

GW - 72

**MONITORING
REPORTS**

DATE:

2001

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February 26, 2002

Mr. Wayne Price
Environmental Bureau
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
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RECEIVED
MAR 1 8 2002
Environmental Bureau
Oil Conservation Division

12832.017



**Subject: Transmittal of Report
December 2001 Quarterly Sampling Event
BJ Services Company U.S.A. – Hobbs Facility: GW-072
2708 West County Road
Hobbs, New Mexico**

Dear Mr. Price:

Enclosed please find the subject report for the BJ Services Company, U.S.A. (BJ Services) facility at Hobbs, New Mexico. During the December 2001 groundwater sampling, event monitor wells MW-3, MW-4, MW-5, MW-11A, MW-12D, MW-13, and MW-14 were sampled after removal of approximately 0.25 gallons of water, rather than being purged to stability, dryness, or removal of three well volumes of water from the well.

Comparison of analytical data from the December 2001 sampling event to historical constituent concentration data on a well-by-well basis (see Tables 4, 5, and 6 of the subject report, as applicable) suggests that the deviation from standard monitor well purging procedures that occurred in December 2001 had minimal effect on chemical analytical data.

Additionally, the surface completion of monitor well MW-10 has been damaged, so that surficial soil materials have entered the well and accumulated to an approximate thickness of 1.6 feet in the bottom of the well. The accumulated sediment in the well and the low water level in the well resulted in production of a minimal quantity of extremely turbid groundwater from monitor well MW-10 during the December 2001 sampling event.

Comparison of the December 2001 analytical results from monitor well MW-10 (see Appendix A of the subject report) to historical constituent concentrations data from the well (see Tables 4 and 6 of the subject report) indicates that the introduction of a substantial quantity foreign materials into monitor well MW-10, in combination with the resultant minimal production of groundwater from the well, has rendered the December 2001 data from monitor well MW-10 invalid.

February 26, 2002
Mr. Wayne Price
Page 2

During the upcoming March 2002 quarterly sampling event, Brown and Caldwell will collect groundwater samples from all water-producing wells after purging the well to stability, dryness, or removal of three well volumes of water and compare the March 2002 constituent concentration data to corresponding December 2001 data to further substantiate the December 2001 data.

For monitor well MW-10, BJ Services will:

1. Repair the surface completion to ensure that it seals adequately to prevent introduction of surficial soil materials into the well; and
2. Attempt to remove accumulated sediment from the bottom of the well in order to improve the ability of the well to produce an adequate quantity of low turbidity groundwater.

BJ Services anticipates performing these rehabilitative activities for monitor well MW-10 in late February 2002. The March 2002 quarterly groundwater sampling event will be conducted no sooner than 1 week following completion of these monitor well rehabilitation activities.

If you have any questions regarding the information presented herein, please feel free to contact Mr. Lynn Wright of Brown and Caldwell (713) 759-0999 or Ms. Jo Ann Cobb of BJ Services at (281) 357-2572.

Sincerely,

BROWN AND CALDWELL



Richard L. Rexroad, P.G.
Project Manager

RLR:uak

Attachments (1)

cc: NMOCD – Hobbs, New Mexico Office
Jo Ann Cobb, BJ Services Company, U.S.A.
Brown and Caldwell Project File: 12832.02

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

**DECEMBER 2001 GROUNDWATER
SAMPLING REPORT
HOBBS, NEW MEXICO FACILITY**

BJ SERVICES COMPANY, U.S.A.

FEBRUARY 26, 2002

**DECEMBER 2001 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: 12832.017



Richard L. Rexroad, P.G.
Project Manager

February 26, 2002

Brown and Caldwell
1415 Louisiana, Suite 2500
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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."

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DISTRIBUTION AND QA/QC REVIEWER'S SIGNATURE

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APPENDICES

A	Groundwater Sampling Forms
B	Laboratory Analytical Report for Groundwater Samples



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 December 2001. 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 being applied at the facility. A groundwater potentiometric surface map and a hydrocarbons concentration 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. The December 2001 sampling event is the second groundwater sampling event conducted since the completion of the confirmation soil boring program.

BJ Services removed three field waste tanks at 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.

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



2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled 10 monitor wells at the facility during the December 2001 groundwater sampling event to determine concentrations of dissolved-phase hydrocarbons in groundwater and to evaluate general groundwater quality in the area of the facility. Monitor well locations are shown in Figure 1. The following subsections describe the field activities conducted by Brown and Caldwell at the facility in December 2001 and present the results of the associated groundwater analyses.

2.1 Groundwater Sampling Activities

Groundwater level measurements were obtained from monitor wells prior to purging and sampling the wells. Groundwater levels were measured to the nearest 0.01 foot with an oil/water interface probe. Current and historic groundwater elevation data are presented in Table 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with a hydraulic gradient of approximately 0.008 foot/foot. A groundwater elevation map for December 6, 2001 is presented in Figure 2. The groundwater elevation data presented in Table 2 indicate that groundwater levels have declined in all monitor wells at the facility since late 1995. Monitor wells MW-12 and OW-4 did not contain sufficient water in December 2001 for collection of groundwater samples. Monitor well MW-12D is located adjacent to monitor well MW-12 and is screened in a deeper portion of the aquifer than is monitor well MW-12. Brown and Caldwell collected a groundwater sample from monitor well MW-12D in lieu of sampling monitor well MW-12. The top of the PVC casing of monitor well MW-10 has been damaged so that the well will not seal correctly. The well is apparently being filled with surficial soil materials that are entering the top of the well from the land surface. A small quantity of highly turbid water was removed from the well during the December 2001 sampling event, but review of chemical analysis of this turbid water, in comparison to the previous data from monitor well MW-10, indicate that the December 2001 chemical analysis of the turbid water recovered from well MW-10 does not provide valid data.

All wells were purged and sampled with disposable bailers and clean unused nylon string. Wells were typically purged dry or were sampled after removal of 0.25 gallons of water due to limited water columns in certain wells and minimal apparent recharge of groundwater to these wells. The wells were sampled in general order of least impacted to most impacted (based on analytical results from the September 2001 and preceding sampling events) to further mitigate the potential for cross-contamination of wells.

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

Groundwater samples were collected by pouring recovered water from a bailer. Each sample was transferred to 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. Completed chain-of-custody documentation was provided for all samples.

Field measurement equipment was decontaminated prior to and after each usage. Decontamination procedures consisted of washing with fresh water and a non-phosphate detergent, then rinsing with deionized water. Purge water was discharged to an on-site water reclamation system for re-use by BJ Services.

2.2 Results of Groundwater Analyses

Groundwater samples from monitor wells MW-14 and MW-15 were analyzed for chloride content using Method 325.3. Groundwater samples from the remaining wells sampled in December 2001 were analyzed for gasoline- and diesel-range total petroleum hydrocarbons (TPH-G and TPH-D) using EPA Method 8015B and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021. Selected wells were also sampled for natural attenuation evaluation parameters. The laboratory analytical reports and chain-of-custody documentation for the groundwater samples collected during the December 2001 sampling event are provided in Appendix B.

Current and cumulative analytical results for BTEX, TPH-D, and TPH-G are presented in Table 4. Figure 3 presents a hydrocarbons concentration map for the December 2001 sampling event. No benzene concentrations in excess of the laboratory detection limit were reported in the seven groundwater samples submitted for BTEX analysis during this sampling event. As such, all benzene concentrations were less than the New Mexico Water Quality Control Commission (NMWQCC) standard of 0.01 milligrams per liter (mg/L). Benzene has not been detected in former fuel island source area monitor wells MW-3, MW-4, or MW-13 since June 1999, March 1999, and June 2000, respectively. Adjustments to the biosparging system in July 1999 and March 2000 to increase air flow to the monitor well MW-13 area resulted in decreases in the concentration of benzene in monitor well MW-13 from 1.5 mg/L on July 2, 1999 to the present non-detectable concentration. Benzene has not been detected in monitor well MW-13 since June 2000.

Table 5 presents current and historic results for chloride analyses performed on groundwater samples collected at the facility. The December 2001 chloride concentration of 276 mg/L in down-gradient well MW-14 exceeds the NMWQCC standard of 250 mg/L for chloride. The chloride concentration of well MW-15 in December 2001 was 215 mg/L. Chloride concentrations in monitor well MW-15 have remained essentially constant and less than 250 mg/L from the time of its installation in January 2001 to the present. The chloride concentration in monitor well MW-14 has fluctuated from 368 mg/L to 222 mg/L during this time period.

Groundwater samples from selected wells were analyzed for nitrate and sulfate by Method 300.0 and dissolved methane by Method RSK-SOP 147/175 to assist in evaluation of natural attenuation processes at the facility. The current and historic 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.



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 at Hobbs, New Mexico.

3.1 Biosparging System at the Former Fueling System Area

Based on the results of previous investigations conducted by Brown and Caldwell and Roberts/Schornick and Associates, Inc., Brown and Caldwell recommended the installation of a biosparging system at the former fueling system area of the facility in the 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 and expanded in April 1997 and February 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in former fueling system area monitor wells MW-1, MW-3, MW-4, MW-9, and MW-13, as documented in the December 2000 groundwater sampling report for the facility.

Based on these favorable trends in hydrocarbon concentrations and in accordance with the recommendations presented in the report for the June 2000 groundwater sampling event, the biosparging system was deactivated on November 1, 2000. The December 2001 sampling event is the fifth sampling event completed since this shut down.

Benzene concentrations in former fueling system source area monitor wells MW-3, MW-4, MW-9, and MW-13 have remained at non-detectable levels since deactivation of the biosparging system. BTEX constituent concentrations in these wells and monitor well MW-1 have now remained below applicable NMWQCC standards for at least seven consecutive quarters.

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 in this area. The analytical results for these soil samples, as

discussed in the report for the June 2001 groundwater sampling event, indicate that remediation goals for soil in this area have successfully been achieved. The December 2001 sampling event is the second groundwater sampling event conducted since the completion of the confirmation soil boring program. Sampling of former fuel island source area wells that have sufficient groundwater and recharge for collection of valid groundwater samples will continue through June 2002. If, in accordance with the requirements specified in the NMOCD-approved RAP, analytical results for groundwater samples collected from these monitor wells do not exceed the groundwater remediation goals specified in the RAP during the 1-year followup quarterly monitoring period, then a biosparging system closure report will be submitted for the former fuel island portion of the facility.

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 the field waste 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 natural attenuation rate of 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 in the four groundwater sampling events from December 2000 through September 2001. Concentrations of toluene, ethylbenzene, and xylenes in monitor well MW-10 have undergone similar decreases over this time period. December 2001 chemical data from MW-10 are not considered valid, as previously discussed in Section 2.1.

Benzene concentrations at the monitor well MW-11/11A location have decreased from a maximum of 0.970 mg/L in December 1996 (prior to removal of the field waste tanks) to less than the NMWQCC standard of 0.01 mg/L in the last three groundwater sampling events. There has been only one detection each of toluene, ethylbenzene, and xylenes in monitor well MW-11A groundwater since December 2000.

Concentrations of BTEX constituents at the monitor well MW-12/12D location have displayed decreases similar to those observed at the monitor well MW-11 and MW-11A location since September 1998.

3.2.2 Secondary Evidence

The following lines of geochemical evidence can 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 during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

Although there was minimal hydrocarbon impact detected in former field waste tanks area monitor wells MW-11A and MW-12D in December 2001, dissolved oxygen concentrations in these wells were less than the dissolved oxygen content of background monitor well MW-5, as indicated in Table 3. The decreases in dissolved oxygen concentrations in former field waste tanks area monitor wells MW-11A and MW-12D relative to the background dissolved oxygen concentration are likely due to the residual effects of hydrocarbons at this former source area.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility has indicated that dissolved oxygen concentrations have typically been 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).

Continued use of dissolved oxygen as an electron acceptor during intrinsic bioremediation is likely to occur if residual hydrocarbons are present at the former field waste tanks area.

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 2.38 mg/L in background monitor well MW-5 during the December 2001 sampling event. Although there was minimal to no hydrocarbon impact at former field waste tanks area wells MW-11A and MW-12D in December 2001, nitrate was not detected in either of these wells. The decreased nitrate concentrations observed in December 2001 at former field waste tanks area wells MW-11A and MW-12D relative to the background nitrate concentration at the facility is likely due to residual effects of hydrocarbons.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors 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.

Ferrous iron was not measured in background monitor well MW-5 in December 2001, so the occurrence of natural attenuation of hydrocarbons based on ferrous iron concentrations in monitor wells at the former field waste tanks area can not be evaluated based on December 2001 data.

4. Microbes that utilize sulfate become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through use of sulfate as an electron acceptor. December 2001 sulfate concentrations in former field waste tanks area monitor wells MW-11A and MW-12D are 240 mg/L and 200 mg/L, respectively. The December 2001 sulfate concentration in background monitor well MW-5 is 120 mg/L. The fact that sulfate concentrations in former source area monitor wells MW-11A and MW-12D are greater than the sulfate concentration in the background 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, and its concentration should therefore increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.

Methane detected in former field waste tanks area monitor well MW-11A at a concentration of 0.0041 mg/L in December 2001, but was not detected in background monitor well MW-5. The elevated methane concentration in monitor well MW-11A at the former field waste tanks area suggests that utilization of carbon dioxide as an electron acceptor, resulting in methanogenesis, has occurred during natural attenuation of hydrocarbons in the vicinity of monitor well MW-11A 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 well MW-5 was measured at 90.6 millivolts (mV) in December 2001. Respective redox potentials of -78.0 mV and -119.3 mV were measured in former field waste tanks area monitor wells MW-11A and MW-12D in December 2001. The negative redox values in former field waste tank area monitor wells MW-11A and MW-12D as compared to the positive redox value in the background well at the facility provide additional evidence that natural attenuation of hydrocarbons is occurring in the area of the former field waste tanks.

7. Alkalinity is expected to increase during natural attenuation processes, due to the leaching of carbonates from mineral substrates by microbially produced organic acids. Alkalinity was not measured in background monitor well MW-5 in December 2001, so natural attenuation of hydrocarbons at the former field waste tank area cannot be evaluated based on December 2001 alkalinity data. Previous alkalinity data from the facility have generally been inconclusive regarding the occurrence of natural attenuation.

In conclusion, current and historic dissolved oxygen, nitrate, and methane data suggest that dissolved oxygen, nitrate, and carbon dioxide act as electron acceptors during intrinsic bioremediation processes at former field waste tanks area of the facility. Ferric iron also appears to

be serving as an electron acceptor during natural attenuation of hydrocarbons, based on historic ferrous iron data from background wells and monitor wells at the former field waste tanks area. Current redox data provide further evidence that natural attenuation of hydrocarbons is occurring in this area.

It is recommended that monitoring for natural attenuation evaluation parameters continue in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12D and the background well, MW-5. Redox potential, dissolved oxygen content, and alkalinity are good indicators of the occurrence of aerobic bioremediation of hydrocarbons, so it is also recommended that field testing for these parameters be performed 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 December 2001 groundwater sampling event conducted at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Dissolved benzene and BTEX concentrations in all monitor wells located near the former fueling system area are non-detectable. TPH-D was detected at low concentrations in two wells in this area (MW-4 and MW-7), but was also detected at a comparable concentration in the upgradient background well (MW-5). There were no detections of TPH-G in December 2001 at monitor wells located near the former fueling system area. BTEX and TPH concentrations in these wells have remained below applicable standards for the past seven quarterly groundwater sampling events.
- December 2001 benzene concentrations in former field waste tanks area monitor wells MW-11A and MW-12D are less than the New Mexico WQCC standard of 0.01 mg/L for benzene. Natural attenuation processes appear to be occurring in the vicinity of the former field waste tanks removed in March 1997, based on decreasing hydrocarbon concentrations in local monitor wells over time and as substantiated by geochemical data.
- The current chloride concentration of 276 mg/L in monitor well MW-14 exceeds the NMOCC standard of 250 mg/L. Chloride concentrations have varied between 368 mg/L and 222 mg/L in monitor well MW-14 since its installation in January 2001. Chloride concentrations in monitor well MW-15 have remained essentially constant and less than 250 mg/L since installation of these wells in January 2001.

4.2 Recommendations

- Attempt to rehabilitate former field waste tanks source area monitor well MW-10 by removing accumulated sediment from the bottom of the well. If successful, repair the cracked top of PVC casing, place a sealing well cap on the well, and install a new concrete well pad around this flush-mounted well.
- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-11A, MW-12D, and (if feasible) MW-10. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters.

- Perform quarterly sampling events of monitor wells pertaining to the former fueling system source area in March 2002 and June 2002. If analytical results for groundwater samples continue to not exceed the groundwater remediation goals specified in the RAP during the 1-year monitoring period following collection of confirmation soil samples in July 2001 (as specified in the RAP), then a biosparging system closure report will be submitted for the former fuel island portion of the facility.
- After submittal and approval of the biosparging system closure report by the NMOCD, decommission the biosparging system and P&A the injection wells, extraction wells, and applicable monitor wells.

DISTRIBUTION

December 2001 Groundwater Sampling Report
BJ Services Company, U.S.A.
Hobbs, New Mexico

February 26, 2002

Final Distribution as follows:

1 copy to: State of New Mexico
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Hobbs, New Mexico 88240

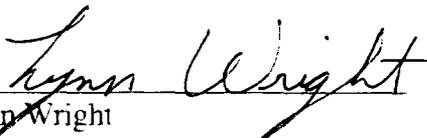
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11211 FM 2920
Tomball, Texas 77375

Attention: Ms. Jo Ann Cobb

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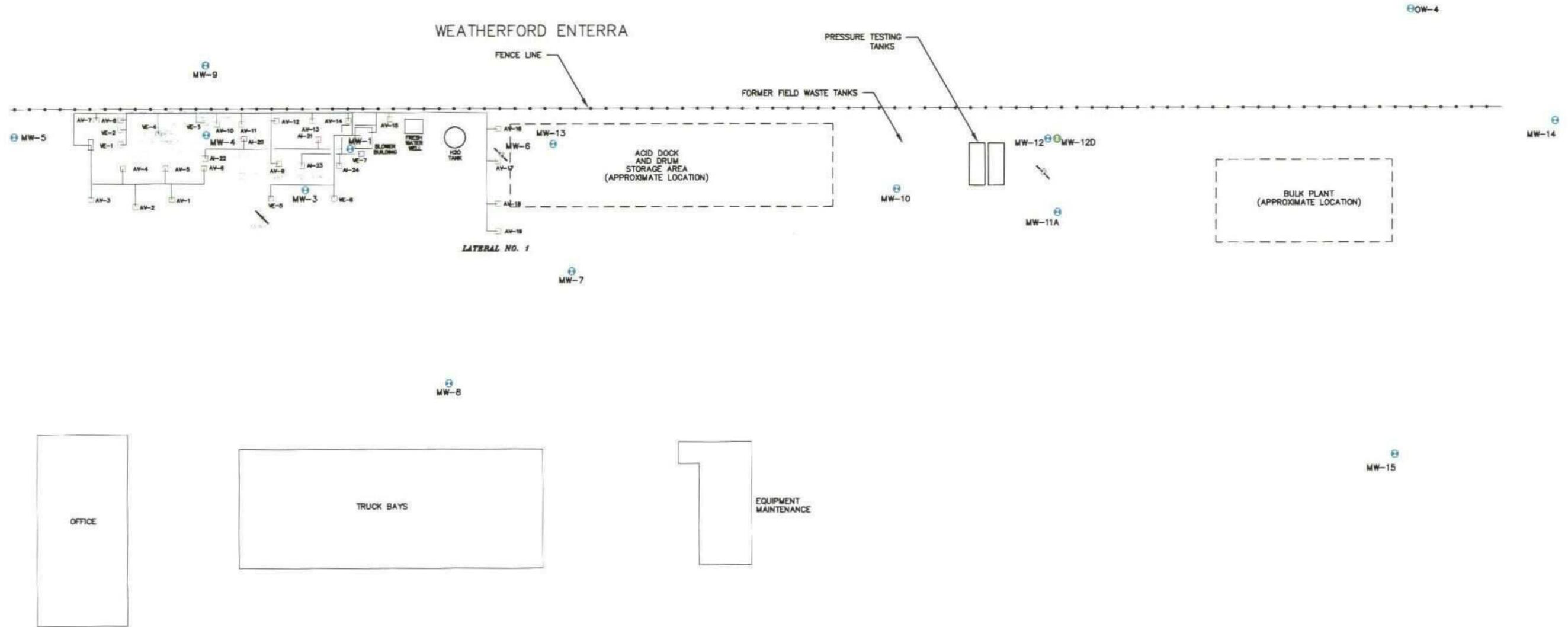

Lynn Wright
Principal Geologist

RLR/uak

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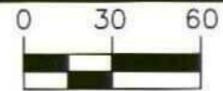


FIGURES



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BROWN AND CALDWELL
HOUSTON, TEXAS



SCALE IN FEET

DRAWN BY: _____ DATE: _____

CHK'D BY: _____ DATE: _____

APPROVED: _____ DATE: _____

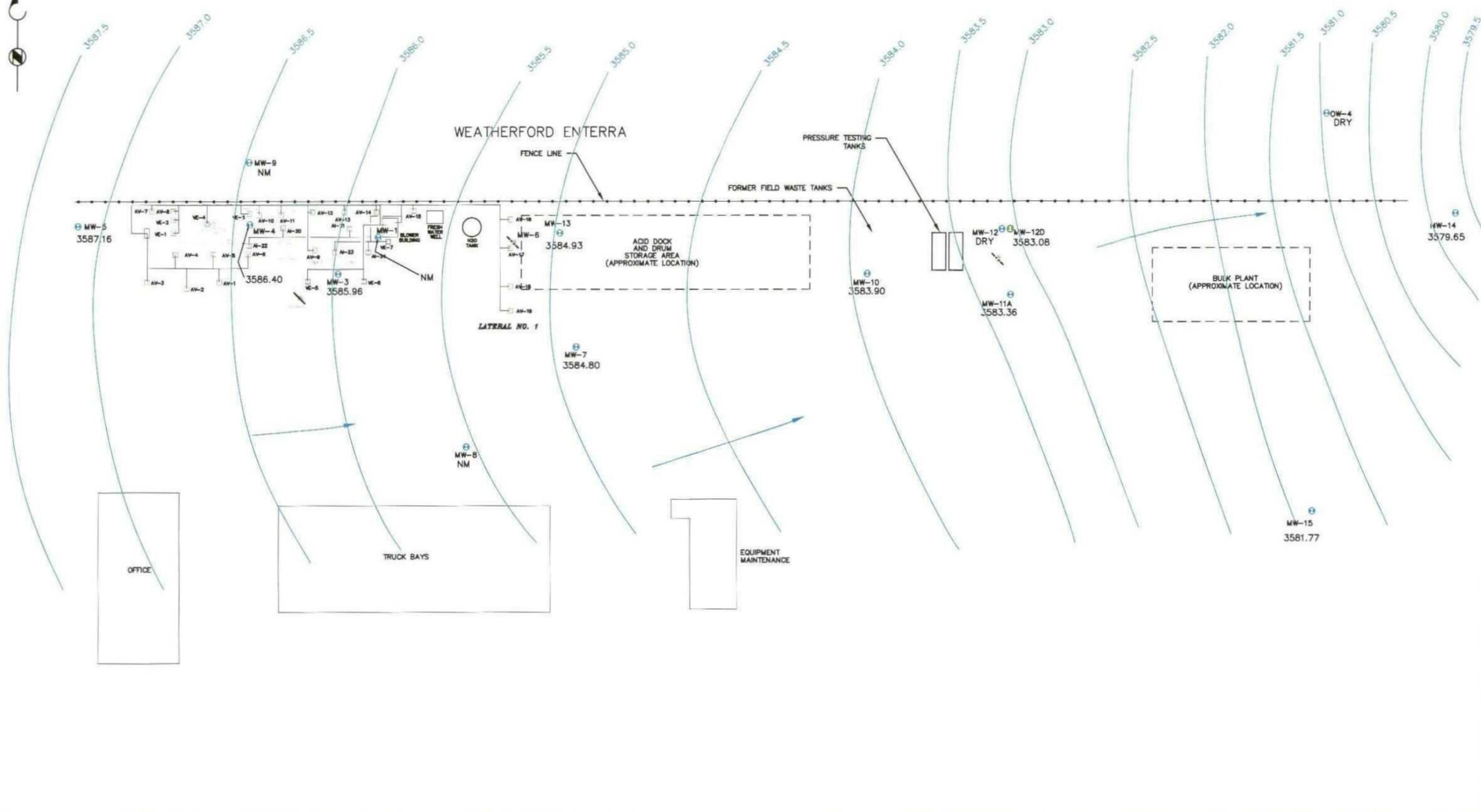
SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

LEGEND

- MW-3 EXISTING MONITOR WELL LOCATION
- BIOSPARGING SYSTEM
- MW-2 MONITOR WELL (PLUGGED AND ABANDONED)

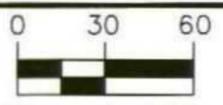
TITLE	SITE MAP	DATE	4/6/01
CLIENT	BJ SERVICES COMPANY, U.S.A.	PROJECT NUMBER	12832.016
SITE	HOBBS, NEW MEXICO	FIGURE NUMBER	1



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BROWN AND CALDWELL
HOUSTON, TEXAS

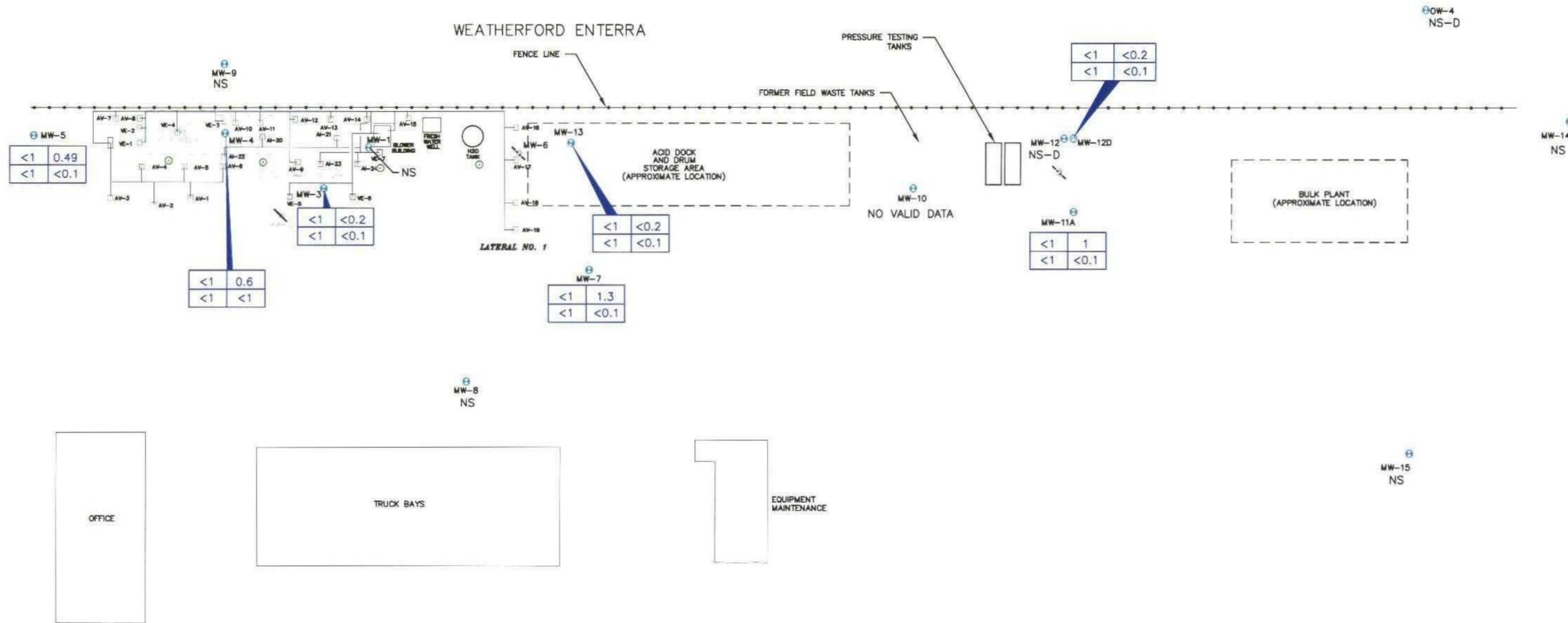
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PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL



SCALE IN FEET
DRAWN BY: CLK DATE 1/02
CHK'D BY: _____ DATE _____
REV'D BY: _____ DATE _____

- LEGEND**
- 3585.96
MW-3
MONITOR WELL LOCATION WITH GROUNDWATER ELEVATION (feet AMSL)
 - BIOSPARGING SYSTEM
 - GROUNDWATER FLOW DIRECTION
 - MONITOR WELL (PLUGGED AND ABANDONED)
 - NM - NOT MEASURED

TITLE	GROUNDWATER ELEVATION MAP FOR DECEMBER 6, 2001	DATE	1/17/02	
CLIENT	BJ SERVICES COMPANY, U.S.A.		PROJECT NUMBER	12832.016
SITE	HOBBS, NEW MEXICO		FIGURE NUMBER	2



P:\CAD\JOBS\BjServices\12832\Hydro_Con12_6_01

BROWN AND CALDWELL
HOUSTON, TEXAS



SCALE IN FEET
DRAWN BY: CLK DATE 1/02
CHK'D BY: _____ DATE _____
REV'D BY: _____ DATE _____

SUBMITTED: _____ DATE: _____
PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL

LEGEND

MW-3 EXISTING MONITOR WELL LOCATION
MW-2 MONITOR WELL (PLUGGED AND ABANDONED)

BENZENE (ug/L) <1 <0.2 - TPH-D (mg/L)
TOTAL BTEX (ug/L) <1 <0.1 - TPH-G (mg/L)

NS = NOT SAMPLED
NS-D = NOT SAMPLED (DRY WELL)

BIOSPARGING SYSTEM

TITLE	HYDROCARBONS DISTRIBUTION MAP FOR DECEMBER 6, 2001	DATE	1/17/02
CLIENT	BJ SERVICES COMPANY, U.S.A.	PROJECT NUMBER	12832.016
SITE	HOBBS, NEW MEXICO	FIGURE NUMBER	3

Tables



TABLES

Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
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.

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	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	57.90	0.00	3.589.65	
		9/14/1999	58.14	0.00	3.589.39	
		12/9/1999	-	-	-	(5)
		3/9/2000	58.99	0.00	3.588.54	
		6/8/2000	-	-	-	
9/13/2000	-	-	-			
12/7/2000	-	-	-			
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			
			not measured			
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	
		8/18/1993	49.71	0.00	3.595.13	
		1/26/1994	49.97	0.00	3.594.87	
		5/3/1995	-	-	-	(4),(5)
MW-3	3.645.00	8/10/1992	52.99	0.00	3.592.01	(1)
		2/9/1993	52.72	0.00	3.592.28	
		8/18/1993	52.82	0.00	3.592.18	
		1/26/1994	53.05	0.00	3.591.95	
		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	
		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	
		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			

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	3/23/1998	53.22	0.00	3.591.78	
		6/23/1998	53.66	0.00	3.591.34	
		9/30/1998	54.06	0.00	3.590.94	
		12/9/1998	54.36	0.00	3.590.64	
		3/10/1999	54.72	0.00	3.590.28	
		6/10/1999	55.17	0.00	3.589.83	
		7/2/1999	55.15	0.00	3.589.85	
		9/14/1999	55.42	0.00	3.589.58	
		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			
MW-4	3.645.28	8/10/1992	50.55	0.00	3.594.75	(1)
		2/9/1995	50.26	0.00	3.595.02	
		8/18/1995	50.38	0.00	3.594.90	
		1/26/1994	50.90	0.30	3.594.65	
		5/3/1995	51.51	0.45	3.594.14	
		7/31/1995	51.74	0.26	3.593.75	
		11/14/1995	51.05	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	53.45	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	
		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			
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			
MW-5	3.647.72	8/10/1992	52.38	0.00	3.595.34	(1)
		2/9/1995	52.06	0.00	3.595.66	
		8/18/1995	52.16	0.00	3.595.56	

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	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	52.85	0.00	3,594.89	
		2/23/1996	53.57	0.00	3,594.15	
		5/31/1996	53.16	0.00	3,594.56	
		8/23/1996	53.41	0.00	3,594.31	
		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	
		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	56.95	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			
MW-6	3,644.74	2/9/1995	50.58	0.00	3,594.16	(1)
		8/18/1995	50.78	0.00	3,593.96	
		1/26/1994	51.00	0.00	3,593.74	
		5/3/1995	52.65	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	51.65	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	53.27	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	
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	2/9/1995	50.55	0.00	3,594.02	(1)
		8/18/1995	50.74	0.00	3,593.81	
		1/26/1994	51.01	0.00	3,593.54	

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	5/3/1995	52.25	0.00	3.592.30	
		7/31/1995	51.92	0.00	3.592.65	
		11/14/1995	51.48	0.00	3.593.07	
		2/23/1996	52.15	0.00	3.592.40	
		5/31/1996	51.78	0.00	3.592.77	
		8/23/1996	52.02	0.00	3.592.55	
		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	55.75	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	58.24	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			
12/6/2001	59.75	0.00	3.584.80			
MW-8	3.644.87	2/9/1995	50.48	0.00	3.594.39	(1)
		8/18/1995	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	51.92	0.00	3.592.95	
		12/2/1996	52.45	0.00	3.592.44	
		3/12/1997	52.95	0.00	3.591.94	
		6/12/1997	53.96	0.00	3.590.91	
		9/11/1997	52.75	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			

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	6/8/2000	-	-	-	
		9/13/2000	-	-	-	
		12/7/2000	-	-	-	
		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		not measured		
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	
		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	
		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 Sheer
		9/12/1997	51.95	0.00	3.592.85	PSH Sheer
		12/10/1997	52.37	0.00	3.592.41	PSH Sheer
		3/23/1998	52.68	0.00	3.592.10	PSH Sheer
		6/23/1998	53.08	0.00	3.591.70	PSH Sheer
		9/30/1998	53.39	0.00	3.591.40	PSH Sheer
		12/9/1998	53.68	0.00	3.591.10	
		3/10/1999	54.15	0.00	3.590.65	
		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	-	-	-	(3)
		3/9/2000	55.69	0.00	3.589.09	
		6/8/2000	-	-	-	
		9/13/2000	-	-	-	
12/7/2000	-	-	-			
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		not measured				
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	52.79	0.00	3.591.68	
		8/23/1996	53.05	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			

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-10	3.644.47	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	3.587.85	
		9/14/1999	56.91	0.00	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	3.585.66	
		3/9/2001	59.31	0.00	3.585.24	
		6/21/01	59.89	0.00	3.584.66	
9/10/01	61.34	0.00	3.583.21			
12/6/2001	60.65	0.00	3.583.90			
MW-11	3.643.78	8/18/1995	51.95	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	3.590.45	
		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	3.590.55	
		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	52.95	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	55.45	0.00	3.588.81	
		9/30/1998	55.96	0.00	3.588.28	
		12/9/1998	56.15	0.00	3.588.11	
		3/10/1999	56.45	0.00	3.587.81	
		6/10/1999	56.94	0.00	3.587.30	
		7/2/1999	57.01	0.00	3.587.25	
		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	3.586.25	
		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	

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	3/8/2001	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	
MW-12	3.644.29	3/23/1998	54.72	0.00	3.589.57	(7)
		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	
		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	3.586.55	
		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	59.31	0.00	3.584.98	
		3/8/2001	59.76	0.00	3.584.55	
		6/21/01	60.29	0.00	3.584.00	
9/10/01	60.79	0.00	3.583.50			
		12/6/2001		well dry		
MW-12D	3.644.38	7/2/1999	57.15	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	
		9/13/2000	-	-	-	
		12/7/2000	-	-	-	
		3/8/2001	-	-	-	
		6/21/01	-	-	-	
		9/10/01	-	-	-	
		12/6/2001	61.30	0.00	3.583.08	
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	3.587.25	
		12/7/2000	58.68	0.00	3.586.84	
		3/8/2001	59.19	0.00	3.586.35	
		6/21/01	59.80	0.00	3.585.72	
		9/10/01	60.05	0.00	3.585.49	
		12/6/2001	60.59	0.00	3.584.95	
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	

**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	9/10/01	62.31	0.00	3.580.14	
		12/6/2001	62.80	0.00	3.579.65	
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	
OW-4	3.644.06	7/2/1999	58.18	0.00	3.585.88	(8)
		9/14/1999	58.65	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	
		12/07/00	61.15	0.00	3.582.91	
		3/8/2001	61.45	0.00	3.582.65	(10)
		6/21/01	61.48	0.00	3.582.58	
		9/10/01	61.55	0.00	3.582.53	
		12/6/2001		well dry		

(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 0.8.

