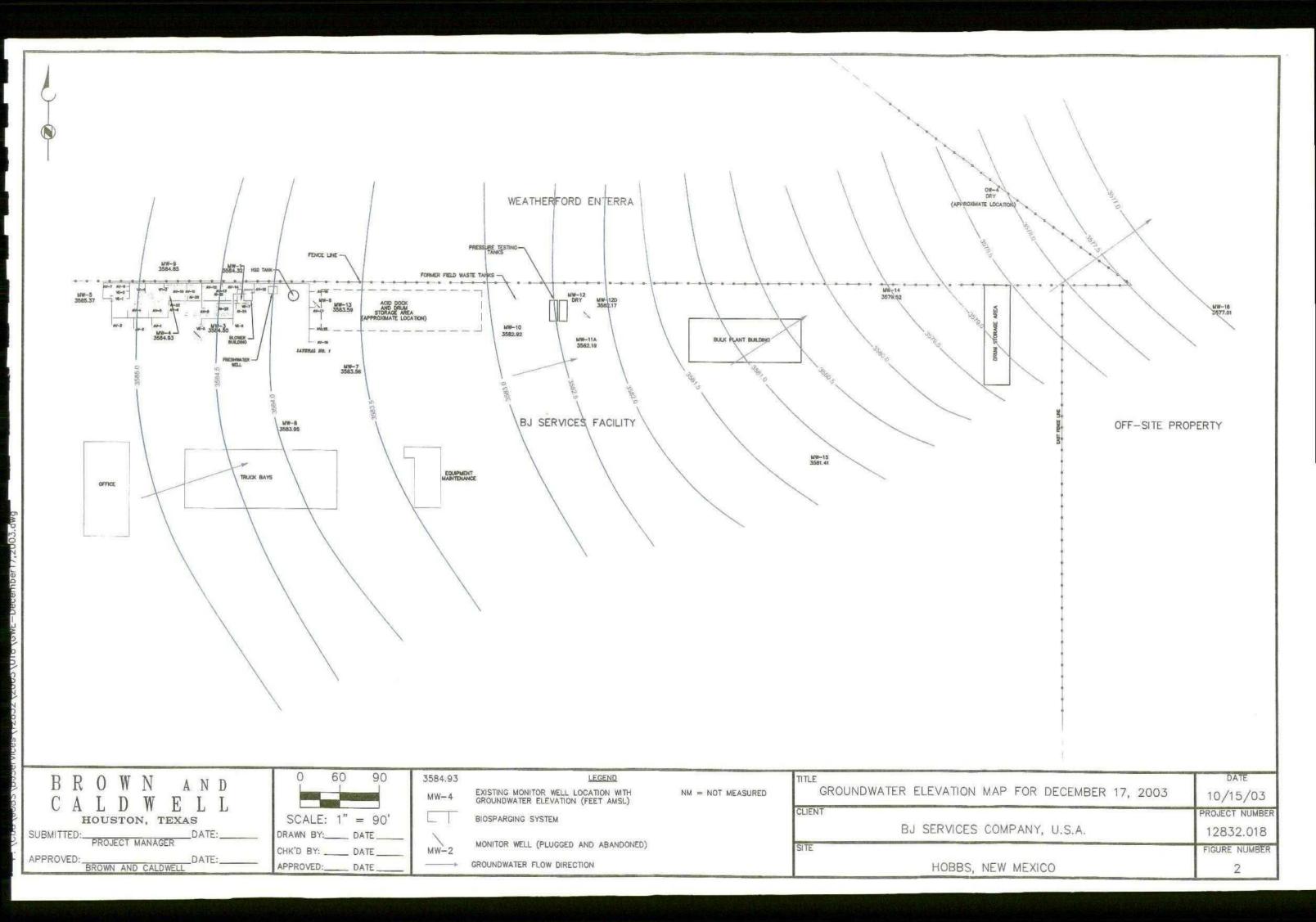
Lynn M. Wright, P.G.

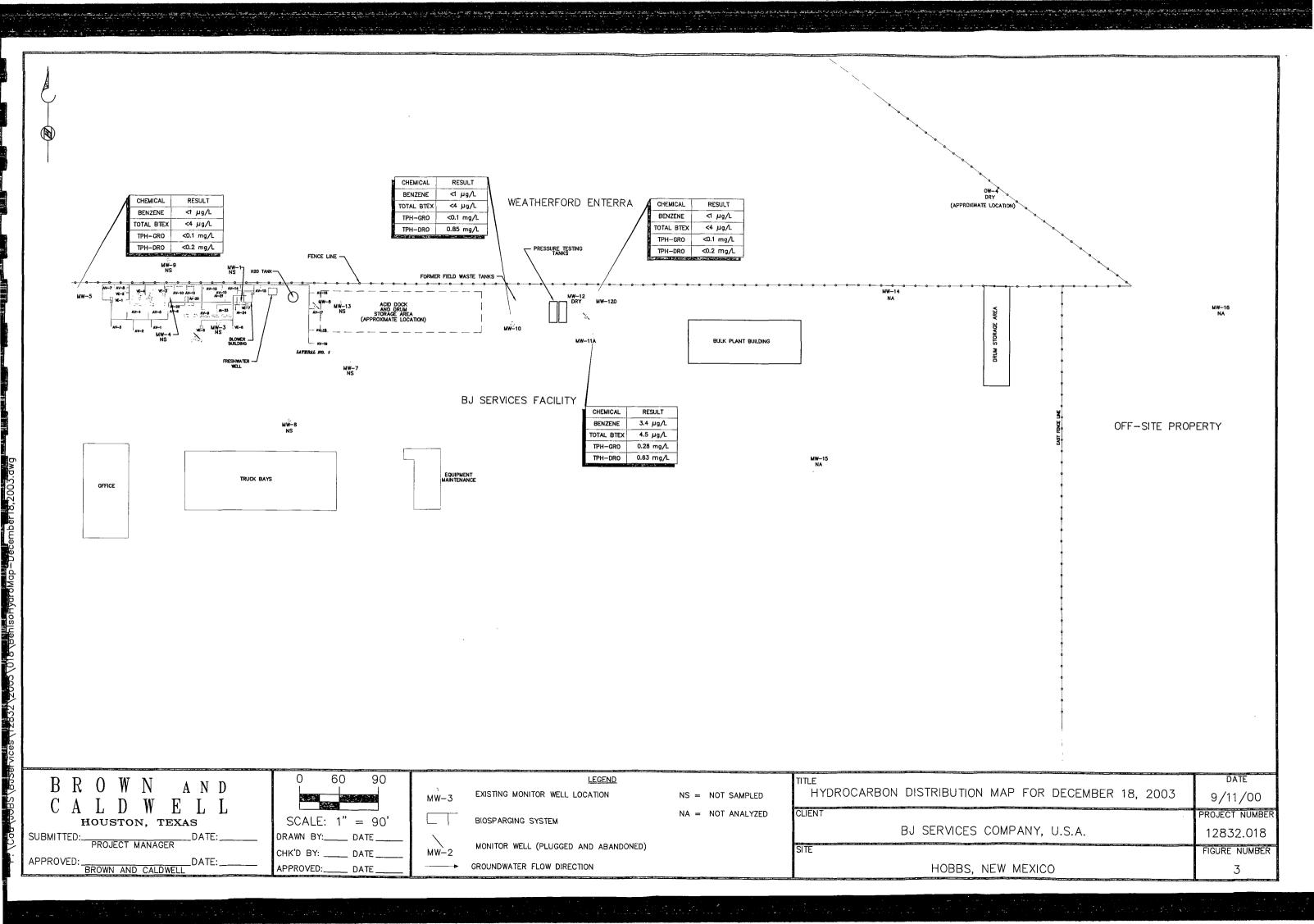
Supervising Geologist

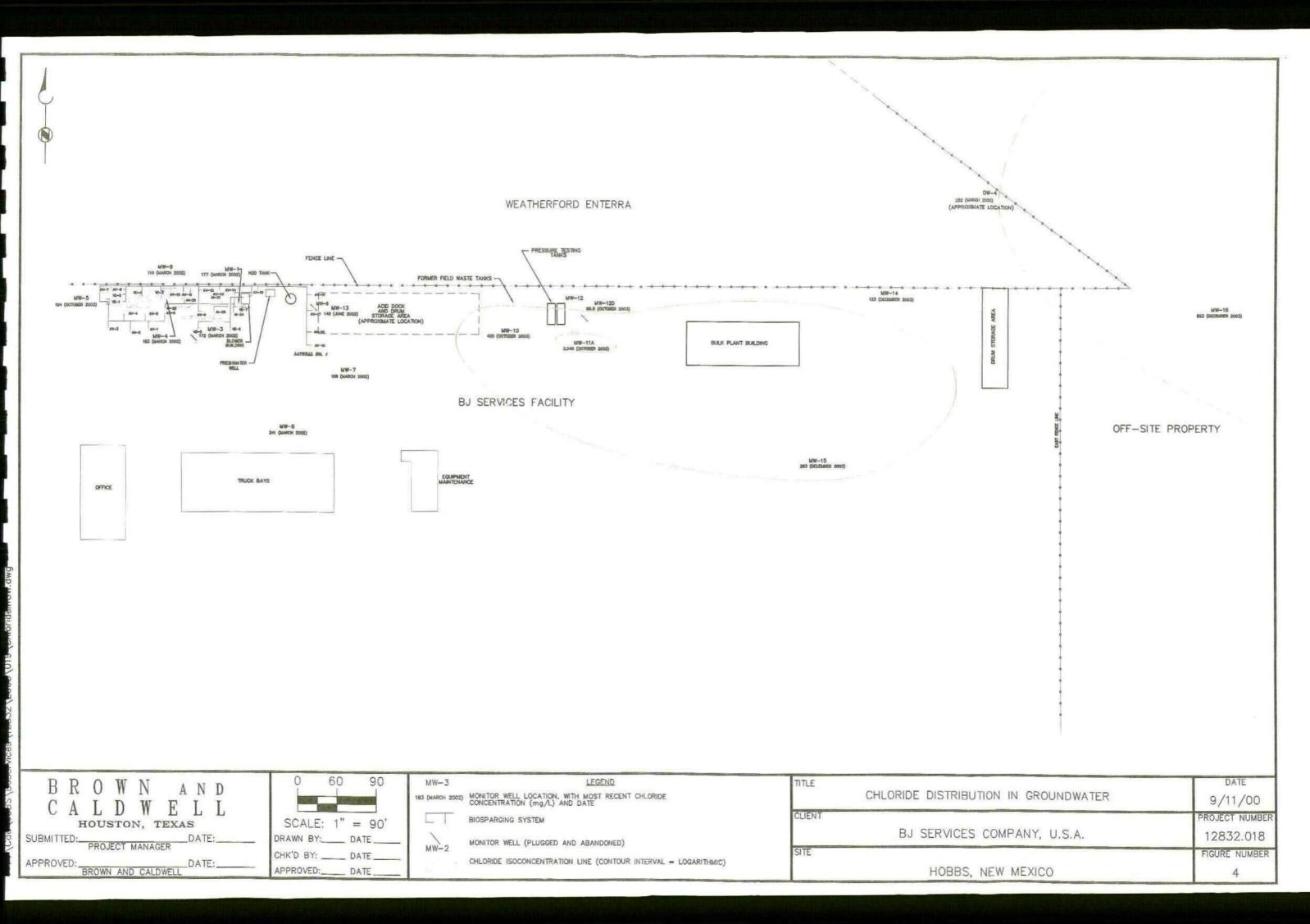
BROWN AND CALDWELL **FIGURES**

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BROWN AND CALDWELL **TABLES**

Date	Activity
February 7, 1991	The New Mexico Oil Conservation Division (NMOCD) conducted an on-site inspection, including sampling of the on-site fresh water well.
August 6, 1991	The NMOCD requested submittal of an investigation work plan.
September 5, 1991	Roberts/Schornick and Associates, Inc. (RSA) submitted Technical Work Plan for soil and groundwater investigation to the NMOCD.
November 15, 1991	The NMOCD approved the Technical Work Plan submitted by RSA.
December 16, 1991	RSA sampled the fresh water well. The analytical results were submitted to the NMOCD.
February 21, 1992	Western sampled the fresh water well. The analytical results were submitted to the NMOCD.
July 29 - August 10, 1992	Brown and Caldwell conducted a soil and groundwater investigation according to the approved Technical Work Plan. The investigation included drilling and sampling nine soil borings, sampling six handaugured soil borings, installation and sampling of five monitor wells, and sampling of the fresh water well.
October 12, 1992	Brown and Caldwell submitted a Soil and Groundwater Investigation Report to the NMOCD.
December 2, 1992	The NMOCD requested the installation and sampling of four additional monitor wells, including a monitor well on an adjacent property.
April 13, 1993	Brown and Caldwell conducted a vapor extraction pilot test on the existing monitor wells.
April 15, 1993	Brown and Caldwell installed off-site monitor well MW-9.
April 22, 1993	Brown and Caldwell sampled off-site monitor well MW-9.
May 27, 1993	Brown and Caldwell submitted a letter report documenting the installation and sampling of off-site monitor well MW-9 to the NMOCD.
June 2, 1993	Brown and Caldwell conducted a short-term aquifer test using the fresh water well at the facility.
June 8, 1993	USTank Management, Inc. conducted a non-volumetric tank system tightness test on the diesel and unleaded gasoline aboveground storage tanks at the facility.
June 21, 1993	ENSR Consulting and Engineering (ENSR), the environmental consultant for the adjacent property owner on which off-site well MW-9 is located, submitted a request to sample monitor well MW-9.

July 15, 1993	ENSR split a groundwater sample collected from monitor well MW-9 with Brown and Caldwell.
July 30, 1993	USTank Management, Inc. submitted a tank tightness test report to Brown and Caldwell. The report indicated that both tanks and their associated piping passed.
August 16-19, 1993	Brown and Caldwell installed two additional downgradient monitor wells. Brown and Caldwell sampled each of the existing and newly installed monitor wells.
January 26, 1994	Brown and Caldwell performed a groundwater monitoring event; the existing monitor wells and the fresh water well were purged and sampled. The groundwater samples were analyzed for BTEX.
May 6, 1994	A Remedial Action Plan (RAP) was submitted to the NMOCD.
August 11, 1994	The RAP was approved by the NMOCD.
May 3, 1995	Brown and Caldwell conducted the May 1995 groundwater sampling event.
July 31, 1995	Brown and Caldwell conducted the July 1995 groundwater sampling event.
August 2-9, 1995	Installation of the biosparging system was initiated. Nineteen combined injection/extraction wells and three vacuum extraction wells were installed.
August 14-26, 1995	Remedial Construction Services, Inc. (RCS) constructed the initial design of the biosparging system.
September 19, 1995	Operation of the extraction portion of the biosparging system commenced.
November 13, 1995	Operation of the injection portion of the biosparging system commenced.
November 14, 1995	Brown and Caldwell conducted the November 1995 groundwater sampling event.
February 23, 1996	Brown and Caldwell conducted the February 1996 groundwater sampling event.
May 31, 1996	Brown and Caldwell conducted the May 1996 groundwater sampling event.
August 23, 1996	Brown and Caldwell conducted the August 1996 groundwater sampling event.
December 2, 1996	Brown and Caldwell conducted the December 1996 groundwater sampling event.

March 6-7, 1997	BJ Services removed three field waste tanks and associated hydrocarbon-impacted soil.
March 12, 1997	Brown and Caldwell conducted the March 1997 groundwater sampling event.
March 14, 1997	Vapor extraction well VE-4 was installed.
April 1997	Vapor extraction well VE-4 was connected to the vapor extraction system.
June 12, 1997	Brown and Caldwell conducted the June 1997 groundwater sampling event.
September 11-12, 1997	Brown and Caldwell conducted the September 1997 groundwater sampling event.
December 10, 1997	Brown and Caldwell conducted the December 1997 groundwater sampling event.
February 3-14, 1998	Air injection wells AI-20 through AI-24, vapor extraction wells VE-5 through VE-7, and monitor wells MW-11A and MW-12 were installed.
February 19, 1998	Operation of previously existing injection wells was suspended in preparation for start-up of new injection wells AI-20 through AI-24.
March 10, 1998	Operation of new air injection wells AI-20 through AI-24 and new vapor extraction wells VE-5 through VE-7 commenced.
March 23-24, 1998	Brown and Caldwell conducted the March 1998 groundwater sampling event.
March 24, 1998	Operation of previously existing injection wells and vapor extraction wells resumed.
June 23, 1998	Brown and Caldwell conducted the June 1998 groundwater sampling event.
September 30, 1998	Brown and Caldwell conducted the September 1998 groundwater sampling event.
December 9-10, 1998	Brown and Caldwell conducted the December 1998 groundwater sampling event.
January 21, 1999	The NMOCD requested submittal of a work plan by March 22, 1999 to perform additional groundwater delineation in the area of the former field waste tanks and the former AST/MW-6 area.
March 9-10, 1999	Brown and Caldwell conducted the March 1999 groundwater sampling event.
March 19, 1999	Brown and Caldwell submitted the work plan for groundwater delineation activities that was requested by the NMOCD.

May 19, 1999	The NMOCD approved the groundwater delineation work plan.
June 10, 1999	Brown and Caldwell performed sampling of existing monitor wells for the June /July 1999 groundwater sampling event.
July 2, 1999	Brown and Caldwell completed plugging and abandonment of monitor wells MW-2, MW-6, and MW-11; installed and developed monitor wells MW-12D and MW-13; and sampled monitor wells MW-12D and MW-13 to complete the June/July 1999 groundwater sampling event.
July 14, 1999	Brown and Caldwell redirected air discharge from the shallow injection well injection system to Lateral No. 1 and optimized air flow to injection wells AI-16 and AI-17 to apply increased remedial pressure to the eastern portion of the west plume.
September 13-14, 1999	Brown and Caldwell conducted the September 1999 groundwater sampling event.
December 9, 1999	Brown and Caldwell conducted the December 1999 groundwater sampling event.
March 9-10, 2000	Brown and Caldwell conducted the March 2000 groundwater sampling event and shut off air flow to biosparging system Lateral Nos. 4S, 5S, 6S, and 7S.
June 8, 2000	Brown and Caldwell conducted the June 2000 groundwater sampling event.
September 13, 2000	Brown and Caldwell conducted the September 2000 groundwater sampling event.
November 1, 2000	Brown and Caldwell deactivated the biosparging system.
December 7, 2000	Brown and Caldwell conducted the December 2000 groundwater sampling event.
January 2001	Brown and Caldwell installed and sampled monitor wells MW-14 and MW-15.
March 8-9, 2001	Brown and Caldwell conducted the March 2001 groundwater sampling event.
June 21-22, 2001	Brown and Caldwell conducted the June 2001 groundwater sampling event.
July 23, 2001	Brown and Caldwell collected soil samples from four soil borings installed at the former fueling system area of the facility to confirm the effectiveness of the biosparging system in remediating hydrocarbon impact to soil, as specified in the NMOCD-approved RAP.
September 10, 2001	Brown and Caldwell conducted the September 2001 groundwater sampling event.

December 6, 2001	Brown and Caldwell conducted the December 2001 groundwater sampling event.
February 26, 2002	Brown and Caldwell repaired the crushed well completion on monitor well MW-10.
February 28, 2002	NMOCD requested an evaluation of chloride content of groundwater at the facility.
March 11-12, 2002	Brown and Caldwell conducted the March 2002 groundwater sampling event. Groundwater samples from all water-producing wells at the facility were analyzed for chloride content.
May 21, 2002	Brown and Caldwell submitted the report for the March 2002 groundwater sampling event, including an evaluation of chloride content of groundwater at the facility and a recommendation for installation of a downgradient off-site well (MW-16) to replace off-site well OW-4, which has gone dry.
June 17-18, 2002	Brown and Caldwell conducted the June 2002 groundwater sampling event.
September 16, 2002	Brown and Caldwell conducted the September 2002 groundwater sampling event.
November 11, 2002	Brown and Caldwell submitted the June 2002 Groundwater Sampling Report and Biosparging System Closure Report.
January 9, 2003	Brown and Caldwell conducted the January 2003 groundwater sampling event.
March 6, 2003	Brown and Caldwell conducted the March 2003 groundwater sampling event.
May 13, 2003	Brown and Caldwell installed monitor well MW-16 at a location to the west of the facility.
June 19, 2003	Brown and Caldwell initiated the June 2003 groundwater sampling event.
August 22, 2003	Brown and Caldwell completed the June 2003 groundwater sampling event.
October 2, 2003	Brown and Caldwell conducted the October 2003 groundwater sampling event.
December 17-18, 2003	Brown and Caldwell conducted the December 2003 groundwater sampling event.

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Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

BJ Services Company, U.S.A.								
Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments		
MW-1	3,647.53	8/10/1992	53.22	0.00	3,594.31	(1)		
		2/9/1993	53.03	0.00	3,594.50	()		
		8/18/1993	53.10	0.00	3,594.43			
		1/26/1994	53.31	0.00	3,594.22			
		5/3/1995	54.64	0.20	3,593.05	(2)		
		7/31/1995	54.14	0.00	3,593.39	(-)		
		11/14/1995	53.69	0.00	3,593.84			
		2/23/1996	54.32	0.00	3,593.21			
		5/31/1996	54.14	0.00	3,593.39			
		8/23/1996	56.17	0.00	3,591.36			
		12/2/1996	55.27	0.00	3,592.26			
		3/12/1997	55.70	0.27	3,592.05			
		6/12/1997	55.08	0.02	3,592.47			
		9/12/1997	55.64	0.51	3,592.31			
		12/10/1997	55.46	0.00	3,592.07	PSH Sheen		
		3/24/1998	55.81	0.00	3,591.72	PSH Sheen		
		6/23/1998	56.38	0.06	3,591.20			
		9/30/1998	56.82	0.00	3,590.71	PSH Sheen		
		12/9/1998	57.05	0.00	3,590.48			
		3/10/1999	57.45	0.00	3,590.08			
		6/10/1999	58.02	0.00	3,589.51			
		7/2/1999	58.02 57.90	0.00	3,589.63			
				0.00	3,589.39			
		9/14/1999	58.14	0.00	3,369.39	(2)		
		12/9/1999	-	-	2.500.54	(3)		
		3/9/2000	58.99	0.00	3,588.54			
		06/00	, -	-	-			
		09/00	-	-	-			
		12/7/00	-	-	-			
		3/8/2001	60.35	0.00	3,587.18			
		6/21/01	60.99	0.00	3,586.54			
		9/10/01	61.17	0.00	3,586.36			
		12/6/2001		not measured				
		03/11/02	62.11	0.00	3,585.42			
		6/17/02	62.53	0.00	3,585.00	Í		
		9/16/2002	62.43	0.00	3,585.10			
		1/9/2003	62.61	0.00	3,584.92			
			62.72	0.00	3,584.81			
		3/6/2003	02.72	0.00	5,564.61	(0) 11		
		6/19/2003	_		_	(3) - well not		
		0/19/2005		1		located		
		10/2/2003	62.97	0.00	3,584.56			
		12/17/2003	63.21	0.00	3,584.32	Ì		
MW-2	3,644.84	8/10/1992	52.82	0.00	3,592.02	(1)		
- · · · -		2/9/1993	49.60	0.00	3,595.24	l `´		
		8/18/1993	49.71	0.00	3,595.13			
		1/26/1994	49.97	0.00	3,594.87			
		5/3/1995	77.71 -		- 1.01	(4),(5)		
MW-3	3,645.00	8/10/1992	52.99	0.00	3,592.01			
C- 44 141	5,045.00	2/9/1993		0.00	3,592.28	(1)		
			52.72 52.82		3,592.18			
		8/18/1993	52.82	0.00		1		
		1/26/1994	53.05	0.00	3,591.95	1		
		5/3/1995	54.31	0.00	3,590.69			
		7/31/1995	51.24	0.00	3,593.76			
		11/14/1995	51.10	0.00	3,593.90	1		
		2/23/1996	51.68	0.00	3,593.32			
		5/31/1996	51.45	0.00	3,593.55			
		8/23/1996	51.55	0.00	3,593.45			
		12/2/1996	52.23	0.00	3,592.77			
		3/12/1997	52.67	0.00	3,592.33			
			52.68	0.00	3,592.32	1		
		6/12/1997			3,592.29			
		6/12/1997		1 0.00				
		9/11/1997	52.71	0.00				
		9/11/1997 12/10/1997	52.71 52.89	0.00	3,592.11			
		9/11/1997 12/10/1997 3/23/1998	52.71 52.89 53.22	0.00 0.00	3,592.11 3,591.78			
		9/11/1997 12/10/1997 3/23/1998 6/23/1998	52.71 52.89 53.22 53.66	0.00 0.00 0.00	3,592.11 3,591.78 3,591.34			
		9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998	52.71 52.89 53.22 53.66 54.06	0.00 0.00 0.00 0.00	3,592.11 3,591.78 3,591.34 3,590.94			
		9/11/1997 12/10/1997 3/23/1998 6/23/1998	52.71 52.89 53.22 53.66	0.00 0.00 0.00	3,592.11 3,591.78 3,591.34			
		9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998	52.71 52.89 53.22 53.66 54.06	0.00 0.00 0.00 0.00 0.00 0.00	3,592.11 3,591.78 3,591.34 3,590.94 3,590.64 3,590.28			
		9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998	52.71 52.89 53.22 53.66 54.06 54.36	0.00 0.00 0.00 0.00 0.00	3,592.11 3,591.78 3,591.34 3,590.94 3,590.64			

Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-3	3,645.00	9/14/1999	55.42	0.00	3,589.58	
cont.	3,613.00	12/9/1999	55.78	0.00	3,589.22	
Cont.	1	3/9/2000	56.23	0.00	3,588.77	
		6/8/2000	56.66	0.00	3,588.34	
		9/13/2000	56.77	0.00	3,588.23	
		12/7/2000	57.15	0.00	3,587.85	
		3/8/2001	57.69	0.00	3,587.31	
		6/21/01	58.34	0.00	3,586.66	
	1	9/10/01	58.54	0.00	3,586.46	
	<u> </u>	12/6/2001	59.04	0.00	3,585.96	
		3/11/2002	59.50	0.00	3,585.50	ļ
	1	6/17/02	59.83	0.00	3,585.17	İ
		9/16/2002	59.80	0.00	3,585.20	
		1/9/2003	60.01	0.00	3,584.99	
		3/6/2003	60.10	0.00	3,584.90	
			00.10	0.00	2,00	(3) - well not
		6/19/2003	-	-	2.594.66	located
		10/2/2003 12/17/2003	60.34 60.50	0.00 0.00	3,584.66 3,584.50	
MW-4	3,645.28	8/10/1992	50.55	0.00	3,594.73	(1)
		2/9/1993	50.26	0.00	3,595.02	
		8/18/1993	50.38	0.00	3,594.90	
		1/26/1994	50.90	0.30	3,594.63	
		5/3/1995	51.51	0.45	3,594.14	
		7/31/1995	51.74	0.26	3,593.75	
		11/14/1995	51.03	0.00	3,594.25	
		2/23/1996	51.65	0.01	3,593.64	
	-	5/31/1996	51.48	0.00	3,593.80	
		8/23/1996	53.49	0.00	3,591.79	
		12/2/1996	52.32	0.00	3,592.96	
		3/12/1997	52.74	0.05	3,592.58	
		6/12/1997	53.08	0.44	3,592.56	
		9/12/1997	52.60	0.15	3,592.80	
	1	12/10/1997	52.89	0.00	3,592.39	PSH Sheen
		3/24/1998	53.20	0.25	3,592.29	
		6/23/1998	53.82	0.22	3,591.64	
		9/30/1998	53.96	0.00	3,591.32	200 ml PSH
		12/9/1998	54.27	0.00	3,591.01	
		3/10/1999	54.69	0.04	3,590.62	
		6/10/1999	55.07	0.00	3,590.21	
		7/2/1999	55.10	0.00	3,590.18	
	i	9/14/1999	55.33	0.00	3,589.95	
		12/9/1999	55.79	0.00	3,589.49	
		3/10/2000	56.12	0.00	3,589.16	
		6/8/2000	56.67	0.00	3,588.61	
		9/13/2000	56.65	0.00	3,588.63	
		12/7/2000	57.05	0.00	3,588.23	
		3/8/2001	57.72	0.00	3,587.56	
		6/21/01	58.18	0.00	3,587.10	
		9/10/01	58.54	0.00	3,586.74	
		12/6/2001	58.88	0.00	3,586.40	
		3/11/2002	59.41	0.00	3,585.87	
		6/17/02	59.67	0.00	3,585.61	
		9/16/2002	59.71	0.00	3,585.57	
		1/9/2003	59.91	0.00	3,585.37	
		3/6/2003	60.03	0.00	3,585.25	
		6/19/2003	60.16	0.00	3,585.12	
		10/2/2003 12/17/2003	60.30 60.35	0.00 0.00	3,584.98 3,584.93	
MW-5	3,647.72	8/10/1992	52.38	0.00	3,595.34	(1)
141 44 -D	5,047.72	2/9/1993	52.06	0.00	3,595.66	
		8/18/1993	52.16	0.00	3,595.56	
				0.00	3,595.22	
					1 3.073.66	I .
		1/26/1994	52.50 53.57			i
		5/3/1995	53.57	0.00	3,594.15	
		5/3/1995 7/31/1995	53.57 53.27	0.00 0.00	3,594.15 3,594.45	
		5/3/1995	53.57	0.00	3,594.15	

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Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

BJ Services Company, U.S.A.							
Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments	
MW-5	3,647.72	8/23/1996	53.41	0.00	3,594.31		
cont.		12/2/1996	53.98	0.00	3,593.74		
		3/12/1997	54.44	0.00	3,593.28		
		6/12/1997	54.48	0.00	3,593.24		
	ļ	9/12/1997	54.29	0.00	3,593.43		
		12/10/1997	54.66	0.00	3,593.06		
		3/23/1998	55.05	0.00	3,592.67		
		6/23/1998	55.44	0.00	3,592.28		
		9/30/1998	55.65	0.00	3,592.07		
	}	12/9/1998	56.00	0.00	3,591.72		
		3/9/1999	56.45	0.00	3,591.27		
		6/10/1999	56.91	0.00	3,590.81		
		7/2/1999	56.93	0.00	3,590.79		
		9/14/1999	57.12	0.00	3,590.60		
		12/9/1999	57.41	0.00	3,590.31		
		3/9/2000	57.92	0.00	3,589.80		
		6/8/2000	58.32	0.00	3,589.40		
		9/13/2000	58.36	0.00	3,589.36		
		12/7/2000	58.71	0.00	3,589.01		
		3/8/2001	59.36	0.00	3,588.36		
		6/21/01	59.94	0.00	3,587.78		
		9/10/01	59.85	0.00	3,587.87		
		12/6/2001	60.56	0.00	3,587.16		
		3/11/02	61.12	0.00	3,586.60		
		6/17/02	61.43	0.00	3,586.29		
		9/16/2002	61.52	0.00	3,586.20		
		1/9/2003	61.75	0.00	3,585.97		
		3/6/2003	61.90	0.00	3,585.82		
		6/19/2003	62.01	0.00	3,585.71		
		10/2/2003	62.16	0.00	3,585.56		
		12/17/2003	62.35	0.00	3,585.37		
MW-6	3,644.74	2/9/1993	50.58	0.00	3,594.16	(1)	
0	2,011.,7	8/18/1993	50.78	0.00	3,593.96	(*)	
		1/26/1994	51.00	0.00	3,593.74		
		5/3/1995	52.63	0.00	3,592.11		
	-	7/31/1995	51.90	0.00	3,592.84		
		11/14/1995	51.19	0.00	3,593.55		
		2/23/1996	52.10	0.00	3,592.64		
		5/31/1996	51.76	0.00	3,592.98		
		8/23/1996	51.63	0.00	3,593.11		
		12/2/1996	52.85	0.00	3,591.89		
		3/12/1997	53.55	0.00	3,591.19		
		6/12/1997	52.08	0.00	3,592.66		
		9/11/1997	53.72	0.00	3,591.02		
	(12/10/1997	53.72	0.00	3,591.47	ľ	
		3/23/1998	53.56	0.00	3,591.18		
		6/23/1998	52.88	0.00	3,591.86		
		9/30/1998	54.89	0.00	3,589.85		
		12/9/1998	54.57	0.00	3,590.17		
	ĺ	3/10/1999	55.10	0.00	3,589.64	(
		7/2/1999	55.10	-	-	(5),(6)	
MW-7	3,644.55	2/9/1993	50.53	0.00	3,594.02	(1)	
	5,0 17.55	8/18/1993	50.74	0.00	3,593.81	(')	
		1/26/1994	51.01	0.00	3,593.54		
ĺ		5/3/1995	52.25	0.00	3,592.30	[
		7/31/1995	51.92	0.00	3,592.63		
		11/14/1995	51.48	0.00	3,593.07		
		2/23/1996	52.15	0.00	3,592.40		
İ		5/31/1996	51.78	0.00	3,592.77	!	
	[8/23/1996	52.02	0.00	3,592.77		
		12/2/1996	52.52	0.00	3,592.03		
		1		0.00			
		3/12/1997	52.99		3,591.56		
		6/12/1997	53.08	0.00	3,591.47		
		9/11/1997	53.00	0.00	3,591.55		
		12/10/1997	53.28	0.00	3,591.27	1	
		3/23/1998	53.59	0.00	3,590.96		
		4/33/1000 L	E 4 30	0.00	2.500.25	1	
		6/23/1998 9/30/1998	54.20 54.54	0.00 0.00	3,590.35 3,590.01		

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

BJ Services Company, U.S.A.							
Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments	
MW-7	3,644.55	12/9/1998	54.74	0.00	3,589.81		
cont.		3/9/1999	55.15	0.00	3,589.40		
		6/10/1999	55.66	0.00	3,588.89		
		7/2/1999	55.73	0.00	3,588.82		
		9/13/1999	55.94	0.00	3,588.61		
	Į ,	12/9/1999	56.38	0.00	3,588.17		
		3/9/2000	56.74	0.00	3,587.81		
		6/8/2000	57.17	0.00	3,587.38		
		9/13/2000	57.40	0.00	3,587.15		
		12/7/2000	57.77	0.00	3,586.78		
		3/8/2001	58.29	0.00	3,586.26		
		6/21/01	58.91	0.00	3,585.64		
		9/10/01	59.25	0.00	3,585.30		
	1	12/6/2001	59.75	0.00	3,584.80		
	1			0.00			
	1	3/11/2002	60.03		3,584.52		
	1	6/17/02	60.39	0.00	3,584.16		
		9/16/2002	60.39	0.00	3,584.16		
		1/9/2003	60.53	0.00	3,584.02		
	1	3/6/2003	60.61	0.00	3,583.94		
	1	6/19/2003	60.73	0.00	3,583.82		
		10/2/2003	60.84	0.00	3,583.71		
	1	12/17/2003	60.99	0.00	3,583.56		
MW-8	3,644.87	2/9/1993	50.48	0.00	3,594.39	(1)	
		8/18/1993	50.67	0.00	3,594.20	ì	
		1/26/1994	50.96	0.00	3,593.91		
		5/3/1995	52.15	0.00	3,592.72		
		7/31/1995	51.77	0.00	3,593.10		
	1	11/14/1995	51.37	0.00	3,593.50		
		2/23/1996	52.17	0.00	3,592.70		
		5/31/1996	51.55	0.00	3,593.32		
		8/23/1996	51.92	0.00	3,592.95		
		12/2/1996	52.43	0.00	3,592.44		
			52.93	0.00	3,591.94		
		3/12/1997					
]	6/12/1997	53.96	0.00	3,590.91		
	ļ	9/11/1997	52.73	0.00	3,592.14		
		12/10/1997	53.15	0.00	3,591.72		
		3/23/1998	53.51	0.00	3,591.36	ļ	
	-	6/23/1998	54.01	0.00	3,590.86		
		9/30/1998	54.35	0.00	3,590.52		
		12/9/1998	54.60	0.00	3,590.27		
		3/9/1999	55.00	0.00	3,589.87		
	l i	6/10/1999	55.56	0.00	3,589.31		
		7/2/1999	55.57	0.00	3,589.30		
		9/13/1999	55.72	0.00	3,589.15		
		12/9/1999	<u>-</u>	_	-	(3)	
		3/9/2000	56.52	0.00	3,588.35	``'	
		06/00			- /		
		09/00	-	-	_		
		12/00	_	_	-]	
		3/8/2001	58.11	0.00	3,586.76		
		6/21/01	58.72	0.00	3,586.15		
		9/10/01	58.94	0.00	3,585.93]	
		12/6/2001	30.74	not measured	2,202.72	1	
		3/11/2002	59.94	0.00	3,584.93	1	
			60.22	0.00	3,584.65	1	
		6/17/02	60.24	0.00	3,584.63		
		9/16/2002				1	
		1/9/2003	60.42	0.00	3,584.45		
		3/6/2003	60.52	0.00	3,584.35		
		6/19/2003	60.63	0.00	3,584.24		
		10/2/2003	60.75	0.00	3,584.12		
		12/17/2003	60.92	0.00	3,583.95		
MW-9	3,644.78	4/22/1993	49.73	0.00	3,595.05	(1)	
		7/15/1993	49.65	0.00	3,595.13		
		8/18/1993	49.85	0.00	3,594.93		
		1/26/1994	50.02	0.00	3,594.76		
		5/3/1995	51.35	0.00	3,593.43		
		7/31/1995	50.97	0.00	3,593.81	1	
		11/14/1995	50.43	0.00	3,594.35		
				, 0.00			

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Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-9	3,644.78	5/31/1996	50.89	0.00	3,593.89	
cont.		8/23/1996	50.98	0.00	3,593.80	
	1	12/2/1996	51.58	0.00	3,593.20	
		3/12/1997	52.21	0.05	3,592.61	DOII Charr
		6/12/1997 9/12/1997	52.10 51.95	0.00 0.00	3,592.68 3,592.83	PSH Sheen PSH Sheen
		12/10/1997	51.93 52.37	0.00	3,592.41	PSH Sheen
		3/23/1998	52.68	0.00	3,592.10	PSH Sheen
	1	6/23/1998	53.08	0.00	3,591.70	PSH Sheen
		9/30/1998	53.39	0.01	3,591.40	PSH Sheen
		12/9/1998	53.68	0.00	3,591.10	
		3/10/1999	54.15	0.00	3,590.63	
	İ	6/10/1999	54.68	0.00	3,590.10	
		7/2/1999	54.71	0.00	3,590.07	
		9/13/1999	54.71	0.00	3,590.07	(2)
		12/9/1999	- 55.69	0.00	3,589.09	(3)
		3/9/2000 06/00	33.69	0.00	3,369.09	
		09/00	_]	•	
		12/00	<u>-</u>	_		
		3/8/2001	57.03	0.00	3,587.75	
	1	6/21/01	57.91	0.00	3,586.87	
	}	9/10/01	57.95	0.00	3,586.83	
	1	12/6/2001		not measured		
	}	3/11/2002	58.96	0.00	3,585.82	
	1	6/17/02	59.14	0.00	3,585.64	
		9/16/2002	59.34	not measured 0.00	3,585.44	
	İ	1/9/2003 3/6/2003	59.48	0.00	3,585.30	
		6/19/2003	59.64	0.00	3,585.14	
		10/2/2003	59.76	0.00	3,585.02	
	,	12/17/2003	59.93	0.00	3,584.85	
MW-10	3,644.47	8/18/1993	51.54	0.00	3,592.93	(1)
		1/26/1994	51.90	0.00	3,592.57	
	ł	5/3/1995	52.97	0.00	3,591.50	
		7/31/1995	52.87	0.00	3,591.60	
		11/14/1995	52.51 53.05	0.00 0.00	3,591.96 3,591.42	
		2/23/1996 5/31/1996	53.05 52.79	0.00	3,591.68	
		8/23/1996	53.03	0.00	3,591.44	
		12/2/1996	53.41	0.00	3,591.06	
		3/12/1997	54.21	0.00	3,590.26	
	i	6/12/1997	53.99	0.00	3,590.48	
		9/12/1997	53.94	0.00	3,590.53	
		12/10/1997	54.12	0.00	3,590.35	
		3/23/1998	54.51	0.00	3,589.96	
		6/23/1998	55.12 55.61	0.00 0.00	3,589.35 3,588.86	
		9/30/1998 12/9/1998	55.61 55.80	0.00	3,588.67	1
		3/9/1999	56.09	0.00	3,588.38	
		6/10/1999	56.60	0.00	3,587.87	
		7/2/1999	56.64	0.00	3,587.83	
		9/14/1999	56.91	0.00	3,587.56	1
		12/9/1999	57.37	0.00	3,587.10	
		3/10/2000	57.71	0.00	3,586.76	
		6/8/2000	58.08	0.00	3,586.39	
		9/13/2000	58.44	0.00	3,586.03	
		12/7/2000 3/9/2001	58.89 59.31	0.00 0.00	3,585.58 3,585.16	
		6/21/01	59.31 59.89	0.00	3,584.58	
		9/10/01	61.34	0.00	3,583.13	
		12/6/2001	60.65	0.00	3,583.82	
		3/11/2002	60.69	0.00	3,583.78	
	}	6/17/02	60.98	0.00	3,583.49	
		9/16/2002	61.00	0.00	3,583.47	
		1/9/2003	61.07	0.00	3,583.40	
		3/6/2003	61.19	0.00	3,583.28	
		6/19/2003	61.26	0.00	3,583.21	
		10/2/2003	61.38	0.00	3,583.09	
	L	12/17/2003	61.55	0.00	3,582.92	L

Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

	1	BJ Services Company, U.S.A.							
Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments			
MW-11	3,643.78	8/18/1993	51.92	0.00	3,591.86	(1)			
		1/26/1994	52.32	0.00	3,591.46	. ,			
		5/3/1995	53.38	0.00	3,590.40				
	į.	7/31/1995	53.35	0.00	3,590.43				
		11/14/1995	52.96	0.00	3,590.82				
		2/23/1996	53.50	0.00	3,590.28				
		5/31/1996	53.25	0.00	3,590.53				
	,	8/23/1996	53.49	0.00	3,590.29				
		12/2/1996	53.79	0.00	3,589.99				
		3/12/1997	53.81	0.00	3,589.97				
	ĺ	6/12/1997	53.96	0.00	3,589.82				
		9/12/1997	52.93	0.00	3,590.85				
		12/10/1997	52.73	-	-	(5),(6)			
MW-11A	3,644.24	3/23/1998	54.79	0.00	3,589.45	(7)			
141 44 -1 174	5,044.24	6/23/1998	55.43	0.00	3,588.81	(7)			
		9/30/1998	55.96	0.00	3,588.28				
		12/9/1998	56.13	0.00	3,588.11				
		3/10/1999	56.43	0.00	3,587.81				
		6/10/1999	56.94	0.00	3,587.30				
		7/2/1999	50.94 57.01	0.00	3,587.23				
	1	9/14/1999	57.36	0.00	3,586.88				
		12/9/1999	57.36 57.72	0.00	3,586.52				
		3/9/2000	58.01	0.00	3,586.23				
	J .	6/8/2000	58.40	0.00	3,585.84				
			58.84	0.00	- 1				
		9/13/2000	59.29	0.00	3,585.40 3,584.95				
		12/7/2000 3/8/2001	59.72	0.00	3,584.52				
	[6/21/01	60.28	0.00	3,583.96				
		9/10/01	60.69	0.00	3,583.55				
				0.00					
		12/6/2001 3/11/2002	60.88 61.42	0.00	3,583.36 3,582.82				
			61.55	0.00					
	į	6/17/02		0.00	3,582.69				
	ļ	9/16/2002	61.59		3,582.65				
		1/9/2003	61.67	0.00	3,582.57				
		3/6/2003	61.70	0.00	3,582.54				
		6/19/2003	61.84	0.00	3,582.40				
	ĺ	10/2/2003	61.88	0.00	3,582.36				
14317-1-2	3 (44 30	12/17/2003	62.05	0.00	3,582.19	(7)			
MW-12	3,644.29	3/23/1998	54.72	0.00	3,589.57	(7)			
	ļ	6/23/1998	55.48	0.00	3,588.81				
		9/30/1998	56.02	0.00	3,588.27				
		12/9/1998	56.17	0.00	3,588.12				
		3/10/1999	56.45	0.00	3,587.84				
	ſ	6/10/1999	56.97	0.00	3,587.32				
		7/2/1999	56.99	0.00	3,587.30				
		9/14/1999	57.41	0.00	3,586.88				
	}	12/9/1999	57.76	0.00	3,586.53				
		3/10/2000	58.08	0.00	3,586.21				
		6/8/2000	58.42	0.00	3,585.87				
	J	9/13/2000	58.85	0.00	3,585.44				
		12/7/2000	59.31	0.00	3,584.98				
		3/8/2001	59.76	0.00	3,584.53				
		6/21/01	60.29	0.00	3,584.00				
	1	9/10/01	60.79	0.00	3,583.50				
		12/6/2001	wel	l dry during this and subseque					
MW-12D	3,644.38	7/2/1999	57.13	0.00	3,587.25	(8)			
	ļ	9/14/1999	57.74	0.00	3,586.64				
		12/9/1999	57.86	0.00	3,586.52				
	1	3/9/2000	58.24	0.00	3,586.14				
	1	6/8/2000	58.56	0.00	3,585.82				
		09/00	- 1	- !	-				
		12/00	-	-	-				
t t		3/8/2001	_	-	-				
ĺ	I	2/0/2001							
j]	<u>-</u>	- 1				
		6/21/01	-	-	-				
			- - 61.30	- - 0.00	3,583.08				

Table 2 **Cumulative Groundwater Elevation Data** Hobbs, New Mexico Facility

BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-12D	3,644.38	6/17/02	61.71	0.00	3,582.67	
cont.		9/16/2002	61.75	0.00	3,582.63	
		1/9/2003	61.86	0.00	3,582.52	
		3/6/2003	61.91	0.00	3,582.47	
		6/19/2003	61.95	0.00	3,582.43	
		10/2/2003	62.05	0.00	3,582.33	
		12/17/2003	62.21	0.00	3,582.17	
MW-13	3,645.52	7/2/1999	56.60	0.00	3,588.92	(9)
	5,075.52	9/14/1999	56.92	0.00	3,588.60	(-)
		12/9/1999	57.28	0.00	3,588.24	
		3/10/2000	57.68	0.00	3,587.84	
		6/8/2000	58.04	0.00	3,587.48	
		9/13/2000	58.29	0.00	3,587.23	
		12/7/2000	58.68	0.00	3,586.84	
		3/8/2001	59.19	0.00	3,586.33	
		6/21/01	59.80	0.00	3,585.72	
				0.00	3,585.49	
		9/10/01	60.03			
	[12/6/2001	60.59	0.00 0.00	3,584.93 3,584.58	
		3/11/2002	60.94	0.00		
		6/17/02	61.28		3,584.24	
		9/16/2002	61.23	0.00	3,584.29	
		1/9/2003	61.38	0.00	3,584.14	
		3/6/2003	61.45	0.00	3,584.07	
		6/19/2003	61.58	0.00	3,583.94	
		10/2/2003	61.70	0.00	3,583.82	ļ
		12/17/2003	61.93	0.00	3,583.59	
MW-14	3,642.45	3/8/2001	61.07	0.00	3,581.38	}
		6/21/01	61.71	0.00	3,580.74	
		9/10/01	62.31	0.00	3,580.14	
		12/6/2001	62.80	0.00	3,579.65	
		3/11/2002	62.70	0.00	3,579.75	
		6/17/02	62.65	0.00	3,579.80	
		9/16/2002	62.55	0.00	3,579.90	
		1/9/2003	62.59	0.00	3,579.86	
		3/6/2003	62.64	0.00	3,579.81	ļ
		6/19/2003	62.64	0.00	3,579.81	1
	[10/2/2003	62.73	0.00	3,579.72	ĺ
		12/17/2003	62.93	0.00	3,579.52	
MW-15	3,643.24	3/8/2001	59.79	0.00	3,583.45	
	·	6/21/01	60.49	0.00	3,582.75	
		9/10/01	61.02	0.00	3,582.22	
	i	12/6/2001	61.47	0.00	3,581.77	
		3/11/2002	61.65	0.00	3,581.59	
	l	6/17/02	61.68	0.00	3,581.56	
		9/16/2002	61.47	0.00	3,581.77	
		1/9/2003	61.59	0.00	3,581.65	[
		3/6/2003	61.63	0.00	3,581.61	}
	l	6/19/2003	61.62	0.00	3,581.62	1
	l	10/2/2003	61.70	0.00	3,581.54	1
		12/17/2003	61.83	0.00	3,581.41	1
MW-16	3,643.73	6/19/2003	66.50	0.00	3,577.23	
	2,0.0.73	10/2/2003	66.61	0.00	3,577.12	1
		12/17/2003	66.72	0.00	3,577.01	
OW-4	3,644.06	7/2/1999	58.18	0.00	3,585.88	(8)
~ · · ·	5,074.00	9/14/1999	58.63	0.00	3,585.43	(6)
	ĺ	12/9/1999	58.92	0.00	3,585.14	-
		3/9/2000	58.92 59.19	0.00	3,584.87	
	!	6/8/2000		0.00	3,584.50	
			59.56			1
		9/13/2000	60.16	0.00	3,583.90	1
		12/7/2000	61.15	0.00	3,582.91	(10)
	İ	3/8/2001	61.43	0.00	3,582.63	(10)
	1	6/21/01	61.48	0.00	3,582.58	
	!	9/10/01	61.53	0.00	3,582.53	
	i	12/6/2001	we	ll dry during this and subseque	ent monitoring events	

^{(1).} Top of casing elevations and groundwater elevations of all monitor wells were relative to an arbitrary datum of

^{100.00} feet prior to March 1997 and have been converted to Mean Sea Level (MSL)

^{(2) -} For wells having measurable thickness of free product, the groundwater elevation was calculated as follows:

Groundwater Elevation = (TOC elevation)-(depth to groundwater)+[(free product thickness)x(SG of free product)]

Note: The specific gravity (SG) of the free product is 0.82.

^{(3) -} Not measured.

^{(4) -} Monitor well MW-2 could not be located after January 1994.

^{(5) -} Well plugged and abandoned July 2, 1999.

^{(6) -} Monitor well MW-11 could not be located after September 12, 1997.

^{(7) -} TOC elevations for MW-11A and MW-12 estimated relative to TOC elevation for MW-10.

^{(8) -} TOC elevations for MW-12D and OW-4 estimated relative to TOC elevation for MW-12.

^{(9) -} TOC elevation for MW-13 estimated relative to TOC elevation for MW-7.

^{(10) -}Well dry (measured depth to water is below base of screen); true groundwater elevation is less than listed groundwater elevation.

Table 3
December 18, 2003 Field Screening Results for Groundwater Samples Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Moniton	Cumulative				n.d.	Dissolved	Dissolved	¥
Well	Liters Removed	Hd	Temperature (°C)	(umhos/cm)	мецох (шV)	Oxygen (meter) (mg/L)	Oxygen (Hach kit) (mg/L)	rerrous Iron (mg/L)
MW-5	4.6	NM ⁽²⁾	MN	MN	MN	NM	3.6	1.00
MW-10	NM ⁽¹⁾	NM	MN	NM	MN	NM	2.0	8.9
MW-11A	NM	NM	MN	MN	MN	NM	1.5	7.8
MW-12D	2.0	08.9	16.58	1,124	-108	0.63	1.2	2.2
MW-14	3.7(1)	NM	MN	NM	MN	MN	NM	NM
MW-15	9.2(1)	NM	MN	NM	MN	NM	NM	NM
MW-16	3.0	6.77	17.31	3,478	6.85	6.79	NM	NM

Monitor wells MW-1, MW-3, MW-4, MW-7, MW-8, MW-9, and MW-13 not sampled.

Monitor well MW-2 not operative after January 1994; P&A'd 7/1/99.

Monitor well MW-6 P&A'd 7/1/99.

Monitor well MW-11 not operative after September 1997; P&A'd 7/1/99.

Monitor wells MW-12 and OW-4 were dry.

Monitor wells MW-5 and MW-15 were purged by removing 3 well volumes of groundwater from each well

(1) - Well was purged dry using bailing techniques.

(2) - NM = Not measured

Table 4
Cumulative Results⁽¹⁾ for Chloride⁽²⁾ Analyses
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Sample Date	-								Mo	Monitor Wells ⁽³⁾	ells ⁽³⁾							
Sample Date	MW-1	MW-3	MW-4	MW-5	9-MM	MW-7	MW-8	MW-9 N	MW-10 MW-11	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
8/1/95	160	150	310	130	380	310	350	110	2,200	3,400	ΝP	NP	NP	ΝΡ	ΝP	£		NS
8/23/96	130	140	100	66	210	250	360	140	2,000	2,900	Ē	NP.	ď	ď	NP	ďΝ	£	NS
3/23-24/98	212	206	126	151	183	223	364	164	2,390	NS	940	1,200	ΝΡ	ďZ	£	Ę.	ě	SN
3/9-10/99	163	156	142	155	411	238	274	123	1,160	SN	834	314	ďΝ	ďN	ΝP	ď	£	NS
6/10-7/5/99	NA	NA	NA	NA	NP	NA	NA	NA	NA	ďN.	NA	NA	195	496	NP	ďΝ	£	592
3/9-10/00	258	196	196	196	NP	224	241	131	474	Đ.	1,290	327	117	276	ď	분	ΝP	258
1/14/2001	NS	NS	NS	NS	NP	NS	NS	SN	NS	g.	SN	NS	SN	NS	368	219	ΝP	SN
3/8-9/01	NA	165	172	152	NP	224	250	127	879	ΝP	1,720	586	SN	276	327	NA	ΝP	NS-D
6/21/2001	NA	NA	NA	NA	NP	NA	NA	NA	NA	ďΝ	NA	NA	SN	NA	222	222	NP	NS-D
9/10/2001	NA	NA	NA	NA	Š	NA	NA	NA	NA	NP	NA	NS-D	NA	NA	245	228	NP	NS-D
9/18/2001	NA	NA	NA	NA	ΝĐ	NA	NA	NA	NA	ďΝ	ΝΑ	NS-D	62	NA	NA	NA	ď	NS-D
12/6/2001	NA	NA	NA	NA	원	NA	NA	NA	NA	ΝP	VN	US-D	NA	NA	276	215	ΨN	NS-D
3/11-12/02	177	172	183	127	Ν.	188	241	110	861	ΝP	1,230	Q-SN	92	207	284	224	ďΝ	NS-D
6/18/2002	NS	NA	NA	NA	N.	NA	NS	NS	NA	NP	NA	NS-D	NA	145	258	233	NP	NS-D
9/16/2002	NS	NS	NS	121	ΔĘ.	NS	NS	NS	1,030	ΝP	1,550	NS-D	98	NS	293	246	ξV	NS-D
1/9/2003	NS	NS	NS	123	ξŽ	NS	NS	NS	525	ď	3,150	NS-D	95	NS	179	228	ΝP	NS-D
3/6/2003	NS	NS	NS	116	NP PP	SN	NS	NS	363	NP	2,900	NS-D	102	NS	163	272	ď	NS-D
6/20/2003	NS	SN	NS	NS	ΝΡ	NS	NS	NS	NS	ΝP	SN	NS-D	89.3	NS	NS	NS	983	NS-D
8/22/2003	NS	SN	NS	NS	R	NS	NS	NS	NS	ďN	NS	NS-D	SN	NS	182	280	841	NS-D
10/2/2003	SN	SN	SN	194		NS	NS	NS	420	ďN	3,240	NS-D	8.66	NS	175	298	696	NS-D
12/18/2003	NS	NS	NS	NA	ΝΡ	NS	NS	NS	NA	ΝP	NA	NS-D	NA	NS	123	263	823	NS-D

(I) - in mg/L.

(2) - NMWQCC standard for chloride is 250 mg/L.

(3) - MW-2 not operative after May 3, 1995; P&A'd 7/1/99.

MW-6 P&A'd 7/1/99.

MW-11 P&A'd 7/1/99.

MW-11A installed February 1998.

MW-12 installed February 1998 (screened at the top of the saturated zone).

MW-12D installed June 1999, adjacent to MW-12 (screened in a lower portion of the uppermost saturated zone).

MW-13 installed June 1999.

MW-14 installed January 2001.

MW-15 installed January 2001.

MW-16 installed May 2003.

NP = not present at time of sampling event.

NS = not sampled during applicable sampling event.

NA = not analyzed for chloride during applicable sampling event.

NS-D = not sampled because well was dry during applicable sampling event.

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре	Benzene		ns per liter, ug/L	ryienes	milligrams po	
MW-1	8/10/92	Regular	5550.0	12090.0	2160.0	7370.0	NA	NA
141 44-1	2/9/93	Regular	2100.0	6500.0	1300.0	7400.0	NA	NA
	8/19/93	Regular	3200.0	7300.0	1200.0	3700.0	NA NA	NA NA
	1/27/94	Regular	1930.0	4580.0	672.0	2390.0	NA NA	NA
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	390.0	1300.0	230.0	800.0	NA	5.7
	11/15/95	Regular	880.0	1800.0	300.0	970.0	NA	6.8
	2/23/96	Regular	1500.0	3700.0	620.0	2200.0	NA NA	21
	5/31/96	Regular	1100.0	1700.0	380.0	990.0	NA	7.5
	8/23/96	_		3300.0	570.0	2100.0	NA NA	17
		Regular	1800.0	9600.0	2100.0	9600.0	100	64
	12/2/96	Regular	5600.0	9700.0	2600.0	8200.0	22	62
	3/12/97 6/12/97	Regular	5500.0	34000.0	7500.0	27000.0	180	160
		Regular	5300.0	1	1000.0	3000.0	23	21
	9/12/97	Regular	1800.0	4400.0	2800.0	8200.0	23 11	71
	12/10/97 3/24/98	Regular	7600.0 4800.0	12000.0 7200.0	1200.0	2400.0	4.2	38
		Regular			580.0	1400.0	1.4	9.2
	6/23/98 9/30/1998	Regular Regular	53.0 3.2	680.0 90.0	280.0	970.0	2.5	3.6
	12/10/1998	1 -	< 1.0	1.5	17.0	110.0	1.4	0.31
	3/10/1998	Regular	< 1.0	< 1.0	8.2	110.0	0.62	0.85
	3/10/1999	Regular	< 1.0	< 1.0	7.9	110.0	0.66	0.84
	6/10/1999	Duplicate	< 1.0	1.1	< 1.0	28.0	0.53	0.55
	6/10/1999	Regular Duplicate	< 1.0	1.1	< 1.0	41.0	0.69	0.76
	9/14/1999	-	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	NS	NS NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	<1	9.1	14	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	_	NS	NS	NS	NS	NS	NS
	12/7/2000	_	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	2.0	< 1	< 1	<1	0.49	0.58
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	-					310	210
	through	-	NS	NS	NS	NS	NS	NS
MW-2 ¹	December 2003 8/10/92	Pagulan	14.9	< 4	< 4	< 4	NA	NA
141 44 -7	2/9/93	Regular	< 2	< 2	< 2	< 6	NA NA	NA NA
	2/9/93 8/19/93	Regular	100.0	12.0	3.0	13.0	NA NA	NA NA
	8/19/93 1/27/94	Regular Regular	< 1	12.0	2.0	2.5	NA NA	NA NA
MW-3			304.9	2099.0	6760.0	1586.0	NA NA	NA NA
TAT AA =?	8/10/92 2/9/93	Regular Regular	130.0	< 10	< 10	190.0	NA NA	NA NA
	2/9/93 8/19/93	Regular	560.0	3100.0	630.0	190.0	NA NA	NA NA
	8/19/93 1/27/94	Regular	1070.0	5380.0	510.0	3120.0	NA NA	NA NA
		_			470.0	1800.0	NA NA	NA NA
	5/4/95	Regular	770.0	3300.0 2900.0	890.0	1600.0	NA NA	14
	8/1/95	Regular	490.0		180.0	440.0	NA NA	2.9
	11/15/95	Regular	250.0	1000.0	170.0	560.0	NA NA	4
	2/23/96	Regular	120.0	810.0	170.0	2300.0	NA NA	15
	5/31/96	Regular	670.0	3900.0		1500.0	NA NA	12
	8/23/96	Regular	330.0	2200.0	590.0	1300.0	I NA	12

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	ТРН-D	TPH-G
Well	Date	Туре	Benzene	'	ns per liter, ug/L	11) (-110)	milligrams pe	
MW-3	12/2/96	Regular	220.0	1800.0	670.0	1000.0	0.89	7.4
(cont.)	3/12/97	Regular	370.0	2000.0	960.0	1400.0	1.8	11
(cont.)	6/12/97	_	860.0	4800.0	1700.0	2600.0	1.9	20
	l	Regular		I		1900.0	1.6	16
	9/11/97	Regular	770.0	3000.0	1600.0 500.0	450.0	0.59	5.3
	12/10/97	Regular	240.0	740.0		1 1		
	3/24/98	Regular	140.0	630.0	360.0	310.0	0.56	3.9
	6/23/98	Regular	100.0	720.0	350.0	490.0	0.40	4.9
	9/30/1998	Regular	42.0	470.0	450.0	530.0	1.0	3.8
	12/10/1998	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/1999	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/1999	Regular	1.7	3.1	<1.0	36.0	< 0.20	0.18
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.32	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/13/2000	Regular	< 1	<1	< 1	<1	< 0.2	< 0.1
	12/7/2000 3/8/2001	Regular Regular	< 1 < 1	< 1 < 1	< 1 < 1	< 1 < 1	< 0.25 0.42	< 0.1 < 0.1
	6/21/2001	Regular	<1	<1	< 1	<1	< 0.22	< 0.1
	9/10/2001	Regular	< 1	<1	< 1	<1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	<1	<1	<1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	<1	<1	<1	<1	<0.2	<0.1
	9/16/2002	-						
	through	-	NS	NS	NS	NS	NS	NS
	December 2003							
MW-4	8/10/92	Regular	2594.0	10360.0	2160.0	6740.0	NA	NA
	2/9/93	Regular	5200.0	15000.0	2200.0	10000.0	NA	NA
	8/19/93	Regular	3000.0	12000.0	< 2000	7000.0	NA	NA
	1/27/94	Regular	NSP	NSP	NSP	NSP	NA	NSP
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	5700.0	17000.0	3500.0	13000.0	NA	120
	11/15/95	Regular	490.0	1600.0	310.0	1100.0	NA	5.2
	2/23/96	Regular	360.0	2800.0	560.0	2500.0	NA	18
	5/31/96	Regular	84.0	830.0	280.0	1100.0	NA	6.2
	8/23/96	Regular	110.0	1400.0	430.0	1800.0	NA	9.8
	12/2/96	Regular	190.0	2000.0	1800.0	7200.0	56	43
	3/12/97	Regular	220.0	1500.0	1500.0	4400.0	27	27
	6/12/97	Regular	47.0	270.0	360.0	950.0	2.5	6.2
	9/12/97	Regular	92.0	840.0	670.0	2100.0	15	7.6
	12/10/97	Regular	230.0	750.0	970.0	2300.0	3.7	16
	3/24/98	Regular	150.0	510.0	270.0	620.0	1.2	5.6
	6/23/98	Regular	160.0	890.0	590.0	1600.0	0.69	10
	9/30/1998	Regular	80.0	180.0	370.0	840.0	2.0	3.9
	12/10/1998	Regular	28.0	70.0	210.0	960.0	9.3	4.3
	12/10/1998	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
	3/10/1999	Regular	8.0	20.0	250.0	1400.0	13.0	13
	6/10/1999	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63
	9/14/1999	Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17
	12/9/1999	Regular	< 1.0	2.5	2.3	20.1	2	0.53
	3/10/2000	Regular	<1	2.3 < 1	2.3 < 1	3.6	2.6	0.15
	3/10/2000	regulai	<u></u>			J.U	2.0	0.13

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Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-С
Well	Date	Туре	Denzene		ns per liter, ug/L	Aylenes	milligrams pe	
			- 1		< 1	< 1	0.44	0.23
MW-4	6/8/2000	Regular	<1	<1	i i	<1		< 0.1
(cont.)	9/13/2000	Regular	< 1	<1	< 1	i	0.61	
	12/7/2000	Regular	< 1	< 1	1.3	<1	0.53	0.16
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.43	0.16
	6/21/2001	Regular	<1	< 1	<1	< 1	< 0.25	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	<1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	<1	0.6	< 1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	<1	<1	<1	<1	<0.2	<0.1
	9/16/2002							
	through	-	NS	NS	NS	NS	NS	NS
	December 2003							
MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/10/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	1/27/94	Regular	8.7	29.9	4.0	11.3	NA	NA
	5/3/95	Regular	3.7	5.3	0.9	4.6	NA	NA
	8/1/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	11/15/95	Regular	< 0.3	1.2	< 0.3	1.5	NA	NA
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	5/31/96	Regular	31.0	86.0	10.0	20.0	NA	NA
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	<1	< 0.1	< 0.1
	9/12/97	Regular	<1	< 1	< 1	< l	< 0.1	< 0.1
	12/10/97	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
	3/23/98	Regular	<1	< 1	<1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	6/10/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	9/14/1999	Regular	<1.0	<1.0	<1.0	<2.0	< 0.20	< 0.10
	12/9/1999	Regular	<1	< 1	<1	< 1	< 0.2	< 0.1
			<1		<1	< 1	0.55	< 0.1
	3/9/2000 6/8/2000	Regular Regular	<1	< 1 < 1	< 1	<1	< 0.2	< 0.1
		-	< 1	< 1	<1	<1	< 0.2	< 0.1
	9/13/2000	Regular	ji .	<1	</td <td><1</td> <td>< 0.25</td> <td>< 0.1</td>	<1	< 0.25	< 0.1
	12/7/2000	Regular	<1		<1	<1	0.56	< 0.1
	3/8/2001	Regular	<1	< 1				< 0.1
	6/21/2001	Regular	< 1	< 1	< 1	< 1	0.26	< 0.1
	9/10/2001	Regular	<1	< 1	<1	< 1	< 0.2	
	12/6/2001	Regular	< 1	< 1	< 1	< 1	0.49	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.24	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.3 J	< 0.05
	1/9/2003	Regular	<1	<]	< 1	< 1	< 1.0	< 0.1
	3/6/2003	Regular	< 1	< 1	< 1	< 1	NA	< 0.1
	8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.1	< 0.1
	12/18/2003	Regular	< 1	< 1	<1	< 1	< 0.2	< 0.1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-С
Well	Date	Туре	Бенгене	<u> </u>	ns per liter, ug/L	1	milligrams pe	
MW-6 1	8/10/92	Regular	NS	NS	NS NS	NS	NA	NS
IVI VV -O	2/9/93	Regular	7000.0	19000.0	3100.0	7200.0	NA NA	NA NA
	2/9/93 8/19/93		8100.0	19000.0	3500.0	6400.0	NA NA	NA NA
		Regular	7960.0	20200.0	3830.0	6150.0	NA NA	NA NA
	1/27/94	Regular	11000.0	17000.0	2900.0	6000.0	NA NA	NA NA
	5/4/95	Regular	8300.0	12000.0	2500.0	5100.0	NA NA	60
	8/1/95	Regular	8900.0	17000.0	2900.0	5500.0	NA	57
	11/15/95	Regular	8900.0 8100.0	10000.0	2300.0	4000.0	NA	58
	2/23/96	Regular	83.0	150.0	15.0	51.0	NA NA	0.57
	5/31/96	Regular Duplicate	87.0	160.0	13.0	47.0	NA NA	0.52
	5/31/96		31.0	28.0	9.4	7.9	NA	0.46
	8/23/96	Regular	<1	< 1	9.4 <1	1.7	5.6	< 0.1
	12/2/96 3/12/97	Regular	12.0	< 5	6.8	18.0	12	< 0.5
		Regular	1900.0	1400.0	410.0	310.0	7.8	7.4
	6/12/97	Regular	l	1.3	3.4	< 1	1	< 0.1
	9/11/97	Regular	11.0 3.0	4.2	1.2	3.9	1.7	0.14
	12/10/97 3/23/98	Regular Regular	3.6	4.2 < 1	4.0	3.9 <1	< 0.2	< 0.1
		_	170.0	4.1	15.0	7.2	1.2	0.51
	6/23/98	Regular	1000.0	420.0	140.0	270.0	4.0	3.3
	9/30/1998	Regular	7.6	6.6	1.7	5.8	2.0	< 0.1
	12/10/1998	Regular	2500.0	930.0	590.0	1400.0	11.0	13
MW-7	3/10/1999 8/10/92	Regular Regular	NS	930.0 NS	NS	NS	NA NA	NS
IVI VV - /	2/9/93	Regular	< 2	< 2	< 2	< 6	NA NA	NA NA
	8/19/93	Regular	< 2	3.0	< 2	< 2	NA	NA
	1/27/94	Regular	1.1	<1	<1	<1	NA NA	NA
	5/3/95	Regular	52.0	3.4	0.7	2.8	NA NA	NA
	8/1/95	Regular	22.0	2.2	0.9	2.8	NA	< 0.1
	11/15/95	Regular	8.4	0.8	< 0.3	0.9	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Duplicate	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	29.0	83.0	10.0	21.0	NA	0.25
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	<1	<1	< 1	< 0.1	< 0.1
	6/12/97	Regular	<1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	<1	< 0.1	< 0.1
	12/10/97	Regular	<1	<1	< 1	<1	< 0.2	< 0.1
	3/23/98	Regular	< 1	<1	< 1	<1	< 0.2	< 0.1
	6/23/98	Regular	<1	<1	<1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	<1.0	<1.0	<1.0	<1.0	4.7	< 0.1
	6/10/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 5	< 5	< 5	< 5	1.8	< 0.5
	3/9/2000	Regular	<1	<1	<1	<1	0.66	< 0.1
	6/8/2000	Regular	<1	< 1	< 1	<1	< 0.21	< 0.1
	9/13/2000	Regular	<1	< 1	< 1	<1	< 0.2	< 0.1
	12/7/2000	Regular	<1	< 1	< 1	<1	< 0.29	< 0.1
	3/8/2001	Regular	< 1	<1	< 1	<1	1.2	< 0.1
	3/6/2001	regulai	l	1 1			1	1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

M '4	Comple	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Monitor Well	Sample Date	Туре	Delizelle		as per liter, ug/L	Aylelles	milligrams pe	
			2.			1		
MW-7	6/21/2001	Regular	3.1	< 1	< 1	<1	< 0.22	< 0.1
(cont.)	9/10/2001	Regular	<1	< 1	< 1	< 1	< 0.33	< 0.1
	12/6/2001	Regular	< 1	<1	< 1	< 1	1.3	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	NA	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002				3.00		210	NG
	through	-	NS	NS	NS	NS	NS	NS
	December 2003					270		NO
MW-8	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	< 1	< 1	< i	< 1	NA	NA
	5/3/95	Regular	3.0	4.9	0.8	3.7	NA	NA
	8/1/95	Regular	3.1	1.2	0.5	1.6	NA	< 0.001
	8/1/95	Duplicate	3.6	1.5	0.5	1.5	NA	< 0.1
	11/15/95	Regular	< 0.3	0.5	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	1.8	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	<1	0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	<1	0.3	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.6	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS 0.20	NS
	3/12/2002	Regular	< 1	< 1	< 1	<1	0.38	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
	9/16/2002		NO	No	Nic	Nic	NS	NS
	through	-	NS	NS	NS	NS	1/2	INS
MWO	December 2003	D == 1- :	670.0	200.0	750	970.0	NIA.	NA
MW-9	4/22/93	Regular	570.0	380.0	< 50	870.0	NA NA	
	7/15/93	Regular	121.0	7.3	3.0	458.0	NA NA	NA NA
	8/19/93	Regular	390.0	290.0	40.0	250.0	NA NA	NA NA
	1/27/94	Regular	327.0	357.0	51.1	293.0	NA	NA NA
	5/3/95	Regular	380.0	110.0	19.0	120.0	NA	NA
	8/1/95	Regular	660.0	410.0	91.0	310.0	NA	6.2

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	ТРН-Д	TPH-G
Well	Date	Туре	Belizelle		ns per liter, ug/L	Aylenes	milligrams po	
			240.0			140.0		
MW-9	11/15/95	Regular	240.0	24.0	11.0	140.0	NA	1.5
(cont.)	11/15/95	Duplicate	170.0	18.0	10.0	120.0	NA NA	1.9
	2/23/96	Regular	170.0	18.0	2.3	160.0	NA NA	4.3
	5/31/96	Regular	120.0	16.0	3.0	200.0	NA	NA
	8/23/96	Regular	82.0	13.0	6.0	270.0	NA	4
	8/23/96	Duplicate	76.0	14.0	4.8	250.0	NA 2.6	4.4
	12/2/96	Regular	61.0	< 25	< 25	210.0	2.6	2.8
	12/2/96	Duplicate	86.0	13.0	2.4	270.0	3.7	2.9
	3/12/97	Regular	30.0	48.0	420.0	880.0	8.2	19
	6/12/97	Regular	4.7	2.1	11.0	97.0	2.6	2.2
	6/12/97	Duplicate	< 5	< 5	6.6	69.0	5.2	1.9
	9/12/97	Regular	2.1	2.3	2.1	120.0	1.2	1.9
	12/10/97	Regular	4.9	9.0	6.8	62.0	0.86	0.92
	3/24/98	Regular	< 1	< 1	< 1	26.0	0.9	1
	6/23/98	Regular	2.4	22.0	10.0	36.0	< 0.2	0.25
	9/30/1998	Regular	1.1	5.5	21.0	59.0	0.27	0.27
	12/10/1998	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
	3/10/1999	Regular	< 1.0	< 1.0	5.7	68.0	< 0.2	0.22
	6/10/1999	Regular	< 1.0	1.8	1.8	71.0	< 0.20	0.43
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	64.0	0.66	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	_	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< l	1.4	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001		NS	NS	NS	NS	NS	NS
	12/6/2001	- 1	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	1	< 1	< 1	< 1	0.37	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
	9/16/2002	1						
	through	-	NS	NS	NS	NS	NS	NS
	December 2003					1		
MW-10	8/19/93	Regular	190.0	460.0	< 200	240.0	NA	NA
	1/27/94	Regular	13.4	4.0	5.5	33.6	NA	NA
	5/4/95	Regular	980.0	15.0	11.0	84.0	NA	NA
	8/1/95	Regular	1300.0	32.0	32.0	100.0	NA	3.6
	11/15/95	Regular	1000.0	24.0	15.0	36.0	NA	1.7
	2/23/96	Regular	810.0	23.0	27.0	44.0	NA	2.4
	5/31/96	Regular	700.0	24.0	34.0	28.0	NA	2
	8/23/96	Regular	290.0	3.4	6.4	13.0	NA	1.4
	12/2/96	Regular	280.0	1.3	17.0	8.0	0.94	0.97
	3/12/97	Regular	110.0	< 5	17.0	< 5	0.61	0.57
	6/12/97	Regular	150.0	12.0	30.0	< 5	0.68	< 0.5
	9/12/97	Regular	87.0	2.3	26.0	2.7	0.76	0.33
	9/12/97	Duplicate	87.0	2.4	26.0	2.8	0.79	0.33
	12/10/97	Regular	41.0	9.8	12.0	7.7	1.1	0.28
	12/10/97	Duplicate	36.0	8.5	10.0	6.7	1.2	0.24
	3/23/98	Regular	36.0	< 5	5.9	< 5	1.6	< 0.5
	3143190	Regulai	30.0		٥.۶	1	1.0	1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	трн-G
Well	Date	Туре	Denzene		ns per liter, ug/L	Aylenes	milligrams pe	
			26.0			1.3	1.7	0.18
MW-10	3/23/98	Duplicate	36.0	<1	5.3 < 5	< 5	2.1	< 0.5
(cont.)	6/23/98	Regular	37.0	< 5		1 !	1.4	0.36
	9/30/1998	Regular	84.0	3.2	30.0	2.2		0.38
	12/10/1998	Regular	29.0	1.0	7.0	1	0.86	<0.5
	3/9/1999	Regular	28.0	<5.0	5.8	<5.0	0.92	
	6/10/1999	Regular	17.0	<1.0	<1.0	<1.0	0.30	0.16
	9/14/1999	Regular	10.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/1999	Regular	23.0	< 1	< 1	1.2	0.44	0.16
	3/10/2000	Regular	300.0	4.3	6.6	43.2	1.2	0.85
	6/8/2000	Regular	78.0	1.7	7.2	9.0	0.67	0.74
	9/13/2000	Regular	23.0	1.5	1.1	2.9	1.6	0.41
	12/7/2000	Regular	7.2	<1	< 1	< 1	1.5	0.15
	3/8/2001	Regular	3.4	1.1	< 1	<1	3.4	0.2
	6/22/2001	Regular	< 1	< 1	< 1	<1	1.2	<0.1
	9/10/01 and 9/18/01	Regular	2	< 1	< }	< 1	2.3	<0.1
	12/6/2001	Regular]	No Valid Data		
	3/12/2002	Regular	< 1	< 1	< 1	< l	3.2	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< !	1.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	0.1	<0.082	3 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1
	3/6/2003	Regular	< 1	< 1	18	< 1	NA	< 0.1
	8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.2	< 0.1
	12/18/2003	Regular	< 1	< 1	< 1	< 1	0.9	< 0.1
MW-11 1	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA
	5/4/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	8/1/95	Regular	44.0	29.0	5.5	13.0	NA	0.2
	11/15/95	Regular	190.0	2.8	6.2	11.0	NA	0.4
	2/23/96	Regular	49.0	1.2	0.5	4.0	NA	0.25
	5/31/96	Regular	300.0	83.0	12.0	28.0	NA	0.8
	8/23/96	Regular	100.0	1.2	0.3	4.7	NA	0.26
	12/2/96	Regular	970.0	< 5	6.0	8.1	2	1.3
	3/12/97	Regular	130.0	< 5	13.0	5.8	0.42	< 0.5
	3/12/97	Duplicate	100.0	< 5	10.0	5.1	0.43	< 0.5
	6/12/97	Regular	150.0	23.0	19.0	< 5	1.1	0.55
	9/12/97	Regular	220.0	15.0	27.0	13.0	1	0.46
MW-11A	3/24/98	Regular	24.0	5.0	< 5	< 5	0.28	0.14
	6/23/98	Regular	9.9	< 5	< 5	< 5	< 0.2	< 0.5
	9/30/1998	Regular	9.3	3.7	2.2	7.0	<0.20	0.1
	12/10/1998	Regular	1.7	<1.0	<1.0	<1.0	<0.20	<0.1
	3/10/1999	Regular	<5	< 5	< 5	< 5	0.3	<0.5
	6/10/1999	Regular	<1.0	< 1.0	< 1.0	< 1.0	<0.20	<0.10
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/1999	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
	3/9/2000	Regular	1.2	< 1	< 1	< 1	0.43	< 0.1
	6/8/2000	Regular	3.6	< 1	< 1	< 1	0.37	< 0.1
	9/13/2000	Regular	1.4	<1	< 1	< 1	0.36	< 0.1
	12/7/00	Regular	26	< 1	< 1	3.3	0.3	0.12
	3/8/01	Regular	12	< 5	< 5	< 5	2.2	< 0.5

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	трн-G
Well	Date	Туре	Delizene		ns per liter, ug/L	Ayiches	milligrams p	
		† ··	1.5			< 1	1	< 0.1
MW-11A	6/22/2001	Regular	1.5	<1	<1 <1	<1	1.1	< 0.1
(cont.)	9/10/2001	Regular	7.9	<1				
	12/6/2001	Regular	<1 	<1	<1	< 1	1	< 0.1
	3/12/2002	Regular	1.8	< 1	< 1	1	1.6	< 0.1
	6/18/2002	Regular	2.9	< 0.1	1.3	< 1	0.91	<0.1
	9/16/2002	Regular	9	< 0.11	41	< 0.082	1 J	0.2
	1/9/2003	Regular	12	<1	< 1	1.2	< 1.0	0.4
	3/6/2003	Regular	3.2	< 1	< 1	1.2	< 1	0.13
	8/21/2003	Regular	3.7	< 1	< 1	< 1	< 1	< 0.1
	10/2/2003	Regular	3.7	< 1	< 1	< 1	< 1.2	< 0.1
· · · · · ·	12/18/2003	Regular	3.4	< 1	1.1	< 1	0.63	0.28
MW-12	3/24/98	Regular	100.0	11.0	6.0	8.0	0.29	0.41
	6/23/98	Regular	88.0	< 5	< 5	< 5	< 0.2	< 0.5
	6/23/98	Duplicate	89.0	< 5	< 5	< 5	0.31	< 0.5
	9/30/1998	Regular	260.0	3.0	1.2	7.9	<0.20	0.62
	12/10/1998	Regular	160.0	< 1.0	< 1.0	1.2	0.21	0.36
	3/10/1999	Regular	160.0	1.1	< 1.0	2.9	0.38	0.45
	6/10/1999	Regular	49.0	1.4	< 1.0	< 1.0	0.22	0.13
	9/14/1999	Regular	75.0	< 1.0	< 1.0	< 2.0	<0.20	0.23
	12/9/1999	Regular	64.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Regular	93.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Duplicate	99.0	< 1	< 1	< 1	0.22	0.22
	6/8/2000	Regular	62.0	< 1	< 1	<1	< 0.2	< 0.1
	9/13/2000	Regular	34.0	< 1	< 1	< 1	0.23	< 0.1
	12/7/2000	Regular	27	< 1	2.9	1.9	<0.25	< 0.1
	3/8/2001	Regular	14	< 1	< 1	< 1	2.1	0.1
	6/22/2001	Regular	12	< l	< 1	< 1	0.51	0.11
	9/10/2001		·		Sampled) During This	,		
MW-12D	7/2/1999	Regular	< 5	< 5	< 5	< 5	<0.20	<0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	<0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
J	3/9/2000	Regular	< 1	< 1	< 1	<1	0.24	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< !	< 0.2	< 0.1
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	-	NS	NS	NS	NS	NS	NS
	6/22/2001	-	NS	NS	NS	NS	NS	NS
	9/18/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
İ	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.44	< 0.1
ļ	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.2 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	< 1	<1	< 0.1
	3/6/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	6/20/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.2	< 0.1
	12/18/2003	Regular	< 1	< 1	< 1	< 1	<0.2	< 0.1
MW-13	7/2/1999	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/1999	Regular	860.0	16.0	450.0	34.4	2.1	3.1
Ī	12/9/1999	Regular	430.0	16.0	410.0	40.9	0.46	3.2

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Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	трн-G
Well	Date	Туре		microgran	ns per liter, ug/L		milligrams p	er liter, mg/L
	3/10/2000	Regular	88.0	2.8	200.0	1.3	1.9	0.99
MW-13	6/8/2000	Regular	6.0	< 1	63.0	3.3	1.1	0.91
(cont.)	9/13/2000	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/2000	Regular	<1	<1	<1	<1	0.43	< 0.1
	3/8/2001	Regular	<1	<1	1.2	<1	2	< 0.1
	6/22/2001	Regular	< 1	< 1	< 1	< 1	0.31	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< j	< 1	< 1	0.84	< 0.1
	6/18/2002	Regular	<1	<1	<1	<1	0.3	<0.1
	9/16/2002	· ·		·				
	through	-	NS	NS	NS	NS	NS	NS
	December 2003		ĺ					
MW-14	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
	12/18/03	Regular	NA	NA	NA	NA	NA	NA
MW-15	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
_	12/18/03	Regular	NA	NA	NA	NA	NA	NA
MW-16	6/20/2003	Regular	< 5	< 5	< 5	< 5	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
_	12/18/03	Regular	NA	NA	NA	NA	NA	NA
OW-4	6/10/1999	Regular	<1.0	<1.0	<1.0	4.4	< 0.2	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	3/9/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	0.25	< 0.1
	6/8/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.21	< 0.1
	9/13/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	12/7/2000			Well Dry (Not	Sampled) During This	and Subseque	nt Monitoring Events	

¹ Well plugged and abandoned 7/1/99

NA = Not Analyzed

NS = Not Sampled

NS-D = Not Sampled because well was dry

NSP = Not Sampled due to Phase-Separated Hydrocarbons

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
	3/23/1998	3.87	190	< 0.0012
1	3/9/1999	< 0.1	195	< 0.0012
	6/10/1999	4.73	209	< 0.0012
	9/14/1999	4.3	210	< 0.0012
	12/9/1999	4.2	210	< 0.0012
	3/9/2000	5.3	260	< 0.0012
	6/8/2000	4.7	240	< 0.0012
:	9/13/2000	3.93	200	< 0.0012
	12/7/2000	3.27	160	< 0.0012
	3/8/2001	3.24	180	< 0.0012
MW-5	6/21/2001	2.74	150	0.0017
	9/10/2001	NA ⁽²⁾	130	< 0.0012
	12/6/2001	2.38	120	< 0.0012
	3/12/2002	2.98	120	< 0.0012
	6/18/2002	2.56	110	0.002
	9/16/2002	2.4	105	0.002
	1/9/2003	2.1	97	0.004
	3/6/2003	2.75	110	< 0.0012
	8/21/2003	2.4	100	< 0.0012
	10/2/2003	2.5	100	< 0.0012
	12/18/2003	2.5	110	< 0.0012
	3/23/1998	0.07	320	0.91
	6/23/1998	< 0.1	325	0.55
	9/30/1998	< 0.1	204	0.81
	12/10/1998	< 0.1	180	0.091
	3/9/1999	< 0.1	142	0.035
		···	223 ⁽³⁾	
	9/14/1999	< 0.10	160	0.0049
N 43V 10	12/9/1999	0.49	170	0.0039
MW-10	3/10/2000	0.1	160	0.0056
	6/8/2000	< 0.1	150	0.031
	9/13/2000	< 0.1 < 0.1	160 190	0.031
	3/8/2001	< 0.1	270	< 0.0012
	6/22/2001	< 0.1	270	0.0012
	9/10/2001	NA NA	NA NA	NA NA
	3/12/2002	< 0.1	230	NA NA
	6/18/2002	< 0.1	240	0.007