(3) - Not measured

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

(5) - Well plugged and abandoned July 2, 1994

(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-15 estimated relative to TOC elevation for MW-7

Table 3
December 6, 2001 Field Screening Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Cumulative Gallons Removed	pH	Temperature (°C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)	Alkalinity (mg/L)
MW-3	NM ⁽²⁾	7.5	NM	NM	NM	NM	NM	NM	NM
MW-4	0.25	7.26	17.38	1289.0	-51.6	3.61	NM	NM	NM
MW-5	0.25	7.58	17.37	1151	90.6	4.46	NM	NM	NM
MW-7	0.25	6.99	19.0	787	106.2	2.60	NM	NM	NM
MW-10 ⁽³⁾	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-11A	0.25	6.95	17.02	4005	-78.0	1.85	0.0	6.0	770
MW-12D	0.25	7.4	18.6	1134	-119.3	0.98	0.4	0.4	720
MW-13	0.25	7.32	18.31	1645	8.5	0.99	0.4	2.6	NM
MW-14	0.25	7.39	17.18	1819	58.1	1.21	NM	NM	NM
MW-15	0.25	7.20	18.52	1281	111.1	4.71	NM	NM	NM
OW-4 ⁽⁴⁾	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D

⁽¹⁾ NTUs = Nephelometric turbidity units

⁽²⁾ NM = Not Measured

⁽³⁾ No data (ND) collected (due to minimal quantity of water in well)

⁽⁴⁾ Well dry. NM-D=Not Measured (well dry)

Monitor well MW-2 not operative after January 1994. P&A'd 7/1/95

Monitor well MW-6 P&A'd 7/1/95

Monitor well MW-11 not operative after September 1997. P&A'd 7/1/95

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-1	8/10/92	Regular	5550.0	12090.0	2160.0	7570.0	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	1500.0	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	5300.0	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	54000.0	7500.0	27000.0	180	160
	9/12/97	Regular	1800.0	4400.0	1000.0	5000.0	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	55.0	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
	5/10/1999	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	1.3	<1.0	41.0	0.65	0.76
	9/14/1999	Regular	<1.0	<1.0	<1.0	<2.0	<0.20	<0.14
	12/9/1999	.	NS	NS	NS	NS	NS	NS
	3/9/2000	Regular	<1	<1	<1	9.1	14	13
	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	0.44	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	
MW-2	8/10/92	Regular	14.5	<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	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
	8/23/96	Regular	330.0	2200.0	590.0	1500.0	NA	12
	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

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-3	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	5.5
	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	550.0	1.0	3.8
	12/10/1998	Regular	13.0	220.0	160.0	290.0	1.5	0.45
	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	0.52	< 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
MW-4	8/10/97	Regular	2594.0	10560.0	2160.0	6740.0	NA	NA
	2/9/98	Regular	5200.0	15000.0	2200.0	10000.0	NA	NA
	8/19/98	Regular	5000.0	12000.0	< 2000	7000.0	NA	NA
	1/27/99	Regular	NSP	NSP	NSP	NSP	NA	NSP
	5/3/98	Regular	NSP	NSP	NSP	NSP	NA	NSP
	8/1/98	Regular	5700.0	17000.0	3500.0	15000.0	NA	120
	11/15/98	Regular	490.0	1600.0	510.0	1100.0	NA	5.1
	2/23/96	Regular	360.0	2800.0	560.0	2500.0	NA	18
	5/31/96	Regular	84.0	850.0	280.0	1100.0	NA	6.1
	8/23/96	Regular	110.0	1400.0	450.0	1800.0	NA	9.8
	12/2/96	Regular	190.0	2000.0	1800.0	7200.0	56	45
	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	76
	12/10/97	Regular	250.0	750.0	970.0	2300.0	5.7	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	9.5	4.5
	12/10/1998	Duplicate	26.0	62.0	180.0	850.0	3.9	4.5
	3/10/1999	Regular	8.0	20.0	250.0	1400.0	13.0	15
	6/10/1999	Regular	<1.0	<1.0	12.0	12.0	0.44	0.65
	9/14/1999	Regular	< 1.0	< 1.0	5.5	13.1	0.35	0.17
	12/9/1999	Regular	< 1	2.5	2.5	20.1	2	0.55
	3/10/2000	Regular	< 1	< 1	< 1	3.6	2.6	0.15
	6/8/2000	Regular	< 1	< 1	< 1	< 1	0.44	0.25
	9/13/2000	Regular	< 1	< 1	< 1	< 1	0.61	<0.1
	12/7/2000	Regular	< 1	< 1	1.5	< 1	0.55	0.16
3/8/2001	Regular	< 1	< 1	< 1	< 1	0.45	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	

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
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	< 0.5	< 0.5	< 0.5	< 0.6	NA	NA
	11/15/95	Regular	< 0.5	1.2	< 0.5	1.5	NA	NA
	2/23/96	Regular	< 0.5	< 0.5	< 0.5	< 0.6	NA	NA
	5/31/96	Regular	31.0	86.0	10.0	20.0	NA	NA
	8/23/96	Regular	< 0.5	< 0.5	< 0.5	< 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
	9/15/2000	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	0.50	< 0.1
	6/21/2001	Regular	< 1	< 1	< 1	< 1	0.20	< 0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/6/2001	Regular	< 1	< 1	< 1	< 1	0.45	< 0.1	
MW-6	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	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	17	< 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	5.6	< 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

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-6 ¹	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	15
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	< 0.5	0.9	NA	< 0.1
	2/23/96	Regular	< 0.5	< 0.5	< 0.5	< 0.6	NA	< 0.1
	2/23/96	Duplicate	< 0.5	< 0.5	< 0.5	< 0.6	NA	< 0.1
	5/31/96	Regular	29.0	85.0	10.0	21.0	NA	0.25
	8/23/96	Regular	< 0.5	< 0.5	< 0.5	< 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	< 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	47	< 0.1
	6/10/1999	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/15/1999	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/1999	Regular	< 1	< 1	< 1	< 1	13	< 0.1
	3/9/2000	Regular	< 1	< 1	< 1	< 1	0.60	< 0.1
	6/8/2000	Regular	< 1	< 1	< 1	< 1	< 0.20	< 0.1
9/13/2000	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1	
12/7/2000	Regular	< 1	< 1	< 1	< 1	< 0.24	< 0.1	
3/8/2001	Regular	< 1	< 1	< 1	< 1	1.7	< 0.1	
6/21/2001	Regular	3.1	< 1	< 1	< 1	< 0.25	< 0.1	
9/10/2001	Regular	< 1	< 1	< 1	< 1	< 0.35	< 0.1	
12/6/2001	Regular	< 1	< 1	< 1	< 1	1.5	< 0.1	
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	< 0.5	0.5	< 0.5	< 0.6	NA	< 0.1
	2/23/96	Regular	< 0.5	< 0.5	< 0.5	< 0.6	NA	< 0.1
	5/31/96	Regular	< 0.5	< 0.5	< 0.5	< 0.6	NA	< 0.1
	8/23/96	Regular	< 0.5	< 0.5	< 0.5	< 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	0.5	< 0.1

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-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	NS
MW-9	4/22/95	Regular	570.0	380.0	< 50	870.0	NA	NA
	7/15/95	Regular	121.0	7.5	5.0	458.0	NA	NA
	8/19/95	Regular	390.0	290.0	40.0	250.0	NA	NA
	1/27/96	Regular	327.0	357.0	51.1	293.0	NA	NA
	5/3/96	Regular	380.0	110.0	19.0	120.0	NA	NA
	8/1/96	Regular	660.0	410.0	91.0	310.0	NA	6.7
	11/15/96	Regular	240.0	24.0	11.0	140.0	NA	1.5
	11/15/96	Duplicate	170.0	18.0	10.0	120.0	NA	1.9
	2/23/97	Regular	170.0	18.0	2.5	160.0	NA	4.3
	5/31/97	Regular	120.0	16.0	5.0	200.0	NA	NA
	8/23/97	Regular	82.0	15.0	6.0	270.0	NA	4
	8/23/97	Duplicate	76.0	14.0	4.8	250.0	NA	4.4
	12/2/97	Regular	61.0	< 25	< 25	210.0	2.0	2.8
	12/2/97	Duplicate	86.0	15.0	2.4	270.0	5.7	2.9
	3/12/97	Regular	30.0	48.0	420.0	880.0	8.5	19
	6/12/97	Regular	4.5	2.1	11.0	97.0	2.6	2.2
	6/12/97	Duplicate	< 5	< 5	6.0	69.0	5.7	1.9
	9/12/97	Regular	2.1	2.5	2.1	120.0	1.7	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	0.45
	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	1.5
	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	

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-9	12/6/2001	-	NS	NS	NS	NS	NS	NS
MW-10	8/19/95	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	5.5	1.3	1.7	0.18
	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	0.56
	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	1.2	0.44	0.16
	3/10/2000	Regular	300.0	4.3	6.1	43.2	1.1	0.81
	6/8/2000	Regular	78.0	1.7	7.2	9.0	0.67	0.74
	9/13/2000	Regular	23.0	1.3	1.1	2.9	1.1	0.41
12/7/2000	Regular	7.2	< 1	< 1	< 1	1.3	0.13	
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	< 1	2.3	< 0.1	
12/6/2001	Regular	78	460	32	239	NA	2.2	
MW-11	8/19/95	Regular	< 2	< 2	< 2	< 2	NA	NA
	1/27/94	Regular	< 1	< 1	< 1	< 1	NA	NA
	5/4/95	Regular	< 0.5	< 0.5	< 0.5	< 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

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-11A	12/10/1998	Regular	1.7	<1.0	<1.0	<1.0	<0.20	<0.1
	5/10/1999	Regular	<5	<5	<5	<5	0.5	<0.5
	6/10/1999	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.10
	9/15/1999	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	0.45	<0.1
	6/8/2000	Regular	5.6	<1	<1	<1	0.57	<0.1
	9/15/2000	Regular	1.4	<1	<1	<1	0.56	<0.1
	12/7/00	Regular	26	<1	<1	3.5	0.5	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	1	<0.1
MW-12	5/24/98	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	0.51	<0.5
	9/30/1998	Regular	260.0	5.0	1.2	7.9	<0.20	0.62
	12/10/1998	Regular	160.0	<1.0	<1.0	1.2	0.21	0.56
	5/10/1999	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	0.15
	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	0.23
	5/10/2000	Regular	95.0	<1	<1	<1	<0.2	0.27
	5/10/2000	Duplicate	99.0	<1	<1	<1	0.22	0.22
	6/8/2000	Regular	62.0	<1	<1	<1	<0.2	<0.1
	9/15/2000	Regular	54.0	<1	<1	<1	0.23	<0.1
	12/7/2000	Regular	27	<1	2.5	1.5	<0.2	<0.1
	3/8/2001	Regular	14	<1	<1	<1	2.1	0.1
	6/22/2001	Regular	12	<1	<1	<1	0.55	0.11
	9/10/2001	Regular	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
12/6/2001	Regular	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D	
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
	9/15/2000	-	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	
MW-15	7/2/1999	Regular	1500.0	25.0	750.0	58.0	2.2	5.1
	9/14/1999	Regular	860.0	16.0	450.0	34.4	2.1	5.1
	12/9/1999	Regular	450.0	16.0	410.0	40.9	0.46	5.2
	5/10/2000	Regular	88.0	2.8	200.0	1.5	1.9	0.99
	6/8/2000	Regular	6.0	<1	65.0	5.5	1.1	0.91
	9/15/2000	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/2000	Regular	<1	<1	<1	<1	0.45	<0.1
	3/8/2001	Regular	<1	<1	1.2	<1	2	<0.1

Table 4
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Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-13	6/22/2001	Regular	< 1	< 1	< 1	< 1	0.31	<0.1
	9/10/2001	Regular	< 1	< 1	< 1	< 1	0.5	<0.1
	12/6/2001	Regular	< 1	< 1	< 1	< 1	<0.7	<0.1
MW-14	1/14/2001	Regular	<1	<1	<1	<1	<0.7	<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
MW-15	1/14/2001	Regular	<1	<1	<1	<1	<0.7	<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
OW-4	6/10/1999	Regular	<1.0	<1.0	<1.0	4.4	<0.7	<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	<0.7	<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	<0.7	<0.1
	12/7/2000	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	3/8/2001	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	6/21/2001	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	9/10/2001	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	12/6/2001	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D

Well plugged and abandoned 7/1/99
 NA= Not Analyzed NS= Not Sampled NS-D= Not Sampled because well was Dry NS-P= Not Sampled due to Phase separated hydrocarbons in well

Table 5
 Cumulative Results⁽¹⁾ for Chloride⁽²⁾ Analyses
 Hobbs, New Mexico Facility
 B.J. Services Company, U.S.A.

Sample Date	Monitor Wells ⁽³⁾																
	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
8/1/95	160	150	310	130	380	310	350	110	2200	3400	NA ⁽⁴⁾	NA	NA	NA	NA	NA	NA
8/23/96	130	140	100	99	210	250	360	130	2000	2000	NA	NA	NA	NA	NA	NA	NA
3/23-24/98	212	206	126	151	183	223	364	164	2390	NA	940	1200	NA	NA	NA	NA	NA
3/9-10/99	163	156	142	155	411	238	274	123	1160	NA	834	314	NA	NA	NA	NA	NA
6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	195	496	NA	NA	266
3/9-10/00	258	196	196	196	NA	224	241	131	474	NA	1290	327	117	276	NA	NA	258
1/14/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	368	219	NA
3/8-9/01	NA	165	172	152	NA	224	250	127	879	NA	1720	586	NA	276	327	NA	NA
6/21/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	222	222	NA
9/10/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	245	228	NA
9/18/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	78.8	NA	NA	NA	NA
12/6/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276	215	NA

⁽¹⁾ - in mg/l.

⁽²⁾ - NMWQC 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.

⁽⁴⁾ - NA indicates not analyzed.

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-5	3/23/98	3.87	190	<0.0012
	3/9/99	<0.1	195	<0.0012
	6/10/99	4.73	209	<0.0012
	9/14/99	4.5	210	<0.0012
	12/9/99	4.2	210	<0.0012
	3/9/00	5.3	260	<0.0012
	6/8/00	4.7	240	<0.0012
	9/13/00	3.93	200	<0.0012
	12/7/00	3.27	160	<0.0012
	3/8/01	3.24	180	<0.0012
	6/21/01	2.74	150	0.0017
	9/10/01	NA ⁽²⁾	130	<0.0012
	12/6/01	2.38	120	<0.0012
MW-10	3/23/98	0.07	320	0.91
	6/23/98	<0.1	325	0.55
	9/30/98	<0.1	204	0.81
	12/10/98	<0.1	180	0.091
	3/9/99	<0.1	142	0.035
			225 ⁽³⁾	
	9/14/99	<0.10	160	0.0049
	12/9/99	0.49	170	0.0039
	3/10/00	0.1	160	0.0056
	6/8/00	<0.1	150	0.031
	9/13/00	<0.1	160	0.031
	12/7/00	<0.1	190	0.17
	3/8/01	<0.1	270	<0.0012
6/22/01	<0.1	270	0.044	
9/10/01	NA	NA	NA	
MW-11A	3/23/98	<0.05	190	0.14
	6/23/98	<0.1	225	0.11
	9/30/98	0.4	196	0.043
	12/10/98	0.7	188	0.033

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-11A	3/10/99	<0.1	164	0.094
		<0.1 ⁽⁴⁾	227 ⁽⁵⁾	
	6/10/99	<0.1	181	0.0036
	9/13/99	0.22	250	<0.0012
	12/9/99	<0.1	290	0.0079
	3/9/00	0.11	270	0.037
	6/8/00	<0.1	240	0.0069
	9/13/00	<0.1	320	<0.0012
	12/7/00	<0.1	260	0.0096
	3/8/01	<0.1	330	0.0028
	6/22/01	<0.1	180	0.0074
	9/10/01	NA	280	<0.0012
12/6/01	<0.1	240	0.0041	
MW-12	3/23/98	<0.05	240	<0.0012
	6/23/98	<0.1	240	<0.0012
	9/30/98	<0.1	168	<0.0012
	12/10/98	<0.1	202	<0.0012
	3/10/99	<0.1	137	<0.0012
		<0.1 ⁽⁴⁾	195 ⁽⁵⁾	
	6/10/99	<0.1	217	<0.0012
	9/14/99	<0.10	230	<0.0012
	12/9/99	<0.1	180	<0.0012
	3/10/00	<0.1	210	<0.0012
	6/8/00	<0.1	220	<0.0012
	9/13/00	<0.1	240	<0.0012
	12/7/00	<0.1	260	<0.0012
	3/8/01	<0.1	300	<0.0012
	6/22/01	<0.1	360	0.0021
9/10/01	NS-D ⁽⁵⁾	NS-D	NS-D	
12/6/01	NS-D	NS-D	NS-D	

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-12D ⁽⁶⁾	9/18/01	NA	190	<0.0012
	12/6/01	<0.1	200	<0.0012

⁽¹⁾ - Analysis by EPA Method 300, except as noted

⁽²⁾ - NA = not analyzed

⁽³⁾ - Analysis by EPA Method 375.4

⁽⁴⁾ - Analysis by EPA Method 355.3

⁽⁵⁾ - NS-D = not sampled (well dry)

⁽⁶⁾ - Well MW-12D not sampled for applicable parameters until well MW-12 went dry

mg/L = milligrams per liter

Appendices



APPENDICES

A



APPENDIX A
Groundwater Sampling Forms



GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-3

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 017
 Client: BJ Services
 Project Location: Hobbs, NM

Date: 12/6/01 Time: 1540
 Personnel: Teggie, L; Mortl, A
 Weather: Clear / Cooling

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>62.00</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input checked="" type="checkbox"/> Other: <u>Historical</u>
Depth to Static Water: <u>59.44</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: <u>—</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>2.96</u> feet	Well Volume: <u>0.49</u> gal
Screened Interval (from GS): <u>45-60</u>	
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft	

3. PURGE DATA

Purge Method: Boiler, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Boiler Stainless PVC Teflon® Other: Polyethylene Equipment Model(s): 1. YSI-600
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other	Comments
1545	<u>0.4</u>	<u>7.3</u>	<u>Purged</u>	<u>Nearly Dry</u>	<u>Allow 10 minute Recharge</u>				
1558	<u>Start</u>		<u>Sampling</u>	<u>→ well goes nearly Dry</u>	<u>Allow 10 minute Recharge</u>				
	<u>Complete</u>		<u>Sampling</u>						

4. SAMPLING DATA

Method(s): Boiler, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Boiler Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: DNM Field Filtered? Yes No

Sample ID: MW-3 Sample Time: 1545 # of Containers: 5

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Replaced well cap - Old cap damaged. Replaced lock with 2001 series, Non-Traditional well vault contributing to damage to well cap - May need to replace vault

Note: Include comments such as well condition, color, presence of NAPL or other items not on the field data sheet

[Signature]



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GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-4

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 017

Date: 12/6/01 Time: 1645

Client: BJ Service

Personnel: Teague, L; Mortl, A

Project Location: Hobbs, NM

Weather: cool

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____

Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____

Total Depth of Well: 61.30 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Historics 1

Depth to Static Water: 58.88 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: 2.42 feet Well Volume: 0.40 gal Screened Interval (from GS): 45-60
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Equipment Model(s)
 1. YSI-600
 2. _____
 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other:	Comments
1648	0.25	7.26	17.38	1289	-51.6	3.61	—		
1649	0.40	well purged nearly dry							
		Allow Recharge for approximately 1 minute							

4. SAMPLING DATA

Method(s): Bailor, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: DNM Field Filtered? Yes No

Sample ID: MW-4 Sample Time: 1650 # of Containers: 5

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: — mg/L

DO: — mg/L

Nitrate: — mg/L

Sulfate: — mg/L

Alkalinity: — mg/L

5. COMMENTS

Tubing has yellow powder on it - "wet" portion of tubing has yellow tint water "clear" but has black "organic" sludge at bottom of well based on visual of bailor when pulled up.

Note: include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet

[Signature]
Signature



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GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-5

1. PROJECT INFORMATION

Project Number: 12832 Task Number: Ø17 Date: 12/6/01 Time: 10:00
 Client: BJ Services Personnel: Teague, L; Mortl, A
 Project Location: Hobbs, NM Weather: Cool, Clear

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 64.5 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Hysterical
 Depth to Static Water: 60.56 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: 3.94 feet Well Volume: Ø.66 gal Screened Interval (from GS): 45.5-59.5
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s)
 Materials: Pump/Bailor Stainless PVC Teflon® Other: Polyethylene 1. YSI-600
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon 2. _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other	Comments
1045	Ø.25	7.58	17.37	11.51	9Ø.6	4.46			Well nearly dry.
									Allow to recharge approximately 5 minutes
									Collected sample as well continues to recharge slowly.

4. SAMPLING DATA

Method(s): Bailor, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailor Stainless PVC Teflon® Other: polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: DNH Field Filtered? Yes No
 Sample ID: MW-5 Sample Time: 1045 # of Containers: 9
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Yellow "powder" on outside of tubing & inside of well;
Well was locked & properly secured on arrival; -oil/water
interface probe-battery out; Had to remeasure DTW @ 1145 hrs

Note: Include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet

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GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-7

1. PROJECT INFORMATION

Project Number: 12832 Task Number: φ17
 Client: BS Services
 Project Location: Hobbs, NM

Date: 12/6/01 Time: 1200
 Personnel: Teague, L.J. Marti, A
 Weather: Warm, Clear

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 61.5 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Historical
 Depth to Static Water: 59.75 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: 1.75 feet Well Volume: 0.29 gal Screened Interval (from GS): 45.5-59.5
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Boiler, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s) _____
 Materials: Pump/Boiler Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. YSI-600
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other:	Comments
1215	89.2	6.99	19.4	787	106.2	2.6	-		Greenish Yellow Tint - well Dry - Allow Recharge 30 minutes - Fill Vials - Dry
1420	Fill 3/4								of one Amber - Well Dry; Allow Recharge
1530	Fill 1/4								of one Amber; 1/3 of second Amber; Well Dry; Allow Recharge
1747	Fill 2/3								of second Amber; well Dry

4. SAMPLING DATA

Method(s): Boiler, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Boiler Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: DNM Field Filtered? Yes No
 Sample ID: MW-7 Sample Time: 1215 # of Containers: 5
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Well continued to bail dry as sample containers were filled
* Based on start of Purge (Sample Collection over 5 hours)

Note include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet

[Signature]
 Signature



GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: Mw-17

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 417
 Client: BJ Services
 Project Location: Hobbs, NM

Date: 12/6/01 Time: 1641
 Personnel: Teague, L; Mortl, A
 Weather: Cool, Clear

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>62.0</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input checked="" type="checkbox"/> Other: <u>Historical</u>
Depth to Static Water: <u>66.5</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input checked="" type="checkbox"/> Other: <u>Broken</u>
Depth to Product: _____ feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>0.65</u> feet	Well Volume: <u>0.11</u> gal
Screened Interval (from GS): <u>Not Reported</u> <small>Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft</small>	

3. PURGE DATA

Purge Method: Boiler, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s) _____

Materials: Pump Boiler Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other:	Comments
									Well sampled Dry - Start Sampling Mw-4 (Return)
									Water has large amounts of vegetative & insect matter content
									see Note

4. SAMPLING DATA

Method(s): Boiler, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump Boiler Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: DNM Field Filtered? Yes No

Sample ID: Mw-17 Sample Time: 1700 # of Containers: 6

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: NM mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: ✓ mg/L

5. COMMENTS

Manway Damaged - TOC is broken - Well cap will not seal; well is sitting up from contaminants; well will be destroyed if manway not replaced.

Note: Include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet

[Signature]
 Signature



AN INTEGRAL PART OF

BROWN AND CALDWELL

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: Mw11 A

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 017
 Client: BJ Services
 Project Location: Hobbs, NM

Date: 12/6/01 Time: 1712
 Personnel: Merrill, A.; Teague, L
 Weather: Cool - Sun going down

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>63.3</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input checked="" type="checkbox"/> Other: <u>Historical</u>
Depth to Static Water: <u>69.88</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: _____ feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>2.42</u> feet	Well Volume: <u>4.4</u> gal
Screened Interval (from GS): <u>5p-6.5</u>	
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft	

3. PURGE DATA

Purge Method: Bailor, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor: Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing: Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Equipment Model(s)
 1. YSI-600
 2. _____
 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other:	Comments
1720	0.25	6.95	17.0	2400	-75.0	1.55			well purged nearly dry @ 0.25 gallons. Allow 5 minutes recharge & sample well

4. SAMPLING DATA

Method(s): <input checked="" type="checkbox"/> Bailor, Size: <u>1</u> <input type="checkbox"/> Bladder Pump <input type="checkbox"/> 2" Submersible Pump <input type="checkbox"/> 4" Submersible Pump <input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Inertial Lift Pump <input type="checkbox"/> Other: _____	Geochemical Analyses Ferrous Iron: <u>6.4</u> mg/L DO: <u>0.9</u> mg/L Nitrate: _____ mg/L Sulfate: _____ mg/L Alkalinity: <u>770</u> mg/L
Materials: Pump/Bailor: <input type="checkbox"/> Stainless <input type="checkbox"/> PVC <input type="checkbox"/> Teflon® <input checked="" type="checkbox"/> Other: <u>Polyethylene</u> <input type="checkbox"/> Dedicated <input type="checkbox"/> Prepared Off-Site <input type="checkbox"/> Field Cleaned <input checked="" type="checkbox"/> Disposable	
Materials: Tubing/Rope: <input type="checkbox"/> Polyethylene <input type="checkbox"/> Polypropylene <input type="checkbox"/> Teflon® <input checked="" type="checkbox"/> Other: <u>Nylon</u> <input type="checkbox"/> Dedicated <input type="checkbox"/> Prepared Off-Site <input type="checkbox"/> Field Cleaned <input checked="" type="checkbox"/> Disposable	
Depth to Water at Time of Sampling: <u>DNM</u> Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Sample ID: <u>Mw11 A</u> Sample Time: <u>1720</u> # of Containers: <u>9</u>	
Duplicate Sample Collected? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No ID: _____	

5. COMMENTS No lock on well cap & out of lock -
Need lock for next sampling event.

Note: Include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet

Signature



GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-12

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 017
Client: BT Services
Project Location: Hobbs, NM

Date: 12/6/01 Time: 1405
Personnel: Teague, L, Morin, J
Weather: Warm, Clear

2. WELL DATA

Form with fields for Casing Diameter (2 inches), Screen Diameter (2 inches), Total Depth of Well (67.8 feet), Depth to Static Water (Dry), Depth to Product, Length of Water Column, Well Volume, and Screened Interval.

3. PURGE DATA

Purge Method: Bladder Pump, 2" Submersible Pump, 4" Submersible Pump. Materials: Pump/Bailer, Rope/Tubing. Was well purged dry? Yes. Pumping Rate: 0 gal/min.

Table with columns: Time, Cum. Gallons Removed, pH, Temp, Spec. Cond., Eh, Dissolved Oxygen, Turbidity, Other, Comments. Contains handwritten 'Dry' in the Temp column.

4. SAMPLING DATA

Method(s): Bladder Pump, 2" Submersible Pump, 4" Submersible Pump. Materials: Pump/Bailer, Tubing/Rope. Depth to Water at Time of Sampling: Field Filtered? No. Sample ID: Sample Time: # of Containers: Duplicate Sample Collected? No.

Geochemical Analyses

Ferrous Iron: mg/L
DO: mg/L
Nitrate: mg/L
Sulfate: mg/L
Alkalinity: mg/L

5. COMMENTS

Well Dry; Bolts are stripped on well vault & need replacing

Note: Include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet

Signature: [Handwritten Signature]

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-12 D

1. PROJECT INFORMATION
 Project Number: 12832 Task Number: 017 Date: 12/6/01 Time: 1735
 Client: BJ Services Personnel: Teague, L; Merrill A
 Project Location: Holsh, NM Weather: Sunny Clear Wc

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>DNM</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Static Water: <u>61.3</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: _____ feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>26.2</u> feet Well Volume: <u>4.3</u> gal	Screened Interval (from GS): <u>77.5-87.5</u> <small>Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft</small>

* Based on Screened Interval

3. PURGE DATA

Purge Method: Bailor, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: Polyethylene Equipment Model(s): YST-600
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other	Comments
<u>1445</u>	<u>0.25</u>	<u>7.40</u>	<u>18.6</u>	<u>1134</u>	<u>-11943</u>	<u>0.98</u>			
	<u>Taking Sample after 2 C.35 gallon recovery based on other wells and dry wells.</u>								

4. SAMPLING DATA

Method(s): Bailor, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: DNM Field Filtered? Yes No

Sample ID: MW12 D Sample Time: 1445 # of Containers: 9

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses	
Ferrous Iron:	<u>0.4</u> mg/L
DO:	<u>0.4</u> mg/L
Nitrate:	_____ mg/L
Sulfate:	_____ mg/L
Alkalinity:	_____ mg/L

5. COMMENTS well vault bolts broken off

Note: Include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet

[Signature]
 Signature



GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-13

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 017
 Client: BJ Services
 Project Location: Hebbs, NM

Date: 12/6/01 Time: 1510
 Personnel: Teague, L., Morst, A
 Weather: Warm, Clear

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 65.20 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: Historical
 Depth to Static Water: 64.59 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: 4.61 feet Well Volume: 0.77 gal Screened Interval (from GS): 51-66
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s): _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. YSI-600
 Materials: Rope Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other	Comments
1515	0.25	7.32	19.31	1643	8.5	0.99			6121
									Water recovered by bailer dropping. Allow 5 minute recharge & take sample.

4. SAMPLING DATA

Method(s): Bailer, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: DNM Field Filtered? Yes No
 Sample ID: MW-13 Sample Time: 1515 # of Containers: 5
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 2.6 mg/L
 DO: 0.4 mg/L
 Nitrate: - mg/L
 Sulfate: - mg/L
 Alkalinity: 385 mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet



GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW14

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 17 Date: 12/6/01 Time: 1807
 Client: BJ Services Personnel: Tracy, L. Merrill, A
 Project Location: Hebb, NM Weather: cool Durb.

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 69.2 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: HISTORICAL
 Depth to Static Water: 62.8 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: 6.40 feet Well Volume: 1.07 gal Screened Interval (from GS): 54.5-69.5
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s)
 Materials: Pump/Bailor: Stainless PVC Teflon® Other: Polyethylene 1. PSI-600
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing: Polyethylene Polypropylene Teflon® Other: Nylon 2. _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other:	Comments
1807	20.25	7.39	17.18	1819	58.1	1.21	Removed 3 bailors		
First two have full recovery, 3 bailor has 1/2 recovery									
Decide to start sampling after allowing 5 minute recovery									
Collect one sample container									

4. SAMPLING DATA

Method(s): Bailor, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailor: Stainless PVC Teflon® Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope: Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: DNM Field Filtered? Yes No
 Sample ID: MW14 Sample Time: 1807 # of Containers: 1
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet

[Signature]
 Signature

WELL ID: MW-15

1. PROJECT INFORMATION

Project Number: _____ Task Number: _____ Date: _____ Time: 1300
 Client: _____ Personnel: Teague
 Project Location: Hobb, NM Weather: Windy, Sunny

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon Other: _____
 Total Depth of Well: 67.0 feet From: Top of Well Casing (IOC) Top of Protective Casing Other: HISTORICAL
 Depth to Static Water: 61.47 feet From: Top of Well Casing (IOC) Top of Protective Casing Other: _____
 Depth to Product: _____ feet From: Top of Well Casing (IOC) Top of Protective Casing Other: _____
 Length of Water Column: 5.53 feet Well Volume: 0.92 gal Screened Interval (from GS): 52-67
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Boiler, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s)
 Materials: Pump/Boiler Stainless PVC Teflon Other: _____ 1. YSI-600
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon Other: _____ 2. _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other	Comments
1314	7.25	7.20	18.50	1281	111	4.71			Purged "Dry"
									Allow to Recharge 3 minutes & collect one sample container

4. SAMPLING DATA

Method(s): Boiler, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Boiler Stainless PVC Teflon Other: Polyethylene
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: DNM Field Filtered? Yes No
 Sample ID: MW15 Sample Time: 1310 # of Containers: 1
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

No lock. Placed 2001 series lock on well cap

Note: Include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet



GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: OW-4

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 017

Date: 12/6/01 Time: 1345

Client: BJ Services

Personnel: Teague, L, Math, L

Project Location: Hobbs, NM

Weather: Sunny, warm

2. WELL DATA

Casing Diameter: <u>4</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>4</u> inches	Type: <input type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>61.50</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input checked="" type="checkbox"/> Other: <u>Dry</u>
Depth to Static Water: <u>0-7</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: _____ feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: _____ feet	Well Volume: _____ gal
Screened Interval (from GS): <u>No Data</u>	
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft	

3. PURGE DATA

Purge Method: Boiler, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s) _____

Materials: Pump/Boiler Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. _____

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____

Was well purged dry? Yes No Pumping Rate: _____ gal/min 3. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Eh	Dissolved Oxygen	Turbidity	Other	Comments
NO DATA									

4. SAMPLING DATA

Method(s): Boiler, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Boiler Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: _____ Field Filtered? Yes No

Sample ID: _____ Sample Time: _____ # of Containers: _____

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

~~Ferrous Iron: _____ mg/L~~

~~DO: _____ mg/L~~

~~Nitrate: _____ mg/L~~

~~Sulfate: _____ mg/L~~

~~Alkalinity: _____ mg/L~~

5. COMMENTS

well "Dry" - Moist - Silty - Sand at bottom based on "mud" streak in interface probe

Note: Include comments such as well condition, odor, presence of NAPL or other items not on the field data sheet

[Signature]
Signature

B



APPENDIX B

Laboratory Analytical Report for Groundwater Samples



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

Brown & Caldwell

Certificate of Analysis Number:

01120267

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, Hobbs, NM #12832 Site: Houston TX. Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 12/24/01
--	---------------------	---

This Report Contains A Total Of 30 Pages

Excluding This Page

And

Chain Of Custody

12/24/01

Date



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

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
01120267

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, Hobbs, NM #12832 Site: Houston TX. Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 12/24/01
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A plastic unpreserved container and a set of unpreserved vials were received for your sample ID "MW13" (SPL ID: 01120267-05). Also a set of unpreserved vials were received for both sample ID's "MW3 and MW4" (SPL ID's: 01120267-6 and 01120267-07). No analyses were requested on the chain of custody for these containers. Per your request, via phone conversation, on December 12, 2001, no analyses were performed on the additional containers received. SPL analyzed the samples according to the analyses requested on the chain of custody.

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.