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-10	9/16/2002	< 0.03	318	0.006
(cont.)	1/9/2003	< 0.1	280	0.0024
, ,	3/6/2003	< 0.1	270	0.0031
	8/21/2003	0.21	350	< 0.0012
	10/2/2003	0.11	360	< 0.0012
	12/18/2003	0.28	350	< 0.0012
	3/23/1998	< 0.05	190	0.14
	6/23/1998	< 0.1	225	0.11
	9/30/1998	0.4	196	0.043
	12/10/1998	0.7	188	0.033
	3/10/1999	< 0.1	164	0.094
		< 0.1 ⁽⁴⁾	227 ⁽³⁾	
	6/10/1999	< 0.1	181	0.0036
	9/13/1999	0.22	250	< 0.0012
	12/9/1999	< 0.1	290	0.0079
	3/9/2000	0.11	270	0.037
	6/8/2000	< 0.1	240	0.0069
	9/13/2000	< 0.1	320	< 0.0012
MW-11A	12/7/2000	< 0.1	260	0,0096
	3/8/2001	< 0.1	330	0.0028
	6/22/2001	< 0.1	180	0.0074
	9/10/2001	NA	280	< 0.0012
	12/6/2001	< 0.1	240	0.0041
	3/12/2002	< 0.1	350	0.0044
	6/18/2002	< 0.1	560	0.0028
	9/16/2002	0.3	383	< 0.0012
	1/9/2003	< 0.5	290	0.0063
	3/6/2003	< 0.1	290	0.0044
	8/21/2003	0.68	340	< 0.0012
	10/2/2003	1.4	350	< 0.0012
	12/18/2003	<0.1	320	< 0.0012
MW-12	3/23/1998	< 0.05	240	< 0.0012
	6/23/1998	< 0.1	240	< 0.0012
	9/30/1998	< 0.1	168	< 0.0012
	12/10/1998	< 0.1	202	< 0.0012
	3/10/1999	< 0.1	137	< 0.0012
		< 0.1 ⁽⁴⁾	193 ⁽³⁾	
	6/10/1999	< 0.1	217	< 0.0012
	9/14/1999	< 0.10	230	< 0.0012
	12/9/1999	< 0.1	180	< 0.0012
	3/10/2000	< 0.1	210	< 0.0012

Table 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-12	6/8/2000	< 0.1	220	< 0.0012
(cont.)	9/13/2000	< 0.1	240	< 0.0012
	12/7/2000	< 0.1	260	< 0.0012
	3/8/2001	< 0.1	300	< 0.0012
	6/22/2001	< 0.1	360	0.0021
	9/10/2001	d) During This and Subseq	uent Monitoring Events	
MW-12D	9/18/2001	NA	190	< 0.0012
	12/6/2001	< 0.1	200	< 0.0012
	3/12/2002	< 0.1	200	< 0.0012
	6/18/2002	< 0.1	180	0.0012
	9/16/2002	0.06	172	< 0.0012
	1/9/2003	< 0.1	150	0.005
	3/6/2003	0.705	170	0.0038
	6/20/2003	< 0.1	160	< 0.0012
	8/22/2003	< 0.1	160	< 0.0012
	10/2/2003	< 0.1	140	< 0.0012
	12/18/2003	<0.1	160	< 0.0012

^{(1) -} By EPA Method 300, except as noted

mg/L = milligrams per liter

^{(2) -} NA indicates not analyzed

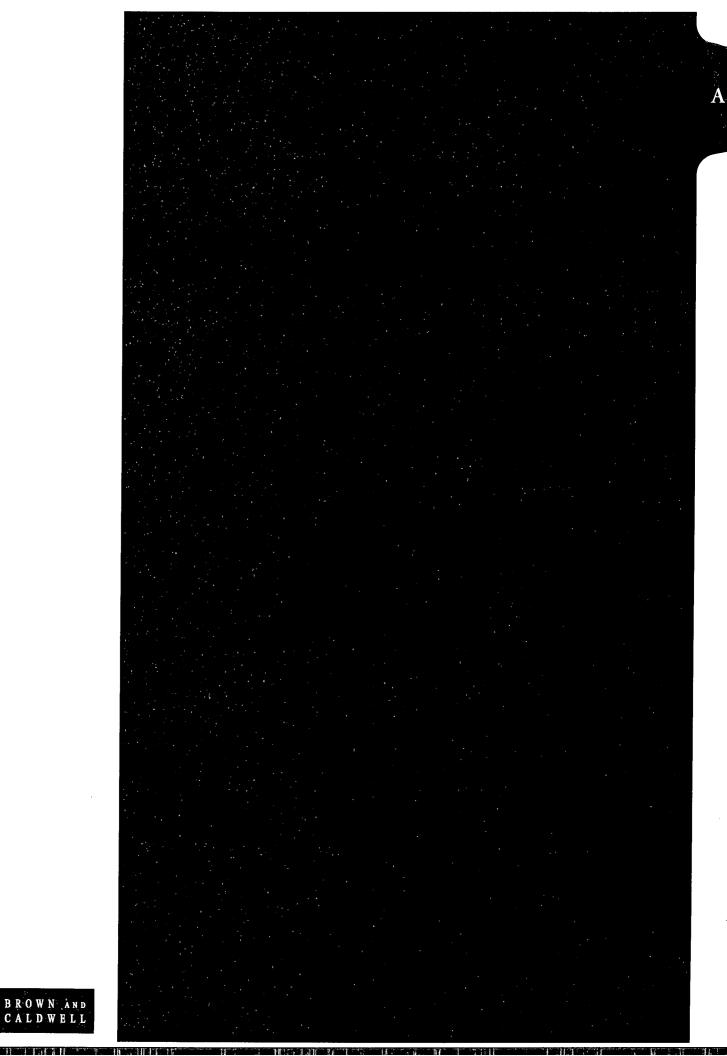
^{(3) -} By EPA Method 375.4

^{(4) -} By EPA Method 353.3

^{(5) -} NS-D indicates not sampled (well dry)

BROWN AND CALDWELL

APPENDICES



APPENDIX A

Groundwater Sampling Forms

III I HE ELEMAN CONTRACTOR OF A CONTRACTOR AND A CONTRACTOR OF

B R O W N A N D C A L D W E L L

FORM GW-1 (Rev 2/26/02 - dg)

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-5

,		· · · · · · · · · · · · · · · · · · ·						
	JECT INFO			1 26		10	2	
Project i	Number: <u>/2-8</u>	32 Task	Number:	19	Date: <u>/2</u>	-/8-	<u> </u>	ime: <u>0830</u>
Client:_	BJ	,			Personnel:	TE/1	23	<u> </u>
Project I	Location:	0BB5	; K/M		Weather:	10/8/	+347/	wildy
2. WEL	L DATA							
Casing	Diameter: <u>2</u>	inches	Туре: ф	PVC 🗆 Stainle	ss 🛭 Gelv. St	eel 🗆 Teflone	Other	
	Diameter:	inches	Туре: г	PVC - Stainle				
Total De	epth of Well: <u>64</u>	feet feet	From: o	Top of Well Car	sing (TOC)	Top of Protec	tive Casing 100	her. Historical
Depth to	Static Water:	52 · 35 feet	From:	Top of Well Car	sing (TOC)	Top of Protec	tive Casing 🚨 O	ther
	Product:	feet		Top of Well Car	sing (TOC)		ctive Casing 🗆 C	
	of Water Column			Jme: <u>2 · 3 4</u>	<u>⊈</u> gel	Screened In	terval (from GS)	45-601
	ntake depth <u>63</u>	· 5 (from G	s) $3 \omega v$	= 1.032		Note: 2	inch well = 0.16 gr	4-inch well = 0.65 gel/ft
3. PUR	GE DATA	24	-					•
Purge N	Aethod: Beile Centr	r, Size: <u> </u>	Bladder Pump (Peristaltic Pump (⊒ 27-Submersible □ Inertial Lift Pur	Pump □ 4" 8 np □ Other:	Submersible Pi	<u></u>	Equipment Model(s)
	ls: Pump/Baller	☐ Stainless	□ PVC □ Teff	on® 🛭 Other:		<u> </u>	_	Ma
14-4-4-	ls: Rope/Tubing		□ Prepared On-S □ Polypropyle □ Prepared Off-1				, ,	
4				Site 🖸 Field Cla	ened Disp	posable	2. <u>va</u>	to probe
Was we	ell purged dry?	Yes 🗹	No Pun	nping Rate:	(i/min	3. Ha	intie
Time	Cum. Gallons Removed	рН Те	mp Spec. Cond.	, - n	Dissolved	Turbidity	Depth to Water (TOC)	Comments
	Removed		COIN.		Oxygen	<u> </u>	(100)	
	<u> </u>					1/	Volum	V S \
	D	. led	1.2.	5 Tal	(3	well	Veron	
	19	. / • •	- 1 - 2 -	/	 ``	<u> </u>		
					ļ	 		
<u> </u>		·			<u> </u>		<u> </u>	
				_	 	 	 	
					 			
4 6 4 4 4	PLING DAT				<u> </u>	<u> </u>	Genr	hemical Analyses
	M Roller Siz	- //	Ider Pump Di2*	Submersible Pur	mp □ 4"Suba	mersible Pumo	.	100
Method		Pump O Inertial	Lift Pumo D Oth	ner:	. =		Ferro	us Iron: mg/L
Material	ls: Pump/Bailer	☐ Stainless (☐ Dedicated (☐	□ PVC □ Tefli □ Prepared Off-Si	on® □ Other:_ ite □ Field Clea	ened 🖸 Disp	osable	DO:	3· ₹ mg/L
Material	s: Tubing/Rope	Polyethylene	☐ Polypropyle☐ Prepared Off-	ne 🗆 Teflon®	Other	posable	- Nitra	te: mg/L
	Water at Time		Prepared Offic		ed? D Yes			
	ID: $MW-5$		ple Time:_0	750	# of Contain	-	Sulfa	ite:mg/L
·	•	n v.	/		or Contract		- Alka	inity: mg/L
Duplicat	te Sample Collec	xled?			-			,
					 	· · · · · · · · · · · · · · · · · · ·		
E 001	MENTO	9	1/		72-		1)	2116 110
5. COM	MEN 19	Juny	11/ A)	15 / 13	10K	TPH	(-), []	177- 5, 10 3,
) O 4, 1	7/talu	11184	and f	1660/v	iea n	19tha	ue
Note: Include	comments such as	well condition of	dor, presence of	NAPL, or other it	ems not on the	e field data she	el.	
	n-proj\forms\Fi							
Genvio	א שיפווו זטוינט דקיני	AND DOMESTICATION	TOUR PARTY					

Signature

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-10

1. PROJ	ECT INFO	RMAT	ION		-				
Project N	Number: 128	32	Task Num	ber: 010	<u>7</u>	Date: 12 -	-18-1	<u> </u>	Time: 0920
Client:	BJ 50	4000	e5_			Personnel:	JE/R	-B	· · · · · · · · · · · · · · · · · · ·
Project L	ocation: 14 o	bbs.	My			Weather:	Gold 1+	320F	windy
2. WELI	_ DATA			•					V
Casing [Diameter2_	incl	105	Type: pp	/C 🗆 Stainle	es 🛘 Gelv. St	eel 🗆 Teflonf	Other	
Screen	Diameter: 1	ind	hes	Type: DP	/C 🗆 Stainle	es 🗆 Gelv. St	eel 🗆 Teflonf	D Other:	
Total De	pth of Well: b	3.51 te	et	From: p To	op of Well Cas	ing (TOC)	Top of Protec	ctive Casing 🚨 C	Other:
Depth to	Static Water:_	61.55	feet	From: to To	op of Well Car	ing (TOC) 🗆	Top of Prote	ctive Casing 🔲 C	Other:
	Product:	feet			op of Well Car	,	Top of Prote	ctive Casing D	Other:
Length o	of Water Column	n: 1 · 4	e feet		e: <u>0 · 3</u>			terval (from GS)	
	take depth	<u> </u>	om GS) 💆	30000	3.940	gal	Note: 2	inch well = 0.16 g	wift 4-inch well = 0.85 gel/ft
	GE DATA	- 2/	<i>(</i>)			·
Purge M	lethod: Belle	r, Size: <u>/-</u> rifugal Pum	□ Bladd p □ Perista	erPump □ 2* atticPump □ 1	":Submersible nertial Lift Pun	Pump □ 4"8 np □ Other:	Submersible Pr	итр	Equipment Modeks)
Material	s: Pump/Bailer			Teffont				 . Q.	rider
	ν .	,	•			ned X Dispo □ Other:			
Material	s: Rope/Tubing	• /		epered Off-Site	☐ Field Cle	Other: ened S Dis	posable	2. 10.	atel pube
Was we	Il purged dry?	Yes	□ No	Pumpi	ng Rate:	00	Vmin	3. Ha	eh kit
Time	Cum. Gallons Removed	рΗ	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
									Builed out
								,	dry-1/2 701
							page and the second		/ /
							N. Station		
		•							
				and the same of the same					
				المستميرين					
4. SAM	PLING DAT	TA "						Geo	chemical Analyses
Method(s): S Baller, St	se:(Bladder Pu	ump D 2" Su	bmersible Pur	np □4"Sub	mensible Pump	Ferm	ous Iron: 6.8 mg/L
1	/			Teflone					0:0
	s: Pump/Bailjer	Dedic	eted OPrep trylene OF	ared Off-Site Polypropylene	☐ Field Clea	aned SI Disp		DO:	
	s: Tubing/Rope					sened Dis	,	- Nitra	
	Water at Time					ed? Yes		Sulf	ate:mg/L
Sampie	10: <u>/ (/ - </u>			No ID:			ileis:	- Alka	alinity: mg/L
Duplicat	e Sample Collec	cted?	J 165 9	NO 1D		-			•
									
5. COM	MENTS	In.	nled	7sv	BTEL	TRI	7-6-	a D. 11	itiste, sultere
MIKAI	Carte	1,66	11105	hier	<u> </u>	1 1			thate, gulfare
10000	= 177	V (17			<u></u>			· · · · · · · · · · · · · · · · · · ·	
Note: Include	comments such as	s well cond	tion, odor, p	resence of NA	PL, or other it	ems not on the	e field dete sh	eel.	
	-		Chack wiell					TE	

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW- 11 A

1. PROJECT INFORMATION												
Project Number: 12832 Task Number: 019 Data: 12 - 18 - 03 Time: 0805												
Personnel: JE/RB Project Location: HOBBS 1000 Weather: Cold 1 ± 55°f / Winley												
2. WELL DATA												
Casing Diameter: 2 inches Type: D PVC D Stainless D Gelv. Steel D Teflon® D Other.												
Screen Diameter: inches Type: D PVC D Stainless D Gelv. Steel D Teflon® D Other												
Total Depth of Well: 63.22 Teet From: D Top of Well Casing (TOC) D Top of Protective Casing D Other:												
Depth to Static Water: 62.05 feet From: d Top of Well Casing (TOC) D Top of Protective Casing D Other:												
Depth to Product:feet From: ID Top of Well Casing (TOC) ID Top of Protective Casing ID Other:												
Length of Water Column: 1 · 77 feet Well Volume: 6 · 283 gal Screened Interval (from GS): 50 - 667 Note: 2-inch well = 0.16 gal/R 4-inch well = 0.85 gal/R												
Pump intake depth (from GS)												
3. PURGE DATA V Baller Strain 2 D Blooder Purps D 2: Submonthly Burns D 4: Submonthly Burns												
Purge Method: Desiter, Size: Desider Pump Deristettic Pum												
Materials: Pump/Baller												
Atabatists: Page (Turbing Polyethylene Polypropylene Teffon® Other:												
Was well purged dry? Yes No Pumping Rate:gal/min 3												
Time Removed PH Temp Cond. Eh Oxygen Turbidity (TOC) Comments												
Barred 527												
114-1 Spel												
4. SAMPLING DATA Geochemical Analyses												
Method(s): Belier, Size: 2												
Materials Dump/Relify Stainless PVC Teffon® Other												
C) Debuthion C Princerviere C Telloco D Other												
Materials: Tubing/Roge Dedicated Prepared Off-Site Diseased Disposable Nitrate:												
Depth to Water at Time of Sampling: Field Filtered? □ Yes No Sulfate:mg/L												
Sample ID: Mid-// Sample Time: 0930 # of Containers: 3 Alkalinity: mg/L												
Duplicate Sample Collected?												
5. COMMENTS BJEX, TPH-D, TPH-4, NO3, SO4, Altalinity 5												
Dissolved Mexicans												
Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.												

Gen\non-proj\forms\Field Data Sheet_xis\BC-gallons
FORM GW-1 (Rev 2/26/02 - dg)

Signature

FORM GW-1 (Rev 2/26/02 - dg)

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MU-120

1. PROJ	ECT INFO	RMAT	ION						
	lumber: /2 8			ber: 019	<u>, </u>	Date:/ 2 -	18-0	<u>3 </u>	ime: /030
	BJ 5					Personnel:	JE,	1,723	
Project L	ocation:	1108	385			Weather:	11 A/W	sudy)	
2. WELL	DATA			•				· / .	
Casing D	iameter:	inct	186	Type: dip	VC D Stainle	ss 🗆 Gelv. Str	ed D Teflond	0 C) Other:	
Screen D	Diameter:	ind	185	Type: the	VC 🗆 Steinle	es 🛘 Gelv. St	eel 🗆 Teflont	D C Other	
Total De	oth of Well: $rac{R}{2}$	7.58 fe	et	From: d T	op of Well Cas	ing (TOC)	Top of Prote	ctive Casing 🖸 O	her. Historical
Depth to	Static Water: (2.21	feet					ctive Casing 🔲 O	***************************************
	Product:	feet		·				ctive Casing DO	
_	f Water Column				e: 4,24	gel			$\frac{77/_2 - 27/_2}{4R}$
	take depth	/(fro	om GS)	W 0 = 1	·h13		71016. 2		
3. PURG	SE DATA	Sine	□ Bladd	er Pump M 2	"Suhmersihle	Pumo D.4°S	uhmereihle D	umo	
Purge M	ethod: Delter	ifugal Purn	D Perist	eltic Pump 🔲	inertial Lift Pur	p 🗆 Other:			Equipment Model(s)
Materials	s: Pump/Baller			C 🖸 Tefloni pared Off-Site		ned 🖸 Dispo	sable	1. 1	Electric Pengs
Materials	s: Rope/Tubing	N Polyer	hylene D	Polypropylene	Onofier C	Other.		مر نیاری	res prohe/H
	ν I purged dry?		SE No						-/
Was well	Cum. Gallons			Spec.	ng Rate:	Dissolved	Vmin	3	51 620 mos
Time	Removed	pН	Temp	Cond.	Eh .	Oxygen	Turbidity	(TOC)	Comments
1124	<u>Ł</u>		⁹ c	Usfin	Dah	111/1		71	
1129	0.5	6.57	16.44	1120.	8.1	1.44	. 7.	L 2 .36	
1132	1. 3	6.70	15.87	1124	- 93	0.87		62.32	
1135	1.5	6.76	16.18	1121	-103	0.68		62.32	
1138	2.0	6.80	16.58	1124	-108	0.63		62.32	
		· ·							\ . \ . · · · · · · · · · · · · · · · ·
							<u> </u>		·
	1 110 547			<u> </u>	<u> </u>	}			
Method(s	PLING DAT Beller, Sta Peristellic Pump/Baller	e: C Pumo 🖸 li Stainle	nertial Lift P	ump 🖾 Other.	: B [°] ⊡∕Other:	np 🗆 4" Subr			us Iron: 2 · 2 mg/L
Materials	: Tubing/Rope	Polyet	hylene 💷		☑ Field Clea	Cl Other		- Nitrat	
	Y					aned SyDis	,	Mingt	e: mg/L
Depth to	Water at Time of	or:Sampli ⊇. i`\			Field Filter∈ ∤C	d? □ `Yes #.of.Contain	es.	Sulfa	te:mg/L
	Sample Collec	1	Sample T			# of Contair 	reis:	- Alkali	inity: mg/L
		·							
S. COMI	MENTS	Si	Sampi Dy, F	led f	by 13T	EX T I Dissi	PH-G	TPH-D	, NO ₃ ,
lote: Include (comments such as	well condi	tion, odor, p	resence of NA	PL, or other ite	ems not on the	field data she	pet: 7 (-	
	-proj\forms\Fie								

Signature

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW -14

Project i	IECT INFO			nber:_ <i>0 </i>	9	Date: 72 -	-18-0	73	Time: 1245
Client:_		1101/2	j			Personnel:_	JER	BBPLO	· · · · · · · · · · · · · · · · · · ·
Project I 2. WELI		Holls	L			Weather:	COUR 14	2677W	- rolly
	Diameter:	V inc	hes	Type: n p	VC 🗆 Stainle	ss 🗆 Gelv. S	teel D Tefloni	0 € Other	
	Diameter:	3/	hes			es 🗆 Gelv. S			
	pth of Well: 64	7.37 h	et						other. Historical Roja
	Static Water							ctive Casing (1)	
Depth to	Product:	feet		From: p 1	op of Well Ca	sing (TOC) (Top of Prote	ctive Casing 🔲	Other:
Length o	of Water Column	n: 6.8	2 feet	Well Volum	e: 2-2-1	1.291	Screened In	iterval (from GS	1:54.95 69.5
	take depth	(fr	om GS)	1-09/2	gol X3	5 = 3 wa	ele volum	!-Inch well = 0.16 (- ≥ (3.27 9.6	wift 4-inch well = 0.85 gal/ft
Purge M Material Material	GE DATA lethod: A Beije lethod: A Beije Centi s: Pump/Bajller s: Rope/Tubing Il purged dry?	r, Size: rifugal Pum CI Stainl CI Dedic CI Polye CI Dedic	p D Perista ess D PV(eted D Prej thylene DY	eltic Pump 🖸 I C 🚨 Teflont pered Off-Site Polypropylene epered Off-Site	inertial Lift Puri D Cl Other D Field Clea D Teflon®	ned @-Disp	osable	1. Be	Equipment Model(s) Eclev Pro46
Time	Cum. Gallons	рH	Temp	Spec.	Eh	Dissolved	,	3. Depth to Wate	Comments
	Removed			Cond.		Oxygen	T	(тос)	
] 			<u> </u>	
		-							Clas
:	1	-1	al	750	70	2 1	aa	1000	G a
					V -	İ			
									•
									·
Method(s		ne: (Purmo () i () Stainle () Dedice () Polyet	nertial Lift Po ass DPVC ated DPrep hylene CF	ump Other: Content pered Off-Site Polypropylene	D CI Other: D Field Cles		<u>/</u>	Ferni DO:	chemical Analyses ous Iron: mg/L
Depth to	Water at Time	of Sampli	ng:			ed? 🖸 Yes	,	Nitra Sulfi	
	D: <u>MW</u> /	,	Sample Ti		<u></u>	# of Contain	ners:/	Alka	linity:mg/L
5. COM	MENTS	Ba	ilest	dr	y a	t 10	rell5	n	
Note: Include	comments such as	well condi	ion, odor, or	esence of NA	Pl. or other its	ems not on the	field date she	nel .	
	profitorme/Fig				, NI	124 01 016	on cale are		$\mathcal{O}(1)$

FORM GW-1 (Rev 2/26/02 - dg)

FORM GW-1 (Rev 2/26/02 - dg)

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-15

1. PROJECT INFORMATION	
Project Number: 1232 Task Number: 019 Date: 12-18-03 Time: 125	
Client: Personnel: 4/ K/1	Ton.
Project Location: +OBBS, Non Weather: (a) d worky (= 3	<u>6</u> 1-
2. WELL DATA	
Casing Diarmeter: inches Type: @ PVC D Stainless D Gelv. Steel D Teflon® D Other:	
Screen Diameter: inches Type: # PVC Steinless Gelv. Steel G Teflon® G Other:	
Total Depth of Well: 62.0/ feet From: 0 Top of Well Casing (TOC) Top of Protective Casing Other: 115 tol 15	of begin
Depth to Static Water: 6 ★ ? 3 feet From: d Top of Well Casing (TOC) □ Top of Protective Casing □ Other:	
Depth to Product: feet	
Length of Water Column: 5.18 feet Well Volume: 0.829 gal Screened Interval (from GS): 52 -> 6	
Pump intake depth (from GS) 0-829gal x 3 = 2-19gal = 3.001: 2-inch well = 0.16 gal/R 4-inch well	0,05 gavit
3. PURGE DATA	l
Purge Method: Centrifugel Pump Deristattic Pump Dinertial Lift Pump Diction:	odel(s)
· · · · · · · · · · · · · · · · · · ·	
U Department of President of Department of D	
Materials: Robe/Tubing Dedicated Prepared Off-Site Field Cleaned Poisposable 2.	
Was well purged dry? Yes D No Pumping Rate:	
Time Curn. Gallons pH Temp Spec. Eh Dissolved Turbidity Depth to Water (TOC)	nts
- Crace	
State 1 Close	7
The talk of the ta	
1 STORAL STORAGE STORAL STORAGE STORAL STORAGE	
	
4. SAMPLING DATA Geochemical Analyse	8
Method(s): Delier, Size: Delier Pump Delie	_mg/L
Materials: Pump/Baller	mg/L.
Materials: Tubing/Rope	mg/L
Depth to Water at Time of Sampling: Field Filtered? ☐ Yes ☑ No Sulfate:	mg/L
Sample ID: MW -15 Sample Time: 1330 # of Containers:	_
Alkalintty:	_ mg/L
Duplicate Sample Collected?	
5. COMMENTS CHLORIDE	
Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.	
Coulon and Stample Field Date Shoot visiBC-callans	

Signature

B R O W N A N D C A L D W E L L

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: NW-16

1. PROJ	ECT INFO	RMAT	ION					,					
	lumber: 122				2	Date: / 2	2-18	<u>- 93</u> T	ime: 1545				
Client:	BIT	Seri	126.65	<u> </u>		Personnel:							
Project L	ocation:	10BE	4			Weather.	101d	150°F/	Wily				
2. WELL DATA													
Casing [Diameter	<u>incl</u>	186	Туре: фр	VC Stainle	ss 🛘 Gelv. Sk	eel 🗆 Teflorif	Other					
Screen [Screen Diameter: inches Type: D PVC D Stainless D Gelv. Steel D Teflon® D Other:												
Total Depth of Well: 72.0 feet From: C Top of Well Casing (TOC) C Top of Protective Casing C Other.													
Depth to Static Water: 66.72 feet From: D Top of Well Casing (TOC) D Top of Protective Casing D Other.													
	Product:			·			Top of Prote	ctive Casing Q O	ther:				
_	f Water Columi				e: <u>/-644</u>			terval (from GS):					
	take depth_67	, , (fr	om GS) 🧷	well i	ibluma	1.64	ケ×ラ =	inch well = 0.16 ge	IR 4-inch well = 0.85 gal/ft				
3. PURC	SE DATA	- 61	D Di 44	*	, , , , , , , , , , , , , , , , , , , ,	D							
Purge M	ethod: Cent	r, size: rifugel Pum	_ UBlacco p Ol Perista	ellic Pump ()	:-Submersion Inertial Lift Pur	Pump Q4°S	SUDMERSION M		Equipment Model(s)				
	s: Pump/Baller	☑ Steini	BBS DPW	☐ Teffon	© CI_Other:		replie	· Ful	tr gump				
Materiak	s: Rope/Tubing	2 Polye	thylene D	Polypropylene	© Tefon®	oned Upepo Other sened Disp			/				
	V		\ /			//			tel Probe				
Was we	i purged dry?	□ Yes	\$ No		ing Rate: <u>0.</u>	176 00	Vmin :	3. <u>V</u> S					
Time	Cum. Gallons Removed	рH	Temp	Spec. Cond.	Eh .	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments				
1553	Ö		0/	palin	ORP	mg/L		66.78					
1558	0.5	6.88	15.90	3444	58.4	4.52		66.89	Sh cloudy				
1800	1.5	6.83	15.99	3485	52.3	5.81		66.38					
1603	1.5	6.82	18.31	3475	58.7	6.42	<u> </u>	66.90					
1606	2.0	6.78	17-08	3478	58.9	6.62		4.91					
1609	2.5	6.77	17-26	3477	58.8	6.74		66.93					
1612	3.0	6.77	17-31	3478	58.9	6.79		66.95	J-				
	-3.5												
7						Ι		<u> </u>					
4. SAMF	PLING DAT		.*	/					hemical Analyses				
Method(s	S): D Baller, Stz	Pump 🗆 i	Diseader Ponertist Lift Po	ump (2) 2" Su ump (2) Other	ibmersible Pui :	mp 🖸 4" Subi	mersible Purn	Fелто	us Iron: mg/L				
Materials	: Purip/Bailer	Q Staink	985 D PVC	☐ Teffon	0 🗆 Øther	~ ~~~	 -	DO:	mg/L				
,					© Field Cle		osable /						
	:: Tubing/Rope	D Dedica	eted D Pre	epared Off-Sik	e 🖸 Field Cl	eened Sibis	posable	- Nitrat	e:mg/L				
	Water at Time			. /		ed? 🗆 Yeş	/	Sulfa	te:mg/L				
Sample	D: <u>MW - /</u>		-	ime: <u>/6/</u>		# of Contain	ners:/_	_ Alkal	inity: mg/L				
Duplicate	Sample Collec	cted?	☐ Yes 🎖	No ID:		. .		٤.,					
·							·		·				
			,										
5. COM	MENTS	رے	YLOR	IDES									
						 							
N-2-1		. umil ====1	lion ada -	rotones of \$14	ADI or other 2	lame not on the	field data st						
Note: include (comments such as	weii condi	иоп, о оо г, р	esence of NA	NEL, OF OTHER R	erns not on the	; ireiu dete sh	eci.					

Gen\non-proj\forms\Field Data Sheet.xis\BC-gallons FORM GW-1 (Rev 2/25/02 - dg)

Signature

APPENDIX B

Laboratory Analytical Reports

THE TOTAL THE CONTROL OF THE CONTROL



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03120780

Report To:

ax To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana

Suite 2509 Houston

TX

77002-

ph: (713) 759-0999

fax: (713) 308-3886

Brown & Caldwell

Rick Rexroad fax: (713) 308-3886 **Project Name:**

BJ-Hobbs #12832

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.: Date Reported:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
V- 5	03120780-01	Water	12/18/03 9:50:00 AM	12/19/03 9:30:00 AM	188096	
MW-11A	03120780-02	Water	12/18/03 9:30:00 AM	12/19/03 9:30:00 AM	188096	
V-10	03120780-03	Water	12/18/03 9:40:00 AM	12/19/03 9:30:00 AM	188096	
V-12D	03120780-04	Water	12/18/03 11:40:00 AM	12/19/03 9:30:00 AM	188096	一一
rip Blank	03120780-05	Water	12/18/03	12/19/03 9:30:00 AM	188096	16

Senior Project Manager

1/5/04

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Case Narrative for: Brown & Caldwell

Certificate of Analysis Number:

03120780

Report To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana

Suite 2509 Houston

TX

77002-

ph: (713) 759-0999

fax: (713) 308-3886

Project Name:

BJ-Hobbs #12832

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert, No.:

Date Reported:

The data in this report applies to the analysis of four water samples for the BJ Services site in Hobbs, New Mexico. These samples were received on December 19, 2003, assigned to SPL Certificate of Analysis No. 03120780, and analyzed for the parameters as noted on Chain-of-Custody No.188096.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Pat Lynch Senior Project Manager

1/7/2004

Date



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-5 Collected: 12/18/2003 9:50 03120780-01 SPL Sample ID:

	Site:	Hobbs, NM				
Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #

Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY (AS CA	CO3), TOTAL				MCL	E310.1	Units: m	g/L	
Alkalinity, Total (As Ca	iCO3)	234		2		1	12/30/03 12:00	J_C	2023664
DIESEL RANGE ORG	SANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organics		ND		0.2		1	01/02/04 3:10	AM	2024953
Surr: n-Pentacosane		78.2	%	39-142		1	01/02/04 3:10	AM	2024953
Prep Method	Prep Date	J-101		Prep Initials					
SW3510C	12/20/2003 7:5	6		K_L					
GASOLINE RANGE	DRGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Organ	nics	ND		0.1		1	12/27/03 0:34	AE	2019751
Surr: 1,4-Difluorobe	106	%	74-121		1	12/27/03 0:34	ΑË	2019751	
Surr: 4-Bromofluoro	benzene	102	%	55-150		1	12/27/03 0:34	AE	2019751

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L	
Methane	ND	0.0012		1	12/22/03 20:58 J_F	2011153
ION CHROMATOGRAPHY	* * * * * * * * * * * * * * * * * * * *		MCL	E300.0	Units: mg/L	
Nitrogen, Nitrate (As N)	2.5	0.1		1	12/19/03 17:37 CV	2006831

Millogen, Millale (AS M)	2.5		0.1			12/19/03 17.37	CV	2000031
Sulfate	110		4		20	12/30/03 19:22	CV	2025263
PURGEABLE AROMATICS				MCL	SW8021B	Units: uç	g/L	
Benzene	ND		1		1	12/27/03 0:34	AE	2019849
Ethylbenzene	ND		1		1	12/27/03 0:34	AE	2019849
Toluene	ND		1		1	12/27/03 0:34	ΑE	2019849
Xylenes,Total	ND		1		1	12/27/03 0:34	AE	2019849
Surr: 4-Bromofluorobenzene	106	%	57-157		1	12/27/03 0:34	AE	2019849
Surr: 1,4-Difluorobenzene	103	%	39-163		1	12/27/03 0:34	AE	2019849

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-11A Collected: 12/18/2003 9:30

SPL Sample ID:

03120780-02

Site:	Ho	bbs.	NM

DIESEL RANGE ORGANICS	Seq. # 2023669 2024959 2024959
Alkalinity, Total (As CaCO3) 386 2 1 12/30/03 12:00 J_C 2	202495
DIESEL RANGE ORGANICS MCL SW8015B Units: mg/L Diesel Range Organics 0.63 0.2 1 01/02/04 3:48 AM 2 Surr: n-Pentacosane 68.0 % 39-142 1 01/02/04 3:48 AM 2 Prep Method Prep Date Prep Initials Frep Initials K_L Value <td>202495</td>	202495
Diesel Range Organics 0.63 0.2 1 01/02/04 3:48 AM 2 Surr: n-Pentacosane 68.0 % 39-142 1 01/02/04 3:48 AM 2 Prep Method Prep Date Prep Initials SW3510C 12/20/2003 7:56 K_L WCL SW8015B Units: mg/L Units: mg/L Units: mg/L SW8015B Units: mg/L Units: mg/L Units: mg/L SW8015B Units: mg/L <td></td>	
Surr: n-Pentacosane 68.0 % 39-142 1 01/02/04 3:48 AM 2 Prep Method Prep Date Prep Initials SW3510C 12/20/2003 7:56 K_L GASOLINE RANGE ORGANICS MCL SW8015B Units: mg/L Gasoline Range Organics 0.28 0.1 1 12/27/03 0:59 AE 2 Surr: 1,4-Diffuorobenzene 127 MI % 74-121 1 12/27/03 0:59 AE 2 Surr: 4-Bromofluorobenzene 105 % 55-150 1 12/27/03 0:59 AE 2 HEADSPACE GAS ANALYSIS MCL RSK147 Units: mg/L Methane ND 0.0012 1 12/22/03 21:07 J_F 2 ION CHROMATOGRAPHY MCL E300.0 Units: mg/L Nitrogen,Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	
Prep Method Prep Date Prep Initials SW3510C 12/20/2003 7:56 K_L GASOLINE RANGE ORGANICS MCL SW8015B Units: mg/L Gasoline Range Organics 0.28 0.1 1 12/27/03 0:59 AE 2 Surr: 1,4-Difluorobenzene 127 MI % 74-121 1 12/27/03 0:59 AE 2 Surr: 4-Bromofluorobenzene 105 % 55-150 1 12/27/03 0:59 AE 2 HEADSPACE GAS ANALYSIS MCL RSK147 Units: mg/L Methane ND 0.0012 1 12/22/03 21:07 J_F 2 ION CHROMATOGRAPHY MCL E300.0 Units: mg/L Nitrogen,Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	202495
SW3510C 12/20/2003 7:56 K_L GASOLINE RANGE ORGANICS MCL SW8015B Units: mg/L Gasoline Range Organics 0.28 0.1 1 12/27/03 0:59 AE 2 Surr: 1,4-Difluorobenzene 127 MI % 74-121 1 12/27/03 0:59 AE 2 Surr: 4-Bromofluorobenzene 105 % 55-150 1 12/27/03 0:59 AE 2 HEADSPACE GAS ANALYSIS MCL RSK147 Units: mg/L Methane ND 0.0012 1 12/22/03 21:07 J_F 2 ION CHROMATOGRAPHY MCL E300.0 Units: mg/L Nitrogen,Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	
GASOLINE RANGE ORGANICS MCL SW8015B Units: mg/L Gasoline Range Organics 0.28 0.1 1 12/27/03 0:59 AE 2 Surr: 1,4-Difluorobenzene 127 MI % 74-121 1 * 12/27/03 0:59 AE 2 Surr: 4-Bromofluorobenzene 105 % 55-150 1 12/27/03 0:59 AE 2 HEADSPACE GAS ANALYSIS MCL RSK147 Units: mg/L Methane ND 0.0012 1 12/22/03 21:07 J_F 2 ION CHROMATOGRAPHY MCL E300.0 Units: mg/L Nitrogen,Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	
Gasoline Range Organics 0.28 0.1 1 12/27/03 0:59 AE 2 Surr: 1,4-Difluorobenzene 127 MI % 74-121 1 * 12/27/03 0:59 AE 2 Surr: 4-Bromofluorobenzene 105 % 55-150 1 12/27/03 0:59 AE 2 HEADSPACE GAS ANALYSIS MCL RSK147 Units: mg/L Methane ND 0.0012 1 12/22/03 21:07 J_F 2 ION CHROMATOGRAPHY MCL E300.0 Units: mg/L Nitrogen,Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	
Surr: 1,4-Diffuorobenzene 127 MI % 74-121 1 * 12/27/03 0:59 AE 2 Surr: 4-Bromofluorobenzene 105 % 55-150 1 12/27/03 0:59 AE 2 HEADSPACE GAS ANALYSIS MCL RSK147 Units: mg/L Methane ND 0.0012 1 12/22/03 21:07 J_F 2 ION CHROMATOGRAPHY MCL E300.0 Units: mg/L Nitrogen,Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	
Sulf. 1,4-Dilludioberizerie 127 Mil % 74-121 1 12/27/03 0:59 AE 2 Surr: 4-Bromofluorobenzene 105 % 55-150 1 12/27/03 0:59 AE 2 HEADSPACE GAS ANALYSIS MCL RSK147 Units: mg/L Methane ND 0.0012 1 12/22/03 21:07 J_F 2 ION CHROMATOGRAPHY MCL E300.0 Units: mg/L Nitrogen, Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	2019752
HEADSPACE GAS ANALYSIS MCL RSK147 Units: mg/L Methane ND 0.0012 1 12/22/03 21:07 J_F 2 ION CHROMATOGRAPHY MCL E300.0 Units: mg/L Nitrogen, Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	2019752
Methane ND 0.0012 1 12/22/03 21:07 J_F 2 ION CHROMATOGRAPHY MCL E300.0 Units: mg/L Nitrogen, Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	2019752
ION CHROMATOGRAPHY MCL E300.0 Units: mg/L Nitrogen, Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	
Nitrogen, Nitrate (As N) ND 0.1 1 12/19/03 18:15 CV 2	2011154
	2006834
Sulfate 320 10 50 12/30/03 19:35 CV 2	2025265
PURGEABLE AROMATICS MCL SW8021B Units: ug/L	
Benzene 3.4 1 1 12/27/03 0:59 AE 2	2019850
Ethylbenzene 1.1 1 1 12/27/03 0:59 AE 2	2019850
Toluene ND 1 1 12/27/03 0:59 AE 2	2019850
Xylenes,Total ND 1 1 12/27/03 0:59 AE 2	2019850
Surr: 4-Bromofluorobenzene 103 % 57-157 1 12/27/03 0:59 AE 2	2019850
Surr: 1,4-Difluorobenzene 91.8 % 39-163 1 12/27/03 0:59 AE 2	2019850

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

THE A TABLE HE SEED. THE SHOPE HE FILE THE SECOND HE AS A SHOPE HE SEED TO BE A SECOND HE WAS A SHOPE HE AS A SECOND HE WAS A

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-10

Collected: 12/18/2003 9:40

SPL Sample ID:

03120780-03

Site:	Hobbs	

		_		Site	HOL	obs, NM				
Analyses/Method	Res	sult		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY (AS CACO	3), TOTAL				MCL	E	310.1	Units: m	g/L	
Alkalinity, Total (As CaCC	03)	279		2		1		12/30/03 12:00	J_C	2023666
DIESEL RANGE ORGA!	NICS				MCL	SW80	015B	Units: mg/L		
Diesel Range Organics	C	.85		0.25		1		01/02/04 4:26	AM	2024956
Surr: n-Pentacosane	6	57.8	%	39-142		1		01/02/04 4:26	AM	2024956
Prep Method	Prep Date			Prep Initials						
SW3510C	12/20/2003 7:56			K_L						
GASOLINE RANGE OR	GANICS				MCL	SW80	015B	Units: mg/L		
Gasoline Range Organics		ND		0.1		1		12/27/03 1:26	AE	2019753
Surr: 1,4-Difluorobenze	ene	107	%	74-121		1		12/27/03 1:26	AE	2019753
Surr: 4-Bromofluoroben	nzene	119	%	55-150		1		12/27/03 1:26	AE	2019753
HEADSPACE GAS ANA	LYSIS				MCL	RSI	K147	Units: mg/L		
Methane		ND		0.0012		1		12/22/03 21:27	J_F	2011158
ION CHROMATOGRAPI	HY	~			MCL	E3	300.0	Units: m	g/L	
Nitrogen, Nitrate (As N)	0	.28		0.1		1		12/19/03 18:27	CV	2006835
Sulfate		350		20		100		12/30/03 19:48	CV	2025266
PURGEABLE AROMATI	ICS				MCL	SW80)21B	B Units: ug/L		
Benzene		ND		1		1		12/27/03 1:26	AE	2019852
Ethylbenzene		ND		1		1		12/27/03 1:26	AE	2019852
Toluene		ND		1		1		12/27/03 1:26	AE	2019852
Xylenes,Total		ND		1		1		12/27/03 1:26	AE	2019852
Surr: 4-Bromoffuoroben	nzene	105	%	57-157		1		12/27/03 1:26	AE	2019852
Surr: 1,4-Difluorobenze	ene 9	8.6	%	39-163		1		12/27/03 1:26	AE	2019852

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-12D Collected: 12/18/2003 11:40 SPL Sample ID: 03120780-04

Site:	Hobbs.	NIB#
one:	HODDS.	ININI

				Site	: Hot	obs, NM			
Analyses/Method	ı	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY (AS CAC	O3), TOTAL				MCL	E310.1	Units: m	g/L	
Alkalinity, Total (As CaC	O3)	189		2		1	12/30/03 12:00	J_C	2023667
DIESEL RANGE ORGA	NICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organics		ND		0.2		1	01/02/04 5:05	AM	2024957
Surr: n-Pentacosane		77.2	%	39-142		1	01/02/04 5:05	AM	2024957
Prep Method	Prep Date			Prep Initials					
SW3510C	12/20/2003 7:56		******	K_L					
GASOLINE RANGE OF	RGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Organic	S	ND		0.1		1	12/27/03 1:51	AE	2019754
Surr: 1,4-Difluorobenz	ene	105	%	74-121		1	12/27/03 1:51	AE	2019754
Surr: 4-Bromofluorobe	nzene	105	%	55-150		1	12/27/03 1:51	AE	2019754
HEADSPACE GAS ANA	ALYSIS				MCL	RSK147	Units: m	g/L	
Methane		ND		0.0012		1	12/22/03 21:36	J_F	2011157
ION CHROMATOGRAP	PHY				MCL	E300.0	Units: m	g/L	
Nitrogen, Nitrate (As N)		ND		0.1		1	12/19/03 18:40	CV	2006836
Sulfate		160		4		20	12/30/03 20:26	CV	2025270
PURGEABLE AROMAT	rics				MCL	SW8021B	Units։ uç	3/L	
Benzene		ND		1		1	12/27/03 1:51	AE	2019853
Ethylbenzene		ND		1		1	12/27/03 1:51	AE	2019853
Toluene		ND		1		1	12/27/03 1:51	AE	2019853
Xylenes,Total		ND		1		1	12/27/03 1:51	AE	2019853
Surr: 4-Bromofluorobe	nzene	99.3	%	57-157		1	12/27/03 1:51	AE	2019853
Surr: 1,4-Difluorobenzo	ene	98.7	%	39-163		1	12/27/03 1:51	AE	2019853

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID Trip Blank Collected: 12/18/2003 0:00 SPL Sample ID: 03120780-05

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug	/L	
Benzene	ND	1		1	12/27/03 2:17	AE	2019855
Ethylbenzene	ND	1		1	12/27/03 2:17	AE	2019855
Toluene	ND	1	,	1	12/27/03 2:17	AE	2019855
Xylenes,Total	ND	1		1	12/27/03 2:17	AE	2019855
Surr: 4-Bromofluorobenzene	98.4	% 57-157	·	1	12/27/03 2:17	AE	2019855
Surr: 1,4-Difluorobenzene	94.7	% 39-163		1	12/27/03 2:17	AE	2019855

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

Quality Control Documentation



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ-Hobbs #12832

alysis:

alysis Date:

Preparation Date:

Diesel Range Organics

thod:

nID:

SW8015B

Method Blank

WorkOrder:

Samples in Analytical Batch:

03120780

Lab Batch ID:

34298

HP_V_031231E-2024944

Units:

mg/L

Lab Sample ID

Client Sample ID

12/31/2003 19:32

12/20/2003 7:56

Analyst: AM

Prep By: K_L Method SW3510C

03120780-01B 03120780-02B MW-5

03120780-03B

MW-11A MW-10

03120780-04B

MW-12D

Analyte	Result	Rep Limit
Diesel Range Organics	ND	0.20
Surr. n-Pentacosane	94.8	18-120

Laboratory Control Sample (LCS)

RunID:

HP_V_031231E-2024946

Units:

12/31/2003 20:10

mg/L Analyst: AM

Analysis Date: Preparation Date:

12/20/2003 7:56

Prep By: K_L Method SW3510C

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	2.13	85	21	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03120820-01

RunID:

HP_V_031231E-2024949

Units:

mg/L

Analysis Date:

12/31/2003 21:26

Analyst: AM

Preparation Date: 12/20/2003 7:56 Prep By: K_L Method SW3510C

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics	0.666	5	2.43	35.2	5	2.55	37.7	5.04	39	13	130

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and punding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ-Hobbs #12832

alysis:

Headspace Gas Analysis

VARC_031222C-2011143 Units:

thod:

nID:

alysis Date:

RSK147

12/22/2003 18:30

WorkOrder:

03120780

Lab Batch ID:

R100842

Method Blank

Analyst:

mg/L J_F

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03120780-01D 03120780-02D MW-5

MW-11A

03120780-03D

MW-10

03120780-04D

MW-12D

Analyte Result Rep Limit Methane ND 0.0012

Laboratory Control Sample (LCS)

RunID:

Analysis Date:

VARC_031222C-2011144

Units:

12/22/2003 18:40

Analyst:

mg/L JF

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Methane	1000	823	82	70	130

Sample Duplicate

Original Sample:

03120666-01

VARC_031222C-2011145

Units:

mg/L

J_F

Analysis Date:

RunID:

12/22/2003 18:51

Analyst:

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Butane	ND	ND	0	50
Ethane	ND	ND	0	50
Ethylene	ND	ND	0	50
Isobutane	ND	ND	0	50
Methane	ND	ND	0	50
Propane	ND	ND	0	50
Propylene	ND	ND	0	50

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

1/5/04 8:56:58 AM



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE

> HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

alysis:

Gasoline Range Organics

HP_S_031226B-2019738

12/26/2003 18:05

ethod:

alysis Date:

SW8015B

BJ-Hobbs #12832

WorkOrder:

03120780

Lab Batch ID:

R101220

Method Blank

Units:

Analyst:

mq/L ΑE

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03120780-01A

MW-5

03120780-02A

MW-11A

03120780-03A

MW-10

03120780-04A

MW-12D

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	98.3	74-121
Surr. 4-Bromofluorobenzene	100.0	55-150

Laboratory Control Sample (LCS)

RunID:

HP S 031226B-2019735

mg/L

Analysis Date:

12/26/2003 13:25

Units: Analyst: ΑE

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	1	100	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03120727-04

RunID:

HP_S_031226B-2019736

Units:

mg/L

Analysis Date:

12/26/2003 17:13

Analyst: ΑE

1	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoli	ine Range Organics	0.541	0.9	1.71	130	0.9	1.53	110	10.9	36	36	160

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

BJ-Hobbs #12832

alysis:

Purgeable Aromatics

thod:

alysis Date:

SW8021B

WorkOrder:

03120780

Lab Batch ID:

R101225

Method Blank

12/26/2003 18:05

HP_S_031226A-2019827 Units:

Analyst:

ug/L ΑE

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03120780-01A 03120780-02A

MW-5

03120780-03A

MW-11A MW-10

03120780-04A 03120780-05A MW-12D.

Analyte	nesuit	Luch rutur
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
N/ 1 = 1	110	

Trip Blank

Result	Rep Limit
ND	1.0
ND	1.0
ND	1.0
ND	1.0
97.6	39-163
108.6	57-157
	ND ND ND ND 97.6

Laboratory Control Sample (LCS)

RunID:

HP_S_031226A-2019817

Units:

ug/L ΑE

Analysis Date:

12/26/2003 12:59 Analyst:

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	48.9	98	81	125
Ethylbenzene	50	48.4	97	85	119
Toluene	50	49.1	98	87	120
Xylenes,Total	150	145.3	97	83	122

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03120727-01

RunID:

HP_S_031226A-2019820

Units:

ug/L

Analysis Date:

12/26/2003 16:21

Analyst: ΑE

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
ł nzene	ND	20	20.5	98.6	20	20.2	97.0	1.56	26	43	155
Ethylbenzene	ND	20	20.1	101	20	19.4	97.1	3.64	34	51	142
uene	ND	20	19.6	97.9	20	18.6	92.9	5.21	25	57	142
enes,Total	ND	60	60.7	101	60	58.2	97.0	4.21	27	47	154

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and unding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

BJ-Hobbs #12832

nalysis:

unID:

nalysis Date:

Ion Chromatography

IC1_031219A-2006827

12/19/2003 16:46

ethod:

E300.0

WorkOrder:

Samples in Analytical Batch:

03120780

Lab Batch ID:

R100656

Method Blank

Units:

mg/L

CV

Lab Sample ID 03120780-01C

Client Sample ID

03120780-02C

MW-5 MW-11A

03120780-03C

MW-10

03120780-04C

MW-12D

Nitrogen, Nitrate (As N)

Result Rep Limit Analyte ND 0.10

Analyst:

Laboratory Control Sample (LCS)

RunID:

IC1_031219A-2006828

Units:

mg/L CV Analyst:

Analysis Date:

12/19/2003 16:59

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen, Nitrate (As N)	10	10.5	105	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03120780-01

RunID:

IC1_031219A-2006832

Units:

mg/L

Analysis Date:

12/19/2003 17:49

Analyst:

CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
trogen,Nitrate (As N)	2.46	10	13.3	109	10	13.3	109	0.00150	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and counding, the reported RPD may differ from the displayed RPD values but is correct as reported.

1/5/04 8:56:59 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

nalysis:

Alkalinity (as CaCO3), Total

ethod:

uniD:

nalysis Date:

E310.1

BJ-Hobbs #12832

WorkOrder:

03120780

Lab Batch ID:

R101404

Method Blank

WET_031230S-2023656

12/30/2003 12:00

Units:

Analyst:

mg/L J_C

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03120780-01C 03120780-02C

MW-5

03120780-03C

MW-11A

MW-10

03120780-04C

MW-12D

Analyte	Result	Rep Limit
Alkalinity, Total (As CaCO3)	ND	2.0

Laboratory Control Sample (LCS)

RunID:

WET_031230S-2023658

Units:

mg/L

Analysis Date:

12/30/2003 12:00

Analyst: J. C

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit	
Alkalinity, Total (As CaCO3)	101	98.5	98	90	110	

Sample Duplicate

Original Sample:

03120713-01

RunID:

WET_031230S-2023659

Units:

mg/L

Analysis Date:

12/30/2003 12:00

Analyst: J_C

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Alkalinity, Total (As CaCO3)	408	407.9	0	20

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and ounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

1/5/04 8:56:59 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

nalysis:

unID:

halysis Date:

Ion Chromatography

IC1_031230A-2025235

12/30/2003 13:09

ethod:

E300.0

BJ-Hobbs #12832

Samples in Analytical Batch:

WorkOrder:

03120780

Lab Batch ID:

R101495

Method Blank

Units:

Analyst:

mg/L

CV

Lab Sample ID

Client Sample ID

03120780-01C 03120780-02C MW-5

03120780-03C

MW-11A

MW-10

03120780-04C

MW-12D

Analyte	Result	Rep Limit
Sulfate	ND	0.20

Laboratory Control Sample (LCS)

RunID:

IC1_031230A-2025236

Units:

mg/L

Analysis Date:

12/30/2003 13:21

CV Analyst:

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10	10.4	104		120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03120713-03

RunID:

IC1_031230A-2025243

Units:

mg/L

Analysis Date:

12/30/2003 16:00

Analyst:

CV

	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
ulfate		0.838	10	12.1	112	10	11.9	111	1.27	20		120

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

Sample Receipt Checklist And Chain of Custody

				SPL,	, Inc.	lc.				S	SPL Workorder No:	S Conder N	, i			188096	9
	A	Analysis Request & Chain of Custody Record	ednes	t.& C	hain	of C	ustod	y Reco	ord		5		20/80	XO	<u>a</u>	page of	
Client Name: Brown g.	and Cal	C-ldwell		w	matrix bottle	ottle	size	pres.				Red	ueste	Requested Analysis	alysis		
Address Phone: 1415 Louisig	na Suite		713-759-09	6,00		Slass	lsiv								<u> </u>	241	
Client Contact: Rick Rexposed	exroad				:Jəu] per			rets							"44 "	
Project Name: BJ - Hobbs	Sqq			lioa=	= soil } }	ms=	z09 [, z0	-HV	ntain			(4+	,M	
Project Number: 12832				-2	0	 =∧ =∀			10O	X		1 -			4!/	P	
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MW-11A	[2-18-63	0660		>	3	A.9.V	eh j	_	90	>	>	>	>	>		>	,
01-MW	12-18-03	0460		>	3	A. P.V	1.40	_	æ	>	7	>	>	>	>	>	
171-MW	12-18-13	0/11		>	3	A. P.v	ch.	_	00	>	>	>	>	>		>	
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	7	Trip Blan	4	_										Ĭ	Temp:	0	
Requested TAT	Special Report	Special Reporting Requirements		Fax Results	Its		Raw Data		Special I	Special Detection Limits (specify):	Limits (s	pecify):			<u>a. </u>	PM review (initial)	÷ ì
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24hr 🔘 72hr 🔘	1. Relinquishe	1. Relinquished by Sampler.	Red	\mathcal{O}			date 12-1	18-63	time 500		2. Received by:	d by:					
48hr 🔲 Standard 🍼	3. Relinquishe	d by:					1		time	-	4. Received by:	d by:	`				
Other 🔲	5. Relinquished by:	d by:					date /	1/03	time O930	30 /	Cut	de la la					
[V] 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901	Houston, T	X 77054 (7	13) 66()-0901			o	500 Ar	nbassa	dor Ca	ffery P	arkwa	y, Scol	t, LA7	70583	500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775	18

459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Sample Receipt Checklist

Workorder: Date and Time Received: Temperature:	03120780 12/19/03 9:30:00 AM 3.8°C		Receive Carrier Chilled	name: F	RE edex-Standard Overnight Vater Ice
1. Shipping container/c	ooler in good condition?	Yes 🗹	No 🗌	Not Presen	t 🗆
2. Custody seals intact	on shippping container/cooler?	Yes 🗹	No 🗌	Not Presen	t 🗆
3. Custody seals intact	on sample bottles?	Yes 🗌	No 🗌	Not Present	t 🗹
4. Chain of custody pre	sent?	Yes 🗹	No 🗌		
5. Chain of custody sign	ned when relinquished and received?	Yes 🗹	No 🗆		
6. Chain of custody agr	ees with sample labels?	Yes 🗹	No 🗌		
7. Samples in proper co	ontainer/bottle?	Yes 🗹	No 🗌		
8. Sample containers in	ntact?	Yes 🗹	No 🗌		
g. Sufficient sample vol	lume for indicated test?	Yes 🗹	No 🗌		
10. All samples received	within holding time?	Yes 🗹	No 🗌		
11. Container/Temp Blan	k temperature in compliance?	Yes 🔽	No 🗌		
12. Water - VOA vials have		Yes 🗹	No 🗌	Not Applica	ble
13. Water - pH acceptabl	e upon receipt?	Yes 🗹	No 🗌	Not Applica	able
SPL Representati Client Name Contact		Contact Date 8	k Time:		
	GU.				
Non Conformance Issues:					
Client Instructions:					



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

BJ-Hobbs/12832

Hobbs, NM

New Mexico

Brown & Caldwell

Certificate of Analysis Number:

03120777

eport To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana

Suite 2509

Houston

TX

77002-

ph: (713) 759-0999

fax: (713) 308-3886

State:

State Cert. No.: **Date Reported:**

Project Name:

Site Address:

PO Number:

Site:

ax To:

Brown & Caldwell

Rick Rexroad

fax: (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
N-14	03120777-01	Water	12/18/03	12/19/03 9:30:00 AM	188100	
MW-15	03120777-02	Water	12/18/03	12/19/03 9:30:00 AM	188100	
W-16	03120777-03	Water	12/18/03	12/19/03 9:30:00 AM	188100	

Senior Project Manager

1/5/04

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Case Narrative for: **Brown & Caldwell**

Certificate of Analysis Number:

03120777

Report To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana Suite 2509

Houston TX

77002-

ph: (713) 759-0999

Project Name:

BJ-Hobbs/12832

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

The data in this report applies to the analysis of three water samples for the BJ Services site in Hobbs, New Mexico. These samples were received on December 19, 2003, assigned to SPL Certificate of Analysis No. 03120777, and analyzed for the parameters as noted on Chainof-Custody No.188100.

fax: (713) 308-3886

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Senior Project Manager

1/7/2004

Date



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-14 Collected: 12/18/2003 0:00 SPL Sample ID: 03120777-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L	
Chloride	123	2		2	12/30/03 18:00 RA	2025391

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-15 Collected: 12/18/2003 0:00 SPL Sample ID: 03120777-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	D	il. Factor QUAL	Date Analyzed Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L	
Chloride	263	5		5	12/30/03 18:00 RA	2025394

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-16

Collected: 12/18/2003 0:00

SPL Sample ID: 03

03120777-03

Site:	Hobbs,	NM
Oile.	110000;	

Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg	/L	
Chloride	823	10		10	12/30/03 18:00	RA	2025395

Qualifiers:

ND/U - Not Detected at the Reporting Limit

- B Analyte detected in the associated Method Blank
- * Surrogate Recovery Outside Advisable QC Limits
- J Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

Quality Control Documentation



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

BJ-Hobbs/12832

alysis:

Chloride, Total

WET_031230X-2025387

12/30/2003 18:00

thod:

alysis Date:

E325.3

WorkOrder:

03120777

Lab Batch ID:

R101502

Method Blank

Units: mg/L

Analyst: RA

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03120777-01A

MW-14

03120777-02A

MW-15

03120777-03A

MW-16

Analyte	Result	Rep Limit
Chloride	ND	1.0

Laboratory Control Sample (LCS)

RunID:

WET_031230X-2025389

Units:

mg/L

Analysis Date:

12/30/2003 18:00

Analyst: RA

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	78		99	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03120777-01

RunID:

WET_031230X-2025392

Units:

mg/L

Analysis Date:

12/30/2003 18:00

RAAnalyst:

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
oride	122.6	100	220.7	98.07	100	220.7	98.07	0	20	85	115

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

Sample Receipt Checklist And Chain of Custody

Chent Name: Proper Analysis Request & Chain of Custody Record	size pres.	ų,	CC10 6170		-
matrix T13-759-0699 ME comp grab SL=sludge O=other:	size pre		50100	page /	of 1
Tig. 759-09 74 Tig. 759-09 74 Comp grab W=water S=soil W=water S=soil W=water S=soil W=water S=soil S Cooler. Taboratory remarks G=glass V=vial Taboratory remarks	£C		Requested Analysis	nalysis	
ME comp grab Cooler. Scooler. Scooler. Guirements Fax Results	ξC				
B - Hobbs N M Single	10	·			<u></u>
tion: Hobbs, NM Hobbs, NM Hobbs, NM Marker 12832 Marker Marke		ntain Lo			
Hobbs NM	= 7 [= 9				
Rick Rexpossed	P 19 [
DATE TIME Comp grab	HCI 80z I I!ſ				
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12-13-03 12-13-03 W P W P W P W P W P W P W P W P W P W P	1 None	\ \ \			
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-c + triphknk in + kis Cooler. AT Special Reporting Requirements Fax Results					
Laboratory remarks -c +trip b km k in +this Cooler, Special Reporting Requirements Fax Results					
Special Reporting Requirements Fax Results	ks:		I	Intact? DY	Z
	Raw Data S	pecial Detection	Special Detection Limits (specify):	PM review (initial):	(initial):
Standard QC Level 3 QC				solutions	solva
12 DO 12 12	-18-03	time 1600	2. Received by:	<i>2</i>	
48hr Standard M 3. Relinquished by:		time	4. Received by:		X
Other	11463	time 4:30	6. Received by Laboratory:	3	7
 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901 459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777 	500 Am	bassador C	500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775	50 30	37.4775 NLSS CS



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Sample Receipt Checklist

	Workorder:	03120777		Receive	ed By:	R_R	
	Date and Time Received:	12/19/03 9:30:00 AM		Carrier	name: f	FedEx	
	Temperature:	4.2°C		Chilled	by: \	Water Ice	
L	1. Shipping container/c	ooler in good condition?	Yes 🗹	No 🗌	Not Preser	nt 🗆	
	2. Custody seals intact	on shippping container/cooler?	Yes 🗌	No 🗌	Not Preser	nt 🗹	
•	3. Custody seals intact	on sample bottles?	Yes 🗌	No 🗌	Not Preser	nt 🔽	
	4. Chain of custody pres	sent?	Yes 🗹	No 🗌			
	5. Chain of custody sign	ned when relinquished and received?	Yes 🗹	No 🗌			
١	6. Chain of custody agre	ees with sample labels?	Yes 🗹	No 🗌			
	7. Samples in proper co	ontainer/bottle?	Yes 🗹	No 🗔			
Í	8. Sample containers in	tact?	Yes 🗹	No 🗌			
	9. Sufficient sample vol	ume for indicated test?	Yes 🔽	No 🗌			
1	0. All samples received	within holding time?	Yes 🗹	No 🗌			
1	1. Container/Temp Blan	k temperature in compliance?	Yes 🗹	No 🗌			
_	2. Water - VOA vials hav		Yes	No 🗌	Not Applica	able 🗹	
1	3. Water - pH acceptable	e upon receipt?	Yes	No 🗌	Not Applica	able 🗹	
	SPL Representativ		Contact Date &	Time:			
	Client Name Contacte	30:					
	Non Conformance Issues:						
	Client Instructions:						

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APPENDIX C

Oil & Gas Well Search



Oil & Gas Well Search

December 18, 2003

CLIENT

Brown & Caldwell Attention: Rick Rexroad 1415 Louisiana Street, #250 Houston, Texas 77002 Phone: 713-759-0999 Fax: 713-308-3886

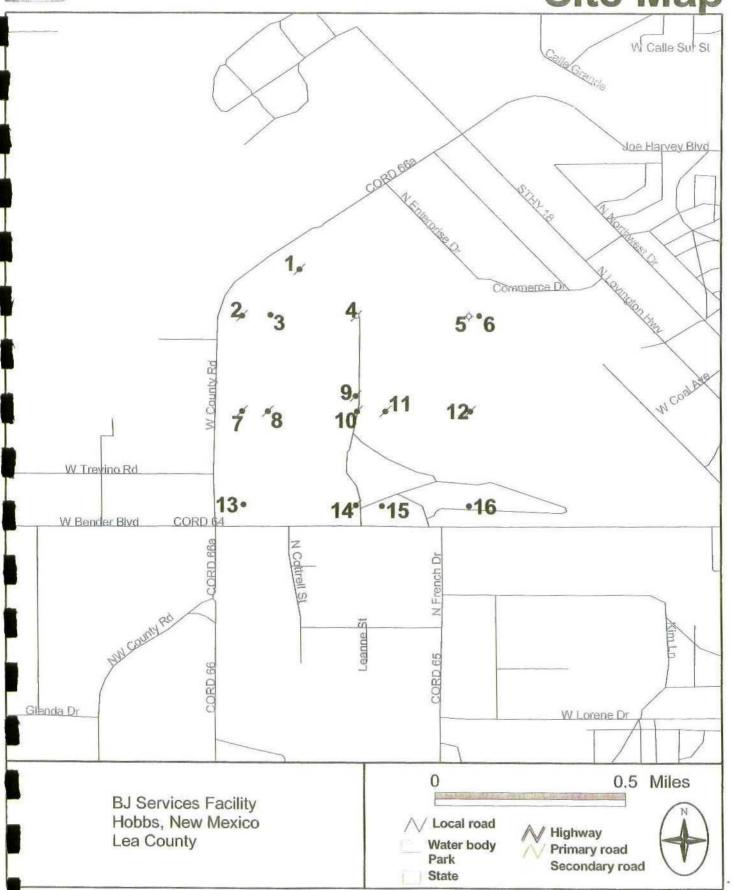
SITE

BJ Services Hobbs, New Mexico Lea County

Banks Information Solutions, Inc. P.O. Box 12851, Capitol Station Austin, Texas 78711 1701 Nueces Austin, Texas 78701 512-478-0059 FAX 512-478-1433 E-Mail banks @ banksinfo.com www.banksinfo.com



Site Map



Oil & Gas Well Search

Subject Property:

BJ Services

Hobbs, New Mexico

Lea County

Wells were searched within eastern half of section 20.

REPORT SUMM	MARY
WELL TYPE	NUMBER IDENTIFIED
Oil Wells	5
Gas Wells	0
Other Types of Wells*	11
TOTAL NUMBER OF WELLS FOUND	16

^{*}May include dry holes, abandoned locations, disposal, injection, domestic or water supply wells.

SOURCES AND LIMITATIONS

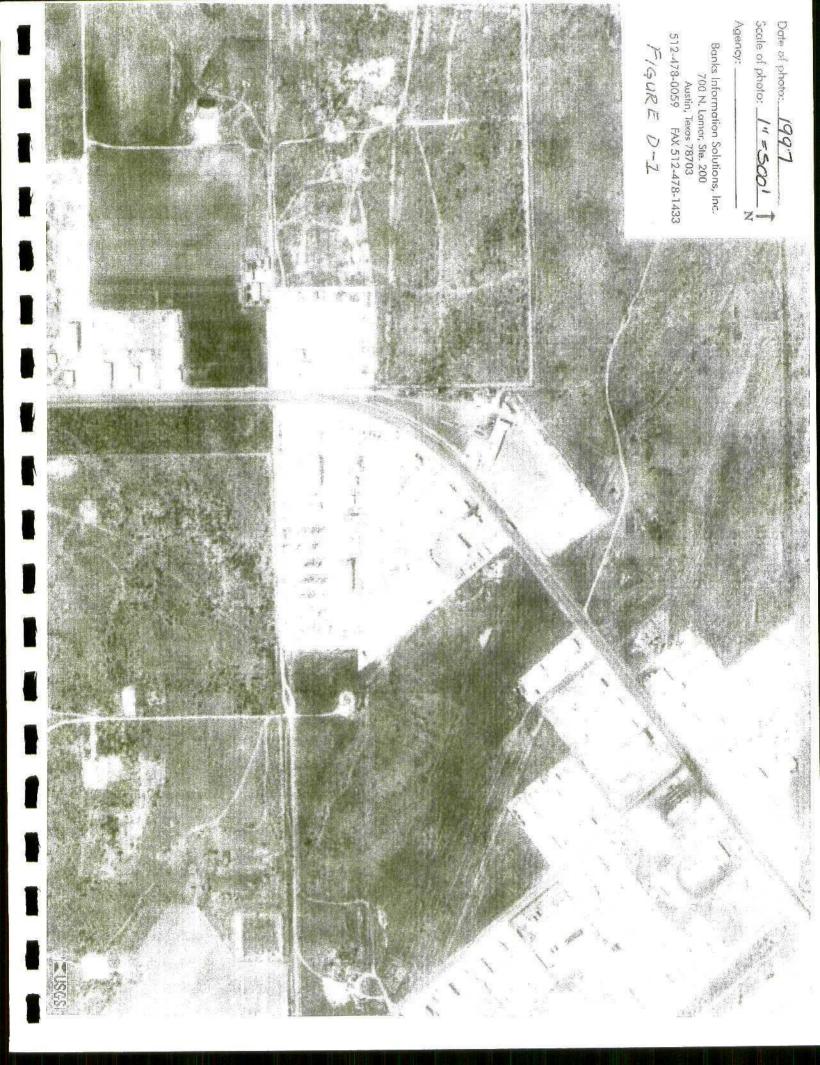
Banks Information Solutions, Inc. has performed a thorough and diligent search of all wells recorded with the Louisiana Department of Natural Resources (LDNR). All information was obtained from the LDNR. Although Banks performs quality assurance and quality control on all research projects, we recognize that any inaccuracies of the well locations and well data could possibly be traced to the appropriate regulatory authority. Therefore, Banks cannot guarantee the accuracy of the data or well location(s) of those maps and records maintained by the Louisiana Department of Natural Resources.

MAP ID#	OPERATOR	LEASE	WELL #	DRILLED DATE	Plug Date	Depth	TYPE / STATUS	API#	COMMENTS
-	Moran Oil Prod. & Drlg.	SM-20	1	3/24/62	Unknown	6175'	iö	30-025-07374	Plugged and Abandoned
2	Sun Oil Company	McKinley B	1	1/28/47	Unknown	8010	ō	30-025-07380	Plugged and Abandoned
3	Morris R. Antweil	McKinley B	1-A	3/20/52	N/A	4270'	ō	30-025-07379	Active
4	Shell Oil Co.	North Hobbs (GBSA) Unit Sec. 20	WI-421	2/24/82	N/A	4414'	Injection	30-025-07388 Active	Active
5	Morris R. Antweil	Morris	-	11/3/52	Unknown	4294'	Dry	30-025-07389	Plugged and Abandoned
9	Robinson Oil Co.	Morris #002	2	5/29/82	N/A	4230	ō	30-025-27777	Active
7	Humble Oil & Refg Co.	BA Bowers B	2	12/24/32	Unknown	4247	iö	30-025-07372	Assumed Plugged and Abandoned
80	Shell Western E & P Inc.	North Hobbs G/SA UT. Sec 20 #331	2-AO	3/17/54	Unknown	4202'	ΙΘ	l 'i	Assumed Plugged and Abandoned
6	Occidental Permian Ltd.	North Hobbs G/SA UT. #432	3	1/23/54	Unknown	4210'	Oil		Assumed Plugged and Abandoned
9	Sweet C H Oil Co.	Brown Grimes	-	11/27/34	Unknown	4244	iio	30-025-07376	Assumed Plugged and Abandoned
-	Occidental Permian Ltd.	North Hobbs G/SA UT. #432	1-AO	5/25/52	Unknown	4253'	iiO	30-025-07386	Assumed Plugged and Abandoned
12	Occidental Permian Ltd.	North Hobbs G/SA Unit #131	131	7/2/83	Unknown	4235'	Öİ	30-025-07393	Assumed Plugged and Abanonded
13	Occidental Permian Ltd.	North Hobbs G/SA Unit #341	. 1	10/2/69	N/A	4242'	ö	1	Active
4	Humble Oil & Refg Co.	Bowers B	3	1/31/33	Unknown	4225'	ō	30-025-07373	Assumed Plugged and Abandoned
15	Sweet C H Oil Co.	Bowers-Federal	3	3/1/54	Unknown	4230'	ijÖ	30-025-07385	Assumed Plugged and Abandoned
16	Occidental Permian Ltd.	North Hobbs G/SA Unit #141	-	1/15/35	A/N	4219.	iō	30-025-07390 Active	Active

B

APPENDIX D

Historic Aerial Photographs



Scale of photo: 1980

Scale of photo: 1"=5001

Agency:

Banks Information Solutions, Inc.
700 N. Lamar, Ste. 200

Austin, Texas 78703

512-478-0059

FAX 512-478-1433

FIGURE D-2

1977 Sorte of photos _ 1" = 500" Baaks Information Solutions, Inc. 700 PL Lamar, Ste. 200 Austin, Texas 78703 512-478-0059 FAX 512-478-1433

Banks Information Salutions, Inc. 700 N. Lamar, Ste. 200 Austin, Texas 78703 512-478-0059 FAX 512-478-1433

FIGURE D-4

J- 07 anota: 1949 State of photo: __ Banks Information Solutions, Inc. 700 N. Lamar, Ste. 200 Austin, Texas 78703 512-478-0059 FAX 512-478-1433 FIGURE D-5

APPENDIX E

Current Water Well Search



Water Well Report

December 8, 2003

CLIENT

Brown & Caldwell, Inc.

1415 Louisiana Street, #2500

Houston, TX 77002

SITE

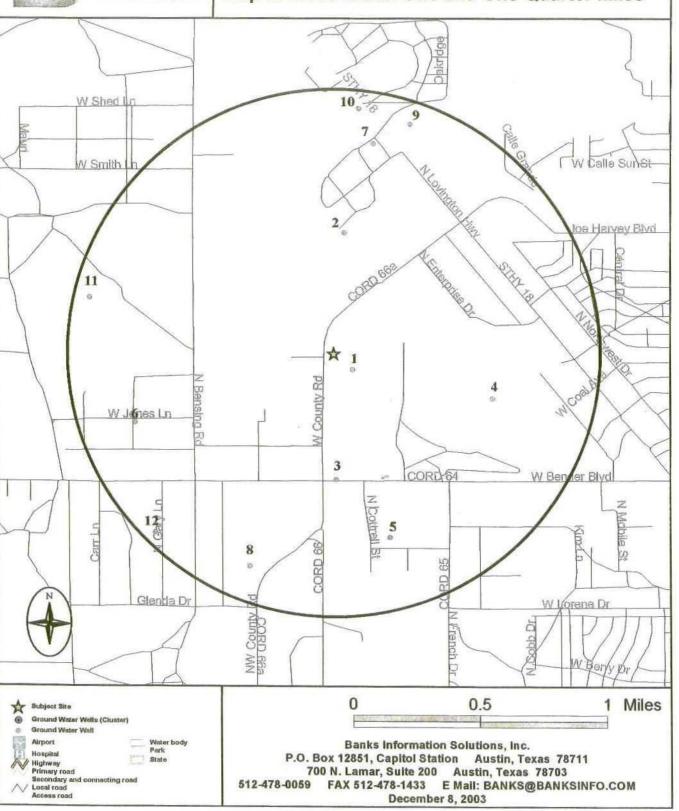
BJ Services Facility Hobbs, New Mexico Lea County 120803-038



Banks Information Sciudons, Inc.

Water Well Report™

Map of Wells within One and One-Quarter Miles





Water Well Report[™]

DETAILS

32
35
C]
In
N
N
-1
32

324356103100701
3502501465
CITY OF EUNICE
Irrigation
N/A '
N/A
-103.168611111
32.7322222222

MAPID
2

MAP ID

1

State ID
Banks ID
Owner Of Well
Type Of Well
Depth Drilled
Completion Date
Longifude
Latitude

L 04320
3502503683
INC. DONNELLY DRILLING CO.
Industrial
112 '
11/10/1959
-103.169161
32.740158

State ID	324333103101101	MAPII
Banks ID	3502501442	3
Owner Of Well	NOLEN, KEN, AND NOLEN CONSTRUCTIO	
Type Of Well	Domestic	
Depth Drilled	102 '	
Completion Date	4/26/1993	
Longitude	-103.169722222	
Latitude	32.72583333333	



Water Well Report[™]

D	E	T	Α	I	LS	
_	-		,,,,		_~	

State ID	324350103093301	MAP ID
Banks ID	3502501458	4
Owner Of Well	CITY OF EUNICE	
Type Of Well	Unused	
Depth Drilled	130 '	
Completion Date	N/A	
Longitude	-103.159166667	
Latitude	32.7305555556	
State ID	324321103095801	MAPID
Banks ID	3502501426	5
Owner Of Well	N/A	34132
Type Of Well	Unused	
Depth Drilled	N/A'	
Completion Date	N/A	
Longitude	-103.166111111	
Latitude	32.7225	
State ID	324345103110001	MAPID
Banks ID	3502501455	6
Owner Of Well	JONES, CHARLES B.	
Type Of Well	Irrigation	
Depth Drilled	N/A'	
Completion Date	N/A	
Longitude	-103.183333333	
Latitude	32.72916666667	



State ID Banks ID

Water Well Report

DETAILS

324443103100201	MAPID
3502501501	7
STATE OF NEW MEXICO	

Owner Of Well	STATE OF NEW MEXICO
Type Of Well	Domestic
Depth Drilled	100 '
Completion Date	N/A
Longitude	-103.167222222
Latitude	32.74527777778

State ID	324315103103201	MAPID
Banks ID	3502501416	8
Owner Of Well	RYLANT, W.L.	
Type Of Well	Domestic	
Depth Drilled	N/A '	
Completion Date	N/A	
Longitude	-103.175555556	
Latitude	32.72083333333	

State ID	324447103095301	MAPID
Banks ID	3502501506	9
Owner Of Well	STATE OF NEW MEXICO	
Type Of Well	Recreation	
Depth Drilled	120 '	
Completion Date	N/A	
Longitude	-103.164722222	
Latitude	32.74638888889	



Water Well Report[™]

DETAILS

State ID	L 04686	MAPID
Banks ID	3502503685	10
Owner Of Well	CACTUS DRILLING COMPANY	
Type Of Well	Industrial	
Depth Drilled	125 '	
Completion Date	8/3/1961	
Longitude	-103.168212	
Latitude.	32.74728	

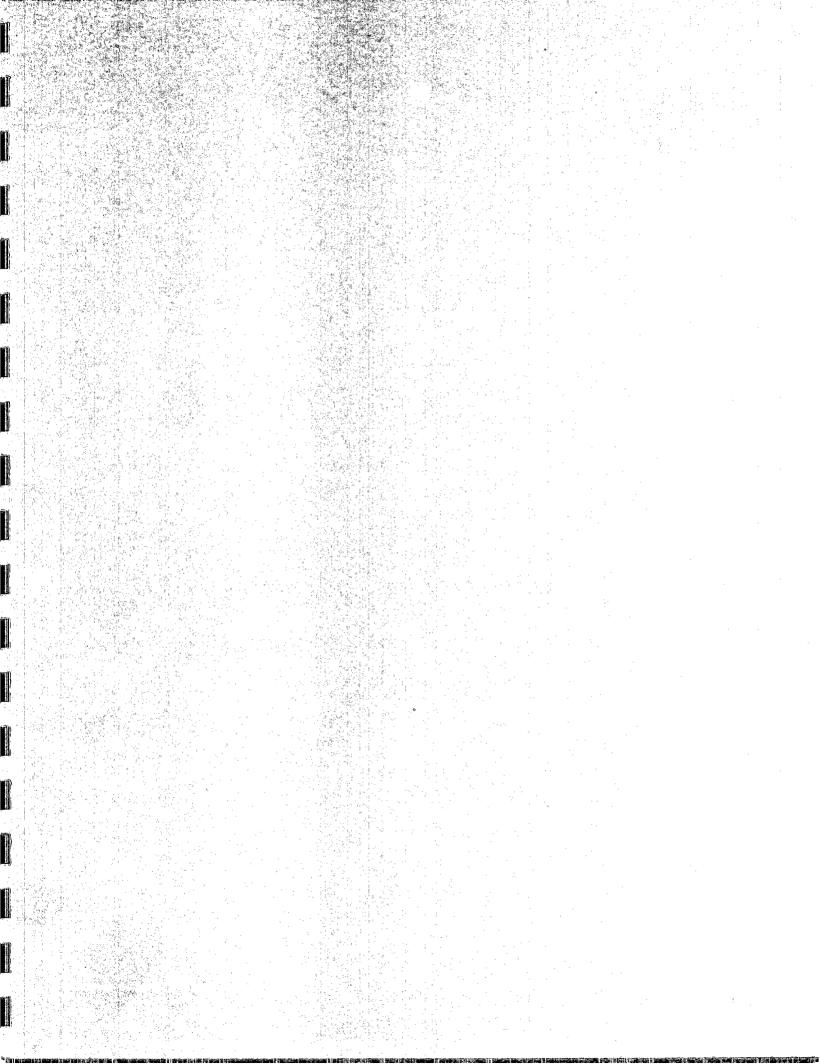
State ID.	324411103111101	MAPID
Banks ID	3502501477	11
Owner Of Well	HUSTON, H.G.	
Type Of Well	Stock	
Depth Drilled	N/A'	
Completion Date	N/A	
Longitude	-103.186388889	
Latitude	32.73638888889	

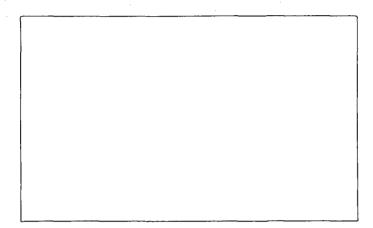
State ID	324322103105501	MAPID
Banks ID	3502501430	12
Owner Of Well	N/A	
Type Of Well	N/A	
Depth Drilled	70 '	
Completion Date	N/A	
Longitude	-103.181944444	
Latitude	32.7227777778	

Water Well Report™ Research Mapping Protocol

Banks Information Solutions, Inc. Water Well Report™ is prepared from existing state water well databases and/or additional file data/records research conducted at the State Engineers Office located in Santa Fe, New Mexico. In New Mexico, water wells are located within a grid system using section, township, and range. The locations of these wells on the enclosed map were plotted using a GIS program, ArcView 3.2, with the aid of the section, township, and range of the wells provided by the drillers logs.

Banks Information Solutions, Inc. has performed a thorough and diligent search of all groundwater well information provided and recorded with the New Mexico State Engineers Office. All mapped locations are based on information obtained from the NMSEO. Although Banks performs quality assurance and quality control on all research projects, we recognize that any inaccuracies of the records and mapped well locations could possibly be traced to the appropriate regulatory authority or the actual driller. It may be possible that some water well schedules and logs have never been submitted to the regulatory authority by the water driller and, thus, may explain the possible unaccountability of privately drilled wells. It is uncertain if the above listing provides 100% of the existing wells within the area of review. Therefore, Banks Information Solutions, Inc. cannot fully guarantee the accuracy of the data or well location(s) of those maps and records maintained by the New Mexico State Engineer regulatory authorities.





BROWN AND CALDWELL OCTOBER 2003 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY

BJ SERVICES COMPANY, U.S.A.

OCTOBER 29, 2003

OCTOBER 2003 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY BJ SERVICES COMPANY, U.S.A.

Prepared for

BJ Services Company, U.S.A. 11211 FM 2920 Tomball, Texas 77375

BC Project Number: 12832.018

Richard L. Rexroad, P.G

Project Manager

October 29, 2003

Brown and Caldwell

1415 Louisiana, Suite 2500 Houston, Texas 77002 - (713) 759-0999

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"This report was prepared in accordance with the standards of the environmental consulting industry at the time it was prepared. It should not be relied upon by parties other than those for whom it was prepared, and then only to the extent of the scope of work which was authorized. This report does not guarantee that no additional environmental contamination beyond that described in this report exists at this site."

BROWN AND CALDWELL

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BROWN AND CALDWELL

1.0 INTRODUCTION

Brown and Caldwell conducted a quarterly groundwater sampling event at the BJ Services Company, U.S.A. (BJ Services) facility located at 2708 West County Road in Hobbs, New Mexico on October 2, 2003. This report presents a description of the groundwater sampling field activities, a summary and evaluation of the analytical results, and an evaluation of remedial technologies applied at the facility. A groundwater potentiometric surface map and a hydrocarbon distribution map are included.

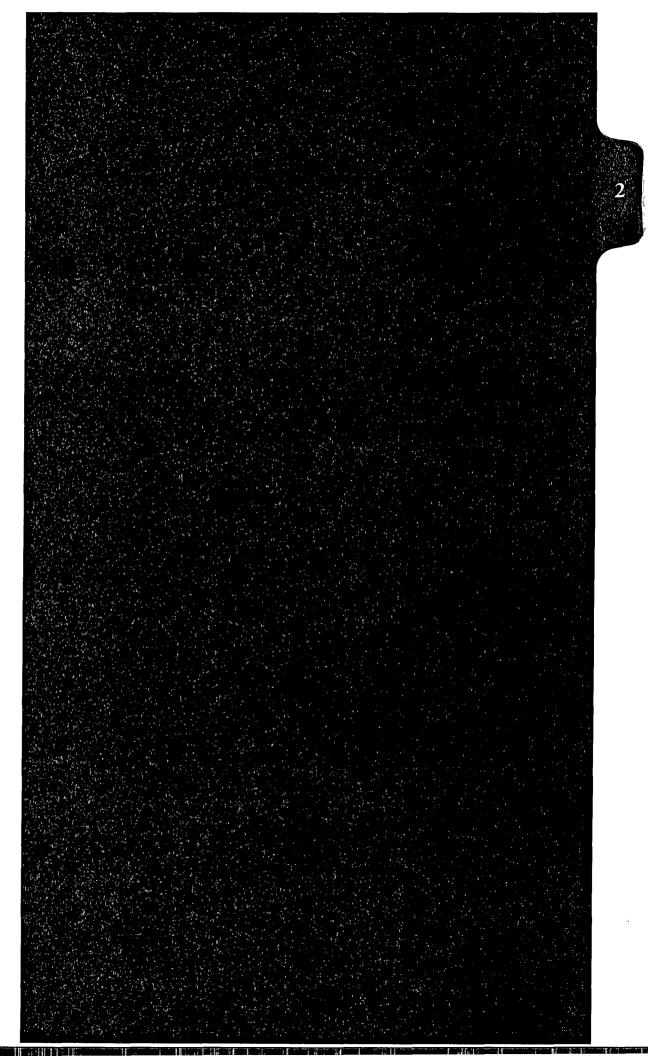
A layout of the facility is shown in Figure 1. The facility formerly operated an on-site fueling system. Subsurface impact near the former diesel fueling system was detected by the New Mexico Oil Conservation Division (NMOCD) during an on-site inspection on February 7, 1991. The fueling system was taken out of operation in July 1995. The NMOCD has required a quarterly groundwater monitoring program to assess the concentration of hydrocarbon constituents in groundwater as a result of the diesel fuel release.

A biosparging system was activated in November 1995 and expanded in March/April 1997 and February/March 1998 to remediate soil and groundwater at the former fuel island area of the facility. The biosparging system was deactivated on November 1, 2000 after achieving cleanup goals for groundwater. The confirmation soil sampling program specified in the NMOCD-approved Remedial Action Plan (RAP) for the facility was conducted in July 2001. The results of the confirmation soil sampling program were presented to NMOCD in the report for the June 2001 groundwater sampling event. In accordance with the RAP for the facility, four additional groundwater sampling events were conducted following the confirmation soil sampling event. Hydrocarbon concentrations in groundwater samples from applicable monitor wells remained below the target concentrations specified in the RAP during each of these sampling events, so a request to decommission the biosparging system was submitted to NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report for the facility.

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BJ Services removed three field waste tanks from the facility on March 6-7, 1997. The ongoing groundwater monitoring program was expanded to address both the former fuel island and the former field waste tanks areas of the facility, as directed by NMOCD in correspondence dated January 21, 1999.

Table 1 presents a site chronology detailing the history of investigations into and the remediation of soil and groundwater impacts in the areas of the former fueling system and the former field waste tanks at the facility.



BROWN AND CALDWELL

2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled seven monitor wells (MW-5, MW-10, MW-11A, MW-12D, MW-14, MW-15, and MW-16) at the facility on October 2, 2003 to determine the concentrations of dissolved-phase hydrocarbons and/or chloride in groundwater. The monitor well locations are shown in Figure 1. The following subsections describe the field activities conducted by Brown and Caldwell during the current groundwater sampling event and present the results from the associated groundwater analyses.

2.1 Groundwater Sampling Activities

Groundwater level measurements were obtained from all accessible monitor wells at the facility prior to purging and sampling the subset of wells listed above. Groundwater levels were measured to the nearest 0.01 foot with an electronic water-level indicator. Current and historical groundwater elevation data for each well are presented in Table 2. The groundwater elevation data presented in Table 2 indicate that groundwater levels have continued to decline in monitor wells at the facility since late 1995. A groundwater elevation map for October 2, 2003 is presented in Figure 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with hydraulic gradient ranging from 0.005 foot/foot (ft/ft) in the western portion of the facility to 0.009 ft/ft in the eastern portion of the groundwater monitoring area.

The monitor wells were purged with a submersible pump and previously unused downhole tubing or previously unused disposable bailers and clean, previously unused polyethylene rope. Three well volumes were purged from monitor wells MW-11A, MW-14, and MW-15. Monitor well MW-10 was purged dry after removal of 0.2 liters of groundwater (see Table 3).

Low flow/low stress purging was performed prior to sampling of monitor wells MW-5, MW-12D and MW-16 to maintain the water level at or near the static water level. Field parameter measurements for pH, specific conductivity, oxidation-reduction potential, dissolved oxygen, and temperature were collected during purging of these wells. Ferrous iron and dissolved oxygen

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concentrations were measured in groundwater from monitor wells MW-5, MW-10, MW-11A and MW-12D upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix A and are summarized in Table 3.

Groundwater samples were obtained directly from the discharge line of the submersible pump or by pouring recovered water from a bailer into laboratory-prepared, clean glass or plastic containers, sealed with Teflon®-lined lids, labeled, and placed on ice in an insulated cooler for delivery to Southern Petroleum Laboratory in Houston, Texas for analysis using standard chain-of-custody procedures.

Field measurement equipment was decontaminated prior to and following each use. Decontamination procedures consisted of washing with distilled water and a non-phosphate detergent, then rinsing with distilled water. Purge and decontamination waters were discharged to an on-site water reclamation system at the BJ Services facility.

2.2 Results of Groundwater Analyses

Groundwater samples from monitor wells MW-14, MW-15, and MW-16 were analyzed for chloride content using Method E325.3. Table 4 presents current and cumulative results for chloride analyses performed on groundwater samples collected at the facility. The current chloride concentration in monitor well MW-14 remains less than the New Mexico Water Quality Control Commission (NMWQCC) chloride standard of 250 milligrams per liter (mg/L). The chloride concentrations in monitor wells MW-15 and MW-16 exceed the NMWQCC chloride standard.

Groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12D were analyzed for diesel- and gasoline-range total petroleum hydrocarbons (TPH-D and TPH-G) using EPA Method SW-8015B and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method SW-8021B. Current and cumulative analytical results for BTEX constituents, TPH-D, and TPH-G are presented in Table 5. Figure 3 presents a hydrocarbon distribution map for October 2,

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2003. All BTEX concentrations measured in groundwater during the current sampling event were less than applicable NMWQCC standards.

Analysis of groundwater from monitor wells MW-5, MW-10, MW-11A, and MW-12D for nitrate and sulfate (Method E300.0), dissolved methane (Method RSK 147), and alkalinity (Method E310.1) was performed to evaluate the potential for natural attenuation of hydrocarbons at the facility. The current and historical results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12, and MW-12D are presented in Table 6.

The laboratory analytical reports and chain-of-custody documentation for the groundwater samples collected during the current sampling event are provided in Appendix B.



3.0 EVALUATION OF REMEDIAL TECHNOLOGIES

The following subsections present evaluations of the remedial technologies applied at the former fueling system and former field waste tanks areas of the BJ Services facility in Hobbs, New Mexico.

3.1 Biosparging System at the Former Fueling System Area

Brown and Caldwell recommended installation of a biosparging system at the former fueling system area of the facility in the Remedial Action Plan (RAP) submitted to the NMOCD in May 1994. The NMOCD approved the RAP on August 11, 1994. The biosparging system was installed in August 1995, with expansions completed in April 1997 and March 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in applicable former fueling system area monitor wells. In accordance with the RAP, confirmation soil sampling activities were conducted at the former fueling system area in July 2001 to verify the effectiveness of the biosparging system in remediating vadose zone soils. The analytical results for these soil samples, as discussed in the report for the June 2001 groundwater sampling event, indicated that remediation goals for soil in this area had been achieved.

Following the confirmation soil sampling activities, hydrocarbon concentrations in groundwater remained below target cleanup goals for four successive quarters. In accordance with the RAP for the facility, a request to decommission the biosparging system was submitted to the NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report.

3.2 Natural Attenuation at the Former Field Waste Tanks Area

Natural attenuation is the primary remediation mechanism for the dissolved-phase hydrocarbon plume located in the area of the former field waste tanks (see Figure 1).

Plume behavior is the primary evidence of natural attenuation. Secondary evidence of natural attenuation can be obtained by the collection and evaluation of data relating to the concentrations of indigenous electron acceptors such as dissolved oxygen, nitrate, sulfate, and carbon dioxide. A plume is shrinking when the rate of hydrocarbon loading from a source area is less than the rate of natural degradation of hydrocarbons. Plume shrinkage in the absence of aggressive remediation is indicative of the occurrence of natural attenuation processes. Conversely, a plume is expanding if the rate of hydrocarbon loading from a source area is greater than the rate of natural degradation of hydrocarbons through natural attenuation processes.

The former field waste tanks in the eastern portion of the facility were removed in March 1997. Concentrations of total BTEX in monitor wells in the area of the former field waste tanks have been generally stable or declining subsequent to removal of these tanks. Sporadic increases in total BTEX concentrations between quarterly sampling events have been observed in monitor wells in this area since March 1997, however. These increases may be attributed to sporadic loading rates from the vadose zone in excess of the rate of natural attenuation in the area. The following subsections present primary and secondary evidence of natural attenuation of hydrocarbons in groundwater at the former field waste tanks area of the facility.

3.2.1 Primary Evidence

The benzene concentration in monitor well MW-10 has decreased from a maximum of 1.3 mg/L in August 1995 (prior to removal of the field waste tanks) to less than the NMWQCC standard of 0.01 mg/L for BTEX in the 11 applicable groundwater sampling events from December 2000 to October 2003. Benzene has not been detected in monitor well MW-10 since September 2001. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-10 were non-detect during the current sampling event and have generally been non-detect since December 2000. Detectable concentrations of TPH-D in monitor well MW-10 have ranged from 0.3 mg/L to 3.4 mg/L. TPH-D has not been detected in this well during the three most recent applicable sampling events, and TPH-G has not been detected during the last nine quarterly groundwater sampling events.

Benzene concentrations at the monitor well MW-11/11A location have generally decreased from a maximum of 0.970 mg/L in December 1996 (prior to removal of the field waste tanks). The current benzene concentration of 0.0037 mg/L in monitor well MW-11A is less than the NMWQCC standard for benzene. Benzene concentrations in MW-11A have been less than the NMWQCC standard for benzene during nine of the ten groundwater sampling events conducted from June 2001 through October 2003. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-11A have been at low to typically non-detectable concentrations since March 1998. Detectable concentrations of TPH-D in monitor well MW-11A have ranged from 0.28 mg/L to 2.2 mg/L. TPH-D has not been detected in monitor well MW-11A during the last four quarterly sampling events, and TPH-G has not been detected during the last two sampling events.

Concentrations of each BTEX constituent at the monitor well MW-12/12D location have been below analytical detection limits for the past 10 sampling events. TPH-D has not been detected at this location since September 2002, and TPH-G has not been detected since June 2001.

3.2.2 Secondary Evidence

The following lines of geochemical evidence can also be used to suggest that intrinsic bioremediation (an important natural attenuation mechanism) of dissolved-phase hydrocarbons is occurring in the area of the former field waste tanks.

1. Dissolved oxygen may be utilized as an electron acceptor during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

Groundwater samples from monitor wells MW-10 and MW-11A were collected using bailers during the current sampling event. The use of bailers may cause groundwater samples to become oxygenated, thus precluding a meaningful comparison of dissolved oxygen data.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility when down-hole pumps were utilized has indicated that dissolved oxygen concentrations were typically depressed in hydrocarbon-impacted

- monitor wells relative to non-impacted wells at the facility (see the June 2001 Groundwater Sampling Report for BJ Services Hobbs, New Mexico Facility, for example).
- 2. Nitrate may be utilized as an electron acceptor during intrinsic bioremediation after dissolved oxygen is depleted. Therefore, nitrate concentrations may be depressed in areas where intrinsic bioremediation is occurring.
 - Nitrate was detected at a concentration of 2.5 mg/L in background monitor well MW-5 during the current sampling event. Although minimal to no hydrocarbon impact was detected at former field waste tanks area wells MW-10, MW-11A, and MW-12D during the current sampling event (see Table 5), nitrate was detected in monitor wells MW-10 and MW-11A at respective concentrations of 0.11 mg/L and 1.4 mg/L; nitrate was not detected in monitor well MW-12D. The depressed to non-detectable nitrate concentrations observed during the current sampling event at former field waste tanks area wells MW-10, MW-11A, and MW-12D relative to the background nitrate concentration at the facility are likely due to residual effects of hydrocarbons in these areas.
- 3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors may become active. Ferrous iron is the reduction product of ferric iron, a common electron acceptor. Therefore, ferrous iron concentrations should increase in areas where intrinsic bioremediation is occurring.
 - The elevated ferrous iron concentrations in monitor wells MW-10, MW-11A and MW-12D relative to background well MW-5 suggest that ferric iron has been used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area of the facility.
- 4. Microbes that utilize sulfate may become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through the use of sulfate as an electron acceptor.
 - During the current sampling event, sulfate concentrations in the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D ranged from 140 mg/L to 360 mg/L, whereas the sulfate concentration in background monitor well MW-5 was measured at 100 mg/L. The fact that sulfate concentrations in the former source area monitor wells are greater than the sulfate concentration in the background monitor well suggests that sulfate is not being utilized as an electron acceptor in the former field waste tanks area.
- 5. Methane is a reaction product generated during utilization of carbon dioxide as an electron acceptor, so its concentration may increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.
 - Dissolved methane was not detected in background monitor well MW-5 or in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D during the current groundwater sampling event. These data indicate that carbon dioxide is no longer being utilized as an electron acceptor at the former field waste tanks area of the facility.

In conclusion, current nitrate and historic dissolved oxygen data suggest that these electron acceptors have been utilized during intrinsic bioremediation processes in the vicinity of the former field waste tanks area of the facility. Data for ferrous iron also indicates that utilization of ferric iron as an electron acceptor has occurred in this area of the facility.

It is recommended that monitoring for natural attenuation evaluation parameters continue in former field waste tank area monitor wells MW-10, MW-11A, and MW-12D and in the background well, MW-5. Redox potential, dissolved oxygen content, ferrous iron content, and alkalinity serve as good indicators of the occurrence of intrinsic bioremediation of hydrocarbons, so testing for these parameters in all wells to be sampled during upcoming groundwater monitoring events is recommended.

B R O W N A N D C A L D W E L L

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the current groundwater sampling event at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Current benzene concentrations in all former field waste tanks area monitor wells are less than the NMWQCC standard of 0.01 mg/L for benzene. There were no detections of toluene, ethylbenzene, xylenes, TPH-D, or TPH-G in these wells during the current groundwater sampling event. Based on generally decreasing hydrocarbon concentrations in these monitor wells over time and as substantiated by geochemical data, natural attenuation appears to have substantially reduced hydrocarbon concentrations in the vicinity of the former field waste tanks that were removed in March 1997.
- The chloride concentration measured in downgradient monitor well MW-14 during the current 2003 groundwater sampling event remains less than the NMWQCC standard of 250 mg/L. The chloride concentrations in monitor wells MW-15 and MW-16 exceed the NMWQCC chloride standard, however.

4.2 Recommendations

- Develop a plan to investigate and remediate off-site chloride impact to groundwater.
- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-10, MW-11A, and MW-12D. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters. If BTEX constituent concentrations in all of these wells remain less than applicable NMWQCC standards and TPH-D and TPH-G concentrations decrease or remain relatively constant for four consecutive quarters, then closure for the former field waste tanks area is recommended.
- Upon approval from the NMOCD, decommission the biosparging system at the former fuel island area.

DISTRIBUTION

October 2003 Groundwater Sampling Report BJ Services Company, U.S.A. Hobbs, New Mexico

October 29, 2003

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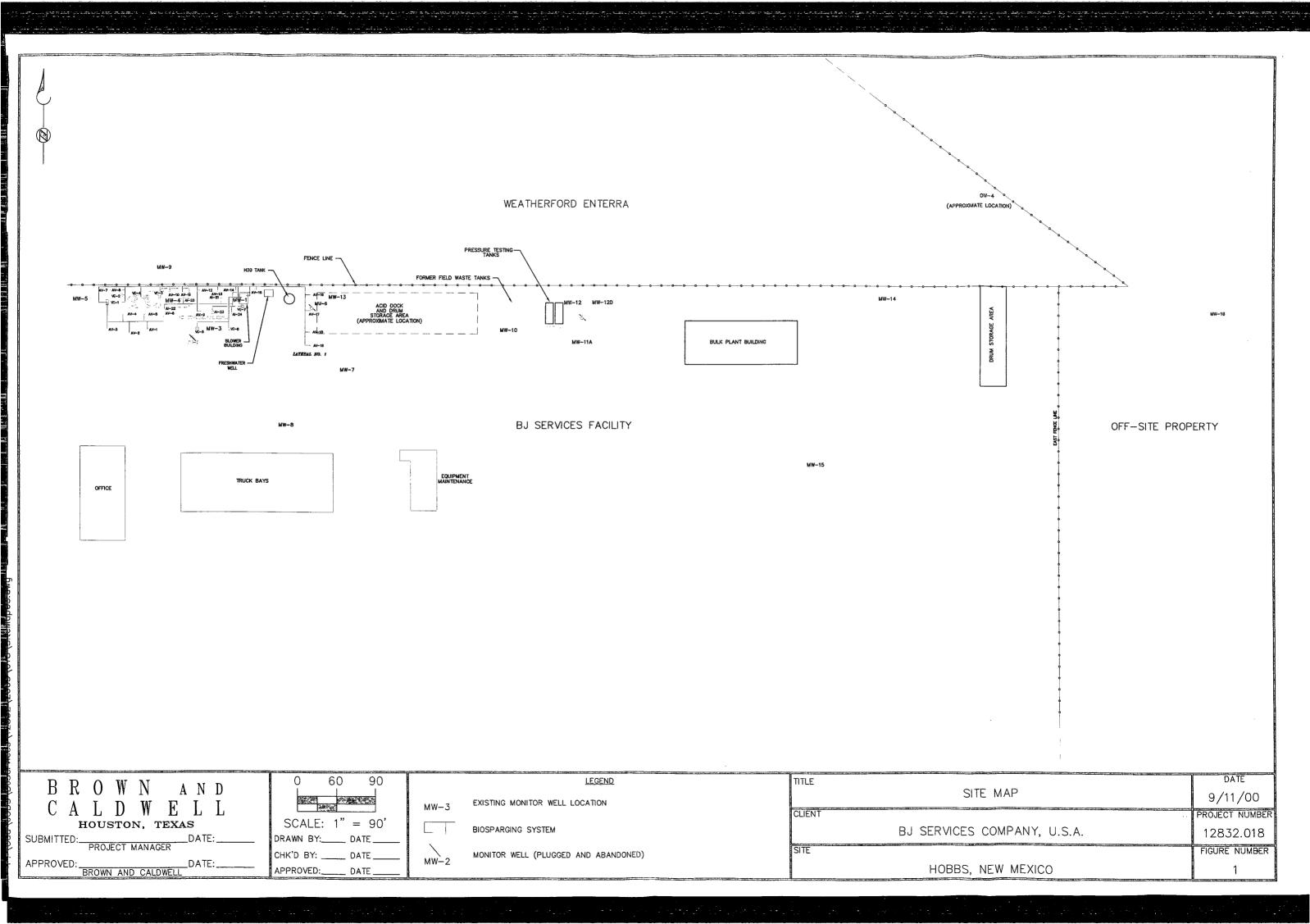
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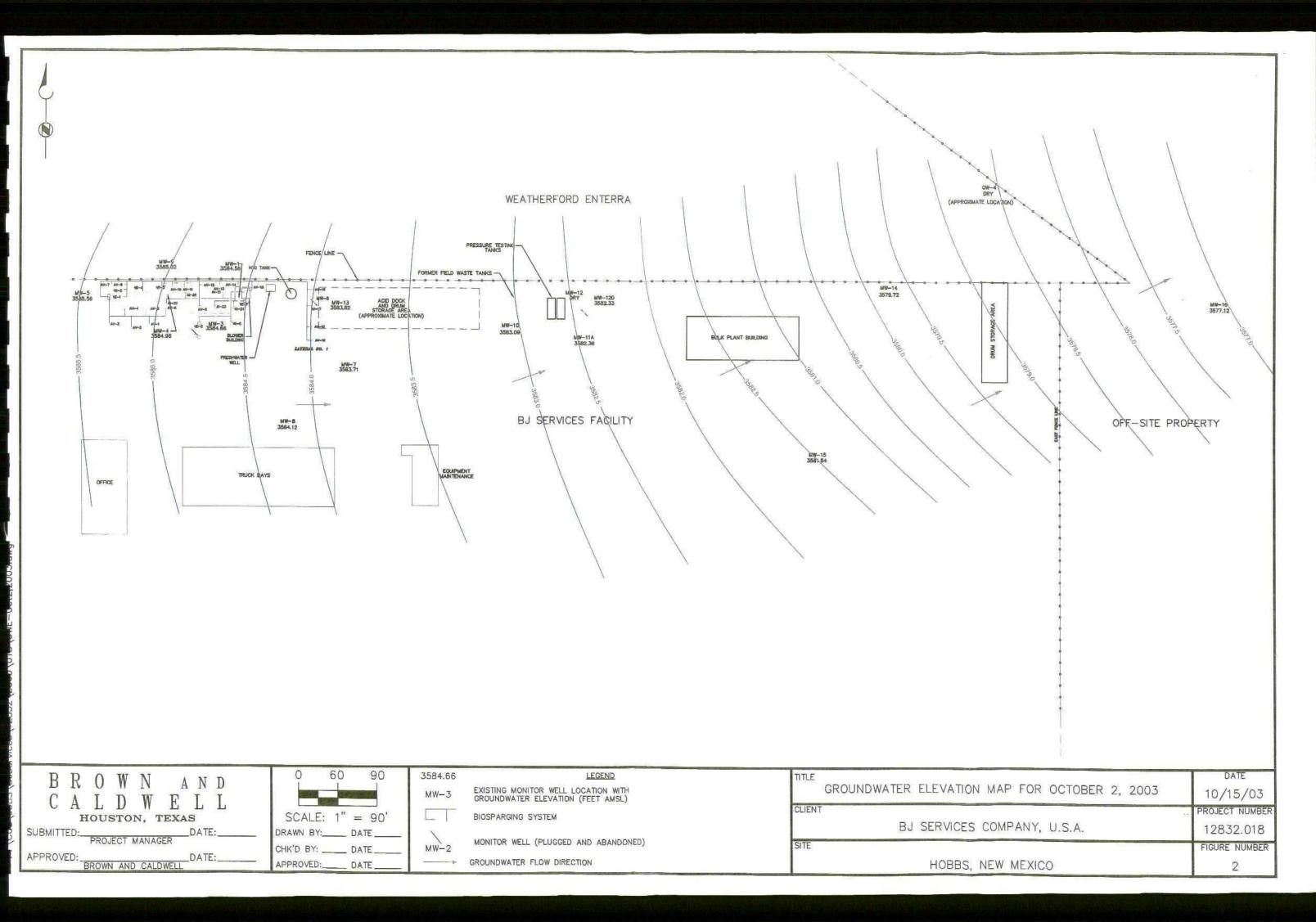
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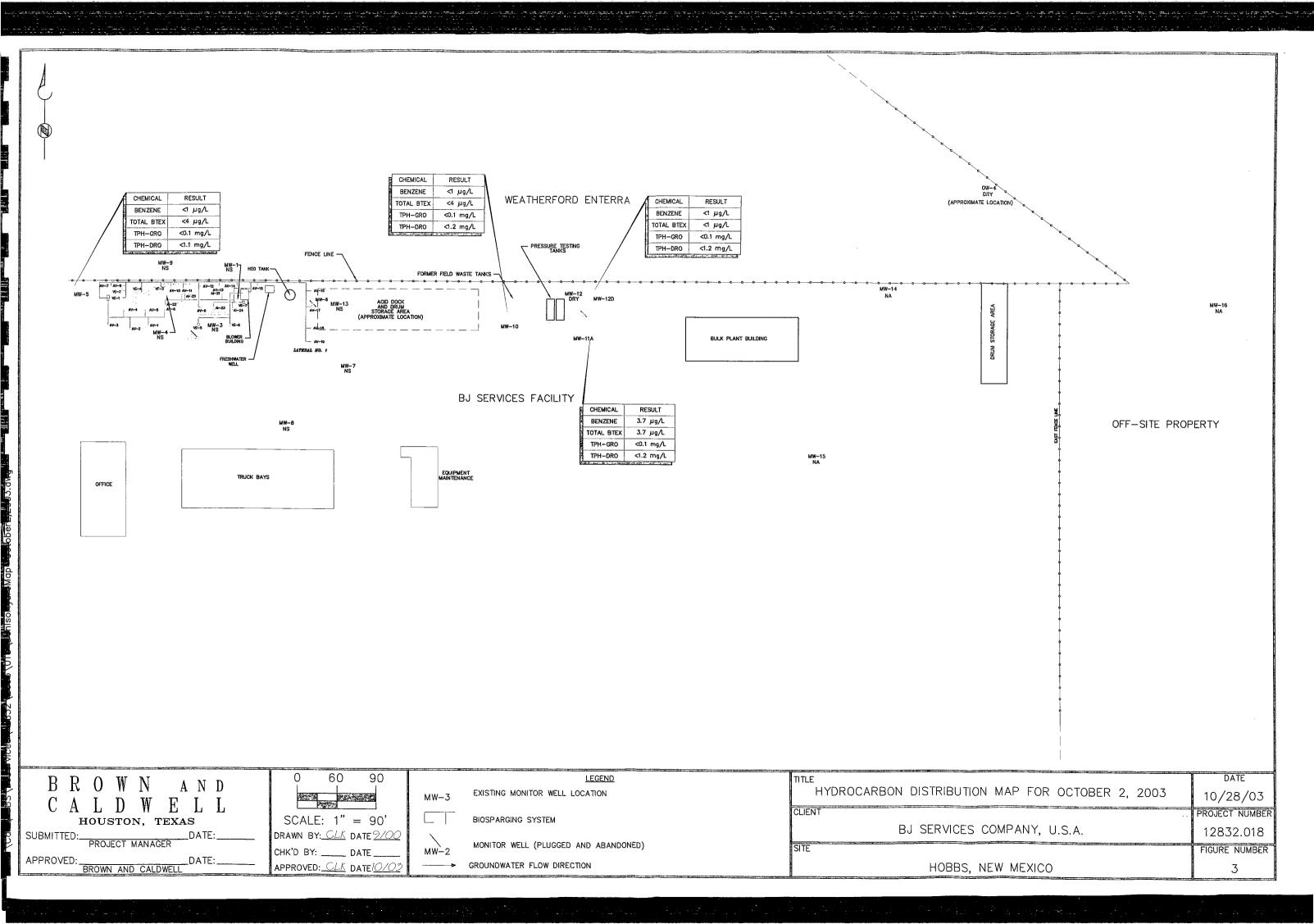
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BROWN AND CALDWELL **TABLES**

Date	Activity
February 7, 1991	The New Mexico Oil Conservation Division (NMOCD) conducted an on-site inspection, including sampling of the on-site fresh water well.
August 6, 1991	The NMOCD requested submittal of an investigation work plan.
September 5, 1991	Roberts/Schornick and Associates, Inc. (RSA) submitted Technical Work Plan for soil and groundwater investigation to the NMOCD.
November 15, 1991	The NMOCD approved the Technical Work Plan submitted by RSA.
December 16, 1991	RSA sampled the fresh water well. The analytical results were submitted to the NMOCD.
February 21, 1992	Western sampled the fresh water well. The analytical results were submitted to the NMOCD.
July 29 - August 10, 1992	Brown and Caldwell conducted a soil and groundwater investigation according to the approved Technical Work Plan. The investigation included drilling and sampling nine soil borings, sampling six hand-augured soil borings, installation and sampling of five monitor wells, and sampling of the fresh water well.
October 12, 1992	Brown and Caldwell submitted a Soil and Groundwater Investigation Report to the NMOCD.
December 2, 1992	The NMOCD requested the installation and sampling of four additional monitor wells, including a monitor well on an adjacent property.
April 13, 1993	Brown and Caldwell conducted a vapor extraction pilot test on the existing monitor wells.
April 15, 1993	Brown and Caldwell installed off-site monitor well MW-9.
April 22, 1993	Brown and Caldwell sampled off-site monitor well MW-9.
May 27, 1993	Brown and Caldwell submitted a letter report documenting the installation and sampling of off-site monitor well MW-9 to the NMOCD.
June 2, 1993	Brown and Caldwell conducted a short-term aquifer test using the fresh water well at the facility.
June 8, 1993	USTank Management, Inc. conducted a non-volumetric tank system tightness test on the diesel and unleaded gasoline aboveground storage tanks at the facility.
June 21, 1993	ENSR Consulting and Engineering (ENSR), the environmental consultant for the adjacent property owner on which off-site well MW-9 is located, submitted a request to sample monitor well MW-9.

July 15, 1993	ENSR split a groundwater sample collected from monitor well MW-9 with Brown and Caldwell.
July 30, 1993	USTank Management, Inc. submitted a tank tightness test report to Brown and Caldwell. The report indicated that both tanks and their associated piping passed.
August 16-19, 1993	Brown and Caldwell installed two additional downgradient monitor wells. Brown and Caldwell sampled each of the existing and newly installed monitor wells.
January 26, 1994	Brown and Caldwell performed a groundwater monitoring event; the existing monitor wells and the fresh water well were purged and sampled. The groundwater samples were analyzed for BTEX.
May 6, 1994	A Remedial Action Plan (RAP) was submitted to the NMOCD.
August 11, 1994	The RAP was approved by the NMOCD.
May 3, 1995	Brown and Caldwell conducted the May 1995 groundwater sampling event.
July 31, 1995	Brown and Caldwell conducted the July 1995 groundwater sampling event.
August 2-9, 1995	Installation of the biosparging system was initiated. Nineteen combined injection/extraction wells and three vacuum extraction wells were installed.
August 14-26, 1995	Remedial Construction Services, Inc. (RCS) constructed the initial design of the biosparging system.
September 19, 1995	Operation of the extraction portion of the biosparging system commenced.
November 13, 1995	Operation of the injection portion of the biosparging system commenced.
November 14, 1995	Brown and Caldwell conducted the November 1995 groundwater sampling event.
February 23, 1996	Brown and Caldwell conducted the February 1996 groundwater sampling event.
May 31, 1996	Brown and Caldwell conducted the May 1996 groundwater sampling event.
August 23, 1996	Brown and Caldwell conducted the August 1996 groundwater sampling event.
December 2, 1996	Brown and Caldwell conducted the December 1996 groundwater sampling event.

March 6-7, 1997	BJ Services removed three field waste tanks and associated hydrocarbon-impacted soil.
March 12, 1997	Brown and Caldwell conducted the March 1997 groundwater sampling event.
March 14, 1997	Vapor extraction well VE-4 was installed.
April 1997	Vapor extraction well VE-4 was connected to the vapor extraction system.
June 12, 1997	Brown and Caldwell conducted the June 1997 groundwater sampling event.
September 11-12, 1997	Brown and Caldwell conducted the September 1997 groundwater sampling event.
December 10, 1997	Brown and Caldwell conducted the December 1997 groundwater sampling event.
February 3-14, 1998	Air injection wells AI-20 through AI-24, vapor extraction wells VE-5 through VE-7, and monitor wells MW-11A and MW-12 were installed.
February 19, 1998	Operation of previously existing injection wells was suspended in preparation for start-up of new injection wells AI-20 through AI-24.
March 10, 1998	Operation of new air injection wells AI-20 through AI-24 and new vapor extraction wells VE-5 through VE-7 commenced.
March 23-24, 1998	Brown and Caldwell conducted the March 1998 groundwater sampling event.
March 24, 1998	Operation of previously existing injection wells and vapor extraction wells resumed.
June 23, 1998	Brown and Caldwell conducted the June 1998 groundwater sampling event.
September 30, 1998	Brown and Caldwell conducted the September 1998 groundwater sampling event.
December 9-10, 1998	Brown and Caldwell conducted the December 1998 groundwater sampling event.
January 21, 1999	The NMOCD requested submittal of a work plan by March 22, 1999 to perform additional groundwater delineation in the area of the former field waste tanks and the former AST/MW-6 area.
March 9-10, 1999	Brown and Caldwell conducted the March 1999 groundwater sampling event.
March 19, 1999	Brown and Caldwell submitted the work plan for groundwater delineation activities that was requested by the NMOCD.

May 19, 1999	The NMOCD approved the groundwater delineation work plan.
June 10, 1999	Brown and Caldwell performed sampling of existing monitor wells for the June /July 1999 groundwater sampling event.
July 2, 1999	Brown and Caldwell completed plugging and abandonment of monitor wells MW-2, MW-6, and MW-11; installed and developed monitor wells MW-12D and MW-13; and sampled monitor wells MW-12D and MW-13 to complete the June/July 1999 groundwater sampling event.
July 14, 1999	Brown and Caldwell redirected air discharge from the shallow injection well injection system to Lateral No. 1 and optimized air flow to injection wells AI-16 and AI-17 to apply increased remedial pressure to the eastern portion of the west plume.
September 13-14, 1999	Brown and Caldwell conducted the September 1999 groundwater sampling event.
December 9, 1999	Brown and Caldwell conducted the December 1999 groundwater sampling event.
March 9-10, 2000	Brown and Caldwell conducted the March 2000 groundwater sampling event and shut off air flow to biosparging system Lateral Nos. 4S, 5S, 6S, and 7S.
June 8, 2000	Brown and Caldwell conducted the June 2000 groundwater sampling event.
September 13, 2000	Brown and Caldwell conducted the September 2000 groundwater sampling event.
November 1, 2000	Brown and Caldwell deactivated the biosparging system.
December 7, 2000	Brown and Caldwell conducted the December 2000 groundwater sampling event.
January 2001	Brown and Caldwell installed and sampled monitor wells MW-14 and MW-15.
March 8-9, 2001	Brown and Caldwell conducted the March 2001 groundwater sampling event.
June 21-22, 2001	Brown and Caldwell conducted the June 2001 groundwater sampling event.
July 23, 2001	Brown and Caldwell collected soil samples from four soil borings installed at the former fueling system area of the facility to confirm the effectiveness of the biosparging system in remediating hydrocarbon impact to soil, as specified in the NMOCD-approved RAP.
September 10, 2001	Brown and Caldwell conducted the September 2001 groundwater sampling event.

December 6, 2001	Brown and Caldwell conducted the December 2001 groundwater sampling event.
February 26, 2002	Brown and Caldwell repaired the crushed well completion on monitor well MW-10.
February 28, 2002	NMOCD requested an evaluation of chloride content of groundwater at the facility.
March 11-12, 2002	Brown and Caldwell conducted the March 2002 groundwater sampling event. Groundwater samples from all water-producing wells at the facility were analyzed for chloride content.
May 21, 2002	Brown and Caldwell submitted the report for the March 2002 groundwater sampling event, including an evaluation of chloride content of groundwater at the facility and a recommendation for installation of a downgradient off-site well (MW-16) to replace off-site well OW-4, which has gone dry.
June 17-18, 2002	Brown and Caldwell conducted the June 2002 groundwater sampling event.
September 16, 2002	Brown and Caldwell conducted the September 2002 groundwater sampling event.
November 11, 2002	Brown and Caldwell submitted the June 2002 Groundwater Sampling Report and Biosparging System Closure Report.
January 9, 2003	Brown and Caldwell conducted the January 2003 groundwater sampling event.
March 6, 2003	Brown and Caldwell conducted the March 2003 groundwater sampling event.
May 13, 2003	Brown and Caldwell installed monitor well MW-16 at a location to the west of the facility.
June 19, 2003	Brown and Caldwell initiated the June 2003 groundwater sampling event.
August 22, 2003	Brown and Caldwell completed the June 2003 groundwater sampling event.
October 2, 2003	Brown and Caldwell conducted the October 2003 groundwater sampling event.

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-1	3,647.53	8/10/1992	53.22	0.00	3,594.31	(1)
		2/9/1993	53.03	0.00	3,594.50	
		8/18/1993	53.10	0.00	3,594.43	
		1/26/1994	53.31	0.00	3,594.22	
		5/3/1995	54.64	0.20	3,593.05	(2)
		7/31/1995	54.14	0.00	3,593.39	
		11/14/1995	53.69	0.00	3,593.84	
		2/23/1996 5/31/1996	54.32 54.14	0.00	3,593.21 3,593.39	
		8/23/1996	56.17	0.00	3,591.36	
		12/2/1996	55.27	0.00	3,592.26	
		3/12/1997	55.70	0.27	3,592.05	
		6/12/1997	55.08	0.02	3,592.47	
		9/12/1997	55.64	0.51	3,592.31	
		12/10/1997	55.46	0.00	3,592.07	PSH Sheen
		3/24/1998	55.81	0.00	3,591.72	PSH Sheen
		6/23/1998	56.38	0.06	3,591.20	
		9/30/1998	56.82	0.00	3,590.71	PSH Sheen
		12/9/1998	57.05	0.00	3,590.48	
		3/10/1999	57.45	0.00	3,590.08	
		6/10/1999	58.02	0.00	3,589.51	
		7/2/1999 9/14/1999	57.90 58.14	0.00 0.00	3,589.63	
		12/9/1999	38.14	0.00	3,589.39	(3)
		3/9/2000 06/00	58.99	0.00	3,588.54	(3)
		09/00	-	-	-	
		12/7/00 3/8/2001	60.35	0.00	3,587.18	
		6/21/01	60.99	0.00	3,586.54	
	Į.	9/10/01	61.17	0.00	3,586.36	
		12/6/2001	01.17	not measured	3,300.30	-
		03/11/02	62.11	0.00	3,585.42	1
		6/17/02	62.53	0.00	3,585.00	
		9/16/2002	62.43	0.00	3,585.10	,
		1/9/2003	62.61	0.00	3,584.92	
		3/6/2003	62.72	0.00	3,584.81	
		6/19/2003	-	-	-	(3) - well not located
		10/2/2003	62.97	0.00	3,584.56	
MW-2	3,644.84	8/10/1992	52.82	0.00	3,592.02	(1)
		2/9/1993	49.60	0.00	3,595.24	
	1	8/18/1993	49.71	0.00	3,595.13	
		1/26/1994	49.97	0.00	3,594.87	(4) (5)
MW-3	3,645.00	5/3/1995 8/10/1992	52.99	0.00	3,592.01	(4),(5)
C- 44 TAT	J,073.00	2/9/1993	52.72	0.00	3,592.28	(1)
		8/18/1993	52.82	0.00	3,592.18	1
		1/26/1994	53.05	0.00	3,591.95	
		5/3/1995	54.31	0.00	3,590.69	1
		7/31/1995	51.24	0.00	3,593.76	
		11/14/1995	51.10	0.00	3,593.90	
		2/23/1996	51.68	0.00	3,593.32	
		5/31/1996	51.45	0.00	3,593.55	[
		8/23/1996	51.55	0.00	3,593.45	
		12/2/1996	52.23	0.00	3,592.77	1
		3/12/1997	52.67	0.00	3,592.33	1
		6/12/1997	52.68	0.00	3,592.32	
		9/11/1997	52.71	0.00	3,592.29	
		12/10/1997	52.89	0.00	3,592.11	
		3/23/1998 6/23/1998	53.22 53.66	0.00	3,591.78	
		9/30/1998	53.66 54.06	0.00 0.00	3,591.34 3,590.94	
		12/9/1998	54.36	0.00	3,590.94 3,590.64	
		3/10/1999	54.72	0.00	3,590.04	
		6/10/1999	55.17	0.00	3,589.83	
				0.00		

Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-3	3,645.00	9/14/1999	55.42	0.00	3,589.58	
cont.	1	12/9/1999	55.78	0.00	3,589.22	
		3/9/2000	56.23	0.00	3,588.77	
		6/8/2000	56.66	0.00	3,588.34	
		9/13/2000	56.77	0.00	3,588.23	
		12/7/2000	57.15	0.00	3,587.85	
		3/8/2001	57.69	0.00	3,587.31	
		6/21/01	58.34	0.00	3,586.66	
		9/10/01	58.54	0.00	3,586.46	
		12/6/2001	59.04	0.00	3,585.96	
		3/11/2002	59.50	0.00	3,585.50	<u> </u>
		6/17/02	59.83	0.00	3,585.17	
		9/16/2002	59.80	0.00	3,585.20	
		1/9/2003	60.01	0.00	3,584.99	
		3/6/2003	60.10	0.00	3,584.90	
		6/19/2003	-	-	-	(3) - well not located
		10/2/2003	60.34	0.00	3,584.66	
MW-4	3,645.28	8/10/1992	50.55	0.00	3,594.73	(1)
		2/9/1993	50.26	0.00	3,595.02	
		8/18/1993	50.38	0.00	3,594.90	1
		1/26/1994	50.90	0.30	3,594.63	
		5/3/1995	51.51	0.45	3,594.14	
		7/31/1995	51.74	0.26	3,593.75	
		11/14/1995	51.03	0.00	3,594.25	
		2/23/1996	51.65	0.01	3,593.64	
		5/31/1996	51.48	0.00	3,593.80	
		8/23/1996	53.49	0.00	3,591.79	†
		12/2/1996	52.32	0.00	3,592.96	
		3/12/1997	52.74	0.05	3,592.58	
		6/12/1997	53.08	0.44	3,592.56	
		9/12/1997	52.60	0.15	3,592.80	
		12/10/1997	52.89	0.00	3,592.39	PSH Sheen
		3/24/1998	53.20	0.25	3,592.29	
		6/23/1998	53.82	0.22	3,591.64	
	į	9/30/1998	53.96	0.00	3,591.32	200 ml PSH
	į l	12/9/1998	54.27	0.00	3,591.01	
		3/10/1999	54.69	0.04	3,590.62	
		6/10/1999	55.07	0.00	3,590.21	
		7/2/1999	55.10	0.00	3,590.18	
	l	9/14/1999	55.33	0.00	3,589.95	
		12/9/1999	55.79	0.00	3,589.49	
		3/10/2000	56.12	0.00	3,589.16	
		6/8/2000	56.67	0.00	3,588.61	
		9/13/2000	56.65	0.00	3,588.63	
		12/7/2000	57.05	0.00	3,588.23	
		3/8/2001	57.72	0.00	3,587.56	
		6/21/01	58.18	0.00	3,587.10	
		9/10/01	58.54	0.00	3,586.74	
		12/6/2001	58.88	0.00	3,586.40	
		3/11/2002	59.41	0.00	3,585.87	
		6/17/02	59.67	0.00	3,585.61	
	Į į	9/16/2002	59.71	0.00	3,585.57	
		1/9/2003	59.91	0.00	3,585.37	
		3/6/2003	60.03	0.00	3,585.25	1
		6/19/2003	60.16	0.00	3,585.12	
		10/2/2003	60.30	0.00	3,584.98	
MW-5	3,647.72	8/10/1992	52.38	0.00	3,595.34	(1)
		2/9/1993	52.06	0.00	3,595.66	1
		8/18/1993	52.16	0.00	3,595.56	
		1/26/1994	52.50	0.00	3,595.22	
		5/3/1995	53.57	0.00	3,594.15	
		7/31/1995	53.27	0.00	3,594.45	
		11/14/1995	52.83	0.00	3,594.89	
		2/23/1996	53.57	0.00	3,594.15	
	1	5/31/1996	53.16	0.00	3,594.56	1

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-5	3,647.72	8/23/1996	53.41	0.00	3,594.31	
cont.		12/2/1996	53.98	0.00	3,593.74	
		3/12/1997	54.44	0.00	3,593.28	
	i e	6/12/1997	54.48	0.00	3,593.24	
		9/12/1997	54.29	0.00	3,593.43	
		12/10/1997	54.66	0.00	3,593.06	
		3/23/1998	55.05	0.00	3,592.67	
		6/23/1998	55.44	0.00	3,592.28	
		9/30/1998	55.65	0.00	3,592.07	
		12/9/1998	56.00 56.45	0.00	3,591.72	
		3/9/1999 6/10/1999	56.91	0.00	3,591.27 3,590.81	
		7/2/1999	56.93	0.00	3,590.79	
		9/14/1999	57.12	0.00	3,590.60	
		12/9/1999	57.41	0.00	3,590.31	
		3/9/2000	57.92	0.00	3,589.80	
		6/8/2000	58.32	0.00	3,589.40	
		9/13/2000	58.36	0.00	3,589.36	
		12/7/2000	58.71	0.00	3,589.01	1
		3/8/2001	59.36	0.00	3,588.36	
		6/21/01	59.94	0.00	3,587.78	
		9/10/01	59.85	0.00	3,587.87	
		12/6/2001	60.56	0.00	3,587.16	
		3/11/02	61.12	0.00	3,586.60	
		6/17/02	61.43	0.00	3,586.29	
		9/16/2002	61.52	0.00	3,586.20	
		1/9/2003	61.75	0.00	3,585.97	
		3/6/2003	61.90	0.00	3,585.82	
		6/19/2003	62.01	0.00	3,585.71	
		10/2/2003	62.16	0.00	3,585.56	
MW-6	3,644.74	2/9/1993	50.58	0.00	3,594.16	(1)
		8/18/1993	50.78	0.00	3,593.96	
	}	1/26/1994	51.00	0.00	3,593.74	
		5/3/1995	52.63	0.00	3,592.11	
		7/31/1995	51.90	0.00	3,592.84	•
		11/14/1995 2/23/1996	51.19 52.10	0.00 0.00	3,593.55 3,592.64	
		5/31/1996	51.76	0.00	3,592.98	
		8/23/1996	51.63	0.00	3,593.11	
		12/2/1996	52.85	0.00	3,591.89	
		3/12/1997	53.55	0.00	3,591.19	
		6/12/1997	52.08	0.00	3,592.66	
i		9/11/1997	53.72	0.00	3,591.02	
		12/10/1997	53.27	0.00	3,591.47	
		3/23/1998	53.56	0.00	3,591.18	
		6/23/1998	52.88	0.00	3,591.86	
	ĺ	9/30/1998	54.89	0.00	3,589.85	
		12/9/1998	54.57	0.00	3,590.17	
	l	3/10/1999	55.10	0.00	3,589.64	
	,,,,,	7/2/1999		-	*	(5),(6)
MW-7	3,644.55	2/9/1993	50.53	0.00	3,594.02	(1)
		8/18/1993	50.74	0.00	3,593.81	
		1/26/1994	51.01	0.00	3,593.54	
		5/3/1995	52.25	0.00	3,592.30	
		7/31/1995	51.92	0.00	3,592.63	
		11/14/1995	51.48	0.00	3,593.07	
		2/23/1996 5/31/1996	52.15 51.78	0.00	3,592.40	
	ļ	8/23/1996	51.78 52.02	0.00	3,592.77	
		12/2/1996	52.02 52.52	0.00 0.00	3,592.53 3,592.03	
		3/12/1996	52.52 52.99	0.00	3,592.03 3,591.56	
		6/12/1997	53.08	0.00	3,591.56 3,591.47	
		9/11/1997	53.08	0.00	3,591.47 3,591.55	
	ĺ	12/10/1997	53.28	0.00	3,591.27	
		3/23/1998	53.59	0.00	3,590.96	1
	}	6/23/1998	54.20	0.00	3,590.35	1
			J7.4U	. 0.00	2.270.33	•

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-7	3,644.55	12/9/1998	54.74	0.00	3,589.81	
cont.	·	3/9/1999	55.15	0.00	3,589.40	
		6/10/1999	55.66	0.00	3,588.89	
		7/2/1999	55.73	0.00	3,588.82	
		9/13/1999	55.94	0.00	3,588.61	
		12/9/1999	56.38	0.00	3,588.17	
		3/9/2000	56.74	0.00	3,587.81	
		6/8/2000	57.17	0.00	3,587.38	
		9/13/2000	57.40	0.00	3,587.15	
		12/7/2000	57.77	0.00	3,586.78	
		3/8/2001	58.29	0.00	3,586.26	
		6/21/01 9/10/01	58.91 59.25	0.00	3,585.64	
		12/6/2001	59.25 59.75	0.00	3,585.30	
		3/11/2002	60.03	0.00 0.00	3,584.80 3,584.52	
		6/17/02	60.39	0.00	3,584.16	
		9/16/2002	60.39	0.00	3,584.16	
		1/9/2003	60.53	0.00	3,584.02	
		3/6/2003	60.61	0.00	3,583.94	
		6/19/2003	60.73	0.00	3,583.82	
-		10/2/2003	60.84	0.00	3,583.71	
MW-8	3,644.87	2/9/1993	50.48	0.00	3,594.39	(1)
		8/18/1993	50.67	0.00	3,594.20	` /
		1/26/1994	50.96	0.00	3,593.91	
		5/3/1995	52.15	0.00	3,592.72	
		7/31/1995	51.77	0.00	3,593.10	
		11/14/1995	51.37	0.00	3,593.50	
		2/23/1996	52.17	0.00	3,592.70	
		5/31/1996	51.55	0.00	3,593.32	
		8/23/1996 12/2/1996	51.92 52.43	0.00 0.00	3,592.95	
		3/12/1997	52.43	0.00	3,592.44 3,591.94	
		6/12/1997	53.96	0.00	3,590.91	
		9/11/1997	52.73	0.00	3,592.14	
		12/10/1997	53.15	0.00	3,591.72	
		3/23/1998	53.51	0.00	3,591.36	
		6/23/1998	54.01	0.00	3,590.86	
		9/30/1998	54.35	0.00	3,590.52	
:		12/9/1998	54.60	0.00	3,590.27	
		3/9/1999	55.00	0.00	3,589.87	
	İ	6/10/1999	55.56	0.00	3,589.31	
		7/2/1999	55.57	0.00	3,589.30	
		9/13/1999	55.72	0.00	3,589.15	
		12/9/1999	-	-	2.500.25	(3)
		3/9/2000	56.52	0.00	3,588.35	
		06/00 09/00	-	-	-	
		12/00	-	-	-	
		3/8/2001	- 58.11	0.00	3,586.76	
		6/21/01	58.72	0.00	3,586.76 3,586.15	
-		9/10/01	58.72 58.94	0.00	3,586.15 3,585.93	
ļ		12/6/2001	JU.JT	not measured	5,565.75	
		3/11/2002	59.94	0.00	3,584.93	
		6/17/02	60.22	0.00	3,584.65	
		9/16/2002	60.24	0.00	3,584.63	
		1/9/2003	60.42	0.00	3,584.45	
		3/6/2003	60.52	0.00	3,584.35	
		6/19/2003	60.63	0.00	3,584.24	
		10/2/2003	60.75	0.00	3,584.12	
MW-9	3,644.78	4/22/1993	49.73	0.00	3,595.05	(1)
		7/15/1993	49.65	0.00	3,595.13	
		8/18/1993	49.85	0.00	3,594.93	
		1/26/1994	50.02	0.00	3,594.76	
		5/3/1995	51.35	0.00	3,593.43	İ
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		7/31/1995 11/14/1995	50.97 50.43	0.00 0.00	3,593.81 3,594.35	

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-9	3,644.78	5/31/1996	50.89	0.00	3,593.89	
cont.		8/23/1996	50.98	0.00	3,593.80	
		12/2/1996	51.58	0.00	3,593.20	
		3/12/1997	52.21	0.05	3,592.61	
		6/12/1997	52.10	0.00	3,592.68	PSH Sheen
		9/12/1997	51.95	0.00	3,592.83	PSH Sheen
		12/10/1997	52.37	0.00	3,592.41	PSH Sheen
		3/23/1998 6/23/1998	52.68 53.08	0.00 0.00	3,592.10 3,591.70	PSH Sheen PSH Sheen
		9/30/1998	53.39	0.00	3,591.40	PSH Sheen
		12/9/1998	53.68	0.00	3,591.40	r 311 311ccii
		3/10/1999	54.15	0.00	3,590.63	
		6/10/1999	54.68	0.00	3,590.10	
		7/2/1999	54.71	0.00	3,590.07	
		9/13/1999	54.71	0.00	3,590.07	
		12/9/1999	-	- 1	-	(3)
		3/9/2000	55.69	0.00	3,589.09	` ′
		06/00	-	-	•	
		09/00	-	-	-	
		12/00	-	-	•	
		3/8/2001	57.03	0.00	3,587.75	
		6/21/01	57.91	0.00	3,586.87	
		9/10/01	57.95	0.00	3,586.83	
	-	12/6/2001 3/11/2002	58.96	not measured	3,585.82	
		6/17/02	58.96 59.14	0.00	3,585.64	
		9/16/2002	39.14	not measured	5,565.04	
		1/9/2003	59.34	0.00	3,585.44	1
		3/6/2003	59.48	0.00	3,585.30	
		6/19/2003	59.64	0.00	3,585.14	
		10/2/2003	59.76	0.00	3,585.02	
MW-10	3,644.47	8/18/1993	51.54	0.00	3,592.93	(1)
		1/26/1994	51.90	0.00	3,592.57	
		5/3/1995	52.97	0.00	3,591.50	
		7/31/1995	52.87	0.00	3,591.60	
		11/14/1995	52.51	0.00	3,591.96	
		2/23/1996	53.05	0.00	3,591.42	
		5/31/1996 8/23/1996	52.79 53.03	0.00	3,591.68 3,591.44	
		12/2/1996	53.41	0.00	3,591.06	
		3/12/1997	54.21	0.00	3,590.26	
		6/12/1997	53.99	0.00	3,590.48	
		9/12/1997	53.94	0.00	3,590.53	
		12/10/1997	54.12	0.00	3,590.35	
		3/23/1998	54.51	0.00	3,589.96	
		6/23/1998	55.12	0.00	3,589.35	
		9/30/1998	55.61	0.00	3,588.86	
		12/9/1998	55.80	0.00	3,588.67	
		3/9/1999	56.09	0.00	3,588.38	
		6/10/1999	56.60	0.00	3,587.87	
		7/2/1999	56.64	0.00	3,587.83	
		9/14/1999	56.91	0.00	3,587.56	
		12/9/1999	57.37 57.71	0.00	3,587.10	
		3/10/2000 6/8/2000	57.71 58.08	0.00 0.00	3,586.76 3,586.39	1
		9/13/2000	58.08 58.44	0.00	3,586.39 3,586.03	
		12/7/2000	58.89	0.00	3,585.58	
		3/9/2001	59.31	0.00	3,585.16	
		6/21/01	59.89	0.00	3,584.58	
		9/10/01	61.34	0.00	3,583.13	
		12/6/2001	60.65	0.00	3,583.82	
		3/11/2002	60.69	0.00	3,583.78	
		6/17/02	60.98	0.00	3,583.49	1
		9/16/2002	61.00	0.00	3,583.47	i
		1/9/2003	61.07	0.00	3,583.40	
		3/6/2003	61.19	0.00	3,583.28	
	1			0.00	_	Į.
		6/19/2003	61.26	0.00	3,583.21	1

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-11	3,643.78	8/18/1993	51.92	0,00	3,591.86	(1)
	_,	1/26/1994	52.32	0.00	3,591.46	(-)
		5/3/1995	53.38	0.00	3,590.40	
		7/31/1995	53.35	0.00	3.590.43	
		11/14/1995	52.96	0.00	3,590.82	
		2/23/1996	53,50	0.00	3,590.28	
		5/31/1996	53.25	0,00	3,590.53	
		8/23/1996	53.49	0.00	3,590.29	
		12/2/1996	53.79	0.00	3,589.99	
		3/12/1997	53.81	0.00	3,589.97	
		6/12/1997	53.96	0.00	3,589.82	
		9/12/1997	52.93	0.00	3,590.85	
		12/10/1997	-	-	<u>-</u>	(5),(6)
MW-11A	3,644.24	3/23/1998	54.79	0.00	3,589.45	(7)
	ĺ	6/23/1998	55.43	0.00	3,588.81	(.,
		9/30/1998	55.96	0.00	3,588.28	
		12/9/1998	56.13	0.00	3,588.11	
		3/10/1999	56.43	0.00	3,587.81	
		6/10/1999	56.94	0.00	3,587.30	
		7/2/1999	57.01	0.00	3,587.23	
		9/14/1999	57.36	0.00	3,586.88	
		12/9/1999	57.72	0.00	3,586.52	
		3/9/2000	58.01	0.00	3,586.23	
		6/8/2000	58.40	0.00	3,585.84	
		9/13/2000	58.84	0.00	3,585.40	
	1	12/7/2000	59.29	0.00	3,584.95	
	1	3/8/2001	59.72	0.00	3,584.52	
		6/21/01	60.28	0.00	3,583.96	
		9/10/01	60.69	0.00	3,583.55	
		12/6/2001	60.88	0.00	3,583.36	
		3/11/2002	61.42	0.00	3,582.82	
	i i	6/17/02	61.55	0.00	3,582.69	
		9/16/2002	61.59	0.00	3,582.65	
		1/9/2003	61.67	0.00	3,582.57	
		3/6/2003	61.70	0.00	3,582.54	
		6/19/2003	61.84	0.00	3,582.40	
		10/2/2003	61.88	0.00	3,582.36	
MW-12	3,644.29	3/23/1998	54.72	0.00	3,589.57	(7)
	1	6/23/1998	55.48	0.00	3,588.81	(')
		9/30/1998	56.02	0.00	3,588.27	
		12/9/1998	56.17	0.00	3,588.12	
	j l	3/10/1999	56.45	0.00	3,587.84	
		6/10/1999	56.97	0.00	3,587.32	
		7/2/1999	56.99	0.00	3,587.30	
		9/14/1999	57.41	0.00	3,586.88	
		12/9/1999	57.76	0.00	3,586.53	
		3/10/2000	58.08	0.00	3,586.21	
		6/8/2000	58.42	0.00	3,585.87	
		9/13/2000	58.85	0.00	3,585.44	
	j l	12/7/2000	59.31	0.00	3,584.98	
	1	3/8/2001	59.76	0.00	3,584.53	
		6/21/01	60.29	0.00	3,584.00	
		9/10/01	60.79	0.00	3,583.50	
		12/6/2001		I dry during this and subsequent		I
MW-12D	3,644.38	7/2/1999	57.13	0.00	3,587.25	(8)
1217] 3,014.50	9/14/1999	57.74	0.00	3,586.64	(6)
		12/9/1999	57.86	0.00	3,586.52	
		3/9/2000	58.24	0.00	3,586.14	
		6/8/2000	58.56	0.00	3,585.82	
		09/00	36.30	0.00	3,303.02	
		12/00	-	_	-	
			-	· ·	-	
		3/8/2001	-	_	_	
		6/21/01	-	_	_	
		9/10/01	(1.20		2 502 00	
		12/6/2001	61.30	0.00	3,583.08	
	1	3/11/2002	61.61	0.00	3,582.77	1

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Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-12D	3,644.38	6/17/02	61.71	0.00	3,582.67	
cont.	,	9/16/2002	61.75	0.00	3,582.63	
		1/9/2003	61.86	0.00	3,582.52	
		3/6/2003	61.91	0.00	3,582.47	
		6/19/2003	61.95	0.00	3,582.43	
		10/2/2003	62.05	0.00	3,582.33	
MW-13	3,645.52	7/2/1999	56.60	0.00	3,588.92	(9)
	,	9/14/1999	56.92	0.00	3,588,60	()
		12/9/1999	57.28	0.00	3,588.24	
		3/10/2000	57.68	0.00	3,587.84	
		6/8/2000	58.04	0.00	3,587.48	
		9/13/2000	58.29	0.00	3,587.23	
		12/7/2000	58.68	0.00	3,586.84	
		3/8/2001	59.19	0.00	3,586.33	
		6/21/01	59.80	0.00	3,585.72	
		9/10/01	60.03	0.00	3,585.49	
		12/6/2001	60.59	0.00	3,584.93	
		3/11/2002	60.94	0.00	3,584.58	
		6/17/02	61.28	0.00	3,584.24	
		9/16/2002	61.23	0.00	3,584.29	
		1/9/2003	61.38	0.00	3,584.14	
		3/6/2003	61.45	0.00	3,584.07	
		6/19/2003	61.58	0.00	3,583.94	
		10/2/2003	61.70	0.00	3,583.82	
MW-14	3,642.45	3/8/2001	61.07	0.00	3,581.38	
		6/21/01	61.71	0.00	3,580.74	
		9/10/01	62.31	0.00	3,580.14	
		12/6/2001	62.80	0.00	3,579.65	
		3/11/2002	62.70	0.00	3,579.75	
		6/17/02	62.65	0.00	3,579.80	
		9/16/2002	62.55	0.00	3,579.90	
		1/9/2003	62.59	0.00	3,579.86	
		3/6/2003	62.64	0.00	3,579.81	
		6/19/2003	62.64	0.00	3,579.81	
		10/2/2003	62.73	0.00	3,579.72	
MW-15	3,643.24	3/8/2001	59.79	0.00	3,583.45	
		6/21/01	60.49	0.00	3,582.75	
		9/10/01	61.02	0.00	3,582.22	
		12/6/2001	61.47	0.00	3,581.77	
		3/11/2002	61.65	0.00	3,581.59	1
		6/17/02	61.68	0.00	3,581.56	1
		9/16/2002	61.47	0.00	3,581.77	1
	l i	1/9/2003	61.59	0.00	3,581.65	1
		3/6/2003	61.63	0.00	3,581.61	[
		6/19/2003	61.62	0.00	3,581.62	
	2 (42 52	10/2/2003	61.70	0.00	3,581.54	
MW-16	3,643.73	6/19/2003	66.50	0.00	3,577.23	1
0117.4	2 (41)	10/2/2003	66.61	0.00	3,577.12	(0)
OW-4	3,644.06	7/2/1999	58.18	0.00	3,585.88	(8)
	į l	9/14/1999	58.63	0.00	3,585.43	
		12/9/1999	58.92	0.00	3,585.14	
		3/9/2000	59.19	0.00	3,584.87	
		6/8/2000	59.56	0.00	3,584.50	
		9/13/2000	60.16	0.00	3,583.90	
		12/7/2000	61.15	0.00	3,582.91	(***)
		3/8/2001	61.43	0.00	3,582.63	(10)
		6/21/01	61.48	0.00	3,582.58	
		9/10/01	61.53	0.00	3,582.53	
		12/6/2001	we	ll dry during this and subsequ	ent monitoring events	

^{(1) -} Top of casing elevations and groundwater elevations of all monitor wells were relative to an arbitrary datum of 100.00 feet prior to March 1997 and have been converted to Mean Sea Level (MSL).

^{(2) -} For wells having measurable thickness of free product, the groundwater elevation was calculated as follows:

Groundwater Elevation = (TOC elevation)-(depth to groundwater)+[(free product thickness)x(SG of free product)]

Note: The specific gravity (SG) of the free product is 0.82.

^{(3) -} Not measured.

⁽⁴⁾- Monitor well MW-2 could not be located after January 1994.

⁽⁵⁾- Well plugged and abandoned July 2, 1999.

^{(6) -} Monitor well MW-11 could not be located after September 12, 1997.

 $^{^{(7)}}$ - TOC elevations for MW-11A and MW-12 estimated relative to TOC elevation for MW-10.

⁽⁸⁾- TOC elevations for MW-12D and OW-4 estimated relative to TOC elevation for MW-12.

⁽⁹⁾- TOC elevation for MW-13 estimated relative to TOC elevation for MW-7.

^{(10) -}Well dry (measured depth to water is below base of screen); true groundwater elevation is less than listed groundwater elevation.

Table 3
October 2003 Field Screening Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Date	Cumulative Liters Removed	Hď	Temperature (°C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)
MW-5	10/2/03	3.0	91.9	21.91	1,076	84	5.38	5.6	0.0
MW-10	10/2/03	$0.2^{(1)}$	$NM^{(2)}$	NM	NM	NM	NM	3.6	2.2
MW-11	10/2/03	1.0	MN	NM	NM	MN	NM	8.4	4.2
MW-12D	10/2/03	2.5	26'9	20.44	1,139	39	0.74	1.0	1.0
MW-16	10/2/03	2.5	87.9	17.92	2,445	93	7.04	MN	NM

Monitor wells MW-1, MW-3, MW-4, MW-7, MW-8, MW-9, and MW-13 not sampled.

Monitor well MW-2 not operative after January 1994; P&A'd 7/1/99.

Monitor well MW-6 P&A'd 7/1/99.

Monitor well MW-11 not operative after September 1997; P&A'd 7/1/99.

Monitor wells MW-12 and OW-4 were dry.

Monitor wells MW-11A, MW-14 and MW-15 were purged by removing 3 well volumes of groundwater from each well

(1) - Well was purged dry using bailing techniques.

(2) - NM = Not measured

Cumulative Results⁽¹⁾ for Chloride⁽²⁾ Analyses Hobbs, New Mexico Facility BJ Services Company, U.S.A. Table 4

Sample Date								Ψc	Monitor Wells ⁽²⁾	ells,							
	MW-1 MW-3		MW-4 MW-5	MW-6 MW	-7	MW-8	NW-9 N	MW-10 MW-11		MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
1 26/1/8	160 150	310	130	380	310	350	110	2,200	3,400	ďN	ďN	ď	ΝP	ďN	dN		SN
8/23/96	130 140	100	66	210	250	360	140	2,000	2,900	ξ	£	È	ΔN	ΝP	ď	È	NS
3/23-24/98 2	212 206	126	151	183	223	364	164	2,390	SN	940	1,200	È	ďΝ	ď	원	Ę.	NS
3/9-10/99	163 156	142	155	411	238	274	123	1,160	NS	834	314	£	έZ	£	€	£	NS
6/10-1/5/99 N	NA NA	ΝA	NA	ďχ	NA	NA	NA	NA	NP	NA	NA	195	496	£	ďN	£	266
3/9-10/00 2	258 196	196	196	ďΝ	224	241	131	474	È	1,290	327	117	276	£	Ē	ž	258
1/14/2001 N	NS NS	NS	NS	ę	SN	NS	NS	NS	ΝP	NS	NS	NS	NS	368	219	Ŕ	NS
3/8-9/01 N	NA 165	172	152	£	224	250	127	628	NP	1,720	286	SN	276	327	NA	МР	NS-D
6/21/2001 N	NA NA	NA	NA	ď	NA	NA	NA	NA	ďN	NA	NA	SN	NA	222	222	£	NS-D
9/10/2001 N	NA NA	NA	NA	Ŗ	NA	NA	NA	NA	NP	NA	Q-SN	NA	NA	245	228	ąz.	NS-D
9/18/2001 N	NA NA	NA	NA	ďΝ	NA	NA	NA	NA	ďΝ	NA	Q-SN	62	NA	NA	NA	£	NS-D
12/6/2001 N	NA NA	NA	NA	Ē	ΝΑ	NA	NA	NA	NP	NA	Q-SN	NA	NA	276	215	NP	NS-D
3/11-12/02	177 172	183	127	g.	188	241	110	861	NP	1,230	US-D	92	207	284	224	호	NS-D
6/18/2002 N	NS NA	NA	NA	ΝD	NA	NS	NS	NA	NP	NA	G-SN	NA	145	258	233	NP	US-D
9/16/2002 N	NS NS	NS	121	NP	NS	NS	NS	1,030	NP	1,550	Q-SN	98	SN	293	246	ďΝ	NS-D
1/9/2003 N	NS NS	NS	123	ξ	NS	SN	NS	525	NP	3,150	O-SN	95	NS	179	228	ď	NS-D
3/6/2003	NS NS	NS	116	Ē	SN	NS	NS	363	NP	2,900	NS-D	102	NS	163	272	ďN	NS-D
6/20/2003	NS NS	NS	NS	£	NS	NS	NS	NS	NP	NS	NS-D	89.3	NS	NS	NS	983	NS-D
8/22/2003 N	NS NS	SN	SN	ğ	SN	NS	SN	SN	dN	SN	Q-SN	SN	NS	182	280	841	NS-D
10/2/2003	NS NS	NS	194	₽.	SN	NS	NS	420	NP	3,240	NS-D	8.66	NS	175	298	963	NS-D

(2) - NMWQCC standard for chloride is 250 mg/L.

 $^{(3)}$ - MW-2 not operative after May 3, 1995; P&A'd 7/1/99.

MW-6 P&A'd 7/1/99.

MW-11 P&A'd 7/1/99.

MW-11A installed February 1998.

MW-12 installed February 1998.

MW-12D installed June 1999.

MW-13 installed June 1999.

MW-14 installed January 2001.

MW-15 installed January 2001.

MW-16 installed May 2003.

NP = not present at time of sampling event.

NS = not sampled during applicable sampling event.

NA = not analyzed for chloride during applicable sampling event. NS-D = not sampled because well was dry during applicable sampling event.

Table 5
Cumulative-BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Comple	Danuara	Toluene	Tablb	Valaria	TRU D	TOTALC
Well	Date	Sample Type	Benzene		Ethylbenzene ns per liter, ug/L	Xylenes	TPH-D milligrams po	TPH-G
MW-1	8/10/92		5550.0			7270.0		
IVI W - I	l	Regular	5550.0	12090.0	2160.0	7370.0	NA	NA
	2/9/93	Regular	2100.0	6500.0	1300.0	7400.0	NA	NA
	8/19/93	Regular	3200.0	7300.0	1200.0	3700.0	NA	NA
	1/27/94	Regular	1930.0	4580.0	672.0	2390.0	NA	NA
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	390.0	1300.0	230.0	800.0	NA	5.7
	11/15/95	Regular	880.0	1800.0	300.0	970.0	NA	6.8
	2/23/96	Regular	1500.0	3700.0	620.0	2200.0	NA	21
	5/31/96	Regular	1100.0	1700.0	380.0	990.0	NA	7.5
	8/23/96	Regular	1800.0	3300.0	570.0	2100.0	NA	17
	12/2/96	Regular	5600.0	9600.0	2100.0	9600.0	100	64
	3/12/97	Regular	5500.0	9700.0	2600.0	8200.0	22	62
	6/12/97	Regular	5300.0	34000.0	7500.0	27000.0	180	160
	9/12/97	Regular	1800.0	4400.0	1000.0	3000.0	23	21
	12/10/97	Regular	7600.0	12000.0	2800.0	8200.0	11	71
	3/24/98	Regular	4800.0	7200.0	1200.0	2400.0	4.2	38
	6/23/98	Regular	53.0	680.0	580.0	1400.0	1.4	9.2
	9/30/1998	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/1998	Regular	< 1.0	1.5	17.0	110.0	1.4	0.31
	3/10/1999	Regular	< 1.0	< 1.0	8.2	110.0	0.62	0.85
	3/10/1999	Duplicate	< 1.0	< 1.0	7.9	110.0	0.66	0.84
	6/10/1999	Regular	< 1.0	1.1	< 1.0	28.0	0.53	0.55
	6/10/1999	Duplicate	< 1.0	1.8	< 1.0	41.0	0.69	0.76
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	9.1	14	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000 3/8/2001	- Regular	NS 2.0	NS < 1	NS < 1	NS < 1	NS 0.40	NS 0.58
	6/21/2001	Regular	2.0 NS	NS	NS	NS	0.49 NS	0.58 NS
	9/10/2001	_	NS	NS NS	NS NS	NS NS	NS NS	NS NS
	12/6/2001	_	NS	NS NS	NS	NS NS	NS NS	NS NS
	3/12/2002	Regular	<1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	-		-	•	_	, . <u>-</u>	
	through	-	NS	NS	NS	NS	NS	NS
	October 2003							
MW-2 ^T	8/10/92	Regular	14.9	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	100.0	12.0	3.0	13.0	NA	NA
	1/27/94	Regular	< 1	1.2	2.0	2.5	NA	NA
MW-3	8/10/92	Regular	304.9	2099.0	6760.0	1586.0	NA	NA
	2/9/93	Regular	130.0	< 10	< 10	190.0	NA	NA
	8/19/93	Regular	560.0	3100.0	630.0	1900.0	NA	NA
	1/27/94	Regular	1070.0	5380.0	510.0	3120.0	NA	NA
	5/4/95	Regular	770.0	3300.0	470.0	1800.0	NA	NA
	8/1/95	Regular	490.0	2900.0	890.0	1600.0	NA NA	14
	11/15/95	Regular	250.0	1000.0	180.0	440.0	NA NA	2.9
	2/23/96	Regular	120.0	810.0	170.0	560.0	NA NA	4
	5/31/96	Regular	670.0	3900.0	1200.0	2300.0	NA NA	15
	8/23/96	Regular	330.0	2200.0	590.0	1500.0	NA NA	13
	0/23/70	Regulai	220.0	2200.0	370.0	1300.0	ln	14

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Manitor	Sample	Sample	Benzene	Toluene	Ethylbarana	Vulonas	ТРН-D	TDU C
Monitor Well	Sample Date	Sample	Веплепе	Toluene	Ethylbenzene	Xylenes		TPH-G
		Туре	2000		is per liter, ug/L	10000	milligrams pe	
MW-3	12/2/96	Regular	220.0	1800.0	670.0	1000.0	0.89	7.4
(cont.)	3/12/97	Regular	370.0	2000.0	960.0	1400.0	1.8	11
	6/12/97	Regular	860,0	4800.0	1700.0	2600.0	1.9	20
	9/11/97	Regular	770.0	3000.0	1600.0	1900.0	1.6	16
	12/10/97	Regular	240.0	740.0	500.0	450.0	0.59	5.3
	3/24/98	Regular	140.0	630.0	360.0	310.0	0.56	3.9
	6/23/98	Regular	100.0	720.0	350.0	490.0	0.40	4.9
	9/30/1998	Regular	42.0	470.0	450.0	530.0	1.0	3.8
	12/10/1998	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/1999	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/1999	Regular	1.7	3.1	<1.0	36.0	< 0.20	0.18
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.32	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.42	< 0.1
l	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
ł	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
j	3/12/2002 6/18/2002	Regular	< 1 <1	<1	< 1	<1	< 0.2	< 0.1 <0.1
	9/16/2002	Regular		<1	<1	<]	<0.2	\0.1
	through		NS	NS	NS	NS	NS	NS
	October 2003	_	5	"	115	715	110	145
MW-4	8/10/92	Regular	2594.0	10360.0	2160.0	6740.0	NA	NA
	2/9/93	Regular	5200.0	15000.0	2200.0	10000.0	NA	NA
	8/19/93	Regular	3000.0	12000.0	< 2000	7000.0	NA	NA
	1/27/94	Regular	NSP	NSP	NSP	NSP	NA	NSP
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	5700.0	17000.0	3500.0	13000.0	NA	120
	11/15/95	Regular	490.0	1600.0	310.0	1100.0	NA	5.2
	2/23/96	Regular	360.0	2800.0	560.0	2500.0	NA	18
	5/31/96	Regular	84.0	830.0	280.0	1100.0	NA	6.2
	8/23/96	Regular	110.0	1400.0	430.0	1800.0	NA NA	9.8
	12/2/96	Regular	190.0	2000.0	1800.0	7200.0	56	43
	3/12/97	Regular	220.0	1500.0	1500.0	4400.0	27	27
	6/12/97	Regular	47.0	270.0	360.0	950.0	2.5	6.2
	9/12/97	Regular	92.0	840.0	670.0	2100.0	15	7.6
	12/10/97	Regular	230.0	750.0	970.0	2300.0	3.7	16
	3/24/98	Regular	150.0	510.0	270.0	620.0	1.2	5.6
	6/23/98	Regular	160.0	890.0	590.0	1600.0	0.69	10
	9/30/1998		80.0				2.0	3.9
	12/10/1998	Regular	28.0	180.0	370.0	840.0	9.3	1
		Regular		70.0	210.0	960.0	ł .	4.3
	12/10/1998	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
	3/10/1999	Regular	8.0	20.0	250.0	1400.0	13.0	13
	6/10/1999	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63
	9/14/1999	Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17
	12/9/1999	Regular	< 1	2.5	2.3	20.1	2	0.53
	3/10/2000	Regular	< 1	< 1	< 1	3.6	2.6	0.15

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-G
Well	Date	Туре			ns per liter, ug/L		milligrams pe	er liter, mg/L
MW-4	6/8/2000	Regular	< 1	< 1	< 1	< l	0.44	0.23
(cont.)	9/13/2000	Regular	< 1	<1	< 1	< 1	0.61	< 0.1
, ,	12/7/2000	Regular	< 1	< 1	1.3	< 1	0.53	0.16
	3/8/2001	Regular	< 1	< }	< 1	< 1	0.43	0.16
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	0.6	< 1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	<1	<1	<1	<1	<0.2	<0.1
	9/16/2002]		
	through	- :	NS	NS	NS	NS	NS	NS
	October 2003					1		
MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/10/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	1/27/94	Regular	8.7	29.9	4.0	11.3	NA	NA
	5/3/95	Regular	3.7	5.3	0.9	4.6	NA	NA
	8/1/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	11/15/95	Regular	< 0.3	1.2	< 0.3	1.5	NA	NA
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA .	NA
	5/31/96	Regular	31.0	86.0	10.0	20.0	NA	NA
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	6/10/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	9/14/1999	Regular	<1.0	<1.0	<1.0	<2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/2000	Regular	< }	< l	< 1	< 1	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.56	< 0.1
	6/21/2001	Regular	< 1	< 1	< 1	< 1	0.26	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	0.49	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.24	< 0.1
	6/18/2002	Regular	< 1	< 1	< i	< 1	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.3 J	< 0.05
	1/9/2003	Regular	<	<	< 1	< 1	< 1.0	< 0.1
	3/6/2003	Regular	< 1	< 1	< 1	< 1	NA	< 0.1
	8/21/2003	Regular	< 1	< 1	< 1	<1	< 1	< 0.1
	10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.1	< 0.1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgran	ns per liter, ug/L		milligrams pe	r liter, mg/L
MW-6	8/10/92	Regular	NS	NS	NS	NS	NA	NS
(cont.)	2/9/93	Regular	7000.0	19000.0	3100.0	7200.0	NA	NA
,	8/19/93	Regular	8100.0	19000.0	3500.0	6400.0	NA	NA
	1/27/94	Regular	7960.0	20200.0	3830.0	6150.0	NA	NA
	5/4/95	Regular	11000.0	17000.0	2900.0	6000.0	NA	NA
	8/1/95	Regular	8300.0	12000.0	2500.0	5100.0	NA	60
	11/15/95	Regular	8900.0	17000.0	2900.0	5500.0	NA	57
	2/23/96	Regular	8100.0	10000.0	2300.0	4000.0	NA	58
	5/31/96	Regular	83.0	150.0	15.0	51.0	NA	0.57
	5/31/96	Duplicate	87.0	160.0	13.0	47.0	NA	0.52
	8/23/96	Regular	31.0	28.0	9.4	7.9	NA	0.46
	12/2/96	Regular	< 1	< 1	< 1	1.7	5.6	< 0.1
	3/12/97	Regular	12.0	< 5	6.8	18.0	12	< 0.5
	6/12/97	Regular	1900.0	1400.0	410.0	310.0	7.8	7.4
	9/11/97	Regular	11.0	1.3	3.4	< 1	1	< 0.1
	12/10/97	Regular	3.0	4.2	1.2	3.9	1,7	0.14
	3/23/98	Regular	3.6	< 1	4.0	< 1	< 0.2	< 0.1
	6/23/98	Regular	170.0	4.1	15.0	7.2	1.2	0.51
	9/30/1998	Regular	1000.0	420.0	140.0	270.0	4.0	3.3
	12/10/1998	Regular	7.6	6.6	1.7	5.8	2.0	< 0.1
	3/10/1999	Regular	2500.0	930.0	590.0	1400.0	11.0	13
MW-7	8/10/92	Regular	NS	NS	NS	NS	NA	NS
MW-7	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	3.0	< 2	< 2	NA	NA
	1/27/94	Regular	1.1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	52.0	3.4	0.7	2.8	NA	NA
	8/1/95	Regular	22.0	2.2	0.9	2.8	NA	< 0.1
	11/15/95	Regular	8.4	0.8	< 0.3	0.9	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Duplicate	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	29.0	83.0	10.0	21.0	NA	0.25
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	<]	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	<1.0	<1.0	<1.0	<1.0	4.7	< 0.1
	6/10/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 5	< 5	< 5	< 5	1.8	< 0.5
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.66	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.21	< 0.1
	9/13/2000	Regular	< 1	< 1	< 1	<	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	<	< 0.29	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Type		microgran	ns per liter, ug/L		milligrams po	er liter, mg/L
MW-7	6/21/2001	Regular	3.1	<]	< 1	< 1	< 0.22	< 0.1
(cont.)	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.33	< 0.1
	12/6/2001	Regular	< l	< 1	< 1	< 1	1.3	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	NA	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002							
	through	-	NS	NS	NS	NS	NS	NS
	October 2003							
MW-8	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	3.0	4.9	0.8	3.7	NA	NA
	8/1/95	Regular	3.1	1.2	0.5	1.6	NA	< 0.001
	8/1/95	Duplicate	3.6	1.5	0.5	1.5	NA	< 0.1
	11/15/95	Regular	< 0.3	0.5	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	1.8	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS -	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.6	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS NS	NS NG	NS	NS NS	NS	NS
	12/6/2001 3/12/2002	Dagular	NS < 1	NS	NS	NS	NS	NS
	6/18/2002	Regular	< I NS	< 1 NS	< 1 NS	< 1 NS	0.38 NS	< 0.1 NS
	9/16/2002	-	149	140	110	149	149	IND
	through	_	NS	NS	NS	NS	NS	NS
	October 2003	İ	1,5	, (0	140	1,10	110	140
MW-9	4/22/93	Regular	570.0	380.0	< 50	870.0	NA	NA
-	7/15/93	Regular	121.0	7.3	3.0	458.0	NA NA	NA NA
	8/19/93	Regular	390.0	290.0	40.0	250.0	NA NA	NA NA
	1/27/94	Regular	327.0	357.0	51.1	293.0	NA NA	NA NA
	5/3/95	Regular	380.0	110.0	19.0	120.0	NA NA	NA NA
	8/1/95	Regular	660.0	410.0	91.0	310.0	NA NA	6.2

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Manitan	Somels.	Sample	D	T.I	Falsalhangana	Xylenes	TPH-D	ТРН-С
Monitor Well	Sample Date	Type	Benzene	Toluene	Ethylbenzene ns per liter, ug/L	Aylenes	milligrams pe	
			240.0			140.0		
MW-9	11/15/95	Regular	240.0	24.0	11.0	140.0 120.0	NA NA	1.5 1.9
(cont.)	11/15/95	Duplicate	170.0	18.0	10.0		NA NA	
	2/23/96	Regular	170.0	18.0	2.3	160.0	NA NA	4.3
	5/31/96	Regular	120.0	16.0	3.0	200.0	NA	NA
	8/23/96	Regular	82.0	13.0	6.0	270.0	NA NA	4
	8/23/96	Duplicate	76.0	14.0	4.8	250.0	NA 2.6	4.4
	12/2/96	Regular	61.0	< 25	< 25	210.0	2.6	2.8
	12/2/96	Duplicate	86.0	13.0	2.4	270.0	3.7	2.9
	3/12/97	Regular	30.0	48.0	420.0	880.0	8.2	19
	6/12/97	Regular	4.7	2.1	11.0	97.0	2.6	2.2
	6/12/97	Duplicate	< 5	< 5	6.6	69.0	5.2	1.9
	9/12/97	Regular	2.1	2.3	2.1	120.0	1.2	1.9
	12/10/97	Regular	4.9	9.0	6.8	62.0	0.86	0.92
	3/24/98	Regular	< l	< l	< 1	26.0	0.9	1
	6/23/98	Regular	2.4	22.0	10.0	36.0	< 0.2	0.25
	9/30/1998	Regular	1.1	5.5	21.0	59.0	0.27	0.27
	12/10/1998	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
	3/10/1999	Regular	< 1.0	< 1.0	5.7	68.0	< 0.2	0.22
	6/10/1999	Regular	< 1.0	1.8	1.8	71.0	< 0.20	0.43
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	64.0	0.66	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< j	1.4	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	1	< 1	< 1	< i	0.37	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
	9/16/2002							
	through	-	NS	NS	NS	NS	NS	NS
	October 2003							
MW-10	8/19/93	Regular	190.0	460.0	< 200	240.0	NA	NA
	1/27/94	Regular	13.4	4.0	5.5	33.6	NA	NA
	5/4/95	Regular	980.0	15.0	11.0	84.0	NA	NA
	8/1/95	Regular	1300.0	32.0	32.0	100.0	NA	3.6
	11/15/95	Regular	1000.0	24.0	15.0	36.0	NA	1.7
	2/23/96	Regular	810.0	23.0	27.0	44.0	NA	2.4
	5/31/96	Regular	700.0	24.0	34.0	28.0	NA	2
	8/23/96	Regular	290.0	3.4	6.4	13.0	NA	1.4
	12/2/96	Regular	280.0	1.3	17.0	8.0	0.94	0.97
	3/12/97	Regular	110.0	< 5	17.0	< 5	0.61	0.57
	6/12/97	Regular	150.0	12.0	30.0	< 5	0.68	< 0.5
	9/12/97	Regular	87.0	2.3	26.0	2.7	0.76	0.33
	9/12/97	Duplicate	87.0	2.4	26.0	2.8	0.79	0.33
	12/10/97	Regular	41.0	9.8	12.0	7.7	1.1	0.28
	12/10/97	Duplicate	36.0	8.5	10.0	6.7	1.2	0.24
	3/23/98	Regular	36.0	< 5	5.9	< 5	1.6	< 0.5
	3/23/98	Kegular	30.0	<u> </u>	3.9		1.0	<u> </u>

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	ТРН-D	ТРН-G
Well	Date	Туре	Denzene		ns per liter, ug/L	Ayienes	milligrams pe	
	 	 	26.0	1		1.2		
MW-10	3/23/98	Duplicate	36.0	< 1	5.3	1.3	1.7	0.18
(cont.)	6/23/98	Regular	37.0	< 5	< 5	< 5	2.1	< 0.5
	9/30/1998	Regular	84.0	3.2	30.0	2.2	1.4	0.36
	12/10/1998	Regular	29.0	1.0	7.0	1.0	0.86	0.18
	3/9/1999	Regular	28.0	<5.0	5.8	<5.0	0.92	<0.5
	6/10/1999	Regular	17.0	<1.0	<1.0	<1.0	0.30	0.16
	9/14/1999	Regular	10.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/1999	Regular	23.0	<	< 1	1.2	0.44	0.16
	3/10/2000	Regular	300.0	4.3	6.6	43.2	1.2	0.85
	6/8/2000	Regular	78.0	1.7	7.2	9.0	0.67	0.74
	9/13/2000	Regular	23.0	1.5	1.1	2.9	1.6	0.41
	12/7/2000	Regular	7.2	<]	< 1	< 1	1.5	0.15
	3/8/2001	Regular	3.4	1.1	< 1	< 1	3.4	0.2
	6/22/2001	Regular	< 1	< 1	< 1	< 1	1.2	<0.1
	9/10/01 and	Regular	2	< 1	< 1	< 1	2.3	<0.1
	9/18/01			<u> </u>				
	12/6/2001	Regular		,		No Valid Data		
	3/12/2002	Regular	< 1	< 1	< 1	< 1	3.2	< 0.1
	6/18/2002	Regular	<]	< 1	< 1	< 1	1.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	0.1	<0.082	3 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1
	3/6/2003	Regular	< 1	< 1	18	< 1	NA	< 0.1
	8/21/2003	Regular	< 1	< 1	< 1	<]	< 1	< 0.1
	10/2/2003	Regular	<]	< 1	< 1	< 1	< 1.2	< 0.1
MW-11	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA
	5/4/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	8/1/95	Regular	44.0	29.0	5.5	13.0	NA	0.2
	11/15/95	Regular	190.0	2.8	6.2	11.0	NA	0.4
	2/23/96	Regular	49.0	1.2	0.5	4.0	NA	0.25
	5/31/96	Regular	300.0	83.0	12.0	28.0	NA	0.8
	8/23/96	Regular	100.0	1.2	0.3	4.7	NA	0.26
	12/2/96	Regular	970.0	< 5	6.0	8.1	2	1.3
	3/12/97	Regular	130.0	< 5	13.0	5.8	0.42	< 0.5
	3/12/97	Duplicate	100.0	< 5	10.0	5.1	0.43	< 0.5
	6/12/97	Regular	150.0	23.0	19.0	< 5	1.1	0.55
	9/12/97	Regular	220.0	15.0	27.0	13.0	1	0.46
MW-11A	3/24/98	Regular	24.0	5.0	< 5	< 5	0.28	0.14
	6/23/98	Regular	9.9	< 5	< 5	< 5	< 0.2	< 0.5
	9/30/1998	Regular	9.3	3.7	2.2	7.0	<0.20	0.1
	12/10/1998	Regular	1.7	<1.0	<1.0	<1.0	< 0.20	<0.1
	3/10/1999	Regular	<5	< 5	< 5	< 5	0.3	<0.5
	6/10/1999	Regular	<1.0	< 1.0	< 1.0	< 1.0	<0.20	< 0.10
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	< 0.10
	12/9/1999	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
	3/9/2000	Regular	1.2	< 1	< 1	< 1	0.43	< 0.1
	6/8/2000	Regular	3.6	< 1	< 1	< 1	0.37	< 0.1
	9/13/2000	Regular	1.4	< 1	< 1	< 1	0.36	< 0.1
	12/7/00	Regular	26	< 1	< 1	3.3	0.3	0.12
	3/8/01	Regular	12	< 5	< 5	< 5	2.2	< 0.5