Sonia West
Senior Project Manager

12/24/01

Date



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

Brown & Caldwell

Certificate of Analysis Number:
01120267

Report To: Brown & Caldwell
 Rick Rexroad
 1415 Louisiana
 Suite 2509
 Houston
 TX
 77002-
 ph: (713) 759-0999

Project Name: BJ Service, Hobbs, NM #12832
Site: Houston TX.
Site Address:

PO Number:
State: New Mexico
State Cert. No.:

Date Reported: 12/24/01

Fax To: Brown & Caldwell
 Rick Rexroad
 fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
W-5	01120267-01	Water	12/6/01 10:45:00 AM	12/7/01 1:00:00 PM	100213	<input type="checkbox"/>
MW-7	01120267-02	Water	12/6/01 12:15:00 PM	12/7/01 1:00:00 PM	100213	<input type="checkbox"/>
MW-15	01120267-03	Water	12/6/01 1:10:00 PM	12/7/01 1:00:00 PM	100213	<input type="checkbox"/>
W-12D	01120267-04	Water	12/6/01 2:45:00 PM	12/7/01 1:00:00 PM	100213	<input type="checkbox"/>
W-13	01120267-05	Water	12/6/01 3:15:00 PM	12/7/01 1:00:00 PM	100213	<input checked="" type="checkbox"/>
MW-13	01120267-05	Water	12/6/01 3:15:00 PM	12/7/01 1:00:00 PM	100214	<input type="checkbox"/>
W-3	01120267-06	Water	12/6/01 3:45:00 PM	12/7/01 1:00:00 PM	100213	<input checked="" type="checkbox"/>
W-3	01120267-06	Water	12/6/01 3:45:00 PM	12/7/01 1:00:00 PM	100214	<input type="checkbox"/>
MW-4	01120267-07	Water	12/6/01 4:50:00 PM	12/7/01 1:00:00 PM	100215	<input checked="" type="checkbox"/>
MW-4	01120267-07	Water	12/6/01 4:50:00 PM	12/7/01 1:00:00 PM	100214	<input type="checkbox"/>
W-10	01120267-08	Water	12/6/01 5:00:00 PM	12/7/01 1:00:00 PM	100214	<input type="checkbox"/>
MW-11A	01120267-09	Water	12/6/01 5:20:00 PM	12/7/01 1:00:00 PM	100214	<input type="checkbox"/>
MW-14	01120267-10	Water	12/6/01 6:07:00 PM	12/7/01 1:00:00 PM	100214	<input type="checkbox"/>
Trip Blank 1	01120267-11	Water	12/6/01	12/7/01 1:00:00 PM	100214	<input type="checkbox"/>
Trip Blank 2	01120267-12	Water	12/6/01	12/7/01 1:00:00 PM	100214	<input type="checkbox"/>
Trip Blank 3	01120267-13	Water	12/6/01	12/7/01 1:00:00 PM	100214	<input type="checkbox"/>

Deborah West
 Senior Project Manager

12/24/01

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



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

Client Sample ID: MW-5

Collected: 12/6/01 10:45:00 SPL Sample ID: 01120267-01

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	0.49	0.2	1		12/14/01 10:23	AR	955903
Surr: n-Pentacosane	70.0	% 18-120	1		12/14/01 10:23	AR	955903

Prep Method	Prep Date	Prep Initials
SW3510B	12/11/2001 12:08	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/18/01 2:04	D_R	952489
Surr: 1,4-Difluorobenzene	99.3	% 74-121	1		12/18/01 2:04	D_R	952489
Surr: 4-Bromofluorobenzene	97.0	% 55-150	1		12/18/01 2:04	D_R	952489

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		12/18/01 17:25	ER	954160
Ethylene	ND	0.0032	1		12/18/01 17:25	ER	954160
Methane	ND	0.0012	1		12/18/01 17:25	ER	954160

NITROGEN, NITRATE (AS N)			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N)	2.38	0.1	1		12/08/01 8:00	ES	951750

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/18/01 2:49	D_R	952434
Ethylbenzene	ND	1	1		12/18/01 2:49	D_R	952434
Toluene	ND	1	1		12/18/01 2:49	D_R	952434
Xylenes Total	ND	1	1		12/18/01 2:49	D_R	952434
Surr: 4-Bromofluorobenzene	97.1	% 48-156	1		12/18/01 2:49	D_R	952434
Surr: 1,4-Difluorobenzene	98.4	% 72-137	1		12/18/01 2:49	D_R	952434

SULFATE			MCL	E300	Units: mg/L		
Sulfate	120	4	20		12/08/01 8:00	ES	952008

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



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

Client Sample ID: MW-7

Collected: 12/6/01 12:15:00 SPL Sample ID: 01120267-02

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	1.3	0.2	1		12/14/01 11:01	AR	955904
Surr: n-Pentacosane	162 MI	% 18-120	1	*	12/14/01 11:01	AR	955904

Prep Method	Prep Date	Prep Initials
SW3510B	12/11/2001 12:08	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/18/01 3:01	D_R	952490
Surr: 1,4-Difluorobenzene	99.0	% 74-121	1		12/18/01 3:01	D_R	952490
Surr: 4-Bromofluorobenzene	100	% 55-150	1		12/18/01 3:01	D_R	952490

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/18/01 3:19	D_R	952435
Ethylbenzene	ND	1	1		12/18/01 3:19	D_R	952435
Toluene	ND	1	1		12/18/01 3:19	D_R	952435
Xylenes, Total	ND	1	1		12/18/01 3:19	D_R	952435
Surr: 4-Bromofluorobenzene	98.8	% 48-156	1		12/18/01 3:19	D_R	952435
Surr: 1,4-Difluorobenzene	99.5	% 72-137	1		12/18/01 3:19	D_R	952435

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



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

Client Sample ID: MW-12D Collected: 12/6/01 2:45:00 SPL Sample ID: 01120267-04

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	0.2	1		12/14/01 18:58	AR	955944
Surr: n-Pentacosane	83.2	% 18-120	1		12/14/01 18:58	AR	955944

Prep Method	Prep Date	Prep Initials
SW3510B	12/11/2001 12:08	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/18/01 5:01	D_R	952491
Surr: 1,4-Difluorobenzene	99.3	% 74-121	1		12/18/01 5:01	D_R	952491
Surr: 4-Bromofluorobenzene	99.0	% 55-150	1		12/18/01 5:01	D_R	952491

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		12/18/01 18:00	ER	954164
Ethylene	ND	0.0032	1		12/18/01 18:00	ER	954164
Methane	ND	0.0012	1		12/18/01 18:00	ER	954164

NITROGEN, NITRATE (AS N)			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N)	ND	0.1	1		12/08/01 8:00	ES	951751

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/18/01 5:16	D_R	952439
Ethylbenzene	ND	1	1		12/18/01 5:16	D_R	952439
Toluene	ND	1	1		12/18/01 5:16	D_R	952439
Xylenes, Total	ND	1	1		12/18/01 5:16	D_R	952439
Surr: 4-Bromofluorobenzene	98.9	% 48-156	1		12/18/01 5:16	D_R	952439
Surr: 1,4-Difluorobenzene	99.7	% 72-137	1		12/18/01 5:16	D_R	952439

SULFATE			MCL	E300	Units: mg/L		
Sulfate	200	4	20		12/08/01 8:00	ES	952011

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID: MW-13

Collected: 12/6/01 3:15:00

SPL Sample ID: 01120267-05

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	0.2	1		12/14/01 19:36	AR	955906
Surr: n-Pentacosane	37.8	% 18-120	1		12/14/01 19:36	AR	955906

Prep Method	Prep Date	Prep Initials
SW3510B	12/11/2001 12:08	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/18/01 5:04	D_R	952492
Surr: 1,4-Difluorobenzene	99.7	% 74-121	1		12/18/01 5:04	D_R	952492
Surr: 4-Bromofluorobenzene	99.0	% 55-150	1		12/18/01 5:04	D_R	952492

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/18/01 5:46	D_R	952440
Ethylbenzene	ND	1	1		12/18/01 5:46	D_R	952440
Toluene	ND	1	1		12/18/01 5:46	D_R	952440
Xylenes, Total	ND	1	1		12/18/01 5:46	D_R	952440
Surr: 4-Bromofluorobenzene	97.3	% 48-156	1		12/18/01 5:46	D_R	952440
Surr: 1,4-Difluorobenzene	98.0	% 72-137	1		12/18/01 5:46	D_R	952440

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



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

Client Sample ID: MW-3 Collected: 12/6/01 3:45:00 SPL Sample ID: 01120267-06

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	0.2	1		12/14/01 20:14	AR	955907
Surr: n-Pentacosane	85.4	% 18-120	1		12/14/01 20:14	AR	955907

Prep Method	Prep Date	Prep Initials
SW3510B	12/11/2001 12:08	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/18/01 6:01	D_R	952493
Surr: 1,4-Difluorobenzene	99.0	% 74-121	1		12/18/01 6:01	D_R	952493
Surr: 4-Bromofluorobenzene	97.7	% 55-150	1		12/18/01 6:01	D_R	952493

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/18/01 6:15	D_R	952441
Ethylbenzene	ND	1	1		12/18/01 6:15	D_R	952441
Toluene	ND	1	1		12/18/01 6:15	D_R	952441
Xylenes, Total	ND	1	1		12/18/01 6:15	D_R	952441
Surr: 4-Bromofluorobenzene	97.3	% 48-156	1		12/18/01 6:15	D_R	952441
Surr: 1,4-Difluorobenzene	97.0	% 72-137	1		12/18/01 6:15	D_R	952441

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID: MW-4 Collected: 12/6/01 4:50:00 SPL Sample ID: 01120267-07

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	0.6	0.2	1		12/14/01 20:51	AR	955909
Surr: n-Pentacosane	63.8	% 18-120	1		12/14/01 20:51	AR	955909

Prep Method	Prep Date	Prep Initials
SW3510B	12/11/2001 12:08	IKL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	1		10	12/18/01 6:04	D_R	952494
Surr: 1,4-Difluorobenzene	106	% 74-121		10	12/18/01 6:04	D_R	952494
Surr: 4-Bromofluorobenzene	101	% 55-150		10	12/18/01 6:04	D_R	952494

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1		1	12/18/01 16:53	D_R	954173
Ethylbenzene	ND	1		1	12/18/01 16:53	D_R	954173
Toluene	ND	1		1	12/18/01 16:53	D_R	954173
Xylenes, Total	ND	1		1	12/18/01 16:53	D_R	954173
Surr: 4-Bromofluorobenzene	77.3	% 48-156		1	12/18/01 16:53	D_R	954173
Surr: 1,4-Difluorobenzene	92.6	% 72-137		1	12/18/01 16:53	D_R	954173

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID: MW-10 Collected: 12/6/01 5:00:00 SPL Sample ID: 01120267-08

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	2.2	0.5	5		12/19/01 13:03	D_R	956076
Surr: 1,4-Difluorobenzene	122MI	% 74-121	5	*	12/19/01 13:03	D_R	956076
Surr: 4-Bromofluorobenzene	91.2	% 55-150	5		12/19/01 13:03	D_R	956076
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.025	10		12/18/01 18:35	ER	954166
Ethylene	ND	0.032	10		12/18/01 18:35	ER	954166
Methane	0.53	0.012	10		12/18/01 18:35	ER	954166
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	78	5	5		12/19/01 13:30	D_R	955232
Ethylbenzene	32	5	5		12/19/01 13:30	D_R	955232
Toluene	460	5	5		12/19/01 13:30	D_R	955232
Xylenes, Total	239	5	5		12/19/01 13:30	D_R	955232
Surr: 4-Bromofluorobenzene	90.4	% 48-156	5		12/19/01 13:30	D_R	955232
Surr: 1,4-Difluorobenzene	105	% 72-137	5		12/19/01 13:30	D_R	955232

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



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

Client Sample ID: MW-11A

Collected: 12/6/01 5:20:00

SPL Sample ID: 01120267-09

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	1	0.2	2		12/14/01 20:14	AR	955895
Surr: n-Pentacosane	57.6	% 55-155	2		12/14/01 20:14	AR	955895

Prep Method	Prep Date	Prep Initials
SW3510B	12/11/2001 12:08	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/19/01 13:00	D_R	956074
Surr: 1,4-Difluorobenzene	104	% 74-121	1		12/19/01 13:00	D_R	956074
Surr: 4-Bromofluorobenzene	90.0	% 55-150	1		12/19/01 13:00	D_R	956074

HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		12/18/01 18:47	ER	954167
Ethylene	ND	0.0032	1		12/18/01 18:47	ER	954167
Methane	0.0041	0.0012	1		12/18/01 18:47	ER	954167

NITROGEN, NITRATE (AS N)			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N)	ND	0.1	1		12/08/01 8:00	ES	951752

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/19/01 13:04	D_R	955231
Ethylbenzene	ND	1	1		12/19/01 13:04	D_R	955231
Toluene	ND	1	1		12/19/01 13:04	D_R	955231
Xylenes, Total	ND	1	1		12/19/01 13:04	D_R	955231
Surr: 4-Bromofluorobenzene	73.8	% 48-156	1		12/19/01 13:04	D_R	955231
Surr: 1,4-Difluorobenzene	80.9	% 72-137	1		12/19/01 13:04	D_R	955231

SULFATE			MCL	E300	Units: mg/L		
Sulfate	240	4	20		12/08/01 8:00	ES	952012

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID: MW-14 Collected: 12/6/01 6:07:00 SPL Sample ID: 01120267-10

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	276	5	5		12/19/01 14:30	CV	955560

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL



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

Client Sample ID: Trip Blank 1

Collected: 12/6/01

SPL Sample ID: 01120267-11

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/18/01 2:02	D_R	952488
Surr: 1,4-Difluorobenzene	99.3	% 74-121	1		12/18/01 2:02	D_R	952488
Surr: 4-Bromofluorobenzene	97.7	% 55-150	1		12/18/01 2:02	D_R	952488
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/18/01 2:20	D_R	952433
Ethylbenzene	ND	1	1		12/18/01 2:20	D_R	952433
Toluene	ND	1	1		12/18/01 2:20	D_R	952433
Xylenes, Total	ND	1	1		12/18/01 2:20	D_R	952433
Surr: 4-Bromofluorobenzene	97.9	% 48-156	1		12/18/01 2:20	D_R	952433
Surr: 1,4-Difluorobenzene	98.7	% 72-137	1		12/18/01 2:20	D_R	952433

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



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

Client Sample ID: Trip Blank 2

Collected: 12/6/01

SPL Sample ID: 01120267-12

Site: Houston TX.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		12/19/01 12:01	D_R	956070
Surr: 1,4-Difluorobenzene	104	% 74-121	1		12/19/01 12:01	D_R	956070
Surr: 4-Bromofluorobenzene	94.3	% 55-150	1		12/19/01 12:01	D_R	956070
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		12/19/01 12:13	D_R	955229
Ethylbenzene	ND	1	1		12/19/01 12:13	D_R	955229
Toluene	ND	1	1		12/19/01 12:13	D_R	955229
Xylenes, Total	ND	1	1		12/19/01 12:13	D_R	955229
Surr: 4-Bromofluorobenzene	71.9	% 48-156	1		12/19/01 12:13	D_R	955229
Surr: 1,4-Difluorobenzene	81.6	% 72-137	1		12/19/01 12:13	D_R	955229

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



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Diesel Range Organics
Method: SW8015B

WorkOrder: 01120267
Lab Batch ID: 16760A

Method Blank

Samples in Analytical Batch:

RunID: HP_V_011214C-955894 Units: mg/L
Analysis Date: 12/14/2001 11:01 Analyst: AR
Preparation Date: 12/11/2001 12:08 Prep By: KL Method SW3510B

Table with 2 columns: Lab Sample ID, Client Sample ID. Rows include 01120267-01B through 01120267-09B with corresponding MW-5 through MW-11A.

Table with 3 columns: Analyte, Result, Rep Limit. Rows: Diesel Range Organics (ND, 0.10), Surr. n-Pentacosane (109.6, 18-120).

Laboratory Control Sample (LCS)

RunID: HP_V_011214C-955892 Units: mg/L
Analysis Date: 12/14/2001 10:23 Analyst: AR
Preparation Date: 12/11/2001 12:08 Prep By: KL Method SW3510B

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Diesel Range Organics (2.5, 2.4, 98, 21, 175).

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

Sample Spiked: 01120267-01
RunID: HP_V_011214C-955897 Units: mg/L
Analysis Date: 12/14/2001 20:51 Analyst: AR
Preparation Date: 12/11/2001 12:08 Prep By: KL Method SW3510E

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Diesel Range Organics (ND, 5, 4.5, 80.2, 5, 4.6, 82.2, 2.43, 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

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.



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Headspace Gas Analysis
Method: RSK147

WorkOrder: 01120267
Lab Batch ID: R50095

Method Blank

Samples in Analytical Batch:

RunID: VARC_011219A-954129 Units: mg/L
Analysis Date: 12/18/2001 11:44 Analyst: ER

Lab Sample ID Client Sample ID
01120267-01C MW-5
01120267-04C MW-12D
01120267-08C MW-10
01120267-09C MW-11A

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Ethane, Ethylene, and Methane with results marked as ND.

Sample Duplicate

Original Sample: 01120267-09
RunID: VARC_011219A-954167 Units: mg/L
Analysis Date: 12/18/2001 18:47 Analyst: ER

Table with 5 columns: Analyte, Sample Result, DUP Result, RPD, RPD Limit. Rows include Butane, Ethane, Ethylene, Isobutane, Methane, Propane, and Propylene.

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

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.



Quality Control Report

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

Brown & Caldwell

BJ Service, Hobbs, NM #12832

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 01120267
Lab Batch ID: R49984

Method Blank

Samples in Analytical Batch:

RunID: HP_O_011217A-952419 Units: ug/L
Analysis Date: 12/17/2001 17:02 Analyst: D_R

Lab Sample ID Client Sample ID
01120267-01A MW-5
01120267-02A MW-7
01120267-04A MW-12D
01120267-05A MW-13
01120267-06A MW-3
01120267-11A Trip Blank 1

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes Total, and two surrogate compounds.

Laboratory Control Sample (LCS)

RunID: HP_O_011217A-952418 Units: ug/L
Analysis Date: 12/17/2001 16:03 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes Total.

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

Sample Spiked: 01120267-01
RunID: HP_O_011217A-952430 Units: ug/L
Analysis Date: 12/17/2001 23:53 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes Total.

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

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.



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 01120267
Lab Batch ID: R49987

Method Blank

Samples in Analytical Batch:

RunID: HP_O_011217C-952543 Units: mg/L
Analysis Date: 12/17/2001 17:00 Analyst: D_R

Table with 2 columns: Lab Sample ID, Client Sample ID. Rows include 01120267-01A through 01120267-11A.

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Gasoline Range Organics, Surr: 1,4-Difluorobenzene, Surr: 4-Bromofluorobenzene.

Laboratory Control Sample (LCS)

RunID: HP_O_011217C-952542 Units: mg/L
Analysis Date: 12/17/2001 16:03 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Gasoline Range Organics.

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

Sample Spiked: 01120267-02
RunID: HP_O_011217C-952486 Units: mg/L
Analysis Date: 12/18/2001 0:05 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Gasoline Range Organics.

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

The percent recoveries for OC 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.



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 01120267
Lab Batch ID: R50043

Method Blank

Samples in Analytical Batch:

RunID: HP_U_011218A-953437 Units: ug/L
Analysis Date: 12/18/2001 14:40 Analyst: D_R

Lab Sample ID: 01120267-07A
Client Sample ID: MW-4

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, and two surrogate compounds.

Laboratory Control Sample (LCS)

RunID: HP_U_011218A-953438 Units: ug/L
Analysis Date: 12/18/2001 15:13 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

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

Sample Spiked: 01120508-12
RunID: HP_U_011218A-954181 Units: ug/L
Analysis Date: 12/18/2001 20:41 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

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

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.



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 01120267
Lab Batch ID: R50134

Method Blank

Samples in Analytical Batch:

RunID: HP_U_011219A-955225 Units: ug/L
Analysis Date: 12/19/2001 6:50 Analyst: D_R

Lab Sample ID Client Sample ID
01120267-08A MW-10
01120267-09A MW-11A
01120267-12A Trip Blank 2

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, and two surrogate compounds.

Laboratory Control Sample (LCS)

RunID: HP_U_011219A-955224 Units: ug/L
Analysis Date: 12/19/2001 6:00 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

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

Sample Spiked: 01120326-01
RunID: HP_U_011219A-955752 Units: ug/L
Analysis Date: 12/19/2001 19:01 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

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

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.



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 01120267
Lab Batch ID: R50182

Method Blank

Samples in Analytical Batch:

RunID: HP_U_011219C-956085 Units: mg/L
Analysis Date: 12/19/2001 15:03 Analyst: D_R

Lab Sample ID Client Sample ID
01120267-08A MW-10
01120267-09A MW-11A
01120267-12A Trip Blank 2

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Gasoline Range Organics, Surr. 1,4-Difluorobenzene, and Surr. 4-Bromofluorobenzene.

Laboratory Control Sample (LCS)

RunID: HP_U_011219C-956080 Units: mg/L
Analysis Date: 12/19/2001 17:02 Analyst: D_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Gasoline Range Organics.

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

Sample Spiked: 01120326-02
RunID: HP_U_011219C-956083 Units: mg/L
Analysis Date: 12/19/2001 21:02 Analyst: D_R

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Gasoline Range Organics.

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

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.



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 01120267
Lab Batch ID: R50338

Method Blank

Samples in Analytical Batch:

RunID: HP_U_011221A-958886 Units: ug/L
Analysis Date: 12/21/2001 12:47 Analyst: DL

Lab Sample ID: 01120267-13A
Client Sample ID: Trip Blank 3

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, Xylenes, Total, and two surrogate compounds.

Laboratory Control Sample (LCS)

RunID: HP_U_011221A-958885 Units: ug/L
Analysis Date: 12/21/2001 11:57 Analyst: DL

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

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

Sample Spiked: 01120601-03
RunID: HP_U_011221A-961312 Units: ug/L
Analysis Date: 12/21/2001 15:49 Analyst: DL

Large table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, and Xylenes, Total.

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

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.



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 01120267
Lab Batch ID: R50344

Method Blank

Samples in Analytical Batch:

RunID: HP_U_011221C-958959 Units: mg/L
Analysis Date: 12/21/2001 12:04 Analyst: DL

Lab Sample ID: 01120267-13A
Client Sample ID: Trip Blank 3

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Gasoline Range Organics, Surr. 1,4-Difluorobenzene, and Surr. 4-Bromofluorobenzene.

Laboratory Control Sample (LCS)

RunID: HP_U_011221C-958958 Units: mg/L
Analysis Date: 12/21/2001 12:02 Analyst: DL

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row for Gasoline Range Organics.

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

Sample Spiked: 01120601-04
RunID: HP_U_011221C-961337 Units: mg/L
Analysis Date: 12/21/2001 16:04 Analyst: DL

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row for Gasoline Range Organics.

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

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.



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Nitrogen, Nitrate (As N)
Method: E300

WorkOrder: 01120267
Lab Batch ID: R49944

Method Blank

Samples in Analytical Batch:

RunID: WET_011208G-951738 Units: mg/L
Analysis Date: 12/08/2001 8:00 Analyst: ES

Lab Sample ID Client Sample ID
01120267-01D MW-5
01120267-04D MW-12D
01120267-09D MW-11A

Table with 3 columns: Analyte, Result, Rep Limit. Row: Nitrogen, Nitrate (As N), ND, 0.10

Laboratory Control Sample (LCS)

RunID: WET_011208G-951739 Units: mg/L
Analysis Date: 12/08/2001 8:00 Analyst: ES

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Nitrogen, Nitrate (As N), 10, 9.2, 92, 90, 110

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

Sample Spiked: 01120253-03
RunID: WET_011208G-951743 Units: mg/L
Analysis Date: 12/08/2001 8:00 Analyst: ES

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Nitrogen, Nitrate (As N), 0.28, 10, 9.93, 96.5, 10, 9.82, 95.4, 1.17, 20, 76, 124

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 OC Limits

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.



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Sulfate
Method: E300

WorkOrder: 01120267
Lab Batch ID: R49958

Method Blank

Samples in Analytical Batch:

RunID: WET_011208K-952006 Units: mg/L
Analysis Date: 12/08/2001 8:00 Analyst: ES

Lab Sample ID Client Sample ID
01120267-01D MW-5
01120267-04D MW-12D
01120267-09D MW-11A

Table with 3 columns: Analyte, Result, Rep Limit. Row: Sulfate, ND, 0.20.

Laboratory Control Sample (LCS)

RunID: WET_011208K-952007 Units: mg/L
Analysis Date: 12/08/2001 8:00 Analyst: ES

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Sulfate, 10, 11, 105, 90, 110.

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

Sample Spiked 01120267-01
RunID: WET_011208K-952009 Units: mg/L
Analysis Date 12/08/2001 8:00 Analyst: ES

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Sulfate, 120, 200, 320, 99.5, 200, 330, 106, 6.28, 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

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.



Quality Control Report

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

Brown & Caldwell
BJ Service, Hobbs, NM #12832

Analysis: Chloride, Total
Method: E325.3

WorkOrder: 01120267
Lab Batch ID: R50154

Method Blank

Samples in Analytical Batch:

RunID: WET_011219I-955554 Units: mg/L
Analysis Date: 12/19/2001 14:30 Analyst: CV

Lab Sample ID Client Sample ID
01120267-03D MW-15
01120267-10D MW-14

Table with 3 columns: Analyte, Result, Rep Limit. Row: Chloride, ND, 1.0

Laboratory Control Sample (LCS)

RunID: WET_011219I-955556 Units: mg/L
Analysis Date: 12/19/2001 14:30 Analyst: CV

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Chloride, 143, 140, 98, 90, 110

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

Sample Spiked: 01120267-03
RunID: WET_011219I-955556 Units: mg/L
Analysis Date: 12/19/2001 14:30 Analyst: CV

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Chloride, 220, 250, 465, 99.9, 250, 465, 99.9, 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

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*



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

Sample Receipt Checklist

Workorder:	01120267	Received By:	RE
Date and Time Received:	12/7/01 1:00:00 PM	Carrier name:	Greyhound
Temperature:	3	Chilled by:	Water Ice

1. Shipping container/cooler in good condition? Yes No Not Present
2. Custody seals intact on shipping 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
 1. Received 1-plastic unpreserved & vial unpreserved for ID#MW-13 not written on COC. Also received 2-sets of vials unpreserved ID#MW-3 and MW-4 (for headspace) Login on hold.
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: Wyatt, Neaundra

Contact Date & Time: 12/12/01 12:58:00 PM

Client Name Contacted: Rick Rexroad

Non Conformance Issues:

Client Instructions: Per Rick only want to analyze what is indicated on the chain of custody. Don't analyze the extra containers received.



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

01120267

100214

page of

Requested Analysis

Client Name: **Bevan DeBluel**
 Address/Phone: **1415 Louisiana # 2500**
 Client Contact: **Rick Rexford**
 Project Name: **BI Hobbs**
 Project Number: **12832**
 Project Location: **Hobbs NM**
 Inmate To: **Rick Rexford**

matrix bottle size pres.
 W=water S=soil SL=sludge O=other:
 P=plastic A=amber glass G=glass V=vial
 1=1 liter 4=4oz 40=vial 8=8oz 16=16oz
 1=HCl 2=HNO3 3=H2SO4 O=other:

Number of Containers	
BTEX (80218)	
TPH-D (8015)	
TPH-G (8015)	
Methane, Ethane, Ethylax (RST-59) 175/197	
Nitrate (300.0)	
Sulfate (300.0)	
Chlorides (325.3)	

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Analysis	Inclad?	Temp:
MW-13	12/6/01	15:15			W	VA		1	5	X		
MW-3	12/6/01	15:45			W	VA		1	5	X		
MW-4	12/6/01	16:50			W	VA		1	5	X		
MW-10	12/6/01	17:00			W	V		1	5	X		
MW-11	12/6/01	17:20			W	V		1	5	X		
MW-14	12/6/01	18:07			W	V		1	5	X		
Trip Blank 1					W	V			3	X		
Trip Blank 2					W	V			3	X		
Trip Blank 3					W	V			3	X		

Client/Consultant Remarks: **MW10 - only Vocs available**

Laboratory remarks: **RUSH**

Requested TAT

Special Reporting Requirements

Standard QC Level 3 QC Raw Data Level 4 QC Special Detection Limits (specify):

1. Relinquished by Sampler: **[Signature]** date: **12/6/01** time: **1903**

2. Received by: **[Signature]**

3. Relinquished by: **[Signature]** date: **12/7/01** time: **1300**

4. Received by: **[Signature]**

5. Relinquished by:

6. Received by Laboratory: **[Signature]**

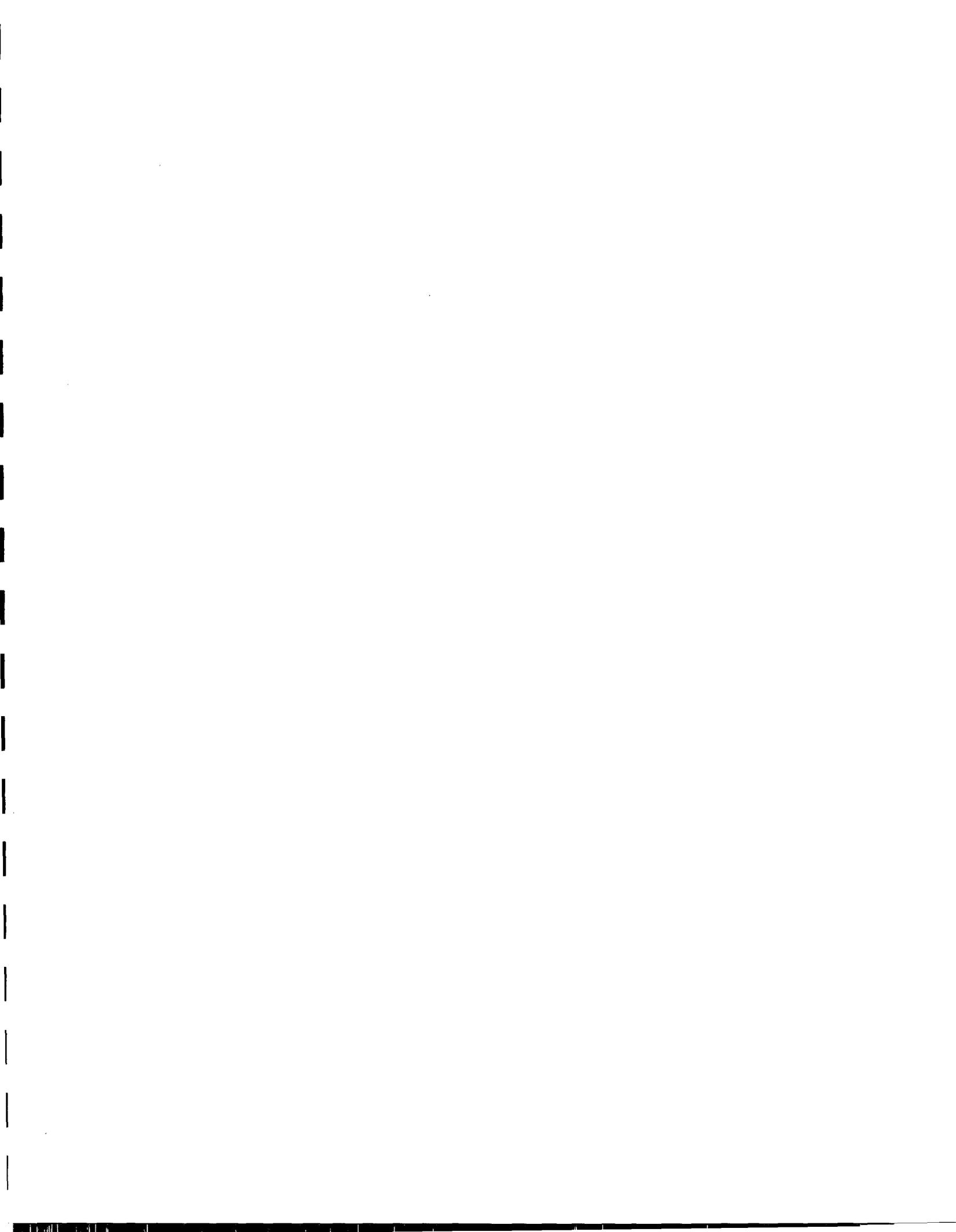
Inclad? Y N

PM review (initials): **[Signature]**

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

500 Ambassador Caffery Parkway, Sout, LA 70583 (318) 237-4775

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



BROWN AND CALDWELL

Suite 2500, 1415 Louisiana, Houston, TX 77002
(713) 759-0999 • (713) 308-3886

TRANSMITTAL MEMORANDUM

To: Mr. Wayne Price Energy, Minerals, and Natural Resources Dept. Oil Conservation Division 2040 South Pacheco Street, State Land Office Building Santa Fe, New Mexico 87505	Date: November 12, 2001	Job No: 12832-016
	Subject: Hobbs, New Mexico Groundwater Report	
	Certified Mail No.:	
	Equipment No:	
	Spec. Ref:	
Submittal No:		

WE ARE SENDING:	<input checked="" type="checkbox"/> Attached	<input type="checkbox"/> Under separate cover via US mail the following items:		
<input type="checkbox"/> Shop Drawings	<input type="checkbox"/> Prints	<input type="checkbox"/> Plans	<input type="checkbox"/> Samples	<input type="checkbox"/>
<input type="checkbox"/> Copy of letter	<input type="checkbox"/> Change Order	Other: Final Groundwater Sampling Report		

THESE ARE TRANSMITTED AS CHECKED BELOW:

- Second submittal
- For your use
- As requested
- For review and comment
- With submittal review action noted

SUBMITTAL REVIEW ACTIONS:

- No exceptions taken
- Make revisions
- Amend and resubmit
- Rejected--see Remarks
- None

Copies	Date	No.	Description
1	10/26/01		Final Groundwater Sampling Report, BJ Services Company, USA, Hobbs, New Mexico

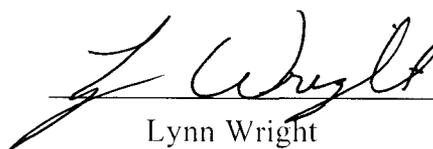
REMARKS:

RECEIVED

DEC 12 2001

Environmental Bureau
Oil Conservation Division

cc: Mr. Chris Williams, State of New Mexico
Ms. Jo Ann Cobb, BJ Services
Brown and Caldwell Project File



Lynn Wright
Principal Geologist

If enclosures are not as noted, kindly notify us at once

P:\WP\BJSERVA\1283210781v.doc

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DEC 12 2001

Environmental Bureau
Oil Conservation Division

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

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DEC 17 2001

Environmental Bureau
Oil Conservation Division

MARCH 2001 GROUNDWATER SAMPLING
REPORT

HOBBS, NEW MEXICO FACILITY

BJ SERVICES COMPANY, U.S.A.

OCTOBER 26, 2001

**MARCH 2001 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: 12832.016



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October 26, 2001

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1.0 INTRODUCTION

Brown and Caldwell conducted field activities associated with the March 2001 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 March 8-9, 2001. The March 2001 sampling event included collection of groundwater samples from monitor wells MW-14 and MW-15, which were installed in January 2001. Groundwater samples were analyzed for gasoline and diesel range total petroleum hydrocarbons (TPH-G and TPH-D), benzene, toluene, ethylbenzene, and total xylenes (BTEX), polynuclear aromatic hydrocarbons (PAHs), carbonate, bicarbonate, major anions, major cations, total hardness, dissolved methane/ethylene/ethane, sulfates, and nitrates, as specified by the New Mexico Oil Conservation Division (NMOCD) in NMOCD Permit GW-072. This report presents a description of the groundwater sampling field activities, a summary of the analytical results, and an evaluation of remedial technologies being applied at the facility. A groundwater potentiometric surface map, a benzene concentration map, and a hydrocarbon distribution map are included.

A layout of the facility is shown in Figure 1. The facility formerly operated an above-grade on-site fueling system. Subsurface impact near the former diesel fueling system was first detected by the 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. BJ Services removed three field waste tanks at 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.

A biosparging system was activated in November 1995 to remediate soil and groundwater at the former fuel island area of the facility. The biosparging system was expanded in March/April 1997 and February/March 1998. Flow adjustments were made to the biosparging system during the June/July 1999 and March 2000 sampling events to intensify remedial pressure in the area of

monitor well MW-13. On November 1, 2000, the biosparging system was turned off. A site chronology detailing the history of the former fueling system and the former field waste tanks area, the soil and groundwater remediation system, and previous sampling events is presented in Table 1.



2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled 13 groundwater monitor wells at and adjacent to the BJ Services Hobbs facility on March 8-9, 2001 to determine concentrations of dissolved-phase hydrocarbons in groundwater and to evaluate general groundwater quality in the area. The locations of the monitor wells at the facility are shown in Figure 1. The following subsections describe the field activities conducted by Brown and Caldwell at the facility in January 2001 and March 2001. The results of the associated groundwater analyses are also presented.