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	трн-р	ТРН-G
Well	Date	Туре	Denzene		ns per liter, ug/L	Ayienes	milligrams pe	
MW-11A	6/22/2001		1.5	< 1	< 1	<]	l l	< 0.1
(cont.)	9/10/2001	Regular Regular	1.5 7.9	<1	< 1	< 1	1.1	< 0.1
(cont.)	12/6/2001	~	7.9 <1	< 1	< 1	< 1	1.1	< 0.1
	3/12/2002	Regular		<1	< 1		1.6	< 0.1
		Regular	1.8			1		
	6/18/2002	Regular	2.9	< 0.1	1.3	< 1	0.91	<0.1
	9/16/2002	Regular	9	< 0.11	41	< 0.082	1 J	0.2
	1/9/2003	Regular	12	< 1	< 1	1.2	< 1.0	0.4
	3/6/2003	Regular	3.2	< 1	< 1	1.2	< 1	0.13
	8/21/2003	Regular	3.7	< 1	< 1	< 1	<1	< 0.1
1400 10	10/2/2003	Regular	3.7	< 1	< 1	< 1	< 1.2	< 0.1
MW-12	3/24/98	Regular	100.0	11.0	6.0	8.0	0.29	0.41
	6/23/98 6/23/98	Regular	88.0 89.0	< 5 < 5	< 5 < 5	< 5 < 5	< 0.2	< 0.5 < 0.5
	9/30/1998	Duplicate Regular	89.0 260.0	3.0	1.2	7.9	0.31 <0.20	< 0.5 0.62
	12/10/1998	Regular	160.0	< 1.0	< 1.0	1.2	0.21	0.36
	3/10/1999	Regular	160.0	1.1	< 1.0	2.9	0.38	0.45
	6/10/1999	Regular	49.0	1.4	< 1.0	< 1.0	0.22	0.13
	9/14/1999	Regular	75.0	< 1.0	< 1.0	< 2.0	<0.20	0.23
	12/9/1999	Regular	64.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Regular	93.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Duplicate	99.0	<1	< 1	- < 1	0.22	0.22
	6/8/2000	Regular	62.0	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/2000	Regular	34.0	<1	< 1	< 1	0.23	< 0.1
	12/7/2000	Regular	27	< 1	2.9	1.9	<0.25	< 0.1
	3/8/2001	Regular	14	< 1	< 1	< 1	2.1	0.1
	6/22/2001	Regular	12	< 1	< 1	<1	0.51	0.11
	9/10/2001			Well Dry (Not	Sampled) During This	and Subseque	 	<u> </u>
MW-12D	7/2/1999	Regular	< 5	< 5	< 5	< 5	<0.20	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.24	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/2000	_	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	- !	NS	NS	NS	NS	NS	NS
	6/22/2001	-	NS	NS	NS	NS	NS	NS
	9/18/2001	Regular	< 1	< }	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.44	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.2 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	3/6/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	6/20/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	8/21/2003	Regular	< 1	< 1	< 1	< l	< 1	< 0.1
	10/2/2003	Regular	< 1	< 1	< 1	< 1	< 1.2	< 0.1
MW-13	7/2/1999	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/1999	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/1999	Regular	430.0	16.0	410.0	40.9	0.46	3.2
İ	3/10/2000	Regular	88.0	2.8	200.0	1.3	1.9	0.99

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	ТРН-Д	TPH-G
Well	Date	Type		microgran	ns per liter, ug/L		milligrams po	er liter, mg/L
MW-13	6/8/2000	Regular	6.0	< 1	63.0	3.3	1.1	0.91
(cont.)	9/13/2000	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/2000	Regular	<1	<1	<1	<1	0.43	< 0.1
	3/8/2001	Regular	<1	<1	1.2	<1	2	< 0.1
	6/22/2001	Regular	< 1	< 1	< 1	< 1	0.31	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.84	< 0.1
	6/18/2002	Regular	<1	<1	<1	<1	0.3	< 0.1
	9/16/2002							:
İ	through	-	NS	NS	NS	NS	NS	NS
	October 2003							
MW-14	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
MW-15	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
	October 2003	Regular	NA	NA	NA	NA	NA	NA
MW-16	6/20/2003	Regular	< 5	< 5	< 5	< 5	NA	NA
	October 2003	Regular	NA	NA NA	NA	NA	NA_	NA
OW-4	6/10/1999	Regular	<1.0	<1.0	<1.0	4.4	< 0.2	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	3/9/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	0.25	< 0.1
	6/8/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.21	< 0.1
	9/13/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	12/7/2000		·	Well Dry (Not	Sampled) During This	and Subseque	nt Monitoring Events	

¹ Well plugged and abandoned 7/1/99

NA = Not Analyzed

NS = Not Sampled

NS-D = Not Sampled because well was dry

NSP = Not Sampled due to Phase-Separated Hydrocarbons

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico

BJ	Services	Company,	U.S.A.
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Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
	3/23/1998	3.87	190	< 0.0012
	3/9/1999	< 0.1	195	< 0.0012
	6/10/1999	4.73	209	< 0.0012
	9/14/1999	4.3	210	< 0.0012
	12/9/1999	4.2	210	< 0.0012
	3/9/2000	5.3	260	< 0.0012
	6/8/2000	4.7	240	< 0.0012
	9/13/2000	3.93	200	< 0.0012
	12/7/2000	3.27	160	< 0.0012
	3/8/2001	3.24	180	< 0.0012
MW-5	6/21/2001	2.74	150	0.0017
	9/10/2001	NA ⁽²⁾	130	< 0.0012
	12/6/2001	2.38	120	< 0.0012
	3/12/2002	2.98	120	< 0.0012
	6/18/2002	2.56	110	0.002
	9/16/2002	2.4	105	0.002
	1/9/2003	2.1	97	0.004
	3/6/2003	2.75	110	< 0.0012
	8/21/2003	2.4	100	< 0.0012
	10/2/2003	2.5	100	<0.0012
-	3/23/1998	0.07	320	0.91
	6/23/1998	< 0.1	325	0.55
	9/30/1998	< 0.1	204	0.81
	12/10/1998	< 0.1	180	0.091
	3/9/1999	< 0.1	142	0.035
	3/3/1339	V 0.1	223 ⁽³⁾	0.033
	9/14/1999	< 0.10	160	0.0049
	12/9/1999	0.49	170	0.0039
MW-10	3/10/2000	0.1	160	0.0056
	6/8/2000	< 0.1	150	0.031
	9/13/2000	< 0.1	160	0.031
	12/7/2000	< 0.1	190	0.17
	3/8/2001	< 0.1	270	< 0.0012
	6/22/2001	< 0.1	270	0.044
i	9/10/2001	NA	NA	NA
	3/12/2002	< 0.1	230	NA
	6/18/2002	< 0.1	240	0.007

Table 6
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D
Hobbs, New Mexico

BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-10	9/16/2002	< 0.03	318	0.006
(cont.)	1/9/2003	< 0.1	280	0.0024
	3/6/2003	< 0.1	270	0.0031
	8/21/2003	0.21	350	< 0.0012
	10/2/2003	0.11	360	< 0.0012
	3/23/1998	< 0.05	190	0.14
	6/23/1998	< 0.1	225	0.11
	9/30/1998	0.4	196	0.043
	12/10/1998	0.7	188	0.033
	3/10/1999	< 0.1	164	0.094
	3/10/1999	< 0.1 ⁽⁴⁾	227 ⁽³⁾	0.094
	6/10/1999	< 0.1	181	0.0036
	9/13/1999	0.22	250	< 0.0012
	12/9/1999	< 0.1	290	0.0079
	3/9/2000	0.11	270	0.037
	6/8/2000	< 0.1	240	0.0069
1007.114	9/13/2000	< 0.1	320	< 0.0012
MW-11A	12/7/2000	< 0.1	260	0.0096
	3/8/2001	< 0.1	330	0.0028
	6/22/2001	< 0.1	180	0.0074
	9/10/2001	NA	280	< 0.0012
	12/6/2001	< 0.1	240	0.0041
	3/12/2002	< 0.1	350	0.0044
	6/18/2002	< 0.1	560	0.0028
	9/16/2002	0.3	383	< 0.0012
	1/9/2003	< 0.5	290	0.0063
	3/6/2003	< 0.1	290	0.0044
	8/21/2003	0.68	340	< 0.0012
	10/2/2003	1.4	350	< 0.0012
	3/23/1998	< 0.05	240	< 0.0012
	6/23/1998	< 0.1	240	< 0.0012
	9/30/1998	< 0.1	168	< 0.0012
	12/10/1998	< 0.1	202	< 0.0012
	2/10/1000	< 0.1	137	< 0.0012
MW-12	3/10/1999	< 0.1 ⁽⁴⁾	193 ⁽³⁾	< 0.0012
ľ	6/10/1999	< 0.1	217	< 0.0012
l	9/14/1999	< 0.10	230	< 0.0012
	12/9/1999	< 0.1	180	< 0.0012
l	3/10/2000	< 0.1	210	< 0.0012

Table 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)					
MW-12	6/8/2000	< 0.1	220	< 0.0012					
(cont.)	9/13/2000	< 0.1	240	< 0.0012					
	12/7/2000	< 0.1	260	< 0.0012					
	3/8/2001	< 0.1	300	< 0.0012					
	6/22/2001	< 0.1	360	0.0021					
	9/10/2001	Well Dry (Not Sample	Vell Dry (Not Sampled) During This and Subsec						
	9/18/2001	NA	190	< 0.0012					
	12/6/2001	< 0.1	200	< 0.0012					
1	3/12/2002	< 0.1	200	< 0.0012					
	6/18/2002	< 0.1	180	0.0012					
MW-12D	9/16/2002	0.06	172	< 0.0012					
W - 12D	1/9/2003	< 0.1	150	0.005					
	3/6/2003	0.705	170	0.0038					
[6/20/2003	< 0.1	160	< 0.0012					
	8/22/2003	< 0.1	160	< 0.0012					
	10/2/2003	< 0.1	140	< 0.0012					

^{(1) -} By EPA Method 300, except as noted

mg/L = milligrams per liter

^{(2) -} NA indicates not analyzed

^{(3) -} By EPA Method 375.4

^{(4) -} By EPA Method 353.3

^{(5) -} NS-D indicates not sampled (well dry)

APPENDICES

,

APPENDIX A

Groundwater Sampling Forms

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-5

	JECT INFO			A (1	r .				
Project	Number: 126	<u> 32</u>	Task Num	ober:	-				Time: 1919
	BJ Se					Personnel:_		la /R Ro	xroed_
	Location:	Hobb,	5, NM			Weather:	clear	1 5750	,
2. WEL	L DATA	7		····					
Casing	Diameter:	inc	hes	 		ess 🛭 Galv. St			
	Screen Diameter: inches Type: @/PVC □ Stainless □ Galv. Steel □ Teflon® □ Other:								
	Total Depth of Well: 6450 feet From: Top of Well Casing (TOC) Top of Protective Casing Other. Histarical								
Depth to	Static Water:	62.16	_ feet					ctive Casing Q O	
		feet					2 Top of Prote	ctive Casing C	ther
	of Water Colum			Well Volum	e: <u>5-1</u>	gal		terval (from GS): -inch well = 0.16 ga	
	take depth NU	<u>はらっつ</u> (fr	om GS)						With Thiell Hell - 0.00 gas.
	GE DATA	or Size	□ Bladd	 or Dumon ∏ 2	" Submareibla	Pump 🗆 4" S	Submersible Pi	·mn	1
Purge M	lethod: Cent	rifugal Pum	ip D Perista	iltic Pump 🛚 I	nertial Lift Pun	np 🗆 Other: _	300116161616		Equipment Model(s)
1	s: Pump/Bailer	Stain	less 🗆 PV(☐ Teflon®	0 🖸 Other:	ned Dispo	· · · · <u>- · · · · · · · · · · · · · · ·</u>	1. F	ultz pung
Material	s: Rope/Tubing	☐ Polye	thylene 🗆	Polypropylene	☐ Teflon®	Other:		- 1	
		U Dedic		•		aned Disp		2. ————————————————————————————————————	15.
we we	Il purged dry?		No		ng Rate:	,	Vmin		ir but tymetor
Time	Cum. Gallons Removed	рН	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity .	Depth to Water (TOC)	Comments
1419	Li		° C	mS/cm	mV	250	NTUS	f+	
1421	0.5	6.64	21.77	1.090	94	5.35			
1423	1.0	6.67	21.5B	1.083	90	5.00	<u> </u>		
1425	1.5	6:71	21.43	1.076	89	4.95	- Y		
1427	2,0	6.73	21.64	1.072	88	5.01	64.40	67-40	
1429	2.5	6.75	21-83	1.073	85	5.31	14	62.42	
1431	3.0	6.76	21-91	1.076	६ ५	5.38	V_		
	AA								
	<u> </u>		/						
4. SAMF	PLING DAT								hemical Analyses
Method(s	s): Deristaltic			ımp ©2′2″ Sut ımp □ Other:	mersible Pun	np 🖸 4* Subi	mersible Pump	Ferro	us Iron: mg/L
Materials	: Pump/Bailer	Stainle	ss DPVC		Other:	ned Disp	osable	DO:	<u>5.6</u> mg/L
Materials	: Tubing/Rope	G Polyeti	hylene □ F	olypropylene	☐ Teflon®	Other:	posable	- Nitrat	te: mg/L
Depth to	Water at Time		17	42		ed? D Yes	,	Sulfa	te: mg/L
Sample I	D: NW-5	5	Sample Ti	me:_ 1 43	5	# of Contain	ners:	_	
	No ID:								
Duplicate Sample Collected?									
5. COMMENTS									
					· ·				
Note: Include c	omments such as	well condit	ion, odor, pre	esence of NAF	L, or other ite	ems not on the	field data she	et/ / <	

Gen\non-proj\forms\Field Data Sheet.xls\BC-gallons

FORM GW-1 (Rev 2/26/02 - dg)

FORM GW-1 (Rev 2/26/02 - dg)

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-10

- 000	IFOT INEC)DMA	FION				<u> </u>					
11. PRO	JECT INFO	77.	IION	018			n - in 7		rula			
				nber:		Date: 10-2-03 Time: 11.40 Personnel: Mexical (Banda						
Chork												
	Location:	o pu	. 107	<u> </u>		Weather:	Clear	12 B				
S 100 100 100	L DATA			l=					· ·			
Protession of the con-	Diameter: 3	inc	hes	 	ype: St PVC Stainless Gelv, Steel G Teffon® G Other							
Savan	Diameter	inc	hes	Type: (2-PyC Stainless Gelv. Steel Teffon® Other:								
Total D	opth of Well:		et	· · · · ·	om: 2 Top of Well Casing (TOC)							
Dapth N	Static Water	·	feet	From: Top of Well Casing (TOC)								
	Product:	teet		From: Top of Well Casing (TOC) D Top of Protective Casing D Other.								
Langth	of Water Column):	feet	Well Volume:gal Screened Interval (from GS):								
	ntake depth	(fr	om GS)				Note: 2	inch well = 0.16 ga	I/ft 4-inch well = 0.65 gal/ft			
	GE DATA		f ·		- -							
Purps N	Aethod: D Centr	, Size: <u>//</u> ifugel Pum	D Bladd p D Perist	er Pump 🛛 2 eltic Pump 🔘 k	" Submersible nertial LIR Pun	Pump. 🗆 4" 8 xp 🖸 Other;	Submensible Pr	ump	Equipment Model(s)			
	s: Pump/Bailer	☐ Staini	ess DPV	C ExTellions	Other				ch Test Kits			
	s: Rope/Tubing			pared Off-Site Polypropylene			J680)8	1. <u>+100</u>	n (C) IVIS			
	\sim	□ Dedic	eted CIPm	epared Off-Site			posable	2				
Was we	ill purged dry?	₩ Yes	□ No	Pumpi	ng Rate:	0	Vmin	3	•			
Tome	Cum. Gallons Removed	ρΗ	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity.	Depth to Water (TOC)	Comments			
Purc	ed we	1 dr	1 - Cc	Hected	Samp	bes a	s we	11 rec	overed.			
k d												
		_				·						
		•	·									
									•			
4 SAME	LING DAT	Α .				!	·	Geor	hemical Analyses			
Method(s	, D Baller, Size		Bladder Pi	ump Ci <i>2</i> °Sub	omersible Pun	np 🗆 4" Sub	mersible Pum	p	ous iron: 2.2 mo/L			
1	Person			ump D Other.) () ()**			rent	3 (-			
Meterials	s: Pump/Bailer	□ Dedica	ted 🗅 Prep	ered Off-Site	☐ Field Cles	-	ocable	DO:	3.6 mg/L			
Materials	s: Tubing Rope	D Dedica	ted .D Pre	Polypropylene pared Off-Site	☐ Field Cle	ened (A'Dis	1	Nitra	ite: mg/L			
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Water at Time o		ng:/	IM WAR	Field Filters	ed? 🖸 Yes	to No	Sulfa	ate:mg/L			
Sample	10: MW-1	$\underline{\mathcal{O}}$	Sample Ti	me: 1140	/ 	# of Contai	ners:	_ Allea	dinity:mg/L			
Dunlicate	sample Collect	ed?	Yes X	No ID:		_						
- Jupikali	Duplicate Sample Collected?											
6. COM	MENTS											
	U, GOIVINIE (1)											
												
Note: include o	comments such as i	well conditi	ion, odor, pr	esence of NAI	PL, or other it	ems not on the	e field data sh	eet.				
							7.11					

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-IIA

1. PROJECT INFORMATION									
Project Number: 12631 Task Number: 018 Date: 10-2-03 Time: 120 Client: DJ Services Personnel: R. Banda / R. Rex road									
Client: b7 Services Personnel: R. Banda / R. Rexiscal									
Project Location: Hobbs NM Weather:									
2. WELL DATA									
Casing Diameter: inches Type: 1 PVC D Stainless D Galv. Steel D Teflon® D Other									
Screen Diameter: inches Type: □ PVC □ Stainless □ Galv. Steel □ Teflon® □ Other									
Total Depth of Well: 63.8 Zfeet From: 12 Top of Well Casing (TOC) Top of Protective Casing Other: Historical									
Depth to Static Water: 61.93 feet From: Top of Well Casing (TOC) Top of Protective Casing Charge									
Depth to Product:feet From: □ Top of Well Casing (TOC) □ Top of Protective Casing □ Other									
Length of Water Column: 1.94 feet Well Volume: 0.31 gal Screened Interval (from GS):									
Pump intake depth Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft									
3. PURGE DATA									
Purge Method: Bailer, Size: 2 □ Bladder Pump □ 2" Submersible Pump □ 4" Submersible Pump □ Centrifugal Pump □ Peristaltic Pump □ Inertial Lift Pump □ Other									
Materials: Pump/Baller Dedicated Prepared Off-Site Field Cleaned Disposable 1.									
Materials: Rope/Tubing Depolyethylene Polypropylene Teflon® Other									
Was well purged dry? Yes No Pumping Rate: gallering									
Cum Ashees Spec Disselved Denth to Water									
Time Removed pH Temp Cond. Eh Oxygen Turbidity (TOC) Comments									
purged well by removing 3 were volumes (1.0 gallons									
4. SAMPLING DATA , Geochemical Analyses									
Reiter Size: 7									
Method(s): Penistaltic Pump Inertial Lift Pump Other:									
Materials: Pump Baile									
Materials: Tubing/Rone Polyethylene Teflon® Other.									
U Dedicated U Prepared Off-Site U Field Cleaned Uppsposable									
Depth to Water at Time of Sampling: Field Filtered? Yes No Sulfate: mg/L									
Alkalinity:									
Duplicate Sample Collected? Yes No ID:									
5. COMMENTS									
Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.									
Gen\non-proj\forms\Field Data Sheet,xls\BC-gallons FORM GW-1 (Rev 2/26/02 - dg) Signature									

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-12D

1. PRO	JECT INFO	ORMA	TION					_	1120
Project	Number: 129	832	Task Nun	nber: 0 (<u>*</u>	Date: / 6) - 2 - 5	7 7 n	Time:
Client:_			·			Personnel:_	140	-/ R 13	
Project	Location:	1000	<u> </u>			Weather:	1 (ea	7, t C	5° minimal br
2. WEL	L DATA		<u> </u>						
Casing	Diameter:	<u>inc</u>	hes	Type: p	VC D Stainle	ess 🛘 Galv. St	eel 🗆 Teflon	Other:	
	Diameter:		hes	Type: ØP	VC D Stainle	ess 🛛 Galv. St	eel 🖸 Teflon(Other:	
Total Depth of Well: \$7.58 feet From: Top of Well Casing (TOC) Top of Protective Casing Other.									Other
Depth to	Static Water:_	62.05	feet	 	op of Well Cas		Top of Prote	ctive Casing (Other:
	Product:	feet			op of Well Ca	sing (TOC)	Top of Prote	ctive Casing 🖸	Other
Length (of Water Colum	n: 125 .5 k (4 7	feet	Well Volume	e:	gal		terval (from GS -inch well = 0.16 g	
	take depth_P	0 4 () (fr	om GS) (3 abo	VE TD	<u> </u>	740le. 2	-11CH Well - 0.70 (aut 441CH Well - 0.00 gautt
3. PUR	GE DATA	. Sino:	O Blood		n Submanible	Pump 🗆 4" S	Submereible D	ımn	'
Purge M	Method: Cent	rifugal Pum	_ □ Bladd p □ Perista	altic Pump 🔲 I	nertial Lift Pun	np 🗆 Other			Equipment Model(s)
1	s Pump/Bailer	☐ Staint	ess DPV	C D Teflone	Other_	D Diag		1 Y	75 T
Material	s: Rope/(ubing	□ Polye	thylene	Polypropylene	☐ Teflon®	Other		'`— <i>—</i>	
j			• •				posable	2	
Was we	Il purged dry?	☐ Yes	No.	Pumpi	ng Rate:0-	- L	/min	3	
Time	Cum. Gallons Removed	рН	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Wate (TOC)	Comments
1103	gL.		00	n Sem	mV	ms	NTUE		
1106	0.5	7.00	19.84	452	44	134	NM	622	
1108	1	10.99	19.91	1145	57	1.07		62.24	8.4.
1113	1.5	6.57	20.05	1-141	43	0.97	Y	62.28	RR 10/2/3
1112	7.5	6.95	22.31	1.139	43	0.77		62.21	1015- lavered
1115	2.5	6.97	20.44	1.139	39	0.74	1	62.19	Pump = 1.5'
									, ,
4. SAMI	PLING DA	TA		. /				Geo	chemical Analyses
Method(s): Bailer, Siz	e: C	Bladder Pu	ımp D2 Sul ımp D Other.	omersible Pur	np 🗆 4" Subi	mersible Pum	Fen	ous Iron: // o mg/L
Materials	s: Pump/Bailer	☐ Stainle	ss 🗆 PVC	☐ Teflon®	Other:			DO:	/ ; O mg/L
Material	S. C. GILLIAN CO.			ared Off-Site Polypropylene		ned □ Disp	osable	50.	
	s: Tubing/Rope	☐ Dedica	ited DPre	pared Off-Site		eaned Dis	posable	- Nitr	ate: mg/L
Depth to	Water at Time	of Samplii	ng: <u>62</u>	<u>. 19'</u>	Field Filtere	ed? D Yes	□ No (Sulf	ate: mg/L
Sample ID: MW-17 D Sample Time: 1120 # of Containers:									
Duplicate	e Sample Collec	ted?	Yes 🗅	No ID:	1W-10	20			
5. COM	MENTS	Sim	pleil.	for Bi	EXITA	14-6	19H - D	Math	me, alkalinity,
	NO2 50	4,0	. 1-		,			′ 	, ,,
		·							
Note: Include (comments such as	well condit	ion, odor, pre	esence of NAF	PL, or other ite	ems not on the	field data she	ei.///	

Gen\non-proj\forms\Field Data Sheet.xls\BC-gallons FORM GW-1 (Rev 2/26/02 - dg)

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-14

									
	JECT INFO			·					·
Project	Number: 12			nber: <u>이</u> 역		Date:	10-2-	-03 Ti	me:
Client:_	R7 8	ervice	.5			Personnel:_	K.	Bende/R	Respond
		to665	NW			Weather:			
2. WEL	L DATA	7							
Casing	Diameter:	inc	hes		VC D Stainle				
	Diameter:		hes	 	VC D Stainle				
	epth of Well:				<u> </u>				ner. Historical
Depth to	Static Water:_	<u> 52:73</u>	feet					ctive Casing Ott	
· · · · · · · · · · · · · · · · · · ·	Product:	feet					Top of Prote	ctive Casing	ner:
_	of Water Column			_	e: [.66	-		terval (from GS):_ -inch well = 0.16 gal	
	take depth	(fro	om GS)	(00 K	3 = 3.	1 & gal.		THE THE TEN PORT OF THE TEN	1 4-inch wei = 0.00 gavi
3. PUR	GE DATA Baile Centre	r. Size:	□ Bladd	ier Pump 🗆 2	" Submersible	Pump (14" 5	Submersible Pr	UDAY	
Purg <u>e N</u>	ethod: Centi	rifugal Pum	p D Peristr	altic Pump 🔘 I	nertial Lift Pun	np D Other			Equipment Model(s)
Material	s: Pump/Bailer			C D Teflone pared Off-Site		ned Dispo	osable	1.	•
Material	s: Rope/Tubing			Polyprop ylene					<u> </u>
	I purged dry?			epared Off-Site				2	
vvas we		u res	C) No	· · · · · ·	ng Rate:		Vmin	3	\rightarrow
Time	Cum. Gallons Removed	pН	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
									1
	Purged	Well	bu	romou	ing 3,	No.11 V	slyme	3.18	sallons)
					7				7
		-							
• .									
4_SAMF	LING DAT	A	 '	<u></u>		 		Geoch	emical Analyses
Method(:	、 □ Bailer, Size	e: 🖸	l Bladder Pu ertial Lift Pu	ump 🖸 2" Sub ump 🚨 Other.	omersible Purr	np 🖸 4" Subr	mersible Pump	Ferrou	s Iron:mg/L
Materials	_	Q Stainles	ss 🗅 PVC	☐ Teflon®				DO:	mg/L
				ared Off-Site			esable		
Matenais	: Tubing/Rope			pared Off-Site			posable	Nitrate	:mg/L
•	Water at Time of	·			Field Filtere	d? ☐ Yes	U-No-	Sulfate	e: mg/L
Sample I	D:		Sample Tir	me:		# of Contain	ners:	Alkalir	ity mg/L
Duplicate	Sample Collect	ed?	Yes 🖸	No ID:		-			
				·	·				
5. COM	MENTS _								
									
iote: Include d	omments such as i	vell condition	on, odor, pr€	sence of NAF	L, or other ite	ms not on the	field data she	et/ //) ,	\sim

Gen\non-proj\forms\Field Data Sheet.xls\BC-gallons FORM GW-1 (Rev 2/26/02 - dg)

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-15

1. PROJECT INFORMATION										
Project Number: 12832,618. Task Number: 018 Date: 10-2-03 Time: 1807										
Client: Branche Personnel: L. Banda										
Project Location: Hobbs Weather: Clear + 10°										
2. WELL DATA										
Casing Diarneter: inches Type: _ PVC _ Stainless _ Galv. Steel _ Teffon® _ Other										
Screen Diameter: inches Type: □ PVC □ Stainless □ Galv. Steel □ Teflon® □ Other:										
Total Depth of Well: 61.0 feet From:										
Depth to Static Water: 61.70 feet From: Top of Well Casing (TOC) Top of Protective Casing Other.										
Depth to Product: From: Top of Well Casing (TOC) Top of Protective Casing Other:										
Length of Water Column: 5.31 feet Well Volume: 8.85 gal Screened Interval (from GS):										
Pump intake depth(from GS) 0.85 k 3 = 2.55 Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft										
3. PURGE DATA										
Purge Method: Bailer, Size: Bladder Pump										
Manual Ruma / Bailer										
Descriptions Description Description Description										
Materials: Rober 1 during Dedicated Degree Prepared Off-Site Deficience Disposable 2.										
Was well purged dry?										
Time Cum. Gallons pH Temp Spec. Eh Dissolved Turbidity Depth to Water Comments										
Removed Cond. City Oxygen (TOC)										
Purged well by romoving 3 well volumes (2-5 gallons)										
Purged well by removing 3 well volumes (2-5 gallons)										
4. SAMPLING DATA Geochemical Analyses										
Method(s): Method(s): Method(s): Bailer, Size: Denstal Lift Pump Denstal Lift Pump Other: Denstal Lift Pump Other: Ferrous Iron: mg/L										
Materials: Pump/Baile)										
Dedicated Defrequence Delypropylene Define Delypropylene Define Delypropylene Define Delypropylene Define Delypropylene Delyprop										
Materials: Tubing/Rope Dedicated Prepared Off-Site Disposable Nitrate: mg/L										
Depth to Water at Time of Sampling: 1 M Field Filtered? Yes No Sulfate: mg/L										
Sample ID: 15 Sample Time: 1907 # of Containers: Alkalinity:mg/L										
Duplicate Sample Collected? Yes No ID:										
<u>e</u>										
5. COMMENTS										
Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.										
Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.										

Gen\non-proj\forms\Field Data Sheet.xls\BC-gallons
FORM GW-1 (Rev 2/26/02 - dg)

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-16

1. PROJECT INFORMATION Project Number: 18 Task Number: 018 Date: 10 10 3 Time: 0939 Client: BT Personnel: RRIRB Project Location: Hobbs Weather: Clear + 65° minimal & ree 2. WELL DATA
Client: BT Personnel: RRIRB Project Location: Hobbs Weather: Clear + 65° minimal re-
Project Location: 170bbs Weather: (120 t 65° minimalare
2. WELL DATA
Casing Diameter: inches Type: DLAVC Stainless Galv. Steel Teflon® Other
Screen Diameter: inches Type: QAVC Stainless Galv. Steel Teflon® Other
Total Depth of Well:feet From: □ Top of Well Casing (TOC) □ Top of Protective Casing □ Other
Depth to Static Water: (a) (feet From: D Top of Well Casing (TOC) D Top of Protective Casing D Other.
Depth to Product:feet From: □ Top of Well Casing (TOC) □ Top of Protective Casing □ Other
Length of Water Column: feet Well Volume: gal Screened Interval (from GS):
Pump intake depth (from GS) (3 'above TD) Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft
B. PURGE DATA
Purge Method: Bailer, Size: Diladder Pump 2 Submersible Pump 4 Submersible Pump Denstaltic
Today Control
U Dedicated U Prepared Off-Site U Field Cleaned U Disposable 1. 73.1
Dedicated Prepared Off-Site Field Cleaned Disposable 2.
Was well purged dry? Yes No Pumping Rate: 0, 15 gal/min 3.
Time Cum. Gettons PH Temp Spec. En Dissolved Oxygen Turbidity Depth to Water (TOC)
0926 start purses. U Ger MS/en MV MS/L NM ft
0927 0.5 6.02 1745 3483 88 6.96 V 66.98 Clear
0929 1.0 6.10 17.66 3499 89 10.97 4 66.90
0937 1.5 6.19 17.41 3483 91 7.05 4 66.90
0934 2.0 6.24 17.46 3473 92 7.09 4 66.90
0936 2.5 6.28 17.92 3445 93 700 66.88
. SAMPLING DATA Geochemical Analyses
Manhadia), D Bailer, Size: D Bladder Pump D 2" Submersible Pump D 4" Submersible Pump
The Pump of Inertial Lift Pump of Other.
Materials: euro/Bailer
Materials: (ubing/Rope
Positive Wester of Time of Semplings () ()
Sample ID: NW-16 Sample Time: 9:39 # of Containers:
Alkalinity:mg/L
Duplicate Sample Collected?
COMMENTS
6. COMMENTS Chloride analysis
· t

Gen\non-proj\forms\Field Data Sheet.xIs\BC-gallons FORM GW-1 (Rev 2/26/02 - dg)

APPENDIX B

Laboratory Analytical Reports



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Case Narrative for: Brown & Caldwell

Certificate of Analysis Number:

03100106

Report To:

Brown & Caldwell

Rick Rexroad 1415 Louisiana

Suite 2509

Houston

77002-

ph: (713) 759-0999

fax: (713) 308-3886

Project Name:

BJ Service/12832.018

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

The data in this report applies to the analysis of five water samples from the BJ Services site located in Hobbs, New Mexico. SPL received these samples on October 3, 2003, assigned them to SPL Certificate of Analysis No. 03100106, and assigned analyses as specified on Chain-of-Custody No. 189843.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Pat Lynch
Senior Project Manager

11/3/2003

Date



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03100106

Report To:

Fax To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana Suite 2509

Houston

TX

77002-

ph: (713) 759-0999 Brown & Caldwell

fax: (713) 308-3886

Rick Rexroad fax: (713) 308-3886 Project Name:

BJ Service/12832.018

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.: **Date Reported:**

Client Sample ID Lab Sample ID Matrix **Date Collected Date Received** COC ID HOLD MW-12D 03100106-01 Water 10/2/2003 11:20:00 AM 10/3/2003 9:30:00 AM MW-11A 03100106-02 10/2/2003 12:20:00 PM Water 10/3/2003 9:30:00 AM 189843 MW-10 03100106-03 Water 10/2/2003 11:40:00 AM 10/3/2003 9:30:00 AM 189843 MW-5 03100106-04 Water 10/2/2003 2:35:00 PM 10/3/2003 9:30:00 AM 189843 MW-100 03100106-05 Water 10/2/2003 12:00:00 PM 10/3/2003 9:30:00 AM 189843

Lynch Senior Project Manager

11/3/2003

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-12D Collected: 10/02/2003 11:20 SPL Sample ID: 03100106-01

Client Sample ID MV	V-12D			Col	lected: 1	0/02/2003 11:20	SPL Sample I	D: 031	00106-01
				Sit	e: Hob	obs, NM			
Analyses/Method	Re	esult		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARI	BONATE				MCL	M2320 B	Units: m	g/L	
Alkalinity, Bicarbonate		224		2		1	10/15/03 14:00	RA	1910032
ALKALINITY, CARBO	ONATE				MCL	M2320 B	Units: m	g/L	
Alkalinity, Carbonate		ND		2		1	10/15/03 14:00	RA	1910079
CHLORIDE, TOTAL					MCL	E325.3	Units: m	g/L	
Chloride		99.8		1		1	10/15/03 11:00	RA	1909995
DIESEL RANGE ORG	ANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organics	3	ND		1.2		1	10/08/03 4:59	AM	1906947
Surr: n-Pentacosane	9	62.6	%	18-120		1	10/08/03 4:59	AM	1906947
Prep Method	Prep Date			Prep Initials					
SW3510C	10/03/2003 13:09			K_L					
GASOLINE RANGE C	ORGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Organ	nics	ND		0.1		1	10/14/03 6:52	AE	1906285
Surr: 1,4-Difluorober	nzene	99.7	%	74-121		1	10/14/03 6:52	AE	1906285
Surr: 4-Bromofluorol	benzene	91.3	%	55-150		1	10/14/03 6:52	AE	1906285
HEADSPACE GAS AI	NALYSIS				MCL	RSK147	Units: m	g/L	
Methane		ND		0.0012		1	10/09/03 15:59	J_F	1900627
ION CHROMATOGRA	APHY				MCL	E300.0	Units: m	g/L	
Nitrogen, Nitrate (As N)		ND		0.1		1	10/03/03 14:28	CV	1903353
Sulfate		170		4		20	10/15/03 20:40	CV	1910577
PURGEABLE AROMA	ATICS				MCL	SW8021B	Units: ug	g/L	
Benzene		ND		1		1	10/14/03 6:52	AE	1906474
Ethylbenzene		ND		1		1	10/14/03 6:52	AE	1906474
Toluene		ND		1		1	10/14/03 6:52	AE	1906474
Xylenes,Total		ND		1		1	10/14/03 6:52	AE	1906474
Surr: 4-Bromofluorot	benzene	92.7	%	57-157		1	10/14/03 6:52	AE	1906474

Qualifiers:

Surr: 1,4-Difluorobenzene

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

99.3

%

39-163

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

10/14/03 6:52

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

1906474



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

							(713) 660-090	1	
Client Sample ID MV	V-11A	* * *		Coll	ected: 1	0/02/2003 12:20	SPL Sample II	D: 031	00106-02
				Site	e: Hol	obs, NM			
Analyses/Method		Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARI	BONATE		-		MCL	M2320 B	Units: m	g/L	
Alkalinity, Bicarbonate		381		2		1	10/15/03 14:00	RA	1910033
ALKALINITY, CARBO	ONATE				MCL	M2320 B	Units: m	g/L	
Alkalinity, Carbonate		ND		2		1	10/15/03 14:00	RA	1910080
CHLORIDE, TOTAL					MCL	E325.3	Units: m	g/L	,
Chloride		3240		50		50	10/15/03 11:00		1909996
DIESEL RANGE ORG	ANICS				MCL	SW8015B	Units: m	a/L	
Diesel Range Organics		ND		1.2		1	10/08/03 5:38	AM	1906948
Surr: n-Pentacosane		72.5	%	18-120		1	10/08/03 5:38	AM	1906948
Prep Method	Prep Date			Prep Initials]				
SW3510C	10/03/2003 13:0)9		K_L					
GASOLINE RANGE C	ORGANICS				MCL	SW8015B	Units: m	a/L	
Gasoline Range Organ	nics	0.2		0.1		1	10/14/03 7:18	AE	1906286
Surr: 1,4-Difluorober		113	%	74-121		1	10/14/03 7:18	AE	1906286
Surr: 4-Bromofluorol	benzene	84.0	%	55-150		1	10/14/03 7:18	AE	1906286
HEADSPACE GAS AI	NALYSIS				MCL	RSK147	Units: m	g/L	
Methane		ND		0.0012		1 .	10/09/03 16:26		1900629
ION CHROMATOGRA	\PHY				MCL	E300.0	Units: m	g/L	 -,,
Nitrogen, Nitrate (As N)		1.4		0.1		1	10/03/03 15:06		1903356
Sulfate		350		20		100	10/15/03 21:18	CV	1910580
PURGEABLE AROMA	ATICS				MCL	SW8021B	Units: ug]/L	
Benzene		3.7		1		1	10/14/03 7:18	AE	190647
Ethylbenzene		ND		1	· · · · · · · · · · · · · · · · · · ·	1	10/14/03 7:18	AE	190647
Toluene		ND	-	1		1	10/14/03 7:18	AE	190647
Xylenes,Total		ND		1		1	10/14/03 7:18	AE	1906475

57-157

39-163

Qualifiers:

Surr: 4-Bromofluorobenzene

Surr: 1,4-Difluorobenzene

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

102

98.1

%

%

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

10/14/03 7:18

10/14/03 7:18

ΑE

ΑE

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

1

1

1906475

1906475



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-10 Collected: 10/02/2003 11:40 SPL Sample ID: 03100106-03

				Site	: Hol	bbs, NM		_	
Analyses/Method	Re	sult		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARE	BONATE				MCL	M2320 B	Units: m	g/L	
Alkalinity, Bicarbonate		364	_	2		1	10/15/03 14:00	RA	1910034
ALKALINITY, CARBO	NATE				MCL	M2320 B	Units: m	g/L	
Alkalinity, Carbonate		ND		2		1	10/15/03 14:00	RA	1910082
CHLORIDE, TOTAL					MCL	E325.3	Units: m	q/L	
Chloride		420		10		10	10/15/03 11:00	RA	1909997
DIESEL RANGE ORG	ANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organics		ND		1.2		1	10/08/03 6:17		1906949
Surr: n-Pentacosane	(37.7	%	18-120		1	10/08/03 6:17	AM	1906949
Prep Method	Prep Date			Prep Initials					
SW3510C	10/03/2003 13:09			K_L					
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: m	g/L		
Gasoline Range Organi	ics	ND		0.1		1	10/14/03 7:44	AE	1906288
Surr: 1,4-Difluoroben	zene 9	8.7	%	74-121		1	10/14/03 7:44	AE	1906288
Surr: 4-Bromofluorob	enzene 8	34.7	%	55-150		1	10/14/03 7:44	AE	1906288
HEADSPACE GAS AN	NALYSIS				MCL	RSK147	Units: m	g/L	
Methane		ND		0.0012		1	10/09/03 16:36	J_F	1900630
ION CHROMATOGRA	PHY				MCL	E300.0	Units: m	g/L	
Nitrogen, Nitrate (As N)	C),11		0.1	-	1	10/03/03 15:18	CV	1903357
Sulfate		360		20		100	10/15/03 21:56	CV	1910583
PURGEABLE AROMA	ATICS				MCL	SW8021B	Units: u	g/L	
Benzene		ND		1		1	10/14/03 7:44	AE	1906476
Ethylbenzene		ND		1		1	10/14/03 7:44	AE	1906476
Toluene		ND		1		1	10/14/03 7:44	AE	1906476
Xylenes,Total		ND		1		1	10/14/03 7:44	AE	1906476
Surr: 4-Bromofluorob	enzene 9	9.5	%	57-157		1	10/14/03 7:44	AE	1906476
Surr: 1,4-Difluoroben	zene	101	%	39-163		1	10/14/03 7:44	AE	1906476

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-5 Collected: 10/02/2003 14:35 SPL Sample ID: 03100106-04

Client Sample ID MW-5			Colle	cted: 1	10/02/2003 14:35	SPL Sample II) : 031	00106-04
			Site	Hol	bbs, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARE	BONATE			MCL	M2320 B	Units: m	g/L	
Alkalinity, Bicarbonate	194		2		1	10/15/03 14:00	RA	1910036
ALKALINITY, CARBO	NATE			MCL	M2320 B	Units: m	g/L	
Alkalinity, Carbonate	5.97		2		1	10/15/03 14:00	RA	1910083
CHLORIDE, TOTAL		•		MCL	E325.3	Units: m	g/L	
Chloride	116		2		2		RA	1909998
DIESEL RANGE ORGA	ANICS			MCL	SW8015B	Units: m	g/L	
Diesel Range Organics	ND		1.1		1		AM	1906950
Surr: n-Pentacosane	68.0	%	18-120		1	10/08/03 6:57	AM	1906950
Prep Method	Prep Date		Prep Initials					
SW3510C	10/03/2003 13:09		K_L					
GASOLINE RANGE O	RGANICS		·	MCL	SW8015B	Units: m	g/L	
Gasoline Range Organi	cs ND		0.1		1	10/14/03 8:11	AE	1906290
Surr: 1,4-Difluoroben:	zene 99.0	%	74-121		1	10/14/03 8:11	AE	1906290
Surr: 4-Bromofluorob	enzene 89.3	%	55-150		11	10/14/03 8:11	AE	1906290
HEADSPACE GAS AN	IALYSIS			MCL	RSK147	Units: m	g/L	
Methane	ND		0.0012		1	10/09/03 16:51	J_F	1900631
ION CHROMATOGRA	PHY			MCL	E300.0	Units: m	g/L	
Nitrogen, Nitrate (As N)	2.5		0.1	•	1	10/03/03 15:31	CV	1903358
Sulfate	100		2		10	10/15/03 22:09	CV	1910584
PURGEABLE AROMA	TICS			MCL	SW8021B	Units: ug	ı/L	
Benzene	ND		1		1	10/14/03 8:11	AE	1906477
Ethylbenzene	ND		1		1	10/14/03 8:11	AE	1906477
Toluene	ND		1		1	10/14/03 8:11	AE	1906477
Xylenes,Total	ND		1		1	10/14/03 8:11	AE	1906477

Qualifiers:

Surr: 4-Bromofluorobenzene

Surr: 1,4-Difluorobenzene

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

98.4

101

%

57-157

39-163

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

10/14/03 8:11

10/14/03 8:11

ΑĒ

ΑE

1906477

1906477

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

1

1



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-100

Collected: 10/02/2003 12:00

SPL Sample ID:

03100106-05

A	11-1-1-	
Site:	Hobbs.	NIM

				Site	: Hob	obs, NM			
Analyses/Method	F	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGA	ANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organics		ND		1		1	10/08/03 7:36 AM		1906951
Surr: n-Pentacosane		64.6	%	18-120		1	10/08/03 7:36	AM	1906951
Prep Method	Prep Date			Prep Initials					
SW3510C	10/03/2003 13:0	9		K_L					
GASOLINE RANGE OF	RGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Organic	cs	ND		0.1		1	10/14/03 8:38	AE	1906291
Surr: 1,4-Difluorobenz	zene	103	%	74-121		1	10/14/03 8:38	AE	1906291
Surr: 4-Bromofluorobe	enzene	70.7	%	55-150		1	10/14/03 8:38	AE	1906291
PURGEABLE AROMA	TICS				MCL	SW8021B	Units: uç]/L	
Benzene		ND		1		1	10/14/03 8:38	AE	1906478
Ethylbenzene		ND		1		1	10/14/03 8:38	AE	1906478
Toluene		ND		1		1	10/14/03 8:38	AE	1906478
Xylenes,Total		ND		1		1	10/14/03 8:38	AE	1906478
Surr: 4-Bromofluorobe	enzene	98.1	%	57-157		1	10/14/03 8:38	AE	1906478
Surr: 1,4-Difluorobenz	zene	101	%	39-163		1	10/14/03 8:38	AE	1906478

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

Quality Control Documentation



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service/12832.018

Analysis:

Diesel Range Organics

Method:

RunID:

SW8015B

WorkOrder:

03100106

Lab Batch ID:

32240a

Method Blank

HP_V_031013A-1906954

Units:

AM

Lab Sample ID

Client Sample ID

Analysis Date: reparation Date:

10/13/2003 14:03 10/03/2003 13:09 Analyst: Prep By: K_L Method SW3510C

mg/L

03100106-01B

MW-12D

03100106-02B

MW-11A

03100106-03B

MW-10

03100106-04B

MW-5

Result Rep Limit Analyte Diesel Range Organics ND 1.0 Surr: n-Pentacosane

82.6 18-120 03100106-05B

Samples in Analytical Batch:

MW-100

Laboratory Control Sample (LCS)

RunID:

HP_V_031013A-1906955

Units:

mg/L

Analysis Date: Preparation Date: 10/13/2003 14:42 10/03/2003 13:09

Analyst: AM

Prep By: K_L Method SW3510C

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	2.38	95	21	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03100083-04

RunID:

HP_V_031013A-1906931

Units:

mg/L

Analysis Date:

10/08/2003 22:55

AM Analyst:

Preparation Date:

10/03/2003 13:09

Prep By: K_L Method SW3510C

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics	ND	5	8.96	124	5	9.99	145 *	11.0		13	130

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

11/3/2003 5:48:01 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service/12832.018

Analysis:

Headspace Gas Analysis

ethod:

RSK147

WorkOrder:

03100106

Lab Batch ID:

R95616

Method Blank

RunID: halysis Date: VARC_031009B-1900625

10/09/2003 15:27

Units: Analyst:

mg/L J_F

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03100106-01C 03100106-02C MW-12D

03100106-03C

MW-11A

MW-10

03100106-04C

MW-5

Result Rep Limit Analyte ND 0.0012 Methane

Laboratory Control Sample (LCS)

RunID:

VARC_031009B-1900626

Units:

mg/L

Analysis Date:

10/09/2003 15:47

Analyst: J_F

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Methane	1000	904	90	70	130

Sample Duplicate

Original Sample:

03100106-01

RunID:

VARC_031009B-1900627

Units:

mg/L

Analysis Date:

10/09/2003 15:59

Analyst:

J_F

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Butane	ND	ND	0	50
Ethane	ND	ND	0	50
Ethylene	ND	ND	0	50
Isobutane	ND	ND	0	50
Methane	ND	ND	0	50
Propane	ND	ND	0	50
Propylene	ND	ND	0	50

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service/12832.018

Analysis:

Gasoline Range Organics

lethod:

SW8015B

WorkOrder:

03100106

Lab Batch ID:

R95846

Method Blank

RunID: nalysis Date: VARD_031013A-1906311

Surr: 4-Bromofluorobenzene

Units:

mg/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

10/13/2003 20:15

Analyst: ΑE 03100106-01A 03100106-02A MW-12D

MW-11A

03100106-03A

MW-10

03100106-04A

03100106-05A

MW-5 MW-100

Result Rep Limit Analyte ND 0.10 Gasoline Range Organics 91.0 Surr: 1,4-Difluorobenzene

74-121 83.7 55-150

Laboratory Control Sample (LCS)

RunID:

VARD_031013A-1906269

Units: mg/L

Analysis Date:

10/13/2003 12:05

Analyst: ΑĘ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	1.02	102	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03100159-01

RunID:

VARD_031013A-1906276

Units:

mg/L

Analysis Date:

10/13/2003 21:35

Analyst: ΑE

Sample MS MS MS % MSD MSD MSD % RPD RPD High Analyte Low Result Spike Result Recovery Spike Result Recovery Limit Limit Limit Added Added Gasoline Range Organics 1.72 0.9 1.46 -28.3 0.9 1.5 -24.7 * 2.16 36 36 160

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

Analysis: lethod:

Purgeable Aromatics

SW8021B

BJ Service/12832.018

WorkOrder:

03100106

Lab Batch ID:

R95851

Method Blank

Units:

Analyst:

RunID: nalysis Date: VARD_031013D-1906457

10/13/2003 20:15

ug/L ΑE

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03100106-01A

MW-12D

03100106-02A

MW-11A

03100106-03A

MW-10

03100106-04A

MW-5

03100106-05A

MW-100

Rep Limit Analyte Result Benzene ND 1.0 Ethylbenzene ND 1.0 ZD Toluene 1.0 Xylenes,Total ND 1.0 Surr: 1,4-Difluorobenzene 101.1 39-163 Surr: 4-Bromofluorobenzene 93.5 57-157

Laboratory Control Sample (LCS)

RunID:

VARD_031013D-1906456

Units:

ug/L

Analysis Date:

10/13/2003 15:59

Analyst: ΑE

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	55.6	111	81	125
Ethylbenzene	50	51.8	104	85	119
Toluene	50	54.2	108	87	120
Xylenes,Total	150	157.3	105	83	122

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03100159-01

RunID:

VARD_031013D-1906458

Units:

ug/L

Analysis Date:

10/13/2003 20:42

Analyst: ΑE

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
enzene ·	12.3	20	36.8	123	20	38.2	129	3.55	26	43	155
thylbenzene	3.10	20	25.8	113	20	24.7	108	4.41	34	51	142
Toluene	ND	20	24.1	120	20	23.4	117	2.69	25	57	142
ylenes,Total	3.39	60	77.2	123	60	73.7	117	4.64	27	47	154

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

Analysis: ethod:

Ion Chromatography

E300.0

BJ Service/12832.018

WorkOrder:

03100106

Lab Batch ID:

R95724

Method Blank

BunID: nalysis Date: IC1_031003A-1905420 10/03/2003 13:38

Units: Analyst:

mg/L CV

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03100106-01D 03100106-02D

MW-12D

03100106-03D

MW-11A MW-10

03100106-04D

MW-5

Analyte Rep Limit Result Nitrogen, Nitrate (As N) ND

Laboratory Control Sample (LCS)

0.10

RunID:

IC1_031003A-1903350

Units:

mg/L

Analysis Date:

10/03/2003 13:50

Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen, Nitrate (As N)	10	10.4	104	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03100106-01

RunID:

IC1_031003A-1903354

Units:

mg/L

Analysis Date:

10/03/2003 14:41

CV Analyst:

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
litrogen,Nitrate (As N)	ND	10	9.98	99.8	10	10	100	0.460	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

11/3/2003 5:48:02 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service/12832.018

Analysis:

nalysis Date:

RunID:

Chloride, Total

ethod: E325.3

Sel VICe/ 12032.010

WorkOrder:

03100106

Lab Batch ID:

R95999

Method Blank

WET_031015K-1909988 10/15/2003 11:00 Units: Analyst: mg/L RA

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03100106-01D

MW-12D

03100106-02D

MW-11A

03100106-03D

MW-10

03100106-04D

MW-5

Analyte	Result	Rep Limit
Chloride	. ND	1.0

Laboratory Control Sample (LCS)

RunID:

WET_031015K-1909990

Units:

mg/L

Analysis Date:

10/15/2003 11:00

Analyst: RA

A	nalyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride		78	78.81	101	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03100106-04

RunID:

WET_031015K-1909999

Units:

mg/L

Analysis Date:

10/15/2003 11:00

Analyst: RA

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
hloride	115.6	100	210.1	94.57	100	210.1	94.57	0	20	85	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell BJ Service/12832.018

Analysis: Method:

Alkalinity, Bicarbonate

M2320 B

WorkOrder: Lab Batch ID: 03100106

R96001

Method Blank

RunID:

nalysis Date:

WET_031015M-1910027

Units:

mg/L RA

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

10/15/2003 14:00

Analyst:

03100106-01D 03100106-02D MW-12D

MW-11A

03100106-03D

MW-10

03100106-04D

MW-5

Analyte Result Rep Limit ND Alkalinity, Bicarbonate

Laboratory Control Sample (LCS)

RuniD:

WET_031015M-1910031

Units:

mg/L

Analysis Date:

10/15/2003 14:00

RA Analyst:

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Bicarbonate	101	98.5	98	90	110

Sample Duplicate

Original Sample:

03100106-04

WET_031015M-1910036

Units:

mg/L

Analysis Date:

RunID:

10/15/2003 14:00

Analyst:

RA

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Alkalinity, Bicarbonate	194	193	1	20

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

11/3/2003 5:48:03 PM



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE

HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service/12832.018

Analysis:

RunID:

Alkalinity, Carbonate

ethod: M2320 B

WorkOrder:

Samples in Analytical Batch:

03100106

Lab Batch ID:

R96005

Method Blank

WET_031015N-1910075 Units:

mg/L

Lab Sample ID

Client Sample ID

halysis Date:

10/15/2003 14:00

Analyst: RA

03100106-01D

MW-12D

03100106-02D

MW-11A

03100106-03D

MW-10

03100106-04D

MW-5

Analyte Result Rep Limit
Alkalinity, Carbonate ND 2.0

Laboratory Control Sample (LCS)

RunID:

WET_031015N-1910078

Units: mg/L

Analysis Date:

10/15/2003 14:00

Analyst: RA

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Carbonate	101	98.5	98	90	110

Sample Duplicate

Original Sample:

03100106-04

RunID:

WET_031015N-1910083

Units:

mg/L

Analysis Date:

10/15/2003 14:00

Analyst: RA

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Alkalinity, Carbonate	5.97	6.965	15	20

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service/12832.018

Analysis: ethod:

Ion Chromatography

E300.0

WorkOrder:

03100106

Lab Batch ID:

R96026A

Method Blank

RuniD: nalysis Date: IC1_031015A-1910565 10/15/2003 17:56

Units: Analyst:

mg/L CV

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03100106-01D 03100106-02D

MW-12D

MW-11A

03100106-03D

MW-10

03100106-04D

MW-5

Analyte Sulfate

Rep Limit Result ND 0.20

Laboratory Control Sample (LCS)

RunID:

IC1_031015A-1910566

Units: mg/L

Analysis Date:

10/15/2003 18:09

Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10	10.5	105	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

Analysis Date:

03100106-02

RunID:

IC1_031015A-1910581 10/15/2003 21:31

Units:

mg/L Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit	
ulfate	348	1000	1430	108	1000	1430	108	0.0950	20	80	120	

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

11/3/2003 5:48:03 PM

Sample Receipt Checklist And Chain of Custody

Analysis Request & Chain of Custody Record College 173/57-04 matrix bottle 173/57-04 matrix bottle 173/57-04 matrix bottle 173/57-04 matrix bottle 173/57-04 matrix bottle 173/57-04 matrix bottle 173/57-04 matrix bottle 173/57-04 matrix bottle 173/57-04 matrix bottle 175/57-04 matrix 170/57-04	SPL,		(3)	SP. Workorder No	1 2 3 3 3 3 3 3 3 3 3 3	92	89
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HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Sample Receipt Checklist

Workorder: Date and Time Received: Temperature:	03100106 10/3/2003 9:30:00 AM 3.7°C		Receive Carrier Chilled	name:	R_R FedEx Water Ice
1. Shipping container/co	ooler in good condition?	Yes 🗹	No 🗌	Not Prese	ent.
2. Custody seals intact of	on shippping container/cooler?	Yes 🗌	No 🗌	Not Prese	ent 🗹
3. Custody seals intact	on sample bottles?	Yes	No 🗌	Not Pres	ent 🔽
4. Chain of custody pres	sent?	Yes 🗹	No 🗌		
5. Chain of custody sign	ned when relinquished and received?	Yes 🗹	No 🗌		
6. Chain of custody agre	ees with sample labels?	Yes 🗹	No 🗌		
7. Samples in proper co	ntainer/bottle?	Yes 🗹	No 🗆		
8. Sample containers in	tact?	Yes 🗹	No 🗌		
9. Sufficient sample vol	ume for indicated test?	Yes 🗹	No 🗆		
10. All samples received	within holding time?	Yes 🗹	No 🗆		
11. Container/Temp Blan	k temperature in compliance?	Yes 🗹	No 🗌		
12. Water - VOA vials hav	ve zero headspace?	Yes 🔽	No 🗌	Not Appl	icable 🗀
13. Water - pH acceptable	e upon receipt?	Yes 🔽	No 🗌	Not Appl	licable
SPL Representativ		Contact Date 8	k Time:		
Non Conformance Issues:			<u></u>		
Client Instructions:					



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Case Narrative for: Brown & Caldwell

Certificate of Analysis Number:

03100148

Report To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana

Suite 2509

Houston

TX

77002-

ph: (713) 759-0999

fax: (713) 308-3886

Project Name:

BJ Service/12832.018

Site: Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Pat Lynch
Senior Project Manager

10/21/03

Date



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03100148

port To:

Eax To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana

Suite 2509

Houston

ΤX

77002-

ph: (713) 759-0999

fax: (713) 308-3886

Brown & Caldwell

Rick Rexroad

fax: (713) 308-3886

Project Name:

BJ Service/12832.018

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
<i>I</i> -16	03100148-01	Water	10/2/03 9:39:00 AM	10/4/03 10:00:00 AM	189852	
W-15	03100148-02	Water	10/2/03 6:07:00 PM	10/4/03 10:00:00 AM	189852	
B-10-2-03	03100148-03	Water	10/2/03	10/4/03 10:00:00 AM	189852	
1 -14	03100148-04	Water	10/2/03 7:18:00 PM	10/4/03 10:00:00 AM	189852	$\top \sqcap$

Senior Project Manager

10/21/03

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-16

Collected: 10/02/2003 9:39

SPL Sample ID:

03100148-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit		Díl. Factor QUAL	Date Analyzed Anal	yst Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L	
Chloride	963	10		10	10/16/03 18:00 RA	1912297

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-15

Collected: 10/02/2003 18:07

SPL Sample ID:

03100148-02

Site:

Hobbs, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: m	g/L	
Chloride	298	10		10	10/16/03 18:00	RA	1912298

^{* -} Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID TB-10-2-03

Collected: 10/02/2003 0:00

SPL Sample ID:

03100148-03

Site: Hobbs, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Organics	ND		0.1		1	10/14/03 6:25	AE	1906284
Surr: 1,4-Difluorobenzene	105	%	74-121		1	10/14/03 6:25	ΑE	1906284
Surr: 4-Bromofluorobenzene	88.3	%	55-150		1	10/14/03 6:25	AE	1906284
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug	j/L	
Benzene	ND		1		1	10/14/03 6:25	ΑE	1906473
Ethylbenzene	ND		1		1	10/14/03 6:25	AE	1906473
Toluene	ND		1		1	10/14/03 6:25	ΑE	1906473
Xylenes,Total	ND		1		1	10/14/03 6:25	ΑE	1906473
Surr: 4-Bromofluorobenzene	91.8	%	57-157		1	10/14/03 6:25	AE	1906473
Surr: 1,4-Difluorobenzene	99.9	%	39-163		1	10/14/03 6:25	AE	1906473

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-14 Collected: 10/02/2003 19:18 SPL Sample ID: 03100148-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L	
Chloride	175	5		5	10/16/03 18:00 RA	1912299

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

Quality Control Documentation



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE

HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service/12832.018

Analysis: thod:

nID:

alysis Date:

Gasoline Range Organics

SW8015B

WorkOrder:

03100148

Lab Batch ID:

R95846

Method Blank

VARD_031013A-1906311

10/13/2003 20:15

Units: Analyst:

mg/L

ΑE

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03100148-03A

TB-10-2-03

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	91.0	74-121
Surr: 4-Bromofluorobenzene	83.7	55-150

Laboratory Control Sample (LCS)

RunID:

VARD_031013A-1906269

Units:

mg/L

Analysis Date:

10/13/2003 12:05

Analyst:

ΑE

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	1.02	102	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03100159-01

RunID:

VARD_031013A-1906276

Units:

mg/L ΑE

Analysis Date:

10/13/2003 21:35

Analyst:

MSD MSD MSD % RPD RPD Sample MS MS MS % Low High Analyte Spike Limit Result Spike Result Recovery Result Recovery Limit Limit Added Added Gasoline Range Organics 1.72 1.46 -28.3 0.9 1.5 -24.7 * 2.16 36 0.9 36 160

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service/12832.018

Analysis:

alD:

lvsis Date:

Purgeable Aromatics

hod: SW8021B

WorkOrder:

Samples in Analytical Batch:

vorkOrder:

03100148

Lab Batch ID:

R95851

Method Blank

VARD_031013D-1906457

10/13/2003 20:15

Units: Analyst: ug/L

ΑE

Lab Sample ID

Client Sample ID

03100148-03A

TB-10-2-03

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	101.1	39-163
Surr: 4-Bromofluorobenzene	93.5	57-157

Laboratory Control Sample (LCS)

RunID:

VARD_031013D-1906456

ug/L

Analysis Date:

10/13/2003 15:59

Analyst: AE

Units:

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	55.6	111	81	125
Ethylbenzene	50	51.8	104	85	119
Toluene	50	54.2	108	87	120
Xylenes,Total	150	157.3	105	83	122

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03100159-01

RunID:

00100100-01

VARD_031013D-1906458

Units: ug/L

Analysis Date:

10/13/2003 20:42

Analyst: AE

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
zene	12.3	20	36.8	123	20	38.2	129	3.55	26	43	155
Ethylbenzene	3.10	20	25.8	113	20	24.7	108	4.41	34	51	142
Toluene	ND	20	24.1	120	20	23.4	117	2.69	25	57	142
x enes,Total	3.39		77.2	123	60	73.7	117	4.64	27	47	154

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell

BJ Service/12832.018

<u>An</u>alysis:

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alysis Date:

Chloride, Total

E325.3 thod:

WorkOrder:

03100148

Lab Batch ID:

R96089

Method Blank

WET_031016D-1912294

10/16/2003 18:00

Units: Analyst: mg/L RA

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03100148-01A 03100148-02A

MW-16 MW-15

03100148-04A

MW-14

	Analyte	Result	Rep Limit
Chloride		ND	1.0

Laboratory Control Sample (LCS)

RunID:

WET_031016D-1912296

Units:

mg/L

Analysis Date:

10/16/2003 18:00

Analyst: RA

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	78	78.81	101	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03100579-01

RunID:

WET_031016D-1912301

Units:

mg/L

Analysis Date:

10/16/2003 18:00

Analyst: RA

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
loride	33.27	50	84.06	101.6	50	84.06	101.6	0	20	85	115

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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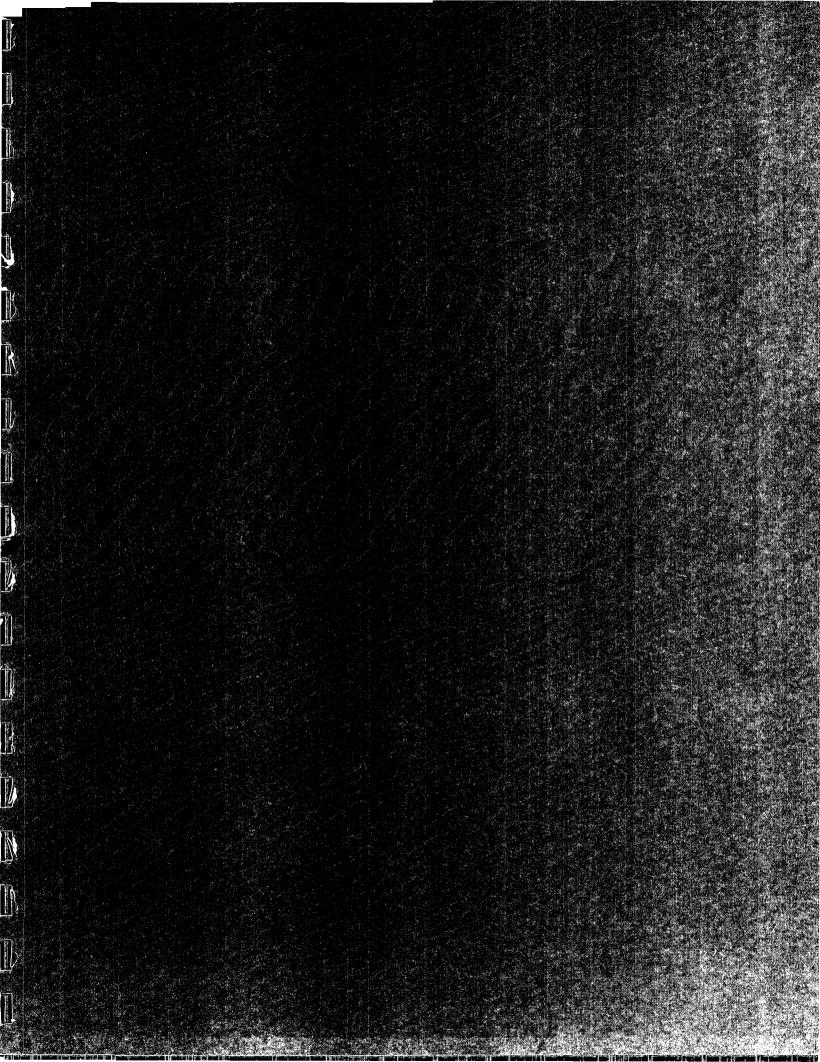


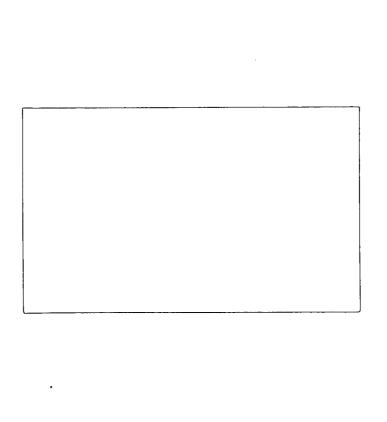
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(713) 660-0901

Sample Receipt Checklist

Workorder: 03100148 Date and Time Received: 10/4/03 10:00:00 AM Temperature: 4.1°C		Receive Carrier Chilled	name: FedEx	
1. Shipping container/cooler in good condition?	Yes 🗹	No 🗆	Not Present	
2. Custody seals intact on shippping container/cooler?	Yes 🗹	No 🗌	Not Present	
3. Custody seals intact on sample bottles?	Yes 🗌	No 🗌	Not Present 🔽	
4. Chain of custody present?	Yes 🗹	No 🗌		
5. Chain of custody signed when relinquished and received?	Yes 🗹	No 🗌		
6. Chain of custody agrees with sample labels?	Yes 🗹	No 🗀		
7. Samples in proper container/bottle?	Yes 🗹	No 🗀		
8. Sample containers intact?	Yes 🗹	No 🗆		
9. Sufficient sample volume for indicated test?	Yes 🔽	No 🗌		
10. All samples received within holding time?	Yes 🗹	No 🗌		
11. Container/Temp Blank temperature in compliance?	Yes 🗹	No 🗌		
12. Water - VOA vials have zero headspace?	Yes 🗹	No 🗌	Not Applicable	
13. Water - pH acceptable upon receipt?	Yes 🗹	No 🗌	Not Applicable	
SPL Representative: Client Name Contacted:	Contact Date &	k Time:		
Non Conformance Issues:				
Client Instructions:				







Environmental Engineers & Consultants

JUNE/AUGUST 2003 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY

BJ SERVICES COMPANY, U.S.A.

JULY 16, 2004

JUNE/AUGUST 2003 GROUNDWATER SAMPLING REPORT HOBBS, NEW MEXICO FACILITY BJ SERVICES COMPANY, U.S.A.

Prepared for

BJ Services Company, U.S.A. 11211 FM 2920 Tomball, Texas 77375

BC Project Number: 12832.018

Richard L. Rexroad, P.G.

Project Manager

July 16, 2004

Brown and Caldwell

1415 Louisiana, Suite 2500

Houston, Texas 77002 - (713) 759-0999

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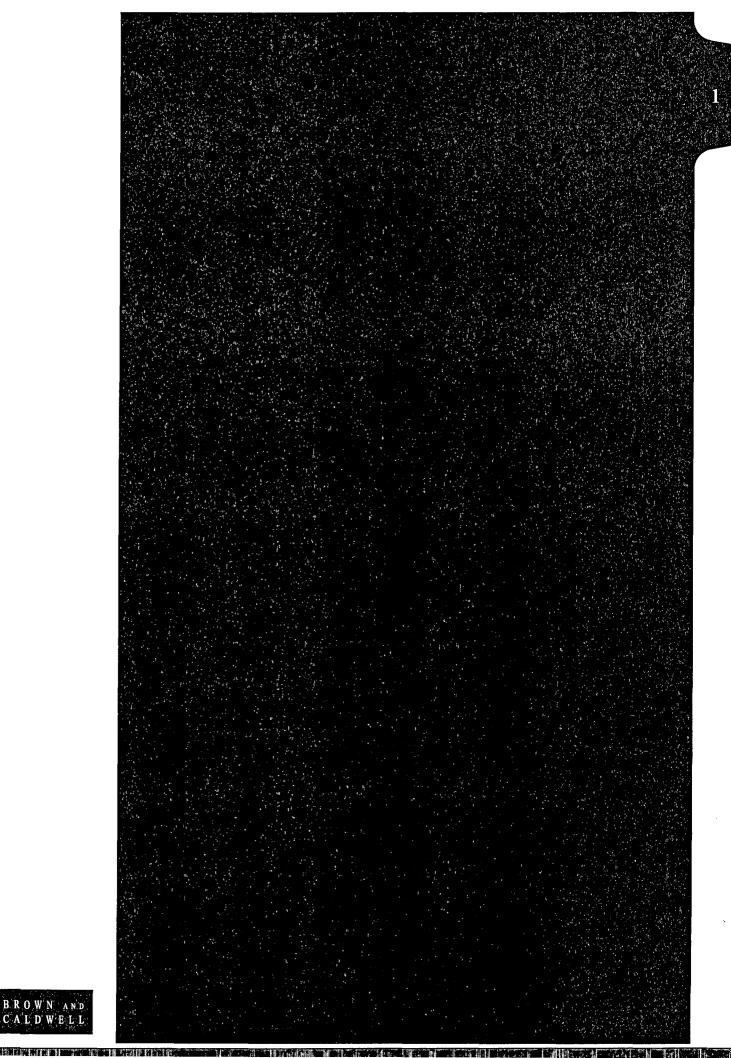
BROWN AND CALDWELL

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1.0 INTRODUCTION

Brown and Caldwell conducted a quarterly groundwater sampling event at the BJ Services Company, U.S.A. (BJ Services) facility located at 2708 West County Road in Hobbs, New Mexico in June 2003 and August 2003. The groundwater sampling event was initiated on June 19, 2003, but could not be completed on that date because the analytical laboratory had not supplied an adequate number of sample containers. The groundwater sampling event was completed on August 21-22, 2003. This report presents a description of the groundwater sampling field activities, a summary and evaluation of the analytical results, and an evaluation of remedial technologies applied at the facility. A groundwater potentiometric surface map and a hydrocarbon distribution map are included.

A layout of the facility is shown in Figure 1. The facility formerly operated an on-site fueling system. Subsurface impact near the former diesel fueling system was detected by the New Mexico Oil Conservation Division (NMOCD) during an on-site inspection on February 7, 1991. The fueling system was taken out of operation in July 1995. The NMOCD has required a quarterly groundwater monitoring program to assess the concentration of hydrocarbon constituents in groundwater as a result of the diesel fuel release.

A biosparging system was activated in November 1995 and expanded in March/April 1997 and February/March 1998 to remediate soil and groundwater at the former fuel island area of the facility. The biosparging system was deactivated on November 1, 2000 after achieving cleanup goals for groundwater. The confirmation soil sampling program specified in the NMOCD-approved Remedial Action Plan (RAP) for the facility was conducted in July 2001. The results of the confirmation soil sampling program were presented to NMOCD in the report for the June 2001 groundwater sampling event. In accordance with the RAP for the facility, four additional groundwater sampling events were conducted following the confirmation soil sampling event. Hydrocarbon concentrations in groundwater samples from applicable monitor wells remained below the target concentrations specified in the RAP during each of these sampling events, so a

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request to decommission the biosparging system was submitted to NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report for the facility.

BJ Services removed three field waste tanks from the facility on March 6-7, 1997. The ongoing groundwater monitoring program was expanded to address both the former fuel island and the former field waste tanks areas of the facility, as directed by NMOCD in correspondence dated January 21, 1999.

Table 1 presents a site chronology detailing the history of investigations into and the remediation of soil and groundwater impacts in the areas of the former fueling system and the former field waste tanks at the facility.

B R O W N A N D C A L D W E L L

2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled seven monitor wells (MW-5, MW-10, MW-11A, MW-12D, MW-14, MW-15, and MW-16) at the facility on June 19, 2003 and August 21-22, 2003 to determine the concentrations of dissolved-phase hydrocarbons and/or chloride in groundwater and to evaluate general groundwater quality in the area of the facility. The monitor well locations are shown in Figure 1. In the March 2002 Groundwater Sampling Report for the facility, Brown and Caldwell recommended installation of a new monitor well (MW-16) to replace monitor well OW-4, which has gone dry. Brown and Caldwell completed installation of monitor well MW-16 on May 13, 2003, after obtaining approval by the NMOCD and access privileges from the off-site landowner. A boring log and well construction diagram for monitor well MW-16 are presented in Appendix A. The top-of-casing (TOC) elevation of monitor well MW-16 was surveyed relative to the TOC elevation of existing monitor well MW-15. Monitor well MW-16 was sampled for the first time on June 19, 2003. The following subsections describe the field activities conducted by Brown and Caldwell during the current groundwater sampling event and present the results from the associated groundwater analyses.

2.1 Groundwater Sampling Activities

Groundwater level measurements were obtained from all accessible monitor wells at the facility on June 19, 2003 prior to purging and sampling the subset of wells listed above. Groundwater levels were measured to the nearest 0.01 foot with a water-level indicator. Current and historical groundwater elevation data for each well are presented in Table 2. The groundwater elevation data presented in Table 2 indicate that groundwater levels have continued to decline in monitor wells at the facility since late 1995. A groundwater elevation map for June 19, 2003 is presented in Figure 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with hydraulic gradient ranging from 0.005 foot/foot (ft/ft) in the western portion of the facility to 0.0085 ft/ft in the eastern portion of the groundwater monitoring area.

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The monitor wells were purged and sampled with decontaminated or previously unused disposable bailers and clean, previously unused nylon string. Three well volumes were purged from monitor wells MW-5, MW-12D, and MW-16. Monitor wells MW-10, MW-11A, MW-14, and MW-15 were purged dry after removal of volumes of groundwater ranging from 0.2 gallons to 3.5 gallons (see Table 3).

Field parameter measurements for pH, specific conductivity, oxidation-reduction (redox) potential, dissolved oxygen content, and temperature were collected during and upon completion of well purging. Ferrous iron and dissolved oxygen were measured in monitor wells MW-5, MW-10, MW-11A, and MW-15 upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix B. Field parameter readings for each well sampled during the June/August 2003 event are summarized in Table 3.

Groundwater samples were collected by pouring recovered water from a bailer into laboratory-prepared, clean glass or plastic containers, sealed with Teflon[®]-lined lids, labeled, and placed on ice in an insulated cooler for delivery to Southern Petroleum Laboratory in Houston, Texas for analysis using standard chain-of-custody procedures.

Field measurement equipment was decontaminated prior to and following each use. Decontamination procedures consisted of washing with distilled water and a non-phosphate detergent, then rinsing with distilled water. Purge and decontamination waters were discharged to an on-site water reclamation system at the BJ Services facility.

2.2 Results of Groundwater Analyses

Groundwater samples from monitor wells MW-12D, MW-14, MW-15, and MW-16 were analyzed for chloride content using Method E325.3. Table 4 presents current and cumulative results for chloride analyses performed on groundwater samples collected at the facility. Current chloride concentrations in monitor wells MW-12D and MW-14 remained less than the New Mexico Water Quality Control Commission (NMWQCC) chloride standard of 250 milligrams per liter (mg/L).

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The chloride concentration of 280 mg/L in monitor well MW-15 exceeds the NMWQCC chloride standard. A chloride concentration of 983 mg/L was measured in the groundwater sample collected from monitor well MW-16 on June 19, 2003. This measurement was confirmed in August 2003, when chloride was detected at 841 mg/L in the monitor well MW-16 groundwater sample.

Groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12D were analyzed for diesel- and gasoline-range total petroleum hydrocarbons (TPH-D and TPH-G) using EPA Method SW-8015B and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method SW-8021B. Current and cumulative analytical results for BTEX constituents, TPH-D, and TPH-G are presented in Table 5. Figure 3 presents a hydrocarbon distribution map for August 21-22, 2003. All BTEX concentrations measured in groundwater during the current sampling event were less than applicable NMWQCC standards.

Analysis of groundwater from monitor wells MW-5, MW-10, MW-11A, and MW-12D for nitrate and sulfate (Method E300.0), dissolved methane (Method RSK 147), and alkalinity (Method E310.1) was performed to evaluate the potential for natural attenuation of hydrocarbons at the facility. The current and historical results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, MW-12, and MW-12D are presented in Table 6.

Monitor well MW-16 was analyzed for the full suite of NMWQCC parameters because this was the first sampling event of this well. These parameters are as follows:

- Polynuclear aromatic hydrocarbons (PAHs, by Method 8310);
- Volatile organic compounds (VOCs, by Method 8260);
- RCRA metals and calcium, magnesium, potassium, and sodium (by Methods 6010B and 7470A);
- Carbonate and bicarbonate alkalinity (by Method M2320B);
- Nitrate and sulfate (by Method E300.0); and
- Dissolved methane (by Method RSK 147).

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Additional sampling for NMWQCC constituents was performed during the current sampling event for analyses that could not be performed during the March 2003 annual sampling event for NMWQCC parameters due to insufficient groundwater production from various wells at the facility at that time. These parameters included the following:

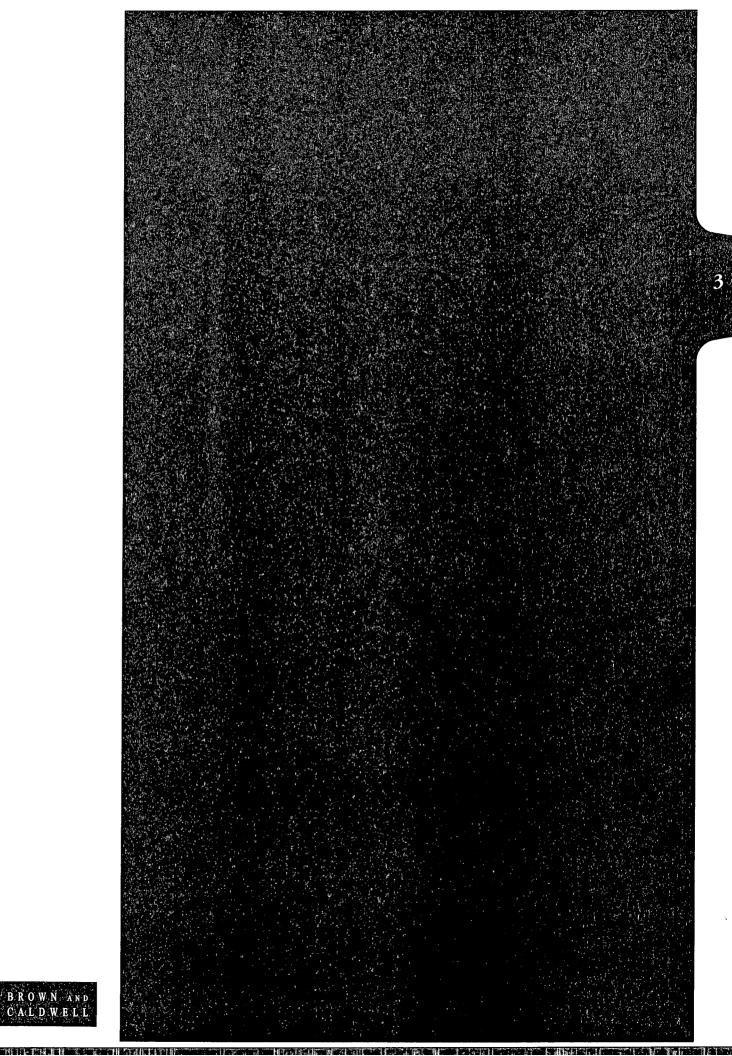
- Hardness in monitor wells MW-10, MW-14, and MW-15;
- Methane in monitor wells MW-14 and MW-15;
- RCRA metals, calcium, magnesium, potassium, and sodium in monitor wells MW-10, MW-14, and MW-15; and
- PAHs in monitor wells MW-5, MW-10, MW-14, and MW-15.

Table 7 presents the cumulative analytical results for annual sampling and analysis of applicable wells for NMWQCC constituents. The 2003 analytical results for geochemical parameters (i.e., carbonate, bicarbonate, hardness, fluoride, nitrate, sulfate, and cations) and RCRA metals are generally comparable to historic data for these parameters on a well-by-well basis.

With exception of the previously noted chloride concentration and an elevated concentration of sodium, the groundwater geochemistry of monitor well MW-16 is generally similar to that of the other downgradient monitor wells at the facility, MW-14 and MW-15, as indicated in Table 7.

The laboratory analytical reports and chain-of-custody documentation for the groundwater samples collected during the current sampling event are provided in Appendix C.

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3.0 EVALUATION OF REMEDIAL TECHNOLOGIES

The following subsections present evaluations of the remedial technologies applied at the former fueling system and former field waste tanks areas of the BJ Services facility in Hobbs, New Mexico.

3.1 Biosparging System at the Former Fueling System Area

Brown and Caldwell recommended installation of a biosparging system at the former fueling system area of the facility in the Remedial Action Plan (RAP) submitted to the NMOCD in May 1994. The NMOCD approved the RAP on August 11, 1994. The biosparging system was installed in August 1995, with expansions completed in April 1997 and March 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in applicable former fueling system area monitor wells. In accordance with the RAP, confirmation soil sampling activities were conducted at the former fueling system area in July 2001 to verify the effectiveness of the biosparging system in remediating vadose zone soils. The analytical results for these soil samples, as discussed in the report for the June 2001 groundwater sampling event, indicated that remediation goals for soil in this area had been achieved.

Following the confirmation soil sampling activities, hydrocarbon concentrations in groundwater remained below target cleanup goals for four successive quarters. In accordance with the RAP for the facility, a request to decommission the biosparging system was submitted to the NMOCD in the June 2002 Groundwater Sampling and Biosparging System Closure Report.

3.2 Natural Attenuation at the Former Field Waste Tanks Area

Natural attenuation is the primary remediation mechanism for the dissolved-phase hydrocarbon plume located in the area of the former field waste tanks (see Figure 1).

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Plume behavior is the primary evidence of natural attenuation. Secondary evidence of natural attenuation can be obtained by the collection and evaluation of data relating to the concentrations of indigenous electron acceptors such as dissolved oxygen, nitrate, sulfate, and carbon dioxide. A plume is shrinking when the rate of hydrocarbon loading from a source area is less than the rate of natural degradation of hydrocarbons. Plume shrinkage in the absence of aggressive remediation is indicative of the occurrence of natural attenuation processes. Conversely, a plume is expanding if the rate of hydrocarbon loading from a source area is greater than the rate of natural degradation of hydrocarbons through natural attenuation processes.

The former field waste tanks in the eastern portion of the facility were removed in March 1997. Concentrations of total BTEX in monitor wells in the area of the former field waste tanks have been generally stable or declining subsequent to removal of these tanks. Sporadic increases in total BTEX concentrations between quarterly sampling events have been observed in monitor wells in this area since March 1997, however. These increases may be attributed to sporadic loading rates from the vadose zone in excess of the rate of natural attenuation in the area. The following subsections present primary and secondary evidence of natural attenuation of hydrocarbons in groundwater at the former field waste tanks area of the facility.

3.2.1 Primary Evidence

The benzene concentration in monitor well MW-10 has decreased from a maximum of 1.3 mg/L in August 1995 (prior to removal of the field waste tanks) to less than the NMWQCC standard of 0.01 mg/L for BTEX in the 10 applicable groundwater sampling events between December 2000 and June/August 2003. Benzene has not been detected in monitor well MW-10 since September 2001. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-10 were non-detect during the current sampling event and have generally been non-detect since December 2000.

Benzene concentrations at the monitor well MW-11/11A location have generally decreased from a maximum of 0.970 mg/L in December 1996 (prior to removal of the field waste tanks). The current benzene concentration of 0.0037 mg/L in monitor well MW-11A is less than the NMWQCC P:\Wp\BJSERV\12832\116r.doc

standard for benzene. Benzene concentrations in MW-11A have been less than the NMWQCC standard for benzene during eight of the nine groundwater sampling events conducted since June 2001.

Concentrations of each BTEX constituent at the monitor well MW-12/12D location have been below analytical detection limits for the past nine sampling events.

3.2.2 Secondary Evidence

The following lines of geochemical evidence can also be used to suggest that intrinsic bioremediation (an important natural attenuation mechanism) of dissolved-phase hydrocarbons is occurring in the area of the former field waste tanks.

1. Dissolved oxygen may be utilized as an electron acceptor during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

Groundwater samples were collected using bailers during the current sampling event due to low water levels in the wells. Measured dissolved oxygen concentrations in most wells at the facility were therefore artificially elevated. The use of bailers may cause groundwater samples to become oxygenated, thus precluding a meaningful comparison of dissolved oxygen data.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility when down-hole pumps were utilized has indicated that dissolved oxygen concentrations were typically depressed in hydrocarbon-impacted monitor wells relative to non-impacted wells at the facility (see the June 2001 Groundwater Sampling Report for BJ Services Hobbs, New Mexico Facility, for example).

2. Nitrate may be utilized as an electron acceptor during intrinsic bioremediation after dissolved oxygen is depleted. Therefore, nitrate concentrations may be depressed in areas where intrinsic bioremediation is occurring.

Nitrate was detected at a concentration of 2.4 mg/L in background monitor well MW-5 during the current sampling event. Although minimal to no hydrocarbon impact was detected at former field waste tanks area wells MW-10, MW-11A, and MW-12D during the current sampling event (see Table 5), nitrate was detected in monitor wells MW-10 and MW-11A at respective concentrations of 0.21 mg/L and 0.68 mg/L; nitrate was not detected in monitor well MW-12D. The depressed to non-detectable nitrate concentrations observed

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- during the current sampling event at former field waste tanks area wells MW-10, MW-11A, and MW-12D relative to the background nitrate concentration at the facility are likely due to residual effects of hydrocarbons in these areas.
- 3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors may become active. Ferrous iron is the reduction product of ferric iron, a common electron acceptor. Therefore, ferrous iron concentrations should increase in areas where intrinsic bioremediation is occurring.
 - The elevated ferrous iron concentrations in monitor wells MW-10 and MW-11A relative to background well MW-5 suggest that ferric iron has been used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area of the facility.
- 4. Microbes that utilize sulfate may become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through the use of sulfate as an electron acceptor.
 - During the current sampling event, sulfate concentrations in the former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D ranged from 160 mg/L to 350 mg/L, whereas the sulfate concentration in background monitor well MW-5 was measured at 100 mg/L. The fact that sulfate concentrations in the former source area monitor wells are greater than the sulfate concentration in the background monitor well suggests that sulfate is not being utilized as an electron acceptor in the former field waste tanks area.
- 5. Methane is a reaction product generated during utilization of carbon dioxide as an electron acceptor, so its concentration may increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.
 - Dissolved methane was not detected in background monitor well MW-5 or in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D during the current groundwater sampling event. These data indicate that carbon dioxide is no longer being utilized as an electron acceptor at the former field waste tanks area of the facility.
- 6. Redox potential is a measure of chemical energy in groundwater. The redox potential of groundwater from background monitor well MW-5 was measured at 114 mV in August 2003. The redox potential of -16 mV measured in the former field waste tanks area monitor well MW-11A as compared to the positive redox value in the background well at the facility provides additional evidence that natural attenuation of hydrocarbons has occurred at the former field waste tanks area of the facility.

In conclusion, current nitrate and historic dissolved oxygen data suggest that these electron acceptors have been utilized during intrinsic bioremediation processes in the vicinity of the former field waste tanks area of the facility. Data for ferrous iron also indicates that utilization of ferric iron as an electron acceptor has occurred in this area of the facility. Current redox data provide further evidence that natural attenuation of hydrocarbons has occurred in this area.

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It is recommended that monitoring for natural attenuation evaluation parameters continue in the former field waste tank area monitor wells MW-10, MW-11A, and MW-12D and in the background well, MW-5. Redox potential, dissolved oxygen content, ferrous iron content, and alkalinity serve as good indicators of the occurrence of intrinsic bioremediation of hydrocarbons, so testing for these parameters in all wells to be sampled during upcoming groundwater monitoring events is recommended.

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BROWN AND CALDWELL

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the current groundwater sampling event at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Current benzene concentrations in all former field waste tanks area monitor wells are less than the NMWQCC standard of 0.01 mg/L for benzene. Based on generally decreasing hydrocarbon concentrations in these monitor wells over time and as substantiated by geochemical data, natural attenuation processes appear to be occurring in the vicinity of the former field waste tanks that were removed in March 1997.
- The chloride concentration measured in downgradient monitor well MW-14 during the current 2003 groundwater sampling event remains less than the NMWQCC standard of 250 mg/L. The chloride concentrations in monitor wells MW-15 and MW-16 exceed the NMWQCC chloride standard, however.

4.2 Recommendations

- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-10, MW-11A, and MW-12D. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters.
- Upon approval from the NMOCD, decommission the biosparging system at the former fuel island area.

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July 16, 2004

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Ms. Jo Ann Cobb

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Brown and Caldwell Project File

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Limas M Marroy Lynn M. Wright, P.G.

Supervising Geologist

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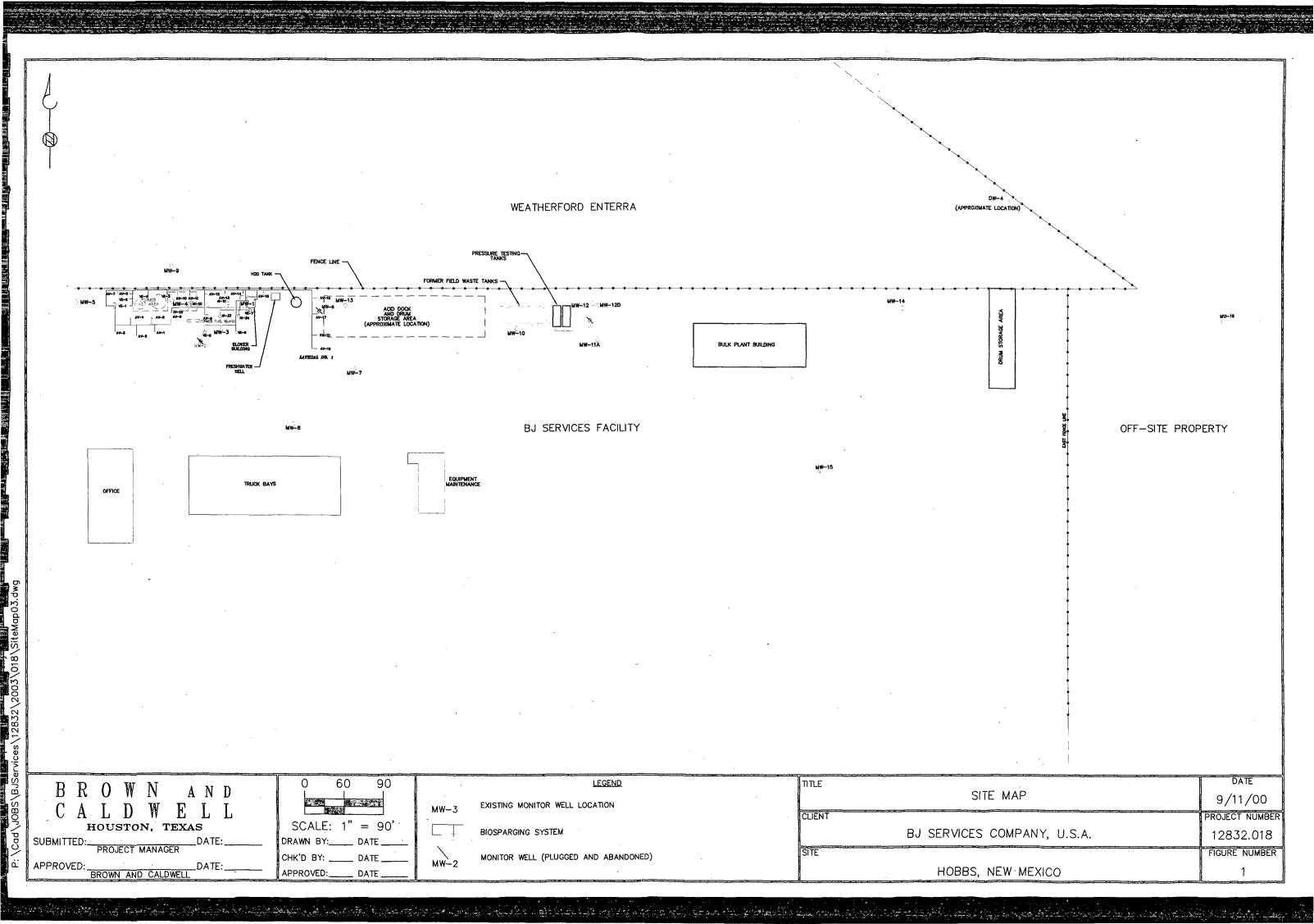
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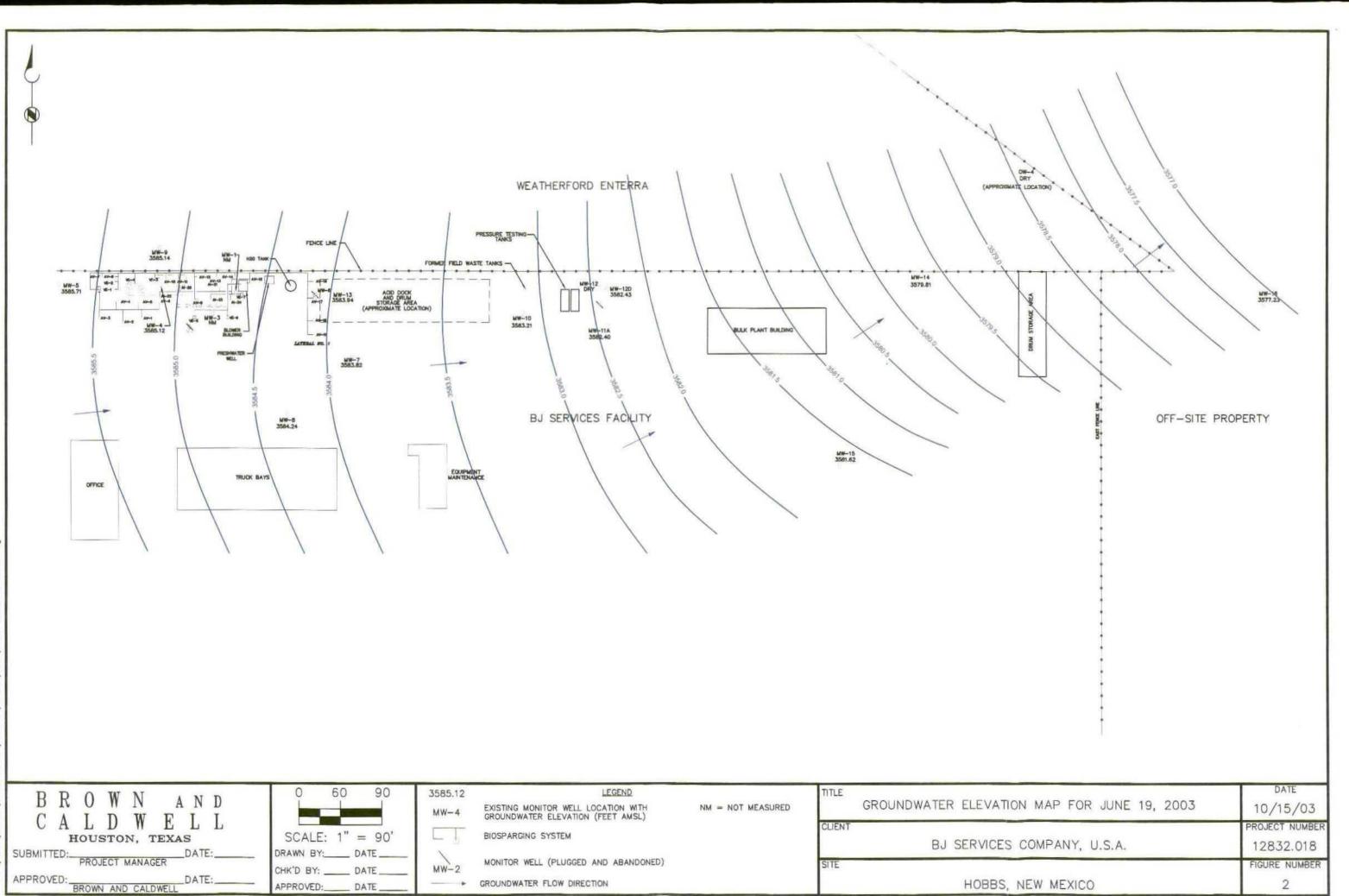
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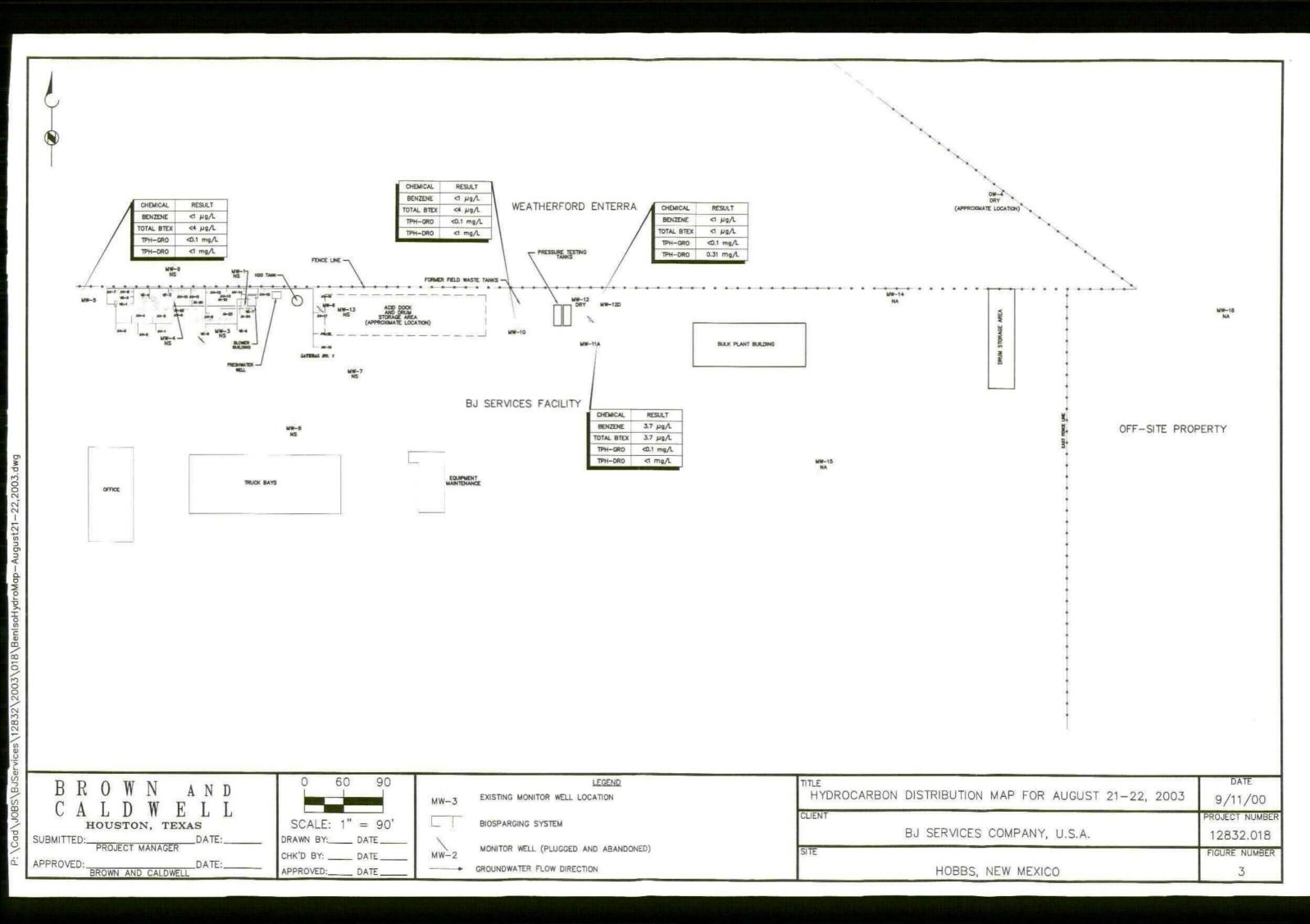
BROWN AND CALDWELL

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TABLES

Date	Activity
February 7, 1991	The New Mexico Oil Conservation Division (NMOCD) conducted an on-site inspection, including sampling of the on-site fresh water well.
August 6, 1991	The NMOCD requested submittal of an investigation work plan.
September 5, 1991	Roberts/Schornick and Associates, Inc. (RSA) submitted Technical Work Plan for soil and groundwater investigation to the NMOCD.
November 15, 1991	The NMOCD approved the Technical Work Plan submitted by RSA.
December 16, 1991	RSA sampled the fresh water well. The analytical results were submitted to the NMOCD.
February 21, 1992	Western sampled the fresh water well. The analytical results were submitted to the NMOCD.
July 29 - August 10, 1992	Brown and Caldwell conducted a soil and groundwater investigation according to the approved Technical Work Plan. The investigation included drilling and sampling nine soil borings, sampling six handaugured soil borings, installation and sampling of five monitor wells, and sampling of the fresh water well.
October 12, 1992	Brown and Caldwell submitted a Soil and Groundwater Investigation Report to the NMOCD.
December 2, 1992	The NMOCD requested the installation and sampling of four additional monitor wells, including a monitor well on an adjacent property.
April 13, 1993	Brown and Caldwell conducted a vapor extraction pilot test on the existing monitor wells.
April 15, 1993	Brown and Caldwell installed off-site monitor well MW-9.
April 22, 1993	Brown and Caldwell sampled off-site monitor well MW-9.
May 27, 1993	Brown and Caldwell submitted a letter report documenting the installation and sampling of off-site monitor well MW-9 to the NMOCD.
June 2, 1993	Brown and Caldwell conducted a short-term aquifer test using the fresh water well at the facility.
June 8, 1993	USTank Management, Inc. conducted a non-volumetric tank system tightness test on the diesel and unleaded gasoline aboveground storage tanks at the facility.
June 21, 1993	ENSR Consulting and Engineering (ENSR), the environmental consultant for the adjacent property owner on which off-site well MW-9 is located, submitted a request to sample monitor well MW-9.

July 15, 1993	ENSR split a groundwater sample collected from monitor well MW-9 with Brown and Caldwell.		
July 30, 1993	USTank Management, Inc. submitted a tank tightness test report to Brown and Caldwell. The report indicated that both tanks and their associated piping passed.		
August 16-19, 1993	Brown and Caldwell installed two additional downgradient monitor wells. Brown and Caldwell sampled each of the existing and newly installed monitor wells.		
January 26, 1994	Brown and Caldwell performed a groundwater monitoring event; the existing monitor wells and the fresh water well were purged and sampled. The groundwater samples were analyzed for BTEX.		
May 6, 1994	A Remedial Action Plan (RAP) was submitted to the NMOCD.		
August 11, 1994	The RAP was approved by the NMOCD.		
May 3, 1995	Brown and Caldwell conducted the May 1995 groundwater sampling event.		
July 31, 1995	Brown and Caldwell conducted the July 1995 groundwater samplinevent.		
August 2-9, 1995	Installation of the biosparging system was initiated. Nineteen combined injection/extraction wells and three vacuum extraction wells were installed.		
August 14-26, 1995	Remedial Construction Services, Inc. (RCS) constructed the initial design of the biosparging system.		
September 19, 1995	Operation of the extraction portion of the biosparging system commenced.		
November 13, 1995	Operation of the injection portion of the biosparging system commenced.		
November 14, 1995	Brown and Caldwell conducted the November 1995 groundwater sampling event.		
February 23, 1996	Brown and Caldwell conducted the February 1996 groundwater sampling event.		
May 31, 1996	Brown and Caldwell conducted the May 1996 groundwater sampling event.		
August 23, 1996	Brown and Caldwell conducted the August 1996 groundwater sampling event.		
December 2, 1996	Brown and Caldwell conducted the December 1996 groundwater sampling event.		

March 6-7, 1997	BJ Services removed three field waste tanks and associated hydrocarbon-impacted soil.
March 12, 1997	Brown and Caldwell conducted the March 1997 groundwater sampling event.
March 14, 1997	Vapor extraction well VE-4 was installed.
April 1997	Vapor extraction well VE-4 was connected to the vapor extraction system.
June 12, 1997	Brown and Caldwell conducted the June 1997 groundwater sampling event.
September 11-12, 1997	Brown and Caldwell conducted the September 1997 groundwater sampling event.
December 10, 1997	Brown and Caldwell conducted the December 1997 groundwater sampling event.
February 3-14, 1998	Air injection wells AI-20 through AI-24, vapor extraction wells VE-5 through VE-7, and monitor wells MW-11A and MW-12 were installed.
February 19, 1998	Operation of previously existing injection wells was suspended in preparation for start-up of new injection wells AI-20 through AI-24.
March 10, 1998	Operation of new air injection wells AI-20 through AI-24 and new vapor extraction wells VE-5 through VE-7 commenced.
March 23-24, 1998	Brown and Caldwell conducted the March 1998 groundwater sampling event.
March 24, 1998	Operation of previously existing injection wells and vapor extraction wells resumed.
June 23, 1998	Brown and Caldwell conducted the June 1998 groundwater sampling event.
September 30, 1998	Brown and Caldwell conducted the September 1998 groundwater sampling event.
December 9-10, 1998	Brown and Caldwell conducted the December 1998 groundwater sampling event.
January 21, 1999	The NMOCD requested submittal of a work plan by March 22, 1999 to perform additional groundwater delineation in the area of the former field waste tanks and the former AST/MW-6 area.
March 9-10, 1999	Brown and Caldwell conducted the March 1999 groundwater sampling event.
March 19, 1999	Brown and Caldwell submitted the work plan for groundwater delineation activities that was requested by the NMOCD.

May 19, 1999	The NMOCD approved the groundwater delineation work plan.
June 10, 1999	Brown and Caldwell performed sampling of existing monitor wells for the June /July 1999 groundwater sampling event.
July 2, 1999	Brown and Caldwell completed plugging and abandonment of monitor wells MW-2, MW-6, and MW-11; installed and developed monitor wells MW-12D and MW-13; and sampled monitor wells MW-12D and MW-13 to complete the June/July 1999 groundwater sampling event.
July 14, 1999	Brown and Caldwell redirected air discharge from the shallow injection well injection system to Lateral No. 1 and optimized air flow to injection wells AI-16 and AI-17 to apply increased remedial pressure to the eastern portion of the west plume.
September 13-14, 1999	Brown and Caldwell conducted the September 1999 groundwater sampling event.
December 9, 1999	Brown and Caldwell conducted the December 1999 groundwater sampling event.
March 9-10, 2000	Brown and Caldwell conducted the March 2000 groundwater sampling event and shut off air flow to biosparging system Lateral Nos. 4S, 5S, 6S, and 7S.
June 8, 2000	Brown and Caldwell conducted the June 2000 groundwater sampling event.
September 13, 2000	Brown and Caldwell conducted the September 2000 groundwater sampling event.
November 1, 2000	Brown and Caldwell deactivated the biosparging system.
December 7, 2000	Brown and Caldwell conducted the December 2000 groundwater sampling event.
January 2001	Brown and Caldwell installed and sampled monitor wells MW-14 and MW-15.
March 8-9, 2001	Brown and Caldwell conducted the March 2001 groundwater sampling event.
June 21-22, 2001	Brown and Caldwell conducted the June 2001 groundwater sampling event.
July 23, 2001	Brown and Caldwell collected soil samples from four soil borings installed at the former fueling system area of the facility to confirm the effectiveness of the biosparging system in remediating hydrocarbon impact to soil, as specified in the NMOCD-approved RAP.
September 10, 2001	Brown and Caldwell conducted the September 2001 groundwater sampling event.

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December 6, 2001	Brown and Caldwell conducted the December 2001 groundwater sampling event.
February 26, 2002	Brown and Caldwell repaired the crushed well completion on monitor well MW-10.
February 28, 2002	NMOCD requested an evaluation of chloride content of groundwater at the facility.
March 11-12, 2002	Brown and Caldwell conducted the March 2002 groundwater sampling event. Groundwater samples from all water-producing wells at the facility were analyzed for chloride content.
May 21, 2002	Brown and Caldwell submitted the report for the March 2002 groundwater sampling event, including an evaluation of chloride content of groundwater at the facility and a recommendation for installation of a downgradient off-site well (MW-16) to replace off-site well OW-4, which has gone dry.
June 17-18, 2002	Brown and Caldwell conducted the June 2002 groundwater sampling event.
September 16, 2002	Brown and Caldwell conducted the September 2002 groundwater sampling event.
November 11, 2002	Brown and Caldwell submitted the June 2002 Groundwater Sampling Report and Biosparging System Closure Report.
January 9, 2003	Brown and Caldwell conducted the January 2003 groundwater sampling event.
March 6, 2003	Brown and Caldwell conducted the March 2003 groundwater sampling event.
May 13, 2003	Brown and Caldwell installed monitor well MW-16 at a location to the west of the facility.
June 19, 2003	Brown and Caldwell initiated the June 2003 groundwater sampling event.
August 22, 2003	Brown and Caldwell completed the June 2003 groundwater sampling event.

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Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-1	3,647.53	8/10/1992	53.22	0.00	3,594.31	(1)
	1	2/9/1993	53.03	0.00	3,594.50	
		8/18/1993	53.10	0.00	3,594.43	
	ļ	1/26/1994	53.31	0.00	3,594.22	
	1	5/3/1995	54.64	0.20	3,593.05	(2)
		7/31/1995	54.14	0.00	3,593.39	
	1	11/14/1995	53.69	0.00	3,593.84	
		2/23/1996	54.32	0.00	3,593.21	
	· ·	5/31/1996	54.14	0.00	3,593.39	
		8/23/1996	56.17	0.00	3,591.36	
	1	12/2/1996	55.27	0.00 0.27	3,592.26 3,592.05	
	1	3/12/1997 6/12/1997	55.70 55.08	0.27	3,592.47	
		9/12/1997	55.64	0.02	3,592.47	
	"	12/10/1997	55.46	0.00	3,592.07	PSH Sheen
		3/24/1998	55.81	0.00	3,591.72	PSH Sheen
	(6/23/1998	56.38	0.06	3,591.20	1 5 5
	1	9/30/1998	56.82	0.00	3,590.71	PSH Sheen
		12/9/1998	57.05	0.00	3,590.48	
	1	3/10/1999	57.45	0.00	3,590.08	ļ
	,	6/10/1999	58.02	0.00	3,589.51	
	ĺ	7/2/1999	57.90	0.00	3,589.63	
		9/14/1999	58.14	0.00	3,589.39	
	(12/9/1999	-	- 1	· •	(3)
		3/9/2000	58.99	0.00	3,588.54	1
		06/00	-	-	-	
		09/00	-	-	-	
		12/7/00	-	- 1	-	
		3/8/2001	60.35	0.00	3,587.18	
		6/21/01	60.99	0.00	3,586.54	
	i.	9/10/01	61.17	0.00	3,586.36	
		12/6/2001	not measured	not measured	not measured	
		03/11/02	62.11	0.00	3,585.42	
		6/17/02	62.53	0.00 0.00	3,585.00	
		9/16/2002 1/9/2003	62.43 62.61	0.00	3,585.10 3,584.92	ļ
		3/6/2003	62.72	0.00	3,584.81	
		6/19/2003	-	-	3,364.61	(3) - well not
						located
MW-2	3,644.84	8/10/1992	52.82	0.00	3,592.02	(1)
	1	2/9/1993	49.60	0.00	3,595.24	
		8/18/1993	49.71	0.00	3,595.13	
		1/26/1994	49.97	0.00	3,594.87	(4) (5)
MW-3	3,645.00	5/3/1995	52.99	0.00	3,592.01	(4),(5)
C- 44 141	3,043.00	8/10/1992 2/9/1993	52.79 52.72	0.00	3,592.01 3,592.28	(1)
	[0.00	3,592.18	
) X/ X/ 994 '	52 X2			
		8/18/1993 1/26/1994	52.82 53.05			
	}	1/26/1994 5/3/1995	53.05	0.00	3,591.95	į
		1/26/1994				j
		1/26/1994 5/3/1995	53.05 54.31	0.00 0.00	3,591.95 3,590.69	;
		1/26/1994 5/3/1995 7/31/1995	53.05 54.31 51.24	0.00 0.00 0.00	3,591.95 3,590.69 3,593.76	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996	53.05 54.31 51.24 51.10 51.68 51.45	0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996	53.05 54.31 51.24 51.10 51.68 51.45 51.55	0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996 3/12/1997	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77 3,592.33	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996 3/12/1997 6/12/1997	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77 3,592.33 3,592.32	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996 3/12/1997 6/12/1997 9/11/1997	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77 3,592.33 3,592.32 3,592.29	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1997 6/12/1997 9/11/1997 12/10/1997	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77 3,592.33 3,592.32 3,592.29 3,592.11	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1997 6/12/1997 9/11/1997 9/11/1997 3/23/1998	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,592.77 3,592.33 3,592.32 3,592.29 3,592.11 3,591.78	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1997 6/12/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77 3,592.33 3,592.32 3,592.11 3,591.78 3,591.34	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,592.77 3,592.33 3,592.32 3,592.29 3,592.11 3,591.78 3,591.34 3,590.94	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 8/23/1996 12/2/1996 3/12/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.45 3,592.77 3,592.33 3,592.32 3,592.11 3,591.78 3,591.34 3,590.94 3,590.64	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 12/2/1996 3/12/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998 3/10/1999	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.72	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.45 3,592.77 3,592.33 3,592.32 3,592.29 3,592.11 3,591.78 3,591.34 3,590.94 3,590.64 3,590.28	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 5/31/1996 8/23/1996 3/12/1997 6/12/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998 3/10/1999 6/10/1999	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.72 55.17	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.45 3,592.77 3,592.33 3,592.32 3,592.29 3,592.11 3,591.78 3,591.34 3,590.94 3,590.64 3,590.28 3,590.28 3,590.28	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 8/23/1996 8/23/1996 3/12/1997 6/12/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998 3/10/1999 6/10/1999 7/2/1999	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.36 54.36 54.72 55.17	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77 3,592.33 3,592.32 3,592.32 3,592.11 3,591.78 3,591.34 3,590.94 3,590.94 3,590.64 3,590.28 3,589.83 3,589.83	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 8/23/1996 8/23/1996 3/12/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 3/10/1998 3/10/1999 6/10/1999 9/14/1999	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.72 55.17 55.15 55.42	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.32 3,593.55 3,593.45 3,592.77 3,592.32 3,592.32 3,592.32 3,592.11 3,591.78 3,591.34 3,590.94 3,590.64 3,590.28 3,589.85 3,589.85 3,589.85	
		1/26/1994 5/3/1995 7/31/1995 11/14/1995 2/23/1996 8/23/1996 8/23/1996 3/12/1997 6/12/1997 6/12/1997 9/11/1997 12/10/1997 3/23/1998 6/23/1998 9/30/1998 12/9/1998 3/10/1999 6/10/1999 7/2/1999	53.05 54.31 51.24 51.10 51.68 51.45 51.55 52.23 52.67 52.68 52.71 52.89 53.22 53.66 54.06 54.36 54.36 54.36 54.72 55.17	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3,591.95 3,590.69 3,593.76 3,593.90 3,593.32 3,593.55 3,593.45 3,592.77 3,592.33 3,592.32 3,592.32 3,592.11 3,591.78 3,591.34 3,590.94 3,590.94 3,590.64 3,590.28 3,589.83 3,589.83	

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-3	3,645.00	9/13/2000	56.77	0.00	3,588.23	
cont.		12/7/2000	57.15	0.00	3,587.85	İ
		3/8/2001	57.69	0.00	3,587.31	
		6/21/01	58.34	0.00	3,586.66	}
		9/10/01	58.54	0.00	3,586.46	
	ĺ	12/6/2001	59.04	0.00	3,585.96	
	i	3/11/2002	59.50	0.00	3,585.50	1
		6/17/02	59.83	0.00	3,585.17	
	1	9/16/2002	59.80	0.00	3,585.20	
		1/9/2003	60.01	0.00	3,584.99	
		3/6/2003	60.10	0.00	3,584.90	
		6/19/2003	-	-	•	(3) - well not located
MW-4	3,645.28	8/10/1992	50.55	0.00	3,594.73	(1)
		2/9/1993	50.26	0.00	3,595.02)
		8/18/1993	50.38	0.00	3,594.90	
	1	1/26/1994	50.90	0.30	3,594.63	1
		5/3/1995	51.51	0.45	3,594.14	
		7/31/1995	51.74	0.26	3,593.75	Į
	Į J	11/14/1995	51.03	0.00	3,594.25	1
		2/23/1996	51.65	0.01	3,593.64	
		5/31/1996	51.48	0.00	3,593.80	
		8/23/1996	53.49	0.00	3,591.79	j
	(12/2/1996	52.32	0.00	3,592.96	[
		3/12/1997	52.74	0.05	3,592.58	
		6/12/1997	53.08	0.03	3,592.56	
	ľ	9/12/1997	52.60	0.15		Í
			52.89	0.13	3,592.80	DCII Chaan
		12/10/1997			3,592.39	PSH Sheen
	ł	3/24/1998	53.20	0.25	3,592.29	Ì
		6/23/1998	53.82	0.22	3,591.64	
		9/30/1998	53.96	0.00	3,591.32	200 ml PSH
]	12/9/1998	54.27	0.00	3,591.01	
		3/10/1999	54.69	0.04	3,590.62	
		6/10/1999	55.07	0.00	3,590.21	
		7/2/1999	55.10	0.00	3,590.18	
		9/14/1999	55.33	0.00	3,589.95 ·	
		12/9/1999	55.79	0.00	3,589.49	
		3/10/2000	56.12	0.00	3,589.16	
	1	6/8/2000	56.67	0.00	3,588.61	ĺ
		9/13/2000	56.65	0.00	3,588.63	
		12/7/2000	57.05	0.00	3,588.23	
	1	3/8/2001	57.72	0.00	3,587.56	
		6/21/01	58.18	0.00	3,587.10	
		9/10/01	58.54	0.00	3,586.74	
	Į	12/6/2001	58.88	0.00	3,586.40	1
		3/11/2002	59.41	0.00	3,585.87	
		6/17/02	59.67	0.00	3,585.61	
	ļ	9/16/2002	59.71	0.00	3,585.57	1
		1/9/2003	59.91	0.00	3,585.37	
		3/6/2003	60.03	0.00	3,585.25	1
	j l	6/19/2003	60.16	0.00	3,585.12	1
MW-5	3,647.72	8/10/1992	52.38	0.00	3,595.34	(1)
۵-11 د	5,047.72	2/9/1993	52.06	0.00	3,595.66	(1)
		8/18/1993	52.16	0.00	3,595.56	1
	1	1/26/1994	52.16 52.50	0.00	3,373.30 3 505 33	[
		5/3/1995	53.57	0.00	3,595.22 3,594.15	1
	ļ			0.00		1
		7/31/1995	53.27	0.00	3,594.45	1
	1	11/14/1995	52.83	0.00	3,594.89	
		2/23/1996	53.57	0.00	3,594.15	
	1	5/31/1996	53.16	0.00	3,594.56	1
		8/23/1996	53.41	0.00	3,594.31	1
		12/2/1996	53.98	0.00	3,593.74	1
]	3/12/1997	54.44	0.00	3,593.28	Į.
		6/12/1997	54.48	0.00	3,593.24	
		9/12/1997	54.29	0.00	3,593.43	1
	1	12/10/1997	54.66	0.00	3,593.06	1
	1	3/23/1998	55.05	0.00	3,592.67	1
		6/23/1998	55.44	0.00	3,592.28	
	i 1		55.65	0.00	3,592.07	1

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-5	3,647.72	12/9/1998	56.00	0.00	3,591.72	
cont.		3/9/1999	56.45	0.00	3,591.27	
		6/10/1999	56.91	0.00	3,590.81	
		7/2/1999	56.93	0.00	3,590.79	
		9/14/1999 12/9/1999	57.12 57.41	0.00	3,590.60 3,590.31	
		3/9/2000	57.92	0.00	3,589.80	
		6/8/2000	58.32	0.00	3,589.40	
		9/13/2000	58.36	0.00	3,589.36	
		12/7/2000	58.71	0.00	3,589.01	
		3/8/2001	59.36	0.00	3,588.36	
		6/21/01	59.94	0.00	3,587.78	
		9/10/01	59.85	0.00	3,587.87	
		12/6/2001	60.56	0.00	3,587.16	
		3/11/02	61.12 61.43	0.00 0.00	3,586.60 3,586.29	
		6/17/02 9/16/2002	61.52	0.00	3,586.20	
		1/9/2003	61.75	0.00	3,585.97	
		3/6/2003	61.79	0.00	3,585.82	
		6/19/2003	62.01	0.00	3,585.71	
MW-6	3,644.74	2/9/1993	50.58	0.00	3,594.16	(1)
		8/18/1993	50.78	0.00	3,593.96	
		1/26/1994	51.00	0.00	3,593.74	
		5/3/1995	52.63	0.00	3,592.11	
		7/31/1995	51.90 51.19	0.00	3,592.84 3,593.55	
		11/14/1995 2/23/1996	51.19 52.10	0.00	3,593.55 3,592.64	
		5/31/1996	51.76	0.00	3,592.98	
		8/23/1996	51.63	0.00	3,593.11	
	l .	12/2/1996	52.85	0.00	3,591.89	l
		3/12/1997	53.55	0.00	3,591.19	
	l	6/12/1997	52.08	0.00	3,592.66	
		9/11/1997	53.72	0.00	3,591.02	
	ł	12/10/1997	53.27	0.00	3,591.47	
		3/23/1998	53.56 52.88	0.00	3,591.18	
		6/23/1998 9/30/1998	52.88 54.89	0.00	3,591.86 3,589.85	
		12/9/1998	54.57	0.00	3,590.17	
	1	3/10/1999	55.10	0.00	3,589.64	}
		7/2/1999			,	(5),(6)
MW-7	3,644.55	2/9/1993	50.53	0.00	3,594.02	(1)
		8/18/1993	50.74	0.00	3,593.81	
	į į	1/26/1994	51.01	0.00	3,593.54	
		5/3/1995	52.25	0.00	3,592.30	
		7/31/1995 11/14/1995	51.92 51.48	0.00	3,592.63 3,593.07	Ì
		2/23/1996	51.46 52.15	0.00	3,592.40	
	į	5/31/1996	51.78	0.00	3,592.77	
		8/23/1996	52.02	0.00	3,592.53	
		12/2/1996	52.52	0.00	3,592.03	1
		3/12/1997	52.99	0.00	3,591.56	
		6/12/1997	53.08	0.00	3,591.47	1
		9/11/1997	53.00	0.00	3,591.55	
		12/10/1997	53.28	0.00	3,591.27	(
		3/23/1998	53.59	0.00	3,590.96	
		6/23/1998 9/30/1998	54,20 54.54	0.00 0.00	3,590.35 3,590.01	İ
		12/9/1998	54.74 54.74	0.00	3,589.81	
,		3/9/1999	55.15	0.00	3,589.40	1
		6/10/1999	55.66	0.00	3,588.89	[
		7/2/1999	55.73	0.00	3,588.82	Ì
		9/13/1999	55.94	0.00	3,588.61	1
		12/9/1999	56.38	0.00	3,588.17	1
!		3/9/2000	56.74	0.00	3,587.81	1
		6/8/2000	57.17	0.00	3,587.38	1
,		9/13/2000	57.40	0.00	3,587.15	
	}	12/7/2000	57.77 58.20	0.00	3,586.78	1
	ı	3/8/2001	58.29	0.00	3,586.26	1
1		6/21/01	58.91	0.00	3,585.64	

Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-7	3,644.55	12/6/2001	59.75	0.00	3,584.80	
cont.	·	3/11/2002	60.03	0.00	3,584.52	
		6/17/02	60.39	0.00	3,584.16	
		9/16/2002	60.39	0.00	3,584.16	
	į	1/9/2003	60.53	0.00	3,584.02	
		3/6/2003	60.61	0.00	3,583.94	
1717.0	2 (14 87	6/19/2003	60.73	0.00	3,583.82 3,594.39	715
MW-8	3,644.87	2/9/1993 8/18/1993	50.48 50.67	0.00	3,594.20	(1)
		1/26/1994	50.96	0.00	3,593.91	
		5/3/1995	52.15	0.00	3,592.72	
		7/31/1995	51.77	0.00	3,593.10	
		11/14/1995	51.37	0.00	3,593.50	
		2/23/1996	52.17	0.00	3,592.70	[
		5/31/1996	51.55	0.00	3,593.32	
		8/23/1996	51.92	0.00	3,592.95	
		12/2/1996	52.43	0.00	3,592.44	
		3/12/1997	52.93	0.00	3,591.94	Ì
		6/12/1997	53.96	0.00	3,590.91	
		9/11/1997	52.73 53.15	0.00	3,592.14	
		12/10/1997 3/23/1998	53.15 53.51	0.00 0.00	3,591.72 · 3,591.36	
	İ	6/23/1998	54.01	0.00	3,590.86	
		9/30/1998	54.35	0.00	3,590.52	
		12/9/1998	54.60	0.00	3,590.27	
		3/9/1999	55.00	0.00	3,589.87	
	ľ	6/10/1999	55.56	0.00	3,589.31	ľ
		7/2/1999	55.57	0.00	3,589.30	
		9/13/1999	55.72	0.00	3,589.15	
		12/9/1999	-	~	-	(3)
		3/9/2000	56.52	0.00	3,588.35	
		06/00	-	-	•	
		09/00	•	- 1		ł
		12/00	-	-	2.506.76	1
		3/8/2001	58.11	0.00 0.00	3,586.76	
		6/21/01 9/10/01	58.72 58.94	0.00	3,586.15 3,585.93	
		12/6/2001	not measured	not measured	not measured	Į
		3/11/2002	59.94	0.00	3,584.93	{
		6/17/02	60.22	0.00	3,584.65	
		9/16/2002	60.24	0.00	3,584.63	
		1/9/2003	60.42	0.00	3,584.45	
		3/6/2003	60.52	0.00	3,584.35	
		6/19/2003	60.63	0.00	3,584.24	
MW-9	3,644.78	4/22/1993	49.73	0.00	3,595.05	(1)
	1	7/15/1993	49.65	0.00	3,595.13	Ì
		8/18/1993	49.85	0.00	3,594.93	
		1/26/1994 5/3/1995	50.02 51.35	0.00 0.00	3,594.76 3,593.43	[
		5/3/1995 7/31/1995	51.35 50.97	0.00	3,593.43 3,593.81	
		11/14/1995	50.43	0.00	3,594.35	
		2/23/1996	51.12	0.00	3,593.66	
		5/31/1996	50.89	0.00	3,593.89	1
		8/23/1996	50.98	0.00	3,593.80	
		12/2/1996	51.58	0.00	3,593.20	
		3/12/1997	52.21	0.05	3,592.61	
		6/12/1997	52.10	0.00	3,592.68	PSH Sheen
		9/12/1997	51.95	0.00	3,592.83	PSH Sheen
		12/10/1997	52.37	0.00	3,592.41	PSH Sheen
		3/23/1998	52.68	0.00	3,592.10	PSH Sheen
		6/23/1998	53.08	0.00	3,591.70	PSH Sheen
		9/30/1998	53.39	0.01	3,591.40	PSH Sheen
		12/9/1998	53.68	0.00	3,591.10	
		3/10/1999	54.15 54.68	0.00	3,590.63	
		6/10/1999 7/2/1999	54.68 54.71	0.00 0.00	3,590.10 3,590.07	
		9/13/1999	54.71 54.71	0.00	3,590.07 3,590.07	
		12/9/1999	34.71	-	5,570.07	(3)
		3/9/2000	55.69	0.00	3,589.09	
			22.02	. 0.00		

Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Monitor	Top-of-Casing Elevation		Depth to Groundwater	Free Product Thickness	Groundwater	
Well	(MSL)	Date Measured	(feet)	(feet)	Elevation (MSL)	Comments
MW-9	3,644.78	09/00	-	-	•	
cont.		12/00 3/8/2001	- 57.03	0.00	3,587.75	
		6/21/01	57.03 57.91	0.00	3,586.87	
		9/10/01	57.95	0.00	3,586.83	
		12/6/2001	not measured	not measured	not measured	
		3/11/2002	58.96	0.00	3,585.82	
		6/17/02	59.14	0.00	3,585.64	
·		9/16/2002	not measured	not measured	not measured	
	!	1/9/2003	59.34 59.48	0.00 0.00	3,585.44	
		3/6/2003 6/19/2003	59.46 59.64	0.00	3,585.30 3,585.14	
MW-10	3,644.47	8/18/1993	51.54	0.00	3,592.93	(1)
	,	1/26/1994	51.90	0.00	3,592.57	, ,
		5/3/1995	52.97	0.00	3,591.50	
		7/31/1995	52.87	0.00	3,591.60	
		11/14/1995	52.51	0.00	3,591.96	
		2/23/1996 5/31/1996	53.05 52.79	0.00 0.00	3,591.42 3,591.68	
		8/23/1996	53.03	0.00	3,591.44	
		12/2/1996	53.41	0.00	3,591.06	
		3/12/1997	54.21	0.00	3,590.26	
		6/12/1997	53.99	0.00	3,590.48	
		9/12/1997 12/10/1997	53.94 54.12	0.00 0.00	3,590.53 3,590.35	İ
		3/23/1998	54.12 54.51	0.00	3,589.96	
		6/23/1998	55.12	0.00	3,589.35	
		9/30/1998	55.61	0.00	3,588.86	
		12/9/1998	55.80	0.00	3,588.67	
		3/9/1999	56.09	0.00	3,588.38	
		6/10/1999	56.60	0.00	3,587.87	
		7/2/1999 9/14/1999	56.64 56.91	0.00 0.00	3,587.83 3,587.56	
		12/9/1999	57.37	0.00	3,587.10	
		3/10/2000	57.71	0.00	3,586.76	
		6/8/2000	58.08	0.00	3,586.39	
		9/13/2000	58.44	0.00	3,586.03	
		12/7/2000	58.89	0.00	3,585.58	
		3/9/2001 6/21/01	59.31 59.89	0.00 0.00	3,585.16 3,584.58	
		9/10/01	61.34	0.00	3,583.13	
		12/6/2001	60.65	0.00	3,583.82	ļ
		3/11/2002	60.69	0.00	3,583.78	
		6/17/02	60.98	0.00	3,583.49	
		9/16/2002	61.00	0.00	3,583.47	
		1/9/2003 3/6/2003	61.07 61.19	0.00 0.00	3,583.40 3,583.28	
		6/19/2003	61.26	0.00	3,583.21	
MW-11	3,643.78	8/18/1993	51.92	0.00	3,591.86	(1)
		1/26/1994	52.32	0.00	3,591.46	1
		5/3/1995	53.38	0.00	3,590.40	1
		7/31/1995	53.35 53.06	0.00	3,590.43	
		11/14/1995 2/23/1996	52.96 53.50	0.00 0.00	3,590.82 3,590.28	
		5/31/1996	53.25	0.00	3,590.28	
		8/23/1996	53.49	0.00	3,590.29	
		12/2/1996	53.79	0.00	3,589.99	
		3/12/1997	53.81	0.00	3,589.97	
		6/12/1997	53.96	0.00	3,589.82	
		9/12/1997 12/10/1997	52.93	0.00	3,590.85	(5),(6)
MW-IIA	3,644.24	3/23/1998	54,79	0.00	3,589.45	(3),(6)
* * * * *	J,U77.27	6/23/1998	55.43	0.00	3,588.81	''
		9/30/1998	55.96	0.00	3,588.28	
		12/9/1998	56.13	0.00	3,588.11	
		3/10/1999	56.43	0.00	3,587.81	
		6/10/1999	56.94	0.00	3,587.30	
		7/2/1999 9/14/1999	57.01 57.36	0.00 0.00	3,587.23 3,586.88	
	l l	9/14/1999 12/9/1999	57.72	0.00	3,586.88 3,586.52	1

Table 2
Cumulative Groundwater Elevation Data
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-11A	3,644.24	3/9/2000	58.01	0.00	3,586.23	
cont.		6/8/2000	58.40	0.00	3,585.84	
		9/13/2000	58.84	0.00	3,585.40	
		12/7/2000	59.29	0.00	3,584.95	
		3/8/2001	59.72	0.00	3,584.52	
		6/21/01	60.28 60.69	0.00	3,583.96 3,583.55	
	1	9/10/01 12/6/2001	60.88	0.00	3,583.36	
		3/11/2002	61.42	0.00	3,582.82	
	j	6/17/02	61.55	0.00	3,582.69	
		9/16/2002	61.59	0.00	3,582.65	
		1/9/2003	61.67	0.00	3,582.57	
		3/6/2003	61.70	0.00	3,582.54	
		6/19/2003	61.84	0.00	3,582.40	/ /
MW-12	3,644.29	3/23/1998	54.72	0.00	3,589.57	(7)
		6/23/1998	55.48 56.03	0.00	3,588.81 3,588.27	
	1	9/30/1998 12/9/1998	56.02 56.17	0.00	3,588.12	
		3/10/1999	56.45	0.00	3,587.84	
		6/10/1999	56.97	0.00	3,587.32	
		7/2/1999	56.99	0.00	3,587.30	
		9/14/1999	57.41	0.00	3,586.88	
		12/9/1999	57.76	0.00	3,586.53	
		3/10/2000	58.08	0.00	3,586.21	
		6/8/2000	58.42	0.00	3,585.87	
		9/13/2000	58.85	0.00	3,585.44	Į
	1	12/7/2000	59.31	0.00	3,584.98	
		3/8/2001	59.76	0.00	3,584.53	
		6/21/01 9/10/01	60.29 60.79	0.00 0.00	3,584.00 3,583.50	ļ
		12/6/2001		ng this and subsequent monito		
MW-12D	3,644.38	7/2/1999	57.13	0.00	3,587.25	(8)
		9/14/1999	57.74	0.00	3,586.64	(-)
		12/9/1999	57.86	0.00	3,586.52]
		3/9/2000	58.24	0.00	3,586.14	
		6/8/2000	58.56	0.00	3,585.82	
		09/00	-	-	-	
		12/00	-	-	• .	
	}	3/8/2001 6/21/01	-	-	-	
		9/10/01	<u>-</u>		_	
		12/6/2001	61.30	0.00	3,583.08	
		3/11/2002	61.61	0.00	3,582.77	
	j j	6/17/02	61.71	0.00	3,582.67	
		9/16/2002	61.75	0.00	3,582.63	
		1/9/2003	61.86	0.00	3,582.52	ļ
		3/6/2003	61.91	0.00	3,582.47	
X/W 12	3 (48 53	6/19/2003	61.95	0.00	3,582.43	
MW-13	3,645.52	7/2/1999	56.60	0.00	3,588.92	(9)
		9/14/1999 12/9/1999	56.92 57.28	0.00 0.00	3,588.60 3,588.24	
		3/10/2000	57.28 57.68	0.00	3,588.24 3,587.84	1
		6/8/2000	58.04	0.00	3,587.48	1
	ļ	9/13/2000	58.29	0.00	3,587.23	{
		12/7/2000	58.68	0.00	3,586.84	
		3/8/2001	59.19	0.00	3,586.33	}
		6/21/01	59.80	0.00	3,585.72	
		9/10/01	60.03	0.00	3,585.49	
		12/6/2001	60.59	0.00	3,584.93	
		3/11/2002	60.94	0.00	3,584.58	
l		6/17/02	61.28	0.00 0.00	3,584.24	1
		9/16/2002 1/9/2003	61.23 61.38	0.00	3,584.29 3,584.14 .	
		3/6/2003	61.45	0.00	3,584.14 . 3,584.07	1
l		6/19/2003	61.58	0.00	3,583.94	
MW-14	3,642.45	3/8/2001	61.07	0.00	3,581.38	1
	,	6/21/01	61.71	0.00	3,580.74	
		9/10/01	62.31	0.00	3,580.14	ļ
		12/6/2001	62.80	0.00	3,579.65	
		3/11/2002	62.70	0.00	3,579.75	1

Table 2 Cumulative Groundwater Elevation Data Hobbs, New Mexico Facility BJ Services Company, U.S.A.

Monitor Well	Top-of-Casing Elevation (MSL)	Date Measured	Depth to Groundwater (feet)	Free Product Thickness (feet)	Groundwater Elevation (MSL)	Comments
MW-14	3,642.45	6/17/02	62.65	0.00	3,579.80	
cont.		9/16/2002	62.55	0.00	3,579.90	
		1/9/2003	62.59	0.00	3,579.86	
		3/6/2003	62.64	0.00	3,579.81	
		6/19/2003	62.64	0.00	3,579.81	
MW-15	3,643.24	3/8/2001	59.79	0.00	3,583.45	
		6/21/01	60.49	0.00	3,582.75	
		9/10/01	61.02	0.00	3,582.22	
		12/6/2001	61.47	0.00	3,581.77	
		3/11/2002	61.65	0.00	3,581.59	
		6/17/02	61.68	0.00	3,581.56	
		9/16/2002	61.47	0.00	3,581.77	
	ļ	1/9/2003	61.59	0.00	3,581.65	
		3/6/2003	61.63	0.00	3,581.61	
		6/19/2003	61.62	0.00	3,581.62	
MW-16	3,643.73	6/19/2003	66.5	0.00	3,577.23	
OW-4	3,644.06	7/2/1999	58.18	0.00	3,585.88	(8)
		9/14/1999	58.63	0.00	3,585.43	
		12/9/1999	58.92	0.00	3,585.14	
	1	3/9/2000	59.19	0.00	3,584.87	
		6/8/2000	59.56	0.00	3,584.50	
		9/13/2000	60.16	0.00	3,583.90	
		12/7/2000	61.15	0.00	3,582.91	
	1	3/8/2001	61.43	0.00	3,582.63	(10)
	ĺ	6/21/01	61.48	0.00	3,582.58	
		9/10/01	61.53	0.00	3,582.53	
		12/6/2001	well dry durir	ng this and subsequent monito	ring events	

^{(1) -} Top of casing elevations and groundwater elevations of all monitor wells were relative to an arbitrary datum of 100.00 feet prior to March 1997 and have been converted to Mean Sea Level (MSL).

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^{(2) -} For wells having measurable thickness of free product, the groundwater elevation was calculated as follows:

Groundwater Elevation = (TOC elevation)-(depth to groundwater)+[(free product thickness)x(SG of free product)]

Note: The specific gravity (SG) of the free product is 0.82.

^{(3) -} Not measured.

^{(4) -} Monitor well MW-2 could not be located after January 1994.

^{(5) -} Well plugged and abandoned July 2, 1999.

^{(6) -} Monitor well MW-11 could not be located after September 12, 1997.

⁽⁷⁾- TOC elevations for MW-11A and MW-12 estimated relative to TOC elevation for MW-10.

 $^{^{(8)}\}text{-}$ TOC elevations for MW-12D and OW-4 estimated relative to TOC elevation for MW-12.

⁽⁹⁾- TOC elevation for MW-13 estimated relative to TOC elevation for MW-7.

^{(10) -}Well dry (measured depth to water is below base of screen); true groundwater elevation is less than listed groundwater elevation.

Table 3
June/August 2003 Field Screening Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Date	Cumulative Gallons Removed	Hd	Temperature (°C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)
MW-5	8/21/03	1	7.45	19.48	1,051	114	9.64 ⁽¹⁾	6.2	8.0
MW-10	8/21/03	0.2*	6.29	20.70	2,187	70	$NV^{(2)}$	7.4	> 10
MW-11A	8/21/03	1.25*	19'9	19.98	8,640	-16	6.80 ⁽¹⁾	1.0	> 10
act way	6/20/03	4.25	7.45	20.99	1,141	-79.2	1.25	0.1	9.0
U21-W W	8/22/03	12.0	7.89	19.15	1,110	52	9.25 ⁽¹⁾	8.9	3.5
MW-14	8/21/03	2.0*	7.42	19.60	1,537	85	0.26	1.6	NM ⁽³⁾
MW-15	8/21/03	3.5*	7.14	19.93	1,584	94	0.43	2.0	5.6
71 MM	6/20/03	5.5	7.12	19.44	3,658	186.4	11.64 ⁽¹⁾	7.0	0
01-w w	8/22/03	5.0	7.67	18.59	3,462	09	2.53	14.0	NM ⁽³⁾

Monitor wells MW-1, MW-4, MW-7, MW-8, MW-9, and MW-13 not sampled.

Monitor well MW-2 not operative after January 1994; P&A'd 7/1/99.

Monitor well MW-6 P&A'd 7/1/99.

Monitor well MW-11 not operative after September 1997; P&A'd 7/1/99.

Monitor wells MW-12 and OW-4 were dry.

(1) - Elevated reading indicates possible instrument error.

 $^{(2)}$. NV = Not valid (instrument error).

(3) - NM = Not measured

* Well was purged dry using bailing techniques.

Cumulative Results⁽¹⁾ for Chloride⁽²⁾ Analyses Hobbs, New Mexico Facility BJ Services Company, U.S.A. Table 4

							X	Monitor Wells ⁽³⁾	ells ⁽³⁾							
MW-4		MW-5	9-MW	MW-7	MW-8	MW-9	MW-10 MW-1	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
310		130	380	310	350	110	2,200	3,400	ď	ΝP	ďN	ď	ды	ΝΡ		SN
100		66	210	250	360	140	2,000	2,900	NP	NP	ďN	ΝP	ďΝ	NP	NP	NS
126		151	183	223	364	164	2,390	SN	940	1,200	ďN	æ	Ē	ξŁ	ďΝ	NS
142		155	411	238	274	123	1,160	SN	834	314	£	분	Ē	ΝP	NP	NS
NA		NA	ΝP	NA	NA	NA	NA	NP	NA	NA	195	496	₽N	NP	N.	566
196		196	В	224	241	131	474	ď	1,290	327	117	276	ď	NP	ďN	258
NS		NS	ďV	NS	SN	SN	SN	£	SN	SN	NS	NS	368	219	ďN	NS
172		152	dN	224	250	127	879	NP	1,720	586	NS	276	327	NA	NP	NS-D
NA		NA	ΝP	NA	NA	NA	NA	NP	NA	NA	NS	NA	222	222	NP	NS-D
Ν	_	NA	NP	NA	NA	NA	NA	NP	NA	Q-SN	NA	NA	245	228	NP	NS-D
Ϋ́		NA	ď	NA	NA	ΑA	NA	ΝP	NA	Q-SN	62	NA	NA	NA	ď	NS-D
N A		NA	È	NA	NA	NA	NA	ďΣ	NA	US-D	NA	NA	276	215	ď	NS-D
183		127	ď	188	241	110	861	NP	1,230	Q-SN	76	207	284	224	NP	NS-D
NA	-	NA	ďN	NA	SN	NS	NA	ΝP	NA	Q-SN	NA	145	258	233	NP	NS-D
NS		121	ΝP	NS	NS	NS	1,030	ΝP	1,550	US-D	98	NS	293	246	ď	NS-D
NS		123	ďN	NS	NS	NS	525	ď	3,150	NS-D	95	NS	179	228	ď	NS-D
NS		116	ΝP	NS	NS	NS	363	ΝP	2,900	NS-D	102	NS	163	272	È	NS-D
NS	S	SN	È	SN	NS	NS	NS	Ν	NS	NS-D	89.3	NS	NS	SN	983	NS-D
SS	S	NS	皇	NS	NS	NS	SN	М	NS	US-D	SN	SN	182	280	841	NS-D

(1) - in mg/L.

(2) - NMWQCC standard for chloride is 250 mg/L.

(3) - MW-2 not operative after May 3, 1995; P&A'd 7/1/99.

MW-6 P&A'd 7/1/99.

MW-11A installed February 1998. MW-11 P&A'd 7/1/99.

MW-12 installed February 1998. MW-12D installed June 1999.

MW-13 installed June 1999.

MW-14 installed January 2001.

MW-15 installed January 2001. MW-16 installed May 2003.

NP = not present at time of sampling event.

NS = not sampled during applicable sampling event.

NS-D = not sampled because well was dry during applicable sampling event. NA = not analyzed for chloride during applicable sampling event.

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре		microgran	ns per liter, ug/L		milligrams pe	er liter, mg/L
MW-1	8/10/92	Regular	5550.0	12090.0	2160.0	7370.0	NA	NA
	2/9/93	Regular	2100.0	6500.0	1300.0	7400.0	NA	NA
	8/19/93	Regular	3200.0	7300.0	1200.0	3700.0	NA	NA
	1/27/94	Regular	1930.0	4580.0	672.0	2390.0	NA	NA
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	390.0	1300.0	230.0	800.0	NA	5.7
'	11/15/95	Regular	880.0	1800.0	300.0	970.0	NA	6.8
	2/23/96	Regular	1500.0	3700.0	620.0	2200.0	NA	21
	5/31/96	Regular	1100.0	1700.0	380.0	990.0	NA	7.5
	8/23/96	Regular	1800.0	3300.0	570.0	2100.0	NA	17
	12/2/96	Regular	5600.0	9600.0	2100.0	9600.0	100	64
	3/12/97	Regular	5500.0	9700.0	2600.0	8200.0	22	62
	6/12/97	Regular	5300.0	34000.0	7500.0	27000.0	180	160
	9/12/97	Regular	1800.0	4400.0	1000.0	3000.0	23	21
	12/10/97	Regular	7600.0	12000.0	2800.0	8200.0	11	71
	3/24/98	Regular	4800.0	7200.0	1200.0	2400.0	4.2	38
	6/23/98		53.0	680.0	580.0	1400.0	1.4	9.2
	9/30/1998	Regular		90.0		970.0	2.5	3.6
	12/10/1998	Regular	3.2		280.0	1 1		
:	1	Regular	< 1.0	1.5	17.0	110.0	1.4	0.31
	3/10/1999	Regular	< 1.0	< 1.0	8.2	110.0	0.62	0.85
	3/10/1999	Duplicate	< 1.0	< 1.0	7.9	110.0	0.66	0.84
	6/10/1999	Regular	< 1.0	1.1	< 1.0	28.0	0.53	0.55
	6/10/1999	Duplicate	< 1.0	1.8	< 1.0	41.0	0.69	0.76
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	- D l -	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1 NS	< 1 NG	< 1 NG	9.1	14	1.3
	6/8/2000 9/13/2000	-	NS NS	NS NS	NS NS	NS NS	NS	NS NS
	12/7/2000	-	NS NS	NS	NS NS	NS NS	NS NS	NS NS
	3/8/2001	Regular	2.0	<1	< 1	< 1	0.49	0.58
	6/21/2001	-	NS NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS NS	NS	NS
	12/6/2001	_	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	< 1	< 1	< 1	<1	< 0.2	< 0.1
	6/18/2002	-	·					
	through	-	NS	NS	NS	NS	NS	NS
	June 2003	-					•	
MW-2 ¹	8/10/92	Regular	14.9	< 4	< 4	< 4	NA	NA
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	100.0	12.0	3.0	13.0	NA	NA
	1/27/94	Regular	< 1	1.2	2.0	2.5	NA	NA
MW-3	8/10/92	Regular	304.9	2099.0	6760.0	1586.0	NA	NA
	2/9/93	Regular	130.0	< 10	< 10	190.0	NA	NA
	8/19/93	Regular	560.0	3100.0	630.0	1900.0	NA	NA
	1/27/94	Regular	1070.0	5380.0	510.0	3120.0	NA	NA NA
	5/4/95	Regular	770.0	3300.0	470.0	1800.0	NA ·	NA NA
	8/1/95	Regular	490.0	2900.0	890.0	1600.0	NA NA	14
	11/15/95	Regular	250.0	1000.0	180.0	440.0	NA NA	2.9
	2/23/96	Regular	120.0	810.0	170.0	560.0	NA NA	4
	5/31/96	-	670.0			1 1		
	3/3/1/90	Regular	330.0	3900.0	1200.0	2300.0	NA	15

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

			D.	T. 1	Edulbarran	Xylenes	ТРН-Д	TPH-G
Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Aylelles	milligrams pe	
Well	Date	Type			ns per liter, ug/L	10000		
MW-3	12/2/96	Regular	220.0	1800.0	670.0	1000.0	0.89	7.4
(cont.)	3/12/97	Regular	370.0	2000.0	960.0	1400.0	1.8	11
	6/12/97	Regular	860.0	4800.0	1700.0	2600.0	1.9	20
	9/11/97	Regular	770.0	3000.0	1600.0	1900.0	1.6	16
	12/10/97	Regular	240.0	740.0	500.0	450.0	0.59	5.3
	3/24/98	Regular	140.0	630.0	360.0	310.0	0.56	3.9
	6/23/98	Regular	100.0	720.0	350.0	490.0	0.40	4.9
	9/30/1998	Regular	42.0	470.0	450.0	530.0	1.0	3.8
	12/10/1998	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/1999	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/1999	Regular	1.7	3.1	<1.0	36.0	< 0.20	0.18
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.32	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.42	< 0.1
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.22	< 0.1
	9/10/2001	Regular	<1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1 < 0.1
	3/12/2002	Regular	< 1	< 1 <1	< 1 <1	< 1 <1	< 0.2 <0.2	<0.1 <0.1
	6/18/2002 9/16/2002	Regular	<1	<u></u>			~ 0.2	~ 0.1
	through]	NS	NS	NS	NS	NS	NS
	June 2003	_	145	115	1,5	1.0	110	110
MW-4	8/10/92	Regular	2594.0	10360.0	2160.0	6740.0	NA .	NA
	2/9/93	Regular	5200.0	15000.0	2200.0	10000.0	NA	NA
	8/19/93	Regular	3000.0	12000.0	< 2000	7000.0	NA	NA
	1/27/94	Regular	NSP	NSP	NSP	NSP	NA	NSP
	5/3/95	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/95	Regular	5700.0	17000.0	3500.0	13000.0	NA	120
	11/15/95	Regular	490.0	1600.0	310.0	1100.0	NA	5.2
	2/23/96	Regular	360.0	2800.0	560.0	2500.0	NA NA	18
	5/31/96	Regular	84.0	830.0	280.0	1100.0	NA	6.2
	8/23/96	Regular	110.0	1400.0	430.0	1800.0	NA .	9.8
	12/2/96	Regular	190.0	2000.0	1800.0	7200.0	56	43
	3/12/97	Regular	220.0	1500.0	1500.0	4400.0	27	27
	6/12/97	Regular	47.0	270.0	360.0	950.0	2.5	6.2
	9/12/97	Regular	92.0	840.0	670.0	2100.0	15	7.6
	12/10/97	Regular	230.0	750.0	970.0	2300.0	3.7	16
	3/24/98	Regular	150.0	510.0	270.0	620.0	1.2	5.6
	6/23/98	Regular		890.0	590.0	1600.0	0.69	10
	1	1	160.0			840.0		3.9
	9/30/1998	Regular	80.0	180.0	370.0		2.0	
	12/10/1998	Regular	28.0	70.0	210.0	960.0	9.3	4.3
	12/10/1998	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
	3/10/1999	Regular	8.0	20.0	250.0	1400.0	13.0	13
	6/10/1999	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63
	9/14/1999	Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17
	12/9/1999	Regular	< 1	2.5	2.3	20.1	2	0.53
	3/10/2000	Regular	< 1	< 1	< 1	3.6	2.6	0.15

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

								TDU C
Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Туре			is per liter, ug/L		milligrams pe	
MW-4	6/8/2000	Regular	< 1	< 1	< 1	<1	0.44	0.23
(cont.)	9/13/2000	Regular	< 1	< 1	< 1	< 1	0.61	< 0.1
	12/7/2000	Regular	< 1	< 1	1.3	< 1	0.53	0.16
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.43	0.16
	6/21/2001	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	0.6	< 1
l	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/18/2002	Regular	<1	<1	<1	<1	<0.2	<0.1
	9/16/2002	1						
	through	} -	NS	NS	NS	NS	NS ,	NS
	June 2003							
MW-5	8/10/92	Regular	< 4	< 4	< 4	< 4	NA	NA
Ì	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/10/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	1/27/94	Regular	8.7	29.9	4.0	11.3	NA ·	NA
ĺ	5/3/95	Regular	3.7	5.3	0.9	4.6	NA	NA
	8/1/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	11/15/95	Regular	< 0.3	1.2	< 0.3	1.5	NA	NA
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	5/31/96	Regular	31.0	86.0	10.0	20.0	NA	NA
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< l	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	<1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	6/10/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
}	9/14/1999	Regular	<1.0	<1.0	<1.0	<2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	<1	< 1	< 1	< 1	0.55	< 0.1
	6/8/2000	Regular	<1	< 1	< 1	<1	< 0.2	< 0.1
	9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< 1	0.56	< 0.1
	6/21/2001	Regular	< 1	< 1	< 1	< 1	0.26	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
ĺ	12/6/2001	Regular	< 1	< 1	< 1	< 1	0.49	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	< 0.24	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.3 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1
	3/6/2003	Regular	< 1	< 1	< 1	< 1	NA	< 0.1
	8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
MW-6	8/10/92	Regular	NS	NS	NS	NS	NA	NS

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	l Samula	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	ТРН-D	ТРН-С
Well	Sample Date	_	Denzene	<u>(,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	is per liter, ug/L	Aylenes	milligrams pe	
		Type	50000			7200.0	-	
MW-6	2/9/93	Regular	7000.0	19000.0	3100.0	7200.0	NA NA	NA NA
(cont.)	8/19/93	Regular	8100.0	19000.0	3500.0	6400.0	NA NA	NA
	1/27/94	Regular	7960.0	20200.0	3830.0	6150.0	NA	NA
	5/4/95	Regular	11000.0	17000.0	2900.0	6000.0	NA	NA
	8/1/95	Regular	8300.0	12000.0	2500.0	5100.0	NA	60
	11/15/95	Regular	8900.0	17000.0	2900.0	5500.0	NA	57
	2/23/96	Regular	8100.0	10000.0	2300.0	4000.0	NA	58
	5/31/96	Regular	83.0	150.0	15.0	51.0	NA	0.57
	5/31/96	Duplicate	87.0	160.0	13.0	47.0	NA	0.52
	8/23/96	Regular	31.0	28.0	9.4	7.9	NA 1.	0.46
	12/2/96	Regular	<1	< 1	< 1	1.7	5.6	< 0.1
	3/12/97	Regular	12.0	< 5	6.8	18.0	12	< 0.5
	6/12/97	Regular	1900.0	1400.0	410.0	310.0	7.8	7.4
	9/11/97	Regular	11.0	1.3	3.4	<1	1	< 0.1
	12/10/97	Regular	3.0	4.2	1.2	3.9	1.7	0.14
	3/23/98	Regular	3.6	< 1	4.0	< 1	< 0.2	< 0.1
	6/23/98	Regular	170.0	4.1	15.0	7.2	1.2	0.51
	9/30/1998	Regular	1000.0	420.0	140.0	270.0	4.0	3.3
	12/10/1998	Regular	7.6	6.6	1.7	5.8	2.0	< 0.1
	3/10/1999	Regular	2500.0	930.0	590.0	1400.0	11.0	13
MW-7	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	3.0	< 2	< 2	NA	NA
	1/27/94	Regular	1.1	< 1	< 1	<1	NA	NA
	5/3/95	Regular	52.0	3.4	0.7	2.8	NA .	NA
	8/1/95	Regular	22.0	2.2	0.9	2.8	NA	< 0.1
	11/15/95	Regular	8.4	0.8	< 0.3	0.9	NA	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	2/23/96	Duplicate	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	29.0	83.0	10.0	21.0	NA	0.25
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	6/12/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	9/11/97	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	12/10/97	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/1999	Regular	<1.0	<1.0	<1.0	<1.0	4.7	< 0.1
	6/10/1999	Regular	<1.0	<1.0	<1.0	<1.0	< 0.20	< 0.1
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 5	< 5	< 5	< 5	1.8	< 0.5
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.66	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.21	< 0.1
	9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.29	< 0.1
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1
	6/21/2001	Regular	3.1	< 1	< 1	< 1	< 0.22	< 0.1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-G
Well	Date	Туре			ns per liter, ug/L	<u> </u>	milligrams pe	er liter, mg/L
MW-7	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.33	< 0.1
(cont.)	12/6/2001	Regular	<1	< 1	< 1	< 1	1.3	< 0.1
(•0)	3/12/2002	Regular	<1	< 1	< 1	<1	NA	< 0.1
	6/18/2002	Regular	< 1	<1	< 1	<1	< 0.2	< 0.1
	9/16/2002		,	-	-			
	through	_	NS	NS	NS	NS	NS .	NS
	June 2003							
MW-8	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	2/9/93	Regular	< 2	< 2	< 2	< 6	NA	NA
	8/19/93	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	<1	< 1	< 1	< 1	NA	NA
	5/3/95	Regular	3.0	4.9	0.8	3.7	NA	NA
	8/1/95	Regular	3.1	1.2	0.5	1.6	NA	< 0.001
	8/1/95	Duplicate	3.6	1.5	0.5	1.5	NA	< 0.1
	11/15/95	Regular	< 0.3	0.5	< 0.3	< 0.6	NA ·	< 0.1
	2/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	5/31/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	8/23/96	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	< 0.1
	12/2/96	Regular	< 1	< 1	< 1	< 1	< 0.1	< 0.1
	3/12/97	Regular	<1	<1	< 1	1.8	< 0.1	< 0.1
	6/12/97	1 –	< 1	<1	<1	< 1	< 0.1	< 0.1
	9/11/97	Regular	<1	<1	<1	<1	0.1	< 0.1
		Regular		<1	< 1	<1	0.3	< 0.1
	12/10/97	Regular	<1	<1	<1	<1	< 0.2	< 0.1
	3/23/98 6/23/98	Regular	< 1 < 1	<1	<1	<1	< 0.2	< 0.1
	9/30/1998	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/1998	Regular	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
		Regular			i		< 0.20	< 0.1
	3/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0		
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/1999 12/9/1999	Regular	< 1.0 NS	< 1.0 NS	< 1.0 NS	< 2.0 NS	< 0.20 NS	< 0.10 NS
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
	6/8/2000	Regulai	NS	NS	NS	NS	NS	NS
	9/13/2000	_	NS	NS	NS	NS	NS ·	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.6	< 0.1
	6/21/2001	- 1	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.38	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
	9/16/2002]		
	through	-	NS	NS	NS	NS	NS	NS
	June 2003							
MW-9	4/22/93	Regular	570.0	380.0	< 50	870.0	NA	NA
	7/15/93	Regular	121.0	7.3	3.0	458.0	NA	NA
	8/19/93	Regular	390.0	290.0	40.0	250.0	NA	NA
	1/27/94	Regular	327.0	357.0	51.1	293.0	NA	NA
	5/3/95	Regular	380.0	110.0	19.0	120.0	NA	NA
	8/1/95	Regular	660.0	410.0	91.0	310.0	NA	6.2
	11/15/95	Regular	240.0	24.0	11.0	140.0	NA NA	1.5

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-G
Well	Date	Type	Benzene		ns per liter, ug/L	Ayicites	milligrams po	
			150.0			120.0		
MW-9	11/15/95	Duplicate	170.0	18.0	10.0	120.0	NA	1.9
(cont.)	2/23/96	Regular	170.0	18.0	2.3	160.0	NA	4.3
	5/31/96	Regular	120.0	16.0	3.0	200.0	NA	NA
}	8/23/96	Regular	82.0	13.0	6.0	270.0	NA	4
	8/23/96	Duplicate	76.0	14.0	4.8	250.0	NA ·	4.4
	12/2/96	Regular	61.0	< 25	< 25	210.0	2.6	2.8
	12/2/96	Duplicate	86.0	13.0	2.4	270.0	3.7	2.9
	3/12/97	Regular	30.0	48.0	420.0	880.0	8.2	19
	6/12/97	Regular	4.7	2.1	11.0	97.0	2.6	2.2
	6/12/97	Duplicate	< 5	< 5	6.6	69.0	5.2	1.9
	9/12/97	Regular	2.1	2.3	2.1	120.0	1.2	1.9
	12/10/97	Regular	4.9	9.0	6.8	62.0	0.86	0.92
	3/24/98	Regular	< 1	< 1	< 1	26.0	0.9	1
	6/23/98	Regular	2.4	22.0	10.0	36.0	< 0.2	0.25
	9/30/1998	Regular	1.1	5.5	21.0	59.0	0.27	0.27
	12/10/1998	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
	3/10/1999	Regular	< 1.0	< 1.0	5.7	68.0	< 0.2	0.22
	6/10/1999	Regular	< 1.0	1.8	1.8	71.0	< 0.20	0.43
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	-	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	< 1	< 1	< 1	64.0	0.66	1.3
	6/8/2000	-	NS	NS	NS	NS	NS	NS
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS .	NS
	3/8/2001	Regular	< 1	< 1	< 1	< 1	1.4	< 0.1
	6/21/2001	-	NS	NS	NS	NS	NS	NS
	9/10/2001	-	NS	NS	NS	NS	NS	NS
	12/6/2001	-	NS	NS	NS	NS	NS	NS
	3/12/2002	Regular	1	< 1	< 1	< 1	0.37	< 0.1
	6/18/2002	-	NS	NS	NS	NS	NS	NS
	9/16/2002							
	through	-	NS ·	NS	NS	NS	NS	NS
	June 2003							
MW-10	8/19/93	Regular	190.0	460.0	< 200	240.0	NA	NA
	1/27/94	Regular	13.4	4.0	5.5	33.6	NA	NA
	5/4/95	Regular	980.0	15.0	11.0	84.0	NA	NA
	8/1/95	Regular	1300.0	32.0	32.0	100.0	NA	3.6
	11/15/95	Regular	1000.0	24.0	15.0	36.0	NA	1.7
	2/23/96	Regular	810.0	23.0	27.0	44.0	NA	2.4
	5/31/96	Regular	700.0	24.0	34.0	28.0	NA NA	2
	8/23/96	Regular	290.0	3.4	6.4	13.0	NA NA	1.4
	12/2/96	Regular	280.0	1.3	17.0	8.0	0.94	0.97
	3/12/97	Regular	110.0	< 5	17.0	< 5	0.61	0.57
	6/12/97	Regular	150.0	12.0	30.0	< 5	0.68	< 0.5
	9/12/97	Regular	87.0	2.3	26.0	2.7	0.76	0.33
	9/12/97	Duplicate	87.0	2.4	26.0	2.7	0.79	0.33
	12/10/97	Regular	41.0	2. 4 9.8	12.0	7.7	1.1	0.33
	12/10/97	Duplicate	36.0	9.8 8.5	10.0	6.7	1.1	0.28
	3/23/98	Regular	36.0		5.9	< 5		
	3/23/98	1		< 5		1	1.6	< 0.5
·	3123198	Duplicate	36.0	< 1	5.3	1.3	1,7	0.18

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

M	I c	C1-	D	T-1	Edhalbanasa	Valence	трн-р	TPH-G
Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene ns per liter, ug/L	Xylenes	milligrams pe	
Well	Date	Type						
MW-10	6/23/98	Regular	37.0	< 5	< 5	< 5	2.1	< 0.5
(cont.)	9/30/1998	Regular	84.0	3.2	30.0	2.2	1.4	0.36
	12/10/1998	Regular	29.0	1.0	7.0	1.0	0.86	0.18
ļ	3/9/1999	Regular	28.0	<5.0	5.8	<5.0	0.92	<0.5
	6/10/1999	Regular	17.0	<1.0	<1.0	<1.0	0.30	0.16
	9/14/1999	Regular	10.0	< 1.0	< 1.0	< 2.0	<0.20	< 0.10
}	12/9/1999	Regular	23.0	< 1	< 1	1.2	0.44	0.16
	3/10/2000	Regular	300.0	4.3	6.6	43.2	1.2	0.85
	6/8/2000	Regular	78.0	1.7	7.2	9.0	0.67	0.74
	9/13/2000	Regular	23.0	1.5	1.1	2.9	1.6	0.41
	12/7/2000	Regular	7.2	< 1	< 1	< 1	1.5	0.15
	3/8/2001	Regular	3.4	1.1	< 1	< 1	3.4	0.2
	6/22/2001	Regular	< 1	< 1	< 1	< 1	1.2	<0.1
	9/10/01 and		2	< 1	< 1	< 1	2.3	<0.1
	9/18/01	Regular	<u></u>				2.3	~U.1
	12/6/2001	Regular			<u> </u>	No Valid Data		
	3/12/2002	Regular	< 1	< 1	< 1	< 1	3.2	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< !	1.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	0.1	<0.082	3 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1.0	< 0.1
1	3/6/2003	Regular	< 1	< 1	18	< 1	NA	< 0.1
	8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
MW-11 1	8/19/93	Regular	< 2	< 2	< 2	< 2	NA ,	NA
	1/27/94	Regular	1 >	< 1	< 1	< 1	NA	NA
	5/4/95	Regular	< 0.3	< 0.3	< 0.3	< 0.6	NA	NA
	8/1/95	Regular	44.0	29.0	5.5	13.0	NA	0.2
	11/15/95	Regular	190.0	2.8	6.2	11.0	NA	0.4
	2/23/96	Regular	49.0	1.2	0.5	4.0	NA	0.25
	5/31/96	Regular	300.0	83.0	12.0	28.0	NA	0.8
	8/23/96	Regular	100.0	1.2	0.3	4.7	NA	0.26
	12/2/96	Regular	970.0	< 5	6.0	8.1	2	1.3
	3/12/97	Regular	130.0	< 5	13.0	5.8	0.42	< 0.5
	3/12/97	Duplicate	0.001	< 5	10.0	5.1	0.43	< 0.5
	6/12/97	Regular	150.0	23.0	19.0	< 5	1.1	0.55
	9/12/97	Regular	220.0	15.0	27.0	13.0	1	0.46
MW-11A	3/24/98	Regular	24.0	5.0	< 5	< 5	0.28	0.14
	6/23/98	Regular	9.9	< 5	< 5	< 5	< 0.2	< 0.5
	9/30/1998	Regular	9.3	3.7	2.2	7.0	<0.20	0.1
	12/10/1998	Regular	1.7	<1.0	<1.0	<1.0	<0.20	<0.1
	3/10/1999	Regular	<5	< 5	< 5	< 5	0.3	<0.5
	6/10/1999	Regular	<1.0	< 1.0	< 1.0	< 1.0	<0.20	<0.10
	9/13/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/1999	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
	3/9/2000	Regular	1.2	< 1	< 1	< 1	0.43	< 0.1
	6/8/2000	Regular	3.6	< 1	< 1	< 1	0.37	< 0.1
	9/13/2000	Regular	1.4	<1	< 1	<1	0.36	< 0.1
	12/7/00	Regular	26	<1	< 1	3.3	0.3	0.12
	3/8/01	Regular	12	< 5	< 5	< 5	2.2	< 0.5
	6/22/2001	Regular	1.5	<1	< 1	<1	1 2.2	< 0.1
	9/10/2001	-				< 1	1.1	
	9/10/2001	Regular	7.9	< 1	< 1		1.1	< 0.1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	ТРН-G
Well	Date	Туре		microgran	ns per liter, ug/L		milligrams p	er liter, mg/L
MW-11A	12/6/2001	Regular	<1	< 1	< 1	< 1	1	< 0.1
(cont.)	3/12/2002	Regular	1.8	< 1	< 1	1	1.6	< 0.1
	6/18/2002	Regular	2.9	< 0.1	1.3	< 1	0.91	<0.1
	9/16/2002	Regular	9	< 0.11	41	< 0.082	1 J .	0.2
	1/9/2003	Regular	12	< 1	< 1	1.2	< 1.0	0.4
	3/6/2003	Regular	3.2	< 1	< 1	1.2	< 1	0.13
	8/21/2003	Regular	3.7	< 1	< 1	<1	< 1	< 0.1
MW-12	3/24/98	Regular	100.0	11.0	6.0	8.0	0.29	0.41
	6/23/98	Regular	88.0	< 5	< 5	< 5	< 0.2	< 0.5
	6/23/98	Duplicate	89.0	< 5	< 5	< 5	0.31	< 0.5
	9/30/1998	Regular	260.0	3.0	1.2	7.9	< 0.20	0.62
i	12/10/1998	Regular	160.0	< 1.0	< 1.0	1.2	0.21	0.36
	3/10/1999	Regular	160.0	1.1	< 1.0	2.9	0.38	0.45
	6/10/1999	Regular	49.0	1.4	< 1.0	< 1.0	0.22	0.13
	9/14/1999	Regular	75.0	< 1.0	< 1.0	< 2.0	<0.20	0.23
	12/9/1999	Regular	64.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Regular	93.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/2000	Duplicate	99.0	< 1	< 1	<1	0.22	0.22
	6/8/2000	Regular	62.0	< 1	< 1	<1	< 0.2	< 0.1
	9/13/2000	Regular	34.0	< 1	< 1	< 1	0.23	< 0.1
	12/7/2000	Regular	27	< 1	2.9	1.9	<0.25	< 0.1
	3/8/2001	Regular	14	< 1	< 1	< 1	2.1	0.1
	6/22/2001	Regular	12	< 1	< 1	<1	0.51	0.11
	9/10/2001		,	Well Dry (Not S	Sampled) During This	and Subseque	nt Monitoring Events	
MW-12D	7/2/1999	Regular	< 5	< 5	< 5	< 5	<0.20	<0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.24	< 0.1
	6/8/2000	Regular	< J	< 1	< 1	<]	< 0.2	< 0.1
	9/13/2000	-	NS	NS	NS	NS	NS	NS
	12/7/2000	-	NS	NS	NS	NS	NS	NS
	3/8/2001	-	NS	NS	NS	NS	NS .	NS
	6/22/2001	-	NS	NS	NS	NS	NS	NS
	9/18/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/6/2001	Regular	< 1	<1	< 1	< 1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.44	< 0.1
	6/18/2002	Regular	< 1	< 1	< 1	< j	< 0.2	< 0.1
	9/16/2002	Regular	< 0.074	< 0.11	< 0.068	< 0.082	0.2 J	< 0.05
	1/9/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	3/6/2003	Regular	< 1	<1	< 1	< 1	< 1	< 0.1
	6/20/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
	8/21/2003	Regular	< 1	< 1	< 1	< 1	< 1	< 0.1
MW-13	7/2/1999	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/1999	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/1999	Regular	430.0	16.0	410.0	40.9	0.46	3.2
	3/10/2000	Regular	88.0	2.8	200.0	1.3	1.9	0.99
	6/8/2000	Regular	6.0	< 1	63.0	3.3	1.1	0.91
	9/13/2000	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/2000	Regular	<1	<1	<1	<1	0.43	< 0.1
	3/8/2001	Regular	<1	<1	1.2	<1	2	< 0.1

Table 5
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor	Sample	Sample	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
Well	Date	Type		microgran	is per liter, ug/L		milligrams p	er liter, mg/L
	6/22/2001	Regular	< 1	< 1	< 1	< 1	0.31	< 0.1
MW-13	9/10/2001	Regular	< 1	< 1	< 1	< 1	0.3	< 0.1
(cont.)	12/6/2001	Regular	< 1	< 1	< 1	<1	< 0.2	< 0.1
	3/12/2002	Regular	< 1	< 1	< 1	< 1	0.84	< 0.1
	6/18/2002	Regular	<1	<1	<1	<1	0.3	< 0.1
,	9/16/2002					 		
i	through	-	NS	NS	NS	NS	NS	NS
	June 2003							
MW-14	1/14/2001	Regular	< 1	< 1	<1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA .	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA NA
MW-15	1/14/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/16/2002	Regular	NA	NA	NA	NA	NA	NA
	1/9/2003	Regular	NA	NA	NA	NA	NA	NA
	March 2003	Regular	NA	NA	NA	NA	NA	NA
	June 2003	Regular	NA	NA	NA	NA	NA	NA
MW-16	6/20/2003	Regular	<5	<5	<5	<5	NA	NA
OW-4	6/10/1999	Regular	<1.0	<1.0	<1.0	4.4	< 0.2	< 0.10
	9/14/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	3/9/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	0.25	< 0.1
	6/8/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.21	< 0.1
	9/13/2000	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 0.1
	12/7/2000			Well Dry (Not S	Sampled) During This	and Subseque	nt Monitoring Events	

¹ Well plugged and abandoned 7/1/99

NA = Not Analyzed

NS = Not Sampled

NS-D = Not Sampled because well was dry

NSP = Not Sampled due to Phase-Separated Hydrocarbons

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Table 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
	3/23/1998	3.87	190	< 0.0012
	3/9/1999	< 0.1	195	< 0.0012
	6/10/1999	4.73	209	< 0.0012
	9/14/1999	4.3	210	< 0.0012
	12/9/1999	4.2	210	< 0.0012
	3/9/2000	5.3	260	< 0.0012
	6/8/2000	4.7	240	< 0.0012
	9/13/2000	3.93	200	< 0.0012
	12/7/2000	3.27	160	< 0.0012
MW-5	3/8/2001	3.24	180	< 0.0012
	6/21/2001	2.74	150	0.0017
	9/10/2001	NA ⁽²⁾	130	< 0.0012
	12/6/2001	2.38	120	< 0.0012
	3/12/2002	2.98	120	< 0.0012
	6/18/2002	2.56	110	0.002
	9/16/2002	2.4	105	0.002
	1/9/2003	2.1	97	0.004
	3/6/2003	2.75	110	< 0.0012
	8/21/2003	2.4	100	< 0.0012
	3/23/1998	0.07	320	0.91
	6/23/1998	< 0.1	325	0.55
	9/30/1998	< 0.1	204	0.81
	12/10/1998	< 0.1	180	0.091
	3/9/1999	< 0.1	142	0.035
	3/9/1999	V 0.1	223 ⁽³⁾	0.033
1	9/14/1999	< 0.10	160	0.0049
	12/9/1999	0.49	170	0.0039
MW-10	3/10/2000	0.1	160	0.0056
	6/8/2000	< 0.1	150	0.031
	9/13/2000	< 0.1	160	0.031
	12/7/2000	< 0.1	190	0.17
	3/8/2001	< 0.1	270	< 0.0012
	6/22/2001	< 0.1	270	0.044
	9/10/2001	NA	NA	NA
1	3/12/2002	< 0.1	230	NA
	6/18/2002	< 0.1	240	0.007

Table 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-10	9/16/2002	< 0.03	318	0.006
(cont.)	1/9/2003	< 0.1	280	0.0024
	3/6/2003	< 0.1	270	0.0031
	8/21/2003	0.21	350	< 0.0012
MW-11A	3/23/1998	< 0.05	190	0.14
	6/23/1998	< 0.1	225	0.11
	9/30/1998	0.4	196	0.043
	12/10/1998	0.7	188	0.033
	3/10/1999	< 0.1	164	0.094
		< 0.1 ⁽⁴⁾	227 ⁽³⁾	
	6/10/1999	< 0.1	181	0.0036
	9/13/1999	0.22	250	< 0.0012
	12/9/1999	< 0.1	290	0.0079
	3/9/2000	0.11	270	0.037
	6/8/2000	< 0.1	240	0.0069
	9/13/2000	< 0.1	320	< 0.0012
	12/7/2000	< 0.1	260	0.0096
	3/8/2001	< 0.1	330	0.0028
	6/22/2001	< 0.1	180	0.0074
	9/10/2001	NA	280	< 0.0012
	12/6/2001	< 0.1	240	0.0041
	3/12/2002	< 0.1	350	0.0044
	6/18/2002	< 0.1	560	0.0028
	9/16/2002	0.3	383	< 0.0012
	1/9/2003	< 0.5	290	0.0063
	3/6/2003	< 0.1	290	0.0044
	8/21/2003	0.68	340	< 0.0012
MW-12	3/23/1998	< 0.05	240	< 0.0012
	6/23/1998	< 0.1	240	< 0.0012
	9/30/1998	< 0.1	168	< 0.0012
	12/10/1998	< 0.1	202	< 0.0012
	3/10/1999	< 0.1	137	< 0.0012
		< 0.1 ⁽⁴⁾	193 ⁽³⁾	
	6/10/1999	< 0.1	217	< 0.0012
	9/14/1999	< 0.10	230	< 0.0012
	12/9/1999	< 0.1	180	< 0.0012
	3/10/2000	< 0.1	210	< 0.0012

Table 6 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, MW-12, and MW-12D

Hobbs, New Mexico BJ Services Company, U.S.A.