2.1 January 2001 Monitor Well Installation and Sampling Activities

Monitor wells MW-14 and MW-15 were installed and developed in accordance with the workplan dated September 9, 2000, as subsequently approved by NMOCD. Boring logs and completion diagrams are presented in Appendix A. The monitor wells were sampled in January 2001 for the New Mexico Water Quality Control Commission (NMWQCC) parameters, including chloride, in accordance with the purging and sample collection procedures described in Section 2.2. The results of the January 2001 sampling event are presented in Table 2. The complete analytical report is provided in Appendix B. Monitor well MW-14 was re-sampled for chloride during the March 2001 sampling event. Chloride impact above the NMWQCC standard of 250 milligrams per liter (mg/L) was measured in monitor well MW-14.

2.2 March 2001 Groundwater Measurements and Sampling

Groundwater level measurements were obtained from monitor wells prior to purging and sampling the wells. Groundwater levels were measured to the nearest 0.01 foot with an oil/water interface probe. A cumulative table of groundwater elevation data is presented in Table 3. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with a hydraulic gradient of approximately 0.008 foot/foot (ft/ft). A groundwater elevation map for March 8-9, 2001 is presented in Figure 2. The groundwater elevation data presented in Table 3 indicate that

groundwater levels have declined in all monitor wells at the facility since late 1995. Monitor well OW-4 did not contain sufficient water for collection of a groundwater sample in March 2001.

The monitor wells were purged and sampled using disposable bailers. Field parameter measurements for pH, conductivity, oxidation-reduction (redox) potential, dissolved oxygen, and temperature were collected during and upon completion of well purging. Ferrous iron and alkalinity were measured in selected wells upon conclusion of purging activities to further assist in assessment of natural attenuation potential. Turbidity of groundwater was typically measured upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix C. Field readings for the groundwater sampling event are summarized in Table 4.

Groundwater samples were collected after completion of purging operations using disposable PVC bailers. Each sample was transferred to laboratory-prepared, clean glass or plastic containers sealed with Teflon[®]-lined lids, labeled, and placed on ice in an insulated cooler for shipment via overnight courier to the analytical laboratory. Each cooler was accompanied by completed chain-of-custody documentation.

Field measurement equipment was decontaminated prior to and after each usage. Decontamination procedures consisted of washing with fresh water and a non-phosphate detergent, then rinsing with deionized water. Purge water was discharged to an on-site water reclamation system for re-use by BJ Services.

2.3 Results of Groundwater Analyses

Groundwater samples collected from all wells during this sampling event except monitor wells MW-14 and MW-15 were analyzed for TPH-D and TPH-G by EPA Method 8015B, BTEX by EPA Method 8021B, PAHs by EPA Method 8310, the eight RCRA metals by the EPA 6010B Series, and the NMWQCC groundwater quality parameters, including major anions (chloride,

fluoride, nitrate, and sulfate), major cations (calcium, magnesium, potassium, and sodium), hardness, carbonate, and bicarbonate. Groundwater from monitor wells MW-14 and MW-15 was analyzed for BTEX, Method 8260 volatile organic compounds (VOCs), and chloride only, having previously been analyzed for BTEX, PAHs, RCRA metals, and NMWQCC groundwater quality parameters in January 2001. Groundwater samples from selected wells were analyzed for dissolved methane to assist in evaluation of natural attenuation processes at the facility. The laboratory analytical reports and chain-of-custody documentation for the groundwater samples collected during the March 2001 sampling event are provided in Appendix B.

Current and cumulative analytical results for BTEX, TPH-D, and TPH-G are presented in Table 5. Current and cumulative analytical results for groundwater quality parameters as well as PAHs and RCRA metals detected in one or more wells in one or more sampling events since August 1995 are presented in Table 2, along with a listing of VOCs detected in monitor wells MW-14 and MW-15. The results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12 to evaluate natural attenuation processes are presented in Table 6.

Benzene concentrations in excess of applicable laboratory detection limits were reported in four of the 13 groundwater samples collected during this sampling event. Benzene concentrations were below the NMWQCC standard of 0.01 mg/L in all wells except monitor wells MW-11A and MW-12. Figure 3 presents a benzene concentration and total BTEX distribution map for the March 2001 sampling event. A total petroleum hydrocarbon distribution map for the March 2001 sampling event is presented in Figure 4.

Benzene concentrations in monitor wells located near the former fuel island source area remained below the NMWQCC standard of 0.01 mg/L in March 2001. Benzene was detected at a concentration of 2 micrograms per liter ($\mu\text{g/L}$) in monitor well MW-1. Benzene was not detected in monitor wells MW-3, MW-4, MW-9, or MW-13. Benzene has not been detected in monitor wells MW-3, MW-4, or MW-9 since June 1999, March 1999, and September 1998, respectively.

Benzene has not been detected in monitor well MW-13 since June 2000. Adjustments to the biosparging system in July 1999 and March to increase air flow to the monitor well MW-13 area resulted in decreases in the concentration of benzene in monitor well MW-13 from 1.5 mg/L on July 2, 1999 to the present non-detectable levels, as documented in previous quarterly groundwater sampling reports for the facility.

2.4 Natural Attenuation Evaluation

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

The primary evidence of natural attenuation is plume behavior. 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 the field waste 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 natural attenuation rate of the area.

Benzene and total BTEX concentrations measured in former field waste tanks area monitor wells MW-10 and MW-12 in March 2001 are lower than at any time during the monitoring history of these wells, providing primary evidence that natural attenuation of hydrocarbons is occurring in these areas.

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. The following lines of geochemical evidence 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 during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring.

March 2001 dissolved oxygen data for the facility are inconclusive because oxygen is typically added to groundwater when a bailer is used for well purging and sampling. However, historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility has indicated that dissolved oxygen concentrations are typically depressed in hydrocarbon impacted monitor wells relative to non-impacted monitor wells at the facility, suggesting that natural attenuation of hydrocarbons is occurring at the facility.

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 concentrations were measured at less than 0.10 mg/L in monitor wells MW-10, MW-11A, and MW-12 during the March 2001 sampling event. These concentrations are less than the background nitrate concentration of 3.24 mg/L measured in monitor well MW-5 (see Table 6). The low nitrate concentrations in monitor wells MW-10, MW-11A, and MW-12 suggest that nitrate is serving as an electron acceptor during natural attenuation of hydrocarbons in the former field waste tanks area of the facility.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors 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.

Ferrous iron was measured at concentrations ranging from 2.5 mg/L to 4.0 mg/L in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12, as shown in Table 4. The detections of ferrous iron in monitor wells MW-10, MW-11A, and MW-12 suggest that

ferric iron is being used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area.

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

Sulfate concentrations in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 exceed the concentration of sulfate in background monitor well, however (see Table 6). These data indicate 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, and its concentration should therefore increase in areas where depletion of electron acceptors such as dissolved oxygen and nitrate has occurred.

Methane was detected only in monitor well MW-11A, which displays benzene and BTEX impact (see Tables 5 and 6). The presence of methane in monitor well MW-11A suggests the utilization of carbon dioxide as an electron acceptor, resulting in methanogenesis, is occurring during natural attenuation of hydrocarbons in the vicinity of monitor well MW-11A.

6. Redox is a measure of chemical energy in groundwater. Redox in background well MW-5 was measured at 174.0 millivolts (mV), as shown in Table 3. Redox values in the vicinity of former field waste tanks area wells MW-10, MW-11A, and MW-12 ranged from -87 mV to -117 mV. Redox values are positive in all non-impacted wells except MW-13. The negative redox values in the former field waste tank area monitor wells suggest that electron acceptors other than dissolved oxygen and nitrate (e.g., carbon dioxide) are being utilized in this area.

7. Alkalinity is expected to increase during natural attenuation processes, due to the leaching of carbonates from mineral substrates by microbially produced organic acids.

Bicarbonate alkalinity in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 ranged from 475 mg/L to 646 mg/L, as compared to a value of 222 mg/L in the upgradient monitor well MW-5 (see Table 2). These data provide further evidence that natural attenuation of hydrocarbons is occurring in the area of the former field waste tanks area.

In conclusion, dissolved oxygen and nitrate data from this and previous groundwater sampling events suggest that these constituents are acting as electron acceptors during intrinsic bioremediation processes that are ongoing at former field waste tanks area of the facility. Redox

and alkalinity data provide further evidence that natural attenuation of hydrocarbons is occurring in this area. The detection of methane in former field waste tanks area monitor well MW-11A suggests that carbon dioxide is also serving locally as an electron acceptor during intrinsic bioremediation of hydrocarbons in this area.

It is recommended that monitoring for natural attenuation evaluation parameters continue in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 and upgradient well MW-5. Redox, dissolved oxygen content, and alkalinity are good indicators of the occurrence of aerobic bioremediation of hydrocarbons, so it is also recommended that field testing for these parameters be performed in all wells to be sampled during upcoming groundwater monitoring events.



3.0 REMEDIATION SYSTEM

Based on the results of previous investigations conducted by Brown and Caldwell and Roberts/Schornick and Associates, Inc., Brown and Caldwell recommended the installation of a biosparging system 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 and expanded in April 1997 and February 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in the former fuel island source area monitor wells MW-1, MW-3, MW-4, MW-9, and MW-13, as documented in the December 2000 report for the facility.

Based on these favorable trends in hydrocarbon concentrations and in accordance with the recommendations presented in the report for the June 2000 groundwater sampling event, the biosparging system was shut down completely on November 1, 2000. The March 2001 sampling event is the second sampling event since this shut down.

Benzene concentrations in former fuel island source area monitor wells MW-3, MW-4, MW-9, and MW-13 have remained at non-detectable levels since shut down of the biosparging system, as previously discussed in Section 2.3. BTEX constituent concentrations in these wells and monitor well MW-1 have now remained below applicable NMWQCC standards for four consecutive quarters. It is therefore recommended that the post-remediation confirmation sampling specified in the NMOCD-approved RAP for the former fuel island area of the facility be performed in conjunction with a quarterly monitoring event for all wells at the facility in June 2001. The proposed locations of the confirmation soil borings are indicated in Figures 3 and 4.

If this confirmation sampling confirms that the remediation goals for the facility have been met, then a biosparging system closure report for the former fuel island area of the facility will be prepared and submitted to NMOCD.



4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on information obtained during the March 2001 groundwater sampling event at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Dissolved benzene, BTEX, and TPH concentrations in all monitor wells located near the former fueling system source area are non-detectable or below applicable standards and have remained at these levels for the past four quarterly groundwater sampling events..
- Benzene concentrations in all monitor wells at the facility except MW-11A and MW-12 are less than the New Mexico WQCC standard of 0.01 mg/L for benzene.
- Benzene and total BTEX concentrations measured in former field waste tanks area monitor wells MW-10 and MW-12 in March 2001 are lower than at any time during the monitoring history of these wells.
- Natural attenuation processes appear to be occurring in the vicinity of the former field waste tanks removed in March 1997.
- The chloride concentration in monitor well MW-14 exceeds the NMQCC standard of 250.0 mg/L.

4.2 Recommendations

- Perform an additional quarterly groundwater monitoring event for the former fuel island area monitor wells in June 2001. Perform confirmation sampling in this area as specified in the RAP in conjunction with this groundwater monitoring event.
- Submit a closure report for the biosparging system at the former fuel island area, if warranted based on the results of the June 2001 sampling activities.
- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-10, MW-11A, and MW-12. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters.

DISTRIBUTION

March 2001 Groundwater Sampling Report
BJ Services Company, U.S.A.
Hobbs, New Mexico

October 26, 2001

Distribution as follows:

1 copy to: State of New Mexico
Energy, Minerals, and Natural Resources Dept.
Oil Conservation Division
2040 South Pacheco Street, State Land Office Building
Santa Fe, New Mexico 87505

Attention: Mr. Wayne Price

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Oil Conservation Division, Hobbs District Office
1625 N. French Dr.
Post Office Box 1980
Hobbs, New Mexico 88240

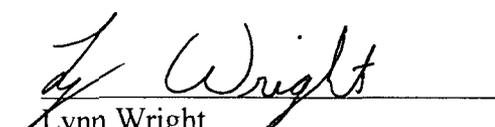
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QUALITY CONTROL REVIEWER


Lynn Wright
Principal Geologist

RLR/uak

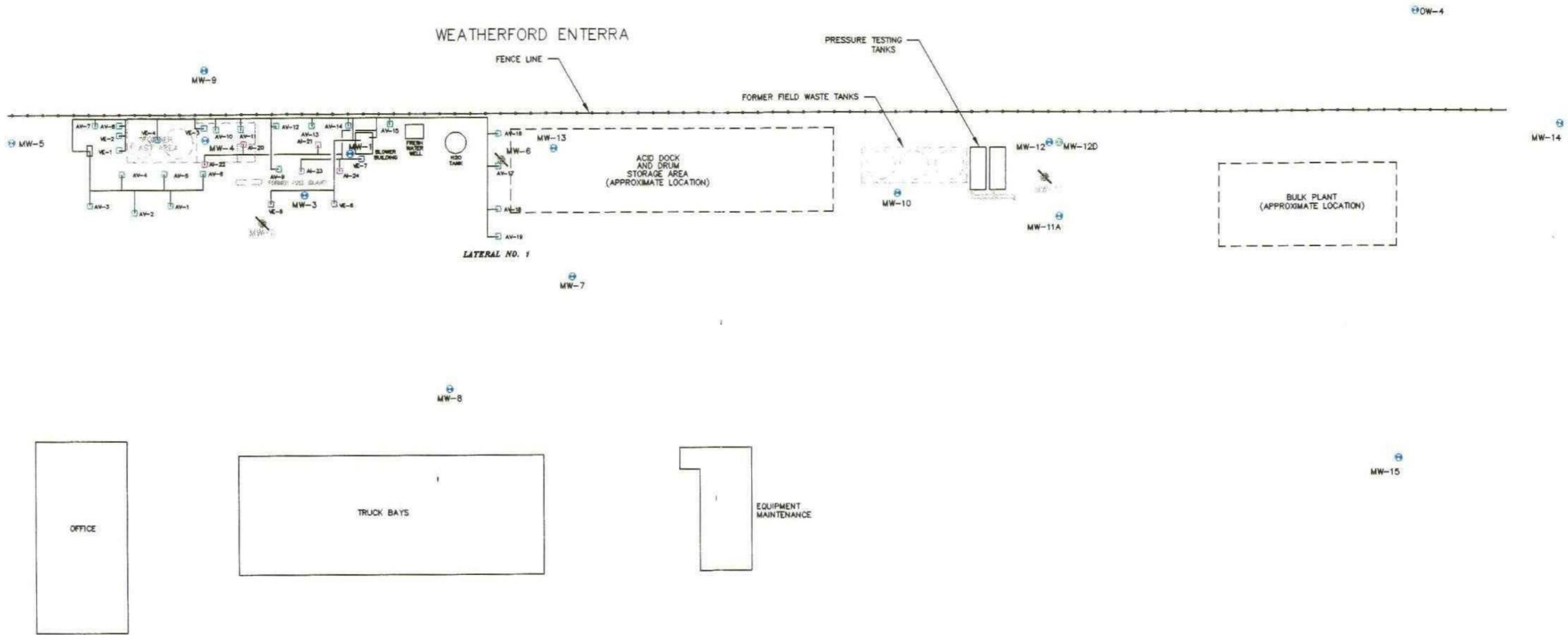
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Figures





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HOUSTON, TEXAS

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PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL

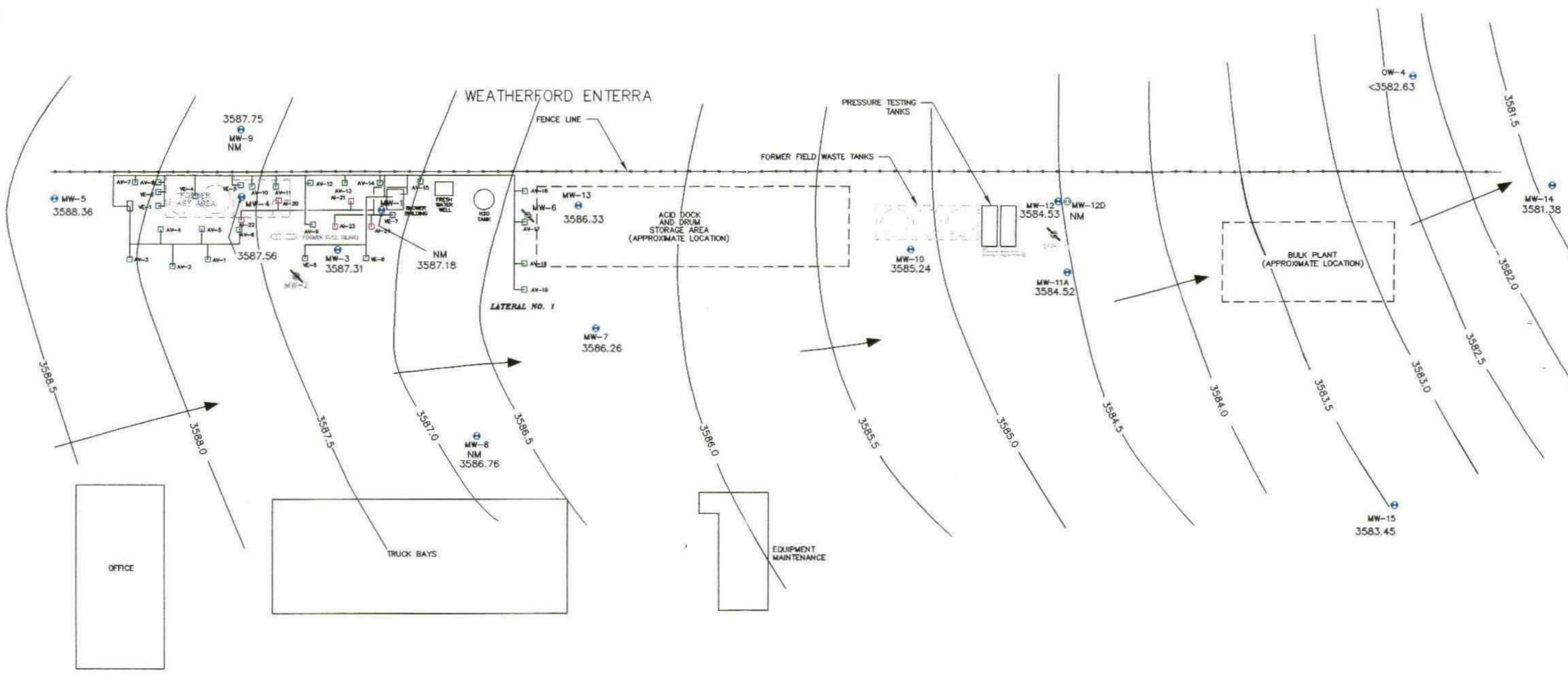


SCALE: 1" = 60'
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CHK'D BY: _____ DATE: _____
APPROVED: _____ DATE: _____

LEGEND

- MW-3 EXISTING MONITOR WELL LOCATION
- BIOSPARGING SYSTEM
- MW-2 MONITOR WELL (PLUGGED AND ABANDONED)

TITLE	SITE MAP	DATE	4/6/01
CLIENT	BJ SERVICES COMPANY, U.S.A.		PROJECT NUMBER
SITE	HOBBS, NEW MEXICO		FIGURE NUMBER
			1



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BROWN AND CALDWELL
HOUSTON, TEXAS

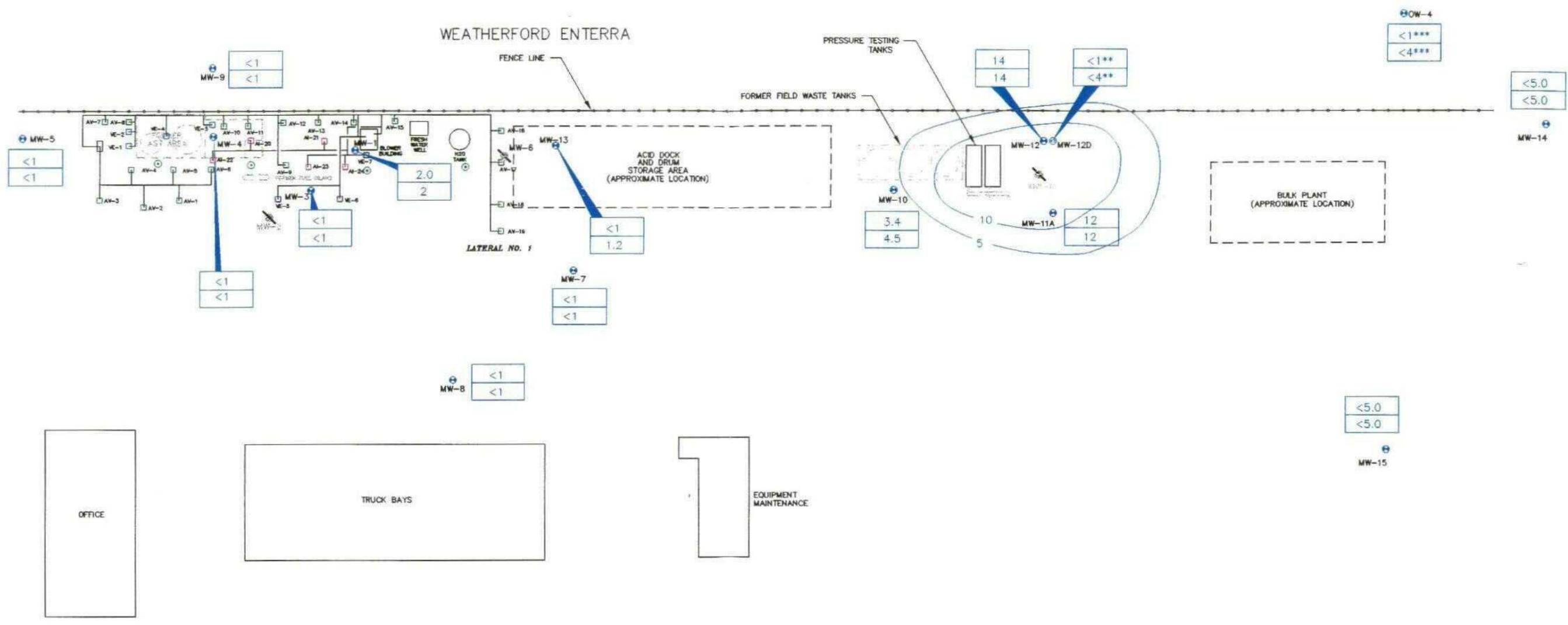
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PROJECT MANAGER
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BROWN AND CALDWELL

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SCALE: 1" = 60'
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APPROVED: _____ DATE: _____

LEGEND
3587.31
MW-3
MONITOR WELL LOCATION WITH GROUNDWATER ELEVATION (feet AMSL)
BIOSPARGING SYSTEM
MW-2
MONITOR WELL (PLUGGED AND ABANDONED)
GROUNDWATER FLOW DIRECTION

TITLE
GROUNDWATER ELEVATION MAP FOR MARCH 8-9, 2001
CLIENT
BJ SERVICES COMPANY, U.S.A.
SITE
HOBBS, NEW MEXICO

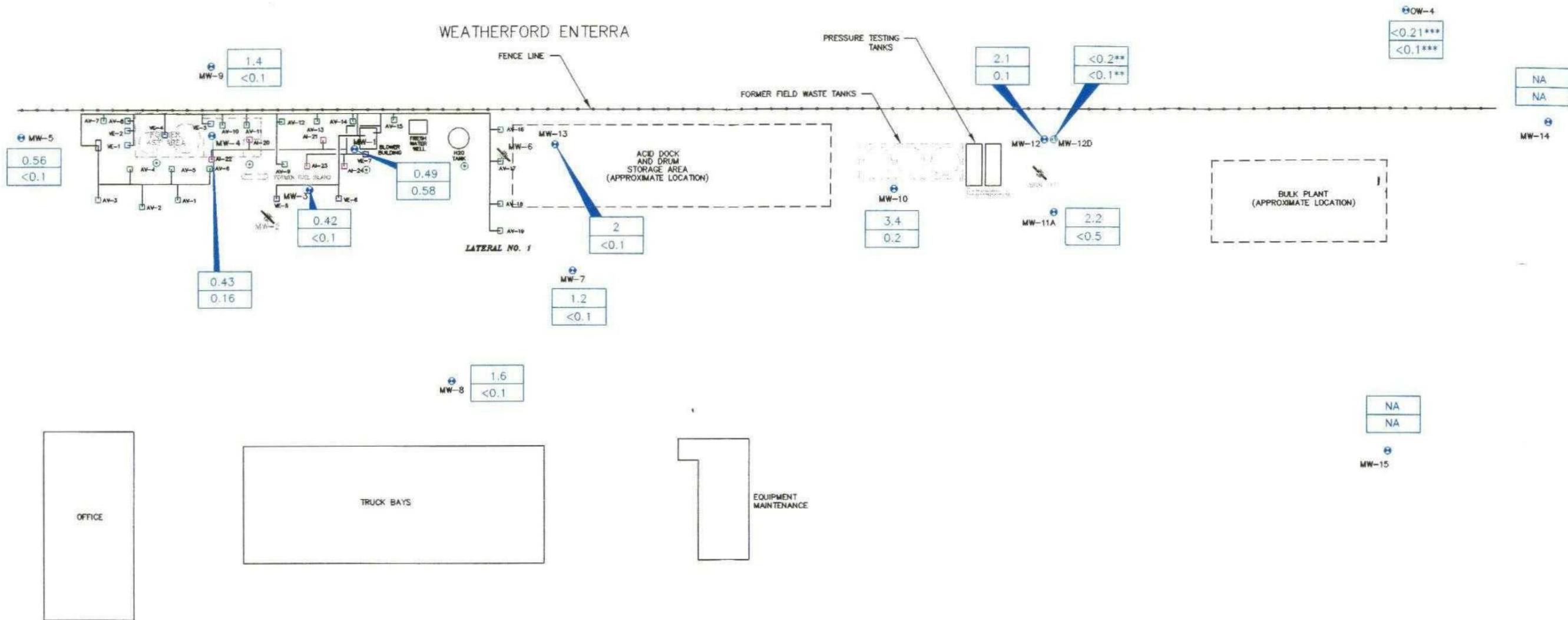
DATE
4/6/01
PROJECT NUMBER
12832.016
FIGURE NUMBER
2



NOTE: MONITOR WELL MW-12D IS SCREENED IN A DEEPER PORTION OF THE AQUIFER THAN MONITOR WELL MW-12 AND THE OTHER MONITOR WELLS; DATA FROM MONITOR WELL MW-12D NOT INCLUDED IN CONTOURING.

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BROWN AND CALDWELL HOUSTON, TEXAS SUBMITTED: _____ DATE: _____ PROJECT MANAGER APPROVED: _____ DATE: _____ BROWN AND CALDWELL	0 30 60 SCALE: 1" = 60' DRAWN BY: _____ DATE: _____ CHK'D BY: _____ DATE: _____ APPROVED: _____ DATE: _____	LEGEND MW-3 EXISTING MONITOR WELL LOCATION MW-2 MONITOR WELL (PLUGGED AND ABANDONED) <1.0 - BENZENE CONCENTRATION (ug/L) <4.0 - TOTAL BTEX CONCENTRATION (ug/L) BIOSPARING SYSTEM - BENZENE ISOCONCENTRATION CONTOUR (ug/L) - PROPOSED CONFIRMATION SOIL BORING LOCATION ** INDICATES WELL NOT SAMPLED 3/8/01; DATA PRESENTED ARE FROM 6/8/00 *** INDICATES WELL NOT SAMPLED 3/8/01; DATA PRESENTED ARE FROM 9/13/00	TITLE: BENZENE ISOCONCENTRATION AND TOTAL BTEX DISTRIBUTION MAP FOR MARCH 8-9, 2001 DATE: 4/6/01
			CLIENT: BJ SERVICES COMPANY, U.S.A. PROJECT NUMBER: 12832.016
			SITE: HOBBS, NEW MEXICO FIGURE NUMBER: 3



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BROWN AND CALDWELL



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APPROVED: _____ DATE: _____

LEGEND

- EXISTING MONITOR WELL LOCATION
- MONITOR WELL (PLUGGED AND ABANDONED)
- BIOSPARGING SYSTEM
- PROPOSED CONFIRMATION SOIL BORING LOCATION
- TPH-D CONCENTRATION (mg/L)
- TPH-G CONCENTRATION (mg/L)
- ** - INDICATES WELL NOT SAMPLED 3/8/01; DATA PRESENTED ARE FROM 6/8/00
- *** - INDICATES WELL NOT SAMPLED 3/8/01; DATA PRESENTED ARE FROM 9/13/00

TITLE	TOTAL PETROLEUM HYDROCARBONS DISTRIBUTION MAP FOR MARCH 8-9, 2001	DATE	4-6-01
CLIENT	BJ SERVICES COMPANY, U.S.A.	PROJECT NUMBER	12832.016
SITE	HOBBS, NEW MEXICO	FIGURE NUMBER	4

Tables



Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
February 7, 1991	The State of New Mexico Oil Conservation Division (OCD) conducted an on-site inspection, including sampling of the on-site fresh water well.
August 6, 1991	OCD 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 OCD.
November 15, 1991	The OCD approved Technical Work Plan submitted by RSA.
December 16, 1991	RSA sampled the fresh water well. Analytical results were submitted to the OCD.
February 21, 1992	Western sampled the fresh water well. Analytical results were submitted to the OCD.
July 29 - August 10, 1992	Brown and Caldwell conducted a soil and groundwater investigation according to the approved Technical Work Plan. Investigation included drilling and sampling 9 soil borings, sampling 6 hand-augured soil borings, the installation and sampling of 5 monitoring wells and the sampling of the fresh water well.
October 12, 1992	Brown and Caldwell submitted Soil and Groundwater Investigation Report to the OCD.
December 2, 1992	The OCD requested the installation and sampling of 4 additional monitoring wells, including a monitoring well on an adjacent property.
April 13, 1993	Brown and Caldwell conducted a vapor extraction pilot test on existing groundwater monitoring wells.
April 15, 1993	Brown and Caldwell installed off-site monitoring well.
April 22, 1993	Brown and Caldwell sampled off-site monitoring well.
May 27, 1993	Brown and Caldwell submitted a letter report documenting the installation and sampling of the off-site monitoring well to the OCD.
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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
June 21, 1993	ENSR Consulting and Engineering (ENSR), the environmental consultant of the adjacent property owner on which the off-site well is located, submitted a request to sample the off-site monitoring well.
July 15, 1993	ENSR split one groundwater sample, collected from the off-site monitoring well, with Brown and Caldwell.
July 30, 1993	USTank Management, Inc. submitted the 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 monitoring wells. Brown and Caldwell sampled each of the existing monitoring and the newly installed monitoring wells.
January 26, 1994	Brown and Caldwell performed groundwater monitoring event; existing monitoring wells and the fresh water well were purged and sampled. Groundwater samples were analyzed for BTEX.
May 6, 1994	Remedial Action Plan (RAP) submitted to the OCD.
August 11, 1994	RAP approved by the OCD.
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 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) began construction of the biosparging system.
September 19, 1995	Began operation of the extraction portion of the biosparging system.
November 13, 1995	Began operation of the injection portion of the biosparging system.
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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
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 tank 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 installed.
April 1997	Vapor extraction well VE-4 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 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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
January 21, 1999	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 on January 22, 1999 to NMOCD.
May 19, 1999	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 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 shut down the biosparging system.
December 7, 2000	Brown and Caldwell conducted the December 2000 groundwater sampling event.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
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.