Well	Date	Nitrate ⁽¹⁾ (mg/L)	Sulfate ⁽¹⁾ (mg/L)	Dissolved Methane (mg/L)
MW-12	6/8/2000	< 0.1	220	< 0.0012
(cont.)	9/13/2000	< 0.1	240	< 0.0012
	12/7/2000	< 0.1	260	< 0.0012
	3/8/2001	< 0.1	300	< 0.0012
	6/22/2001	< 0.1	360	0.0021
	9/10/2001	Well Dry (Not Sample	d) During This and Subsequ	uent Monitoring Events
	9/18/2001	NA	190	< 0.0012
	12/6/2001	< 0.1	200	< 0.0012
	3/12/2002	< 0.1	200	< 0.0012
	6/18/2002	< 0.1	180	0.0012
MW-12D	9/16/2002	0.06	172	< 0.0012
	1/9/2003	< 0.1	150	0.005
	3/6/2003	0.705	170	0.0038
	6/20/2003	< 0.1	160	< 0.0012
	8/22/2003	< 0.1	160	< 0.0012

^{(1) -} By EPA Method 300, except as noted

mg/L = milligrams per liter

^{(2) -} NA indicates not analyzed

^{(3) -} By EPA Method 375.4

^{(4) -} By EPA Method 353.3

Table 7

Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

										Monitor Wells ⁽¹	ells ⁽¹⁾								
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9 M	MW-10 MA	MW-11 MV	V-11A N	MW-12 N	MW-12D	MW-13	MW-14	MW-15	MW-16	0W-4
Bicarbonate, as CaCO ₂ (mg/L)	8/1/1995	380	430	490	290	029	440						훋	<u>a</u>	ž	ęż	ď	å	NS ₍₃₎
	8/23/1996	310	310	210	270	120	400						ž	Š.	È	ž	È	Š	SN
 -	3/23-24/1998	286	214	175	247	180	309						451	욷	È	e E	È	ğ	SN
	3/9-10/1999	95	309	981	283	586	358		_				386	£	å	aż Ż	Š	ŝ	SN
	6661/2/2-6661/01/9	SZ S	SZ	SN .	SN	Ē ;	SN						SN	50	520	È !	全 :	<u>R</u>	316
	1/14/2001	NS.	ę v	20 V	SN SN	ž ž	tor No						204 NG	744 NG	047 NG	N Z	- S	ž 9	0701
	3/8-9/2001	6:06	242	232	222	 E	283						475	SS	E E	NA(E)	SN	 E &	NS-D(3)
	3/11-12/2002	230	230	210	790	å	560						NS-D	260	164	SN	SN	a's	NS-D
	3/6/2003	NS	SN	SZ	243	g N	NS	SN	SN	273	ę z	401	NS-D	241	sx	373	231	ğ	NS-D
Carbonate as CaCO, (mo/I)	6/20/2003	SN	SN	SN	AN S	a S	SN	- -	_ 1	- -	-		NS-D	232	SN	YZ 5	Y S	163	US-D
	8/21/1995	2 5	2 9	2 9	2 2	2 2	2 5						ž 2	ž Ž	ž Ž	ž Ž	ž 2	ž §	S Z
	3/23-24/1998	? -	₹ ⊽	? ·	?	? ⊽	2 -							ž ž	žź	ž Ž	ž	Z å	2 ×Z
	3/9-10/1999	⊽	⊽	⊽			· ⊽							È	ž	- E	ž	£	SZ
	6661/7/2-6661/01/9	SN	SN	SN	SN	ď						_	SN	⊽	⊽	å	å	g N	⊽
	3/9-10/2000	4	4	4	7	ŝ							2	7	0,	έż	ģ	ě	\$
	1/14/2001	SN	SN	SN	SN	ďχ				_			SN	NS	SN	7	۵	₽ N	SZ
	3/8-9/2001	7	٥	\$	٥,	È							۵,	NS	۵.	NA	SN	ez S	NS-D
	3/11-12/2002	7	4	۵	0	È		_					NS-D	7	۵	SN	SZ	È	NS.D
	3/6/2003	SN	SZ	SZ	7	å !							NS-D	4	SN	3.03	0	g '	Q-SN
G G	6/20/2003	NS	SN	SN	SN	È	+	+	- 1	4	+	-	NS-D	7	SN	AA A	YN !	<2	NS-D
Hardness-Total, as CaCO,	3/23-24/1998	430	430	275	342	440							009.1	è s	£ £	ž į	ž į	£ 5	S S
(7,8,)	3/9-10/1999	007	0 440	310	300	040 ND							007	Z 09'C	ž Š	ž ž	ž ž	ž Š	S 5
	3/8-9/2001	310	470	919	440	ž							300	S X	029	Z Z	SZ	E S	O'SN
	3/11-12/2002	420	420	450	420	- E							NS-D	330	750	NS	SN	å	U-SN
	3/6/2003	SN	SN	SN	069								NS-D	360	SN	NA A	N.	ĝ	O-SN
	8/21-22/2003	NS	NS	NS	NA	-	_	-	- 1	_	-	-	NS-D	NA	NS	009	099	SN	NS-D
Hydroxide (mg/L)	8/1/1995	< 10	01 >	< 10	01 >		o1 >	< 10				<u> </u>	 Z ;	ž :	÷	d i	ž į	<u> </u>	SN N
Machine (may)	8/23/1996	× 10	< 10	× 10	< 10	-	- -	╁	- 1	-	-		0.0012	ž	ž ž	ž	ž	ž	SN
evicinane (riig/ L.)	3/9-10/1999	NS	NS	SN	<0.0012			-					0.0012	ąz.	ĝ	£	Š	e N	SN
	6/10/1999-7/2/1999	SN	NS	SN	NS	_	_					_	NA A	0.0015	0.0017	ď	gN.	호	< 0.0012
	3/9-10/2000	< 0.0012	< 0.0012	< 0.0012	< 0.0012								0.0012	< 0.0012	< 0.0012	ą.	ę.	È	< 0.0012
	3/8-9/2001	< 0.0012	< 0.0012	< 0.0012	< 0.0012		ν	~				~	0.0012	SN	< 0.0012	V S	S S	<u> </u>	Q.S.D
	3/11-12/2002	0.007	< 0.0012	0.0024 NS	< 0.0012							0.0044	- C-SN	< 0.0012	2100.0 ×	o v	o v	ž ž	NS-D
	5/0/2003	s S	SZ	SZ	NS								NS-D	< 0.0012	SN	SZ	SS	< 0.0012	NS-D
	8/21-22/2003	NS	NS	NS	< 0.0012	-		-	. 1		Ť	7	NS-D	< 0.0012	NS	< 0.0012	< 0.0012	NS	NS-D
Anions (mg/L)					İ														
Chloride									See Tat	Table 4									
Fluoride	3/23-24/1998	6.0	1.2	1.2	9.0	=	8.0	6.0	ļ	-	_	2.9	4.2	ďΣ	ďΧ	ďΣ	ęż.	å	SN
	3/9-10/1999	1.54	1.46	1.5	1.38	1.79	1.56	1.44				3.08	3.13	ez ez	å	ď	Ę.	 Ž	SN
	6/10/1666-7/2/1666	SN	SN	SZ	SN	ž	SN	SZ				SN	SN	1.83	2.22	<u>E</u> !	生 :	<u> </u>	3.45
	3/9-10/2000	7.1	1.1 NG	J. 1	1.1	a a	0.75 NG	69:0 NS	1.5 N	- 2	· 	- VN	7:1 SS	e S	L.7 NS	3.5 P	N 7	ž ž	s: S SS
	3/8-9/2001	5.1 E.3	77.0	0.63	0.86	ž	69.0	99'0					6.1	SS	1.6	Ą	SN	å	NS-D
	3/11-12/2002	1.2	1.4	1.2	1.4	ď	1.3	1.1	_	_		2.1	NS-D	1.4	2.3	SN	NS	호	NS-D
												i	1						

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Table 7

Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

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										Monitor	Wells ⁽¹⁾								
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	9-MM	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
Fluoride (continued)	3/6/2003	S N	S S	NS N	1.1	ž	SN	NS NS	NS	1.6	₽ B	4.1 NA	NS-D	1.2	SN NS	2.3	0.91 AN	žž	NS-D
Nitrate (Nitrogen as N)	8/1/1995	4.7	5.6	15	28	1.3	9.2	=	38	< 0.1	5.5	d de	ž	£ &	ž	ďΣ	å	£	SN
	8/23/1996	Ξ	7.6	7.6	12	< 0.5	10	9.8	24	< > 2	=	Š	<u>\$</u>	å	Ě	ğ	å	ĝ	SN
	3/23-24/1998	1.78	3.07	2.59	3.87	69.0	3.92	1.84	4.27	0.07	NS	< 0.05	< 0.05	š	ď	ď	ž	ž	SZ
	3/9-10/1999	0.7	2.1	2.6	V Y	0 1	3.3	0.7	3.7	Y Y	<u> </u>	-0° 5	- O	ž ;	£ Z	£ 5	<u> </u>	÷ 5	S &
	3/9-10/2000	0.33	2.9	3.7	. S. 3	ž ž	2 9	0.35	7.2	2 0	žž	S 1	S 0	0.14	+;7 0>	žž	ż ż	ž ž	3.6
	1/14/2001	NS	NS	SN	SN	æ	SN	SN	SN	SN	È	NS	SS	SN	SN	4.5	88.	ž	. S
	3/8-9/2001	4.31	2.56	4.75	3.24	a.	2.82	0.664	7.9	0.1	a N	<0.1	<0.1	SN	0>	Y V	SN	ę.	O-SN
	3/11-12/2002	5.7	3.86	8.55	2.98	ď.	3.23	0.607	6.34	<0.1	ďΝ	<0.1	NS-D	<0.1	<0.1	SN	NS	ž	Q-SN
	3/6/2003	SN	SN	NS	2.75	₽ N	SN	SN	SN	√0.1	a B	<0.1	NS-D	0.705	SN	5.82	3.67	È	O-SN
	6/20/2003	SN	SN	SZ SZ	SS	<u> </u>	SS	SN	SS SS	SZ SZ	e f	SN .	Q.S.D	0°.1	SN	SZ Z	SS	4.4 4.8	US-D
Sulfate	8/1/1995	150	150	210	230	6.7	180	091 _±	150	130	230	Š Š	d'S	dN	2 2	ž	<u> </u>	2 2	NS NS
	8/23/1996	130	150	150	140	85	80	160	180	120	130	ş	ž	Š	ž	Š	ď	å	SN
	3/23-24/1998	130	180	160	190	230	310	250	230	320	SN	190	240	ď	NP	å	N d	æ	SN
	3/9-10/1999	196	162	178	195	72	246	240	146	223	dN	227	193	ď	ď	Š	N _P	e Ž	SN
	6661/7/2-6661/01/9	SN	SN	SN	SN	ĝ	SN	SN	SN	SZ	ğ	SN	SZ	249	334	å	Š	호	192
	3/9-10/2000	530	190	250	760	Š	280	760	120	160	d.	270	210	200	170	å	å	<u>-</u> -	200
	1/14/2001	SN	SN	SN	SS	<u></u>	SN	SN	SN	SN	è !	SN	S S	SN ;	SN	180	130	ž :	SN S
	3/8-9/2001	210	0 5	180	081	ž į	260	240	150	270	2 5	330	300	SZ	380	Y S	SS	ž	NS O
	3/11-12/2002	061	051	9 4	0 7	ž į	240	057	0° 50	057	ž 5	900	O S	007	086	S S	S 5	ž 2	Z 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	3/6/2003	S S	2 2	ž ž	2 5	ž į	2 5	2 2	2 5	0/7	<u> </u>	25	7.62	0/1	S S	001	2 2	- S	- SN
	8/21/2003	S S	s s	S S	2 8	žž	S S	S S	S Z	S Z	ž ž	z z	NS-D	091	S S	Z Z	S A	NS S	NS-D
Cations (mg/L)																			
Calcium	8/1/1995	120	120	220	160	320	300	300	180	610	490	ď	ď	ďN	ď	NP	ŝ	₽	NS
	8/23/1996	120	130	68	110	62	270	230	061	390	440	ğ	È	£	Ž	å	å	ž	SZ
	3/23-24/1998	129	122	- 62	109	94	208	215	142	417	SN	259	388	ğ	N d	ď	È	ž	SX
	3/9-10/1999	80.2	129	8:06	911	141	233	197	122	214	ď	308	148	È	ģ	<u>R</u>	울 :	è:	SZ :
	6/10/16661/01/9	SN	SZ :	SZ :	SN	<u> </u>	SN .	SN	SN	SZ :	<u> </u>	SN	SN	13	389	a a	a a	ž ž	141
	1/14/2001	C V	- VZ	ž	S S	ž	è	SN	- SZ	SZ	ž Š	SS	SN	SN	SN	179	150	ž	SN
	3/8-9/2001	8.98	148	214	157	Š	172	183	381	331	ď	466	338	SN	198	NA	SN	ĝ	NS-D
	3/11-12/2002	112	121	130	143	ď	S.	g 2	Ñ.	303	å	330	NS-D	120	225	SN	SN	ŝ	NS-D
	3/6/2003	SZ	SN	SX	288	N _P	SN	SN	SN	A S	å !	470	NS-D	135	SS	A Z	Υ Y	az c	O S O
	6/20/2003	SZ ?	SN :	SZ S	SZ ;	ž į	S S	S S	S 5	2 5	ž į	2 2	J.S.Y.	K ×	2 2	, C	2 5	N N	2.00
Maximum	8/21-22/2003	S Z	S 52	S S	77	77	c4	49	K 43	130	130	ž	E E	£	E E	å	ď	ž	SN
inidgilesimi	8/23/1996	120	2 2	21	. 20	58	04	. 84	44	84	120	å	Ł	ΝP	ě	ĝ	å	ď	SN
	3/23-24/1998	39	30	- 81	70	42	47	52	36	130	SN	96	108	ž	ď	ž	ď	ě.	SN
	3/9-10/1999	19.7	31.5	20.4	21.6	62.2	54.4	47.7	28.5	43	ď	101	32.1	N N	È	ď	Š	Ř	SN
	6/10/1689-7/2/1999	SN	SN	SN	SN	Ê	SN	SN	SN	SN	ď	SN	SN	9.91	83.9	È	š	Š	44.3
	3/9-10/2000	41.3	27.5	26.3	29.2	ğ	44.3	39.1	26.2	19	Š	47.7	30.6	7.25	38.8	e Z	ê.	ž	74.5
	1/14/2001	SN	SX	SZ	NS	<u></u>	SZ	SN	SN	SZ	<u>e</u> !	NS	SN	SN	NS (5)	87.5	28.3	ž 5	SZ
	3/8-9/2001	20.7	24.9	25.9	16.6	ž :	<u> </u>	37.4	7.87		ž ž	101	2.5% C 2N	S 25	22.3	c v	c z	2 2	Z.S.
	3/11-12/2002	27.3 NS	20.7 NS	7.07 N.S	51	ž Ž	Q V	Q S	S S	Z Z	ž ž	5 9	NS-D	6.74	SN	2 X	Z Y	- <u>-</u>	Q-SN
	3/0/2003	CZ	N.	SX.	17.0	INI	CNI	CKI	22	95		3	1	;					

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Table 7

Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

										Monitor	Wells ⁽¹⁾								
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	9-MM	MW-7	MW-8	1 6-WM	MW-10 N	MW-11 N	11A	MW-12	MW-12D	MW-13	MW-14	MW-15	4W-16	OW-4
Magnesium (continued)	6/20/2003	SN	SN	SN	SN	Z :	SN	SN	SN	NS	₽ :	SN	NS-D	NA :	SN	SN	SN	45.4	US-D
Potaccium	8/21-22/2003	NS 6	S S	S	AN C	ž r	SZ Z	S 4	2 -	1.14	Z 4	Υ <u>α</u>	G-SZ ex	AN DIN	2 2	C S	7 g	2 2	J-SN NN
	8/23/1996	2.4	۳.	2.2	3.15	2.4	3.7	3.9	2.6	3 4	2 53	ž	ž	ž	Š	ż	: È	- - ½	SZ
	3/23-24/1998	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	20	SN	30	70	ž	Š	È	È	ď	SN
	3/9-10/1999	т.	4		4	4	6	4	3	15	Š	21	101	Ž	Š	Ř	ĝ	ď	SN
	6/10/16661/01/9	SN	SN	SN	SN	å	SN	SN	SN	SN	ě	SN	SN	99	9	£	e Ž	È	9
	3/9-10/2000	4.01	-	3.95	5.61	ž	86.9	4.53	4.08	18.3	ĝ.	18.6	<u>8</u>	9.02	2.84	È	È	dz !	10.7
	1/14/2001	SN	SS	S	S	 È	SZ	SN	SN	S	 탈	SN	SS	S	SZ	3.59	4.59	ê	SZ
	3/8-9/2001	۵.	2.56	2.76	2.25	<u>~</u>	5.15	2.94	3.84	19.5	ž	33.5	47.2	SN	2.26	Y Y	SZ	È.	NS-D
	3/11-12/2002	2.82	4.05	2.79	3.55	ď.	2	£	g	g	 Ž	41.5	NS-D	72	2.82	SN	SS	ŝ	NS-D
	3/6/2003	SN	SZ :	S	3.72	È	SZ	SN	SN	V.	È	39.4	NS-D	55.6	SZ	Y !	Y !	£ !	NS-D
	6/20/2003	S S	S Z	S Z	N Z	ž ž	S Z	x x	S Z	S 4	ž ž	X Z	O C	K K	S Z	SS V	S 8	8/.4 N	d-SZ C-SZ C-SZ
Sodium	8/1/1995	92	6	140	101	130	5.	3	8	099	2000	£	e N	£	2 2	£	ď	9	SN
	8/23/1996	8 8	011	2 00	120	120	. %	. 6	2 66	096	2600	ž	ž	<u> </u>	ž	 E È	: È	<u> </u>	SS
	3/23-24/1998	113	126	601	130	001	92	101	118	1090	SN	312	381	ŝ	È	å	å	È	NS
	3/9-10/1999	126	135	124	155	141	011	115	122	856	Š	225	180	원	å	£	ď	ď	NS
	6/10/1999-7/2/1999	NS	SN	SN	SN	å	SN	NS	NS	NS	ě	SN	NS	121	165	ğ	ğ	ď	103
	3/9-10/2000	123	112	115	123	ğ	95.1	95.4	1.66	181	ê.	809	129	103	114	£	g.	È	97.3
	1/14/2001	SN	SN	NS	SN	ď	SN	SN	NS	NS	ď.	NS	SN	SN	SN	144	801	È	SS
	3/8-9/2001	141	124	135	147	g.	121	118	119	410	ž	108	185	NS	142	Ϋ́	SZ	ž	NS-D
	3/11-12/2002	147	133	128	145	È	g	£	Q	e E	È	099	NS-D	79.4	127	SX	SN	ž	NS-D
	3/6/2003	SN	SZ	SN	144	Š	SN	SN	SN	NA A	ŝ	1550	NS-D	8.89	SN	Y V	Ϋ́	å	NS-D
	6/20/2003	SN	SN	NS	SN	₽.	SN	SN	SN	NS	ž	SN	NS-D	¥ :	SN	SN	SN	436	US-D
	8/21-22/2003	NS	SS	NS	NA	ď	NS	NS	NS	170	호	Y Y	NS-D	NA V	SN	53.3	63.8	SZ	O-SN
Metals (mg/L)																			
Arsenic	8/1/1995	92000	0.0043	< 0.002	0.0059	0.028	0.0033	0.0034	0.0055	0.015	9800.0	호	ez Z	Š	ď	ďΑ	₽ E	ď	NS
	8/23/1996	0.0078	9900'0	0.0059	0.0067	0.018	0.0036	0.0033	0.0044	0.028	0.011	Ě	å	ĝ	ž	호	Ž.	d.	SX
	3/23-24/1998	0.007	0.007	800.0	0.007	0.013	< 0.005	< 0.005	0.005	0.035	SN	0.019	0.013	ž	È	ď	Š	ğ	SZ
	3/9-10/1999	0.013	600.0	0.012	0.005	0.02	900.0	0.005	0.007	0.026	윤	0.036	990.0	Š	ž	<u> </u>	È :	<u>2</u>	SN
	6661/2/2-6661/01/9	SN	SZ	SN	SN	È	SN	SN	SZ	SN	<u>R</u>	SN	SNS	0.022	0.008	È 5	ż į	ž 2	<0.003
	3/9-10/2000	0.0178	0.00817	0.0178	0.0173	£ 5	0.00849	0.00953	0.00757	0.0474	ž	0.108 No. 108	0.0948 NS	0.0143 NG	C00.0 >	0.00511	N 0 0 0 0	<u>.</u> 2	SN SN
	1/14/2001	SN. O	2000	NS 000	NS 0.00074	ž 2	5N1 0.00694	2 2	5100	5110	ž	800	0.0445	S	0.00673	NA.	NS	Ē	NS-D
	3/11-12/2002	0.00939	0.00889	0.0101	0.0104	 E	£	Ð	£	0.286	- E	980.0	NS-D	0.0471	0.012	SN	SN	ğ	NS-D
	3/6/2003	SN	SN	SN	0.0125	ď	SN	NS	SN	Ϋ́	ž	0.0387	NS-D	0.0491	NS	¥.	¥.	ž	NS-D
	6/20/2003	NS	SN	SZ	SN	È	NS	SN	SN	SN	ď	SZ	NS-D	Y V	SN	SN	S	0.00674	O-SN
	8/21-22/2003	NS	NS	NS	NA	δN	NS	NS	SN	0.0598	윤	AA	NS-D	ΑN	SS	< 0.005	< 0.005	SN	US-D
Barium	5661/1/8	690.0	0.38	0.34	0.049	=	690.0	0.075	680.0	0.37	0.2	È	Š	Ž	£	£	È	È.	SZ :
	8/23/1996	0.064	0.24	690'0	0.038	0.29	0.061	990:0	0.089	0.26	0.2	<u></u>	ŝ	ď	ž	£	È	<u>.</u>	SZ
	3/23-24/1998	0.11	0.182	0.044	0.044	0.208	0.059	0.074	990.0	0.287	SN	0.163	0.157	È	È	È	ğ	å.	SZ
	3/9-10/1999	0.058	0.059	0.045	0.054	0.555	9/0.0	0.052	0.043	0.17	ž	0.174	0.144	È	È	ž	È	È	SN
	6661/2/2-6661/01/9	SN	SN	SN	NS	È	NS	SN	SN	SZ	È	SN	SZ	0.155	0.333	È	ž	Š	0.062
	3/9-10/2000	0.0917	0.108	0.0694	0.184	ď	0.046	0.236	0.0419	0.281	å	0.872	0.245	0.0962	0.113	Š	ž	£ !	1.49
	1/14/2001	SN	S	SZ	SN	È	SN	SN	SN	SN	È	SS	SS	SZ :	SN	0.0833	0.073	ž į	S S
	3/8-9/2001	0.044	611.0	0.0978	0.0055	ŝ.	0.043	0.0512	0.111	0.23	à !	0.401	0.603	SS	0.10	Y S	S S	ž Ž	200
	3/11-12/2002	90.0	0.0797	0.0805	0.0524	Ē.	₽ :	2	₽ :	0.294	ž :	0.348	O-SN	0.0865	6 2	S Z	S Z	L Q	J. S. A.
	3/6/2003	SN	SN	SN	0.15	ž	SZ	SZ	S	Y.	Ž	0.297	NS-D	i	C.	52	Ç.		200

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Table 7

Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

										Monitor Wells ⁽¹⁾	Vells ⁽¹⁾								
Analyte (units)	Sample Date	MW-1	MW-3	MM-4	MW-5	MW-6	MW-7	MW-8	6-WM	MW-10 MW-11		MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
Barium (continued)	6/20/2003	SZ	NS	SN	SN	<u>e</u>	SN	SN	NS		g.	SN	NS-D	NA	NS	SN	SN	0.0728	NS-D
	8/21-22/2003	SN	SN	SN	ΑN	ġ.	NS	SS	SS	+	e l	NA NA	NS-D	NA	SS	0.0262	0.0326	SN	NS-D
Cadmum	\$41/1995	< 0.001	0.001	0.0052	100.00 ×	< 0.001	00.00	< 0.001	< 0.001		< 0.001	ž ;	<u> </u>	ž į	2 5	ž ;	è :	ž :	SN
	3/23-24/1998	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.00	< 0.005	< 0.005	< 0.005	I SN	NP > 0.005		žź	ž ž	ž ž	ž Š	ž ž	S Z
	3/9-10/1999	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	δ	<0.005	<0.005	È	ž	ž	ž	ŝ	SN
	6/10/16661/01/9	SN	SN	SN	SN	Š	SN	SS	NS	SN	å	SN	SN	<0.005	<0.005	Š	È	È	<0.005
	3/9-10/2000	<0.005	< 0.005	0.0178	<0.005	A A	<0.005	<0.005	<0.005	<0.005	AN N	< 0.005	<0.005	<0.005	<0.005	ģ	ğ	ğ	<0.005
	1/14/2001	SN	SZ	SN	SN	ę.	SN	SN	SN	SN	N d	SN	SX	SN	SN	<0.005	<0.005	N.	SN
	3/8-9/2001	<0.005	<0.005	0.0121	<0.005	ŝ	<0.005	<0.005	<0.005	<0.005	ğ	<0.005	<0.005	NS	<0.005	NA	SN	Š	NS-D
	3/11-12/2002	<0.005	<0.005	<0.005	<0.005	å	Q.	g.	g	<0.005	ě	<0.005	Q-SN	<0.005	<0.005	NS	NS	ģ	NS-D
	3/6/2003	SN	SN	SN	<0.005	È	SN	SZ	SN	NA V	₽	<0.005	NS-D	<0.005	SN	NA VA	NA	È	NS-D
	6/20/2003	SN	SN	SZ	SN	å	SN	SN	NS	SN	ez Ez	SZ	NS-D	V.	SN	SN	SN	<0.005	NS-D
	8/21-22/2003	NS	NS	NS	NA	Νb	SN	NS	NS	<0.005	æ Ž	NA	NS-D	NA	SN	62.2	107	SN	NS-D
Chromium	\$661/1/8	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	È	£	N.	å	A.	£	ě.	SN
	9661/27/8	< 0.01	< 0.01	< 0.01	< 0.01	0.049	< 0.01	< 0.01	< 0.01	< 0.01	10.0>	ž	ďχ	ğ	Š	Š	A.	N P	SN
	3/23-24/1998	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	> 0.01	> 0.01	< 0.01	SN	< 0.01	< 0.01	å	ě	N N	ďχ	ŝ	SN
	3/9-10/1999	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	δŽ	< 0.01	< 0.01	δŽ	ž	È	a.	ď	SZ
	6/10/1999-7/2/1999	SN	SN	SN	SN	È	SN	SN	SN	SN	£	SZ	NS	0.02	0.02	ğ	g.	å	< 0.01
	3/9-10/2000	< 0.01	< 0.01	< 0.01	0.0248	È	< 0.01	< 0.01	< 0.01	0.031	g.	0.0342	0.0124	< 0.01	< 0.01	Š	Š	ď.	0.105
	1/14/2001	SN	SN	SN	SN	ď	SN	NS	SN	SN	å	SN	SN	SN	NS	< 0.01	< 0.01	ğ	SN
	3/8-9/2001	< 0.01	< 0.01	0.0104	0.0101	È	< 0.01	< 0.01	0.013	0.0109	g.	0.0392	0.0469	SN	0.0104	Y Y	SN	δŽ	NS-D
	3/11-12/2002	< 0.01	< 0.01	< 0.01	< 0.01	ď	ND	Q.	<u>R</u>	0.0246	<u>R</u>	0.023	Q-SN	< 0.01	0.0114	SN	SN	δŽ	NS-D
	3/6/2003	NS	SN	SN	0.0174	NP	SN	SN	NS	Α̈́	P.	0.0168	NS-D	0.01	SN	A A	V.	ž	NS-D
-	6/20/2003	SN	SN	SN	SN	ď	SN	SN	SN	SN	ą.	SN	NS-D	NA	SN	NS	SN	< 0.01	NS-D
	8/21-22/2003	NS	NS	NS	ΥN	ď	NS	NS	SN	< 0.01	ď	NA	NS-D	NA	NS	< 0.01	< 0.01	NS	NS-D
Lead	8/1/1995	< 0.002	< 0.002	0.0044	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		0.0025	<u> </u>	å	È	È	호	AZ D	å.	SN
	8/23/1996	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	È	È	ŝ	ž	 Ž	å	ğ	SZ
	3/23-24/1998	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	NS	< 0.005	< 0.005	ş	Š	È	ď	å.	SZ
-	3/9-10/1999	<0.005	<0.005	<0.005	< 0.005	0.013	< 0.005	< 0.005	< 0.005	< 0.005	ğ	600.0	<0.005	È	å	ę.	Š	Š	SS
	6/10/1989-7/2/1999	SN	SN	SN	SN	Š	SN	SN	SN	SN	Š	SZ	SN	<0.005	<0.005	ğ	å.	êz	< 0.005
	3/9-10/2000	<0.005	<0.005	<0.005	0.00565	ğ	< 0.005	< 0.005	< 0.005	0.00661	å	0.00595	< 0.005	<0.005	<0.005	ď	ğ	È	0.0355
	1/14/2001	SN	SN	SN	SN	<u>R</u>	SN	SN	NS	NS	È	SN	SN	SN	SZ	<0.005	<0.005	ğ	SS
	3/8-9/2001	<0.005	<0.005	0.00602	<0.005	È	<0.005	<0.005	0.00597	0.0222	È!	0.0119	0.00627	SN	<0.005	A S	S S	È 5	O S
-	3/11-12/2002	<0.005	<0.005	<0.005	40.005	å !	2 5	ON S	2 2	0.0234	ž	<0.005 0.005	U-SN G PIN	<0.003	<0.005	2 2	N N	L Q	NS-C
	3/6/2003	S S	o s	S S	COU.U.	<u> </u>	2 2	2 2	2 2	2 2	2 9	S 2	200	42	Z	y Z	SZ	<0.00	G-SN
	\$100/02/03	2 %	S X	S S	2 8	2 2	2 2	S	S S	> 00.00		2 X	NS-D	Ž	SZ	< 0.005	< 0.005	SN	NS-D
Mercury	8/1/1995	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0005	-	╄	-	< 0.0002	a.	å	ďχ	£	£	В	e Z	SN
	8/23/1996	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002		< 0.0002	ĝ	₽	ğ	å	ď.	ž	<u> </u>	SN
	3/23-24/1998	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0003	_	< 0.0002	SN	< 0.0002	< 0.0002	È	å	ž	å.	Š	SN
	3/9-10/1999	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	È	<0.0002	<0.0002	ek N	호	ğ	Š	ď	NS
	6/10/1999-7/2/1999	SN	SN	SN	SN	a N	SN	SN	S.	SS	호	SN	SN	<0.0002	<0.0002	Š	g.	<u>ę</u>	<0.0002
	3/9-10/2000	SN	NS	NS	NS	ď	<0.0002	<0.0002	<0.0002	<0.0002	호	<0.0002	<0.0002	<0.0002	<0.0002	d.	ez Ez	e Ž	<0.0002
	1/14/2001	SN	NS	SN	SN	ğ	SN	SN	SN	SZ	호	SN	SN	NS	SN	<0.0002	<0.0002	ğ	SN
	3/8-9/2001	<0.0002	<0.0002	<0.0002	<0.0002	N _P	<0.0002	<0.0002	<0.0002	<0.0002	<u>B</u>	<0.0002	<0.0002	SN	<0.0002	NA V	SN	호	NS-D
	3/11-12/2002	<0.0002	<0.0002	<0.0002	0.000243	δŽ	Ð	Q	£	<0.0002	ž	<0.0002	NS-D	<0.0002	<0.0002	SN	SN	å.	NS-D
	3/6/2003	SZ	SZ	SN	<0.0002	ď	SN	SZ	NS.	Y.	ĝ:	<0.0002	NS-D	<0.0002	SN	Y S	V.	d S	NS-D
	6/20/2003	SN	NS	SN	NS	ď	SN	NS	+	NS	e l	SN	NS-D	V.	N.	SN	SZ	<0.0002	Q-SN
Mercury (continued)	8/21-22/2003	NS	NS	NS	NA A	ď	NS	NS	NS	<0.0002	- dz	Y.	NS-D	AN	SZ	<0.0002	<0.0002	SZ	NS-D

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Table 7

Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

										Monitor	Wells ⁽¹⁾								
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	9-MM	MW-7	MW-8	MW-9	MW-10 MW-11	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14		MW-16	OW-4
Sclenium	8/1/1995	<0.004	<0.004	<0.004	<0.004	<0.004	SN	SN	SN	SN	SN	Ν	Š	ďΝ	ž	άŽ	ďΣ	ę.	SN
	8/23/1996	40.004 40.004	<0.004	<0.004	40.004 40.004	<0.004	SN	NS	SN	SN	SN 5	a v	AN V	Ē Ē	<u> </u>	å å	<u> </u>	e 9	SZ Z
	3/9-10/1999	0.00	0.006	00.00	9000	<0.005	2000	\$0.00	<0.005	50.005	2 5	<0.000	\$00.00	ž	žŽ	- E	- E	ž	2 ×2
	6/10/1999-7/2/1999	SN	SN	SN	SN	ğ	NS	SN	SN	NS	ğ	SN	NS	NS	SN	å	Š	å	SN
-	3/9-10/2000	<0.005	<0.005	<0.005	<0.005	ž	0.00926	<0.005	<0.005	<0.005	άŽ	<0.005	<0.005	<0.005	<0.005	ď	ď	È	<0 005
	1/14/2001	SN	SN	SN	SN	ď	NS	SN	SN	NS	È	SN	NS	SN	NS	<0.005	0.00523	È	SN
	3/8-9/2001	<0.005	0.00702	0.00508	0.00587	Š.	0.00617	<0.005	0.0054	<0.005	Š	<0.005	<0.005	SN	<0.005	NA	NS	£	NS-D
	3/11-12/2002	0.00549	0.00625	<0.005	0.00558	Ŗ	Q.	<u>Q</u>	S.	<0.005	ğ	<0.005	NS-D	<0.005	<0.005	NS	SN	£	O-SN
	3/6/2003	SN	SN	SN	<0.005	Š	SN	SN	NS	A A	Ϋ́	<0.005	NS-D	<0.005	SN	N A	Y Y	Š	NS-D
	6/20/2003	SN	SN	SN	SN	£ ;	SN	SN	SN	SN	<u> </u>	SS	NS-D	Y :	SN	SN	SN	<0.005	US-D
	\$177-77003	S	S	SZ		N.	S	S	S.	< 0.000	ž	Z.	NS-D	N.A.	n Z	c00.0 >	< 0.003	SN.	NS-D
PAHs (µg/L)																			
Acenaphthene	8/1/1995	< 50	01 >	> 500	< 5	< 30	<.5	<.5	< 5	<.5	<\$	ę.	₽	άN	ď	Ę.	₽	핲	NS
	8/23/1996	< 10	01 >	< 30	< 5	< 30	< 5	< 5	< >	< 5	< 5	ĝ	ğ	£	Νď	ğ	å	ĝ	NS
	3/23-24/1998	or >	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	Š	<0.3	<0.3	ž	ď	÷	å	롼	SN
	3/9-10/1999	< 0.1	< 0.1	<2.0	< 0.1	<2.0	<0.1	<0.1	< 0.1	< 0.1	š	< 0.1	< 0.1	Ē	ď	ď	È	ž	SN
·····	6/10/1666-1/01/9	NS	SN	SN	SN	Ě	SN	SN	SN	NS	ğ	SN	SN	-0°	< 1.0	ď	Š	<u>a</u>	<0.1
	3/9-10/2000	0.28	< 0.1	< 0.1	<0.1	<u>e</u>	€0.1	-0°	<0.1	< 0.1	ž	<0.1	0.1	<0.1	<0.1	ž	È	å	<0.1
	1/14/2001	S	SN	SN	SZ	ď	SN	NS	SN	SZ	ď	SN	SN	SN	SZ	-0 -0	V0.1	Š	SN
	3/8-9/2001	<0.12	<0.13	<0.12	00	È	<0.13	<0.12	<0.12	<0.15	δŽ	<0.13	<0.13	SN	<0.12	X A	NS	<u></u>	US-D
	3/11-12/2002	< 0.1	0.11	< 0.1	- O ×	ž	g	QN	£	Q.	È	-0°	NS-D	-0 -0	-0°	SN	SN	<u></u>	NS-D
	3/6/2003	SS	SN	SN	AN	È	SN	SN	SN	NA A	Š	0 -	NS-D	-0 -	SZ	NA NA	Ϋ́	g Z	NS-D
	6/20/2003	SN	SZ	SZ	SN	ž	SN	SN	SZ :	NS	£ :	SZ ;	NS-D	Y ;	SN	SN S	SZ	· · · · · · · · · · · · · · · · · · ·	O-SN
	8/21-22/2003	SZ	SZ S	SN	1.0 >	d (SN	SZ Y	S	1.0 >	ž	AN div	U-SN EN	AN ON	S S	ON ON	dN dN	2 2	O-SN
Acenaphthylene	\$601/1/8	06 0	2 9	0000	? (06 / 1	2 (7 (7 (? ~	ž §	ž 2	- 2	<u> </u>	2 2	Ę	: È	2 2
-	8/23/1996	01 0	2 5		° é	S 5	ु ह	Ç	 ? {) ¥	5 6		- A	2 2	Z Z	Z å	 E &	S
	3/0.10/1090	2 5	5 6			7 0	7 5		; o	100	2 5	0 >	10 >	a. Z	. 2	ž	 E	<u>-</u>	SN
	6/10/1999	, ¥	5 y	, y	, ×	Ç E	SN	SX	SZ	SS	£	SS	SN	-0>	< 1.0	È	È	ę.	-0×
	3/9-10/2000	160	CO >	0 >		ž	<0.1	<0.1	0	4.0	Ν̈́	-0×	<0.1	<0.1	8.1	È	æ Ž	ž	<0.1
	1/14/2001	SS	SN	SN	SN	Ν	NS	SN	SN	SN	a.	SN	SN	SN	SN	<0.1	<0.1	ď	SN
	3/8-9/2001	<0.12	<0.13	<0.12	<0.1	Ν	<0.13	<0.12	<0.12	0.71	Š	0.35	<0.13	SN	<0.12	Y Y	SN	ď	NS-D
	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	ď	N Q	Ω Ω	£	Q.	ž	=	NS-D	<0.1	-0°	SN	SN	<u>2</u>	NS-D
	3/6/2003	SN	SZ	SN	NA	È	SN	SS	SN	Y X	a Z	<0.1	NS-D	<0.1	SN	Y !	¥ S	ž	Q-SN
	6/20/2003	SZ	SZ	SN	SN	Š	SZ	SS	SN	SZ	<u>2</u>	SZ :	Q-SN	¥;	S S	S S	S S	C 2	200
	8/21-22/2003	SN	SN	SN	< 0.1	de S	SZ	SN	SN	< 0.1	ż	A O	O-SN-O	Y D	S &	7 d2	a de	2 2	SN
Anthracene	8/1/1995	05 5	2 9	005 >	Ç ,	06 /	7 1	2 4	7 (7 (7 5	2	: B	ž	: 2	ž	불	å	SZ
	8/23/1996	2 9	2 6	5 5	5 5	7 5	7 6	; 6	. 6	9	SX	¢0.1	9	Š	È	ž	ž	Š	S
	3/9-10/1999	20 /		. 0		<2.0	Ç 0.	0.0	< 0.1	< 0.1	å	< 0.1	< 0.1	Š	È	å	ž	g _N	SN
	6/10/1666-1/2/1666	SN	SZ	SS	SN	Š	SN	SN	SN	SN	ď.	SN	SN	<0.1	< 1.0	å	Ē	Š.	-0>
•	3/9-10/2000	0.12	< 0.1	< 0.1	<0.1	Š	<0.1	<0.1	<0.1	< 0.1	ğ	<0.1	<0.1	<0.1	<0.1	å	È	ž	<0.1
	1/14/2001	SN	SN	SN	SN	È	SN	SN	SN	NS	ž	SN	SS	SN	SS	0	0.1	Ž	SN
	3/8-9/2001	<0.12	<0.13	<0.12	€0.1	Š	<0.13	<0.12	<0.12	<0.15	ž	<0.13	<0.13	NS	<0.12	Y Y	SZ	Ž	Q-SN
	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	È	g	£	g	£	È	-0.	NS-D	00	0	SN	SN ;	è :	O-SN
	3/6/2003	SN	SN	SZ	YA !	<u>e</u>	SN	SN S	SN	V S	È S	0.0	O-SN G-SN	- CO. 1	2 2	A N	Y Z	Z V	- C
	6/20/2003	SZ :	SZ :	SZ ;	SZ	ž į	ž ;	S S	S S	S .	ž	2 2	G-SN G-SN	ξ 7 2	S 2	c c	2	SX	O.S.
	8/21-22/2003	SS	NS	NS	× 0.1	N _P	SZ	S	S	< 0.1	ž	NA NA	No-CV	5	Chi	707		2	22:

P:/Wp\BJSERV\12832\117ta\TABLE7

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Table 7

Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

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										Monitor	Wells ⁽¹⁾								
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	8-MM	6-WW	MW-10 MW-11		MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
Benzo(a)anthracene	8/1/1995	< 50	> 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	МP	ďŽ	ď	ďΣ	ď	₽	ď	NS
	8/23/1996	< 10	> 10	< 30	< 5	< 30	< 5 <	< 5 <	< 5	< > 2	< 5	Š	NP NP	N _P	ž	å	Ē	ě	SN
	3/23-24/1998	× 10	<0.1	-0×	9	√0.1	0.0	<0.1	-0°	V0.1	SN	<0.1	.0 1.0	Š	È	ž	ŝ	ž	SZ
	3/9-10/1999	V 0.1	< 0.1	0.2	< 0.1	<2.0	-0.1	-0°	< 0.1	< 0.1	ģ	< 0.1	< 0.1	å	È	ŝ	È	ĝ	SZ
	6/10/1999-7/2/1999	SZ	SN	SZ	SZ	È	SN	SZ	SZ	SS	È	SN	SN	<0.1	< 1.0	È	È	È	0 -
	3/9-10/2000	81.0	- O >	- 0.0 - 0.1	0.0	È S	0.1	0.0	00.0	< 0.1	ž ,	- O- I	0 5	0.1 1.	V. 0.1	Š.	Ē,	2 :	0.5
	3/8.9/2001	5 5	2 5	S S	Z E	ž Ž	S	S C	S S	S S	ž Ž	S S	S S	S S	2 5	0		ž	Z S
	3/11-12/2002	200	1100	100	7 0	2	9 5	7 5	7 5	2 5	2 2	3 6	CI ON	S =	7 7	Z Z	2 2	2 2	2 2 2
	3/6/2003	SN	NS	SZ	Y X	ž	SS	SN	SS	Y X	ž	. O	NS-D	0	S	Z Z	Z Z	 Z	Q-SN
	6/20/2003	SN	SN	SN	NS	δŽ	NS	SN	SS	SX	å.	SN	NS-D	N A	SN	SN	SN	. ° S	Q-SN
	8/21-22/2003	NS	SN	NS	< 0.1	Ā.	NS	NS	NS		å	NA A	NS-D	NA	SN	< 0.1	< 0.1	SN	Q-SN
Benzo(k)fluoranthene	8/1/1995	< 50	ot >	> 500	<>	< 30	< 5	\$	<.5	< 5	< 5	ğ	£	ďΖ	£	ďχ	ę.	È	SN
	8/23/1996	< 10	< 10	< 30	< 5	< 30	< \$	< 5	< 5	< 5	< 5	ĝ	윤	ď	å	ď	ď	ď	SN
	3/23-24/1998	× 10	<0.1	<0.1	√0.1	<0.1	-0×	<0.1	<0.1	-0×	SN	<0.1	<0.1	ě	È	Š	ğ	ğ	SN
	3/9-10/1999	< 0.1	< 0.1	0.2	< 0.1	<2.0	<0.1	-0°	< 0.1	< 0.1	ď	< 0.1	< 0.1	Š	š	è	å	ž	SS
	6/10/1999-7/2/1999	SN	NS	SN	SN	₽ Z	SN	SN	SZ	SN	È	SN	SN	<0.1	< 1.0	å	ğ	È	<0.1
	3/9-10/2000	< 0.1	< 0.1	< 0.1	< 0.1	ğ	< 0.1	< 0.1	< 0.1	< 0.1	ğ	< 0.1	< 0.1	< 0.1	< 0.1	Š	- E		< 0.1
	1/14/2001	SN	SN	SN	SN	Ŋ.	NS	SN	SS	SN	ğ	SN	SN	SN	SN	<0.1	<0.1	ď.	SN
	3/8-9/2001	<0.12	<0.13	<0.12	<0.1	Š	<0.13	<0.12	<0.12	<0.15	₽.	<0.13	<0.13	SN	<0.12	N A	SN	<u>a</u>	NS-D
	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	Š	Q.	g	£	<u>R</u>	ď	<0.1	NS-D	<0.1	<0.1	SN	SN	ž	NS-D
	3/6/2003	SN	SN	SN	NA A	호	SN	NS	SN	AN	ΝP	<0.1	NS-D	<0.1	SN	N'A	Ϋ́	ğ	NS-D
	6/20/2003	SN	SN	SN	SN	ğ	SN	SN	SN	SN	Ν	SN	NS-D	Ν	SZ	SN	NS	< >	NS-D
	8/21-22/2003	NS	NS	NS	< 0.1	δ.	NS	NS	SN	< 0.1	ď	NA	NS-D	ΑĀ	SN	< 0.1	< 0.1	NS	NS-D
Benzo(a)pyrene	8/1/1995	< 50	< 10	> 500	< 5	< 30	< 5	< 5	< × 5	<.	< 5	È	ď	Š	È	ž	ž	ğ	SN
	8/23/1996	< 10	< 10	< 30	<>	< 30	< 5	< >	< × 5	< > 5	< > <	È	Š	Š	ģ	ž	È	az Z	SN
	3/23-24/1998	< 10	<0.1	<0.1	<0.1	<0.1	-0×	€0.1	<0.1	<0.1	SN	0,	<0.1	È	ž	È	ĝ	e B	SN
	3/9-10/1999	< 0.1	< 0.1	0.2	< 0.1	<2.0	<0.1	1.0>	< 0.1	< 0.1	å	< 0.1	< 0.1	S.	£	è	Š	호	SN
	6/10/16661/01/9	SN	SN	NS	NS	ĝ	SN	SN	SN	SN	ě	SN	SN	<0.1	× 1.0	È	È	Š.	-0>
	3/9-10/2000	< 0.1	< 0.1	< 0.1	< 0.1	È	< 0.1	< 0.1	< 0.1	< 0.1	ě	< 0.1	< 0.1	< 0.1	< 0.1	ŝ	È	ď	< 0.1
	1/14/2001	SN	NS	SN	NS	È	SN	SN	SN	SN	<u>a</u> z	SN	SN	NS	SZ	<0.1	<0.1	å.	SN
	3/8-9/2001	<0.12	<0.13	<0.12	<0.1	£	<0.13	<0.12	<0.12	<0.15	È	<0.13	<0.13	SN	<0.12	YZ	SN	ž	O-SN
	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	ğ	Q	<u>2</u>	g	2	È	0.0	NS-D	- 0	- O	S.	SN	È!	Q-SN
	3/6/2003	NS	SN	SZ	Y Y	Š	SN	SZ	SZ :	Y !	È!	0.1	Q-SN	<0.1	S S	Y S	K Z	ž v	Z 2.2
	6/20/2003	S	SZ	S S	S. S.	ž į	SS	2 2	S S	SS	2 2	2 2	d-sz.	K V	2 %	2 2	2 0	S	O-SN
	8/21-22/2003	2 5	S S	200	10/	200	5 5	50	\$ >	5	ž v	£ Z	Ž	d.V	£	ν. V.	NA A	ž	NS
	8/73/1996	01 >	01 >	< 30		< 30	\$ \$	< >	. v	< >	< 5	ž	Š	Š	ŝ	N.	NA	å	SN
	3/23-24/1998	× 10	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	SN	<0.3	<0.3	ž	ŝ	Y.	Ϋ́	å	SN
-	3/9-10/1999	< 0.1	< 0.1	<2.0	< 0.1	<2.0	<0.1	<0.1	< 0.1	< 0.1	ą.	< 0.1	< 0.1	ď	ŝ	N.	NA	È	SN
	6/10/16661/01/9	SN	SN	SN	SN	ğ	SN	SN	SZ	SN	ž	SN	NS	<0.1	< 1.0	ž	Y Y	Š	0>
	3/9-10/2000	22	< 0.1	0.36	€0.1	ğ	<0.1	.0>	1.5	<0.1	ď	0.1	-0×	<0.1	1.6	Ϋ́	N A	ž	1.0>
	1/14/2001	SN	SN	SN	NS	È	SN	SN	SZ	SZ	È	SN	SN	SN	SS	0	0.1	ž	SN
	3/8-9/2001	<0.12	<0.13	<0.12	~0.1	ŝ	<0.13	<0.12	<0.12	<0.15	È	<0.13	<0.13	SN	<0.12	Y Y	SZ :	È :	O-SN
	3/11-12/2002	< 0.1	<0.11	< 0.1	× 0.1	È	Ð	2	2	 2	Š	0.1	NS-D	V0.1	70.	SZ	SZ ;	ż ;	G-SN G-SN
	3/6/2003	SN	SN	SZ	V S	울!	SN	SS :	SZ :	Y S	è :	0.0	U-SN C 21x	0.1 در	S N	A V	K N	ž V	אילי מ
	6/20/2003	SN	SN	SN	SN 5	2 2	SN	S X	S Z	SN S	à à	Z Z	O-SZ C-SZ C-SZ	Y X	S S	S 0 V	× 0.1	SN	O-SN O-SN
Manhehalana	8/21-22/2003	SN S	SN C	1700	, v	470	S. S.	\$ \$	2 2	92	\$ × 5	ž	ž	ž	£	ž	£	g.	SN
l'apmiaiche.	8/23/1996	230	011	440	< 5	< 30	< 5	< 5	< 84	> 76	<.5	Α̈́	ďΝ	ēz	È	ď.	ďΝ	NP	NS

Table 7

Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

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E Property

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										Monitor	Wells ⁽¹⁾								
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	9-MM	MW-7	MW-8	MM-9	MW-10 N	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
Naphthalene (continued)	3/23-24/1998	130	23	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		00	NS	8.0	п	ď	NP NP	ď.	e Z	호	SN
	3/9-10/1999	10	œ	170	0.1	091	<0.1	<0.1	<0.1		δN	V0.1	19	ĝ	ğ	N N	ž	å	SN
	6/10/1999-7/2/1999	SZ	SN	SN	SN	È	SN	SN	NS		È	SN	SN	9.0	34	È	는 원	Š	.0 1.0
	3/9-10/2000	2.4	.0>	0.44	1.0>	호	<0.1	<0.1	0.42		ďΖ	0.12	0.26	<0.1	99	å	å	È	<0.1
	1/14/2001	SZ	SZ	SN	SN	ğ	SN	SZ	SZ		ŝ	SS	SZ	SS	Si		 0 	Š	SS
	3/8-9/2001	<0.12	<0.13	<0.12	-0°	ģ	<0.13	<0.12	<0.12		È	0.21	<0.13	SN	<0.12	Y Z	SS	ž	NS-D
-	3/11-12/2002	< 0.1	- O.I.	< 0.1	< 0.1	È	g	g	g		ž	0.14	NS-D	-0°	.0 1.0	SN	SZ	š	NS-D
	3/6/2003	SZ	SN	SN	NA A	È	SN	SN	SN		함	0.1	NS-D	-0>	SN	NA V	Y Y	å	NS-D
	6/20/2003	SN	SN	SN	SN	ŝ	SN	SN	SZ		ě	SZ	NS-D	Ϋ́	SN	SN	SN	< 5	NS-D
	8/21-22/2003	SN	SN	NS	< 0.1	Š	NS	SN	SN	- 1	탈	Ϋ́	NS-D	NA V	SN	< 0.1	× 0.1	SN	NS-D
Phenanthrene	8/1/1995	< 50	01 >	< 500	< 5	< 30	< > >	< > 5	< > 5		< 5	È	ž	ğ	È	<u>ē</u>	<u></u>	ď	SS
	8/23/1996	01 >	< 10	< 30	<.5	< 30	<\$	< 5	< × 5		< 5	ĝ	ž	ď	È	È	£	å	SS
	3/23-24/1998	< 10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		SN	<0.1	<0.1	Ž	Š	ĝ	å	ğ	SN
	3/9-10/1999	< 0.1	< 0.1	7	< 0.1	<2.0	<0.1	V0.1	< 0.1		Š	< 0.1	< 0.1	호	ď	Š	£	È	S
	6/10/16661/01/9	NS	NS	SN	SN	ş	SN	SN	SN		È	NS	SN	< 0.1	× 1.0	Š	È	δŽ	<0.1
	3/9-10/2000	0.65	<0.1	< 0.1	<0.1	Ν	.0 1.0	\$0°1	0.0	<0.1	È	<0.1	<0.1	<0.1	0.22	ď	άŽ	å	<0.1
	1/14/2001	SN	SN	SN	NS	Š	SN	SN	SN	SN	ď	SN	SN	SN	SN	<0.1	√0.1	g.	SN
	3/8-9/2001	<0.12	<0.13	<0.12	<0.1	å	<0.13	<0.12	<0.12	<0.15	A N	<0.13	<0.13	SN	<0.12	V.	NS	ğ	NS-D
-	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	ğ	g	Q	P.	£	ę.	0.1	NS-D	40°.	<0.1	NS	SN	ŝ	NS-D
	3/6/2003	SN	SN	SN	Y.	È	SN	SN	SN	Y.	월	<0.1	NS-D	<0.1	SN	Ϋ́	Y Y	È	NS-D
	6/20/2003	SZ	SN	SN	SN	Š	SN	SN	SN	NS	물	SN	US-D	NA A	SN	NS	SN	< 5	NS-D
	8/21-22/2003	SN	SN	NS	< 0.1	NP	NS	NS	NS	< 0.1	NP	NA	NS-D	NA	SN	< 0.1	< 0.1	NS	NS-D
Рутепе	\$661/1/8	< 50	> 10	< 500	< 5	< 30	< 5	< 5	<. 5	< 5	< 5	- N	δN	ď	Ž	ď	È	È	SN
	8/23/1996	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	°,	ğ	ď	N N	È	호	å	ž	SN
-	3/23-24/1998	< 10	0.0	<0.1	<0.1	70.0	0.1	<0.1	<0.1	<0.1	SN	<0.1	-0°	Ĕ	È	—-	ž	È	SN
	3/9-10/1999	< 0.1	< 0.1	0.4	< 0.1	<2.0	<0.1	-0.1	< 0.1	< 0.1	ΝP	< 0.1	< 0.1	ď	ž	È	ď	È	SN
	6/10/1999-7/2/1999	SN	SN	SN	SN	ğ	SN	SZ	SN	SN	<u>s</u>	SZ	NS	< 0.1	< 1.0	È	a.	ž	-0°.
	3/9-10/2000	< 2	< 0.1	< 0.1	< 0.1	È	< 0.1	< 0.1	< 0.1	< 0.1	ŝ	< 0.1	< 0.1	< 0.1	< 0.1	<u> </u>	g S	ž	< 0.1
	1/14/2001	SN	SN	NS	SN	ğ	SN	SN	SN	SN	<u>R</u>	SN	SN	SN	SN	 0.1	~0·1	è.	SZ
	3/8-9/2001	<0.12	<0.13	<0.12	< 0.1	È	<0.13	<0.12	<0.12	<0.15	ŝ	<0.13	<0.13	SN	<0.12	Ϋ́	S	ŝ	O-SN
	3/11-12/2002	< 0.1	<0.11	< 0.1	< 0.1	ď	QN	Q.	Q.	Q	ŝ	0.0	NS-D	<0.1	<0.1	SN	SN	ğ	O-SN
	3/6/2003	SN	SN	NS	N A	Ř	SN	SZ	SN	N.A	è	<0.1	NS-D	<0.1	SN	Y Z	Y X	å.	NS-D
	6/20/2003	SN	SN	SN	SN	g 2	SN SN	S NS	S S	NS 102	£ £	S Z	US-D	∢ × Z Z	S S	NS ^ 0.1	NS	NS S	O-SN NS-D
	8/21-77/2003	CN	CK.	CNI	5		2	2											
VOCs (µg/L)																		-	
Acetone	3/23-24/1998	SN	NS	SN	SN	NS	SN	NS	SN	SN	SZ	×100	<100	È	£	È	È :	Ē !	SZ
	6/10-1/5/66	SN	SN	SN	SN :	<u> </u>	SS :	SN	SN	S S	£ £	S S	Z Z	130 N A	8 4	ž ž	ž Š	ž ž	8 ×
	6661/7//-01/9	Z 2	۲ ×	¥ 5	ξ <u>ς</u>	2	V 4N	\$ \$	Y Z	Y Z	- E	Y X	×	Y Y	ž	√100	×100	£	NS-D
	3/9-10/2000	ξ δ 2 2	ζ <u>4</u>	Z Z	Y Z	ž	Y Z	. Y	×	Y X	<u> </u>	¥ Z	NS-D	NA A	ΥN	SN	SN	È	NS-D
	3/6/2003	SZ	SN	SN	ž ž	ž	SS	NS	SN	NA	å	Ϋ́	NS-D	VA	SN	N V	×Z	<u>۾</u>	NS-D
	6/20/2003	SZ	SZ	SX	NA	£	SN	NS	SN	Ą	ĝ	NA	NS-D	NA	NS	NA	ΑN	> 100	NS-D
sec-Butylbenzene	3/23-24/1998	SN	SN	SN	NS	SN	NS	NS	NS	NS	NS	ď	È	È	å	å	Š	ž	V V
	6/10-1/5/99	SN	SN	NS	NS	È	SN	SN	SN	SS	 È	NS	SN	<\$	S	È	È	ž	\$
	6/10-7/2/1999	Ϋ́	Ϋ́Z	N A	Ϋ́Z	욷	Ϋ́	Ϋ́	¥ Z	Ϋ́	æ	Y.	¥ Z	Y :	Y :	ž Š	ž (ž	2 5
	3/9-10/2000	Ϋ́	A A	Ϋ́	V Y	å !	¥Z :	¥ ;	YZ ;	¥ ;	È S	Y X	A N	Υ S	Y Z	0.6	0; N	ž ž	G-82
	3/11-12/2002	Y S	Y S	Y S	Υ :	ż :	A O	K 2	Y 2	¥ ×	<u> </u>	. z	d-SN	Y X	SZ	2 ×	Y Z	ż	NS-D
	3/6/2003	2 Z	s s	2 2	¥ × ×	ž ž	c v	S X	2 2	Y X	a a	: X	NS-D	Y X	SZ	¥.	N A	< ×	NS-D
	6/20/2003	S	S	SZ	KN.	JNI	CNI	200	2										

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Table 7

Summary of Groundwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

10.7

MW.3 MW.3 MW.4											Monitor	Wells ⁽¹⁾								
Continue	Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	9-MM	MW-7	MW-8	6	MW-10 N	1W-11 N	14	2	MW-12D	MW-13	MW-14	5	MW-16	OW-4
Statistical Particle Statistic Stati	Isopropylbenzene	3/23-24/1998	SN	NS	NS	SN	SN	NS	NS	SN	SN	NS	ď	ďN	ď	ž	욷	Š	<u>a</u>	SN
Section Sect		6/10-7/5/99	SN	NS	SN	SN	ĝ	SN	SN	SN	SN	Ř	SN	NS	<\$	31	È	å	ğ	< 5
1,11,12,120, 1,14, 1,1		6/10-7/2/1999	ΝΑ	A A	-VA	Ϋ́	ŝ	Y.	NA A	NA A	Y Y	ğ	Y Y	Y Y	NA	Y Y	È	È	È	SS
1407000		3/9-10/2000	Ϋ́	A'N	۲ ۲	¥ Z	ď	Y Z	Y.	¥ Z	Ϋ́	êz	YZ :	ν V	Y :	Y Z	0.5.0	<5.0	운 !	US-D
Figure F		3/11-12/2002	N A	Y N	Y Z	Y X	a. a	Y Z	A N	Y Z	V V		Y 2	O-SN	Υ Υ Z Z	Y Z	Z Z	S Z	ž ž	O S S
Control		6/20/2003	SS	SN	S S	Y Z	ž	S S	S S	SN	Y Y	ž	- ×	US-D	Y X	SZ	Y X	Y Y	< > < >	NS-D
6 (1)(2)(2)(2)(2)(3)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)	Naphthalene	3/23-24/1998	NS	SN	NS	SN	SN	SN	NS	SN	SN	NS	호	å	₽.	È	ď	ď	<u>4</u>	NS
\$\(\) \$\(\)		6/10-1/5/6	NS	NS	SN	SN	Ē	SN	SN	SN	NS	Ê	SN	SN	< 5	190	ğ	È	₫.	< > S
1991-120020		6/10-7/2/1999	Ϋ́	Y.	A A	NA	ğ	Y.	NA A	ΑN	N A	å	NA	NA	Y V	Ϋ́	Š	Š	Ē	sx
14 15 15 15 15 15 15 15		3/9-10/2000	Ϋ́	N.	Ϋ́	Y Z	ż	¥ Z	¥Z	NA VA	Ϋ́	Ř	Ý Z	٧×	Ϋ́ X	A V	<5.0	<5.0	È	U-SN
Section Sect		3/11-12/2002	¥ S	Y S	Y S	×;	<u>e</u>	Y S	A S	¥ ;	¥ :	£ !	¥;	O-SN	¥;	AN S	SN ;	SN	<u> </u>	U.S.V
Figure		3/6/2003	s s	SN SN	s s	e e	ž ž	s s	s s	s z	ς ς Z Z	ž ž	ν ν Z Z	NS-D NS-D	ς ς Z Z	S S	e e	Y Y	ş	NS-D
6-01-27099 NS NS NS NS NS NS NS NS NS NS NS NS NS	n-Propylbenzene	3/23-24/1998	SN	SN	NS	NS	SN	SN	SN	NS	NS	SN	£	È	ę.	ď	£	ŝ	δ	SN
State Stat		6/10-7/2/99	SN	SN	NS	SN	ď	SN	SN	SN	SN	ž	SN	NS	<.5	89	ģ	ğ	å.	< 5
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3011-127002		3/9-10/2000	NA A	٧X	NA	NA	ď	NA	Ϋ́	Y Y	A A	å	NA V	Y Y	¥ Z	Ϋ́Z	<5.0	<5.0	호	NS-D
171-21/1998 NS		3/11-12/2002	Y.	¥ Z	ΝΑ	Y X	Š	N A	NA	Ϋ́	¥	ş	ΑΧ	NS-D	Ϋ́Α	Y X	NS	SN	ᇫ	NS-D
173-2411999		3/6/2003	SZ	SZ :	SN	ž :	<u>E</u> :	SN	S S	SN	¥ :	ē.	¥ ;	NS-D	¥ ;	SN	Υ Z	Υ ź	E (U-SN G-SN
## Colored No. No. No. No. No. No. No. No. No. No.		6/20/2003	SZ S	SS	S S	Y S	ż	S	S	S	AN SI	ż	AN E	O-SN	Y S	S E	YN GX	Z 2	7 9	O-ENI NG
6(10.772)999 NA NA NA NA NA NA NA NA NA NA NA NA NA	1,2,4-Trimethylbenzene	3/23-24/1998	S S	S Z	S Z	x x	S S	S S	s s	s s	2 Z	S E	ž Z	ž Š	ž v	S 8	žž	žž	ż ż	5 5
39-102000 NA NA NA NA NA NA NA NA NA NA NA NA NA		6/10-7/2/1999	Z Z	Y X	Z Z	Y X	ž	Y Y	Y X	NA.	¥	ę ż	Y Y	¥	Ϋ́	NA	£	ę.	Š	SN
111-122002 NA		3/9-10/2000	ΝΑ	V.	NA	Ϋ́	ď	N A	Y Y	NA	A A	ž	Y V	NA	NA V	Y.	<5.0	<5.0	ď	NS-D
316-2003 NS		3/11-12/2002	NA	N	NA	N A	a N	N.	N A	Z Y	NA A	ž	NA A	NS-D	NA	NA	NS	SN	ž	NS-D
No. 10.0003 No. 10.0003		3/6/2003	SN	SN	SN	N A	ž	SS	SN	SN :	YA :	윤 !	¥ ;	NS-D	Ϋ́ς ;	SN	¥ ;	۷ ×	Š ;	O-SN C SN
173-241999 NS		6/20/2003	NS	NS	SN	ΑN	S I	SN	SN	SN	¥ !	<u>ک</u> ا	¥ !	O-SN	Y E	S	ξ.	Y E	Y E	U-SN
\$Stripped by the control of	1,3,5-Trimethylbenzene	3/23-24/1998	SN	SS	SN	SN	S E	SN	S N	S S	S N	S a		ž ž	ž	ž 8	ž ž	ž ž	ž ž	S &
3/1-12/2002 NA NA NA NA NA NA NA NA NA NA NA NA NA		6/7/1-01/9	N N	2 Z	e z	2 2	žž		2 2	2 X	Z Z		Z Z	Y X	Y Y	NA N	è	ž	ž	SN
3/11-12/2002 NA NA NA NA NA NA NA NA NA NA NA NA NA		3/9-10/2000	S Z	¥ Z	Y Z	¥ Z	- Z	¥	¥	Ϋ́Z	NA VA	š	A A	Y Y	NA	Y X	<5.0	<5.0	ž	NS-D
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6/20/2003 NS NS NS NS NS NS NS NS NS NS NS NS NS		3/6/2003	SN	NS	SN	A A	È	SN	SN	SN	Y :	È,	¥;	O-SN	Y Z	SN P	Y Z	¥ ×	å å	O-SN O-SN
\$\frac{\text{S12-241998}{\text{S12-241998}}\$ \text{NS}\$		6/20/2003	SN	SN	SN	AN Six	d S	S S	SZ SZ	SIZ	AN ON	ž ž	N dN	d dN	S S	2 2	£ £	a _Z	£	NS
8(1)-121000 NA NA NA NA NA NA NA NA NA NA NA NA NA	MIBE	3/23-24/1998	S Z	2 2	2 2	S X	2 2	S	SZ	S S	SN	ž	SZ	NS	× 10	25	ď	Α̈́	g.	01 >
3/9-10/2000 NA NA NA NA NA NA NA NA NA NA NA NA NA		6/10-7/2/1999	Y Y	Y X	Y Z	NA	ş	- Y	Y X	Y Y	NA A	È	NA V	ΝΑ	Y V	AN	Š	È	È	SN
3/11-12/2002 NA NA NA NA NA NA NA NA NA NA NA NA NA		3/9-10/2000	NA A	Ϋ́	NA A	NA	ğ	N A	Y X	V.	Ϋ́Z	æ	NA A	Y Z	A V	AN	<5.0	<5.0	물 !	Q-SN
3/6/2003 NS NS NS NS NS NS NS NS NS NS NS NS NS		3/11-12/2002	Ϋ́	N A	Y.	ΝΑ	È	NA	NA A	A N	Y.	N P	Y Y	NS-D	Y :	Y S	SZ ;	SZ Z	2 5	O S
8/1/1995		3/6/2003	SN	SN	SN	¥ ž	£ 9	SZ	S N	S Z	Y X	e e	Y Z	NS-D	y y	s s	ς χ Σ	X X	S S	NS-D
8/11/1995		6/20/2003	S.	S.	CV	C.	INC	2		2										
8/23/1995 < \$6 97 < \$600 < 5 42 < 5 < 5 < 5 < 5 < 5 < 5 NP NP NP NP NP NP NP	SVOCs (µg/L)																		-	
NS NS NS NS NS NS NS NS NS NS NS NS NS N	2,4-Dimethylphenol	8/1/1995	< 50	64	< 500	< 5	42	< >	< 5	< 5	< 5	< 5	È	ž	ž	È	È !		£ :	SS
NS NS NS NS NS NS NS NS NS NS NS NS NS N		8/23/1996	NS	SN	SN	SX	SN	SZ	SN	SZ :	SZ :	SN	È;	ē :	e v	÷ 3	ž ž	ž ž	ż g	2 Y
NA NA NA NA NA NA NA NA NA NA NA NA NA N		6/10-7/2/1999	SN	SN	SN	SZ ;	È :	SN ;	SN	SZ Z	SN SN	à g	S S	z z	° 2	o y	ž ž	ž ž	ž ž	7 ×2
		3/9-10/2000	∀ ₹ ₹	∢ ∢	e e	∢ ∢ Z Z	ž ž	ζ ζ Z Z	Z Z	Z Z	Y Z	ž	Ç Z	NS-D	Y V	¥ Z	SN	SZ	È	NS-D
NS NS NA NP NS NS NA NP NA NS-D NA		3/6/2003	SZ	SN	NS	NA	£	NS	NS	NS	NA	ez Z	NA A	NS-D	NA	SN	NA	A'A	- A	NS-D

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Summary of Grorndwater Quality Parameters and Detected PAHs, Metals, VOCs and SVOCs Hobbs, New Mexico Facility
BJ Services Company, U.S.A. Table 7

12.00 10.00 10.00

12. B. 40.

										Monitor	Wells ⁽¹⁾								
Analyte (units)	Sample Date	MW-1	MW-3	MW-4	MW-5	9-MW	MW-7	MW-8	MM-9	MW-10 MW-11	MW-11 N	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	MW-16	OW-4
2.4-Dimethylphenol (continued)	6/20/2003	NS	Š	SX	Z Y	<u></u>	SZ	SN	SN	¥ Z	ž		NS-D	ΝA	SN	ΝA	Ϋ́	\$ ×	Q-SN
2-Methylnaphthalene	8/1/1995	280	62	1500	<.5 - 5	150	<.5	\$	36	23	<.5	₽ E	ez Z	ď	Š	ďN	ΝP	ďN	SN
	8/23/1996	SN	SN	SN	SN	SN	SN	SN	SN	NS	SN	₽ N	ď	N N	Š	ď	ž	ď	SN
	6/10-7/2/1999	SN	SN	SN	SS	å	SN	SN	SZ	SN	ž	SN	SN	< 5 5	29	έ	ğ	ď	۵.
	3/9-10/2000	Ϋ́Α	Ϋ́	ΝΑ	N A	È	NA	N'A	NA NA	A A	ğ	NA A	N A	NA	N.	Š	ď	ď	SN
	3/11-12/2002	Ϋ́	Y.	ΑN	A A	<u>R</u>	NA	N A	NA A	× X	Š	Y.	NS-D	NA	Ϋ́Α	SN	NS	ď	NS-D
	3/6/2003	SZ	SN	SN	¥ X	ďΝ	SN	SN	SN	Y.	È	NA A	NS-D	Ϋ́	NS	ΝA	Ϋ́	Ž	NS-D
	6/20/2003	NS	NS	NS	NA	NP	NS	NS	NS	NA A	ΨŽ	NA	NS-D	NA	NS	ΝA	NA	<5	NS-D
2-Methylphenol	5661/1/8	< 50	95	< 500	<\$	< 30	< 5	< 5	< 5	< 5	< 5	ΝP	aN.	ŝ	Š	ď	ď	Š	SN
	8/23/1996	SN	SN	NS	NS	SN	SN	SN	SS	SN	SN	g.	ğ	å	Š	ğ	g.	ž	NS
	6/10-7/2/1999	SN	SN	SN	SN	å	SN	SN	SN	SN	ě	NS	SN	< 5	< 5	È	Š	ğ	۵.
	3/9-10/2000	N A	NA	NA A	Ϋ́	₽ N	NA NA	Y Y	Ϋ́	V.	ĝ	NA	NA A	ž	Ϋ́	ğ	Š	Š	NS
	3/11-12/2002	Y X	V.	NA	A A	ě	N A	Y V	N A	Y Y	å	Y Y	NS-D	NA NA	Ä	SN	SN	ď	NS-D
	3/6/2003	SN	SN	SN	ΑN	ď	NS	SN	NS	N A	å	Y Y	NS-D	NA	SN	Ϋ́	NA	£	US-D
	6/20/2003	SN	SN	SN	Ϋ́	ğ	NS	NS	SN	NA	ΝP	NA	NS-D	NA	NS	A A	NA	< 5	NS-D
4-Methylphenol	8/1/1995	08 >	< 20	> 800	8 >	150	8 >	8 >	8 >	8 >	8 >	NP	dN.	ďχ	Š	g.	È	욷	SN
	961/87/8	SN	SN	NS	SN	SN	SN	SN	SN	SN	NS	Š	ď	å	δN	ξ	Ν̈́	ğ	SN
	6661/7/1-01/9	SN	SN	SN	SN	ę.	SN	SN	SN	SN	ğ	SN	SN	<\$	< 5	ğ	ž	ş	۵.
	3/9-10/2000	Ϋ́	NA A	NA	Y Y	ŝ	Ϋ́	NA	NA A	×	ğ	Y.	ΝΑ	NA	Ϋ́	ŝ	Š	₹	SN
	3/11-12/2002	N A	N A	NA	N A	È	A A	NA	Y Y	××	£	NA A	NS-D	NA	Ϋ́	NS	SN	ž	O-SN
	3/6/2003	SN	SN	NS	N A	ž	SN	SN	SZ	N.	₽.	NA A	NS-D	ΝA	SN	NA	NA	Ē	NS-D
	6/20/2003	SN	NS	SN	N A	š	SN	SN	SN	NA	ĝ	NA	NS-D	NA	NS	NA	NA	< 5	US-D
Bis(2-ethylhexyl)-phthalate	8/1/1695	750	< 20	10000	40	< 40	<7	<7	<7	<7	<7	ΝP	NP.	Š	М	È	Α̈́	<u>R</u>	SN
	8/23/1996	SN	NS	NS	SN	SN	SN	NS	SS	SN	SN	È	ĝ	ďχ	ğ	ž	ğ	ě	SN
	6/10-7/2/1999	SN	SN	SN	SN	ž	NS	NS	SN	SN	å.	SS	SN	< 5	< > <	È	Ž	Š	۵
	3/9-10/2000	N.	NA	Y.	ΑN	È	Y Y	¥.	Ϋ́	N A	š	A A	ΑN	VA V	Ν	ž	Š	ž	SN
	3/11-12/2002	Ϋ́	N	Y Y	NA N	È	Y Y	Ϋ́	Y Y	ž	È	¥ Z	NS-D	ΝA	AN	SN	SZ	È	NS-D
	3/6/2003	SN	SN	SN	NA	È	SN	SN	SN	Ϋ́	ğ	¥	NS-D	Ϋ́Z	SZ	Y Y	Y Y	È	Q-SN
	6/20/2003	SN	NS	NS	NA	ďN	NS	NS	SN	NA	ξ	NA	NS-D	NA	NS	NA	ΑN	ç	US-D
Phenol	5661/1/8	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< >	8.2	< 5	ğ	È	Š	ğ	È	호	ž	SN
	8/23/1996	NS	SN	NS	SN	SN	NS	SN	SN	NS	SN	ĝ	å	å	ž	ğ	Š	È	SN
	6/10-7/2/1999	NS	SN	NS	SN	ģ	SN	NS	SN	SN	È	SN	SN	٨	9	ğ	ď	ž	\$
	3/9-10/2000	N V	N.	Ϋ́	NA NA	Š	ž	Y Y	Y Y	NA A	ğ	NA	Ϋ́	Y Y	Ϋ́	È	Š	È	SN
	3/11-12/2002	NA	N A	NA	×	È	Ä	V.	N A	V.	å	¥Z	NS-D	Ϋ́	ΝA	SS	SZ	<u>a</u>	Q-SN
	3/6/2003	SN	SN	SN	NA A	ď	NS	SN	SN	NA	₽	Y Y	NS-D	N A	SZ	¥ ;	¥ :	Z :	O-SN
	6/20/2003	NS	NS	NS	NA AN	ŝ	NS	NS	NS	NA	g.	Ϋ́Α	NS-D	NA	NS	AN	NA NA	ç	O-SN

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^{(0) -} MW-2 not operative after May 3, 1995; MW-11 not operative after September 1997; MW-2, MW-6, and MW-11 P&A'd 7/1/99.

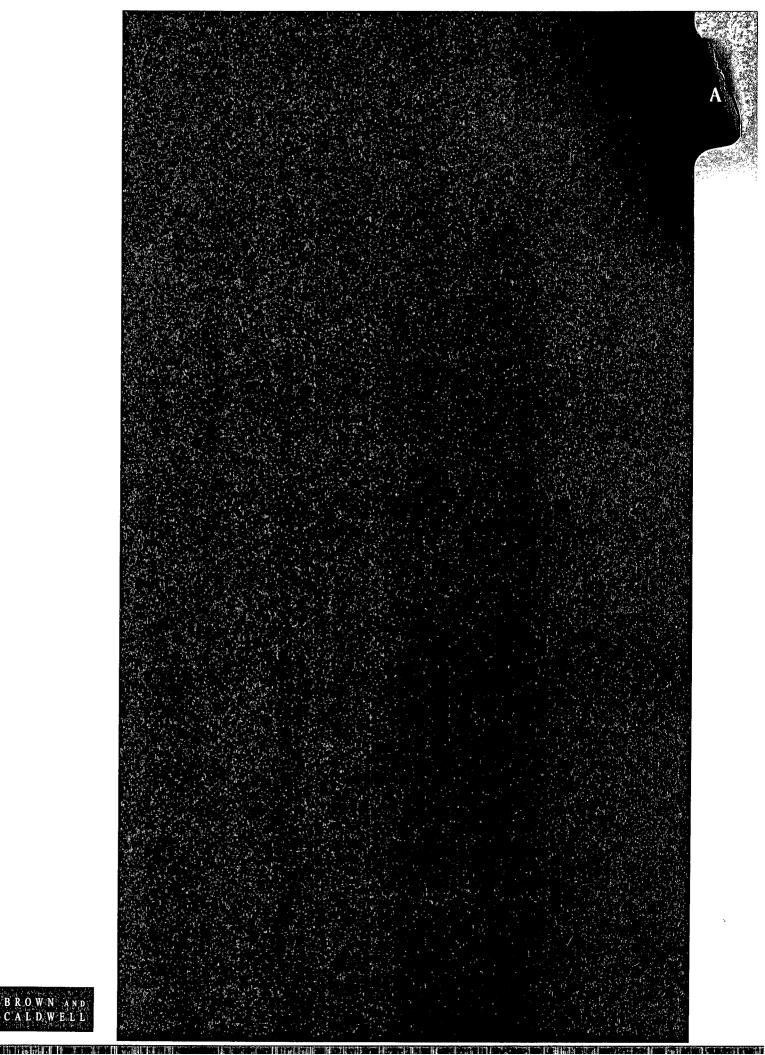
(2) - NP = Well not present at time of sampling event.

(3) - NS = Well not sampled.

^{(4) -} NA = Not Analyzed
(5) - NS.D = Well not sampled (dry well).
(6) - NS.D = No data - sample aliquot not collected due to insufficient well yield.

APPENDICES

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APPENDIX A

Boring Log and Well Construction Diagram for Monitor Well MW-16

Project Number: 12832.018 BJ Services Company, U.S.A. Sheet <u>1</u> of <u>3</u> Project Name: Project Location: Hobbs, New Mexico Logged By: R. Banda Approved: R. Rexroad Drilling Contractor: Harrison and Cooper Date Started: 5/13/03 Date Finished: 5/13/03 **Total Boring** Depth to Static Drilling Equipment: Ingersol-Rand TH-60 Driller: Leonard Hennen Depth: (feet) 78.0 Water: (feet) Drilling Method: Air Rotary Borehole Diameter: 8" TOC Elevation: Ground Elevation: Diameter and Type 2" Schedule 40 PVC Sampling Method: NA of Well Casing: Comments: Logged from cuttings. No samples were collected. Slot Size: 0.01" Filter Material: 20/40 Silica Sand Development Method: 2" PVC Bailer Sampled Interval Readings USC Soil Type Recovery (feet) Depth to Water Monitoring Well Depth (feet) Sample ID Lithology Description Remarks CL Dark brown silty clay with sand, moist ML Cement. Medium brown fine to very fine sandstone, dry Light pinkish brown caliche, little very fine sand, dry SAA, dry. 16-Hydrated bentonite seal. 18 SAA, some very fine sand, dry. 22-Light pinkish brown caliche-cemented sandstone, dry. 26. 28 30 SAA, dry.

Project Name: BJ Services Company, U.S.A. 12832.018 Sheet <u>2</u> of <u>3</u> Project Number: Readings Sampled Interval Depth to Water USC Soil Type Recovery (feet) Monitoring Well Depth (feet) Sample ID Lithology Description Remarks PID Brown medium to fine grained sand, dry SP 34. SP Light brown medium to fine sand, dry. 36 Hydrated bentonite seal. 38-Medium brown sandstone, 0.5" to 1.0" nodules of very fine lithified sandstone, slightly moist. 44.0 20/40 Silica sand filter pack. SAA, slightly moist. SAA, slightly moist. SW ::: Medium brown medium to fine grained sand, moist 0.01-inch slotted well screen. SW ::: Light brown fine grained sand, moist. 58 60sw : SAA, wet. 62-SAA, wet. 68 70-Medium grown medium to fine grained sandstone, wet. 72 ∇ 73.0 Light pinkish brown fine grained lithified sandstone, 73.3 Bottom cap. dry. (Aquitard)

Mο	nitor	ina	Well:
IAIO	HILLOI	шy	** C11.

BJ Services Company, U.S.A.

MW-16

Sheet <u>3</u> of <u>3</u>

Project Number: <u>12832.018</u> Project Name: Sampled Interval PID Readings Recovery (feet) Depth to Water USC Soil Type Monitoring Well Remarks Depth (feet) Sample ID Description Lithology 76— 78-78.0_ Total depth=78 feet.

APPENDIX B

Groundwater Sampling Forms

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-5 1. PROJECT INFORMATION Project Number: 13530 Task Number: 616 Hobbe Project Location: Weather: 2. WELL DATA inches Type: PVC Stainless Galv. Steel Teflon® Other:_ Casing Diameter: Type: DPVC D Stainless D Galv, Steel D Teflon® D Other: Screen Diameter: Total Depth of Well: 64.50 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Depth to Static Water: 62.22 feet Depth to Product: From: Top of Well Casing (TOC) Top of Protective Casing Other: /olume: , 5 gal Screened Interval (from GS): 75 - 40 Length of Water Column: 7 24 feet Well Volume: ____ gal Pump intake depth_____ (from GS) 3. PURGE DATA Purge Method: Bailer, Size: ___ Denistaltic Pump Denistal Equipment Model(s) ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: Materials: Pump/Bailer ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned ☐ Disposable ☐ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Other: / Materials: Rope/Tubing ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned ☐ Disposable ☐ Yes ☑ No Was well purged dry? Pumping Rate: Depth to Water Cum. Gallons Dissolved Spec Temp Turbidity Comments Εh Removed Cond. (TOC) Oxygen 115/cm 047 7.82 055 14.66 103 1106 4. SAMPLING DATA Geochemical Analyses ☐ Bailer, Size: ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump Method(s): ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: Ferrous fron: 8,0 mg/L DO: ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned ☐ Disposable ☐ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Other: Materials: Tubing/Rope mg/L Nitrate: ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned ☐ Disposable Depth to Water at Time of Sampling: <u>102.5</u> Field Filtered? □ Yes □ No Sulfate: mg/L Sample ID: MW-5 Sample Time: 1120 # of Containers: 10 Alkalinity: mg/L ☐ Yes 🗹 No ID: **Duplicate Sample Collected?**

5. COMMENTS		4.5							
		•	-	.,					
Sampled for	BTEX-TPH	-6, TPH-1	D. Mothani	NO3	,504	PAHSO		~	
Note: Include comments suct					the field d	ata sheet. /			
							// ×		

Gen\non-proj\forms\Field Data Sheet.xls\BC-gallons FORM GW-1 (Rev 2/26/02 - dg)

GROUNDWATER SAMPLING FIELD DATA SHEET

WELLID: MW-10

									<u>`</u>
	JECT INFO								
Project	Number: 128			nber: <u>61</u>		Date: Personnel:_	9-21-	03	Time: 1300
Client:_	<u>BS 56</u>					Personnel:_	<u> </u>	Banoli	
	Location:	Hoh	<u> 55. N</u>	M		Weather:	90°		
2. WEL	L DATA	,	,	1					
Casing	Diameter:	incl	hes	Type: 🗆 P	VC 🗆 Stainle	ess 🗅 Galv. S	teel D Teflon	® 🛭 Other:	
i	Diameter:		hes			ess 🗅 Galv. S			
Total D	epth of Well: 🕼	3.51 fe	et	From: 🗗 T	op of Well Ca	sing (TOC)	Top of Prote	ective Casing 🖾 (Other: Historical
Depth t	o Static Water:_	6.1.41.2	feet	From: D T	op of Well Ca	sing (TOC)	Top of Prote	ective Casing 🚨 0	Other:
	o Product:	feet	~	<u> </u>			Top of Prote	ective Casing 🔘 (Other:
Length	of Water Column	n:	⁾ _ feet	Well Volum	e: <u>0.33</u>	gal		nterval (from GS	
Pump i	ntake depth	(fro	om GS)		1.09.	1 : 3 -111/1	Note: 2	2-inch well = 0.16 g	al/ft 4-inch well = 0.65 gal/ft
3. PUR	GE DATA								
Purge I	Method: ☐ Centr	r, Size:	🖸 Bladd	ler Pump 🚨 2	" Submersible	Pump 4*3	Submersible P	ump	Equipment Model(s)
Matoria	Is: Pump/Bailer			C Teflon@					Equipment Model(s)
Materia	is. Purity/Baller			/		aned ⊡1Dispo	osable	1	V31
Materia	ls: Rope/Tubing	☐ Polyet	thylene 🛂 ated 🖵 Pre	Polypropylene epared Off-Site	Teflon® Field Cle	□ Other: eaned □ Disp	oosable	- 2	1
Was we	ell purged dry?	Yes	□ No	Pumpi	ng Rate:	ga	l/min	3	
Time	Cum. Gallons Removed	рН	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
1320	0.2	29	20,70	70187	フロ	77/60		1 accompanion to	odor
	- Core	Par		railed	dru				
		ν.	1		7		-		
		Commence of the same of the same of the	the second secon						
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				- Sealing Administration of the Control of the Cont	Bright of the street, and street, and the stre				
				A Comment	Made growing a dead grade a new grade		Desiry our manage system		
					Market of the second se		Paragraphic and Appendix Annual Paragraphic Paragraphi		
					North State of the				
					Marine and a service of the service				
A SAM	PLING DAT				Name of the state			Georgia	homical Analyses
	PLING DAT	ΓA	Bladder P	umo 🗆 2" Sui	bmersible Pun	no 🗆 4" Subr	nersible Pump		hemical Analyses
4. SAM	Bailer, Siz	Γ A e: <u>ζ</u> ′ c		ump □ 2" Sul ump □ Other:		np 🗆 4" Subr	mersible Pump		hemical Analyses us Iron:/ Omg/L
Method	Bailer, Siz	e: Z C	nertial Lift Pr ess 🔲 PV0	ump 🗆 Other:	Other:				_
Method Material	(s): Bailer, Siz Peristaltic B: Pump/Bailer	e: Z CPump	nertial Lift Po ess □ PVC eted □ Prep hylene □ I	ump Other: C Teflon@ pared Off-Site Polypropylene	Other: Field Clea	ened ⊈Dispo	osable	Perro	us Iron: 10 mg/L mg/L mg/L
Method Material	(s): Bailer, Siz Peristaltic Is: Pump/Bailer	e: Z CPump	nertial Lift Press Description Press noted Description Description	ump Other: C Teflon@ pared Off-Site Polypropylene	Other: Field Clea Teflon®	aned ② Dispo	osable posable	Ferro	us Iron: 10 mg/L mg/L mg/L
Methodo Material Material Depth to	(s): Deristaltic s: Pump/Bailer s: Tubing/Rope D Water at Time of	e: Z CPump	nertial Lift Press PVC ated Prep hylene Will ated Pre	ump Other: C Teflon@ pered Off-Site Polypropylene epared Off-Site	Other: Grield Clea Grielon® Grield Clea Field Filtere	aned PDispo	posable O No	DO: Nitrat	us Iron: mg/L mg/L . e: mg/L
Method Material	(s): Deristaltic s: Pump/Bailer s: Tubing/Rope D Water at Time of	e: Z CPump	nertial Lift Propess PVC ated Prep nylene 12 i ated Prep ated Prep ng: ** Sample Ti	ump □ Other: □ Teflon€ pared Off-Site Polypropylene epared Off-Site	Other: Grield Clea Grielon® Grield Clea Field Filtere	aned ② Dispo	osable posable	DO: Nitrat	us Iron:
Methodo Material Material Depth to Sample	(s): Deristaltic s: Pump/Bailer s: Tubing/Rope D Water at Time of	Pump II Stainle Dedica Polyett Dedica Dedica Company	nertial Lift Propess PVC ated Prep nylene 12 i ated Prep ated Prep ng: ** Sample Ti	ump Other: C Teflon@ pered Off-Site Polypropylene epared Off-Site	Other: Grield Clea Grielon® Grield Clea Field Filtere	aned PDispo	osable posable	DO: Nitrat	us Iron:
Methodo Material Material Depth to Sample	(s): Bailer, Siz Peristaltic S: Pump/Bailer S: Tubing/Rope D Water at Time of the control of	Pump II Stainle Dedica Polyett Dedica Dedica Company	nertial Lift Propess PVC ated Prep nylene 12 i ated Prep ated Prep ng: ** Sample Ti	ump □ Other: □ Teflon€ pared Off-Site Polypropylene epared Off-Site	Other: Grield Clea Grielon® Grield Clea Field Filtere	aned PDispo	osable posable	DO: Nitrat	us Iron:
Methodo Material Material Depth to Sample Duplical	(s): Bailer, Siz Peristaltic S: Pump/Bailer S: Tubing/Rope D Water at Time of the control of	Pump II Stainle Dedica Polyett Dedica Dedica Company	nertial Lift Propess PVC ated Prep nylene 12 i ated Prep ated Prep ng: ** Sample Ti	ump □ Other: □ Teflon® pared Off-Site Polypropylene pared Off-Site me:	Other: □ Field Clea □ Teflon® □ Field Clea Field Filtere	aned	posable posable No ners: 17	DO: Nitrat Sulfa	us Iron:

5. COMMENTS	Sample Ling BTEX, TI	PH-G, TPH-D	, methers.
NO3,504	hardness, Ca, Ma, Na, K, RERA met	als PAHS	,
* well bailed dry	: Well sampled as recovers		
	s well condition, odor, presence of NAPL, or other items not on the field dat	a sheet:	
		1/3//16/	

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GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-11A 1. PROJECT INFORMATION 12432 Task Number: 014 Personnel: 1-1 , 465 Project Location: Weather 2. WELL DATA Type: DPVC D Stainless D Galv. Steel D Teflon® D Other: Casing Diameter: Type: PVC Stainless Galv. Steel Teflon® Other: Screen Diameter: inches Total Depth of Well: 6382 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Depth to Static Water: 61-98 feet From: Top of Well Casing (TOC) Top of Protective Casing Other From: Top of Well Casing (TOC) Top of Protective Casing Other: Depth to Product: Length of Water Column: 164 feet Well Volume: (人以) gal Screened Interval (from GS): Note: 2-inch well = 0.16 gal/ft 4-inch well = 0.65 gal/ft C. 9 = 3 well vo (from GS) Pump intake depth 3. PURGE DATA Purge Method: Bailer, Size: Describe Pump De Equipment Model(s) ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other:_ Materials: Pump/Bailer ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned ☐ Disposable Materials: Rope/Tubing Yes No Was well purged dry? Pumping Rate: Cum. Gallons Dissolved Depth to Water Spec. Time Temp Turbidity Comments (TOC) Removed 9291 6.571 コルス 20:10 70 UD 19.90 (COO) -16 6.80 6.61 4640 4. SAMPLING DATA Geochemical Analyses ☐ Bailer, Size: ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump Method(s): ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: Ferrous Iron: >/ 0 mg/L ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: Materials: Pump/Bailer ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned ☐ Disposable ☐ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Other:_ Materials: Tubing/Rope/ Nitrate: mg/L ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned ☐ Disposable Depth to Water at Time of Sampling: ** / Field Filtered?
Yes
No Sulfate: mg/L Sample ID:___M\w - ilA # of Containers: Alkalinity: mg/L ☐ Yes 12 No ID: --**Duplicate Sample Collected?**

5. COMMENTS * well bailed dry; well	Sampled as it recovers.
5. COMMENTS * well bailed dry; well Sampled for BTEX, TPH-G, TPH-D, M	offine, NO3, SOY
Note: Include comments such as well condition, odor, presence of NAPL, or of	
Gen)non-proilforms/Field Data Sheet vis/RC-gallons	

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GROUNDWATER SAMPLING FIELD DATA SHEET

WELLID: MW-17 N

					·				
1. PRO	JECT INF	ORMAT	TION						0830
Project I	Number: 129	632	Task Num	nber: <u>0146</u>	<u> </u>	Date:	E-22-	رن (Time: 13007
Client:	<u> </u>	Hobb	5			Personnel:_	R. B.	nde	
	_ocation:	Itoh	bs N	N		Weather:	48	/ winds	tron Sunti
2. WELI	L DATA								
Casing I	Diameter:	inch	nes		VC 🗆 Stainle				
	Diameter:	2incl			VC 🗆 Stainle				3673+ 11
Total Depth of Well: 67.58 feet From: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Well Casing (TOC) Top of Protective Casing Other: 1 Top of Protective									
Depth to	Static Water:	62.07	feet	 					***************************************
	Product:	feet						ctive Casing	
	of Water Colum							terval (from GS) -inch well = 0.16 g	: 77. 5 - 87. 5 al/ft 4-inch well = 0.65 gal/ft
	take depth	(fro	m GS)	[2.294	l= swillu:	1	-11011 WON - 0.12 g	dutt 4 mon non 0.00 go
	GE DATA	or Size. 2	 □ Bladd	lor Pump 17	" Submersible	Dumn ∏ 4" 9	Suhmereihle P	umn	
Purge M	lethod: Gen	trifugal Pump	p 🗆 Perista	altic Pump 🚨 I	nertial Lift Purr	np D Other:	Submeraiole .	———	Equipment Model(s)
	s: Pump/Bailer	☐ Stainle	ess 🚨 PV0	C 🗅 Teflon@	Other: Field Clea	_		1 (15I
Materials	s: Rope/Tubing	, 🗆 Polyet	hylene 🗹 l	, Polypropylene	☐ Teflon® [☐ Other:_/		''	
i	Il purged dry?	☐ Dedica	ated ☐ Pre ☑ No		Field Cle			2	
YVUS VIC			140	,	ng Rate:		/min 	3.	
Time	Cum. Gallons Removed	рН	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments
046	10	7.77	19.42	1092	Bet	2.47			clear
0 B55	2.0	8.02	19.09	1107	72	9.45	THE PARTY OF		clear
1903	3,0	7,95	19,21	1103	74	7.27			5/04-
7910	G, Y	1,95	19.25		15 60	8.17			Kliger .
6917	5,0	\$7.94	19,10	VIII	58	16.13			Cleny
1422	6.0	7788	1915	1123	57	9,67	2 1941		Clear
0925	7.0	7.86		1105	50	ସ୍,ଚ୍ଚ	سيد مستومون را سميودي		ching
0932	ન્ ૦	7.09	19.16	ોા 3૦	50	9.36	*****		don
0939	9,0	7.89	19.15	1110	50	9,24			Henr
4. SAMF	PLING DA								hemical Analyses
Method(s				ump 🛚 2" Sulump 🗔 Other:	bmersible Pum	np 🛚 4" Subn	nersible Pump	Ferro	us Iron: 3.5 mg/L
Materials	s: Pump/Bailer	☐ Stainle	ss 🗆 PVC	C □ Teflon€	® 🛘 Other:			DO:	€. S mg/L
· ·		☐ Dedica	7	,	☐ Field Clea ☐ Teflon®		osable		
j	s: Tubing/Rope	□ Dedica	ited 🗅 Pre	epared Off-Site	e 🖸 Field Cle	aned 2 Disp	posable	Nitrat	re: mg/L
	Water at Time							Sulfa	te: mg/L
Sample	ID:				<u>05</u>	# of Contain	ers:	Alkali	inity: mg/L
Duplicate	e Sample Colle	cted?] Yes □′	No ID:		-			
									, in the second
								-20	- <u> </u>
5. COM		, //	JG P	nfled	401	Birx	TPH-0	G, TPH-D	, NO3, SO4,
	Nv.	ethan	<u> </u>						

5. COMMENTS	_ sanfled	401	BiEX, IPH-6	a, TPH-D	NO2 504	6,
me	thane			/	,,	
Note: Include comments such as w	rell condition, odor, presence of NAP	L, or other iten	ns not on the field data shee	6//)/	7_2	

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The	Comvolume		Temp	Spec.	Eh	<i>D</i> 0	Tuvb.	DTW	(smmen45
0945	10.0	7.89	19.15	1118	50	9.26			clear
0953	11.0	7.89	19.16	1130	50	9.38			Clear
(000	12.0	7.89	19.15	1110	52	9.25			(lear
	magamentonin ga-taga Kida		And the second s						
	F. () 480 P. () (100 P. ()	ì	may provide the second		The same of the sa				
	Yuman cash as				No. of Parks				Displace would done where
		1	;		1		, p	parjet , Association	- 1446 ·

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GROUNDWATER SAMPLING FIELD DATA SHEET



WELL ID: MW-K14 1. PROJECT INFORMATION Date: 8-2(03 Time: 1910

Personnel: 1560 Project Number: 12432 Task Number: 014 Client: SJ-1/3665 Hophs Project Location: Weather: WELL DATA Type: 🗹 PVC 🔲 Stainless 🕮 Galv. Steel 🗅 Teflon® 🗅 Other:__ Casing Diameter: inches Type: ☐ PVC ☐ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other:__ Screen Diameter: inches Total Depth of Well: (27.5) feet From: 1 Top of Well Casing (TOC) Top of Protective Casing other: H1349-16. Depth to Static Water: 61.76 feet From: Top of Well Casing (TOC) Top of Protective Casing Dother: From: Top of Well Casing (TOC) Top of Protective Casing Other: Depth to Product: feet Well Volume: 0.34 gal Screened Interval (from GS): 55 - 69,5 Length of Water Column: 5.25 feet 2.52 gal = 3 wall Val. Note: 2-inch well = 0.16 gal/ft Pump intake depth AA (from GS) 3. PURGE DATA Purge Method: Bailer, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: Equipment Model(s) ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: Materials: Pump/Bailer □ Dedicated □ Prepared Off-Site □ Field Cleaned ☑ Disposable ☐ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Other: Materials: Rope/Tubing ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned ☐ Disposable Yes D No Was well purged dry? Pumping Rate: Dissolved Depth to Water Cum. Gallons Spec. рΗ Turbidity Comments Eh Temp Oxygen (TOC) Removed Cond. 0.2 1.86 1970 7.15 19.50 1923 91 1905 0.69 1932 19.10 ý () 1770 1960 4. SAMPLING DATA Geochemical Analyses 🗖 Bailer, Size: ____ 🖸 Bladder Pump 🚨 2" Submersible Pump 🚨 4" Submersible Pump Ferrous Iron: _____ mg/L ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: Materials: Pump/Bailer DO: ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned ☐ Ďisposable Materials: Tubing/Rope

| Polyethylene | Polypropylene | Teflon® | Other: |
| Dedicated | Prepared Off-Site | Field Cleaned | Disposable Nitrate: Depth to Water at Time of Sampling: Field Filtered? ☐ Yes ☑ No Sulfate: Sample ID: MW 15 Sample Time: 📑 🖰 🖰 # of Containers: mg/L Alkalinity: Q Yes Q No ID: **Duplicate Sample Collected?**

5. COMMENTS	Sampland +	51
	7	
Note: Include comments such a	s well condition, odor, presence of NAPL, or oth	er items not on the field data sheet.

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GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW雪15

1. PROJECT INFORMATION									
Project Number: 12832 Task Number: 18 Date: 8-2(-93) Time: 1800									
Client: 3)-1-hbs Personnel: K. banda Project Location: Hohbs NM Weather: 98/Winds from Soutic									
2. WELL DATA									
Casing Diameter: inches Type: @ PVC									
Screen Diameter: inches Type: @ PVC									
Total Depth of Well: 69.37 feet From: Top of Well Casing (TOC) Top of Protective Casing Total Depth of Well: 109.37 feet									
Depth to Static Water: 6273 feet From: Top of Well Casing (TOC) Top of Protective Casing Other:									
Depth to Product: feet From: □ Top of Well Casing (TOC) □ Top of Protective Casing □ Other:									
Length of Water Column: 6.64 feet Well Volume: 1.06 gal Screened Interval (from GS): 52 - 67									
Pump intake depth (from GS) $\frac{7.18 \text{ s.s.}}{5.15 \text{ s.s.}} = \frac{3 \text{ we} (V_b)}{5.15 \text{ Note: 2-inch well = 0.16 gal/ft}}$ 4-inch well = 0.65 gal/ft									
3. PURGE DAȚA									
Purge Method: Bailer, Size: D Bladder Pump D 2" Submersible Pump D 4" Submersible Pump Centrifugal Pump D Peristaltic Pump D Inertial Lift Pump D Other:									
Materials: Duma/Dailer									
Dedicated di Prepared Off-Site di Field Cleaned di Disposable 1.									
□ Dedicated □ Prepared Off-Site □ Field Cleaned □ Disposable 2.									
Was well purged dry? Yes No Pumping Rate:gal/min 3.									
Time Cum. Gallons PH Temp Spec. Eh Dissolved Oxygen Turbidity Depth to Water (TOC)									
1215 0.1 6.8219.91 1640 112 9.80 - eterr									
1825 0.75 7.10 19.83 1605 105 4.03 - c/ear									
1840 1.5 7.14 20.4 1599 95 1.40 - The Clear									
1900 3.0 714 19.93 1584 94. D.43 Welear									
Durand 3 5 gc/ - Dry									
4. SAMPLING DATA Geochemical Analyses									
Method(s): Bailer, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump Ferrous Iron: 9mg/L									
Materials: Pump/Bailer Stainless PVC Teflon® Other: Do: 2.0 mg/L									
Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Mitrate: mg/L									
Depth to Water at Time of Sampling: Field Filtered? Yes No Sulfate: mg/L									
Sample ID: MW-14 Sample Time: 1905 # of Containers: Alkalinity: mg/L									
Duplicate Sample Collected?									
5. COMMENTS									
5. COMMENTS									
•									
Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.									
Gen\non-proj\forms\Field Data Sheet.xls\BC-gallons									

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Signature

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-12h

1 DDO	ECT INFOR	ΝΛΔΤΙ	JVI							
	lumber: 126		Task Numb	nor 1714	,	Date: 6	26-153	7	ime: 0930	
Client:		rvitirs		:^	_	Personnel:	C B	سے المبار محمد اللہ علاقہ کا اللہ علاقہ کا اللہ علاقہ کا اللہ علاقہ کا اللہ علاقہ کا اللہ علاقہ کا اللہ علاقہ کا	IK/ISa.	
	ocation:			-Hebbs,		Weather:	Raini	na Klouds	180°F	
2. WELL		<u> </u>			` ` `			7		
	Diameter:	<u></u>	nes	Type: gpv	C 🗆 Stainle	ss 🛭 Galv. St	eel 🗆 Teflon	Ð □ Other:		
Screen Diameter: Inches Type: PVC Stainless Galv. Steel Teflon® Other:										
Total De	Total Depth of Well: 57.5 feet From: Top of Well Casing (TOC) Top of Protective Casing Other:									
Depth to	Static Water:	<u>C1,95</u>	feet	From: of to	p of Well Cas	sing (TOC)	☐ Top of Prot	ective Casing C	1 Other:	
		feet			pp of Well Ca		☐ Top of Prot	ective Casing C		
Length (of Water Colum	nn: <u>25/</u> 5	25 feet	Well Volume	e: <u>4.04</u>	<u>Z</u> gal		terval (from GS h well = 0.16 gal/f	· ————	
	take depth	(fr	om GS)				10016. 2-11101	1 weii = 0.10 gai/1	t 4-inch well = 0.65 gal/ft	
3. PURG		Circ		Duma dvo	/	Duma D All	Cultura availata l). Imm	ĺ	
Purge M	ethod: 🛭 Ballei	r, size: rifugal Pun	np 🗅 Perist	altic Pump C	3 Inertial Lift P	ump Othe	c:	-ump	Equipment Model(s)	
Materia	ls: Pump/Bailer			: □ Teflon@ epared Off-Sit		leaned D [Disposable	1 F	ultz Pump	
Moteria	ls: Rope/Tubing	Polye	thylene 🗅	Polypropyler	ne 🗆 Teflon®	🖪 🗆 Other:		- 11	C+ 1 - MAC	
		□ Deald	1	repared Off-S	Site 🗆 Fleld	Cleaned 🗆	Disposable	2	ST (020 110)	
Was we	ll purged dry?	□ Yes	¹ Ū ∕ No	Pumpi	ng Rate:	gal	/min	3H	I. Turkelyoms	
Time	Cum. Gallons Removed	рН	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments	
1000	941	~	0 (m5/cm	mV	mgL	NTU;	f'4.		
1004	6.25	7.48	19.50	1.150	-83.2	1.70	128	63.93		
100	1.25	7.45	19,69	1.137	- 59.1	1.29	- (), G	62.24		
1014	1.75	7.44	19.65	1.142	-845	1:30	1.09	62.00		
[0] 8	2.28	7.44	14.74	1.138	-0,-7	1-2-2	97	61.50		
48. 28.	2.75	745	19 76	1-154	-231/	1.24	116.2	62.24		
1624	2.65	7.45		(139	- 8 .6	1.17	87	62.25		
1435	4,50	7,45	19.85	1.134	-41.9	1,23	74	62.00		
1034	4.25	7.43	20,00	1.141	-79.2	1. 1.4	75	62/0		
4. SAMF	PLING DAT	~ ·		2				:	chemical Analyses	
Method	· · U Peristaltic	Pump 🗆	Inertial Lift	Pump 🗆 Oth	er:	mp 🗖 4" Sut	omersible Pur	np Ferro	us Iron: <u>0, 6</u> mg/L	
Materia	ls: Pump/Bailer	Stain!	ess DPVC	Teflon	Other:_	Cleaned D	Disposable	DO:	/. © mg/L	
Materia Materia	ls: Tubing/Rope	∵ Polye	thylene 🗆	Polypropyle	ne 🗆 Teflon	® 🛛 Other:_		- Nitrat	1	
1	o Water at Time	J u Deak				Cleaned C	1			
	ID: MUTT		•				-	Sulfa	te: mg/L	
}				No ID:		# OI COITE	ers	- Alkal	inity:mg/L	
Duplica	te Sample Coll	lected?	- 162 M	INO ID					ì	
<u> </u>						-				
5. COM	INVENITS		C 0	1 11 0	, ,	24 V	1080	ha v	<u> </u>	
J. CON	IIVILI VIO		Δ i	ted f	ir 14	2154/	aku	Methane	, DKB,	
		***************************************	Anion	٠ ٠						
Note: Includ	e comments suc	h as well c	condition, o	dor, presenc	e of NAPL, of	other items r	ot on the fiel	d data sheet.		

Gen\non-proj\torms\Field Data Sheet.xls\BC-gallons

FORM GW-1 (Rev 2/26/02 - dg)

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-16

1. PROJ	ECT INFOR	OITAMS	NC								
Project I	Number: 128	532	Task Num	ber: 18		Date:	- 20 - 0	<u> </u>	Time: <u>0700</u>		
Client:_	6150	ervices	USP		_	Personnel:	R. Ba	nds/K.K	Con		
Project I	ocation:	Hobbs	s luly			Weather:	Sunny	Cost breeze	From the South 70 "F		
2. WELL	DATA										
Casing	Diameter:	inch	es	Type: @'PVC Stainless Galv. Steel Teflon® Other:							
Screen Diameter: 2 Inches Type: SPVC Stainless Galv. Steel Teflon® Other:											
Total De	epth of Well:	<u> </u>	et	From: 🗖 To	p of Well Ca	sing (TOC)	☐ Top of Prot	ective Casing	3 Other:		
Depth to Static Water: 6 - From: 12 Top of Well Casing (TOC) 12 Top of Protective Casing 12 Other:											
Depth t	o Product:	feet		From: 🗖 To	op of Well Co	nsing (TOC)	☐ Top of Prof	tective Casing	☑ Other:		
Length	of Water Colum	nn:_ <i>/O</i>	feet <u>ک</u>	Well Volume	e:	gal	Screened Ir	nterval (from GS	3):		
Pump ir	ntake depth	<u> (fro</u>	om GS)				Note: 2-Inc	h well = 0.16 gal/i	ft 4-Inch well = 0.65 gal/ft		
	E DATA			/	,						
Purge N	¶ethod: ☐ Balle	r, Size: tlfuaal Pun	□ Bladd	er Pump ⊡ ∕2 taltic Pumo □	" Submersible Dinertial Lift P	Pump 4"	Submersible I r:	Pump	Equipment Model(s)		
	ils: Pump/Bailer	ga Stainle	ess 🗅 PVC	☐ Teflon®	Other:_				_Equipment Model(s)		
	·	U Dealo		epared Off-Sit I Polypropyler			Disposable		eltz fump		
Materia	ıls: Rope/Tubinç			repared Off-S			Disposable	- 2. <u>y</u> .5	I GSOMDS		
Was we	ell purged dry?	□ Yes	D No	Pumpi	ng Rate:	gal	/min	3. <u>/-/-</u>	nni Instruments -Ta		
Time	Cum, Gallons Removed	рН	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments		
0730	941	_	٥ (m5/im	mV	mg/	NTUS	-1'+.	PUL Shavings in was		
0734	6.25	7.07	18.24	3.652		11.06	804	66.90			
0740	1,00	7.09	13.92	3-624	160.0	11.49	554	66.84	, .		
6744	1.50	7.10	18.99	3.644	157.1	11.67	391	64.74			
6748	2.00	7.16	19.10	3.646	156.4	11.59	301	66.70			
0752	2.50	7.11	<u> </u>	3.655	156.6	11.49	193	66.70			
0756	3.00	7.11	19.47	3.651	164.Z	11.62	116	66.70			
0800	3.56	7.10	19.54	3.659	170.3	11.35	104	66.70			
080 6	4.02	7.12	19-18	3.660	[64.G	11.65	76	66.70			
	PLING DAT			,	<u> </u>	1-1-1-1	1	:	chemical Analyses		
Method	a(s): Daller, Siz	.e: [ump 2"Su Pump 0 Oth		mp 🛮 4" Sub	omersible Pun	np Ferro	us Iron: mg/L		
Materio	als: Pump/Bailer		ess DPV		🛭 🗆 Other:_			DO:	<u>7.5</u> mg/L		
Materio	als: Tubing/Rope	ွှဲ Ø Polye	thylene [epared Off-Si Polypropylei	ne 🗆 Teflon	® 🛘 Other:_		- Nitra	\		
Donth	to Water at Tim			Prepared Off-			•		T		
	o water at 11m a ID: MW-11.			ime: 0 0 7			i	Sulfa	te: mg/L		
,	·,-			No ID:		# OI COIIIQ	н ю о	- Alkal	linity:mg/L		
Duplico	ate Sample Col	lected?	<u> 169 €</u>	110 10,							
5 001	MENTS		<u> </u>	1 0		1/0 -	C 1 1 1	, A			
JU, CUI\			<u> </u>	pled	+ av	VUC,	<u> 5 60 0</u>	(Hulon	s, Hardness,		
	Methe	ne, l	-ation	s, RCR	A Min	4/5.					
Note: Includ	de comments suc	h as well c	condition, c	dor, presence	e of NAPL or	other items n	ot on the field	d datasheet. 🔿			
	on-proj\forms\				·		[]	2(7/3	(/		
	·1 (Rev 2/26/02 - c			- ,= - ganon			Signature	10-1			

Over

Time	removed	PH	Temp_	Spec.	EL	ρċ	Turkdity	DTW	Comments
0810	4.5 對5.0 5.5	7.12 7.12 7.12	19.42 19.44 19.44	3.658 3.658 3.659	193. 6 186. 7	11.64 11.64	60 50 42.3k	66.70	

4.4

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-/6

										
	JECT INFO						·		r	
Project I	Number: 128			nber: <u> 18</u>		Date:	5-2 2 -3	<u>▽Ś</u> 7	Time: <u>6030</u>	
Client:	13.5	1-Ser		A.		Personnel:_	<u> </u>	ande		
	ocation:	1-10 h	bs. N	M		Weather:	7.5	<u>r</u>		
2. WELL DATA										
Casing [Diameter:	incl		 		ess 🔾 Galv. St				
	Screen Diameter: 2 inches Type: 12/PVC 🗆 Stainless 🗅 Galv. Steel 🗀 Teflon® 🗀 Other:									
Total De	Total Depth of Well: 79 feet From: Top of Well Casing (TOC) Top of Protective Casing Other:									
Depth to	Static Water:_	66.62	feet		·			ctive Casing		
	Product:	feet						ective Casing O		
1	f Water Colum	-		Well Volum				iterval (from GS):		
	take depth	(fro	om GS)		5.43 :	= 3 well vol	mes voic. 2	?-inch well = 0.16 ga	4-inch Weil - 0.05 gaun	
3. PURC	SE DATA	. Cina	ED Dlade	l D	W. C. dana anailain	ePump □ 4"S	Submaraible D	11mm		
Purge M	ethod: Cent	rifugal Pum	_	altic Pump 🔲 2	nertial Lift Pur	mp 🗅 Other:			Equipment Model(s)	
Materials	s: Pump/Bailer/			C Teflon		aned ⊡ -Óispo	neable.	. (/ <t_< td=""></t_<>	
Materials	s: Rope/Tubing	☐ Polyet	hylene 🗗	/ Polypropylene	☐ Teflon®	Other:		1		
Í		☐ Dedica	ated □ Pro /	epared Off-Site	e 🖸 Field Cle	eaned ⊡ ∕Disp		2		
Was wel	l purged dry?	☐ Yes	© No	Pumpi	ng Rate:	gal	/min	3		
Time	Cum. Gallons Removed	pН	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Depth to Water (TOC)	Comments	
1036	0.1	7.08	18.52	3477	85	(34			6,5	
1043	1.0	7,600	18,60	3522	73	11.67	Nag _{parker} and		cloud u	
1050	2.0	7.67	18.56	3465	63	11.80	•——		cloudy	
1058	3.0_	7.67	10.54	3487	62	2.64			clear	
1105	4,0_	7.68	18.59	3582	63	2.82			clear	
1112	510	7.67	18.59	3462	10 D	2.53			clear	
-										
								The Management of the Control of the		
4. SAMF	LING DA	TA		<u> </u>	<u> </u>	<u> </u>	'	Geoch	nemical Analyses	
Method(s	11			•		mp 🚨 4" Subr	nersible Pump	Ferro	us Iron: mg/L	
	Peristanto	C Stointo		ump 🗆 Other:					id n	
Materials	: Pump/Bailer	Dedica	ited 🗆 Prep	gared Off-Site	☐ Field Clea	aned 🖫 Dispo	osable	DO:	mg/L	
Materials	: Tubing/Rope			Polypropylene epared Off-Site		□ Other: eaned □1Disp	posable	- Nitrate	e: mg/L	
Depth to	Water at Time	of Samplii	ng:		Field Filter	ed? 🗆 Yes	№ No	Sulfate	e:\ _mg/L	
	D: <u>MW-/</u>	, ,				# of Contain		_		
Dunlicate	Sample Collec	rted?	O Yes ⊡′	No ID:		_		Alkalir	nity:mg/L	
Daplicate	Dample Collect	olou :								
								·		
5. COMN	5. COMMENTS									
	•									
								7	0.0	
Note: Include c	omments such as	well condit	ion. odor. p	resence of NA	PL or other it	ems not on the	field data she	et	11/	

Gen\non-proj\forms\Field Data Sheet.xIs\BC-gallons FORM GW-1 (Rev 2/26/02 - dg)

APPENDIX C

Laboratory Analytical Reports

HILLERING TO THE SECOND TO SECOND TO THE SECOND SEC



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Case Narrative for: Brown & Caldwell

Certificate of Analysis Number:

03060895

Report To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana Suite 2509

Houston

ΤX

77002-

ph: (713) 759-0999

fax: (713) 308-3886

Project Name:

BJ Service, Hobbs, NM

Site:

Hobbs, New Mexico

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

非环境国籍的 "''佛',从李叔孝是了海滨市,在水市,"'妹',"'你',"不是'''说'自',这是一个一个一个有事的。""这样,

The data in this report applies to the analysis of two water samples plus a trip blank from the BJ Services site located in Hobbs, New Mexico. These samples were received on June 21, 2003, assigned to SPL Certificate of Analysis No. 03060895, and analyzed for the parameters as specified on chain-of-custody 169802.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Sample MW-12R was analyzed as a matrix spike/ matrix spike duplicate for BTEX, and the RPD's for ethylbenzene and xylenes were high. All percent recoveries and all other RPD's were acceptable.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Pat Lynch
Senior Project Manager

8/12/2003

Date



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

BJ Service, Hobbs, NM

Hobbs, New Mexico

Brown & Caldwell

Certificate of Analysis Number:

03060895

Report To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana **Suite 2509**

Houston

TX

77002-

ph: (713) 759-0999

fax: (713) 308-3886

PO Number:

State:

Project Name:

Site Address:

Site:

New Mexico

THE HISTORY IN THE LOUIS OF THE SECTION TO THE SECTION OF THE SECT

Fax To:

Brown & Caldwell

Rick Rexroad

fax: (713) 308-3886

State Cert. No.: **Date Reported:**

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
W-1G	03060895-01	Water	6/20/2003 8:20:00 AM	6/21/2003 10:00:00 AM	169802	
-12R	03060895-02	Water	6/20/2003 10:40:00 AM	6/21/2003 10:00:00 AM	169802	
Trip Blank	03060895-03	Water	6/20/2003	6/21/2003 10:00:00 AM	169802	

at Lynch enior Project Manager

8/12/2003

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: MW-1G Collected: 06/20/2003 8:20 03060895-01 SPL Sample ID:

		Site	: noi	DDS, NEW MEXICO		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed Anal	yst Seq.#
ALKALINITY, BICARBO	LKALINITY, BICARBONATE		MCL	M2320 B	M2320 B Units: mg/L	
Alkalinity, Bicarbonate	163	2		1	06/25/03 13:00 RA	1738530
ALKALINITY, CARBON	ATE		MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2		1	06/25/03 13:00 RA	1738602
CHLORIDE, TOTAL			MCL	E325.3	Units: mg/L	
Chloride	983	10		10	06/26/03 10:00 RA	1740423
HEADSPACE GAS ANA	LYSIS		MCL	RSK147	Units: mg/L	What is a state of the state of
Methane	ND	0.0012		1	06/24/03 15:57 J_F	1736628
ION CHROMATOGRAP	HY		MCL	E300.0	Units: mg/L	
Nitrogen, Nitrate (As N)	4.4	0.1		1	06/21/03 14:10 CV	1732728
Sulfate	200	10		50	06/21/03 16:41 CV	1732739
MERCURY, TOTAL		MCL	SW7470A	Units: mg/L		
Mercury	ND	0.0002		1	06/25/03 17:48 R_T	1739841
Prep Method	Prep Date	Prep Initials				
SWZZZOA	06/25/2003 11:00	РΤ				

Prep Method	Prep Date	Prep Initials
SW7470A	06/25/2003 11:00	R_T

METALS BY METHOD 6010B, TOTAL		MCL	SW6010B	Units: mg/L			
Arsenic	0.00674	0.005		1	07/05/03 17:38	NS	1756665
Lead	ND	0.005		1	07/05/03 17:38	NS	1756665
Selenium	ND	0.005		1	07/05/03 17:38	NS	1756665
Barium	0.0728	0.005		1	07/08/03 2:18	MW	1756042
Cadmium	ND	0.005		1	07/08/03 2:18	MW	1756042
Calcium	219	0.1		1	07/08/03 2:18	MW	1756042
Chromium	ND	0.01		1	07/08/03 2:18	MW	1756042
Magnesium	45.4	0.1		1	07/08/03 2:18	MW	1756042
Potassium	4.78	2		1	07/08/03 2:18	MW	1756042
Silver	ND	0.01		1	07/08/03 2:18	MW	1756042
Sodium	436	0.5		1	07/08/03 2:18	MW	1756042

Prep Method	Prep Date	Prep Initials
SW3010A	06/26/2003 13:15	MED

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: MW-1G 03060895-01 Collected: 06/20/2003 8:20 SPL Sample ID:

> Site: Hobbs, New Mexico

	·									
Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #			
SEMIVOLATILE ORGANICS BY METHOD 8270C			MCL SW	8270C	Units: uç					
1,2,4-Trichlorobenzene	ND	5	1		07/15/03 14:57	GQ	1769381			
1,2-Dichlorobenzene	ND	5	1		07/15/03 14:57	GQ	1769381			
1,2-Diphenylhydrazine	ND	5	1		07/15/03 14:57	GQ	1769381			
1,3-Dichlorobenzene	ND	5	1		07/15/03 14:57	GQ	1769381			
1,4-Dichlorobenzene	ND	5	1		07/15/03 14:57	GQ	1769381			
2,4,5-Trichlorophenol	ND	10	1		07/15/03 14:57	GQ	1769381			
2,4,6-Trichlorophenol	ND	5	1		07/15/03 14:57	GQ	1769381			
2,4-Dichlorophenol	ND	5	1		07/15/03 14:57	GQ	1769381			
2,4-Dimethylphenol	ND	5	1		07/15/03 14:57	GQ	1769381			
2,4-Dinitrophenol	ND	25	1		07/15/03 14:57	GQ	1769381			
2,4-Dinitrotoluene	ND	5	1		07/15/03 14:57	GQ	1769381			
2,6-Dinitrotoluene	ND	5	1		07/15/03 14:57	GQ	1769381			
2-Chloronaphthalene	ND	5	1		07/15/03 14:57	GQ	1769381			
2-Chlorophenol	ND	5	1		07/15/03 14:57	GQ	1769381			
2-Methylnaphthalene	ND	5	1		07/15/03 14:57	GQ	1769381			
2-Nitroaniline	ND	25	1		07/15/03 14:57	GQ	1769381			
2-Nitrophenol	ND	5	1		07/15/03 14:57	GQ	1769381			
3,3´-Dichlorobenzidine	ND	10	1		07/15/03 14:57	GQ	1769381			
3-Nitroaniline	ND	25	1		07/15/03 14:57	GQ	1769381			
4,6-Dinitro-2-methylphenol	ND	25	1		07/15/03 14:57	GQ	1769381			
4-Bromophenyl phenyl ether	ND	5	1		07/15/03 14:57	GQ	1769381			
4-Chloro-3-methylphenol	ND	5	1		07/15/03 14:57	GQ	1769381			
4-Chloroaniline	ND	5	1		07/15/03 14:57	GQ	1769381			
4-Chlorophenyl phenyl ether	ND	5	1		07/15/03 14:57	GQ	1769381			
4-Nitroaniline	ND	25	1		07/15/03 14:57	GQ	1769381			
4-Nitrophenol	ND	25	1		07/15/03 14:57	GQ	1769381			
Acenaphthene	ND	5	1		07/15/03 14:57	GQ	1769381			
Acenaphthylene	ND	5	1		07/15/03 14:57	GQ	1769381			
Aniline	ND	5	1		07/15/03 14:57	GQ	1769381			
Anthracene	ND	5	1		07/15/03 14:57	GQ	1769381			
Benz(a)anthracene	ND	5	1		07/15/03 14:57	GQ	1769381			
Benzo(a)pyrene	ND	5	1		07/15/03 14:57	GQ	1769381			
Benzo(b)fluoranthene	ND	5	1		07/15/03 14:57	GQ	1769381			
Benzo(g,h,i)perylene	ND	5	1		07/15/03 14:57	GQ	1769381			
Benzo(k)fluoranthene	ND	5	1		07/15/03 14:57	GQ	1769381			
Benzoic acid	ND	25	1		07/15/03 14:57	GQ	1769381			
Benzyl alcohol	ND	5	1		07/15/03 14:57	GQ	1769381			
Bis(2-chloroethoxy)methane	ND	5	1		07/15/03 14:57	GQ	1769381			
Bis(2-chloroethyl)ether	ND	5	1		07/15/03 14:57	GQ	1769381			
Bis(2-chloroisopropyl)ether	ND	5	1		07/15/03 14:57	GQ	1769381			
										

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

TAKAN TAUTUH MANAMBURKAN MANAMBAN MANAMBAN MANAMBAN MENUNTUK MANAMBAN MANAMBAN MANAMBAN MANAMBAN MANAMBAN MENUNTUK MENUN

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: MW-1G Collected: 06/20/2003 8:20 SPL Sample ID: 03060895-01

			Site:	Hobbs, New Mexico			
Analyses/Method	Result		Rep.Limit	Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
Bis(2-ethylhexyl)phthalate	ND		5	1	07/15/03 14:57	GQ	1769381
Butyl benzyl phthalate	ND		5	1	07/15/03 14:57	GQ	1769381
Carbazole	ND		5	1	07/15/03 14:57	GQ	1769381
Chrysene	ND		5	1	07/15/03 14:57	GQ	1769381
Di-n-butyl phthalate	ND		5	1	07/15/03 14:57	GQ	1769381
Di-n-octyl phthalate	ND		5	1	07/15/03 14:57	GQ	1769381
Dibenz(a,h)anthracene	ND		5	1	07/15/03 14:57	GQ	1769381
Dibenzofuran	ND		5	1	07/15/03 14:57	GQ	1769381
Diethyl phthalate	ND		5	1	07/15/03 14:57	GQ	1769381
Dimethyl phthalate	ND		5	1	07/15/03 14:57	GQ	176938
Fluoranthene	ND		5	1	07/15/03 14:57	GQ	176938
Fluorene	ND		5	1	07/15/03 14:57	GQ	176938
Hexachlorobenzene	ND		5	1	07/15/03 14:57	GQ	176938
Hexachlorobutadiene	ND		5	1	07/15/03 14:57	GQ	176938
Hexachlorocyclopentadiene	ND		5	1	07/15/03 14:57	GQ	1769381
Hexachloroethane	ND		5	1	07/15/03 14:57	GQ	1769381
Indeno(1,2,3-cd)pyrene	ND		5	1	07/15/03 14:57	GQ	1769381
Isophorone	ND		5	1	07/15/03 14:57	GQ	1769381
N-Nitrosodi-n-propylamine	ND		5	1	07/15/03 14:57	GQ	176938
N-Nitrosodiphenylamine	ND		5	1	07/15/03 14:57	GQ	1769381
Naphthalene	ND		5	1	07/15/03 14:57	GQ	1769381
Nitrobenzene	ND		5	1	07/15/03 14:57	GQ	1769381
Pentachlorophenol	ND		25	1	07/15/03 14:57	GQ	1769381
Phenanthrene	ND		5	1	07/15/03 14:57	GQ	1769381
Phenol	ND		5	1	07/15/03 14:57	GQ	1769381
Pyrene	ND		5	1	07/15/03 14:57	GQ	1769381
Pyridine	ND		5	1	07/15/03 14:57	GQ	1769381
2-Methylphenol	ND		5	1	07/15/03 14:57	GQ	1769381
3 & 4-Methylphenol	ND		5	1	07/15/03 14:57	GQ	1769381
Surr: 2,4,6-Tribromophenol	107	%	10-123	1	07/15/03 14:57	GQ	1769381
Surr: 2-Fluorobiphenyl	80.0	%	43-116	1	07/15/03 14:57	GQ	1769381
Surr: 2-Fluorophenol	49.3	%	21-110	1	07/15/03 14:57	GQ	1769381
Surr: Nitrobenzene-d5	80.0	%	35-114	1	07/15/03 14:57	GQ	1769381
Surr: Phenol-d5	37.3	%	10-110	1	07/15/03 14:57	GQ	1769381
Surr: Terphenyl-d14	78.0	%	33-141	1	07/15/03 14:57	GQ	1769381

Prep Method	Prep Date	Prep Initials
SW3510C	06/24/2003 10:38	KL

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

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J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: MW-1G Collected: 06/20/2003 8:20 SPL Sample ID: 03060895-01

Site: Hobbs, New Mexico

		****	TIODDS, NEW IVI				
Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY MET	HOD 8260B		MCL SW8	MCL SW8260B		ı/L	<u>-</u>
1,1,1,2-Tetrachloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,1,1-Trichloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,1,2,2-Tetrachloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,1,2-Trichloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,1-Dichloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,1-Dichloroethene	ND	5	1		06/24/03 15:33	JC	1737138
1,1-Dichloropropene	ND	5	1		06/24/03 15:33	JC	1737138
1,2,3-Trichlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,2,3-Trichloropropane	ND	5	1		06/24/03 15:33	JC	1737138
1,2,4-Trichlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,2,4-Trimethylbenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dibromo-3-chloropropane	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dibromoethane	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dichlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dichloroethane	ND	5	1		06/24/03 15:33	JC	1737138
1,2-Dichloropropane	ND	5	1		06/24/03 15:33	JC	1737138
1,3,5-Trimethylbenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,3-Dichlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
1,3-Dichloropropane	ND	5	1		06/24/03 15:33	JC	1737138
1,4-Dichlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
2,2-Dichloropropane	ND	5	1		06/24/03 15:33	JC	1737138
2-Butanone	ND	20	1		06/24/03 15:33	JC	1737138
2-Chloroethyl vinyl ether	ND	10	1		06/24/03 15:33	JC	1737138
2-Chlorotoluene	ND	5	1		06/24/03 15:33	JC	1737138
2-Hexanone	ND	10	1		06/24/03 15:33	JC	1737138
4-Chlorotoluene	ND	5	1		06/24/03 15:33	JC	1737138
4-Isopropyltoluene	ND	5	1		06/24/03 15:33	JC	1737138
4-Methyl-2-pentanone	ND	10	1		06/24/03 15:33	JC	1737138
Acetone	ND	100	1		06/24/03 15:33	JC	1737138
Acrylonitrile	ND	50	1		06/24/03 15:33	JC	1737138
Benzene	ND	5	1		06/24/03 15:33	JC	1737138
Bromobenzene	ND	5	1		06/24/03 15:33	JC	1737138
Bromochloromethane	ND	5	1		06/24/03 15:33	JC	1737138
Bromodichloromethane	ND	5	1		06/24/03 15:33	JC	1737138
Bromoform	ND	5	1		06/24/03 15:33	JC	1737138
Bromomethane	ND	10	1		06/24/03 15:33	JC	1737138
Carbon disulfide	ND	5	1	·	06/24/03 15:33	JC	1737138
Carbon tetrachloride	ND	5	1		06/24/03 15:33	JC	1737138
Chlorobenzene	ND	5	1		06/24/03 15:33	JC	1737138
Chloroethane	ND	10	1		06/24/03 15:33	JC	1737138

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

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8880 INTERCHANGE DRIVE-HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: MW-1G Collected: 06/20/2003 8:20 SPL Sample ID: 03060895-01

			Site:	Hobbs, New Mexico			
Analyses/Method	Result		Rep.Limit	Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
Chloroform	ND		5	1	06/24/03 15:33	JC	1737138
Chloromethane	ND		10	1	06/24/03 15:33	JC	1737138
Dibromochloromethane	ND		5	1	06/24/03 15:33	JC	1737138
Dibromomethane	ND		5	1	06/24/03 15:33	JC	1737138
Dichlorodifluoromethane	ND		10	1	06/24/03 15:33	JC	1737138
Ethylbenzene	ND		5	1	06/24/03 15:33	JC	1737138
Hexachlorobutadiene	ND		5	1	06/24/03 15:33	JC	1737138
Isopropylbenzene	ND		5	1	06/24/03 15:33	JC	1737138
Methyl tert-butyl ether	ND		5	1	06/24/03 15:33	JC	1737138
Methylene chloride	ND		5	1	06/24/03 15:33	JC	1737138
n-Butylbenzene	ND		5	1	06/24/03 15:33	JC	1737138
n-Propylbenzene	ND		5	1	06/24/03 15:33	JC	1737138
Naphthalene	ND		5	1	06/24/03 15:33	JC	1737138
sec-Butylbenzene	ND		5	1	06/24/03 15:33	JC	1737138
Styrene	ND		5	1	06/24/03 15:33	JC	1737138
tert-Butylbenzene	ND		5	1	06/24/03 15:33	JC	1737138
Tetrachloroethene	ND		5	1	06/24/03 15:33	JC	1737138
Toluene	ND		5	1	06/24/03 15:33	JC	1737138
Trichloroethene	ND		5	1	06/24/03 15:33	JC	1737138
Trichlorofluoromethane	ND		5	1	06/24/03 15:33	JC	1737138
Vinyl acetate	ND		10	1 .	06/24/03 15:33	JC	1737138
Vinyl chloride	ND		10	1	06/24/03 15:33	JC	1737138
cis-1,2-Dichloroethene	ND		5	1	06/24/03 15:33	JC	1737138
cis-1,3-Dichloropropene	ND		5	1	06/24/03 15:33	JC	1737138
m,p-Xylene	ND		5	1	06/24/03 15:33	JC	1737138
o-Xylene	ND		5	1	06/24/03 15:33	JC	1737138
trans-1,2-Dichloroethene	ND		5	1	06/24/03 15:33	JC	1737138
trans-1,3-Dichloropropene	ND		5	1	06/24/03 15:33	JC	1737138
1,2-Dichloroethene (total)	ND		5	1	06/24/03 15:33	JC	1737138
Xylenes,Total	ND		5	1	06/24/03 15:33	JC	1737138
Surr: 1,2-Dichloroethane-d4	108	%	62-130	1	06/24/03 15:33	JC	1737138
Surr: 4-Bromofluorobenzene	88.0	%	70-130	1	06/24/03 15:33	JC	1737138
Surr: Toluene-d8	94.0	%	74-122	1	06/24/03 15:33	JC	1737138

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

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J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: M-12R Collected: 06/20/2003 10:40 SPL Sample ID: 03060895-02

Site:	Hobbs.	New	Mexico
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				Site	: Hob	obs, New Mexico			
Analyses/Method	Res	ult		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBO	ONATE				MCL	M2320 B	Units: m	g/L	
Alkalinity, Bicarbonate	2	232		2		1	06/25/03 13:00	RA	1738531
ALKALINITY, CARBON	IATE				MCL	M2320 B	Units: m	g/L	
Alkalinity, Carbonate		ND		2		1	06/25/03 13:00	RA	1738603
CHLORIDE, TOTAL					MCL	E325.3	Units: m	g/L	
Chloride	8	9.3		2		2	06/26/03 10:00	RA	1740424
DIESEL RANGE ORGA	NICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organics		ND		1		1	07/05/03 18:02	AM	1754590
Surr: n-Pentacosane	6	0.2	%	18-120		1	07/05/03 18:02	AM	1754590
Prep Method	Prep Date			Prep Initials					
	06/22/2003 16:42			KL					
GASOLINE RANGE OR	GANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Organics	3 1	ΝD		0.1		1	07/01/03 21:33	D_R	1748087
Surr: 1,4-Difluorobenze	ene 1	02	%	74-121		1	07/01/03 21:33	D_R	1748087
Surr: 4-Bromofluorober	nzene 1	05	%	55-150		1	07/01/03 21:33	D_R	1748087
HEADSPACE GAS ANA	LYSIS				MCL	RSK147	Units: m	g/L	
Methane		ΝD		0.0012		1	06/24/03 16:22	J_F	1736629
ION CHROMATOGRAP	HY				MCL	E300.0	Units: m	g/L	
Nitrogen, Nitrate (As N)	1	۷D		0.1		1	06/21/03 14:48	CV	1732731
Sulfate	1	60		4		20	06/21/03 17:19	CV	1732742
PURGEABLE AROMAT	ICS				MCL	SW8021B	Units: ug	ı/L	
Benzene	ľ	ND.		1		1	07/01/03 21:33	D_R	1748040
Ethylbenzene	ſ	۱D		1		1	07/01/03 21:33	D_R	1748040
Toluene	N	1D		1		1	07/01/03 21:33	D_R	1748040
Xylenes,Total		۷D		1		1	07/01/03 21:33	D_R	1748040
Surr: 4-Bromofluorober	nzene 1	04	%	56-158		1	07/01/03 21:33	D_R	1748040
Surr: 1,4-Difluorobenze	ne 1	04	%	46-160		1	07/01/03 21:33	D_R	1748040

Qualifiers:

ND/U - Not Detected at the Reporting Limit

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J - Estimated Value between MDL and PQL

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D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: Trip Blank

Collected: 06/20/2003 0:00

SPL Sample ID:

03060895-03

Site: Hobbs, New Mexico

Analyses/Method	Result	Rep.Limit	Dil. Factor QUA	. Date Analyzed	Analyst Seq. #
VOLATILE ORGANICS BY MET	HOD 8260B		MCL SW8260B	Units: ug/L	•
1,1,1,2-Tetrachloroethane	ND	5	1		IC 1737137
1,1,1-Trichloroethane	ND	5	1	06/24/03 15:08 J	IC 1737137
1,1,2,2-Tetrachloroethane	ND	5	1	06/24/03 15:08 J	IC 1737137
1,1,2-Trichloroethane	ND	5	1	06/24/03 15:08 J	IC 1737137
1,1-Dichloroethane	ND	5	1	06/24/03 15:08 J	IC 1737137
1,1-Dichloroethene	ND	5	1	06/24/03 15:08 J	IC 1737137
1,1-Dichloropropene	ND	5	1	06/24/03 15:08 J	IC 1737137
1,2,3-Trichlorobenzene	ND	5	1	06/24/03 15:08 J	IC 1737137
1,2,3-Trichloropropane	ND	5	1	06/24/03 15:08 J	IC 1737137
1,2,4-Trichlorobenzene	ND	5	1	06/24/03 15:08 J	IC 1737137
1,2,4-Trimethylbenzene	ND	5	1	06/24/03 15:08 J	IC 1737137
1,2-Dibromo-3-chloropropane	ND	5	1	06/24/03 15:08 J	IC 1737137
1,2-Dibromoethane	ND	5	1	06/24/03 15:08 J	IC 1737137
1,2-Dichlorobenzene	ND	5	1	06/24/03 15:08 J	IC 1737137
1,2-Dichloroethane	ND	5	1	06/24/03 15:08 J	IC 1737137
1,2-Dichloropropane	ND	5	1	06/24/03 15:08 J	IC 1737137
1,3,5-Trimethylbenzene	ND	5	1	06/24/03 15:08 J	IC 1737137
1,3-Dichlorobenzene	ND	5	1	06/24/03 15:08 J	IC 1737137
1,3-Dichloropropane	ND	5	1	06/24/03 15:08 J	IC 1737137
1,4-Dichlorobenzene	ND	5	1	06/24/03 15:08 J	IC 1737137
2,2-Dichloropropane	ND	5	1	06/24/03 15:08 J	IC 1737137
2-Butanone	ND	20	1	06/24/03 15:08 J	IC 1737137
2-Chloroethyl vinyl ether	ND	10	1	06/24/03 15:08 J	IC 1737137
2-Chlorotoluene	ND	5	1	06/24/03 15:08 J	IC 1737137
2-Hexanone	ND	10	1	06/24/03 15:08 J	IC 1737137
4-Chlorotoluene	ND	5	1	06/24/03 15:08 J	IC 1737137
4-Isopropyltoluene	ND	5	1	06/24/03 15:08 J	IC 1737137
4-Methyl-2-pentanone	ND	10	1	06/24/03 15:08 J	IC 1737137
Acetone	ND	100	1	06/24/03 15:08 J	IC 1737137
Acrylonitrile	ND	50	1	06/24/03 15:08 J	IC 1737137
Benzene	ND	5	1	06/24/03 15:08 J	IC 1737137
Bromobenzene	ND	5	1	06/24/03 15:08 J	IC 1737137
Bromochloromethane	ND	5	1		IC 1737137
Bromodichloromethane	ND	5	1	06/24/03 15:08 J	IC 1737137
Bromoform	ND	5	1	06/24/03 15:08 J	IC 1737137
Bromomethane	ND	10	1	06/24/03 15:08 J	IC 1737137
Carbon disulfide	ND	5	1		IC 1737137
Carbon tetrachloride	ND	5	1	06/24/03 15:08	IC 1737137
Chlorobenzene	ND	5	1		IC 1737137
Chloroethane	ND	10	1		IC 1737137

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

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J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID: Trip Blank Collected: 06/20/2003 0:00 SPL Sample ID: 03060895-03

			Site:	Hobbs, New M	exico			
Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Chloroform	ND		5	1		06/24/03 15:08	JC	1737137
Chloromethane	ND		10	1		06/24/03 15:08	JC	1737137
Dibromochloromethane	ND		5	1		06/24/03 15:08	JC	1737137
Dibromomethane	ND		5	1		06/24/03 15:08	JC	1737137
Dichlorodifluoromethane	ND		10	1	i e	06/24/03 15:08	JC	1737137
Ethylbenzene	ND		5	1		06/24/03 15:08	JC	1737137
Hexachlorobutadiene	ND		5	1		06/24/03 15:08	JC	1737137
Isopropylbenzene	ND		5	1		06/24/03 15:08	JC	1737137
Methyl tert-butyl ether	ND		5	1		06/24/03 15:08	JC	1737137
Methylene chloride	ND		5	1		06/24/03 15:08	JC	1737137
n-Butylbenzene	ND		5	1		06/24/03 15:08	JC	1737137
n-Propylbenzene	ND		5	1		06/24/03 15:08	JC	1737137
Naphthalene	ND		5	1		06/24/03 15:08	JC	1737137
sec-Butylbenzene	ND		5	1		06/24/03 15:08	JC	1737137
Styrene	ND		5	1		06/24/03 15:08	JC	1737137
tert-Butylbenzene	ND		5	1		06/24/03 15:08	JC	1737137
Tetrachloroethene	ND		5	1		06/24/03 15:08	JC	1737137
Toluene	ND		5	1		06/24/03 15:08	JC	1737137
Trichloroethene	ND		5	1		06/24/03 15:08	JC	1737137
Trichlorofluoromethane	ND		5	1		06/24/03 15:08	JC	1737137
Vinyl acetate	ND		10	1	·	06/24/03 15:08	JC	1737137
Vinyl chloride	ND		10	1		06/24/03 15:08	JC	1737137
cis-1,2-Dichloroethene	ND		5	1		06/24/03 15:08	JC	1737137
cis-1,3-Dichloropropene	ND		5	1		06/24/03 15:08	JC	1737137
m,p-Xylene	ND		5	1		06/24/03 15:08	JC	1737137
o-Xylene	ND		5	1		06/24/03 15:08	JC	1737137
trans-1,2-Dichloroethene	ND		5	1		06/24/03 15:08	JC	1737137
trans-1,3-Dichloropropene	ND		5	1		06/24/03 15:08	JC	1737137
1,2-Dichloroethene (total)	ND		5	1		06/24/03 15:08	JC	1737137
Xylenes,Total	ND		5	1		06/24/03 15:08	JC	1737137
Surr: 1,2-Dichloroethane-d4	104	%	62-130	1		06/24/03 15:08	JC	1737137
Surr: 4-Bromofluorobenzene	88.0	%	70-130	1		06/24/03 15:08	JC	1737137
Surr: Toluene-d8	92.0	%	74-122	1		06/24/03 15:08	JC	1737137

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

Quality Control Documentation



(713) 660-0901

03060895

29532c

Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

RamalD:

Diesel Range Organics

thod:

A Nysis Date:

Preparation Date:

SW8015B

HP_V_030703C-1754583

07/03/2003 23:13

06/22/2003 16:42

Method Blank

Units: mg/L

Analyst: AM

Prep By: KL Method SW3510C Samples in Analytical Batch:

Lab Sample ID 03060895-02B

Client Sample ID M-12R

WorkOrder:

Lab Batch ID:

Result Rep Limit Analyte ПD Diesel Range Organics 1.0 18-120 Surr: n-Pentacosane

Laboratory Control Sample (LCS)

RunID:

HP_V_030703C-1754584

Units: mg/L

Analysis Date: Preparation Date:

07/03/2003 23:52 06/22/2003 16:42 Analyst: AM

Prep By:

KL Method SW3510C

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	1.62	65	21	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03060804-01

RunlD:

HP_V_030703C-1754586

Units:

Analysis Date:

07/04/2003 1:10

AM Analyst:

Preparation Date: 06/22/2003 16:42 Prep By: KL Method SW3510C

mg/L

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics	ND	5	2.65	52.3	5	3.33	65.9	22.7	39	13	130

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:41 AM



(713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

ພາID:

Headspace Gas Analysis

ethod:

RSK147

WorkOrder:

03060895 R87953

Lab Batch ID:

Method Blank

Samples in Analytical Batch:

VARC 030624A-1736623

Units:

mg/L

Lab Sample ID

Client Sample ID

alysis Date:

06/24/2003 11:17

Analyst: JF 03060895-01E

MW-1G

03060895-02D

M-12R

Analyte	Result	Rep Limit
Methane	ND	0.0012

Laboratory Control Sample (LCS)

RunID:

VARC_030624A-1736624

Units: mg/L

Analysis Date:

06/24/2003 11:46

Analyst: J_F

j	Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
	Methane	1000	1010	101	70	130

Sample Duplicate

Original Sample:

03060769-01

RunID:

VARC_030624A-1736625

Units:

mg/L

Analysis Date:

06/24/2003 14:59

Analyst: J_F

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Butane	ND	ND	0	50
Ethane	ND	ND	0	50
Ethylene	ND	ND	0	50
Isobutane	ND	ND	0	50
Methane	0.024	0.0238	1	50
Propane	ND	ND	0	50
Propylene	ND	ND	0	50

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:42 AM



Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

MnID:

Purgeable Aromatics

SW8021B

J Service, Hobbs, NM

WorkOrder:

03060895

Lab Batch ID:

R88495

Method Blank

HP_J_030701A-1748039

Units:

ug/L

D_R

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

alysis Date:

07/01/2003 21:07

Surr: 4-Bromofluorobenzene

Analyst:

03060895-02A

M-12R

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes, Total	ND	1.0
Surr: 1,4-Difluorobenzene	104.0	46-160

Laboratory Control Sample (LCS)

RunID:

HP_J_030701A-1748036

Units:

ug/L

Analysis Date:

07/01/2003 17:15

104.4

Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	53.2	106	70	130
Ethylbenzene	50	52.8	106	70	130
Toluene	50	53.4	107	70	130
Xylenes,Total	150	158.3	106	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03060895-02

RunID: Analysis Date: HP_J_030701A-1748037 07/01/2003 19:22 Units: Analyst:

ug/L D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
hzene	ND	20	21.8	109	20	19.3	96.4	12.2	21	32	164
Ethylbenzene	ND	20	23.6	118	20	18.8	94.2	22.6 *	19	52	142
Toluene	ND	20	21.8	109	20	19	95.2	13.3	20	38	159
enes,Total	ND	60	68.4	114	60	56.2	93.7	19.6 *	18	53	144

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:43 AM



(713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

alysis:

Gasoline Range Organics

thod:

alysis Date:

SW8015B

WorkOrder:

03060895

Lab Batch ID:

R88499

Method Blank

HP_J_030701C-1748086

07/01/2003 21:07

Units: Analyst: mg/L D_R

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03060895-02A

M-12R

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	102.3	74-121
Surr 4-Bromofluorobenzene	103.7	55-150

Laboratory Control Sample (LCS)

RunID:

HP_J_030701C-1748083

Units:

mg/L

Analysis Date:

07/01/2003 17:41

Analyst: DR

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.963	96	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03060895-02

RunID:

HP_J_030701C-1748084

Units:

mg/L

0.9

Analysis Date:

07/01/2003 20:14

D_R Analyst:

Sample MS MS MS % MSD MSD MSD % RPD RPD Analyte Low High Spike Result Result Recovery Spike Result Recovery Limit Limit Limit Added Added ND Gasoline Range Organics 0.9 1.2 133 1.24 137 2.88

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

"国情况的的时间,我们还是不是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人的时候,这个人,我们就是一个人的人。""我们就是一个人,我们

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:44 AM

36

36

160



(713) 660-0901

Brown & Caldwell

galysis: thod:

BanID:

Mercury, Total

SW7470A

BJ Service, Hobbs, NM

WorkOrder:

03060895

Lab Batch ID:

29624

Method Blank

Samples in Analytical Batch:

HGLD_030625A-1739832 Units: mg/L

Lab Sample ID

Client Sample ID

alysis Date:

06/25/2003 17:23

Analyst:

03060895-01D

MW-1G

Preparation Date:

06/25/2003 11:00

R T

Prep By: R_T Method SW7470A

Analyte Result Rep Limit ND 0.0002 Mercury

Laboratory Control Sample (LCS)

RunID:

HGLD_030625A-1739833

Units:

mq/L

Analysis Date:

06/25/2003 17:27

Analyst: R_T

Preparation Date: 06/25/2003 11:00

Prep By: R_T Method SW7470A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Mercury	0.002	0.001991	100	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03060943-01

RunID:

HGLD_030625A-1739837

Units:

mg/L

Analysis Date:

06/25/2003 17:37

Analyst: R_T

Preparation Date: 06/25/2003 11:00 Prep By: R_T Method SW7470A

	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
rcu	ry	ND	0.002	0.001827	91.36	0.002	0.001804	90.20	1.270	20	75	125

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

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N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:45 AM



(713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

alysis:

Metals by Method 6010B, Total

SW6010B thod:

WorkOrder:

03060895

Lab Batch ID:

29666

Method Blank

Samples in Analytical Batch:

ລາກID:

TJA_030707B-1756029

Units:

mg/L

Lab Sample ID

Client Sample ID

alysis Date:

07/08/2003 1:19

Analyst:

MW

03060895-01D

MW-1G

Preparation Date:

06/26/2003 13:15

Prep By: MED Method SW3010A

Rep Limit Result Analyte 0.005 ND Barium ND 0.005 Cadmium ND 0.1 Calcium Chromium ND 0.01 Magnesium ND 0.1 ND Potassium ND 0.01 Silver ND 0.5 Sodium

Laboratory Control Sample (LCS)

RunID:

TJA_030707B-1756030

Units:

mg/L

Analysis Date:

07/08/2003 1:24

Analyst: MW

Preparation Date: 06/26/2003 13:15 Prep By: MED Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Barium	1	1.027	103	80	120
Cadmium	1	0.9928	99	80	120
Calcium	1	1.012	101	80	120
Chromium	1	1.001	100	80	120
Magnesium	1	1.005	101	80	120
Potassium	10	9.166	92	80	120
Silver	1	1.009	101	80	120
Sodium	1	1.018	102	80	120

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

mple Spiked:

03060923-04

TJA_030707B-1756035

Units: mg/L

MW

Analysis Date:

paration Date:

07/08/2003 1:46 06/26/2003 13:15 Analyst: Prep By:

Method

Analyte	Sample Result	PDS Spike Added	PDS Result	PDS % Recovery	PDSD Spike Added	PDSD Result	PDSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Calcium	38.2	1	37.22	-98.21 *	1	36.21	-199.2 *	2.750	20	75	125
Sodium	146	1	150.7	470.1 *	1	154.7	868.0 *	2.606	20	75	125

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.



Brown & Caldwell BJ Service, Hobbs, NM

galysis: thod:

Metals by Method 6010B, Total

SW6010B

WorkOrder:

03060895

Lab Batch ID:

29666

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03060923-04

RunID:

TJA_030707B-1756032

07/08/2003 1:33

Units:

mg/L Analyst: MW

Analysis Date: Preparation Date:

06/26/2003 13:15

Prep By:

MED Method SW3010A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Barium	0.1145	1	1.126	101.1	1	1.142	102.7	1.385	20	75	125
Cadmium	ND	1	1.027	102.7	1	1.019	101.9	0.8515	20	75	125
Icium	38.21	1	38.96	N/C	1	39.29	N/C	N/C	20	75	125
romium	ND	1	1.007	100.7	1	0.9825	98.25	2.461	20	75	125
Magnesium	4.040	1	5.006	N/C	1	5.087	N/C	N/C	20	75	125
tassium	28.66	10	38.42	97.58	10	39.89	112.3	3.762	20	75	125
ver	ND	1	1.03	103.0	1	1.022	102.2	0.7086	20	75	125
Sodium	146.0	1	144.9	N/C	1	155.5	N/C	N/C	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:47 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

Apalysis:

mnID:

Metals by Method 6010B, Total

SW6010B thod:

WorkOrder:

Samples in Analytical Batch:

03060895

Lab Batch ID:

29666-T

Method Blank

TJAT_030705D-1756657

Units: mg/L

Lab Sample ID

Client Sample ID

alysis Date:

07/05/2003 16:51

Analyst: NS 03060895-01D

MW-1G

Preparation Date:

06/26/2003 13:15

Prep By: MED Method SW3010A

Result Rep Limit Analyte 0.005 ND Arsenic ND 0.005 Lead ND 0.005 Selenium

Laboratory Control Sample (LCS)

RunID:

TJAT_030705D-1756658

Units:

mg/L

Analysis Date: Preparation Date: 07/05/2003 16:56 06/26/2003 13:15 Analyst: NS

Prep By: MED Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Arsenic	0.1	0.1085	109	80	120
Lead	0.1	0.1052	105	80	120
Selenium	0.1	0.1051	105	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03060923-04

RuniD:

TJAT_030705D-1756660

Units:

mg/L

Analysis Date:

07/05/2003 17:09

NS Analyst:

Preparation Date:

06/26/2003 13:15

Prep By:

Method

	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
enic		ND	0.1	0.1124	112.4	0.1	0.1119	111.9	0.4281	20	75	125
Lead		ND	0.1	0.1033	101.6	0.1	0.1038	102.1	0.5312	20	75	125
Syeniu	m	ND	0.1	0.1075	107.5	0.1	0.1046	104.6	2.754	20	75	125

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:48 AM



Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

RunID:

Semivolatile Organics by Method 8270C

ethod: SW8270C WorkOrder:

Samples in Analytical Batch:

03060895

Lab Batch ID:

29591

Method Blank

P_030714A-1768442

Units: ug/L

Lab Sample ID

Client Sample ID

halysis Date: eparation Date: 07/14/2003 21:05

GQ Analyst:

03060895-01B

MW-1G

06/24/2003 10:38

Prep By: KL

Method SW3510C

Analyte	Result	Rep Limi
1,2,4-Trichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Diphenylhydrazine	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
2,4,5-Trichlorophenol	ND	10
2,4,6-Trichlorophenol	ND	5.0
2,4-Dichlorophenol	ND	5.0
2,4-Dimethylphenol	ND	5.0
2,4-Dinitrophenol	ND	25
2,4-Dinitrotoluene	ND	5.0
2,6-Dinitrotoluene	ND	5.0
2-Chloronaphthalene	ND	5.0
2-Chlorophenol	ND	5.0
2-Methylnaphthalene	ND	5.0
2-Nitroaniline	ND	2!
2-Nitrophenol	ND	5.0
3,3'-Dichlorobenzidine	ND	1(
3-Nitroaniline	ND	25
4,6-Dinitro-2-methylphenol	ND	25
4-Bromophenyl phenyl ether	ND	5.0
4-Chloro-3-methylphenol	ND	5.0
4-Chloroaniline	ND	5.0
4-Chlorophenyl phenyl ether	ND	5.0
4-Nitroaniline	ND	25
4-Nitrophenol	ND	2:
Acenaphthene	ND	5.0
Acenaphthylene	ND	5.0
Aniline	ND	5.0
Anthracene	ND	5.0
	ND	5.0
Benz(a)anthracene	ND	5.0
Benzo(a)pyrene	ND	5.0
Benzo(b)fluoranthene	ND	
Benzo(g,h,i)perylene	ND	5.0
Benzo(k)fluoranthene		5.0
Benzoic acid	ND	25
Benzyl alcohol	ND	5.0
Bis(2-chloroethoxy)methane	ND	5.0
Bis(2-chloroethyl)ether	ND	5.0
Bis(2-chloroisopropyl)ether	ND	5.0
Bis(2-ethylhexyl)phthalate	ND	5.0
Butyl benzyl phthalate	ND	5.0
Carbazole	ND	5.0
Chrysene	ND	5.0
Di-n-butyl phthalate	ND	5.0
Di-n-octyl phthalate	ND	5.0
Dibenz(a,h)anthracene	ND	5.0
Dibenzofuran	ND	5.0

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

8/4/2003 11:43:45 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

Semivolatile Organics by Method 8270C

ethod: SW8270C WorkOrder:

03060895

Lab Batch ID:

29591

Method Blank

RunID:

P_030714A-1768442

Units: ug/L

nalysis Date: reparation Date:

07/14/2003 21:05 06/24/2003 10:38

Analyst: GQ Prep By:

KL

Method SW3510C

Analyte	Result	Rep Limit
Diethyl phthalate	ND	5.0
Dimethyl phthalate	ND	5.0
Fluoranthene	ND	5.0
Fluorene	ND	5.0
Hexachlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Hexachlorocyclopentadiene	ND	5.0
Hexachloroethane	ND	5.0
Indeno(1,2,3-cd)pyrene	ND	5.0
Isophorone	ND	5.0
N-Nitrosodi-n-propylamine	ND.	5.0
N-Nitrosodiphenylamine	ND.	5.0
Naphthalene	ND	5.0
Nitrobenzene	ND	5.0
Pentachlorophenol	ND	25
Phenanthrene	ND	5.0
Phenol	ND.	5.0
Pyrene	ND	5.0
Pyridine	ND	5.0
2-Methylphenol	ND	5.0
3 & 4-Methylphenol	ND.	5.0
Surr: 2,4,6-Tribromophenol	80.0	10-123
Surr: 2-Fluorobiphenyl	68.0	43-116
Surr: 2-Fluorophenol	62.7	21-110
Surr: Nitrobenzene-d5	66.0	35-114
Surr: Phenol-d5	64.0	10-110
Surr: Terphenyl-d14	70.0	33-141

Laboratory Control Sample (LCS)

RunID:

P_030714A-1768443

Units: ug/L

Analyst: GQ

Analysis Date: Preparation Date:

07/14/2003 21:36 06/24/2003 10:38

Method SW3510C Prep By: KL

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
1,2,4-Trichlorobenzene	50	34	68	30	142
1,4-Dichlorobenzene	50	32	64	30	150
2,4-Dinitrotoluene	50	39	78	30	150
2-Chlorophenol	75	49	65	23	134
4-Chloro-3-methylphenol	75	48	64	25	160
4-Nitrophenol	75	51	68	1	132
Acenaphthene	50	34	68	30	150

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

8/4/2003 11:43:45 AM



Brown & Caldwell BJ Service, Hobbs, NM

Analysis: ethod:

Semivolatile Organics by Method 8270C

SW8270C

WorkOrder:

Lab Batch ID:

03060895

29591

Laboratory Control Sample (LCS)

RunID:

P_030714A-1768443

Units: ug/L

Analysis Date:

07/14/2003 21:36

Analyst: GQ

Preparation Date: 06/24/2003 10:38 Prep By: KL

Method SW3510C

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
N-Nitrosodi-n-propylamine	50	41	82	30	160
Pentachlorophenol	75	41	55	14	176
Phenol	75	51	68	5	112
Pyrene	50	34	68	30	150

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03060844-01

Preparation Date: 06/24/2003 10:38

P_030714A-1768445

Units:

ug/L

Analysis Date:

RunID:

07/14/2003 22:39

Analyst: GQ Prep By: KL

Method SW3510C

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
2,4-Trichlorobenzene	ND	50	26	52	50	28	56.0	7	28	30	142
1,4-Dichlorobenzene	ND	50	24	48	50	26	52.0	8	28	30	150
4-Dinitrotoluene	ND	50	32	64	50	32	64.0	0	50	30	150
Chlorophenol	ND	75	38	51	75	38	50.7	0	40	23	13
4-Chloro-3-methylphenol	ND	75	38	51	75	39	52.0	3	42	25	16
Nitrophenol	ND	75	26	35	75	25	33.3	4	50	1	13:
cenaphthene	ND	50	28	56	50	29	58.0	4	31	30	15
N-Nitrosodi-n-propylamine	ND	50	34	68	50	35	70.0	3	38	30	16
Rentachlorophenol	ND	75	34	45	75	37	49.3	8	50	14	17
henol	ND	75	24	32	75	22	29.3	9	42	5	11:
Pyrene	ND	50	28	56	50	29	58.0	4	31	30	15

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

8/4/2003 11:43:45 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

Volatile Organics by Method 8260B

SW8260B

J Service, Hobbs, NM

WorkOrder:

03060895

Lab Batch ID:

R87982

Method Blank

RonID: Alysis Date: N_030624A-1737131 06/24/2003 11:01 Units: Analyst: ug/L JC

Lab Sample ID

Client Sample ID

03060895-01A

Samples in Analytical Batch:

MW-1G

03060895-03A

Trip Blank

Analyte	Result	Rep Limi
1,1,1,2-Tetrachloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloropropene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0
1,2,3-Trichloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0
1,2-Dibromoethane	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dichloroethane	ND	5.0
1,2-Dichloropropane	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,3-Dichloropropane	ND	5.0
1,4-Dichlorobenzene	ND	5.0
2,2-Dichloropropane	ND	5.0
2-Butanone	ND	20
2-Chloroethyl vinyl ether	ND	10
	ND	
2-Chlorotoluene	ND	5.0 10
2-Hexanone		
4-Chlorotoluene	ND	5.0
4-Isopropyltoluene	ND ND	5.0
4-Methyl-2-pentanone	ND	10
Acetone	ND	100
Acrylonitrile	ND ND	50
Benzene	ND	5.0
Bromobenzene	ND	5.0
Bromochloromethane	ND	5.0
Bromodichloromethane	ND ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	10
Carbon disulfide	ND	5.0
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND	5.0
Dibromomethane	ND	5.0
Dichlorodifluoromethane	ND	10
Ethylbenzene	ND	5.0
-lexachlorobutadiene	ND	5.0
sopropylbenzene	ND	5.0

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:50 AM



Brown & Caldwell BJ Service, Hobbs, NM

Apalysis:

Volatile Organics by Method 8260B

SW8260B

WorkOrder:

03060895

2000

Lab Batch ID:

R87982

Method Blank

nID:

N_030624A-1737131

Units:

ug/L

alysis Date:

06/24/2003 11:01

Analyst: JC

Analyte Result Rep Limit 5.0 Methyl tert-butyl ether ND Methylene chloride ND 5.0 ND 5.0 n-Butylbenzene n-Propylbenzene ND 5.0 Naphthalene ND 5.0 ND 5.0 sec-Butylbenzene Styrene ND 5.0 tert-Butylbenzene ND 5.0 Tetrachloroethene ND 5.0 Toluene ND 5.0 ND 5.0 Trichloroethene Trichlorofluoromethane ND 5.0 10 Vinyl acetate ND Vinyl chloride ND 10 cis-1,2-Dichloroethene ND 5.0 cis-1,3-Dichloropropene ND 5.0 ND 5.0 m,p-Xylene o-Xylene ND 5.0 trans-1,2-Dichloroethene ND 5.0 trans-1,3-Dichloropropene ND 5.0 1,2-Dichloroethene (total) ND 5.0 ND 5.0 Xylenes,Total Surr: 1,2-Dichloroethane-d4 62-130 102.0 Surr: 4-Bromofluorobenzene 86.0 70-130 92.0 74-122 Surr: Toluene-d8

Laboratory Control Sample (LCS)

RunID:

N_030624A-1737130

Units: ug/L

Analysis Date:

06/24/2003 10:12

Analyst: JC

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
1,1-Dichloroethene	50	45	90	61	145
Benzene	50	53	106	76	127
Chlorobenzene	50	49	98	70	130
Toluene	50	52	104	70	129
Trichloroethene	50	50	100	60	140

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:50 AM



Brown & Caldwell

BJ Service, Hobbs, NM

wiysis: hod:

Volatile Organics by Method 8260B

SW8260B

WorkOrder:

03060895

Lab Batch ID:

R87982

Sample Spiked: RunID:

03060594-04

N_030624A-1737150

Units: ug/L

Analysis Date:

06/24/2003 19:15

Analyst: JC

The state of the s	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Dichl	oroethene	ND	2500	2300	92	2500	2400	96.0	4	14	61	145
Enzene		1500	2500	4200	108	2500	4300	112	2	11	76	127
Chlorobe	enzene	ND	2500	2600	104	2500	2600	104	0	13	70	130
Jene		ND	2500	2700	108	2500	2700	108	0	13	70	129
hloro	ethene	ND	2500	2600	104	2500	2600	104	0	14	60	140

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:51 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis:

<mark>Ձ</mark>պոID։

Ion Chromatography

E300.0

J Service, Hobbs, NW

WorkOrder:

03060895

Lab Batch ID:

R87753

Method Blank

IC1_030621A-1734500 Units: mg/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

alysis Date:

06/21/2003 13:07

Analyst: CV

03060895-01C

MW-1G

03060895-02C

M-12R

Analyte	Result	Rep Limit
Nitrogen, Nitrate (As N)	ND	0.10

Laboratory Control Sample (LCS)

RunID:

IC1_030621A-1732725

Units:

mg/L

Analysis Date:

06/21/2003 13:32

Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen, Nitrate (As N)	10	10.1	101	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03060895-01

RunID:

IC1_030621A-1732729

Units:

mg/L

Analysis Date: 0

06/21/2003 14:22

Analyst: CV

Analyte	Sample Result	MS Spike Addeđ	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
rogen,Nitrate (As N)	4.37	10	15.4	110	10	15.2	108	1.24	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:52 AM



Brown & Caldwell BJ Service, Hobbs, NM

nilysis:

Ion Chromatography

hod:

A lysis Date:

E300.0

WorkOrder:

Samples in Analytical Batch:

03060895

Lab Batch ID:

R87753B

Method Blank

IC1_030621A-1734029 06/21/2003 13:07

Units: Analyst:

mg/L CV

Lab Sample ID

Client Sample ID

03060895-01C

MW-1G

03060895-02C

M-12R

Analyte	Result	Rep Limit
Sulfate	ND	0.20

Laboratory Control Sample (LCS)

RunID:

IC1_030621A-1732724

Units:

mg/L

Analysis Date:

06/21/2003 13:19

Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10	9.92	99	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03060895-01

RunID:

IC1_030621A-1732740

Units:

mg/L

Analysis Date:

06/21/2003 16:54

CV Analyst:

	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit	
at	e	196	500	705	102	500	714	103	1.31	20	80	120	

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

Carrie Carlo Program

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:53 AM



Brown & Caldwell

Analysis:

a⊯nID:

Alkalinity, Bicarbonate

thod: M2320 B BJ Service, Hobbs, NM

WorkOrder:

03060895

Lab Batch ID:

R88051

Method Blank

WET_030625J-1738522

Units: mg/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

alysis Date:

06/25/2003 13:00

Analyst: RA 03060895-01C

MW-1G

03060895-02C

M-12R

Analyte	Result	Rep Limit
Alkalinity, Bicarbonate	ND	2.0

Laboratory Control Sample (LCS)

RunID:

WET_030625J-1738525

Units:

mg/L

Analysis Date:

06/25/2003 13:00

RA

Analyst:

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Bicarbonate	98.9	96.52	98	90	110

Sample Duplicate

Original Sample:

03060859-01

RunID:

WET_030625J-1738526

Units:

mg/L

Analysis Date:

06/25/2003 13:00

Analyst:

RA

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Alkalinity, Bicarbonate	424	423.9	- 1	20

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:54 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

Analysis: thod:

BuniD:

alysis Date:

Alkalinity, Carbonate

M2320 B

WorkOrder:

03060895

Lab Batch ID:

R88055

Method Blank

WET_030625K-1738592

06/25/2003 13:00

Units: Analyst: mg/L RA

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03060895-01C

MW-1G

03060895-02C

M-12R

Analyte	Result	Rep Limit
Alkalinity, Carbonate	ND	2.0

Laboratory Control Sample (LCS)

RunID:

WET_030625K-1738595

Units: mg/L

Analysis Date:

06/25/2003 13:00

Analyst: RA

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Carbonate	98.9	96.52	98	90	110

Sample Duplicate

Original Sample:

03060859-01

RunID:

WET_030625K-1738597

Units:

mg/L

Analysis Date:

06/25/2003 13:00

Analyst:

RA

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Alkalinity, Carbonate	ND	ND	0	20

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:55 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

alysis:

nID:

Chloride, Total

06/26/2003 10:00

thod:

alysis Date:

E325.3

Samples in Analytical Batch:

03060895

WorkOrder: Lab Batch ID:

R88136

Method Blank

WET_030626F-1740415

Units: Analyst:

mg/L RA

Lab Sample ID

Client Sample ID

03060895-01C

MW-1G

03060895-02C

M-12R

Analyte	Result	Rep Limit
Chloride	ND	1.0

Laboratory Control Sample (LCS)

RunID:

WET_030626F-1740417

Units: mg/L

Analysis Date:

06/26/2003 10:00

Analyst: RA

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	233	232.7	100	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03060831-06

RunID:

WET_030626F-1740432

Units:

mg/L

Analysis Date:

06/26/2003 10:00

RA Analyst:

	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
loride		4109	2500	6700	103.6	2500	6700	103.6	0	20	85	115

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

7/16/03 11:18:56 AM

Sample Receipt Checklist And Chain of Custody

	SI	SPL, Inc.			SPL Warkarder No.	Fr No:		169802	2
	Analysis Request & Chain of Custody Record	Chain of Cu	stody Rec	ord	9380	03060895		page / of	
Client Name: SKOULY	and Caldwall	matrix bottle	size pres.			Request	Requested Analysis	sis	
1415	s, ana	r: Rjass		Ls.			3f2f	219/11 Sm [5]	
Client Contact:	Noox X & X	ıwpe	ONF zog	aine.	09	0	105	120	
 :		z= S = O = V) I = 9	19/ nuoc	78	128] // _j	5 ×	
140H	15 100 WWX 150	Dİ.) ĭ	10 z	5; 0)		12.4) [4.7]	8 V	
Rick	PONX 23	olast	HCI 30s	7/10 əqu	0		107)	w	
SAMPLE ID	DATE TIME comp grab	C=5 b=k SF=	8=8 I=I	9 in _N	<u> </u>		D 14	,	
MW-16	6.2003 8120 X	I		0/	×	X	X	X	
M-12R	1 04:01 ED-07-9	M		ъ Х	×		×	X	
Axis blak		M		2	X				
		(
						4			
							1 1		
Client/Consultant Remarks:		Laboratory remarks:	11				Intact?	a? DY D	Z
Beginested TAT	Special Reporting Requirements Fax R	Fax Results	Raw Data	Special Detection Limits (specify):	on Limits (spe	cify):		\ <u>~</u>	(F)
Title pareaphar	Standard QC 🔯 Level	Level 3 CC	Level 4 🌣 📋						
24hr 🔲 72hr 🔘	1. Relinquished by Sampler:		date 120/05	time 12.30	2. Received by:	عَد			
48hr 🔲 Standard 🔀	3. Relinquished by:		date	time	4. Received by:	مكن	-		
Other 🔲	5. Relinquished by:		date GIIOZ	time	6. Received	6. Received by Laboratory.			