Table 2
 Summary of Detected Analytes for PAHs, Metals, VOCs, SVOCs and Groundwater Quality Parameters
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells																
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Bicarbonate, as CaCO ₃ (mg/L)	8/1/95	380	430	490	290	670	440	360	570	520	560	NA	NA	NA	NA	NA	NA	NA
	8/23/96	310	310	210	270	120	400	280	390	520	430	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	286	214	175	247	180	309	260	306	557	NA	319	451	NA	NA	NA	NA	NA
	3/9-10/99	92	309	186	283	286	358	317	333	278	NA	335	386	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	200	520	NA	NA	316
	3/9-10/00	89.1	248	160	253	NA	301	362	279	455	NA	703	402	244	240	NA	NA	1020
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	374	250	NA
	3/8-9/01	90.9	242	232	222	NA	283	252	252	586	NA	646	475	NA	131	NA	NA	NA
Carbonate, as CaCO ₃ (mg/L)	8/1/95	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	10	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	NA	< 1	< 1	NA	NA	NA	NA
	3/9-10/99	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	NA	< 1	< 1	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1	< 1	NA	NA	< 1
	3/9-10/00	< 2	< 2	< 2	< 2	NA	< 2	< 2	< 2	< 2	NA	< 2	< 2	< 2	< 2	NA	NA	< 4
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 2	< 2	NA
	3/8-9/01	< 2	< 2	< 2	< 2	NA	< 2	< 2	< 2	< 2	NA	< 2	< 2	NA	< 2	NA	NA	NA
Hardness-Total, as CaCO ₃ (mg/L)	3/23-24/98	430	430	275	342	440	670	740	510	1450	NA	1000	1600	NA	NA	NA	NA	NA
	3/9-10/99	250	440	310	340	640	780	680	370	720	NA	1150	460	NA	NA	NA	NA	NA
	3/9-10/00	600	450	500	1200	NA	660	760	430	760	NA	880	700	260	540	NA	NA	3000
	3/8-9/01	310	470	610	440	NA	590	590	1000	1300	NA	1900	1300	NA	670	NA	NA	NA
Hydroxide (mg/L)	8/1/95	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NA	NA	NA	NA	NA	NA	NA
Methane (mg/L)	3/23-24/98	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	0.039	< 0.0012	0.91	NA	0.14	< 0.0012	NA	NA	NA	NA	NA
	3/9-10/99	NA	NA	NA	< 0.0012	NA	NA	NA	NA	0.035	NA	0.094	< 0.0012	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0015	0.0017	NA	NA	< 0.0012
	3/9-10/00	< 0.0012	< 0.0012	< 0.0012	< 0.0012	NA	< 0.0012	0.13	< 0.0012	0.0056	NA	0.037	< 0.0012	< 0.0012	< 0.0012	NA	NA	< 0.0012
	3/8-9/01	< 0.0012	< 0.0012	< 0.0012	< 0.0012	NA	< 0.0012	< 0.0012	< 0.0012	< 0.0012	NA	0.0028	< 0.0012	NA	< 0.0012	NA	NA	NA
Anions (mg/L)																		
Chloride	8/1/95	160	150	310	130	380	310	350	110	2200	3400	NA	NA	NA	NA	NA	NA	NA
	8/23/96	130	140	100	99	210	250	360	140	2000	2900	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	212	206	126	151	183	223	264	164	2390	NA	940	1200	NA	NA	NA	NA	NA
	3/9-10/99	163	156	142	155	411	238	274	123	1160	NA	834	314	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	195	496	NA	NA	266
	3/9-10/00	258	196	196	196	NA	224	241	131	474	NA	1290	327	117	276	NA	NA	258
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	368	219	NA
	3/8-9/01	NA	165	172	152	NA	224	250	127	879	NA	1720	586	NA	276	327	NA	NA
Fluoride	3/23-24/98	0.9	1.2	1.2	0.6	1.1	0.8	0.9	1.3	6.1	NA	2.9	4.2	NA	NA	NA	NA	NA
	3/9-10/99	1.54	1.46	1.5	1.38	1.79	1.56	1.44	1.84	4.93	NA	3.08	3.13	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.83	2.22	NA	NA	3.45
	3/9-10/00	1.7	1.1	1.1	1.1	NA	0.75	0.69	1.5	1	NA	< 0.1	1.7	1.3	1.7	NA	NA	3.8
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.5	1.2	NA
	3/8-9/01	1.3	0.77	0.63	0.86	NA	0.69	0.66	0.92	1.2	NA	1.1	1.9	NA	1.6	NA	NA	NA
Nitrate (Nitrogen as N)	8/1/95	4.7	5.6	15	28	1.3	9.2	11	38	< 0.1	5.5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	11	7.6	7.6	12	< 0.5	10	8.6	24	< 5	11	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	1.78	3.07	2.59	3.87	0.69	3.92	1.84	4.27	0.07	NA	< 0.05	< 0.05	NA	NA	NA	NA	NA
	3/9-10/99	0.7	2.1	2.6	NA	< 0.1	3.3	0.7	3.7	NA	NA	< 0.1	< 0.1	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.1	2.4	NA	NA	3.96
	3/9-10/00	0.33	2.9	3.7	5.3	NA	3.6	0.35	7.2	0.1	NA	0.11	< 0.1	0.14	< 0.1	NA	NA	3.6
	1/14/01-3/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.5	4.88	NA
	3/8-9/01	4.31	2.56	4.75	3.24	NA	2.82	0.664	7.9	< 0.1	NA	< 0.1	< 0.1	NA	< 0.1	NA	NA	NA
Sulfate	8/1/95	150	150	210	230	6.7	180	160	150	130	230	NA	NA	NA	NA	NA	NA	NA
	8/23/96	130	150	150	140	85	80	160	180	120	130	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	130	180	160	190	230	310	230	230	320	NA	190	240	NA	NA	NA	NA	NA
	3/9-10/99	196	162	178	195	72	246	240	146	223	NA	227	193	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	249	334	NA	NA	192
	3/9-10/00	530	190	250	260	NA	280	260	170	160	NA	270	210	200	170	NA	NA	200
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	180	130	NA
	3/8-9/01	210	170	180	180	NA	260	240	150	270	NA	330	300	NA	380	NA	NA	NA

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

Analyte (units)	Sample Date	Monitor Wells																
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Cations (mg/L)																		
Calcium	8/1/95	120	120	220	160	320	300	300	180	610	490	NA						
	8/23/96	120	130	89	110	62	270	230	190	390	440	NA						
	3/23-24/98	129	122	79	109	94	208	215	142	417	NA	259	388	NA	NA	NA	NA	NA
	3/9-10/99	80.2	129	90.8	116	141	233	197	122	214	NA	308	148	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	113	389	NA	NA	141
	3/9-10/00	155	119	147	387	NA	167	215	110	177	NA	229	180	78.1	122	NA	NA	882
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	179	150	NA
	3/8-9/01	86.8	148	214	157	NA	172	183	381	331	NA	466	338	NA	198	NA	NA	NA
Magnesium	8/1/95	34	36	58	27	72	42	49	43	130	130	NA						
	8/23/96	120	32	21	18	28	40	48	44	84	120	NA						
	3/23-24/98	36	30	18	20	42	47	52	36	130	NA	96	108	NA	NA	NA	NA	NA
	3/9-10/99	19.7	31.5	20.4	21.6	62.2	54.4	47.7	28.5	43	NA	101	32.1	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.6	83.9	NA	NA	44.3
	3/9-10/00	41.3	27.5	26.3	29.2	NA	44.3	39.1	26.2	61	NA	47.7	30.6	7.25	38.8	NA	NA	74.5
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	87.5	28.3
	3/8-9/01	20.7	24.9	25.9	16.6	NA	41.1	37.4	28.2	95.1	NA	93.4	95.3	NA	52.3	NA	NA	NA
Potassium	8/1/95	2.4	2.6	3.5	4.2	3	3.4	5	4.1	35	46	NA						
	8/23/96	2.4	3	2.2	3.1	2.4	3.7	3.9	2.6	41	53	NA						
	3/23-24/98	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	20	NA	30	70	NA	NA	NA	NA	NA
	3/9-10/99	3	4	3	4	4	9	4	3	15	NA	21	101	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	66	6	NA	NA	3
	3/9-10/00	4.01	4.11	3.95	5.61	NA	6.98	4.53	4.08	18.3	NA	18.6	104	70.6	2.84	NA	NA	10.7
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.59	4.59	NA
	3/8-9/01	<2	2.56	2.76	2.25	NA	5.15	2.94	3.84	19.5	NA	33.5	47.2	NA	2.26	NA	NA	NA
Sodium	8/1/95	100	93	140	110	130	95	94	98	660	2000	NA						
	8/23/96	100	110	88	120	120	96	100	83	960	2600	NA						
	3/23-24/98	113	126	109	130	100	92	101	118	1090	NA	312	381	NA	NA	NA	NA	NA
	3/9-10/99	126	135	124	155	141	110	115	122	856	NA	225	180	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	121	165	NA	NA	103
	3/9-10/00	123	112	115	123	NA	95.1	95.4	99.1	181	NA	608	129	103	114	NA	NA	97.3
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	144	108	NA
	3/8-9/01	141	124	135	147	NA	121	118	119	410	NA	801	185	NA	142	NA	NA	NA
Metals (mg/L)																		
Arsenic	8/1/95	0.0076	0.0043	< 0.002	0.0059	0.028	0.0033	0.0034	0.0055	0.015	0.0086	NA						
	8/23/96	0.0078	0.0066	0.0059	0.0067	0.018	0.0036	0.0033	0.0044	0.028	0.011	NA						
	3/23-24/98	0.007	0.007	0.008	0.007	0.013	< 0.005	< 0.005	0.005	0.035	NA	0.019	0.013	NA	NA	NA	NA	NA
	3/9-10/99	0.013	0.009	0.012	0.005	0.02	0.006	0.005	0.007	0.026	NA	0.036	0.066	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.022	0.008	NA	NA	<0.005
	3/9-10/00	0.0178	0.00817	0.0178	0.0173	NA	0.00849	0.00953	0.00757	0.0474	NA	0.108	0.0948	0.0143	<0.005	NA	NA	0.034
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00511	<0.005	NA
	3/8-9/01	0.0205	0.0094	0.0386	0.00974	NA	0.00694	NA	0.013	0.133	NA	0.08	0.0445	NA	0.00673	NA	NA	NA
Barium	8/1/95	0.069	0.38	0.34	0.049	1.1	0.069	0.075	0.089	0.37	0.2	NA						
	8/23/96	0.064	0.24	0.069	0.038	0.29	0.061	0.066	0.089	0.26	0.2	NA						
	3/23-24/98	0.11	0.182	0.044	0.044	0.208	0.059	0.074	0.066	0.287	NA	0.163	0.157	NA	NA	NA	NA	NA
	3/9-10/99	0.058	0.059	0.045	0.054	0.555	0.076	0.052	0.043	0.17	NA	0.174	0.144	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.155	0.333	NA	NA	NA	0.062
	3/9-10/00	0.0917	0.108	0.0694	0.184	NA	0.046	0.236	0.0419	0.281	NA	0.872	0.245	0.0962	0.113	NA	NA	1.49
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0833	0.073	NA	NA
	3/8-9/01	0.044	0.119	0.0978	0.0055	NA	0.043	0.0512	0.111	0.23	NA	0.401	0.603	NA	0.171	NA	NA	NA
Cadmium	8/1/95	< 0.001	< 0.001	0.0052	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	NA						
	8/23/96	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	NA						
	3/23-24/98	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	NA	< 0.005	< 0.005	NA	NA	NA	NA	NA
	3/9-10/99	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	NA	< 0.005	< 0.005	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.005	< 0.005	NA	NA	< 0.005
	3/9-10/00	< 0.005	< 0.005	0.0178	< 0.005	NA	< 0.005	< 0.005	< 0.005	< 0.005	NA	< 0.005	< 0.005	< 0.005	< 0.005	NA	NA	< 0.005
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.005	< 0.005	NA
	3/8-9/01	< 0.005	< 0.005	0.0121	< 0.005	NA	< 0.005	< 0.005	< 0.005	< 0.005	NA	< 0.005	< 0.005	NA	< 0.005	NA	NA	NA

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		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Chromium	8/1/95	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA						
	8/23/96	<0.01	<0.01	<0.01	<0.01	0.049	<0.01	<0.01	<0.01	<0.01	<0.01	NA						
	3/23-24/98	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.01	NA	NA	NA	NA
	3/9-10/99	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.01	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02	0.02	NA	NA	<0.01
	3/9-10/00	<0.01	<0.01	<0.01	0.0248	NA	<0.01	<0.01	<0.01	0.031	NA	0.0342	0.0124	<0.01	<0.01	NA	NA	0.105
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01	<0.01	NA
	3/8-9/01	<0.01	<0.01	0.0104	0.0101	NA	<0.01	<0.01	0.013	0.0109	NA	0.0392	0.0469	NA	0.0104	NA	NA	NA
Lead	8/1/95	<0.002	<0.002	0.0044	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0025	NA						
	8/23/96	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	NA						
	3/23-24/98	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	NA	NA	NA	NA	NA
	3/9-10/99	<0.005	<0.005	<0.005	<0.005	0.013	<0.005	<0.005	<0.005	<0.005	NA	0.009	<0.005	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA	NA	<0.005	
	3/9-10/00	<0.005	<0.005	<0.005	0.00565	NA	<0.005	<0.005	<0.005	0.00661	NA	0.00595	<0.005	<0.005	<0.005	NA	NA	0.0355
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005	NA
	3/8-9/01	<0.005	<0.005	0.00602	<0.005	NA	<0.005	<0.005	0.00597	0.0222	NA	0.0119	0.00627	NA	<0.005	NA	NA	NA
Mercury	8/1/95	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	NA						
	8/23/96	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NA						
	3/23-24/98	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	NA	<0.0002	<0.0002	NA	NA	NA	NA	NA
	3/9-10/99	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NA	<0.0002	<0.0002	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<0.0002	NA	NA	<0.0002
	3/9-10/00	0.000695	<0.0002	<0.0002	<0.0002	NA	<0.0002	<0.0002	<0.0002	<0.0002	NA	<0.0002	<0.0002	<0.0002	<0.0002	NA	NA	<0.0002
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<0.0002	NA
	3/8-9/01	<0.0002	<0.0002	<0.0002	<0.0002	NA	<0.0002	<0.0002	<0.0002	<0.0002	NA	<0.0002	<0.0002	NA	<0.0002	NA	NA	NA
Selenium	8/1/95	<0.004	<0.004	<0.004	<0.004	<0.004	NA											
	8/23/96	<0.004	<0.004	<0.004	<0.004	<0.004	NA											
	3/23-24/98	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	NA	NA	NA	NA	NA
	3/9-10/99	0.005	0.006	<0.005	0.006	<0.005	0.005	<0.005	<0.005	<0.005	NA	<0.005	<0.005	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/9-10/00	<0.005	<0.005	<0.005	<0.005	NA	0.00926	<0.005	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.005	NA	NA	<0.005
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	0.00523	NA
	3/8-9/01	<0.005	0.00702	0.00508	0.00587	NA	0.00617	<0.005	0.0054	<0.005	NA	<0.005	<0.005	NA	<0.005	NA	NA	NA
PAHs (µg/L)																		
Acenaphthene	8/1/95	<50	<10	<500	<5	<30	<5	<5	<5	<5	<5	NA						
	8/23/96	<10	<10	<30	<5	<30	<5	<5	<5	<5	<5	NA						
	3/23-24/98	<10	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	NA	<0.3	<0.3	NA	NA	NA	NA
	3/9-10/99	<0.1	<0.1	<2.0	<0.1	<2.0	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<1.0	NA	NA	<0.1
	3/9-10/00	0.28	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	NA	NA
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	NA
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0.13	<0.12	<0.12	<0.15	NA	<0.13	<0.13	NA	<0.12	NA	NA	NA
Acenaphthylene	8/1/95	<50	<10	<500	<5	<30	<5	<5	<5	<5	<5	NA						
	8/23/96	<10	<10	<30	<5	<30	<5	<5	<5	<5	<5	NA						
	3/23-24/98	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA
	3/9-10/99	<0.1	<0.1	<0.1	<0.1	<2.0	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<1.0	NA	NA	<0.1
	3/9-10/00	0.91	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	0.4	NA	<0.1	<0.1	<0.1	1.8	NA	NA	<0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	NA	
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0.13	<0.12	<0.12	0.71	NA	0.35	<0.13	NA	<0.12	NA	NA	NA
Anthracene	8/1/95	<50	<10	<500	<5	<30	<5	<5	<5	<5	<5	NA						
	8/23/96	<10	<10	<30	<5	<30	<5	<5	<5	<5	<5	NA						
	3/23-24/98	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA
	3/9-10/99	<0.1	<0.1	<0.1	<0.1	<2.0	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<1.0	NA	NA	<0.1
	3/9-10/00	0.12	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	NA	<0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	NA
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0.13	<0.12	<0.12	<0.15	NA	<0.13	<0.13	NA	<0.12	NA	NA	NA
Benzo(a)anthracene	8/1/95	<50	<10	<500	<5	<30	<5	<5	<5	<5	<5	NA						
	8/23/96	<10	<10	<30	<5	<30	<5	<5	<5	<5	<5	NA						
	3/23-24/98	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA
	3/9-10/99	<0.1	<0.1	0.2	<0.1	<2.0	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<1.0	NA	NA	<0.1
	3/9-10/00	0.18	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	NA	<0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	NA
	3/8-9/01	<0.12	<0.13	<0.12	<0.1	NA	<0.13	<0.12	<0.12	<0.15	NA	<0.13	<0.13	NA	<0.12	NA	NA	NA

Table 2
 Summary of Detected Analytes for PAHs, Metals, VOCs, SVOCs and Groundwater Quality Parameters
 Hobbs, New Mexico Facility
 BJ Services Company, U.S.A.

Analyte (units)	Sample Date	Monitor Wells																
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Benzo(k)fluoranthene	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA
	3/9-10/99	< 0.1	< 0.1	0.2	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 1.0	NA	NA	< 0.1
	3/9-10/00	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	NA	< 0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 0.1
	3/8-9/01	< 0.12	< 0.13	< 0.12	< 0.1	NA	< 0.13	< 0.12	< 0.12	< 0.15	NA	< 0.13	< 0.13	NA	< 0.12	NA	NA	NA
Benzo(a)pyrene	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA
	3/9-10/99	< 0.1	< 0.1	0.2	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 1.0	NA	NA	< 0.1
	3/9-10/00	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	NA	< 0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 0.1
	3/8-9/01	< 0.12	< 0.13	< 0.12	< 0.1	NA	< 0.13	< 0.12	< 0.12	< 0.15	NA	< 0.13	< 0.13	NA	< 0.12	NA	NA	NA
Fluorene	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 10	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	NA	< 0.3	< 0.3	NA	NA	NA	NA
	3/9-10/99	< 0.1	< 0.1	< 2.0	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 1.0	NA	NA	< 0.1
	3/9-10/00	25	< 0.1	0.36	< 0.1	NA	< 0.1	< 0.1	1.5	< 0.1	NA	< 0.1	< 0.1	< 0.1	1.6	NA	NA	< 0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 0.1
	3/8-9/01	< 0.12	< 0.13	< 0.12	< 0.1	NA	< 0.13	< 0.12	< 0.12	< 0.15	NA	< 0.13	< 0.13	NA	< 0.12	NA	NA	NA
Naphthalene	8/1/95	< 5	210	1700	< 5	470	< 5	< 5	15	92	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	230	110	440	< 5	< 30	< 5	< 5	< 84	< 76	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	130	23	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	4	8	NA	0.8	11	NA	NA	NA	NA	NA
	3/9-10/99	10	8	170	0.1	160	< 0.1	< 0.1	< 0.1	6	NA	< 0.1	19	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.6	34	NA	NA	< 0.1
	3/9-10/00	2.4	< 0.1	0.44	< 0.1	NA	< 0.1	< 0.1	0.42	1.5	NA	0.12	0.26	< 0.1	56	NA	NA	< 0.1
Naphthalene	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 0.1	NA
	3/8-9/01	< 0.12	< 0.13	< 0.12	< 0.1	NA	< 0.13	< 0.12	< 0.12	0.15	NA	0.21	< 0.13	NA	< 0.12	NA	NA	NA
	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	3/23-24/98	< 10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA
	3/9-10/99	< 0.1	< 0.1	2	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA
Phenanthrene	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 1.0	NA	NA	< 0.1
	3/9-10/00	0.65	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	0.22	NA	NA	< 0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 0.1	NA
	3/8-9/01	< 0.12	< 0.13	< 0.12	< 0.1	NA	< 0.13	< 0.12	< 0.12	< 0.15	NA	< 0.13	< 0.13	NA	< 0.12	NA	NA	NA
	8/1/95	< 50	< 10	< 500	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	< 10	< 10	< 30	< 5	< 30	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	NA	NA
Pyrene	3/23-24/98	< 10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA
	3/9-10/99	< 0.1	< 0.1	0.4	< 0.1	< 2.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 1.0	NA	NA	< 0.1
	3/9-10/00	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	NA	< 0.1
	1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.1	< 0.1
	3/8-9/01	< 0.12	< 0.13	< 0.12	< 0.1	NA	< 0.13	< 0.12	< 0.12	< 0.15	NA	< 0.13	< 0.13	NA	< 0.12	NA	NA	NA
VOCs (µg/L)																		
Acetone	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 100	< 100	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	130	< 100	NA	NA	< 100
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 100	< 100	NA
sec-Butylbenzene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5	5	NA	NA	< 5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 5.0	< 5.0	NA

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Analyte (units)	Sample Date	Monitor Wells																
		MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
Isopropylbenzene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	31	NA	NA	<5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
Naphthalene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	190	NA	NA	<5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
n-Propylbenzene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	68	NA	NA	<5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
1,2,4-Trimethylbenzene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	93	NA	NA	<5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
1,3,5-Trimethylbenzene	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	93	NA	NA	<5
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
MTBE	3/23-24/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	25	NA	NA	<10
	3/8-9/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	NA
SVOCs (µg/L)																		
2,4-Dimethylphenol	8/1/95	<50	97	<500	<5	42	<5	<5	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	56	NA	NA	<5
2-Methylnaphthalene	8/1/95	280	62	1500	<5	150	<5	<5	36	23	<5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	29	NA	NA	<5
2-Methylphenol	8/1/95	<50	56	<500	<5	<30	<5	<5	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	<5
4-Methylphenol	8/1/95	<80	<20	<800	<8	150	<8	<8	<8	<8	<8	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	<5
Bis(2-ethylhexyl)phthalate	8/1/95	750	<20	10000	40	<40	<7	<7	<7	<7	<7	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	<5
Phenol	8/1/95	<50	<10	<500	<5	<30	<5	<5	<5	8.2	<5	NA	NA	NA	NA	NA	NA	NA
	8/23/96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	6	NA	NA	<5

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.
 NA= Not Analyzed.
 PAHs = Polynuclear Aromatic Hydrocarbons.

Table 3
 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	08/10/92	53.22	0.00	3,594.31	(1)
		02/09/93	53.03	0.00	3,594.50	
		08/18/93	53.10	0.00	3,594.43	
		01/26/94	53.31	0.00	3,594.22	
		05/03/95	54.64	0.20	3,593.05	(2)
		07/31/95	54.14	0.00	3,593.39	
		11/14/95	53.69	0.00	3,593.84	
		02/23/96	54.32	0.00	3,593.21	
		05/31/96	54.14	0.00	3,593.39	
		08/23/96	56.17	0.00	3,591.36	
		12/02/96	55.27	0.00	3,592.26	
		03/12/97	55.70	0.27	3,592.05	
		06/12/97	55.08	0.02	3,592.47	
		09/12/97	55.64	0.51	3,592.31	
		12/10/97	55.46	0.00	3,592.07	PSH Sheen
		03/24/98	55.81	0.00	3,591.72	PSH Sheen
		06/23/98	56.38	0.06	3,591.20	
		09/30/98	56.82	0.00	3,590.71	PSH Sheen
		12/09/98	57.05	0.00	3,590.48	
		03/10/99	57.45	0.00	3,590.08	
		06/10/99	58.02	0.00	3,589.51	
		07/02/99	57.90	0.00	3,589.63	
		09/14/99	58.14	0.00	3,589.39	
12/09/99	-	-	-	(3)		
03/09/00	58.99	0.00	3,588.54			
06/00	-	-	-			
09/00	-	-	-			
12/7/00	-	-	-			
03/08/01	60.35	0.00	3587.18			
MW-2	3,644.84	08/10/92	52.82	0.00	3,592.02	(1)
		02/09/93	49.60	0.00	3,595.24	
		08/18/93	49.71	0.00	3,595.13	
		01/26/94	49.97	0.00	3,594.87	
		05/03/95	-	-	-	(4),(5)
MW-3	3,645.00	08/10/92	52.99	0.00	3,592.01	(1)
		02/09/93	52.72	0.00	3,592.28	
		08/18/93	52.82	0.00	3,592.18	
		01/26/94	53.05	0.00	3,591.95	
		05/03/95	54.31	0.00	3,590.69	
		07/31/95	51.24	0.00	3,593.76	
		11/14/95	51.10	0.00	3,593.90	
		02/23/96	51.68	0.00	3,593.32	
		05/31/96	51.45	0.00	3,593.55	
		08/23/96	51.55	0.00	3,593.45	
		12/02/96	52.23	0.00	3,592.77	
		03/12/97	52.67	0.00	3,592.33	
		06/12/97	52.68	0.00	3,592.32	
		09/11/97	52.71	0.00	3,592.29	
		12/10/97	52.89	0.00	3,592.11	
		03/23/98	53.22	0.00	3,591.78	
		06/23/98	53.66	0.00	3,591.34	
		09/30/98	54.06	0.00	3,590.94	
		12/09/98	54.36	0.00	3,590.64	
03/10/99	54.72	0.00	3,590.28			
06/10/99	55.17	0.00	3,589.83			
07/02/99	55.15	0.00	3,589.85			

Table 3
 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		09/14/99	55.42	0.00	3,589.58	
		12/09/99	55.78	0.00	3,589.22	
		03/09/00	56.23	0.00	3,588.77	
		06/08/00	56.66	0.00	3,588.34	
		09/13/00	56.77	0.00	3,588.23	
		12/07/00	57.15	0.00	3,587.85	
		03/08/01	57.69	0.00	3,587.31	
MW-4	3,645.28	08/10/92	50.55	0.00	3,594.73	(1) PSH Sheen 200 ml PSH
		02/09/93	50.26	0.00	3,595.02	
		08/18/93	50.38	0.00	3,594.90	
		01/26/94	50.90	0.30	3,594.63	
		05/03/95	51.51	0.45	3,594.14	
		07/31/95	51.74	0.26	3,593.75	
		11/14/95	51.03	0.00	3,594.25	
		02/23/96	51.65	0.01	3,593.64	
		05/31/96	51.48	0.00	3,593.80	
		08/23/96	53.49	0.00	3,591.79	
		12/02/96	52.32	0.00	3,592.96	
		03/12/97	52.74	0.05	3,592.58	
		06/12/97	53.08	0.44	3,592.56	
		09/12/97	52.60	0.15	3,592.80	
		12/10/97	52.89	0.00	3,592.39	
		03/24/98	53.20	0.25	3,592.29	
		06/23/98	53.82	0.22	3,591.64	
		09/30/98	53.96	0.00	3,591.32	
		12/09/98	54.27	0.00	3,591.01	
		03/10/99	54.69	0.04	3,590.62	
		06/10/99	55.07	0.00	3,590.21	
		07/02/99	55.10	0.00	3,590.18	
		09/14/99	55.33	0.00	3,589.95	
12/09/99	55.79	0.00	3,589.49			
03/10/00	56.12	0.00	3,589.16			
06/08/00	56.67	0.00	3,588.61			
09/13/00	56.65	0.00	3,588.63			
12/07/00	57.05	0.00	3,588.23			
03/08/01	57.72	0.00	3,587.56			
MW-5	3,647.72	08/10/92	52.38	0.00	3,595.34	(1)
		02/09/93	52.06	0.00	3,595.66	
		08/18/93	52.16	0.00	3,595.56	
		01/26/94	52.50	0.00	3,595.22	
		05/03/95	53.57	0.00	3,594.15	
		07/31/95	53.27	0.00	3,594.45	
		11/14/95	52.83	0.00	3,594.89	
		02/23/96	53.57	0.00	3,594.15	
		05/31/96	53.16	0.00	3,594.56	
		08/23/96	53.41	0.00	3,594.31	
		12/02/96	53.98	0.00	3,593.74	
		03/12/97	54.44	0.00	3,593.28	
		06/12/97	54.48	0.00	3,593.24	
		09/12/97	54.29	0.00	3,593.43	
		12/10/97	54.66	0.00	3,593.06	
		03/23/98	55.05	0.00	3,592.67	
		06/23/98	55.44	0.00	3,592.28	
		09/30/98	55.65	0.00	3,592.07	
		12/09/98	56.00	0.00	3,591.72	
		03/09/99	56.45	0.00	3,591.27	

Table 3
 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		06/10/99	56.91	0.00	3,590.81	
		07/02/99	56.93	0.00	3,590.79	
		09/14/99	57.12	0.00	3,590.60	
		12/09/99	57.41	0.00	3,590.31	
		03/09/00	57.92	0.00	3,589.80	
		06/08/00	58.32	0.00	3,589.40	
		09/13/00	58.36	0.00	3,589.36	
		12/07/00	58.71	0.00	3,589.01	
		03/08/01	59.36	0.00	3,588.36	
MW-6	3,644.74	02/09/93	50.58	0.00	3,594.16	(1)
		08/18/93	50.78	0.00	3,593.96	
		01/26/94	51.00	0.00	3,593.74	
		05/03/95	52.63	0.00	3,592.11	
		07/31/95	51.90	0.00	3,592.84	
		11/14/95	51.19	0.00	3,593.55	
		02/23/96	52.10	0.00	3,592.64	
		05/31/96	51.76	0.00	3,592.98	
		08/23/96	51.63	0.00	3,593.11	
		12/02/96	52.85	0.00	3,591.89	
		03/12/97	53.55	0.00	3,591.19	
		06/12/97	52.08	0.00	3,592.66	
		09/11/97	53.72	0.00	3,591.02	
		12/10/97	53.27	0.00	3,591.47	
		03/23/98	53.56	0.00	3,591.18	
		06/23/98	52.88	0.00	3,591.86	
		09/30/98	54.89	0.00	3,589.85	
12/09/98	54.57	0.00	3,590.17			
03/10/99	55.10	0.00	3,589.64			
MW-7	3,644.55	02/09/93	50.53	0.00	3,594.02	(1)
		08/18/93	50.74	0.00	3,593.81	
		01/26/94	51.01	0.00	3,593.54	
		05/03/95	52.25	0.00	3,592.30	
		07/31/95	51.92	0.00	3,592.63	
		11/14/95	51.48	0.00	3,593.07	
		02/23/96	52.15	0.00	3,592.40	
		05/31/96	51.78	0.00	3,592.77	
		08/23/96	52.02	0.00	3,592.53	
		12/02/96	52.52	0.00	3,592.03	
		03/12/97	52.99	0.00	3,591.56	
		06/12/97	53.08	0.00	3,591.47	
		09/11/97	53.00	0.00	3,591.55	
		12/10/97	53.28	0.00	3,591.27	
		03/23/98	53.59	0.00	3,590.96	
		06/23/98	54.20	0.00	3,590.35	
		09/30/98	54.54	0.00	3,590.01	
		12/09/98	54.74	0.00	3,589.81	
		03/09/99	55.15	0.00	3,589.40	
		06/10/99	55.66	0.00	3,588.89	
07/02/99	55.73	0.00	3,588.82			
09/13/99	55.94	0.00	3,588.61			
12/09/99	56.38	0.00	3,588.17			
03/09/00	56.74	0.00	3,587.81			
06/08/00	57.17	0.00	3,587.38			
09/13/00	57.40	0.00	3,587.15			
12/07/00	57.77	0.00	3,586.78			

Table 3
 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		03/08/01	58.29	0.00	3,586.26	
MW-8	3,644.87	02/09/93	50.48	0.00	3,594.39	(1)
		08/18/93	50.67	0.00	3,594.20	
		01/26/94	50.96	0.00	3,593.91	
		05/03/95	52.15	0.00	3,592.72	
		07/31/95	51.77	0.00	3,593.10	
		11/14/95	51.37	0.00	3,593.50	
		02/23/96	52.17	0.00	3,592.70	
		05/31/96	51.55	0.00	3,593.32	
		08/23/96	51.92	0.00	3,592.95	
		12/02/96	52.43	0.00	3,592.44	
		03/12/97	52.93	0.00	3,591.94	
		06/12/97	53.96	0.00	3,590.91	
		09/11/97	52.73	0.00	3,592.14	
		12/10/97	53.15	0.00	3,591.72	
		03/23/98	53.51	0.00	3,591.36	
		06/23/98	54.01	0.00	3,590.86	
		09/30/98	54.35	0.00	3,590.52	
		12/09/98	54.60	0.00	3,590.27	
		03/09/99	55.00	0.00	3,589.87	
		06/10/99	55.56	0.00	3,589.31	
		07/02/99	55.57	0.00	3,589.30	
		09/13/99	55.72	0.00	3,589.15	
		12/09/99	-	-	-	(3)
		03/09/00	56.52	0.00	3,588.35	
		06/00	-	-	-	
		09/00	-	-	-	
		12/00	-	-	-	
		03/08/01	58.11	0.00	3586.76	
MW-9	3,644.78	04/22/93	49.73	0.00	3,595.05	(1)
		07/15/93	49.65	0.00	3,595.13	
		08/18/93	49.85	0.00	3,594.93	
		01/26/94	50.02	0.00	3,594.76	
		05/03/95	51.35	0.00	3,593.43	
		07/31/95	50.97	0.00	3,593.81	
		11/14/95	50.43	0.00	3,594.35	
		02/23/96	51.12	0.00	3,593.66	
		05/31/96	50.89	0.00	3,593.89	
		08/23/96	50.98	0.00	3,593.80	
		12/02/96	51.58	0.00	3,593.20	
		03/12/97	52.21	0.05	3,592.61	
		06/12/97	52.10	0.00	3,592.68	PSH Sheen
		09/12/97	51.95	0.00	3,592.83	PSH Sheen
		12/10/97	52.37	0.00	3,592.41	PSH Sheen
		03/23/98	52.68	0.00	3,592.10	PSH Sheen
		06/23/98	53.08	0.00	3,591.70	PSH Sheen
		09/30/98	53.39	0.01	3,591.40	PSH Sheen
		12/09/98	53.68	0.00	3,591.10	
		03/10/99	54.15	0.00	3,590.63	
		06/10/99	54.68	0.00	3,590.10	
		07/02/99	54.71	0.00	3,590.07	
		09/13/99	54.71	0.00	3,590.07	
		12/09/99	-	-	-	(3)
		03/09/00	55.69	0.00	3,589.09	
		06/00	-	-	-	
		09/00	-	-	-	

Table 3
 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	03/23/98	54.79	0.00	3,589.45	(7)
		06/23/98	55.43	0.00	3,588.81	
		09/30/98	55.96	0.00	3,588.28	
		12/09/98	56.13	0.00	3,588.11	
		03/10/99	56.43	0.00	3,587.81	
		06/10/99	56.94	0.00	3,587.30	
		07/02/99	57.01	0.00	3,587.23	
		09/14/99	57.36	0.00	3,586.88	
		12/09/99	57.72	0.00	3,586.52	
		03/09/00	58.01	0.00	3,586.23	
		06/08/00	58.40	0.00	3,585.84	
		09/13/00	58.84	0.00	3,585.40	
		12/07/00	59.29	0.00	3,584.95	
		03/08/01	59.72	0.00	3,584.52	
MW-12	3,644.29	03/23/98	54.72	0.00	3,589.57	(7)
		06/23/98	55.48	0.00	3,588.81	
		09/30/98	56.02	0.00	3,588.27	
		12/09/98	56.17	0.00	3,588.12	
		03/10/99	56.45	0.00	3,587.84	
		06/10/99	56.97	0.00	3,587.32	
		07/02/99	56.99	0.00	3,587.30	
		09/14/99	57.41	0.00	3,586.88	
		12/09/99	57.76	0.00	3,586.53	
		03/10/00	58.08	0.00	3,586.21	
		06/08/00	58.42	0.00	3,585.87	
		09/13/00	58.85	0.00	3,585.44	
		12/07/00	59.31	0.00	3,584.98	
		03/08/01	59.76	0.00	3,584.53	
MW-12D	3,644.38	07/02/99	57.13	0.00	3,587.25	(8)
		09/14/99	57.74	0.00	3,586.64	
		12/09/99	57.86	0.00	3,586.52	
		03/09/00	58.24	0.00	3,586.14	
		06/08/00	58.56	0.00	3,585.82	
		09/00	-	-	-	
		12/00	-	-	-	
03/08/01	-	-	-			
MW-13	3,645.52	07/02/99	56.60	0.00	3,588.92	(9)
		09/14/99	56.92	0.00	3,588.60	
		12/09/99	57.28	0.00	3,588.24	
		03/10/00	57.68	0.00	3,587.84	
		06/08/00	58.04	0.00	3,587.48	
		09/13/00	58.29	0.00	3,587.23	
		12/07/00	58.68	0.00	3,586.84	
03/08/01	59.19	0.00	3,586.33			
MW-14	3,642.45	03/08/01	61.07	0.00	3,581.38	

Table 3
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	3,643.24	03/08/01	59.79	0.00	3,583.45	
OW-4	3,644.06	07/02/99	58.18	0.00	3,585.88	(8)
		09/14/99	58.63	0.00	3,585.43	
		12/09/99	58.92	0.00	3,585.14	
		03/09/00	59.19	0.00	3,584.87	
		06/08/00	59.56	0.00	3,584.50	
		09/13/00	60.16	0.00	3,583.90	
		12/07/00	61.15	0.00	3,582.91	
		03/08/01	61.43	0.00	3,582.63	

- (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.

Table 4
March 8-9, 2001 Field Screening Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Cumulative Liters Removed	pH	Temperature (°C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)	Alkalinity (mg/L)	Turbidity NTUs ⁽¹⁾
MW-1	1.0	8.27	17.1	99.4	86	6.58	NM	NM	NM	59.5
MW-3	1.0	7.80	15.8	0.136	137	5.56	NM	NM	NM	7.8
MW-4	1.0	7.81	16.5	0.138	94	6.94	NM	NM	NM	58.2
MW-5	1.0	7.67	16.7	0.133	174	6.98	NM	NM	NM	17.1
MW-7	1.0	7.14	15.9	0.174	164	5.06	NM	NM	NM	26.6
MW-8	1.0	7.52	15.5	0.169	166	5.50	NM	NM	NM	21.8
MW-9	1.0	7.90	16.2	0.1	153	4.89	NM	NM	NM	NM
MW-10	1.0	7.23	16.1	0.2	-117	4.71	4.0	2.5	770	195
MW-11A	1.0	7.16	15.3	0.634	-87	1.51	1.0	4.0	770	895
MW-12	1.0	7.22	16.3	0.22	-110	4.50	4.0	2.5	770	88
MW-13	1.0	7.80	17.2	0.178	-47	6.47	NM	NM	NM	37.5
MW-14	1.0	7.23	16	0.203	270	6.62	NM	NM	NM	20.4
MW-15	1.0	7.31	16.7	0.149	214	5.79	NM	NM	NM	18
OW-4 ⁽²⁾	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

⁽¹⁾ NTUs = Nephelometric turbidity units

⁽²⁾ Well dry

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.