459-Hugnes Drive, Iraverse



(713) 660-0901

Sample Receipt Checklist

	Wo	orkorder:	03060895			Received	d Bv:	R_R	
		te and Time Received:	6/21/03 10:00:00 AM			Carrier n	-	FedEx	
		mperature:	3			Chilled b		Water Ice	
81									
	1.	Shipping container/co	poler in good condition?	Yes	\checkmark	No 🗌	Not Prese	ent 🗌	
J	2	Custody seals intact of	on shippping container/cooler?	Yes	V	No 🗌	Not Prese	ent 🔲	
1	۷.		•						
	3.	Custody seals intact of	on sample bottles?	Yes		No 🗌	Not Prese	ent 🗹	
n	1	Chain of custody pres	sent?	Yes	✓	No 🗆			
•	5.	Chain of custody sign	ed when relinquished and received?	Yes	⊻	No 🗌			
	6.	Chain of custody agre	ees with sample labels?	Yes	\checkmark	No 🗌			
	_			Yes		Na 🗆			
	7.	Samples in proper co	ntainer/bottle?	Yes	V .	No 🗌			
	8.	Sample containers int	tact?	Yes	✓	No 🗌			
	_	Sufficient cample volu	ume for indicated test?	Yes		No 🗆			
)	9.	Sumcient Sample void	ame for mulcated test:	103		110			
)	10.	All samples received	within holding time?	Yes	\checkmark	No 🗌			
.	1 4	Container/Temp Blank	temperature in compliance?	Yes	$ \mathbf{Z} $	No 🗔			
1	! 1.	, , , , , , , , , , , , , , , , , , ,							
	12.	Water - VOA vials hav	e zero headspace?	Yes	\checkmark	No 🗌	Not Applic	cable 🗀	
	12	Water - pH acceptable	upon receipt?	Yes	✓	No 🗌	Not Applic	cable	
	10.								
_									
		SPL Representativ		Conta	act Date & T	ime:			
•		Client Name Contacte	d:						
		Non Conformance Issues:							
ĺ		Client Instructions:							
								···	
ļ									
)									



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03080815

eport To:

Fax To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana

Suite 2509

Houston

TX

77002-

ph: (713) 759-0999

Rick Rexroad

Brown & Caldwell

fax: (713) 308-3886

fax: (713) 308-3886

Project Name:

BJ Service, Hobbs, NM

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
V-10	03080815-01	Water	8/21/03 2:00:00 PM	8/23/03 9:30:00 AM	183199	
₩V-11A	03080815-02	Water	8/21/03 2:15:00 PM	8/23/03 9:30:00 AM	183199	
MW-12D	03080815-03	Water	8/22/03 10:05:00 AM	8/23/03 9:30:00 AM	183199	
V-14	03080815-04	Water	8/22/03 1:00:00 AM	8/23/03 9:30:00 AM	183199	
V-15	03080815-05	Water	8/21/03 11:50:00 AM	8/23/03 9:30:00 AM	183199	
MW-16	03080815-06	Water	8/22/03 11:15:00 AM	8/23/03 9:30:00 AM	183199	

Lynch
nior Project Manager

9/8/03

Date

Joel Grice Laboratory Director

Ted Yen
Quality Assurance Officer



(713) 660-0901

BJ Service, Hobbs, NM

Case Narrative for: Brown & Caldwell

Certificate of Analysis Number:

03080815

Report To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana

Suite 2509 Houston

TX

77002-

ph: (713) 759-0999

PO Number:

fax: (713) 308-3886

State:

Site:

New Mexico

Hobbs, NM

State Cert. No.:

Project Name:

Site Address:

Date Reported:

The data in this report applies to the analysis of six water samples from the BJ Services site located in Hobbs, New Mexico. SPL received these samples on August 23, 2003, assigned them to SPL Certificate of Analysis No. 03080815, and analyzed them for the parameters as listed on COC No. 183199. A trip blank was listed on the chain-of-custody. However, SPL did not receive the trip blank.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Pat Lynch
Senior Project Manager

9/9/2003

Date



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-10

Collected: 08/21/2003 14:00

SPL Sample ID:

03080815-01

Analyses/Method		Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq.#
DIESEL RANGE ORG	ANICS				MCL	SW8	3015B	Units: m	g/L	
Diesel Range Organics		ND		1	-	1		08/27/03 23:39	AM	1842115
Surr: n-Pentacosane		72.4	%	18-120		1		08/27/03 23:39 AM		1842115
Prep Method	Prep Date		,	Prep Initials						
CMSETOC	08/24/2003 10:	30		KI						

Prep Method	Prep Date	Prep Initials
SW3510C	08/24/2003 19:30	KL

GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg	g/L	
Gasoline Range Organics	ND		0.1		1	09/04/03 2:48	D_R	1850137
Surr: 1,4-Difluorobenzene	101	%	74-121		1	09/04/03 2:48	D_R	1850137
Surr: 4-Bromofluorobenzene	105	%	55-150		1	09/04/03 2:48	D_R	1850137

MERCURY, TOTAL	· · ·		MCL	SW7470A	Units: mg/L	
Methane	ND	0.0012		1	08/26/03 15:01 J_F	1840899
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L	
Hardness (As CaCO3)	790	50		10	09/02/03 18:00 CV	1847622
HARDNESS, TOTAL (TITRIMETRI	C, EDTA)		MCL	E130.2	Units: mg/L	

Mercury		ND	0.0002	1	08/26/03 14:34 MED	1840092
Prep Method	Prep Date		Prep Initials			

SW7470A	08/26/2003 9:44	MED	j				
TETALS BY METH	OD 6010B, TOTAL	***	MCL	SW6010B	Units: m	g/L	
Arsenic	0.0598	0.005		1	09/04/03 19:54	NS	1851097
Lead	ND	0.005		1	09/04/03 19:54	NS	1851097
Selenium	ND	0.005		1	09/04/03 19:54	NS	1851097
Barium	0.04	0.005		1	08/27/03 17:02	MW	1842436
Cadmium	ND	0.005		1	08/27/03 17:02	MW	1842436
Calcium	108	0.1		1	08/27/03 17:02	MW	1842436
Chromium	ND	0.01		1	08/27/03 17:02	MW	1842436
Magnesium	41.1	0.1		1	08/27/03 17:02	MW	1842436
Potassium	4.61	2		1	09/04/03 17:32	MW	1851436
Silver	ND	0.01		1	08/27/03 17:02	MW	1842436

0.5

Prep Method	Prep Date	Prep Initials
SW3010A	09/04/2003 9:25	SE
SW3010A	08/25/2003 13:22	SE

170

Qualifiers:

Sodium

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

09/04/03 17:32 MW

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

1

1851436



8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Client Sample ID MW-10

Collected: 08/21/2003 14:00

SPL Sample ID:

03080815-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq.#
POLYNUCLEAR AROMATIC H	YDROCARBO	ONS	MCL	. SW8310		Units: uç	₃ /L	
Acenaphthene	ND	0.1		1		08/31/03 8:01	DL	1850245
Acenaphthylene	ND	0.1		1		08/31/03 8:01	DL	1850245
Anthracene	ND	0.1		1	· · · · · · · · · · · · · · · · · · ·	08/31/03 8:01	DL	1850245
Benz(a)anthracene	ND	0.1		1		08/31/03 8:01	DL	1850245
Benzo(a)pyrene	ND	0.1		1		08/31/03 8:01	DL	1850245
Benzo(b)fluoranthene	ND	0.1		1		08/31/03 8:01	DL	1850245
Benzo(g,h,i)perylene	ND	0.1		1		08/31/03 8:01	DL	1850245
Benzo(k)fluoranthene	ND	0.1		1		08/31/03 8:01	DL	1850245
Chrysene	ND	0.1		1		08/31/03 8:01	DL	1850245
Dibenzo(a,h)anthracene	ND	0.1		1		08/31/03 8:01	DL	1850245
Fluoranthene	ND	0.1		1		08/31/03 8:01	DL	1850245
Fluorene	ND	0.1		1		08/31/03 8:01	DL	1850245
Indeno(1,2,3-cd)pyrene	ND	0.1		1		08/31/03 8:01	DL	1850245
Naphthalene	0.14	0.1		1		08/31/03 8:01	DL	1850245
Phenanthrene	ND	0.1		1		08/31/03 8:01	DL	1850245
Pyrene	ND	0.1		1		08/31/03 8:01	DL	1850245
Surr: 1-Fluoronaphthalene	25.7	% 18-130		1		08/31/03 8:01	DL	1850245
Surr: Phenanthrene-d10	29.3	% 21-111		1	***************************************	08/31/03 8:01	DL	1850245

Prep Method	Prep Date	Prep Initials
SW3510C	08/24/2003 19:31	KL

PURGEABLE AROMATICS				MCL	SW8021B	Units: u	g/L	
Benzene	ND		1		1	09/02/03 20:00	D_R	1848022
Ethylbenzene	ND		1		1	09/02/03 20:00	D_R	1848022
Toluene	ND		1		1	09/02/03 20:00	D_R	1848022
Xylenes,Total	ND		1		1	09/02/03 20:00	D_R	1848022
Surr: 4-Bromofluorobenzene	101	%	57-157		1	09/02/03 20:00	D_R	1848022
Surr: 1,4-Difluorobenzene	95.5	%	39-163		1	09/02/03 20:00	D_R	1848022

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

THE REPORT OF THE PARTY OF THE

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-11A

Collected: 08/21/2003 14:15

SPL Sample ID:

03080815-02

		Site:	ПО	obs, NM			
Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq.#
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
ND		1		1	08/28/03 0:18	AM	1842116
62.2	%	18-120		1	08/28/03 0:18	AM	1842116
		Prep Initials					
19:30		KL					
	-		MCL	SW8015B	Units: m	g/L	
0.24		0.1		1	09/04/03 3:15	D_R	1850138
101	%	74-121		1	09/04/03 3:15	D_R	1850138
109	%	55-150		1	09/04/03 3:15	D_R	1850138
			MCL	RSK147	Units: m	g/L	
ND		0.0012		1	08/26/03 15:31	J_F	1840904
			MCL	SW8021B	Units: uç	1/L	
3.7		1		1	09/02/03 20:25	D_R	1848023
ND		1		1	09/02/03 20:25	D_R	1848023
ND		1		1	09/02/03 20:25	D_R	1848023
ND	-	1		1	09/02/03 20:25	D_R	1848023
101	%	57-157		1	09/02/03 20:25	D_R	1848023
103	%	39-163		1	09/02/03 20:25	D_R	1848023
	ND 62.2 19:30 0.24 101 109 ND ND ND ND 101	ND 62.2 % 19:30 0.24 101 % 109 % ND ND ND ND ND ND ND ND ND	Result Rep.Limit ND	Result Rep.Limit MCL ND	Result Rep.Limit Dil. Factor QUAL MCL SW8015B ND 1 1 62.2 % 18-120 1 Prep Initials 19:30 KL MCL SW8015B 0.24 0.1 1 101 % 74-121 1 109 % 55-150 1 MCL RSK147 ND 0.0012 1 ND 1 1 ND 1 1 ND 1 1 ND 1 1 ND 1 1 ND 1 1 ND 1 1 ND 1 1 ND 1 1 ND 1 1 ND 1 1 ND 57-157 1	Result Rep.Limit Dil. Factor QUAL Date Analyzed MCL SW8015B Units: m ND 1 1 08/28/03 0:18 62.2 % 18-120 1 08/28/03 0:18 Prep Initials 19:30 KL MCL SW8015B Units: m 0.24 0.1 1 09/04/03 3:15 101 % 74-121 1 09/04/03 3:15 109 % 55-150 1 09/04/03 3:15 MCL RSK147 Units: m ND 0.0012 1 08/26/03 15:31 MCL SW8021B Units: ug 3.7 1 1 09/02/03 20:25 ND 1 1 09/02/03 20:25 ND 1 1 09/02/03 20:25 ND 1 1 09/02/03 20:25 ND 1 1 09/02/03 20:25 ND 1 1 09/02/03 20:25 ND	Result Rep.Limit Dil. Factor QUAL Date Analyzed Analyst Analyst MCL SW8015B Units: mg/L MCL SW8015B Units: mg/L 0.24 0.1 1 09/04/03 3:15 D_R 101 % 74-121 1 09/04/03 3:15 D_R MCL RSK147 Units: mg/L ND 0.0012 1 08/26/03 15:31 J_F MCL SW8021B Units: mg/L 3.7 1 09/02/03 20:25 D_R ND 1 1 09/02/03 20:25 D_R ND 1 1 09/02/03 20:25 D_R ND 1 1 09/02/03 20:25 D_R ND 1 <th< td=""></th<>

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution



8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Client Sample ID MW-12D 03080815-03 Collected: 08/22/2003 10:05 SPL Sample ID:

Site:	Hobbs.	NM
Jile.	HUDDOS.	14141

				Site	: Hol	obs, NM			
Analyses/Method		Result		Rep.Limit	3	Dil. Factor QUAL	Date Analyzed	Analyst	Seq.#
DIESEL RANGE OR	GANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organic	s	ND		1		1	08/28/03 0:58	AM	1842117
Surr: n-Pentacosan	е	50.2	%	18-120		1	08/28/03 0:58	AM	1842117
Prep Method	Prep Date			Prep Initials					
SW3510C	08/24/2003 1	9:30		KL					
GASOLINE RANGE	ORGANICS				MCL	SW8015B	Units: m	g/L	
Gasoline Range Orga	nics	ND		0.1		1	09/04/03 3:41	D_R	1850139
Surr: 1,4-Difluorobe	nzene	102	%	74-121		1	09/04/03 3:41	D_R	1850139
Surr: 4-Bromofluoro	benzene	97.3	%	55-150		1	09/04/03 3:41	D_R	1850139
HEADSPACE GAS	ANALYSIS				MCL	RSK147	Units: m	g/L	
Methane		ND		0.0012		1	08/26/03 15:44	J_F	1840905
ION CHROMATOGR	APHY				MCL	E300.0	Units: m	g/L	
Nitrogen, Nitrate (As N)	ND		0.1		1	08/23/03 15:58	CV	1837670
Sulfate		160		4		20	08/26/03 16:46	CV	1843566
PURGEABLE AROM	ATICS				MCL	SW8021B	Units: uç	g/L	
Benzene		ND		1		1	09/02/03 20:52	D_R	1848024
Ethylbenzene		ND		1		1	09/02/03 20:52	D_R	1848024
Toluene		ND		1		1	09/02/03 20:52	D_R	1848024
Xylenes,Total		ND		1		1	09/02/03 20:52	D_R	1848024
Surr: 4-Bromofluoro	benzene	97.8	%	57-157		1	09/02/03 20:52	D_R	1848024
Surr: 1.4-Difluorobe		104	%	39-163		1	09/02/03 20:52	0.0	1848024

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-14 Collected: 08/22/2003 1:00 SPL Sample ID: 03080815-04

	Site	: Hol	bbs, NM			
Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq.#
		MCL	E325.3	Units: mg	/L	
182	2		2	08/25/03 11:00	RA	1838041
TITRIMETRIC, EDTA)		MCL	E130.2	Units: mg	/L	
600	50		10	09/02/03 18:00	CV	1847623
NALYSIS		MCL	RSK147	Units: mg	/L	
ND	0.0012		1	08/26/03 15:58	J_F	1840906
		MCL	SW7470A	Units: mg	/L	
ND	0.0002		1	08/26/03 14:36 N	/ED	1840093
Prep Date	Prep Initials					
08/26/2003 9:44	MED					
0 6010B, TOTAL		MCL	SW6010B	Units: ma	/L	
ND	0.005		1	09/04/03 20:00	NS	1851098
ND	0.005		1	09/04/03 20:00	NS	1851098
ND	0.005		1	09/04/03 20:00	NS	1851098
0.0262	0.005		1	08/27/03 17:07 M	ИW	1842438
ND	0.005		1	08/27/03 17:07 M	иW	1842438
62.2	0.1		1	08/27/03 17:07 N	ИW	1842438
ND	0.01		1	08/27/03 17:07 M	ИW	1842438
35.5	0.1		1	08/27/03 17:07 N	ΛW	1842438
ND	2		1	09/04/03 17:37 N	ИW	1851437
ND	0.01		1	08/27/03 17:07 M	ИW	1842438
53.3	0.5		1	09/04/03 17:37 N	иW	1851437
	182 TITRIMETRIC, EDTA) 600 NALYSIS ND Prep Date 08/26/2003 9:44 0 6010B, TOTAL ND ND ND 0.0262 ND 62.2 ND 35.5 ND ND	Result Rep.Limit	Result Rep.Limit MCL	Result Rep.Limit Dil. Factor QUAL	Result Rep.Limit Dil. Factor QUAL Date Analyzed	Result Rep.Limit Dil. Factor QUAL Date Analyzed Analyst

Prep Method	Prep Date	Prep Initials
SW3010A	09/04/2003 9:25	SE
SW3010A	08/25/2003 13:22	SE

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Client Sample ID MW-14

Collected: 08/22/2003 1:00

SPL Sample ID:

03080815-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq.#
POLYNUCLEAR AROMATIC H	YDROCARB	ONS	MCL	SW8310	Units: นดู	ı/L	
Acenaphthene	ND	0.1		1	09/02/03 14:13	DL	1850248
Acenaphthylene	ND	0.1		1	09/02/03 14:13	DL	1850248
Anthracene	ND	0.1		1	09/02/03 14:13	DL	1850248
Benz(a)anthracene	ND	0.1		1	09/02/03 14:13	DL	1850248
Benzo(a)pyrene	ND	0.1		1	09/02/03 14:13	DL	1850248
Benzo(b)fluoranthene	ND	0.1		1	09/02/03 14:13	DL	1850248
Benzo(g,h,i)perylene	ND	0.1		1	09/02/03 14:13	DL	1850248
Benzo(k)fluoranthene	ND	0.1		1	09/02/03 14:13	DL	1850248
Chrysene	ND	0.1		1	09/02/03 14:13	DL	1850248
Dibenzo(a,h)anthracene	ND	0.1		1	09/02/03 14:13	DL	1850248
Fluoranthene	ND	0.1		1	09/02/03 14:13	DL	1850248
Fluorene	ND	0.1		1	09/02/03 14:13	DL	1850248
Indeno(1,2,3-cd)pyrene	ND	0.1		1	09/02/03 14:13	DL	1850248
Naphthalene	ND	0.1		1	09/02/03 14:13	DL	1850248
Phenanthrene	ND	0.1		1	09/02/03 14:13	DL	1850248
Pyrene	ND	0.1		1	09/02/03 14:13	DL	1850248
Surr: 1-Fluoronaphthalene	41.8	% 18-130		1	09/02/03 14:13	DL	1850248
Surr: Phenanthrene-d10	52.3	% 21-111		1	09/02/03 14:13	DL	1850248

Prep Method	Prep Date	Prep Initials
SW3510C	08/24/2003 19:31	KL

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-15 Collected: 08/21/2003 11:50 SPL Sample ID: 03080815-05

		Site	: Hol	obs, NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mo	g/L	
Chloride	280	10		10	08/25/03 11:00	RA	1838042
HARDNESS, TOTAL (TITRIMETRIC, EDTA)		MCL	E130.2	Units: mo	g/L	
Hardness (As CaCO3)	660	50		10	09/02/03 18:00	CV	1847624
HEADSPACE GAS AN	NALYSIS		MCL	RSK147	Units: mg	g/L	
Methane	ND	0.0012		1	08/26/03 16:50	J_F	1840907
MERCURY, TOTAL			MCL	SW7470A	Units: mg	a/L	
Mercury	ND	0.0002		1	08/26/03 14:38		1840094
Prep Method	Prep Date	Prep Initials					
SW7470A	08/26/2003 9:44	MED					
METALS BY METHO	0 6010B, TOTAL		MCL	SW6010B	Units: mg	a/L	
Arsenic	ND	0.005	·	1	09/04/03 20:19	NS	1851101
Lead	ND	0.005		1	09/04/03 20:19	NS	1851101
Selenium	ND	0.005		1	09/04/03 20:19	NS	1851101
Barium	0.0326	0.005		1	08/27/03 17:11	MW	1842440
Cadmium	ND	0.005		1	08/27/03 17:11	MW	1842440
Calcium	107	0.1		1	08/27/03 17:11	MW	1842440
Chromium	ND	0.01		1	08/27/03 17:11	MW	1842440
Magnesium	17.3	0.1		1	08/27/03 17:11	MW	1842440
Potassium	3.98	2		1	09/04/03 17:41	MW	1851438
Silver	ND	0.01		1	08/27/03 17:11	MW	1842440
Sodium	63.8	0.5		1	09/04/03 17:41	MW	1851438

Prep Method	Prep Date	Prep Initials
SW3010A	09/04/2003 9:25	SE
SW3010A	08/25/2003 13:22	SE

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Client Sample ID MW-15

Collected: 08/21/2003 11:50

SPL Sample ID:

03080815-05

Site:	Hobbs.	NM

Analyses/Method	Result		Rep.Limit		Dil. Factor QL	JAL	Date Analyzed	Analyst	Seq.#
POLYNUCLEAR AROMATIC HYDROCARBONS		MCL	MCL SW8310		Units: ug	j/L			
Acenaphthene	ND		0.1		1		08/31/03 9:14	DL	1850246
Acenaphthylene	ND		0.1		1		08/31/03 9:14	DL	1850246
Anthracene	ND		0.1		1		08/31/03 9:14	DL	1850246
Benz(a)anthracene	ND		0.1		1		08/31/03 9:14	DL	1850246
Benzo(a)pyrene	ND		0.1		1		08/31/03 9:14	DL	1850246
Benzo(b)fluoranthene	ND		0.1		1		08/31/03 9:14	DL	1850246
Benzo(g,h,i)perylene	ND		0.1		1		08/31/03 9:14	DL	1850246
Benzo(k)fluoranthene	ND		0.1		1		08/31/03 9:14	DL	1850246
Chrysene	ND		0.1		1		08/31/03 9:14	DL	1850246
Dibenzo(a,h)anthracene	ND		0.1		1		08/31/03 9:14	DL	1850246
Fluoranthene	ND		0.1		1		08/31/03 9:14	DL	1850246
Fluorene	ND		0.1		1		08/31/03 9:14	DL	1850246
Indeno(1,2,3-cd)pyrene	ND		0.1		1		08/31/03 9:14	DL	1850246
Naphthalene	ND		0.1		1		08/31/03 9:14	DL	1850246
Phenanthrene	ND		0.1		1		08/31/03 9:14	DL	1850246
Pyrene	ND		0.1		1		08/31/03 9:14	DL	1850246
Surr: 1-Fluoronaphthalene	42.2	%	18-130		1		08/31/03 9:14	DL	1850246
Surr: Phenanthrene-d10	52.1	%	21-111		1		08/31/03 9:14	DL	1850246

Prep Method	Prep Date	Prep Initials
SW3510C	08/24/2003 19:31	KL

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

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J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-16

Collected: 08/22/2003 11:15

SPL Sample ID:

03080815-06

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq.#
CHLORIDE, TOTAL			MCL	E325.3	Units: mg	g/L	
Chloride	841	10		10	08/25/03 11:00	RA	1838044

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

Quality Control Documentation



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

RunID:

Diesel Range Organics

ethod: SW8015B

WorkOrder:

03080815

Lab Batch ID:

31269

Method Blank

HP_V_030827A-1842112

mg/L Units:

Lab Sample ID

alysis Date:

08/27/2003 21:40

Analyst:

03080815-01C

Client Sample ID

AM

Samples in Analytical Batch:

Preparation Date:

08/24/2003 19:30

03080815-02C

MW-10

Prep By: KL Method SW3510C

MW-11A

03080815-03C

MW-12D

Analyte	Result	Rep Limit
Diesel Range Organics	ND	1.0
Surr: n-Pentacosane	78.8	18-120

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID:

HP_V_030827A-1842114

mg/L

Analysis Date:

08/27/2003 22:59

Units: AM Analyst:

Preparation Date:

08/24/2003 19:30

Prep By: KL

Method SW3510C

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Diesel Range Organics	2.5	1.82	73	2.5	1.92	77	5.4	20	21	130

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:04 AM



Brown & Caldwell BJ Service, Hobbs, NM

<u>Analysis:</u>

ພາກID:

Headspace Gas Analysis

thod:

alysis Date:

RSK147

WorkOrder:

03080815

Lab Batch ID:

R92615

Method Blank

VARC_030826B-1840894

08/26/2003 14:09

Units: Analyst: mg/L J_F

Lab Sample ID 03080815-01D

Samples in Analytical Batch:

Client Sample ID

03080815-02D

MW-10

03080815-03D

MW-11A

03080815-04D

MW-12D

MW-14

Result Rep Limit Analyte

03080815-05D

Methane

ND 0.0012

MW-15

Laboratory Control Sample (LCS)

RunID:

VARC 030826B-1840896

Units:

mg/L

Analysis Date:

08/26/2003 14:35

Analyst: J_F

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Methane	1000	951	95	70	130

Sample Duplicate

Original Sample:

03080815-01

RunID:

VARC_030826B-1840899

Units:

mg/L

Analysis Date:

08/26/2003 15:01

Analyst:

J_F

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Butane	ND	ND	0	50
Ethane	ND	ND	0	50
Ethylene	ND	ND	0	50
Isobutane	ND	ND	0	50
Methane	ND	ND	0	50
Propane	ND	ND	0	50
Propylene	ND	ND	0	50

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

he percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:05 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

∆nalysis:

anID:

alysis Date:

Purgeable Aromatics

thod: SW8021B

J Service, Hobbs, NM

WorkOrder:

03080815

Lab Batch ID:

R92990

Method Blank

HP_U_030902A-1848017 09/02/2003 16:34 Units: Analyst: ug/L D_R

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03080815-01B

MW-10

03080815-02B

MW-11A

03080815-03B

MW-12D

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene _	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	104.1	39-163
Surr: 4-Bromofluorobenzene	96.9	57-157

Laboratory Control Sample (LCS)

RunID:

HP_U_030902A-1848016

Units: ug/L

Analysis Date:

09/02/2003 15:42

Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	53.6	107	81	125
Ethylbenzene	50	52.2	104	85	119
Toluene	50	53.1	106	87	120
Xylenes,Total	150	156.2	104	83	122

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03081032-01

RunID:

HP_U_030902A-1848018

Units:

ug/L

Analysis Date:

09/02/2003 17:00

Analyst: D_R

	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
nzene		ND	20	19.8	99.2	20	19.4	96.9	2.28	26	43	155
Ethylbenz	ene	ND	20	19.3	96.7	20	19.1	95.6	1.11			142
Toluene	THE PARTY NAMED OF THE PARTY NAM	ND	20	19.7	98.6	20	19.4	97.1	1.46	25	57	142
enes,T	otal	ND	60	59.2	98.7	60	58.2	97.0	1.70	27	47	154

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:05 AM



Brown & Caldwell

BJ Service, Hobbs, NM

galysis:

Gasoline Range Organics

thod:

alysis Date:

SW8015B

WorkOrder:

03080815

Lab Batch ID:

R93084

Method Blank

HP_J_030903C-1850125

09/03/2003 18:23

Units:

Analyst:

mg/L D_R

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03080815-01B 03080815-02B MW-10

03080815-03B

MW-11A MW-12D

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	100.7	74-121
Surr: 4-Bromofluorobenzene	99.7	55-150

Laboratory Control Sample (LCS)

RunID:

HP_J_030903C-1850124

Units:

mg/L

Analysis Date:

09/03/2003 17:56

Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.95	95	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080999-01

RunID:

HP_J_030903C-1850891

mg/L DR

Analysis Date:

09/04/2003 15:01

Units: Analyst:

MS MS % MSD MSD MSD % RPD **RPD** Analyte Sample MS Low High Result Spike Result Recovery Spike Result Recovery Limit Limit Limit Added Added 0.977 109 0.951 106 2.70 36 Gasoline Range Organics ND 0.9 0.9 36 160

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:06 AM



Brown & Caldwell

Analysis: thod:

BunID:

, alysis Date:

Preparation Date:

Polynuclear Aromatic Hydrocarbons

SW8310

BJ Service, Hobbs, NM

Method SW3510C

WorkOrder:

03080815

Lab Batch ID:

31270

Method Blank

2_030831A-1850241

08/31/2003 3:46

08/24/2003 19:31

Units:

Analyst:

Prep By:

ug/L

KL

DL

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03080815-01A

MW-10

03080815-04A 03080815-05A MW-14 MW-15

Analyte	Result	Rep Limit
Acenaphthene	ND	0.10
Acenaphthylene	ND	0.10
Anthracene	ND	0.10
Benz(a)anthracene	ND	0.10
Benzo(a)pyrene	ND	0.10
Benzo(b)fluoranthene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Benzo(k)fluoranthene	ND	0.10
Chrysene	ND	0.10
Dibenzo(a,h)anthracene	ND	0.10
Fluoranthene	ND	0.10
Fluorene	ND	0.10
Indeno(1,2,3-cd)pyrene	ND.	0.10
Naphthalene	ND	0.10
Phenanthrene	ND	0.10
Pyrene	ND	0.10
Surr: 1-Fluoronaphthalene	75.6	18-130
Surr: Phenanthrene-d10	89.7	21-111

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID:

2_030831A-1850242

Units:

ug/L

Analysis Date:

08/31/2003 4:22

DL Analyst:

Preparation Date: 08/24/2003 19:31 Prep By: KL

Method SW3510C

44									Τ.	17.
Analyte	LCS	LCS	LCS	LCSD	LCSD	LCSD	RPD	RPD	Lower	Upper
	Spike	Result	Percent	Spike	Result	Percent		Limit	Limit	Limit
	Added		Recovery	Added		Recovery				
enaphthene	0.5	0.278	56	0.5	0.237	47	16.0	30	35	125
Acenaphthylene	0.5	0.279	56	0.5	0.181	36	42.6	30	35	122
hracene	0.5	0.268	54	0.5	0.246	49	8.4	30	29	126
nz(a)anthracene	0.5	0.358	72	0.5	0.319	64	11.5	30	39	119
Benzo(a)pyrene	0.5	0.33	66	0.5	0.293	59	12.1	30	34	125
Benzo(b)fluoranthene	0.5	0.377	75	0.5	0.336	67	11.5	30	42	127
nzo(g,h,i)perylene	0.5	0.422	84	0.5	0.379	76	10.7	30	37	125
benzo(k)fluoranthene	0.5	0.365	73	0.5	0.324	65	11.7	30	42	125
Chrysene	0.5	0.368	74	0.5	0.329	66	11.1	30	40	144
enzo(a,h)anthracene	0.5	0.426	85	0.5	0.382	76	11.0	30	42	130
oranthene	0.5	0.305	61	0.5	0.277	55	9.5	30	38	126
Fluorene	0.5	0.289	58	0.5	0.205	41	33.8	30	37	130
eno(1,2,3-cd)pyrene	0.5	0.363	73	0.5	0.322	64	11.8	30	39	130

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:06 AM



Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

Polynuclear Aromatic Hydrocarbons

SW8310 hod:

WorkOrder:

03080815

Lab Batch ID:

31270

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID:

2 030831A-1850242

Units:

Analysis Date:

08/31/2003 4:22

DL

ug/L

Analyst:

Preparation Date: 08/24/2003 19:31 Prep By: KL

Method SW3510C

, Anal	yte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
h phthalene Fenanthrene		0.5	0.304	61	0.5	0.208	42	37.4	30	36	130
enanthrene		0.5	0.307	61	0.5	0.261	52	16.3	30	38	128
Pyrene		0.5	0.321	64	0.5	0.292	58	9.3	30	39	137

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

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THE TRACK THE TR

9/8/03 9:23:07 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

Analysis: thod:

RunID:

Metals by Method 6010B, Total

SW6010B

WorkOrder:

03080815

Lab Batch ID:

31284A

Method Blank

TJA_030904E-1851426

Units:

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

alysis Date:

09/04/2003 15:57

MW Analyst:

mg/L

03080815-01E

MW-10

Preparation Date:

08/25/2003 13:22

Prep By: SE

Method SW3010A

03080815-04E

MW-14

03080815-05E

MW-15

Analyte	Result	Rep Limit
Potassium	ND	2
Sodium	ND	0.5

Laboratory Control Sample (LCS)

RunID:

TJA 030904E-1851427

Units:

mg/L

Analysis Date:

09/04/2003 16:01

MW Analyst:

Preparation Date: 08/25/2003 13:22 Prep By: SE Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Potassium	10	10.25	102	80	120
Sodium	1	0.9497	95	80	120

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

nple Spiked:

03080795-01

hID: Analysis Date: TJA_030904E-1851432

Units:

mg/L MW

Preparation Date:

09/04/2003 16:25 08/25/2003 13:22 Analyst: Prep By:

Method

#B1											
Analyte	Sample Result	PDS Spike	PDS Result	PDS % Recovery	PDSD Spike Added	PDSD Result	PDSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
dmium	ND	Added	1.159	115.9	Added	1,117	111.7	3,641	20	75	125
Calcium	6.03	1	8.614		1	13.43	740.0 *	43.68 *	ļ		
Magnesium	3.59	1	5.904	231.7 *	1	10.87	728.3 *	59.21 *	20	75	125
gnesium fatassium	81.2	10	93.9	126.8 *	10	89.57	83.51	4.723	20	75	125
Silver	ND	1	1.122	112.2	1	1.075	107.5	4.275	20	75	125
Sodium	2750	1	2619	-13060 *	1	2550	-19930 *	2.658	20	75	125

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

RunID:

03080795-01

Units:

mg/L

Analysis Date:

TJA_030904E-1851429 09/04/2003 16:10

MW Analyst:

Preparation Date: 08/25/2003 13:22 Prep By:

SE Method SW3010A

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

he percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:07 AM



Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

Metals by Method 6010B, Total

SW6010B

WorkOrder:

03080815

Lab Batch ID:

31284A

an tilou.	34400101							Lab Dateiri	J. 012	.07/		
	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
sarium		0.05121	1	1.028	97.66	1	0.9888	93.76	3.868	20	75	125
Cadmium		ND	1	1.153	115.3	1	1.103	110.3	4.399	20	75	125
lcium		6.029	1	8.432	N/C	1	13.58	N/C	N/C	20	75	125
romium		ND	1	0.9194	91.39	1	0.8897	88.43	3.278	20	75	125
Magnesium		3.587	1	5.749	216.2 *	1	11.03	744.0 *	62.92 *	20	75	125
tassium		81.22	10	95.94	N/C	10	89.94	N/C	N/C	20	75	125
ver		ND	1	1.11	111.0	1	1.059	105.9	4.721	20	75	125
Sodium		2750	1	2617	N/C	1	2603	N/C	N/C	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:08 AM



Brown & Caldwell

Analysis:

RunID:

Metals by Method 6010B, Total

SW6010B thod:

BJ Service, Hobbs, NM

WorkOrder:

03080815

Lab Batch ID:

31284A

Method Blank

TJA_030827D-1842419

Units:

Prep By:

mg/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

alysis Date: reparation Date:

08/27/2003 16:16 08/25/2003 13:22

MW Analyst:

Method SW3010A

03080815-01E 03080815-04E MW-10 MW-14

SE

03080815-05E

MW-15

Analyte	Result	Rep Limit
Barium	ND	0.005
Cadmium	ND	0.005
Calcium	ND	0.1
Chromium	ND	0.01
Magnesium	ND	0.1
Silver	ND	0.01

Laboratory Control Sample (LCS)

RunID:

TJA_030827D-1842421

Units: mg/L

Analysis Date: Preparation Date: 08/27/2003 16:21 08/25/2003 13:22

MW Analyst:

Prep By:

SE Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Barium	1	0.9492	95	80	120
Cadmium	1	1.016	102	80	120
Calcium	1	1.008	101	80	120
Chromium	1	1.028	103	80	120
Magnesium	1	1.004	100	80	120
Silver	1	1.034	103	80	120

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

nple Spiked:

03080795-01

nID:

TJA_030827D-1842429

Units:

mg/L

Analysis Date:

08/27/2003 16:44

MW Analyst:

Proparation Date:

08/25/2003 13:22

Prep By:

Method

Analyte	Sample Result	PDS Spike	PDS Result	PDS % Recovery	PDSD Spike	PDSD Result	PDSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
		Added			Added						
Cadmium	ND	1	1.759	175.9 *	1	1.813	181.3 *	3.031	20	75	125
Calcium	7.78	1	8.752	97.13	1	9.576	179.6 *	8.995	20	75	125
N. gnesium	3.51	1	4.954	144.9 *	1	5.044	153.9 *	1.803	20	75	125
lassium	84.2	10	88.07	38.72 *	10	96.19	119.9	8.807	20	75	125
Silver	ND	1	1.611	161.1 *	1	1.616	161.6 *	0.3012	20	75	125

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:08 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

Metals by Method 6010B, Total

SW6010B

WorkOrder:

03080815

Lab Batch ID: -27510 *

3121

31284A

2.720

20 75 125

thod: Sodium

3400

3037 -35880 * Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080795-01

RunID:

TJA_030827D-1842425

Units:

mg/L

Analysis Date: Preparation Date: 08/27/2003 16:30

Analyst:

MW

08/25/2003 13:22 Prep By: SE Method SW3010A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Barium	0.04718	1	1.005	95.80	1	0.9792	93.20	2.619	20	75	125
dmium	ND	1	1.988	198.8 *	1	1.906	190.6 *	4.213	20	75	125
cium	7.780	1	11.2	N/C	1	18.08	N/C	N/C	20	75	125
Chromium	ND	1	1.074	107.4	1	1.051	105.1	2.166	20	75	125
gnesium	3.505	1	5.761	225.6 *	1	11.01	750.6 *	62.61 *	20	75	125
assium	84.20	10	106.9	N/C	10	99.82	N/C	N/C	20	75	125
Silver	ND	1	1.767	176.7 *	1	1.692	169.2 *	4.322	20	75	125
tium	3396	1	3223	N/C	1	3221	N/C	N/C	20	75	125

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:09 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

Analysis: thod:

Mercury, Total

SW7470A

WorkOrder:

03080815

Lab Batch ID:

31292

Method Blank

HGLD_030826B-1840070

Units: mg/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

alysis Date:

08/26/2003 13:45

MED Analyst:

03080815-01E

MW-10

03080815-04E

Preparation Date: 08/26/2003 9:44 Prep By:

MED Method SW7470A

MW-14

03080815-05E

MW-15

Analyte	Result	Rep Limit
Mercury	ND	0.0002

Laboratory Control Sample (LCS)

RunID:

HGLD_030826B-1840071

Units:

mg/L

Analysis Date: Preparation Date:

08/26/2003 13:47 08/26/2003 9:44

Analyst: MED

MED Method SW7470A Prep By:

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Mercury	0.002	0.002078	104	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080790-03

RunID:

HGLD_030826B-1840075

Units:

Analysis Date:

08/26/2003 13:56

mg/L MED Analyst:

Preparation Date:

08/26/2003 9:44

Prep By: MED Method SW7470A

	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
rcury		ND	0.002	0.002061	103.0	0.002	0.002095	104.8	1.676	20	75	125

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:09 AM



Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

PynID:

Metals by Method 6010B, Total

SW6010B thod:

WorkOrder:

03080815

Lab Batch ID:

31477-T

Method Blank

TJAT_030904C-1851089

mg/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

alysis Date: Preparation Date: 09/04/2003 19:03

Analyst:

NS SE

03080815-01E 03080815-04E MW-10 MW-14

09/04/2003 9:25

Prep By:

Units:

Method SW3010A

03080815-05E

MW-15

Analyte	Result	Rep Limit
Arsenic	ND	0.005
Lead	ND	0.005
Selenium	ND	0.005

Laboratory Control Sample (LCS)

RunID:

TJAT 030904C-1851090

Units:

ma/L

Analysis Date: Preparation Date:

09/04/2003 19:09 09/04/2003 9:25

Analyst: NS

Prep By: SE Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Arsenic	0.1	0.09827	98	80	120
Lead	0.1	0.1042	104	80	120
Selenium	0.1	0.104	104	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080972-01

RunID:

TJAT_030904C-1851092

Units:

mg/L

Analysis Date:

09/04/2003 19:22

Analyst: NS

Preparation Date:

09/04/2003 9:25

Prep By:

Method SW3010A SE

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
enic	0.02302	0.1	0.1349	111.8	0.1	0.1332	110.2	1.246	20	75	125
Lead	ND	0.1	0.1055	103.3	0.1	0.1048	102.6	0.7036	20	75	125
Selenium	ND	0.1	0.1102	110.2	0.1	0.1091	109.1	0.9853	20	75	125

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:10 AM



Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

BunID:

Ion Chromatography

thod:

E300.0

WorkOrder:

03080815

Lab Batch ID:

R92458

Method Blank

IC1_030823A-1837651

Units:

mg/L

CV

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

alysis Date:

08/23/2003 11:59

Analyst:

03080815-03E

MW-12D

Analyte	Result	Rep Limit
Nitrogen,Nitrate (As N)	ND	0.10

Laboratory Control Sample (LCS)

RunID:

IC1_030823A-1837652

Units:

mg/L

Analysis Date:

08/23/2003 12:11

Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen, Nitrate (As N)	10	10.4	104	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080815-03

RunID:

IC1_030823A-1837671

Units:

mg/L

Analysis Date:

08/23/2003 16:11

Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
rogen,Nitrate (As N)	ND	10	10	100	10	10	99.7	0.224	20	80	120

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

he percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

AND MALE IT THE AREA OF THE SECOND STREET, AND A SE

9/8/03 9:23:10 AM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Service, Hobbs, NM

Analysis:

Chloride, Total

thod:

alysis Date:

BuniD:

E325.3

WorkOrder:

03080815

Lab Batch ID:

R92476

Method Blank

WET_030825B-1838037

08/25/2003 11:00

Units: Analyst:

mg/L RA

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03080815-04F 03080815-05F

MW-14 MW-15

03080815-06A

MW-16

Analyte	Result	Rep Limit
Chloride	ND	1.0

Laboratory Control Sample (LCS)

RunID:

WET_030825B-1838040

Units:

Analysis Date:

08/25/2003 11:00

mg/L Analyst: RA

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	233	227.7	98	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080815-06

RunID:

WET_030825B-1838045

Units:

mg/L

Analysis Date:

08/25/2003 11:00

RA Analyst:

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
loride	840.6	500	1313	94.57	500	1313	94.57	0	20	85	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:11 AM



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE

HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis:

Ion Chromatography

thod: E300.0

WorkOrder:

Samples in Analytical Batch:

0

03080815 R92752

Method Blank

IC1_030826A-1843557

7 Units:

mg/L : CV

Lab Sample ID

Client Sample ID

alysis Date:

08/26/2003 14:52

Analyst:

03080815-03E

MW-12D

Lab Batch ID:

Analyte	Result	Rep Limit
Sulfate	ND	0.20

Laboratory Control Sample (LCS)

RunID:

IC1 030826A-1843558

Units:

mg/L

Analysis Date:

08/26/2003 15:05

Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10	10.2	102	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080758-03

RunID:

IC1_030826A-1843562

Units:

mg/L

Analysis Date:

08/26/2003 15:56

Analyst: CV

	Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
f	ate	103	200	307	102	200	310	103	0.915	20	80	120

ualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

制用品种性,所以最后的制度。1913年6月,2014年1月20日的2011年1月20日的1914年1月20日的1914年1月20日的1914年1月20日的1914年1月20日日 2014年1月20日 2014年1月20日

9/8/03 9:23:11 AM



Brown & Caldwell

BJ Service, Hobbs, NM

Analysis:

RunID:

nalysis Date:

Hardness, Total (Titrimetric, EDTA)

lethod: E130.2

Do Cervice, mobbs, min

WorkOrder:

03080815

Lab Batch ID:

R92977

Method Blank

WET_030902P-1847616 09/02/2003 18:00 Units: Analyst: mg/L CV

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03080815-01E 03080815-04E MW-10 MW-14

03080815-05E

MW-15

Analyte	Result	Rep Limit
Hardness (As CaCO3)	ND	5.0

Laboratory Control Sample (LCS)

RunID:

WET_030902P-1847618

Units:

mg/L

Analysis Date:

09/02/2003 18:00

Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Hardness (As CaCO3)	289	280	97	94	108

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080946-01

RunID:

WET_030902P-1847620

Units:

mg/L

Analysis Date:

09/02/2003 18:00

Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
ardness (As CaCO3)	80.0	100	180	100	100	178	98.0	1.12	20	81	111

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/8/03 9:23:12 AM

Sample Receipt Checklist And Chain of Custody

	_		SP	² L, Inc.	nc.				SPL Workorder No:	Sorder N	ä			1831	99
	An	Analysis Request &	uest &		n of C	Chain of Custody Record	Record		0.3	0%	308081	5	page	0	6
Client Name: Scown and	(2)			matrix bottle	bottle	size pr	pres.	37		Red	ueste	Requested Analy	ysis		
l.	Louis 42	Sul 42500	2500		gjass		OYO	¥j			Lanne	> /	27		
Client Contact: $3/6$ 6	Lox road					7	JGL:	61211	り		e.	5	-N	57	
Project Name: BJ-Hobbs	ટ્રાયો <u>ક</u>			ios= 1o=	me= siv=	VH= zo9 [; zo	110=	ntain	- H(h.C	7 0	27.5	\ \ \ \	ع م	
Project Number:						=9	:O		14) S _,			61		
Project Location:	Hobbs, NM			ter idge	oit s	Ţ	₽O\$		ΥΞ	/ ^{- {}	Hd.	14. 49	1100) o ,
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MW-12D	6-11-03	1005	×	3	FAV		30	20	X	X		X			
MW-14	6-11-3	0010	×	3	PAV			X					X	X	
MW-15	40.11.03	The second	×	M	PAV			X					X	X	
3)-MW	90-22-8	115	\times	73	سونا								a	X	
Tryo Olank				\mathcal{M}				7.							X
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Client/Consultant Remarks:		-		Laborato	Laboratory remarks	ü			ંકું - કું			T T	act? [☐ ~	<u>z</u>
SON OI-MA	150y not in this shipment.	this ship	went.	!								Temp	idu.		
	Special Reporting Requirements	ng Requirements	Fax R	Fax Results		Raw Data	<u>``</u>	Special Detection Limits (specify):	on Limits (specify):			<u>X</u>	vicw (initial)	: <u>(</u>
•	Stan	Standard OC	Level	Level 3 QC		Level 4 QC									
24hr 🔲 72hr 🔲	1. Relinquishe	d by Sampler.	J. J.	201	3	date	time o	500	2. Received by:	ed by:					
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Other 🔲	5. Relinquished by:	ķ				B 25 2	time 13	35	6. Rocciy	Ed by La	Source Constitution of the				
 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901 459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777 	, Houston, T) verse City, M	(77054 (713 149684 (616) 660-09	777			0 Amb	500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-47	Caffery I	Parkwa.	ıy, Scot	t, LA 70	583 (31	(8) 237-	P

100

1.00

Standard Land

No.



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Sample Receipt Checklist

Workorder:	03080815		Receive	ed By: RT	
Date and Time Received:	8/23/03 9:30:00 AM		Carrier	name: FedEx	
Temperature:	4°C		Chilled	by: Water Ice	
1. Shipping container/co	poler in good condition?	Yes 🔽	No 🗌	Not Present	
2. Custody seals intact	on shippping container/cooler?	Yes 🗹	No 🗌	Not Present	
3. Custody seals intact	on sample bottles?	Yes	No 🗌	Not Present	
4. Chain of custody pres	sent?	Yes 🔽	No 🗌		
5. Chain of custody sign	ned when relinquished and received?	Yes 🗹	No 🗌		
6. Chain of custody agree Trip Blanks were listed received.	ees with sample labels? ed on the chain of custody but were not	Yes	No 🗹		
7. Samples in proper co	ntainer/bottle?	Yes 🗹	No 🗌		
8. Sample containers int	tact?	Yes 🗹	No 🗌		
9. Sufficient sample volu	ume for indicated test?	Yes 🗸	No 🗌		
10. All samples received	within holding time?	Yes 🗹	No 🗌		
11. Container/Temp Blank	k temperature in compliance?	Yes 🗸	No 🗌		
12. Water - VOA vials hav	re zero headspace?	Yes 🗹	No 🗌	Not Applicable	
13. Water - pH acceptable	e upon receipt?	Yes 🗹	No 🗌	Not Applicable	
SPL Representati		Contact Date 8	ł Timo:		
Client Name Contacte		Contact Date of	k iiiie.		
Non Conformance Issues:					
Client Instructions:					
L_			4		

THE REPORT OF THE PARTY OF THE



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Case Narrative for: Brown & Caldwell

Certificate of Analysis Number:

03080758

Report To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana

Suite 2509 Houston

TX

77002-

ph: (713) 759-0999

Project Name:

BJ Hobbs/Odessa

Site:

Hobbs,NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

9/9/03

The data in this report applies to the analysis of three water samples plus a trip blank from the BJ Services site located in Hobbs, New Mexico. SPL received these samples on August 22, 2003, assigned them to SPL Certificate of Analysis No. 03080758, and analyzed them for the parameters as listed on COC No. 171307. Samples MW-4 and MW-13 were listed on the chain-of-custody. However, SPL confirmed with Rick Rexroad of Brown & Caldwell that data for these samples should be reported separately under the BJ Services project for Odessa, Texas.

fax: (713) 308-3886

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result pages or the quality control summary pages.

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

9/19/03

Pat Lynch Senior Project Manager

Date



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell

Certificate of Analysis Number:

03080758

Report To:

Fax To:

Brown & Caldwell

Rick Rexroad

1415 Louisiana Suite 2509

Houston

TX

77002-

ph: (713) 759-0999

Brown & Caldwell

Rick Rexroad

Project Name:

BJ Hobbs/Odessa

Site:

Hobbs,NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

9/9/03

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COCID	HOLD
MW-4	03080758-01	Water	8/20/03 5:20:00 PM	8/22/03 9:30:00 AM	171307	✓
MW-13	03080758-02	Water	8/20/03 7:20:00 PM	8/22/03 9:30:00 AM	171307	V
MW-5	03080758-03	Water	8/21/03 11:20:00 AM	8/22/03 9:30:00 AM	171307	
MW-10	03080758-04	Water	8/21/03 2:00:00 PM	8/22/03 9:30:00 AM	171307	
MW-11A	03080758-05	Water	8/21/03 2:15:00 PM	8/22/03 9:30:00 AM	171307	
Trip Blank	03080758-06	Water	8/21/03	8/22/03 9:30:00 AM	171307	. [

fax: (713) 308-3886

fax: (713) 308-3886

9/19/03

Date

Pat Lynch

Senior Project Manager

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer

9/19/03 12:10:02 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Client Sample ID MW-5 Collected: 08/21/2003 11:20 SPL Sample ID: 03080758-03

Site:	Hobbs.l	MIM
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				Site	HOI	obs,NM	· · · · · · · · · · · · · · · · · · ·		
Analyses/Method		Result		Rep.Limit	**********	Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE OR	GANICS				MCL	SW8015B	Units: m	g/L	
Diesel Range Organic	:s	ND		1		1	08/28/03 18:25	AM	1843909
Surr: n-Pentacosan	ie	71.0	%	18-120		1	08/28/03 18:25	AM	1843909
Prep Method	Prep Date			Prep Initials					
SW3510C	08/22/2003 6:2	24		KL					
GASOLINE RANGE ORGANICS			7	MCL	SW8015B	Units: m	g/L		
Gasoline Range Orga	nics	ND		0.1		1	09/04/03 4:08	D_R	1850140
Surr: 1,4-Difluorobe	enzene	101	%	74-121		1	09/04/03 4:08	D_R	1850140
Surr: 4-Bromofluoro	obenzene	97.7	%	55-150		1	09/04/03 4:08	D_R	1850140
HEADSPACE GAS A	NALYSIS				MCL	RSK147	Units: m	g/L	
Methane		ND		0.0012		1	08/26/03 17:13		1840908
ION CHROMATOGR	APHY				MCL	E300.0	Units: m	g/L	
Nitrogen, Nitrate (As N	1)	2.4		0.1		1	08/22/03 13:45	CV	1837637
Sulfate		100		4		20	08/26/03 15:43	CV	1843561
POLYNUCLEAR AR	OMATIC HYDRO	CARB	SNC		MCL	SW8310	Units: u		
Acenaphthene		ND		0.1		1	08/28/03 8:39	DL	1842385
Acenaphthylene		ND		0.1		1	08/28/03 8:39	DL	1842385
Anthracene		ND		0.1		1	08/28/03 8:39	DL	1842385
Benz(a)anthracene		ND		0.1		1	08/28/03 8:39	DL	1842385
Benzo(a)pyrene		ND		0.1		1	08/28/03 8:39	DL	1842385
Benzo(b)fluoranthene		ND		0.1		1	08/28/03 8:39	DL	1842385
Benzo(g,h,i)perylene		ND		0.1		1	08/28/03 8:39	DL	1842385
Benzo(k)fluoranthene	and the same of th	ND		0.1		1	08/28/03 8:39	DL	1842385
Chrysene		ND		0.1		1	08/28/03 8:39	DL	1842385
Dibenzo(a,h)anthrace	ne	ND		0.1		1	08/28/03 8:39	DL	1842385
Fluoranthene		ND		0.1		1	08/28/03 8:39	DL	1842385
Fluorene		ND		0.1		1	08/28/03 8:39	DL	1842385
Indeno(1,2,3-cd)pyren	ne	ND		0.1		1	08/28/03 8:39	DL	1842385
Naphthalene		ND		0.1		1	08/28/03 8:39	DL	1842385
Phenanthrene		ND		0.1	•	TOTAL TRANSPORTER AND ADMINISTRAÇÃO POR ADMINIST	08/28/03 8:39	DL	1842385
Pyrene		ND		0.1			08/28/03 8:39	DL	1842385
Surr: 1-Fluoronaphi	thalene	19.2	%	18-130		1	08/28/03 8:39	DL	1842385
Surr: Phenanthrene	C 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	28.8	%	21-111		1	08/28/03 8:39	DL	1842385
Pren Method	Pren Date	*** ***********************************		Pren Initials		****			

Prep Method	Prep Date	Prep Initials
SW3510C	08/22/2003 6:25	KL

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

TREWARD POR CONTROL OF THE AREA OF THE ABOVE

9/19/03 12:10:17 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-5

Collected: 08/21/2003 11:20

SPL Sample ID:

03080758-03

Site:	Hobbs,NM
-------	----------

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS				MCL	SW8	021B	Units: ug	g/L	
Benzene	ND		1		1		09/02/03 21:18	D_R	1848025
Ethylbenzene	ND		1		1		09/02/03 21:18	D_R	1848025
Toluene	ND		1		1		09/02/03 21:18	D_R	1848025
Xylenes, Total	ND		1		1		09/02/03 21:18	D_R	1848025
Surr: 4-Bromofluorobenzene	98.5	%	57-157		1		09/02/03 21:18	D_R	1848025
Surr: 1,4-Difluorobenzene	104	%	39-163		1		09/02/03 21:18	D_R	1848025

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

9/19/03 12:10:17 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-10

Collected: 08/21/2003 14:00

SPL Sample ID:

03080758-04

Site: Hobbs,NM

				,			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY			MCL	E300.0	Units: m	g/L	
Nitrogen, Nitrate (As N)	0.21	0.1		1	08/22/03 14:23	CV	1837640
Sulfate	350	0		50	08/26/03 16:21	CV	1843564

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

"我们是我们的,我们就是我们的,我们就是我们的,我们就会看到这一样,我们就是我们的,我们就是我们的,我们就是我们的,我们就是我们的,我们就是我们的,我们就是我们

9/19/03 12:10:18 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID MW-11A

Collected: 08/21/2003 14:15

SPL Sample ID:

03080758-05

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil.	Factor QUAL	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY			MCL	E300.0	Units: m		Commence of the Section
Nitrogen, Nitrate (As N)	0.68	0.1		1	08/22/03 14:36	CV	1837642
Sulfate	340	0		50	08/26/03 16:33	CV	1843565

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

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9/19/03 12:10:18 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Client Sample ID Trip Blank Collected: 08/21/2003 0:00

SPL Sample ID:

03080758-06

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY MET	HOD 8260B	71.) #45	MCL	SW8	3260B	Units: ug	ı/L	1
1,1,1,2-Tetrachloroethane	ND	5		1		08/25/03 15:44	JC	1840311
1,1,1-Trichloroethane	ND	5		1		08/25/03 15:44	JC	1840311
1,1,2,2-Tetrachloroethane	ND	5	THE BUILDING CO. I SECTION I	1		08/25/03 15:44	JC	1840311
1,1,2-Trichloroethane	ND	5		1		08/25/03 15:44	JC	1840311
1,1-Dichloroethane	ND	5		1		08/25/03 15:44	JC	1840311
1,1-Dichloroethene	ND	5		1		08/25/03 15:44	JC	1840311
1,1-Dichloropropene	ND	5		1		08/25/03 15:44	JC	1840311
1,2,3-Trichlorobenzene	ND	5		1		08/25/03 15:44	JC	1840311
1,2,3-Trichloropropane	ND	5		1		08/25/03 15:44	JC	1840311
1,2,4-Trichlorobenzene	ND	5		1		08/25/03 15:44	JC	1840311
1,2,4-Trimethylbenzene	ND	5		1		08/25/03 15:44	JC	1840311
1,2-Dibromo-3-chloropropane	ND	5		1		08/25/03 15:44	JC	1840311
1,2-Dibromoethane	ND	5		1		08/25/03 15:44	JC	1840311
1,2-Dichlorobenzene	ND	5		1		08/25/03 15:44	JC	1840311
1,2-Dichloroethane	ND	5		1		08/25/03 15:44	JC	1840311
1,2-Dichloropropane	ND	5		1		08/25/03 15:44	JC	1840311
1,3,5-Trimethylbenzene	ND	5		1		08/25/03 15:44	JC	1840311
1,3-Dichlorobenzene	ND	5		1		08/25/03 15:44	JC	1840311
1,3-Dichloropropane	ND	5		1		08/25/03 15:44	JC	1840311
1,4-Dichlorobenzene	ND	5		1		08/25/03 15:44	JC	184031
2,2-Dichloropropane	ND	5		1		08/25/03 15:44	JC	1840311
2-Butanone	ND	20	THE PERSON NAMED IN COLUMN	1		08/25/03 15:44	JC	184031
2-Chloroethyl vinyl ether	ND	10	* *************************************	1	Fr. 114 4 Mary State Str. Str. Str. Str.	08/25/03 15:44	JC	1840311
2-Chlorotoluene	ND	5	Mark and designating in part.	1		08/25/03 15:44	JC	1840311
2-Hexanone	ND	10		1		08/25/03 15:44	JC	1840311
4-Chlorotoluene	ND	5		1		08/25/03 15:44	JC	1840311
4-Isopropyltoluene	ND	5		1		08/25/03 15:44	JC	1840311
4-Methyl-2-pentanone	ND	10		1		08/25/03 15:44	JC	1840311
Acetone	ND	100	F - 1000 1 1 100000000 00000000000000000	1		08/25/03 15:44	JC	1840311
Acrylonitrile	ND	50		1		08/25/03 15:44	JC	1840311
Benzene	ND	5		1		08/25/03 15:44	JC	1840311
Bromobenzene	ND	5	1 1991 Fr. Marien. 154 No. 1861 1151 1 1 1	1		08/25/03 15:44	JC	1840311
Bromochloromethane	ND	5		1		08/25/03 15:44	JC	1840311
Bromodichloromethane	ND	5		1	1811 17110 7 10 1184	08/25/03 15:44	JC	1840311
Bromoform	ND	5		1		08/25/03 15:44	JC	1840311
Bromomethane	ND	10		1		08/25/03 15:44	JC	1840311
Carbon disulfide	ND	5		1		08/25/03 15:44	JC	1840311
Carbon tetrachloride	ND	5		1		08/25/03 15:44	JC	1840311
Chlorobenzene	ND	5	THE THE RESIDENCE STATE AND A SECOND	1		08/25/03 15:44	JC	1840311
Chloroethane	ND	10		1		08/25/03 15:44	JC	1840311

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

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9/19/03 12:10:18 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Client Sample ID Trip Blank

Collected: 08/21/2003 0:00

SPL Sample ID:

03080758-06

_			Site	Hobbs,NM				
Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Chloroform	ND		5	1		08/25/03 15:44	JC	1840311
Chloromethane	ND		10	The second secon		08/25/03 15:44	JC	1840311
Dibromochloromethane	ND		5	1		08/25/03 15:44	JC	1840311
Dibromomethane	ND		5	1		08/25/03 15:44	JC	1840311
Dichlorodifluoromethane	ND		10	1		08/25/03 15:44	JC	1840311
Ethylbenzene	ND		5	1		08/25/03 15:44	JC	1840311
Hexachiorobutadiene	ND		5	1		08/25/03 15:44	JC	1840311
Isopropylbenzene	ND		5	1		08/25/03 15:44	JC	1840311
Methyl tert-butyl ether	ND		5	1		08/25/03 15:44	JC	1840311
Methylene chloride	ND		5	1		08/25/03 15:44	JC	1840311
n-Butylbenzene	ND		5	1		08/25/03 15:44	JC	1840311
n-Propylbenzene	ND		5	1		08/25/03 15:44	JC	1840311
Naphthalene	ND		5	1		08/25/03 15:44	JC	1840311
sec-Butylbenzene	ND		5	1		08/25/03 15:44	JC	1840311
Styrene	ND		5	1		08/25/03 15:44	JC	1840311
tert-Butylbenzene	ND		5	1		08/25/03 15:44	JC	1840311
Tetrachloroethene	ND		5	1		08/25/03 15:44	JC	1840311
Toluene	ND		5	1		08/25/03 15:44	JC	1840311
Trichloroethene	ND		5	1		08/25/03 15:44	JC	1840311
Trichlorofluoromethane	ND		5	1		08/25/03 15:44	JC	1840311
Vinyl acetate	ND		10	1		08/25/03 15:44	JC	1840311
Vinyl chloride	ND		10	1		08/25/03 15:44	JC	1840311
cis-1,2-Dichloroethene	ND		5	1		08/25/03 15:44	JC	1840311
cis-1,3-Dichloropropene	ND		5	1		08/25/03 15:44	JC	1840311
m,p-Xylene	ND		5	1	The state of the s	08/25/03 15:44	JC	1840311
o-Xylene	ND		5	1		08/25/03 15:44	JC	1840311
trans-1,2-Dichloroethene	ND		5	1		08/25/03 15:44	JC	1840311
trans-1,3-Dichloropropene	ND		5	1		08/25/03 15:44	JC	1840311
1,2-Dichloroethene (total)	ND		5	1		08/25/03 15:44	JC	1840311
Xylenes,Total	ND		5	1	ere remerantementale database i	08/25/03 15:44	JC	1840311
Surr: 1,2-Dichloroethane-d4	110	%	62-130	1		08/25/03 15:44	JC	1840311
Surr: 4-Bromofluorobenzene	96.0	%	70-130	1	** ** *********************************	08/25/03 15:44	JC	1840311
Surr: Toluene-d8	100	%	74-122	1		08/25/03 15:44	JC	1840311

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

* - Surrogate Recovery Outside Advisable QC Limits

J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL)

D - Surrogate Recovery Unreportable due to Dilution

MI - Matrix Interference

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9/19/03 12:10:19 PM

Quality Control Documentation



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell BJ Hobbs/Odessa

Analysis:

Diesel Range Organics

Method:

SW8015B

WorkOrder:

03080758

Lab Batch ID:

31259A

Method Blank

Units:

Lab Sample ID

Samples in Analytical Batch:

RunID:

HP_V_030828B-1843906

mg/L

03080758-03D

Client Sample ID

Analysis Date: Preparation Date: 08/22/2003 6:24

08/28/2003 17:06

Analyst: AM Prep By: KL

Method SW3510C

MW-5

Analyte	Result	Rep Limit
Diesel Range Organics	ND	1.0
Surr: n-Pentacosane	77.4	18-120

Laboratory Control Sample (LCS)

RunID:

HP_V_030828B-1843908

Units:

mg/L

Analysis Date: Preparation Date:

08/28/2003 17:46 08/24/2003 19:30

Analyst: AM

Prep By: KL Method SW3510C

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	1.93	77	21	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080782-01

RunID:

HP_V_030828B-1843916

Units:

mg/L AM

Analysis Date: Preparation Date: 08/22/2003 6:24

08/28/2003 22:23

Analyst: Prep By: KL

Method SW3510C

Analyte	Sample Result	MS Spike Added	MS Result	Recovery Sp	SD bike ided		MSD % Recovery		RPD Lo		ligh -imit
Diesel Range Organics	ND	5	3.37	66.3	5	3.17	62.3	6.06	39:	13	130

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/19/03 12:10:29 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Hobbs/Odessa

Analysis:

Headspace Gas Analysis

Method:

RSK147

WorkOrder:

03080758

Lab Batch ID:

R92615

Method Blank

RunID:

VARC_030826B-1840894

Units:

mg/L

Lab Sample ID

Client Sample ID

Analysis Date:

08/26/2003 14:09

Analyst: J_F 03080758-03F

Samples in Analytical Batch:

MW-5

Result Rep Limit Analyte ND 0.0012 Methane

Laboratory Control Sample (LCS)

RunID:

VARC_030826B-1840896

Units:

mg/L

Analysis Date:

08/26/2003 14:35

Analyst: J_F

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit	
Methane	1000	951	95	70	130	

Sample Duplicate

Original Sample:

03080815-01

RunID:

VARC_030826B-1840899

Units:

mg/L

Analysis Date:

08/26/2003 15:01

J_F Analyst:

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Butane	ND	ND	0	50
Ethane	ND	ND	0	50
Ethylene	ND	ND	0	50
Isobutane	ND	ND	0	50
Methane	ND:	ND	0.	50
Propane	ND	ND	0	50
Propylene	ND	ND	o	50

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

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D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

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9/19/03 12:10:30 PM



8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Hobbs/Odessa

Analysis:

Purgeable Aromatics

Method:

RunID:

SW8021B

WorkOrder:

03080758

Lab Batch ID:

R92990

Method Blank

HP_U_030902A-1848017

Units: ug/L

D_R

Lab Sample ID

Client Sample ID

Analysis Date:

09/02/2003 16:34

Analyst:

03080758-03B

Samples in Analytical Batch:

MW-5

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes, Total	ND	1.0
Surr: 1,4-Difluorobenzene	104.1	39-163
Surr. 4-Bromofluorobenzene	. 96.9	57-157

Laboratory Control Sample (LCS)

RunID:

HP_U_030902A-1848016

Units:

ug/L

Analysis Date:

09/02/2003 15:42

Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	53.6	107	81	125
Ethylbenzene	50	52.2	104	85	119
Toluene	50	53.1	106	87	120
Xylenes,Total	150	156.2	104	83	122

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03081032-01

RunID:

HP_U_030902A-1848018 Units:

ug/L

Analysis Date:	09/02/2003 17:00	Analyst:	D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD I Limit I	1.	High Limit
Benzene	ND	20	19.8	99.2	20	19.4	96.9	2.28	26	43	155
Ethylbenzene	ND	20	19.3	96.7	20	19.1	95.6	1.11	34	51	142
Toluene	ND	20	19.7	98.6	20	19.4	97.1	1.46	25	57	142
Xylenes,Total	ND	60	59.2	98.7	60	58.2	97.0	1.70	27	47	154

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/19/03 12:10:31 PM



Brown & Caldwell BJ Hobbs/Odessa

Analysis:

RunID:

Gasoline Range Organics

SW8015B Method:

WorkOrder:

03080758

Lab Batch ID:

R93084

Method Blank

HP_J_030903C-1850125 Units:

mg/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

Analysis Date:

09/03/2003 18:23

Analyst:

03080758-03C

D_R

MW-5

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	100.7	74-121
Surr. 4-Bromofluorobenzene	99.7	55-150

Laboratory Control Sample (LCS)

RunID:

HP_J_030903C-1850124

Units:

mg/L

Analysis Date:

09/03/2003 17:56

Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.95	95	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

Analysis Date:

03080999-01

RunID:

HP_J_030903C-1850891

09/04/2003 15:01

Units: Analyst:

mg/L

DR

Analyte	! 8	Sample	MS	MS	MS %	MSD	MSD	MSD %	RPD	RPD Low High	ı
	1	Result	Spike	Result	Recovery	Spike :	Result	Recovery :		Limit Limit Lim	it
	!		Added			Added			į		
3									1		
Gasoline Range Organics	!	ND	0.9	0.977	109	0.9	0.951	106	2.70	36 36 16	30

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/19/03 12:10:31 PM



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

Brown & Caldwell BJ Hobbs/Odessa

Analysis:

Polynuclear Aromatic Hydrocarbons

Method:

RunID:

SW8310

WorkOrder:

03080758

Lab Batch ID:

31260

Method Blank

2_030827A-1842365

Units:

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

Analysis Date:

08/27/2003 6:29

DL Analyst:

ug/L

03080758-03A

MW-5

Preparation Date:

08/22/2003 6:25

Prep By:

KL Method SW3510C

Analyte	Result	Rep Limit
Acenaphthene	ND	0.10
Acenaphthylene	ND	0.10
Anthracene	ND	0.10
Benz(a)anthracene	ND	0.10
Benzo(a)pyrene	ND.	0.10
Benzo(b)fluoranthene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Benzo(k)fluoranthene	ND	0.10
Chrysene	ND	0.10
Dibenzo(a,h)anthracene	ND	0.10
Fluoranthene	, ND	0.10
Fluorene	ND	0.10
Indeno(1,2,3-cd)pyrene	ND	0.10
Naphthalene	. ND	0.10
Phenanthrene	ND	0.10
Pyrene	ND	0.10
Surr: 1-Fluoronaphthalene	63.4	18-130
Surr: Phenanthrene-d10	69.6	21-111

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID:

2_030827A-1842367

Units: ug/L

Analysis Date:

08/27/2003 7:06

Analyst: DL

Preparation Date: 08/22/2003 6:25

Prep By: KL Method SW3510C

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Acenaphthene	0.5	0.361	72	0.5	0.357	71	1.1	30	35	125
Acenaphthylene	0.5	0.407	81	0.5	0.388	78	4.9	30	35	122
Anthracene	0.5	0.348	70	0.5	0.346	69	0.6	30	29	126
Benz(a)anthracene	0.5	0.376	75	0.5	0.377	75	0.4	30	39	119
Benzo(a)pyrene	0.5	0.368	74	0.5	0.366	73	0.4	30	34	125
Benzo(b)fluoranthene	0.5	0.384	77	0.5	0.383	77	0.4	30	42	127
Benzo(g,h,i)perylene	0.5	0.404	81	0.5	0.403	81	0.2	30	37	125
Benzo(k)fluoranthene	0.5	0.385	77	0.5	0.382	76	0.8	30	42	125
Chrysene	0.5	0.375	75	0.5	0.372	74	0.8	30	40	144
Dibenzo(a,h)anthracene	0.5	0.423	85	0.5	0.418	84	1.0	30	42	130
Fluoranthene	0.5	0.357	71	0.5	0.356	71	0.2	30	38	126
Fluorene	0.5	0.367	73	0.5	0.368	74	0.1	30	37	130
Indeno(1,2,3-cd)pyrene	0.5	0.374	75	0.5	0.37	74	1.0	30	39	130

Qualifiers:

ND/U - Not Detected at the Reporting Limit

B - Analyte detected in the associated Method Blank

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

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The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/19/03 12:10:32 PM



Brown & Caldwell

BJ Hobbs/Odessa

Analysis:

Polynuclear Aromatic Hydrocarbons

Method: SW8310 WorkOrder:

03080758

Lab Batch ID:

31260

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID:

2_030827A-1842367

Units:

ug/L

Analysis Date:

08/27/2003 7:06

Analyst: DL

Preparation Date: 08/22/2003 6:25

Prep By: KL Method SW3510C

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Naphthalene	0.5	0.37	74	0.5	0.358	72	3.3	30	36	130
Phenanthrene	0.5	0.364	73	0.5	0.357	71	2.0	30	38	128
Pyrene	0.5	0.371	74	0.5	0.37	74	0.2	30	39	137

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

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9/19/03 12:10:32 PM



Brown & Caldwell BJ Hobbs/Odessa

Analysis:

RunID:

Volatile Organics by Method 8260B

Method: SW8260B

WorkOrder:

03080758

Lab Batch ID:

R92517

Method Blank

N_030825B-1838757

Units:

ug/L

Lab Sample ID

Client Sample ID

Analysis Date:

08/25/2003 9:59

JC Analyst:

03080758-06A

Samples in Analytical Batch:

Trip Blank

Analyte	Result	Rep Limi
1,1,1,2-Tetrachloroethane	. ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloropropene	ND	5.0
1,2,3-Trichlorobenzene		5.0
1,2,3-Trichloropropane	ND	
1,2,4-Trichlorobenzene		
1,2,4-Trimethylbenzene		5.0
1,2-Dibromo-3-chloropropane	ND	5.0
1,2-Dibromoethane	ND	
1,2-Dichlorobenzene	ND	
1,2-Dichloroethane	ND	
1,2-Dichloropropane	ND	
1,3,5-Trimethylbenzene	. ND	
1,3-Dichlorobenzene	ND	
1,3-Dichloropropane	ND ND	5.0
The second secon	ND	
1,4-Dichlorobenzene	ND	
2,2-Dichloropropane	ND	
2-Butanone		
2-Chloroethyl vinyl ether	ND	
2-Chlorotoluene	ND ND	
2-Hexanone	ND ND	10
4-Chlorotoluene	ND	5.0
4-Isopropyltoluene	ND	5.0
4-Methyl-2-pentanone	ND.	10
Acetone	ND.	
Acrylonitrile	ND	50
Benzene	ND	5.0
Bromobenzene	ND.	5.0
Bromochloromethane	ND.	5.0
Bromodichloromethane	. ND	5.0
Bromoform	ND.	5.0
Bromomethane	: ND	10
Carbon disulfide	ND	5.0
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	. ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND.	5.0
Dibromomethane	ND.	5.0
Dichlorodifluoromethane	ND.	10
Ethylbenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Incorporation	ND	
ND/U - Not Detected at t	ND.	5.C

Qualifiers:

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

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9/19/03 12:10:33 PM



Brown & Caldwell

BJ Hobbs/Odessa

Analysis: Method:

Volatile Organics by Method 8260B

SW8260B

WorkOrder:

03080758

Lab Batch ID:

R92517

Method Blank

RunID:

N_030825B-1838757

Units:

Analysis Date:

08/25/2003 9:59

JC Analyst:

ug/L

Analyte	Result	Rep Limit
Methyl tert-butyl ether	ND	5.0
Methylene chloride	ND	5.0
n-Butylbenzene	ND	5.0
n-Propylbenzene	ND	5.0
Naphthalene	ND ND	5.0
sec-Butylbenzene	ND.	5.0
Styrene	ND	5.0
tert-Butylbenzene	ND ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND.	5.0
Trichloroethene	ND	5.0
Trichlorofluoromethane	ND	5.0
Vinyl acetate	ND	10
Vinyl chloride	ND.	10
cis-1,2-Dichloroethene	ND ND	5.0
cis-1,3-Dichloropropene	ND	5.0
m,p-Xylene	ND	5.0
o-Xylene	ND.	5.0
trans-1,2-Dichloroethene	ND .	5.0
trans-1,3-Dichloropropene	ND:	5.0
1,2-Dichloroethene (total)	ND	5.0
Xylenes,Total	ND	5.0
Surr. 1,2-Dichloroethane-d4	112.0	62-130
Surr. 4-Bromofluorobenzene	96.0	70-130
Surr. Toluene-d8	102.0	74-122

Laboratory Control Sample (LCS)

RunID:

N_030825B-1838756

Units:

ug/L Analyst: JC

Analysis Date:

08/25/2003 9:10

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
1,1-Dichloroethene	50	50	100	61	145
Benzene	50;	54	108	76	127
Chlorobenzene	50	50	100	70	130
Toluene	50	54	108	70	129
Trichloroethene	50	51.	102	60	140

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

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9/19/03 12:10:33 PM



03080758

R92517

WorkOrder:

Lab Batch ID:

Brown & Caldwell

BJ Hobbs/Odessa

Analysis: Method:

Volatile Organics by Method 8260B

SW8260B

03080775-02

Sample Spiked: RunID:

N_030825B-1840437

Units:

ug/L

Analysis Date:

08/25/2003 11:38

Analyst:

JC

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit		High Limit
1,1-Dichloroethene	ND	50	50	100	50	51	102	2	14	61	145
Benzene	ND	50	54	108	50	54	108	0	11	76	127
Chlorobenzene	ND	50	52	104	50	50	100	4	13	70	130
Toluene	ND	50	56	112	50	55	110	2	13	70	129
Trichloroethene	ND	50	51	102	50	51	102	0	14	60	140

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

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The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

9/19/03 12:10:34 PM



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE HOUSTON, TX 77054 (713) 660-0901

Brown & Caldwell BJ Hobbs/Odessa

Analysis:

Ion Chromatography

Method:

E300.0

WorkOrder:

03080758

Lab Batch ID:

R92457

Method Blank

RunID: Analysis Date: IC1_030822A-1837632 08/22/2003 12:55

Units: Analyst:

mg/L

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03080758-03E

MW-5

03080758-04A

MW-10

03080758-05A

MW-11A

!"	Analyte	Result	Rep Limit
N	itrogen, Nitrate (As N)	ND	0.10:

Laboratory Control Sample (LCS)

RunID:

IC1_030822A-1837633

Units:

mg/L

Analysis Date:

08/22/2003 13:07

Analyst:

CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen,Nitrate (As N)	10	10.4	104	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080758-03

RunID:

IC1_030822A-1837638

Units:

mg/L

Analysis Date:

08/22/2003 13:58

Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD :		_ow ⊹High _imit ′Limi	
Nitrogen,Nitrate (As N)	2.44	10	13	105	10	12.6	102	2.72	20	80 12	0

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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9/19/03 12:10:34 PM



Brown & Caldwell

Analysis:

Ion Chromatography

Method:

E300.0

BJ Hobbs/Odessa

WorkOrder:

03080758

Lab Batch ID:

Lower

Limit

102

80

R92752

Method Blank

RunID: Analysis Date: IC1_030826A-1843557 08/26/2003 14:52

Units: Analyst:

mg/L CV

Lab Sample ID

Samples in Analytical Batch:

Client Sample ID

03080758-03E 03080758-04A MW-5 MW-10

03080758-05A

MW-11A

Upper

Limit

120

Result Rep Limit

Analyte Sulfate

ND 0.20

Laboratory Control Sample (LCS)

RunID:

IC1_030826A-1843558

Units:

mg/L

Analysis Date:

08/26/2003 15:05

Analyst:

CV

Spike Percent Analyte Result Added Recovery Sulfate 10.2 10

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked:

03080758-03

RunID:

IC1_030826A-1843562

Units:

mg/L

Analysis Date:

08/26/2003 15:56

Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Low High Limit Limit	
Sulfate	103	200	307	102	200	310	103	0.915	20 80 120	

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

* - Recovery Outside Advisable QC Limits

N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.

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9/19/03 12:10:35 PM

Sample Receipt Checklist And Chain of Custody

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	459-Hugnes Drive, Traverse City, MI 49684 (616) 947-5777	3								

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Sample Receipt Checklist

					The second secon
Workorder:	03080758		Receive	-	
Date and Time Received:	8/22/03 9:30:00 AM		Carrier n	ame: Fe	dEx
Temperature:	3°C		Chilled b	y: Wa	ater Ice
1. Shipping container/co	poler in good condition?	Yes 🗹	No 🗆	Not Present	
2. Custody seals intact of	on shippping container/cooler?	Yes 🗹	No 🗆	Not Present	
3. Custody seals intact of	on sample bottles?	Yes	No 🗌	Not Present	~
4. Chain of custody pres	sent?	Yes 🗹	No 🗆		
5. Chain of custody sign	ed when relinquished and received?	Yes 🗹	No 🗌		
6. Chain of custody agre	es with sample labels?	Yes 🗹	No 🗌		
7. Samples in proper co	ntainer/bottle?	Yes 🗹	No 🗌		
8. Sample containers int	act?	Yes 🗹	No 🗆		
9. Sufficient sample volu	ume for indicated test?	Yes 🗹	No 🗆		
10. All samples received v	within holding time?	Yes 🗹	No 🗌		
11. Container/Temp Blank	temperature in compliance?	Yes 🗹	No 🗀		
12. Water - VOA vials have	e zero headspace?	Yes 🗹	No 🗌	Not Applicabl	e 🗌
13. Water - pH acceptable	upon receipt?	Yes 🗹	No 🗆	Not Applicable	le 🗌
					e e communication de la co
SPL Representativ	AND THE PROPERTY OF THE PROPER	Contact Date &	lime:		
Client Name Contacte	a:				
Non Conformance Issues:			•		
Client Instructions:		/ 24 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			