NM=Not Measured

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

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per 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	Regular	53.0	680.0	580.0	1400.0	1.4	9.2
	9/30/98	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/98	Regular	<1.0	1.5	17.0	110.0	1.4	0.31
	3/10/99	Regular	<1.0	<1.0	8.2	110.0	0.62	0.85
	3/10/99	Duplicate	<1.0	<1.0	7.9	110.0	0.66	0.84
	6/10/99	Regular	<1.0	1.1	<1.0	28.0	0.53	0.55
	6/10/99	Duplicate	<1.0	1.8	<1.0	41.0	0.69	0.76
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	-	NS	NS	NS	NS	NS	NS
	3/9/00	Regular	< 1	< 1	< 1	9.1	14	1.3
	6/8/00	-	NS	NS	NS	NS	NS	NS
9/13/00	-	NS	NS	NS	NS	NS	NS	
12/7/00	-	NS	NS	NS	NS	NS	NS	
3/8/01	Regular	2.0	<1	<1	<1	0.49	0.58	
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
	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
	8/23/96	Regular	330.0	2200.0	590.0	1500.0	NA	12
	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	
9/30/98	Regular	42.0	470.0	450.0	530.0	1.0	3.8	

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

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-3	12/10/98	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/99	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/99	Regular	1.7	3.1	<1.0	36.0	<0.20	0.18
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/00	Regular	< 1	< 1	< 1	< 1	0.32	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	< 1	<0.22	< 0.1
	9/13/00	Regular	< 1	< 1	< 1	< 1	<0.2	< 0.1
	12/7/00	Regular	< 1	< 1	< 1	< 1	<0.25	< 0.1
	3/8/01	Regular	< 1	< 1	< 1	< 1	0.42	<0.1
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
	9/30/98	Regular	80.0	180.0	370.0	840.0	2.0	3.9
	12/10/98	Regular	28.0	70.0	210.0	960.0	9.3	4.3
	12/10/98	Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
	3/10/99	Regular	8.0	20.0	250.0	1400.0	13.0	13
	6/10/99	Regular	<1.0	<1.0	12.0	12.0	0.44	0.63
	9/14/99	Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17
12/9/99	Regular	< 1	2.5	2.3	20.1	2	0.53	
3/10/00	Regular	< 1	< 1	< 1	3.6	2.6	0.15	
6/8/00	Regular	< 1	< 1	< 1	< 1	0.44	0.23	
9/13/00	Regular	< 1	< 1	< 1	< 1	0.61	<0.1	
12/7/00	Regular	< 1	< 1	1.3	< 1	0.53	0.16	
3/8/01	Regular	< 1	< 1	< 1	< 1	0.43	0.16	
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

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

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-5	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
	9/30/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/99	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	6/10/99	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/99	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/00	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/00	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/7/00	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1
	3/8/01	Regular	< 1	< 1	< 1	< 1	0.56	< 0.1
MW-6	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	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
9/30/98	Regular	1000.0	420.0	140.0	270.0	4.0	3.3	
12/10/98	Regular	7.6	6.6	1.7	5.8	2.0	< 0.1	
3/10/99	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	

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

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-7	3/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	6/23/98	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/30/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/99	Regular	< 1.0	< 1.0	< 1.0	< 1.0	4.7	< 0.1
	6/10/99	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/13/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/99	Regular	< 5	< 5	< 5	< 5	1.8	< 0.5
	3/9/00	Regular	< 1	< 1	< 1	< 1	0.66	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	< 1	< 0.21	< 0.1
	9/13/00	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	12/7/00	Regular	< 1	< 1	< 1	< 1	< 0.29	< 0.1
	3/8/01	Regular	< 1	< 1	< 1	< 1	1.2	< 0.1
	MW-8	8/10/92	Regular	NS	NS	NS	NS	NA
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
9/30/98		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
12/10/98		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
3/9/99		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
6/10/99		Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
9/13/99		Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
12/9/99	-	NS	NS	NS	NS	NS	NS	
3/9/00	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1	
6/8/00	-	NS	NS	NS	NS	NS	NS	
9/13/00	-	NS	NS	NS	NS	NS	NS	
12/7/00	-	NS	NS	NS	NS	NS	NS	
3/8/01	Regular	< 1	< 1	< 1	< 1	1.6	< 0.1	
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
	11/15/95	Duplicate	170.0	18.0	10.0	120.0	NA	1.9
	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

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

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-9	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
	9/30/98	Regular	1.1	5.5	21.0	59.0	0.27	0.27
	12/10/98	Regular	<1.0	1.9	17.0	79.0	5.1	0.25
	3/10/99	Regular	<1.0	<1.0	5.7	68.0	<0.2	0.22
	6/10/99	Regular	<1.0	1.8	1.8	71.0	<0.20	0.43
	9/13/99	Regular	<1.0	<1.0	<1.0	<2.0	<0.20	<0.10
	12/9/99	-	NS	NS	NS	NS	NS	NS
	3/9/00	Regular	<1	<1	<1	64.0	0.66	1.3
	6/8/00	-	NS	NS	NS	NS	NS	NS
	9/13/00	-	NS	NS	NS	NS	NS	NS
12/7/00	-	NS	NS	NS	NS	NS	NS	
3/8/01	Regular	<1	<1	<1	<1	1.4	<0.1	
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
	3/23/98	Duplicate	36.0	<1	5.3	1.3	1.7	0.18
	6/23/98	Regular	37.0	<5	<5	<5	2.1	<0.5
	9/30/98	Regular	84.0	3.2	30.0	2.2	1.4	0.36
	12/10/98	Regular	29.0	1.0	7.0	1.0	0.86	0.18
	3/9/99	Regular	28.0	<5.0	5.8	<5.0	0.92	<0.5
	6/10/99	Regular	17.0	<1.0	<1.0	<1.0	0.30	0.16
	9/14/99	Regular	10.0	<1.0	<1.0	<2.0	<0.20	<0.10
	12/9/99	Regular	23.0	<1	<1	1.2	0.44	0.16
	3/10/00	Regular	300.0	4.3	6.6	43.2	1.2	0.85
	6/8/00	Regular	78.0	1.7	7.2	9.0	0.67	0.74
	9/13/00	Regular	23.0	1.5	1.1	2.9	1.6	0.41
	12/7/00	Regular	7.2	<1	<1	<1	1.5	0.15
3/8/01	Regular	3.4	1.1	<1	<1	3.4	0.2	

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

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
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
	9/30/98	Regular	9.3	3.7	2.2	7.0	< 0.20	0.1
	12/10/98	Regular	1.7	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/10/99	Regular	< 5	< 5	< 5	< 5	0.3	< 0.5
	6/10/99	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.10
	9/13/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/99	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
	3/9/00	Regular	1.2	< 1	< 1	< 1	0.43	< 0.1
	6/8/00	Regular	3.6	< 1	< 1	< 1	0.37	< 0.1
	9/13/00	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
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
	9/30/98	Regular	260.0	3.0	1.2	7.9	< 0.20	0.62
	12/10/98	Regular	160.0	< 1.0	< 1.0	1.2	0.21	0.36
	3/10/99	Regular	160.0	1.1	< 1.0	2.9	0.38	0.45
	6/10/99	Regular	49.0	1.4	< 1.0	< 1.0	0.22	0.13
	9/14/99	Regular	75.0	< 1.0	< 1.0	< 2.0	< 0.20	0.23
	12/9/99	Regular	64.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/00	Regular	93.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/00	Duplicate	99.0	< 1	< 1	< 1	0.22	0.22
	6/8/00	Regular	62.0	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/00	Regular	34.0	< 1	< 1	< 1	0.23	< 0.1
	12/7/00	Regular	27	< 1	2.9	1.9	< 0.25	< 0.1
3/8/01	Regular	14	< 1	< 1	< 1	2.1	0.1	
MW-12D	7/2/99	Regular	< 5	< 5	< 5	< 5	< 0.20	< 0.10
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/99	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/00	Regular	< 1	< 1	< 1	< 1	0.24	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/00	-	NS	NS	NS	NS	NS	NS
	12/7/00	-	NS	NS	NS	NS	NS	NS
MW-13	7/2/99	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/99	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/99	Regular	430.0	16.0	410.0	40.9	0.46	3.2
	3/10/00	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 Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-13	6/8/00	Regular	6.0	<1	63.0	3.3	1.1	0.91
	9/13/00	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/00	Regular	<1	<1	<1	<1	0.43	<0.1
	3/8/01	Regular	<1	<1	1.2	<1	2	<0.1
MW-14	1/14/01	Regular	<1	<1	<1	<1	<0.2	<0.1
MW-15	1/14/01	Regular	<1	<1	<1	<1	<0.2	<0.1
OW-4	6/10/99	Regular	<1.0	<1.0	<1.0	4.4	<0.2	<0.10
	9/14/99	Regular	<1.0	<1.0	<1.0	<2.0	<0.20	<0.10
	12/9/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.2	<0.1
	3/9/00	Regular	<1.0	<1.0	<1.0	<1.0	0.25	<0.1
	6/8/00	Regular	<1.0	<1.0	<1.0	<1.0	<0.21	<0.1
	9/13/00	Regular	<1.0	<1.0	<1.0	<1.0	<0.2	<0.1
	12/7/00	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D

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, and MW-12
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ¹ (mg/L)	Sulfate ¹ (mg/L)	Methane (mg/L)
MW-5	3/23/98	3.87	190	<0.0012
	3/9/99	<0.1	195	<0.0012
	6/10/99	4.73	209	<0.0012
	9/14/99	4.3	210	<0.0012
	12/9/99	4.2	210	<0.0012
	3/9/00	5.3	260	<0.0012
	6/8/00	4.7	240	<0.0012
	9/13/00	3.93	200	<0.0012
	12/7/00	3.27	160	<0.0012
	3/8/01	3.24	180	<0.0012
MW-10	3/23/98	0.07	320	0.91
	6/23/98	<0.1	325	0.55
	9/30/98	<0.1	204	0.81
	12/10/98	<0.1	180	0.091
	3/9/99	<0.1	142	0.035
			223 ³	
	9/14/99	<0.10	160	0.0049
	12/9/99	0.49	170	0.0039
	3/10/00	0.1	160	0.0056
	6/8/00	<0.1	150	0.031
	9/13/00	<0.1	160	0.031
	12/7/00	<0.1	190	0.17
	3/8/01	<0.1	270	<0.0012
MW-11A	3/23/98	<0.05	190	0.14
	6/23/98	<0.1	225	0.11
	9/30/98	0.4	196	0.043
	12/10/98	0.7	188	0.033
	3/10/99	<0.1	164	0.094
			227 ³	
	6/10/99	<0.1	181	0.0036
	9/13/99	0.22	250	<0.0012
	12/9/99	<0.1	290	0.0079
	3/9/00	0.11	270	0.037
	6/8/00	<0.1	240	0.0069
	9/13/00	<0.1	320	<0.0012
	12/7/00	<0.1	260	0.0096

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

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

Well	Date	Nitrate ¹ (mg/L)	Sulfate ¹ (mg/L)	Methane (mg/L)
MW-11A	3/8/01	<0.1	330	0.0028
MW-12	3/23/98	<0.05	240	<0.0012
	6/23/98	<0.1	240	<0.0012
	9/30/98	<0.1	168	<0.0012
	12/10/98	<0.1	202	<0.0012
	3/10/99	<0.1	137	<0.0012
		<0.1 ²	193 ³	
	6/10/99	<0.1	217	<0.0012
	9/14/99	<0.10	230	<0.0012
	12/9/99	<0.1	180	<0.0012
	3/10/00	<0.1	210	<0.0012
	6/8/00	<0.1	220	<0.0012
	9/13/00	<0.1	240	<0.0012
	12/7/00	<0.1	260	<0.0012
	3/8/01	<0.1	300	<0.0012

1=By EPA Method 300, except as noted

2=By EPA Method 353.3

3=By EPA Method 375.4

mg/L = milligrams per liter

Appendices



A



APPENDIX A

Boring Logs

MW-14

Project Name: Chloride Investigation

Project Number: 12832.022

Sheet 1 of 2

Project Location: Hobbs, New Mexico		Logged By: S. Lesikar	Approved:
Drilling Contractor: Pro - Sonic		Date Started: 1/13/01	Date Finished: 1/14/01
Drilling Equipment: Mobile B-61	Driller: Rene Sosa	Total Boring Depth: (feet) 69.5	Depth to Static Water: (feet) 60.0
Drilling Method: Air Rotary/HSA	Borehole Diameter: 6 7/8"	TOC Elevation:	Ground Elevation:
Sampling Method: Split Spoon		Diameter and Type of Well Casing: 2" Schedule 40 PVC	
Comments: Drilled with air rotary from 3' to 69.5'.		Slot Size: 0.01	Filter Material: 20/40 Sand
		Development Method: Bailer	

Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	Readings	Sampled Interval	Recovery (feet)	Sample ID	Remarks
2		SW		SILTY SAND (SW); Very fine, light reddish brown, dry.			2		
4				SANDSTONE; Medium brown, very fine, dry with interbedded layer (2'-3' thick) of slightly cemented very fine sand.					Start Air Rotary at 3'
12			SAA						Lithology logged from drill cuttings from 3' to 57'.
14			SAA						
16			SAA						
18			SAA						
20			SAA						
22			SAA						
24			SAA						
26			SAA						
28			SAA						
30			SAA						
32			SAA						

MW-14

Project Name: Chloride Investigation

Project Number: 12832.022

Sheet 2 of 2

Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	Readings	Sampled Interval	Recovery (feet)	Sample ID	Remarks
34									
36									
38				SAA					
40									
42									
44									
46									
48							47.5		
50							50.0		2.5' Hydrated bentonite chips
52									
54									20-40 Silica sand
56									
58		SW		SAND (SW); Softer, very fine, brown, uncemented, wet.					2" Diameter Schedule 40 Well Screen 0.01" Slot.
60	▼								
62									
64									
66									
68							68.0		
							69.5		TD 69.5 ft.

MW-15

Project Name: Chloride Investigation

Project Number: 12832.022

Sheet 2 of 2

Depth (feet)	Depth to Water	USC Soil Type	Lithology	Description	Readings	Sampled Interval	Recovery (feet)	Sample ID	Remarks
34									
36				SAA					
38									
40									
42									
44									
46									
47.5									Cement/Bentonite grout
48									
50.0									Hydrated bentonite chips
52									
54									
56									
58		SP		SAND (SP); Softer, very fine, uncemented, wet.					15'-2" Diameter Schedule 40 PVC Screen 0.01" Slot.
60	▼								
62									
64									
66									
67.0									
68.5									1.5' sump
70				SAA					
72									
74									TD 75 ft, hole caved in to 68.5 ft.

B



APPENDIX B

Laboratory Analytical Reports for Groundwater Samples



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

Brown & Caldwell

Certificate of Analysis Number:

01010371

Report To:

Brown & Caldwell
Rick Rexroad
1415 Louisiana
Suite 2500
Houston
TX
77002-
ph: (713) 759-0999

fax: (713) 308-3886

Project Name:

BJ Service #12832-022

Site:

Hobbs, NM

Site Address:

PO Number:

State:

New Mexico

State Cert. No.:

Date Reported:

1/29/01

This Report Contains A Total Of 32 Pages

Excluding This Page

And

Chain Of Custody

1/29/01

Date



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

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
01010371

Report To: Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2500 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886	Project Name: BJ Service #12832-022 Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 1/29/01
---	---

A trip blank was received with the samples but was not written on the chain of custody [SPL ID: 01010371-04]. Per our telephone conversation on January 17, 2001, SPL analyzed the trip blank for BTEX/ TPH-GRO by SW846 methods 8021/8015.

As per your request on January 17, 2001, the laboratory analyzed your sample "Soil Cuttings, MW-14, MW-15" for Gasoline Range Organics, Diesel Range Organics, and RCRA Metals.

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.

Your sample ID "MW-15" (SPL ID: 01010371-01) was randomly selected for use in SPL's quality control program for the Total Metals analysis by SW846 Method 6010B. The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries were outside of the advisable quality control limits for Cadmium and Chromium (Batch ID: 9679) due to matrix interference. A Post Digestion Spike (PDS) and Post Digestion Spike Duplicate (PDSD) was performed and all recoveries were within quality control limits. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

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.

Sonia West
West, Sonia
Senior Project Manager

1/30/01

Date



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

Brown & Caldwell

Certificate of Analysis Number:

01010371

Report To: Brown & Caldwell
 Rick Rexroad
 1415 Louisiana
 Suite 2500
 Houston
 TX
 77002-
 ph: (713) 759-0999

Project Name: BJ Service #12832-022

Site: Hobbs, NM

Site Address:

PO Number:

State: New Mexico

State Cert. No.:

Date Reported: 1/29/01

Fax To: Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
W-15	01010371-01	Water	1/14/01 2:00:00 PM	1/16/01 10:00:00 AM	085943	<input type="checkbox"/>
MW-14	01010371-02	Water	1/14/01 4:00:00 PM	1/16/01 10:00:00 AM	085942	<input type="checkbox"/>
MW-14	01010371-02	Water	1/14/01 4:00:00 PM	1/16/01 10:00:00 AM	085943	<input type="checkbox"/>
Oil Cuttings, MW-14, MW-15	01010371-03	Solid	1/14/01 3:00:00 PM	1/16/01 10:00:00 AM	085943	<input type="checkbox"/>
Tip Blank 1/4/01	01010371-04	Water	1/14/01	1/16/01 10:00:00 AM	085943	<input type="checkbox"/>

Sonia West
 West, Sonia
 Senior Project Manager

1/29/01

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



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

Client Sample ID MW-15 Collected: 1/14/01 2:00:00 SPL Sample ID: 01010371-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	250	2		1	01/17/01 12:00	SN	533556
ALKALINITY, CARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2		1	01/17/01 12:00	SN	533579
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	219	5		5	01/18/01 14:30	CV	536141
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	ND	0.2		1	01/20/01 6:55	AM	538060
Surr: n-Pentacosane	76.4	% 18-120		1	01/20/01 6:55	AM	538060

Prep Method	Prep Date	Prep Initials
SW3510B	01/17/2001 13:27	KL

FLUORIDE-IC	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
FLUORIDE-IC				MCL	E300	Units: mg/L	
Fluoride	1.2	0.1		1	01/16/01 11:23	KM	532528

GASOLINE RANGE ORGANICS	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND	0.1		1	01/25/01 3:42	D_R	541375
Surr: 1,4-Difluorobenzene	96.3	% 74-121		1	01/25/01 3:42	D_R	541375
Surr: 4-Bromofluorobenzene	103	% 55-150		1	01/25/01 3:42	D_R	541375

MERCURY, TOTAL	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002		1	01/23/01 11:11	R_T	539186

Prep Method	Prep Date	Prep Initials
SW7470A	01/23/2001 9:00	R_T

METALS BY METHOD 6010B, TOTAL	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, TOTAL				MCL	SW6010B	Units: mg/L	
Arsenic	ND	0.005		1	01/20/01 1:36	EG	537003
Lead	ND	0.005		1	01/20/01 1:36	EG	537003
Selenium	0.00523	0.005		1	01/20/01 1:36	EG	537003
Barium	0.073	0.005		1	01/17/01 19:40	E_B	534402
Cadmium	ND	0.005		1	01/17/01 19:40	E_B	534402
Calcium	150	0.1		1	01/17/01 19:40	E_B	534402
Chromium	ND	0.01		1	01/17/01 19:40	E_B	534402
Magnesium	28.3	0.1		1	01/17/01 19:40	E_B	534402
Potassium	4.59	2		1	01/17/01 19:40	E_B	534402
Silver	ND	0.01		1	01/17/01 19:40	E_B	534402
Sodium	108	0.5		1	01/17/01 19:40	E_B	534402

Prep Method	Prep Date	Prep Initials
SW3010A	01/19/2001 9:55	R_T
SW3010A	01/17/2001 9:00	R_T

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
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 (713) 860-0901

Client Sample ID MW-15

Collected: 1/14/01 2:00:00

SPL Sample ID: 01010371-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
NITROGEN, NITRATE (AS N)							
			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N)	4.88	0.1	1		01/16/01 11:23	KM	532518
POLYNUCLEAR AROMATIC HYDROCARBONS							
			MCL	SW8310	Units: ug/L		
Acenaphthene	ND	0.1	1		01/23/01 17:31	KA	545133
Acenaphthylene	ND	0.1	1		01/23/01 17:31	KA	545133
Anthracene	ND	0.1	1		01/23/01 17:31	KA	545133
Benz(a)anthracene	ND	0.1	1		01/23/01 17:31	KA	545133
Benzo(a)pyrene	ND	0.1	1		01/23/01 17:31	KA	545133
Benzo(b)fluoranthene	ND	0.1	1		01/23/01 17:31	KA	545133
Benzo(g,h,i)perylene	ND	0.1	1		01/23/01 17:31	KA	545133
Benzo(k)fluoranthene	ND	0.1	1		01/23/01 17:31	KA	545133
Chrysene	ND	0.1	1		01/23/01 17:31	KA	545133
Dibenzo(a,h)anthracene	ND	0.1	1		01/23/01 17:31	KA	545133
Fluoranthene	ND	0.1	1		01/23/01 17:31	KA	545133
Fluorene	ND	0.1	1		01/23/01 17:31	KA	545133
Indeno(1,2,3-cd)pyrene	ND	0.1	1		01/23/01 17:31	KA	545133
Naphthalene	ND	0.1	1		01/23/01 17:31	KA	545133
Phenanthrene	ND	0.1	1		01/23/01 17:31	KA	545133
Pyrene	ND	0.1	1		01/23/01 17:31	KA	545133
Surr: 1-Fluoronaphthalene	51.1	% 15-96	1		01/23/01 17:31	KA	545133
Surr: Phenanthrene-d10	66.8	% 33-108	1		01/23/01 17:31	KA	545133

<u>Prep Method</u>	<u>Prep Date</u>	<u>Prep Initials</u>
SW3510B	01/18/2001 13:00	KL

PURGEABLE AROMATICS							
			MCL	SW8021B	Units: ug/L		
Benzene	ND	1		1	01/25/01 3:42	D_R	541306
Ethylbenzene	ND	1		1	01/25/01 3:42	D_R	541306
Toluene	ND	1		1	01/25/01 3:42	D_R	541306
Xylenes, Total	ND	1		1	01/25/01 3:42	D_R	541306
Surr: 1,4-Difluorobenzene	96.5	% 72-137		1	01/25/01 3:42	D_R	541306
Surr: 4-Bromofluorobenzene	93.8	% 48-156		1	01/25/01 3:42	D_R	541306

SULFATE							
			MCL	E300	Units: mg/L		
Sulfate	130	4		20	01/16/01 11:23	KM	532538

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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Client Sample ID MW-14

Collected: 1/14/01 4:00:00 SPL Sample ID: 01010371-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	374	2	1		01/17/01 12:00	SN	533558
ALKALINITY, CARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2	1		01/17/01 12:00	SN	533581
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	368	5	5		01/18/01 14:30	CV	536144
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	ND	0.2	1		01/20/01 10:48	AM	538063
Surr: n-Pentacosane	79.0 %	18-120	1		01/20/01 10:48	AM	538063

Prep Method	Prep Date	Prep Initials
SW3510B	01/17/2001 13:27	KL

FLUORIDE-IC				MCL	E300	Units: mg/L	
Fluoride	3.5	0.1	1		01/16/01 11:23	KM	532531
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND	0.1	1		01/25/01 4:09	D_R	541376
Surr: 1,4-Difluorobenzene	96.3 %	74-121	1		01/25/01 4:09	D_R	541376
Surr: 4-Bromofluorobenzene	102 %	55-150	1		01/25/01 4:09	D_R	541376

MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002	1		01/23/01 11:11	R_T	539187

Prep Method	Prep Date	Prep Initials
SW7470A	01/23/2001 9:00	R_T

METALS BY METHOD 6010B, TOTAL			MCL	SW6010B	Units: mg/L	
Arsenic	0.00511	0.005	1		01/20/01 1:42	EG 537004
Lead	ND	0.005	1		01/20/01 1:42	EG 537004
Selenium	ND	0.005	1		01/20/01 1:42	EG 537004
Barium	0.0833	0.005	1		01/17/01 20:05	E_B 534408
Cadmium	ND	0.005	1		01/17/01 20:05	E_B 534408
Calcium	179	0.1	1		01/17/01 20:05	E_B 534408
Chromium	ND	0.01	1		01/17/01 20:05	E_B 534408
Magnesium	87.5	0.1	1		01/17/01 20:05	E_B 534408
Potassium	3.59	2	1		01/17/01 20:05	E_B 534408
Silver	ND	0.01	1		01/17/01 20:05	E_B 534408
Sodium	144	0.5	1		01/17/01 20:05	E_B 534408

Prep Method	Prep Date	Prep Initials
SW3010A	01/19/2001 9:55	R_T
SW3010A	01/17/2001 9:00	R_T

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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Client Sample ID MW-14 Collected: 1/14/01 4:00:00 SPL Sample ID: 01010371-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
NITROGEN, NITRATE (AS N)			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N)	4.5	0.1	1		01/16/01 11:23	KM	532521
POLYNUCLEAR AROMATIC HYDROCARBONS			MCL	SW8310	Units: ug/L		
Acenaphthene	ND	0.1	1		01/23/01 19:23	KA	545136
Acenaphthylene	ND	0.1	1		01/23/01 19:23	KA	545136
Anthracene	ND	0.1	1		01/23/01 19:23	KA	545136
Benz(a)anthracene	ND	0.1	1		01/23/01 19:23	KA	545136
Benzo(a)pyrene	ND	0.1	1		01/23/01 19:23	KA	545136
Benzo(b)fluoranthene	ND	0.1	1		01/23/01 19:23	KA	545136
Benzo(g,h,i)perylene	ND	0.1	1		01/23/01 19:23	KA	545136
Benzo(k)fluoranthene	ND	0.1	1		01/23/01 19:23	KA	545136
Chrysene	ND	0.1	1		01/23/01 19:23	KA	545136
Dibenzo(a,h)anthracene	ND	0.1	1		01/23/01 19:23	KA	545136
Fluoranthene	ND	0.1	1		01/23/01 19:23	KA	545136
Fluorene	ND	0.1	1		01/23/01 19:23	KA	545136
Indeno(1,2,3-cd)pyrene	ND	0.1	1		01/23/01 19:23	KA	545136
Naphthalene	ND	0.1	1		01/23/01 19:23	KA	545136
Phenanthrene	ND	0.1	1		01/23/01 19:23	KA	545136
Pyrene	ND	0.1	1		01/23/01 19:23	KA	545136
Surr: 1-Fluoronaphthalene	41.7	% 15-96	1		01/23/01 19:23	KA	545136
Surr: Phenanthrene-d10	61.1	% 33-108	1		01/23/01 19:23	KA	545136

Prep Method	Prep Date	Prep Initials
SW3510B	01/18/2001 13:00	KL

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		01/25/01 4:09	D_R	541307
Ethylbenzene	ND	1	1		01/25/01 4:09	D_R	541307
Toluene	ND	1	1		01/25/01 4:09	D_R	541307
Xylenes, Total	ND	1	1		01/25/01 4:09	D_R	541307
Surr: 1,4-Difluorobenzene	94.6	% 72-137	1		01/25/01 4:09	D_R	541307
Surr: 4-Bromofluorobenzene	88.3	% 48-156	1		01/25/01 4:09	D_R	541307

SULFATE			MCL	E300	Units: mg/L		
Sulfate	180	4	20		01/16/01 11:23	KM	532541

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID Soil Cuttings, MW-14, MW-15 Collected: 1/14/01 3:00:00 SPL Sample ID: 01010371-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8100M	Units: mg/Kg		
Diesel Range Organics	ND	5.0	1		01/20/01 17:54	AM	536479
Surr: n-Pentacosane	91.8	% 20-154	1		01/20/01 17:54	AM	536479

Prep Method	Prep Date	Prep Initials
SW3550B	01/18/2001 12:35	J_L

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/Kg		
Gasoline Range Organics	ND	0.10	1		01/19/01 20:02	TM	536256
Surr: 1,4-Difluorobenzene	101	% 63-122	1		01/19/01 20:02	TM	536256
Surr: 4-Bromofluorobenzene	105	% 39-150	1		01/19/01 20:02	TM	536256

MERCURY, TOTAL			MCL	SW7471A	Units: mg/Kg		
Mercury	ND	0.0330	1		01/22/01 13:17	R_T	538517

Prep Method	Prep Date	Prep Initials
SW7471A	01/22/2001 8:45	R_T

METALS BY METHOD 6010B, TOTAL			MCL	SW6010B	Units: mg/Kg		
Arsenic	1.26	0.500	1		01/18/01 18:33	EG	536357
Lead	1.69	0.500	1		01/18/01 18:33	EG	536357
Selenium	ND	0.500	1		01/18/01 18:33	EG	536357
Barium	108	0.5	1		01/18/01 18:23	E_B	535207
Cadmium	ND	0.5	1		01/18/01 18:23	E_B	535207
Chromium	11.2	1	1		01/18/01 18:23	E_B	535207
Silver	ND	1	1		01/18/01 18:23	E_B	535207

Prep Method	Prep Date	Prep Initials
SW3050B	01/18/2001 9:30	R_T

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID Trip Blank 1/4/01

Collected: 1/14/01

SPL Sample ID: 01010371-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		01/24/01 18:26	D_R	541368
Surr: 1,4-Difluorobenzene	96.0	% 74-121	1		01/24/01 18:26	D_R	541368
Surr: 4-Bromofluorobenzene	101	% 55-150	1		01/24/01 18:26	D_R	541368
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		01/24/01 18:26	D_R	541296
Ethylbenzene	ND	1	1		01/24/01 18:26	D_R	541296
Toluene	ND	1	1		01/24/01 18:26	D_R	541296
Xylenes, Total	ND	1	1		01/24/01 18:26	D_R	541296
Surr: 1,4-Difluorobenzene	96.7	% 72-137	1		01/24/01 18:26	D_R	541296
Surr: 4-Bromofluorobenzene	91.8	% 48-156	1		01/24/01 18:26	D_R	541296

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, TEXAS 77054
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Quality Control Report

Brown & Caldwell
 BJ Service #12832-022

Analysis: Diesel Range Organics
 Method: SW8015B

WorkOrder: 01010371
 Lab Batch ID: 9680

Method Blank

Samples in Analytical Batch:

RunID:	HP_V_010119D-538054	Units:	mg/L	<u>Lab Sample ID</u>	<u>Client Sample ID</u>
Analysis Date:	01/19/2001 17:24	Analyst:	AM	01010371-01C	MW-15
Preparation Date:	01/17/2001 13:27	Prep By:	KL Method SW3510B	01010371-02C	MW-14

Analyte	Result	Rep Limit
Diesel Range Organics	ND	0.20
Surr: n-Pentacosane	90.2	18-120

Laboratory Control Sample (LCS)

RunID: HP_V_010119D-538055 Units: mg/L
 Analysis Date: 01/19/2001 18:02 Analyst: AM
 Preparation Date: 01/17/2001 13:27 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	2.2	88	21	175

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

Sample Spiked: 01010389-03
 RunID: HP_V_010119D-538057 Units: mg/L
 Analysis Date: 01/19/2001 20:37 Analyst: AM
 Preparation Date: 01/17/2001 13:27 Prep By: KL Method SW3510B

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	2.7	46.0	5	2.5	43.0	6.92	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

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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Quality Control Report

Brown & Caldwell
 BJ Service #12832-022

Analysis: Diesel Range Organics
 Method: SW8100M

WorkOrder: 01010371
 Lab Batch ID: 9700

Method Blank

Samples in Analytical Batch:

RunID: HP_V_010120A-536477 Units: mg/Kg
 Analysis Date: 01/20/2001 16:37 Analyst: AM
 Preparation Date: 01/18/2001 12:35 Prep By: J_L Method SW3550B

Lab Sample ID: 01010371-03B
 Client Sample ID: Soil Cuttings, MW-14, MW-15

Analyte	Result	Rep Limit
Diesel Range Organics	ND	5.0
Surr: n-Pentacosane	95.4	20-154

Laboratory Control Sample (LCS)

RunID: HP_V_010120A-536478 Units: mg/Kg
 Analysis Date: 01/20/2001 17:16 Analyst: AM
 Preparation Date: 01/18/2001 12:35 Prep By: J_L Method SW3550B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	83	82	99	50	150

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

Sample Spiked: 01010371-03
 RunID: HP_V_010120A-536480 Units: mg/Kg
 Analysis Date: 01/20/2001 18:33 Analyst: AM
 Preparation Date: 01/18/2001 12:35 Prep By: J_L Method SW3550B

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	83	79	92.0	83	76	88.7	3.63	50	21	175

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

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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Quality Control Report

Brown & Caldwell
 BJ Service #12832-022

Analysis: Gasoline Range Organics
 Method: SW8015B

WorkOrder: 01010371
 Lab Batch ID: R27993

Method Blank

Samples in Analytical Batch:

RunID: VARE_010119A-536254 Units: mg/Kg
 Analysis Date: 01/19/2001 17:43 Analyst: TM

Lab Sample ID: 01010371-03A
 Client Sample ID: Soil Cuttings, MW-14, MW-15

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	100.7	63-122
Surr: 4-Bromofluorobenzene	109.3	39-150

Laboratory Control Sample (LCS)

RunID: VARE_010119A-536251 Units: mg/Kg
 Analysis Date: 01/19/2001 16:20 Analyst: TM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.99	99	70	130

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

Sample Spiked: 01010377-01
 RunID: VARE_010119A-536252 Units: mg/Kg-dry
 Analysis Date: 01/19/2001 16:48 Analyst: TM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	475	450	94.7	475	510	108	12.7	50	26	147

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

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
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Quality Control Report

Brown & Caldwell

BJ Service #12832-022

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 01010371
Lab Batch ID: R28307

Method Blank

Samples in Analytical Batch:

RunID: HP_S_010124A-541294 Units: ug/L
Analysis Date: 01/24/2001 17:34 Analyst: D_R

Lab Sample ID	Client Sample ID
01010371-01A	MW-15
01010371-02A	MW-14
01010371-04A	Trip Blank 1/4/01

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	94.8	72-137
Surr: 4-Bromofluorobenzene	90.3	48-156

Laboratory Control Sample (LCS)

RunID: HP_S_010124A-541293 Units: ug/L
Analysis Date: 01/24/2001 16:15 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	52	105	70	130
Ethylbenzene	50	53	106	70	130
Toluene	50	53	107	70	130
Xylenes, Total	150	163	109	70	130

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

Sample Spiked: 01010610-02
RunID: HP_S_010124A-541297 Units: ug/L
Analysis Date: 01/24/2001 18:52 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
Benzene	ND	20	22	112	20	21	104	6.59	21	32	164
Ethylbenzene	ND	20	21	105	20	20	99.6	5.70	19	52	142
Toluene	ND	20	22	108	20	21	104	3.91	20	38	159
Xylenes, Total	ND	60	65	108	60	62	103	4.72	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

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Quality Control Report

Brown & Caldwell
 BJ Service #12832-022

Analysis: Gasoline Range Organics
 Method: SW8015B

WorkOrder: 01010371
 Lab Batch ID: R28313

Method Blank

Samples in Analytical Batch:

RunID: HP_S_010124D-541367 Units: mg/L
 Analysis Date: 01/24/2001 17:34 Analyst: D_R

Lab Sample ID	Client Sample ID
01010371-01A	MW-15
01010371-02A	MW-14
01010371-04A	Trip Blank 1/4/01

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	95.3	74-121
Surr: 4-Bromofluorobenzene	100.7	55-150

Laboratory Control Sample (LCS)

RunID: HP_S_010124D-541366 Units: mg/L
 Analysis Date: 01/24/2001 16:41 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	1.1	106	70	130

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

Sample Spiked: 01010610-03
 RunID: HP_S_010124D-541369 Units: mg/L
 Analysis Date: 01/24/2001 19:45 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
Gasoline Range Organics	0.90	0.9	1.4	56.2	0.9	1.5	65.0	14.4	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

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Quality Control Report

Brown & Caldwell

BJ Service #12832-022

Analysis: Polynuclear Aromatic Hydrocarbons
 Method: SW8310

WorkOrder: 01010371
 Lab Batch ID: 9703

Method Blank

Samples in Analytical Batch:

RunID: 2_010123A-545131	Units: ug/L	Lab Sample ID	Client Sample ID
Analysis Date: 01/23/2001 16:17	Analyst: KA	01010371-01B	MW-15
Preparation Date: 01/18/2001 13:00	Prep By: KL Method SW3510B	01010371-02B	MW-14

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	62.9	15-96
Surr: Phenanthrene-d10	66.3	33-108

Laboratory Control Sample (LCS)

RunID: 2_010123A-545132	Units: ug/L
Analysis Date: 01/23/2001 16:54	Analyst: KA
Preparation Date: 01/18/2001 13:00	Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Acenaphthene	0.5	0.35	71	23	99
Acenaphthylene	0.5	0.41	81	29	104
Anthracene	0.5	0.33	67	28	126
Benz(a)anthracene	0.5	0.39	79	52	101
Benzo(a)pyrene	0.5	0.39	78	62	97
Benzo(b)fluoranthene	0.5	0.41	83	65	101
Benzo(g,h,i)perylene	0.5	0.41	81	36	117
Benzo(k)fluoranthene	0.5	0.41	82	64	104
Chrysene	0.5	0.43	86	64	124
Dibenzo(a,h)anthracene	0.5	0.38	76	33	111
Fluoranthene	0.5	0.39	78	51	100
Fluorene	0.5	0.39	78	20	105
Indeno(1,2,3-cd)pyrene	0.5	0.43	86	57	115
Naphthalene	0.5	0.34	68	19	95
Phenanthrene	0.5	0.38	77	29	105

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

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Quality Control Report

Brown & Caldwell
BJ Service #12832-022

Analysis: Polynuclear Aromatic Hydrocarbons
Method: SW8310

WorkOrder: 01010371
Lab Batch ID: 9703

Laboratory Control Sample (LCS)

RunID: 2_010123A-545132 Units: ug/L
Analysis Date: 01/23/2001 16:54 Analyst: KA
Preparation Date: 01/18/2001 13:00 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Pyrene	0.5	0.38	75	55	105

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

Sample Spiked: 01010371-01
RunID: 2_010123A-545134 Units: ug/L
Analysis Date: 01/23/2001 18:08 Analyst: KA
Preparation Date: 01/18/2001 13:00 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
Acenaphthene	ND	0.5	0.19	37.2	0.5	0.21	41.8	11.5	30	1	97
Acenaphthylene	ND	0.5	0.19	37.1	0.5	0.2	39.5	6.09	30	1	122
Anthracene	ND	0.5	0.19	37.8	0.5	0.22	44.6	16.7	30	1	106
Benz(a)anthracene	ND	0.5	0.28	56.5	0.5	0.36	71.7	23.9	30	12	119
Benzo(a)pyrene	ND	0.5	0.26	52.6	0.5	0.34	67.2	24.3	30	1	105
Benzo(b)fluoranthene	ND	0.5	0.29	57.6	0.5	0.36	72.9	23.4	30	6	127
Benzo(g,h,i)perylene	ND	0.5	0.27	53.4	0.5	0.32	64.2	18.4	30	1	107
Benzo(k)fluoranthene	ND	0.5	0.28	56.4	0.5	0.36	71.2	23.2	30	5	119
Chrysene	ND	0.5	0.3	60.5	0.5	0.38	75.9	22.7	30	1	144
Indeno(1,2,3-cd)pyrene	ND	0.5	0.24	47.9	0.5	0.28	56.8	17.0	30	1	114
Fluoranthene	ND	0.5	0.34	67.7	0.5	0.4	79.8	16.4	30	14	126
Fluorene	ND	0.5	0.25	43.8	0.5	0.27	48.9	11.0	30	1	107
Indeno(1,2,3-cd)pyrene	ND	0.5	0.29	57.7	0.5	0.36	72.5	22.8	30	1	109
Naphthalene	ND	0.5	0.19	37.9	0.5	0.2	40.2	5.84	30	1	90
Phenanthrene	ND	0.5	0.35	51.3	0.5	0.38	57.2	10.8	30	1	128
Pyrene	ND	0.5	0.35	70.6	0.5	0.44	88.9	23.0	30	1	135

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

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Quality Control Report

Brown & Caldwell

BJ Service #12832-022

Analysis: Metals by Method 6010B, Total
 Method: SW6010B

WorkOrder: 01010371
 Lab Batch ID: 9679

Method Blank

Samples in Analytical Batch:

RunID: TJA_010117B-534400 Units: mg/L
 Analysis Date: 01/17/2001 19:31 Analyst: E_B
 Preparation Date: 01/17/2001 9:00 Prep By: R_T Method SW3010A

Lab Sample ID Client Sample ID
 01010371-01D MW-15
 01010371-02D MW-14

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_010117B-534401 Units: mg/L
 Analysis Date: 01/17/2001 19:35 Analyst: E_B
 Preparation Date: 01/17/2001 9:00 Prep By: R_T Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Barium	2	2	100	80	120
Cadmium	2	2.35	117	80	120
Calcium	20	20.9	104	80	120
Chromium	2	2.39	119	80	120
Magnesium	20	20.8	104	80	120
Potassium	20	20	100	80	120
Silver	2	2.01	100	80	120
Sodium	20	20.3	101	80	120

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

Sample Spiked: 01010371-01
 RunID: TJA_010117B-534406 Units: mg/L
 Analysis Date: 01/17/2001 19:57 Analyst: E_B
 Preparation Date: 01/17/2001 9:00 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
Cadmium	ND	1	1.05	105	1	1.07	107	1.4	20	75	125
Chromium	ND	1	1.05	105	1	1.07	107	1.7	20	75	125

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

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Quality Control Report

Brown & Caldwell

BJ Service #12832-022

Analysis: Metals by Method 6010B, Total
 Method: SW6010B

WorkOrder: 01010371

Lab Batch ID: 9679

Sample Spiked: 01010371-01
 RunID: TJA_010117B-534403 Units: mg/L
 Analysis Date: 01/17/2001 19:44 Analyst: E_B
 Preparation Date: 01/17/2001 9:00 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
Barium	0.073	1	1.05	98.2	1	1.06	99.0	0.887	20	75	125
Cadmium	ND	1	1.32	132 *	1	1	100	26.9 *	20	75	125
Calcium	150	10	162	120	10	162	118	1.04	20	75	125
Chromium	ND	1	1.31	131 *	1	1	100	26.9 *	20	75	125
Magnesium	28	10	39.4	111	10	39	107	3.60	20	75	125
Potassium	4.6	10	14	93.7	10	14.4	98.5	4.94	20	75	125
Silver	ND	1	0.979	97.9	1	0.99	99.0	1.08	20	75	125
Sodium	110	10	121	123	10	120	120	2.35	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

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Quality Control Report

Brown & Caldwell

BJ Service #12832-022

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 01010371

Lab Batch ID: 9704

Method Blank

Samples in Analytical Batch:

RunID: TJA_010118A-535193 Units: mg/Kg
Analysis Date: 01/18/2001 17:07 Analyst: E_B
Preparation Date: 01/18/2001 9:30 Prep By: R_T Method SW3050B

Lab Sample ID: 01010371-03B
Client Sample ID: Soil Cuttings, MW-14, MW-15

Analyte	Result	Rep Limit
Barium	ND	0.5
Cadmium	ND	0.5
Chromium	ND	1
Silver	ND	1

Laboratory Control Sample (LCS)

RunID: TJA_010118A-535194 Units: mg/Kg
Analysis Date: 01/18/2001 17:11 Analyst: E_B
Preparation Date: 01/18/2001 9:30 Prep By: R_T Method SW3050B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Barium	177	156	N/A	137	218
Cadmium	64	55.3	N/A	49.2	78.7
Chromium	143	124	N/A	114	171
Silver	90	80.1	N/A	67	113

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

Sample Spiked: 01010343-03
RunID: TJA_010118A-535199 Units: mg/Kg
Analysis Date: 01/18/2001 17:33 Analyst: E_B
Preparation Date: 01/18/2001 9:30 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
Barium	90.6	100	179	88.6	100	179	88.4	0.25	20	75	125
Cadmium	ND	100	88.6	88.6	100	92.1	92.1	3.9	20	75	125

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

Sample Spiked: 01010434-03
RunID: TJA_010118A-535196 Units: mg/Kg
Analysis Date: 01/18/2001 17:20 Analyst: E_B
Preparation Date: 01/18/2001 9:30 Prep By: R_T Method SW3050B

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

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Quality Control Report

Brown & Caldwell

BJ Service #12832-022

Analysis: Metals by Method 6010B, Total
 Method: SW6010B

WorkOrder: 01010371
 Lab Batch ID: 9704

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	91	100	164	73.1 *	100	168	77.4	5.73	20	75	125
Cadmium	ND	100	75.6	75.6	100	72.7	72.7 *	4.02	20	75	125
Chromium	6.2	100	91.9	85.7	100	87.2	81.0	5.63	20	75	125
Copper	ND	100	79.1	79.1	100	75.4	75.4	4.79	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

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Quality Control Report

Brown & Caldwell

BJ Service #12832-022

Analysis: Metals by Method 6010B, Total
 Method: SW6010B

WorkOrder: 01010371
 Lab Batch ID: 9704-T

Method Blank

Samples in Analytical Batch:

RunID: TJAT_010118A-536347 Units: mg/Kg
 Analysis Date: 01/18/2001 17:35 Analyst: EG
 Preparation Date: 01/18/2001 9:30 Prep By: R_T Method SW3050B

Lab Sample ID: 01010371-03B
 Client Sample ID: Soil Cuttings, MW-14, MW-15

Analyte	Result	Rep Limit
Arsenic	ND	0.5
Lead	ND	0.5
Selenium	ND	0.5

Laboratory Control Sample (LCS)

RunID: TJAT_010118A-536348 Units: mg/Kg
 Analysis Date: 01/18/2001 17:41 Analyst: EG
 Preparation Date: 01/18/2001 9:30 Prep By: R_T Method SW3050B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Arsenic	185	169	N/A	138	233
Lead	119	125	N/A	90.9	148
Selenium	150	143	N/A	111	188

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

Sample Spiked: 01010434-03
 RunID: TJAT_010118A-536352 Units: mg/Kg
 Analysis Date: 01/18/2001 17:57 Analyst: EG
 Preparation Date: 01/18/2001 9:30 Prep By: R_T Method SW3050B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Arsenic	2.6	200	167	82.2	200	163	80.4	2.30	20	75	125
Lead	7.9	100	90.6	82.7	100	86.5	78.5	5.15	20	75	125
Selenium	ND	200	170	84.8	200	164	81.9	3.44	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

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Quality Control Report

Brown & Caldwell

BJ Service #12832-022

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 01010371
Lab Batch ID: 9723-T

Method Blank

Samples in Analytical Batch:

RunID:	TJAT_010119C-536995	Units:	mg/L	Lab Sample ID	Client Sample ID
Analysis Date:	01/20/2001 0:43	Analyst:	EG	01010371-01D	MW-15
Preparation Date:	01/19/2001 9:55	Prep By:	R_T Method SW3010A	01010371-02D	MW-14

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

Laboratory Control Sample (LCS)

RunID: TJAT_010119C-536996 Units: mg/L
Analysis Date: 01/20/2001 0:49 Analyst: EG
Preparation Date: 01/19/2001 9:55 Prep By: R_T Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Arsenic	4	4.01	100	80	120
Lead	2	2.02	101	80	120
Selenium	4	4.14	103	80	120

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

Sample Spiked: 01010472-01
RunID: TJAT_010119C-536998 Units: mg/L
Analysis Date: 01/20/2001 1:05 Analyst: EG
Preparation Date: 01/19/2001 9:55 Prep By: R_T 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
Arsenic	ND	2	2.01	101	2	2.02	101	0.380	20	75	125
Lead	ND	1	0.988	98.8	1	0.989	98.9	0.101	20	75	125
Selenium	ND	2	2.07	103	2	2.08	104	0.583	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

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Quality Control Report

Brown & Caldwell

BJ Service #12832-022

Analysis: Mercury, Total
 Method: SW7471A

WorkOrder: 01010371
 Lab Batch ID: 9778A

Method Blank

Samples in Analytical Batch:

RunID: HGL_010122A-538490 Units: mg/Kg
 Analysis Date: 01/22/2001 13:17 Analyst: R_T
 Preparation Date: 01/22/2001 8:45 Prep By: Method

Lab Sample ID: 01010371-03B
 Client Sample ID: Soil Cuttings, MW-14, MW-15

Analyte	Result	Rep Limit
Mercury	ND	0.033

Laboratory Control Sample (LCS)

RunID: HGL_010122A-538491 Units: mg/Kg
 Analysis Date: 01/22/2001 13:17 Analyst: R_T
 Preparation Date: 01/22/2001 8:45 Prep By: R_T Method SW7471A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Mercury	3.13	2.8	N/A	1.83	4.44

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

Sample Spiked: 01010222-12
 RunID: HGL_010122A-538497 Units: mg/Kg
 Analysis Date: 01/22/2001 13:17 Analyst: R_T
 Preparation Date: 01/22/2001 8:45 Prep By: R_T Method SW7471A

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	0.12	0.33	0.498	114	0.33	0.422	91.2	22.3 *	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

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Quality Control Report

Brown & Caldwell
 BJ Service #12832-022

Analysis: Mercury, Total
 Method: SW7470A

WorkOrder: 01010371
 Lab Batch ID: 9794A

Method Blank

Samples in Analytical Batch:

RunID: _010123B-539251	Units: mg/L	<u>Lab Sample ID</u>	<u>Client Sample ID</u>
Analysis Date: 01/23/2001 11:11	Analyst: R_T	01010371-01D	MW-15
Preparation Date: 01/23/2001 9:00	Prep By: R_T Method SW7470A	01010371-02D	MW-14

Analyte	Result	Rep Limit
Mercury	ND	0.0002

Laboratory Control Sample (LCS)

RunID: _010123B-539252	Units: mg/L
Analysis Date: 01/23/2001 11:11	Analyst: R_T
Preparation Date: 01/23/2001 9:00	Prep By: R_T Method SW7470A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Mercury	0.002	0.00197	98	85	115

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

Sample Spiked: 01010512-01	Units: mg/L
RunID: _010123B-539182	Analyst: R_T
Analysis Date: 01/23/2001 11:11	Prep By: R_T Method SW7470A
Preparation Date: 01/23/2001 9:00	

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	0.00188	93.8	0.002	0.00188	93.8	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

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, TEXAS 77054
 (713) 660-0901

Quality Control Report

Brown & Caldwell
 BJ Service #12832-022

Analysis: Nitrogen, Nitrate (As N)
 Method: E300

WorkOrder: 01010371
 Lab Batch ID: R27758

Method Blank

Samples in Analytical Batch:

RunID: WET_010116F-532516 Units: mg/L
 Analysis Date: 01/16/2001 11:23 Analyst: KM

Lab Sample ID Client Sample ID
 01010371-01E MW-15
 01010371-02E MW-14

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

Laboratory Control Sample (LCS)

RunID: WET_010116F-532517 Units: mg/L
 Analysis Date: 01/16/2001 11:23 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen, Nitrate (As N)	10	9.37	94	90	110

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

Sample Spiked: 01010371-01
 RunID: WET_010116F-532519 Units: mg/L
 Analysis Date: 01/16/2001 11:23 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Nitrogen, Nitrate (As N)	4.9	10	14.7	98.7	10	14.7	98.7	0.0405	20	76	124

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

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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Quality Control Report

Brown & Caldwell
 BJ Service #12832-022

Analysis: Fluoride-IC
 Method: E300

WorkOrder: 01010371
 Lab Batch ID: R27759

Method Blank

Samples in Analytical Batch:

RunID: WET_010116G-532526 Units: mg/L
 Analysis Date: 01/16/2001 11:23 Analyst: KM

Lab Sample ID	Client Sample ID
01010371-01E	MW-15
01010371-02E	MW-14

Analyte	Result	Rep Limit
Fluoride	ND	0.10

Laboratory Control Sample (LCS)

RunID: WET_010116G-532527 Units: mg/L
 Analysis Date: 01/16/2001 11:23 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Fluoride	10	9.7	97	90	110

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

Sample Spiked: 01010371-01
 RunID: WET_010116G-532529 Units: mg/L
 Analysis Date: 01/16/2001 11:23 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Fluoride	1.2	10	10	93.1	10	11	95.2	2.19	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

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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Quality Control Report

Brown & Caldwell
 BJ Service #12832-022

Analysis: Sulfate
 Method: E300

WorkOrder: 01010371
 Lab Batch ID: R27760

Method Blank

Samples in Analytical Batch:

RunID: WET_010116H-532536 Units: mg/L
 Analysis Date: 01/16/2001 11:23 Analyst: KM

Lab Sample ID	Client Sample ID
01010371-01E	MW-15
01010371-02E	MW-14

Analyte	Result	Rep Limit
Sulfate	ND	0.20

Laboratory Control Sample (LCS)

RunID: WET_010116H-532537 Units: mg/L
 Analysis Date: 01/16/2001 11:23 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10	9.9	99	90	110

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

Sample Spiked: 01010371-01
 RunID: WET_010116H-532539 Units: mg/L
 Analysis Date: 01/16/2001 11:23 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	ND	200	330	97.8	200	330	98.4	0.649	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

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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Quality Control Report

Brown & Caldwell
 BJ Service #12832-022

Analysis: Alkalinity, Bicarbonate
 Method: M2320 B

WorkOrder: 01010371
 Lab Batch ID: R27812

Method Blank

Samples in Analytical Batch:

RunID: WET_010117B-533553 Units: mg/L
 Analysis Date: 01/17/2001 12:00 Analyst: SN

Lab Sample ID	Client Sample ID
01010371-01F	MW-15
01010371-02F	MW-14

Analyte	Result	Rep Limit
Alkalinity, Bicarbonate	ND	2.0

Laboratory Control Sample (LCS)

RunID: WET_010117B-533555 Units: mg/L
 Analysis Date: 01/17/2001 12:00 Analyst: SN

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Bicarbonate	23.4	24.2	104	90	110

Sample Duplicate

Original Sample: 01010371-01
 RunID: WET_010117B-533556 Units: mg/L
 Analysis Date: 01/17/2001 12:00 Analyst: SN

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Alkalinity, Bicarbonate	250	250	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

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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Quality Control Report

Brown & Caldwell

BJ Service #12832-022

Analysis: Alkalinity, Carbonate
 Method: M2320 B

WorkOrder: 01010371
 Lab Batch ID: R27814

Method Blank

Samples in Analytical Batch:

RunID: WET_010117C-533576 Units: mg/L
 Analysis Date: 01/17/2001 12:00 Analyst: SN

Lab Sample ID	Client Sample ID
01010371-01F	MW-15
01010371-02F	MW-14

Analyte	Result	Rep Limit
Alkalinity, Carbonate	ND	2.0

Laboratory Control Sample (LCS)

RunID: WET_010117C-533578 Units: mg/L
 Analysis Date: 01/17/2001 12:00 Analyst: SN

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Carbonate	23.4	24.2	104	90	110

Sample Duplicate

Original Sample: 01010371-01
 RunID: WET_010117C-533579 Units: mg/L
 Analysis Date: 01/17/2001 12:00 Analyst: SN

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

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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Quality Control Report

Brown & Caldwell
 BJ Service #12832-022

Analysis: Chloride, Total
 Method: E325.3

WorkOrder: 01010371
 Lab Batch ID: R27983

Method Blank

Samples in Analytical Batch:

RunID:	WET_010118L-536138	Units:	mg/L	<u>Lab Sample ID</u>	<u>Client Sample ID</u>
Analysis Date:	01/18/2001 14:30	Analyst:	CV	01010371-01E	MW-15
				01010371-02E	MW-14

Analyte	Result	Rep Limit
Chloride	ND	1.0

Laboratory Control Sample (LCS)

RunID: WET_010118L-536140 Units: mg/L
 Analysis Date: 01/18/2001 14:30 Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	109	112	103	90	110

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

Sample Spiked: 01010371-01
 RunID: WET_010118L-536142 Units: mg/L
 Analysis Date: 01/18/2001 14:30 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
Chloride	ND	250	473	102	250	473	102	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

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*



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

Sample Receipt Checklist

Workorder: 01010371
Date and Time Received: 1/16/01 10:00:00 AM
Temperature: 3

Received by: Stelly, D'Anna
Carrier name: FedEx

- | | | | |
|---|---|--|---|
| Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| Custody seals intact on shipping container/cooler? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Chain of custody agrees with sample labels? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Container/Temp Blank temperature in compliance? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Water - VOA vials have zero headspace? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| Water - pH acceptable upon receipt? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

01010371

085943

page 1 of 2

Requested Analysis

Client Name: Brown and Caldwell

Address/Phone: 1415 Louisiana, Suite 2500

Client Contact: Rick Rexroad 713.646.1129

Project Name: BT Services

Project Number: 12832-D22

Project Location: Hobbs, NM

Invoice To: Brown and Caldwell

Matrix: W=water S=soil SL=sludge O=other

Bottle: P=plastic A=amber glass G=glass V=vial

Size: 1=1 liter 4=4oz 40=vial 8=8oz 16=16oz

Pres.: 1=HCl 2=HNO3 3=H2SO4 O=other

Number of Containers

BTX 8021, TPH 8015 G

PAH 8310

TPH 8015 D

8RCRA metals Ca, Mg, K, Na

Cl⁻, NO₃⁻, SO₄⁻², F⁻

CO₃, HCO₃

Intact? Y N

Temp: 5

PM activity (optional):

Special Reporting Requirements

Standard QC Level 3 QC Raw Data Level 4 QC

1. Relinquished by Sampler: *Steve Fosha*

2. Received by: *FED-EX*

3. Relinquished by: *Steve Fosha*

4. Received by: *Sammo*

5. Relinquished by: *Sammo*

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Requested Analysis
MW-14-15	1-14-00	14:00	SEV	✓	W	V	40ml	1	3	BTX 8021, TPH 8015 G
		15:00	SEV	✓	W	A	32oz	1	2	PAH 8310
		16:00	SEV	✓	W	A	32oz	1	2	TPH 8015 D
		16:00	SEV	✓	W	P	32oz	2	1	8RCRA metals Ca, Mg, K, Na
		16:00	SEV	✓	W	P	32oz	1	1	Cl ⁻ , NO ₃ ⁻ , SO ₄ ⁻² , F ⁻
		16:00	SEV	✓	W	P	32oz	1	1	CO ₃ , HCO ₃
MW-14	1-14-00	16:00		✓	W	V	40ml	1	3	
	1-14-00	16:00		✓	W	A	32oz	1	2	
Soil cuttings, MW-14	1-14-00	15:00		✓	S	G	8oz	1	1	

Client/Consultant Remarks: Laboratory remarks: Left Me's Seagr 1-17-01 soil cuttings and wet have analyses. Per R. Rexroad analyze soil cuttings for PCB/DRO + metals. 1-17-01 2:00pm.

Requested TAT

24hr 72hr

48hr Standard

Other

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

500 Ambassador Caffery Parkway, Scott, LA 70582 (318) 237-4775

159-H... Tre... 49664 (61) 607-57



SPL, Inc.

SPL Workorder No.

01010371

085942

page 2 of 2

Analysis Request & Chain of Custody Record

Client Name: **B&S Services Brown and Caldwell**

Address/Phone: **1415 Louisiana, Ste 2500, Houston**

Client Contact: **Rick Rekrad 713.646.1129**

Project Name: **BS Services**

Project Number: **12832-022**

Project Location: **Hobbs, NM**

Invoice To: **Brown and Caldwell**

SAMPLE ID

DATE

TIME

comp grab

matrix bottle size pres.

W=water S=soil SL=sludge O=other: P=plastic A=amber glass G=glass V=vial

1=1 liter 4=4oz 40=40oz 8=8oz 16=16oz

1=HCl 2=HNO3 3=H2SO4 O=other:

Number of Containers

Requested Analysis

PAH 8310
8 RCRA Metals
Ca, Mg, K, Na

Cl⁻, NO₃⁻, SO₄²⁻, F⁻

CO₃, HCO₃

11/10

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Requested Analysis
MW-14	1-14-00	16:00			W	A	32oz	-	2	PAH 8310 8 RCRA Metals Ca, Mg, K, Na
					W	P	32oz	2	1	Cl ⁻ , NO ₃ ⁻ , SO ₄ ²⁻ , F ⁻
					W	P	32oz	-	1	CO ₃ , HCO ₃
MW-14	1-14-00	16:00			W	P	32oz	-	1	

Client/Consultant Remarks:

Laboratory remarks:

Initial? Y N

Requested TAT

Special Reporting Requirements

Fast Results

Level 3 QC

Raw Data

Special Detection Limits (specify):

PM review (initials): **PM**

24hr 72hr

48hr Standard

Other

1. Relinquished by Samples: **Scott E. Johnson**

3. Relinquished by: **date**

date **1-15-00** time **17:30**

2. Received by: **FED-CX**

4. Received by: **date** time

6. Received by Laboratory: **1/16/01**

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

500 Ambassador Caffery Parkway, Scott, LA 70563 (318) 237-4775

459-Hobbs Drive, Tarboro, NC 27861 (610) 947-5777



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

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
01020760

<p>Report To:</p> <p>Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886</p>	<p>Project Name: BJ Service, Hobbs, NM</p> <p>Site: Hobbs, NM</p> <p>Site Address:</p> <p>PO Number:</p> <p>State: New Mexico</p> <p>State Cert. No.:</p> <p>Date Reported:</p>
--	---

Upon receipt of you samples it was found that sample was not received on March 9, 2001 for your sample "MW-7". Also, sample was received on March 9, 2001 for Trip Blank but was not listed on the chain of custody. On March 10, 2001, sample was not received for Trip Blank and sample was received for "MW-7". Tim Jenkins was notified of all non-conformance issues on March 9, 2001.

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.

Sonia West
 West, Sonia
 Senior Project Manager

3/30/01

Date



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

Brown & Caldwell

Certificate of Analysis Number:

01020760

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, Hobbs, NM Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported:
Fax To: Brown & Caldwell Rick Rexroad fax: (713) 308-3886	

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	01020760-01	Water	3/8/01 12:40:00 PM	3/9/01 09:30:00 AM	100825	<input type="checkbox"/>
MW-3	01020760-02	Water	3/8/01 11:20:00 AM	3/9/01 09:30:00 AM	100825	<input type="checkbox"/>
MW-4	01020760-03	Water	3/8/01 01:45:00 PM	3/9/01 09:30:00 AM	100825	<input type="checkbox"/>
MW-5	01020760-04	Water	3/8/01 10:15:00 AM	3/9/01 09:30:00 AM	100825	<input type="checkbox"/>
MW-5	01020760-04	Water	3/8/01 10:15:00 AM	3/10/01 10:00:00 AM	100825	<input type="checkbox"/>
MW-7	01020760-05	Water	3/8/01 10:50:00 AM	3/10/01 10:00:00 AM	100821	<input type="checkbox"/>
MW-8	01020760-06	Water	3/9/01 09:10:00 AM	3/9/01 09:30:00 AM	100821	<input type="checkbox"/>
MW-8	01020760-06	Water	3/9/01 09:10:00 AM	3/10/01 10:00:00 AM	100821	<input type="checkbox"/>
MW-9	01020760-07	Water	3/8/01 11:50:00 AM	3/9/01 09:30:00 AM	100825	<input type="checkbox"/>
MW-10	01020760-08	Water	3/9/01 09:30:00 AM	3/10/01 10:00:00 AM	100821	<input type="checkbox"/>
MW-11A	01020760-09	Water	3/8/01 03:15:00 PM	3/9/01 09:30:00 AM	100826	<input type="checkbox"/>
MW-12	01020760-10	Water	3/8/01 04:10:00 PM	3/9/01 09:30:00 AM	100825	<input type="checkbox"/>
MW-13	01020760-11	Water	3/8/01 02:30:00 PM	3/9/01 09:30:00 AM	100825	<input type="checkbox"/>
MW-14	01020760-12	Water	3/8/01 09:30:00 AM	3/9/01 09:30:00 AM	100825	<input type="checkbox"/>
MW-15	01020760-13	Water	3/8/01 09:45:00 AM	3/9/01 09:30:00 AM	100825	<input type="checkbox"/>
Duplicate	01020760-15	Water	3/9/01	3/10/01 10:00:00 AM	100821	<input type="checkbox"/>
Tip Blank 2/28/01	01020760-16	Water	3/9/01	3/10/01 10:00:00 AM	100821	<input type="checkbox"/>
MW-7	01020760-17	Water	3/9/01 09:50:00 AM	3/10/01 10:00:00 AM	100821	<input type="checkbox"/>

Sonia West
 West, Sonia
 Senior Project Manager

3/30/01
 Date

Joel Grice
 Laboratory Director
 Ted Yen
 Quality Assurance Officer



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

Client Sample ID MW-1 Collected: 3/8/01 12:40:00 SPL Sample ID: 01020760-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL		Units: mg/L	
Alkalinity, Bicarbonate	90.9	2	1	M2320 B	03/12/01 10:15	SN	597232
ALKALINITY, CARBONATE				MCL		Units: mg/L	
Alkalinity, Carbonate	ND	2	1	M2320 B	03/12/01 10:15	SN	597332
CHLORIDE, TOTAL				MCL		Units: mg/L	
Chloride	181	5	5	E325.3	03/20/01 11:30	CV	610204
DIESEL RANGE ORGANICS				MCL		Units: mg/L	
Diesel Range Organics	0.49	0.25	1	SW8015B	03/20/01 18:38	AM	609585
Surr: n-Pentacosane	116	% 18-120	1		03/20/01 18:38	AM	609585

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 7:52	KL

FLUORIDE-IC				MCL		Units: mg/L	
Fluoride	1.3	0.1	1	E300	03/09/01 11:53	KM	594811
GASOLINE RANGE ORGANICS				MCL		Units: mg/L	
Gasoline Range Organics	0.58	0.1	1	SW8015B	03/18/01 19:36	D_R	605444
Surr: 1,4-Difluorobenzene	90.7	% 74-121	1		03/18/01 19:36	D_R	605444
Surr: 4-Bromofluorobenzene	94.7	% 55-150	1		03/18/01 19:36	D_R	605444

HARDNESS, TOTAL (TITRIMETRIC, EDTA)				MCL		Units: mg/L	
Hardness (As CaCO3)	310	50	10	E130.2	03/21/01 13:30	CV	612340

HEADSPACE GAS ANALYSIS				MCL		Units: mg/L	
Ethane	ND	0.0025	1	RSK147	03/23/01 10:48	A_A	612655
Ethylene	ND	0.0032	1		03/23/01 10:48	A_A	612655
Methane	ND	0.0012	1		03/23/01 10:48	A_A	612655

MERCURY, TOTAL				MCL		Units: mg/L	
Mercury	ND	0.0002	1	SW7470A	03/21/01 16:24	R_T	610975

Prep Method	Prep Date	Prep Initials
SW7470A	03/21/2001 13:40	R_T

METALS BY METHOD 6010B, TOTAL				MCL		Units: mg/L	
Arsenic	0.0205	0.005	1	SW6010B	03/15/01 21:52	NS	602623
Lead	ND	0.005	1		03/15/01 21:52	NS	602623
Selenium	ND	0.005	1		03/15/01 21:52	NS	602623
Barium	0.044	0.005	1		03/17/01 2:47	E_B	605387
Cadmium	ND	0.005	1		03/17/01 2:47	E_B	605387
Calcium	86.8	0.1	1		03/17/01 2:47	E_B	605387
Chromium	ND	0.01	1		03/17/01 2:47	E_B	605387

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-1

Collected: 3/8/01 12:40:00

SPL Sample ID: 01020760-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Magnesium	20.7	0.1	1		03/17/01 2:47	E_B	605387
Potassium	ND	2	1		03/17/01 2:47	E_B	605387
Silver	ND	0.01	1		03/17/01 2:47	E_B	605387
Sodium	141	0.5	1		03/17/01 2:47	E_B	605387

Prep Method	Prep Date	Prep Initials
SW3010A	03/12/2001 15:00	MME

NITROGEN, NITRATE (AS N)	MCL	E300	Units: mg/L
Nitrogen, Nitrate (As N)	4.31	0.1	1 03/09/01 11:53 KM 594832

POLYNUCLEAR AROMATIC HYDROCARBONS	MCL	SW8310	Units: ug/L
Acenaphthene	ND	0.12	1 03/14/01 22:12 KA 606022
Acenaphthylene	ND	0.12	1 03/14/01 22:12 KA 606022
Anthracene	ND	0.12	1 03/14/01 22:12 KA 606022
Benz(a)anthracene	ND	0.12	1 03/14/01 22:12 KA 606022
Benzo(a)pyrene	ND	0.12	1 03/14/01 22:12 KA 606022
Benzo(b)fluoranthene	ND	0.12	1 03/14/01 22:12 KA 606022
Benzo(g,h,i)perylene	ND	0.12	1 03/14/01 22:12 KA 606022
Benzo(k)fluoranthene	ND	0.12	1 03/14/01 22:12 KA 606022
Chrysene	ND	0.12	1 03/14/01 22:12 KA 606022
Dibenzo(a,h)anthracene	ND	0.12	1 03/14/01 22:12 KA 606022
Fluoranthene	ND	0.12	1 03/14/01 22:12 KA 606022
Fluorene	ND	0.12	1 03/14/01 22:12 KA 606022
Indeno(1,2,3-cd)pyrene	ND	0.12	1 03/14/01 22:12 KA 606022
Naphthalene	ND	0.12	1 03/14/01 22:12 KA 606022
Phenanthrene	ND	0.12	1 03/14/01 22:12 KA 606022
Pyrene	ND	0.12	1 03/14/01 22:12 KA 606022
Surr: 1-Fluoronaphthalene	40.2	% 15-96	1 03/14/01 22:12 KA 606022
Surr: Phenanthrene-d10	61.1	% 33-108	1 03/14/01 22:12 KA 606022

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

PURGEABLE AROMATICS	MCL	SW8021B	Units: ug/L
Benzene	2	1	1 03/27/01 16:33 D_R 617963
Ethylbenzene	ND	1	1 03/27/01 16:33 D_R 617963
Toluene	ND	1	1 03/27/01 16:33 D_R 617963
Xylenes, Total	ND	1	1 03/27/01 16:33 D_R 617963
Surr: 1,4-Difluorobenzene	108	% 72-137	1 03/27/01 16:33 D_R 617963
Surr: 4-Bromofluorobenzene	82.9	% 48-156	1 03/27/01 16:33 D_R 617963

SULFATE	MCL	E300	Units: mg/L
Sulfate	210	4	20 03/09/01 11:53 KM 594874

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-3

Collected: 3/8/01 11:20:00

SPL Sample ID: 01020760-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Magnesium	24.9	0.1	1		03/17/01 2:51	E_B	605388
Potassium	2.56	2	1		03/17/01 2:51	E_B	605388
Silver	ND	0.01	1		03/17/01 2:51	E_B	605388
Sodium	124	0.5	1		03/17/01 2:51	E_B	605388

Prep Method	Prep Date	Prep Initials
SW3010A	03/20/2001 12:35	MME
SW3010A	03/12/2001 15:00	MME

NITROGEN, NITRATE (AS N)	MCL	E300	Units: mg/L
Nitrogen, Nitrate (As N)	2.56	0.1	1 03/09/01 11:53 KM 594835

POLYNUCLEAR AROMATIC HYDROCARBONS	MCL	SW8310	Units: ug/L
Acenaphthene	ND	0.13	1 03/15/01 5:00 KA 611375
Acenaphthylene	ND	0.13	1 03/15/01 5:00 KA 611375
Anthracene	ND	0.13	1 03/15/01 5:00 KA 611375
Benz(a)anthracene	ND	0.13	1 03/15/01 5:00 KA 611375
Benzo(a)pyrene	ND	0.13	1 03/15/01 5:00 KA 611375
Benzo(b)fluoranthene	ND	0.13	1 03/15/01 5:00 KA 611375
Benzo(g,h,i)perylene	ND	0.13	1 03/15/01 5:00 KA 611375
Benzo(k)fluoranthene	ND	0.13	1 03/15/01 5:00 KA 611375
Chrysene	ND	0.13	1 03/15/01 5:00 KA 611375
Dibenzo(a,h)anthracene	ND	0.13	1 03/15/01 5:00 KA 611375
Fluoranthene	ND	0.13	1 03/15/01 5:00 KA 611375
Fluorene	ND	0.13	1 03/15/01 5:00 KA 611375
Indeno(1,2,3-cd)pyrene	ND	0.13	1 03/15/01 5:00 KA 611375
Naphthalene	ND	0.13	1 03/15/01 5:00 KA 611375
Phenanthrene	ND	0.13	1 03/15/01 5:00 KA 611375
Pyrene	ND	0.13	1 03/15/01 5:00 KA 611375
Surr: 1-Fluoronaphthalene	30.9	% 15-96	1 03/15/01 5:00 KA 611375
Surr: Phenanthrene-d10	54.4	% 33-108	1 03/15/01 5:00 KA 611375

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

PURGEABLE AROMATICS	MCL	SW8021B	Units: ug/L
Benzene	ND	1	1 03/17/01 4:48 D_R 604380
Ethylbenzene	ND	1	1 03/17/01 4:48 D_R 604380
Toluene	ND	1	1 03/17/01 4:48 D_R 604380
Xylenes, Total	ND	1	1 03/17/01 4:48 D_R 604380
Surr: 1,4-Difluorobenzene	94.8	% 72-137	1 03/17/01 4:48 D_R 604380
Surr: 4-Bromofluorobenzene	94.4	% 48-156	1 03/17/01 4:48 D_R 604380

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-3 Collected: 3/8/01 11:20:00 SPL Sample ID: 01020760-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
SULFATE			MCL	E300	Units: mg/L		
Sulfate	170	2	10		03/09/01 11:53	KM	594878

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



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

Client Sample ID MW-4

Collected: 3/8/01 1:45:00 P SPL Sample ID: 01020760-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	232	2	1		03/12/01 10:15	SN	597236
ALKALINITY, CARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2	1		03/12/01 10:15	SN	597336
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	172	2	2		03/20/01 11:30	CV	610208
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	0.43	0.27	1		03/20/01 21:12	AM	609595
Surr: n-Pentacosane	85.2 %	18-120	1		03/20/01 21:12	AM	609595

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 7:52	KL

FLUORIDE-IC	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
FLUORIDE-IC				MCL	E300	Units: mg/L	
Fluoride	0.63	0.1	1		03/09/01 11:53	KM	594815

GASOLINE RANGE ORGANICS	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	0.16	0.1	1		03/17/01 5:15	D_R	604418
Surr: 1,4-Difluorobenzene	90.3 %	74-121	1		03/17/01 5:15	D_R	604418
Surr: 4-Bromofluorobenzene	95.3 %	55-150	1		03/17/01 5:15	D_R	604418

HARDNESS, TOTAL (TITRIMETRIC, EDTA)	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
HARDNESS, TOTAL (TITRIMETRIC, EDTA)				MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	610	50	10		03/21/01 13:30	CV	612346

HEADSPACE GAS ANALYSIS	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg/L	
Ethane	ND	0.0025	1		03/23/01 11:39	A_A	612863
Ethylene	ND	0.0032	1		03/23/01 11:39	A_A	612863
Methane	ND	0.0012	1		03/23/01 11:39	A_A	612863

MERCURY, TOTAL	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002	1		03/21/01 16:24	R_T	610987

Prep Method	Prep Date	Prep Initials
SW7470A	03/21/2001 13:40	R_T

METALS BY METHOD 6010B, TOTAL	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, TOTAL				MCL	SW6010B	Units: mg/L	
Arsenic	0.0386	0.005	1		03/15/01 22:18	NS	602627
Lead	0.00602	0.005	1		03/15/01 22:18	NS	602627
Selenium	0.00508	0.005	1		03/15/01 22:18	NS	602627
Barium	0.0978	0.005	1		03/17/01 2:55	E_B	605389
Cadmium	0.0121	0.005	1		03/17/01 2:55	E_B	605389
Calcium	214	0.1	1		03/17/01 2:55	E_B	605389
Chromium	0.0104	0.01	1		03/17/01 2:55	E_B	605389

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-4

Collected: 3/8/01 1:45:00 P SPL Sample ID: 01020760-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Magnesium	25.9	0.1	1		03/17/01 2:55	E_B	605389
Potassium	2.76	2	1		03/17/01 2:55	E_B	605389
Silver	ND	0.01	1		03/17/01 2:55	E_B	605389
Sodium	135	0.5	1		03/17/01 2:55	E_B	605389

Prep Method	Prep Date	Prep Initials
SW3010A	03/12/2001 15:00	MME

NITROGEN, NITRATE (AS N)		MCL	E300	Units: mg/L	
Nitrogen, Nitrate (As N)	4.75	0.1	1	03/09/01 11:53	KM 594836

POLYNUCLEAR AROMATIC HYDROCARBONS		MCL	SW8310	Units: ug/L	
Acenaphthene	ND	0.12	1	03/15/01 5:37	KA 611376
Acenaphthylene	ND	0.12	1	03/15/01 5:37	KA 611376
Anthracene	ND	0.12	1	03/15/01 5:37	KA 611376
Benz(a)anthracene	ND	0.12	1	03/15/01 5:37	KA 611376
Benzo(a)pyrene	ND	0.12	1	03/15/01 5:37	KA 611376
Benzo(b)fluoranthene	ND	0.12	1	03/15/01 5:37	KA 611376
Benzo(g,h,i)perylene	ND	0.12	1	03/15/01 5:37	KA 611376
Benzo(k)fluoranthene	ND	0.12	1	03/15/01 5:37	KA 611376
Chrysene	ND	0.12	1	03/15/01 5:37	KA 611376
Dibenzo(a,h)anthracene	ND	0.12	1	03/15/01 5:37	KA 611376
Fluoranthene	ND	0.12	1	03/15/01 5:37	KA 611376
Fluorene	ND	0.12	1	03/15/01 5:37	KA 611376
Indeno(1,2,3-cd)pyrene	ND	0.12	1	03/15/01 5:37	KA 611376
Naphthalene	ND	0.12	1	03/15/01 5:37	KA 611376
Phenanthrene	ND	0.12	1	03/15/01 5:37	KA 611376
Pyrene	ND	0.12	1	03/15/01 5:37	KA 611376
Surr: 1-Fluoronaphthalene	40.7	% 15-96	1	03/15/01 5:37	KA 611376
Surr: Phenanthrene-d10	80.3	% 33-108	1	03/15/01 5:37	KA 611376

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

PURGEABLE AROMATICS		MCL	SW8021B	Units: ug/L	
Benzene	ND	1	1	03/17/01 5:15	D_R 604381
Ethylbenzene	ND	1	1	03/17/01 5:15	D_R 604381
Toluene	ND	1	1	03/17/01 5:15	D_R 604381
Xylenes, Total	ND	1	1	03/17/01 5:15	D_R 604381
Surr: 1,4-Difluorobenzene	89.4	% 72-137	1	03/17/01 5:15	D_R 604381
Surr: 4-Bromofluorobenzene	93.7	% 48-156	1	03/17/01 5:15	D_R 604381

SULFATE		MCL	E300	Units: mg/L	
Sulfate	180	2	10	03/09/01 11:53	KM 594880

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-5 Collected: 3/8/01 10:15:00 SPL Sample ID: 01020760-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	222	2	1		03/12/01 10:15	SN	597237
ALKALINITY, CARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2	1		03/12/01 10:15	SN	597337
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	152	2	2		03/20/01 11:30	CV	610209
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	0.56	0.22	1		03/20/01 21:51	AM	609596
Surr: n-Pentacosane	95.6 %	18-120	1		03/20/01 21:51	AM	609596

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 7:52	KL

FLUORIDE-IC				MCL	E300	Units: mg/L	
Fluoride	0.86	0.1	1		03/09/01 11:53	KM	594816
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND	0.1	1		03/17/01 5:42	D_R	604419
Surr: 1,4-Difluorobenzene	91.3 %	74-121	1		03/17/01 5:42	D_R	604419
Surr: 4-Bromofluorobenzene	94.0 %	55-150	1		03/17/01 5:42	D_R	604419
HARDNESS, TOTAL (TITRIMETRIC, EDTA)				MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	440	25	5		03/21/01 13:30	CV	612348
HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg/L	
Ethane	ND	0.0025	1		03/23/01 11:51	A_A	612866
Ethylene	ND	0.0032	1		03/23/01 11:51	A_A	612866
Methane	ND	0.0012	1		03/23/01 11:51	A_A	612866
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002	1		03/21/01 16:24	R_T	610988

Prep Method	Prep Date	Prep Initials
SW7470A	03/21/2001 13:40	R_T

METALS BY METHOD 6010B, TOTAL				MCL	SW6010B	Units: mg/L	
Arsenic	0.00974	0.005	1		03/15/01 22:24	NS	602628
Lead	ND	0.005	1		03/15/01 22:24	NS	602628
Selenium	0.00587	0.005	1		03/15/01 22:24	NS	602628
Barium	0.055	0.005	1		03/17/01 2:59	E_B	605390
Cadmium	ND	0.005	1		03/17/01 2:59	E_B	605390
Calcium	157	0.1	1		03/17/01 2:59	E_B	605390
Chromium	0.0101	0.01	1		03/17/01 2:59	E_B	605390

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-5

Collected: 3/8/01 10:15:00 SPL Sample ID: 01020760-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Magnesium	16.6	0.1	1		03/17/01 2:59	E_B	605390
Potassium	2.25	2	1		03/17/01 2:59	E_B	605390
Silver	ND	0.01	1		03/17/01 2:59	E_B	605390
Sodium	147	0.5	1		03/17/01 2:59	E_B	605390

Prep Method	Prep Date	Prep Initials
SW3010A	03/12/2001 15:00	MME

NITROGEN, NITRATE (AS N)	MCL	E300	Units: mg/L
Nitrogen, Nitrate (As N)	3.24	0.1	1 03/09/01 11:53 KM 594837

POLYNUCLEAR AROMATIC HYDROCARBONS	MCL	SW8310	Units: ug/L
Acenaphthene	ND	0.1	1 03/15/01 6:14 KA 611377
Acenaphthylene	ND	0.1	1 03/15/01 6:14 KA 611377
Anthracene	ND	0.1	1 03/15/01 6:14 KA 611377
Benz(a)anthracene	ND	0.1	1 03/15/01 6:14 KA 611377
Benzo(a)pyrene	ND	0.1	1 03/15/01 6:14 KA 611377
Benzo(b)fluoranthene	ND	0.1	1 03/15/01 6:14 KA 611377
Benzo(g,h,i)perylene	ND	0.1	1 03/15/01 6:14 KA 611377
Benzo(k)fluoranthene	ND	0.1	1 03/15/01 6:14 KA 611377
Chrysene	ND	0.1	1 03/15/01 6:14 KA 611377
Dibenzo(a,h)anthracene	ND	0.1	1 03/15/01 6:14 KA 611377
Fluoranthene	ND	0.1	1 03/15/01 6:14 KA 611377
Fluorene	ND	0.1	1 03/15/01 6:14 KA 611377
Indeno(1,2,3-cd)pyrene	ND	0.1	1 03/15/01 6:14 KA 611377
Naphthalene	ND	0.1	1 03/15/01 6:14 KA 611377
Phenanthrene	ND	0.1	1 03/15/01 6:14 KA 611377
Pyrene	ND	0.1	1 03/15/01 6:14 KA 611377
Surr: 1-Fluoronaphthalene	51.4	% 15-96	1 03/15/01 6:14 KA 611377
Surr: Phenanthrene-d10	77.3	% 33-108	1 03/15/01 6:14 KA 611377

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

PURGEABLE AROMATICS	MCL	SW8021B	Units: ug/L
Benzene	ND	1	1 03/17/01 5:42 D_R 604384
Ethylbenzene	ND	1	1 03/17/01 5:42 D_R 604384
Toluene	ND	1	1 03/17/01 5:42 D_R 604384
Xylenes, Total	ND	1	1 03/17/01 5:42 D_R 604384
Surr: 1,4-Difluorobenzene	94.3	% 72-137	1 03/17/01 5:42 D_R 604384
Surr: 4-Bromofluorobenzene	90.4	% 48-156	1 03/17/01 5:42 D_R 604384

SULFATE	MCL	E300	Units: mg/L
Sulfate	180	2	10 03/09/01 11:53 KM 594881

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-7

Collected: 3/8/01 10:50:00

SPL Sample ID: 01020760-05

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		03/17/01 6:09	D_R	604420
Surr: 1,4-Difluorobenzene	91.3	% 74-121	1		03/17/01 6:09	D_R	604420
Surr: 4-Bromofluorobenzene	99.0	% 55-150	1		03/17/01 6:09	D_R	604420
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		03/23/01 12:06	A_A	612869
Ethylene	ND	0.0032	1		03/23/01 12:06	A_A	612869
Methane	ND	0.0012	1		03/23/01 12:06	A_A	612869
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		03/17/01 6:09	D_R	604385
Ethylbenzene	ND	1	1		03/17/01 6:09	D_R	604385
Toluene	ND	1	1		03/17/01 6:09	D_R	604385
Xylenes, Total	ND	1	1		03/17/01 6:09	D_R	604385
Surr: 1,4-Difluorobenzene	93.1	% 72-137	1		03/17/01 6:09	D_R	604385
Surr: 4-Bromofluorobenzene	90.1	% 48-156	1		03/17/01 6:09	D_R	604385

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



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

Client Sample ID MW-8

Collected: 3/9/01 9:10:00 A SPL Sample ID: 01020760-06

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	252	2	1		03/12/01 10:15	SN	597239
ALKALINITY, CARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2	1		03/12/01 10:15	SN	597339
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	250	5	5		03/20/01 11:30	CV	610210
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	1.6	0.29	1		03/20/01 22:29	AM	609600
Surr: n-Pentacosane	108	% 18-120	1		03/20/01 22:29	AM	609600

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 7:52	KL

FLUORIDE-IC	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
FLUORIDE-IC				MCL	E300	Units: mg/L	
Fluoride	0.66	0.1	1		03/10/01 15:14	KM	594896

GASOLINE RANGE ORGANICS	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND	0.1	1		03/17/01 6:36	D_R	604421
Surr: 1,4-Difluorobenzene	92.3	% 74-121	1		03/17/01 6:36	D_R	604421
Surr: 4-Bromofluorobenzene	95.7	% 55-150	1		03/17/01 6:36	D_R	604421

HARDNESS, TOTAL (TITRIMETRIC, EDTA)	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
HARDNESS, TOTAL (TITRIMETRIC, EDTA)				MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	590	50	10		03/21/01 13:30	CV	612349

HEADSPACE GAS ANALYSIS	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg/L	
Ethane	ND	0.0025	1		03/23/01 13:02	A_A	612877
Ethylene	ND	0.0032	1		03/23/01 13:02	A_A	612877
Methane	ND	0.0012	1		03/23/01 13:02	A_A	612877

MERCURY, TOTAL	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002	1		03/21/01 16:24	R_T	610989

Prep Method	Prep Date	Prep Initials
SW7470A	03/21/2001 13:40	R_T

METALS BY METHOD 6010B, TOTAL	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, TOTAL				MCL	SW6010B	Units: mg/L	
Arsenic	0.0061	0.005	1		03/15/01 22:29	NS	602629
Lead	ND	0.005	1		03/15/01 22:29	NS	602629
Selenium	ND	0.005	1		03/15/01 22:29	NS	602629
Barium	0.0512	0.005	1		03/17/01 3:04	E_B	605391
Cadmium	ND	0.005	1		03/17/01 3:04	E_B	605391
Calcium	183	0.1	1		03/17/01 3:04	E_B	605391
Chromium	ND	0.01	1		03/17/01 3:04	E_B	605391

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-8

Collected: 3/9/01 9:10:00 A SPL Sample ID: 01020760-06

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Magnesium	37.4	0.1	1		03/17/01 3:04	E_B	605391
Potassium	2.94	2	1		03/17/01 3:04	E_B	605391
Silver	ND	0.01	1		03/17/01 3:04	E_B	605391
Sodium	118	0.5	1		03/17/01 3:04	E_B	605391

Prep Method	Prep Date	Prep Initials
SW3010A	03/12/2001 15:00	MME

NITROGEN, NITRATE (AS N)	MCL	E300	Units: mg/L
Nitrogen, Nitrate (As N)	0.664	0.1	1 03/10/01 15:14 KM 594956

POLYNUCLEAR AROMATIC HYDROCARBONS	MCL	SW8310	Units: ug/L
Acenaphthene	ND	0.12	1 03/15/01 6:51 KA 611378
Acenaphthylene	ND	0.12	1 03/15/01 6:51 KA 611378
Anthracene	ND	0.12	1 03/15/01 6:51 KA 611378
Benz(a)anthracene	ND	0.12	1 03/15/01 6:51 KA 611378
Benzo(a)pyrene	ND	0.12	1 03/15/01 6:51 KA 611378
Benzo(b)fluoranthene	ND	0.12	1 03/15/01 6:51 KA 611378
Benzo(g,h,i)perylene	ND	0.12	1 03/15/01 6:51 KA 611378
Benzo(k)fluoranthene	ND	0.12	1 03/15/01 6:51 KA 611378
Chrysene	ND	0.12	1 03/15/01 6:51 KA 611378
Dibenzo(a,h)anthracene	ND	0.12	1 03/15/01 6:51 KA 611378
Fluoranthene	ND	0.12	1 03/15/01 6:51 KA 611378
Fluorene	ND	0.12	1 03/15/01 6:51 KA 611378
Indeno(1,2,3-cd)pyrene	ND	0.12	1 03/15/01 6:51 KA 611378
Naphthalene	ND	0.12	1 03/15/01 6:51 KA 611378
Phenanthrene	ND	0.12	1 03/15/01 6:51 KA 611378
Pyrene	ND	0.12	1 03/15/01 6:51 KA 611378
Surr: 1-Fluoronaphthalene	43.5	% 15-96	1 03/15/01 6:51 KA 611378
Surr: Phenanthrene-d10	70.0	% 33-108	1 03/15/01 6:51 KA 611378

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

PURGEABLE AROMATICS	MCL	SW8021B	Units: ug/L
Benzene	ND	1	1 03/17/01 6:36 D_R 604386
Ethylbenzene	ND	1	1 03/17/01 6:36 D_R 604386
Toluene	ND	1	1 03/17/01 6:36 D_R 604386
Xylenes, Total	ND	1	1 03/17/01 6:36 D_R 604386
Surr: 1,4-Difluorobenzene	92.1	% 72-137	1 03/17/01 6:36 D_R 604386
Surr: 4-Bromofluorobenzene	90.6	% 48-156	1 03/17/01 6:36 D_R 604386

SULFATE	MCL	E300	Units: mg/L
Sulfate	240	4	20 03/12/01 9:30 KM 596734

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-9 Collected: 3/8/01 11:50:00 SPL Sample ID: 01020760-07

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	MCL	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE								
Alkalinity, Bicarbonate	252	2	MCL	1	M2320 B	03/12/01 10:15	SN	597240
ALKALINITY, CARBONATE								
Alkalinity, Carbonate	ND	2	MCL	1	M2320 B	03/12/01 10:15	SN	597340
CHLORIDE, TOTAL								
Chloride	127	2	MCL	2	E325.3	03/20/01 11:30	CV	610211
DIESEL RANGE ORGANICS								
Diesel Range Organics	1.4	0.24	MCL	1	SW8015B	03/20/01 23:07	AM	609602
Surr: n-Pentacosane	107	% 18-120		1		03/20/01 23:07	AM	609602

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 7:52	KL

FLUORIDE-IC								
Fluoride	0.92	0.1	MCL	1	E300	03/09/01 11:53	KM	594817
GASOLINE RANGE ORGANICS								
Gasoline Range Organics	ND	0.1	MCL	1	SW8015B	03/17/01 7:03	D_R	604422
Surr: 1,4-Difluorobenzene	93.0	% 74-121		1		03/17/01 7:03	D_R	604422
Surr: 4-Bromofluorobenzene	96.0	% 55-150		1		03/17/01 7:03	D_R	604422

HARDNESS, TOTAL (TITRIMETRIC, EDTA)								
Hardness (As CaCO3)	1000	50	MCL	10	E130.2	03/21/01 13:30	CV	612351

HEADSPACE GAS ANALYSIS								
Ethane	ND	0.0025	MCL	1	RSK147	03/23/01 13:12	A_A	612882
Ethylene	ND	0.0032		1		03/23/01 13:12	A_A	612882
Methane	ND	0.0012		1		03/23/01 13:12	A_A	612882

MERCURY, TOTAL								
Mercury	ND	0.0002	MCL	1	SW7470A	03/21/01 16:24	R_T	610990

Prep Method	Prep Date	Prep Initials
SW7470A	03/21/2001 13:40	R_T

METALS BY METHOD 6010B, TOTAL								
Arsenic	0.013	0.005	MCL	1	SW6010B	03/15/01 22:35	NS	602630
Lead	0.00597	0.005		1		03/15/01 22:35	NS	602630
Selenium	0.0054	0.005		1		03/15/01 22:35	NS	602630
Barium	0.111	0.005		1		03/17/01 3:08	E_B	605392
Cadmium	ND	0.005		1		03/17/01 3:08	E_B	605392
Calcium	381	0.1		1		03/17/01 3:08	E_B	605392
Chromium	0.013	0.01		1		03/17/01 3:08	E_B	605392

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-9

Collected: 3/8/01 11:50:00

SPL Sample ID: 01020760-07

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Magnesium	28.2	0.1	1		03/17/01 3:08	E_B	605392
Potassium	3.84	2	1		03/17/01 3:08	E_B	605392
Silver	ND	0.01	1		03/17/01 3:08	E_B	605392
Sodium	119	0.5	1		03/17/01 3:08	E_B	605392

Prep Method	Prep Date	Prep Initials
SW3010A	03/12/2001 15:00	MME

NITROGEN, NITRATE (AS N)	MCL	E300	Units: mg/L
Nitrogen, Nitrate (As N)	7.9	0.1	1 03/09/01 11:53 KM 594838

POLYNUCLEAR AROMATIC HYDROCARBONS	MCL	SW8310	Units: ug/L
Acenaphthene	ND	0.12	1 03/15/01 7:28 KA 611379
Acenaphthylene	ND	0.12	1 03/15/01 7:28 KA 611379
Anthracene	ND	0.12	1 03/15/01 7:28 KA 611379
Benz(a)anthracene	ND	0.12	1 03/15/01 7:28 KA 611379
Benzo(a)pyrene	ND	0.12	1 03/15/01 7:28 KA 611379
Benzo(b)fluoranthene	ND	0.12	1 03/15/01 7:28 KA 611379
Benzo(g,h,i)perylene	ND	0.12	1 03/15/01 7:28 KA 611379
Benzo(k)fluoranthene	ND	0.12	1 03/15/01 7:28 KA 611379
Chrysene	ND	0.12	1 03/15/01 7:28 KA 611379
Dibenzo(a,h)anthracene	ND	0.12	1 03/15/01 7:28 KA 611379
Fluoranthene	ND	0.12	1 03/15/01 7:28 KA 611379
Fluorene	ND	0.12	1 03/15/01 7:28 KA 611379
Indeno(1,2,3-cd)pyrene	ND	0.12	1 03/15/01 7:28 KA 611379
Naphthalene	ND	0.12	1 03/15/01 7:28 KA 611379
Phenanthrene	ND	0.12	1 03/15/01 7:28 KA 611379
Pyrene	ND	0.12	1 03/15/01 7:28 KA 611379
Surr: 1-Fluoronaphthalene	32.3	% 15-96	1 03/15/01 7:28 KA 611379
Surr: Phenanthrene-d10	50.2	% 33-108	1 03/15/01 7:28 KA 611379

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

PURGEABLE AROMATICS	MCL	SW8021B	Units: ug/L
Benzene	ND	1	1 03/17/01 7:03 D_R 604387
Ethylbenzene	ND	1	1 03/17/01 7:03 D_R 604387
Toluene	ND	1	1 03/17/01 7:03 D_R 604387
Xylenes, Total	ND	1	1 03/17/01 7:03 D_R 604387
Surr: 1,4-Difluorobenzene	92.8	% 72-137	1 03/17/01 7:03 D_R 604387
Surr: 4-Bromofluorobenzene	90.7	% 48-156	1 03/17/01 7:03 D_R 604387

SULFATE	MCL	E300	Units: mg/L
Sulfate	150	2	10 03/09/01 11:53 KM 594882

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-10

Collected: 3/9/01 9:30:00 A SPL Sample ID: 01020760-08

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE							
Alkalinity, Bicarbonate	566	2		MCL	M2320 B	Units: mg/L	
				1	03/12/01 10:15	SN	597241
ALKALINITY, CARBONATE							
Alkalinity, Carbonate	ND	2		MCL	M2320 B	Units: mg/L	
				1	03/12/01 10:15	SN	597341
CHLORIDE, TOTAL							
Chloride	879	10		MCL	E325.3	Units: mg/L	
				10	03/20/01 11:30	CV	610212
DIESEL RANGE ORGANICS							
Diesel Range Organics	3.4	0.26		MCL	SW8015B	Units: mg/L	
				1	03/20/01 21:51	AM	609623
Surr: n-Pentacosane	131MI	% 18-120		1	03/20/01 21:51	AM	609623
Prep Method			Prep Date		Prep Initials		
SW3510B			03/10/2001 7:52		KL		
FLUORIDE-IC							
Fluoride	1.2	0.1		MCL	E300	Units: mg/L	
				1	03/10/01 15:14	KM	594899
GASOLINE RANGE ORGANICS							
Gasoline Range Organics	0.2	0.1		MCL	SW8015B	Units: mg/L	
				1	03/19/01 1:50	D_R	605448
Surr: 1,4-Difluorobenzene	91.7	% 74-121		1	03/19/01 1:50	D_R	605448
Surr: 4-Bromofluorobenzene	97.7	% 55-150		1	03/19/01 1:50	D_R	605448
HARDNESS, TOTAL (TITRIMETRIC, EDTA)							
Hardness (As CaCO3)	1300	120		MCL	E130.2	Units: mg/L	
				25	03/21/01 13:30	CV	612352
HEADSPACE GAS ANALYSIS							
Ethane	ND	0.0025		MCL	RSK147	Units: mg/L	
				1	03/23/01 13:24	A_A	612888
Ethylene	ND	0.0032		1	03/23/01 13:24	A_A	612888
Methane	ND	0.0012		1	03/23/01 13:24	A_A	612888
MERCURY, TOTAL							
Mercury	ND	0.0002		MCL	SW7470A	Units: mg/L	
				1	03/21/01 16:24	R_T	610991
Prep Method			Prep Date		Prep Initials		
SW7470A			03/21/2001 13:40		R_T		
METALS BY METHOD 6010B, TOTAL							
Arsenic	0.133	0.005		MCL	SW6010B	Units: mg/L	
				1	03/15/01 22:40	NS	602631
Lead	0.0222	0.005		1	03/15/01 22:40	NS	602631
Selenium	ND	0.005		1	03/15/01 22:40	NS	602631
Barium	0.23	0.005		1	03/17/01 3:12	E_B	605393
Cadmium	ND	0.005		1	03/17/01 3:12	E_B	605393
Calcium	331	0.1		1	03/17/01 3:12	E_B	605393
Chromium	0.0109	0.01		1	03/17/01 3:12	E_B	605393

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



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 (713) 860-0901

Client Sample ID MW-10

Collected: 3/9/01 9:30:00 A SPL Sample ID: 01020760-08

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Magnesium	95.1	0.1	1		03/17/01 3:12	E_B	605393
Potassium	19.5	2	1		03/17/01 3:12	E_B	605393
Silver	ND	0.01	1		03/17/01 3:12	E_B	605393
Sodium	410	0.5	1		03/17/01 3:12	E_B	605393

Prep Method	Prep Date	Prep Initials
SW3010A	03/12/2001 15:00	MME

NITROGEN, NITRATE (AS N)	MCL	E300	Units: mg/L
Nitrogen, Nitrate (As N)	ND	0.1	1 03/10/01 15:14 KM 594962

POLYNUCLEAR AROMATIC HYDROCARBONS	MCL	SW8310	Units: ug/L
Acenaphthene	ND	0.15	1 03/15/01 8:05 KA 611380
Acenaphthylene	0.71	0.15	1 03/15/01 8:05 KA 611380
Anthracene	ND	0.15	1 03/15/01 8:05 KA 611380
Benz(a)anthracene	ND	0.15	1 03/15/01 8:05 KA 611380
Benzo(a)pyrene	ND	0.15	1 03/15/01 8:05 KA 611380
Benzo(b)fluoranthene	ND	0.15	1 03/15/01 8:05 KA 611380
Benzo(g,h,i)perylene	ND	0.15	1 03/15/01 8:05 KA 611380
Benzo(k)fluoranthene	ND	0.15	1 03/15/01 8:05 KA 611380
Chrysene	ND	0.15	1 03/15/01 8:05 KA 611380
Dibenzo(a,h)anthracene	ND	0.15	1 03/15/01 8:05 KA 611380
Fluoranthene	ND	0.15	1 03/15/01 8:05 KA 611380
Fluorene	ND	0.15	1 03/15/01 8:05 KA 611380
Indeno(1,2,3-cd)pyrene	ND	0.15	1 03/15/01 8:05 KA 611380
Naphthalene	0.15	0.15	1 03/15/01 8:05 KA 611380
Phenanthrene	ND	0.15	1 03/15/01 8:05 KA 611380
Pyrene	ND	0.15	1 03/15/01 8:05 KA 611380
Surr: 1-Fluoronaphthalene	38.4	% 15-96	1 03/15/01 8:05 KA 611380
Surr: Phenanthrene-d10	67.8	% 33-108	1 03/15/01 8:05 KA 611380

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

PURGEABLE AROMATICS	MCL	SW8021B	Units: ug/L
Benzene	3.4	1	1 03/19/01 17:25 D_R 606725
Ethylbenzene	ND	1	1 03/19/01 17:25 D_R 606725
Toluene	1.1	1	1 03/19/01 17:25 D_R 606725
Xylenes, Total	ND	1	1 03/19/01 17:25 D_R 606725
Surr: 1,4-Difluorobenzene	93.3	% 72-137	1 03/19/01 17:25 D_R 606725
Surr: 4-Bromofluorobenzene	86.7	% 48-156	1 03/19/01 17:25 D_R 606725

SULFATE	MCL	E300	Units: mg/L
Sulfate	270	4	20 03/12/01 9:30 KM 596738

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-11A

Collected: 3/8/01 3:15:00 P SPL Sample ID: 01020760-09

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	646	2	1		03/12/01 10:15	SN	597243
ALKALINITY, CARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2	1		03/12/01 10:15	SN	597343
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	1720	25	25		03/20/01 11:30	CV	610214
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	2.2	0.25	1		03/20/01 21:12	AM	609622
Surr: n-Pentacosane	108 %	18-120	1		03/20/01 21:12	AM	609622

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 7:52	KL

FLUORIDE-IC				MCL	E300	Units: mg/L	
Fluoride	1.1	0.1	1		03/09/01 11:53	KM	594818
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	ND	0.5	5		03/19/01 2:17	D_R	605449
Surr: 1,4-Difluorobenzene	90.1 %	74-121	5		03/19/01 2:17	D_R	605449
Surr: 4-Bromofluorobenzene	91.3 %	55-150	5		03/19/01 2:17	D_R	605449
HARDNESS, TOTAL (TITRIMETRIC, EDTA)				MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	1900	120	25		03/21/01 13:30	CV	612354
HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg/L	
Ethane	ND	0.0025	1		03/23/01 13:35	A_A	612893
Ethylene	ND	0.0032	1		03/23/01 13:35	A_A	612893
Methane	0.0028	0.0012	1		03/23/01 13:35	A_A	612893
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002	1		03/21/01 16:24	R_T	610992

Prep Method	Prep Date	Prep Initials
SW7470A	03/21/2001 13:40	R_T

METALS BY METHOD 6010B, TOTAL				MCL	SW6010B	Units: mg/L	
Arsenic	0.08	0.005	1		03/15/01 22:45	NS	602632
Lead	0.0119	0.005	1		03/15/01 22:45	NS	602632
Selenium	ND	0.005	1		03/15/01 22:45	NS	602632
Barium	0.401	0.005	1		03/17/01 3:16	E_B	605394
Cadmium	ND	0.005	1		03/17/01 3:16	E_B	605394
Calcium	466	0.5	5		03/20/01 15:59	E_B	608949
Chromium	0.0392	0.01	1		03/17/01 3:16	E_B	605394

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
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 HOUSTON, TEXAS 77054
 (713) 660-0901

Client Sample ID MW-11A

Collected: 3/8/01 3:15:00 P SPL Sample ID: 01020760-09

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Magnesium	93.4	0.1	1		03/17/01 3:16	E_B	605394
Potassium	33.5	2	1		03/17/01 3:16	E_B	605394
Silver	ND	0.01	1		03/17/01 3:16	E_B	605394
Sodium	801	2.5	5		03/19/01 20:24	E_B	606984

Prep Method	Prep Date	Prep Initials
SW3010A	03/12/2001 15:00	MME
	03/12/2001 15:00	

NITROGEN, NITRATE (AS N)	MCL	E300	Units: mg/L
Nitrogen, Nitrate (As N)	ND	0.1	1 03/09/01 11:53 KM 594839

POLYNUCLEAR AROMATIC HYDROCARBONS	MCL	SW8310	Units: ug/L
Acenaphthene	ND	0.13	1 03/15/01 8:42 KA 611381
Acenaphthylene	0.35	0.13	1 03/15/01 8:42 KA 611381
Anthracene	ND	0.13	1 03/15/01 8:42 KA 611381
Benz(a)anthracene	ND	0.13	1 03/15/01 8:42 KA 611381
Benzo(a)pyrene	ND	0.13	1 03/15/01 8:42 KA 611381
Benzo(b)fluoranthene	ND	0.13	1 03/15/01 8:42 KA 611381
Benzo(g,h,i)perylene	ND	0.13	1 03/15/01 8:42 KA 611381
Benzo(k)fluoranthene	ND	0.13	1 03/15/01 8:42 KA 611381
Chrysene	ND	0.13	1 03/15/01 8:42 KA 611381
Dibenzo(a,h)anthracene	ND	0.13	1 03/15/01 8:42 KA 611381
Fluoranthene	ND	0.13	1 03/15/01 8:42 KA 611381
Fluorene	ND	0.13	1 03/15/01 8:42 KA 611381
Indeno(1,2,3-cd)pyrene	ND	0.13	1 03/15/01 8:42 KA 611381
Naphthalene	0.21	0.13	1 03/15/01 8:42 KA 611381
Phenanthrene	ND	0.13	1 03/15/01 8:42 KA 611381
Pyrene	ND	0.13	1 03/15/01 8:42 KA 611381
Surr: 1-Fluoronaphthalene	57.9	% 15-96	1 03/15/01 8:42 KA 611381
Surr: Phenanthrene-d10	69.2	% 33-108	1 03/15/01 8:42 KA 611381

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

PURGEABLE AROMATICS	MCL	SW8021B	Units: ug/L
Benzene	12	5	5 03/19/01 19:39 D_R 606730
Ethylbenzene	ND	5	5 03/19/01 19:39 D_R 606730
Toluene	ND	5	5 03/19/01 19:39 D_R 606730
Xylenes, Total	ND	5	5 03/19/01 19:39 D_R 606730
Surr: 1,4-Difluorobenzene	92.5	% 72-137	5 03/19/01 19:39 D_R 606730
Surr: 4-Bromofluorobenzene	90.2	% 48-156	5 03/19/01 19:39 D_R 606730

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID MW-11A Collected: 3/8/01 3:15:00 P SPL Sample ID: 01020760-09

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
SULFATE			MCL	E300	Units: mg/L		
Sulfate	330	4	20		03/09/01 11:53	KM	594883

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



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
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 (713) 660-0901

Client Sample ID MW-12

Collected: 3/8/01 4:10:00 P SPL Sample ID: 01020760-10

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Data Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	475	2	1		03/12/01 10:15	SN	597245
ALKALINITY, CARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2	1		03/12/01 10:15	SN	597345
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	586	10	10		03/20/01 11:30	CV	610215
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	2.1	0.27	1		03/20/01 20:34	AM	609621
Surr: n-Pentacosane	127MI	% 18-120	1	*	03/20/01 20:34	AM	609621

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 7:52	KL

FLUORIDE-IC				MCL	E300	Units: mg/L	
Fluoride	1.9	0.1	1		03/09/01 11:53	KM	594821
GASOLINE RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Gasoline Range Organics	0.1	0.1	1		03/19/01 2:44	D_R	605450
Surr: 1,4-Difluorobenzene	89.7	% 74-121	1		03/19/01 2:44	D_R	605450
Surr: 4-Bromofluorobenzene	91.3	% 55-150	1		03/19/01 2:44	D_R	605450
HARDNESS, TOTAL (TITRIMETRIC, EDTA)				MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	1300	120	25		03/21/01 13:30	CV	612355
HEADSPACE GAS ANALYSIS				MCL	RSK147	Units: mg/L	
Ethane	ND	0.0025	1		03/23/01 13:46	A_A	612897
Ethylene	ND	0.0032	1		03/23/01 13:46	A_A	612897
Methane	ND	0.0012	1		03/23/01 13:46	A_A	612897
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002	1		03/21/01 16:24	R_T	610993

Prep Method	Prep Date	Prep Initials
SW7470A	03/21/2001 13:40	R_T

METALS BY METHOD 6010B, TOTAL				MCL	SW6010B	Units: mg/L	
Arsenic	0.0445	0.005	1		03/15/01 0:21	NS	601645
Lead	0.00627	0.005	1		03/15/01 0:21	NS	601645
Selenium	ND	0.005	1		03/15/01 0:21	NS	601645
Barium	0.603	0.005	1		03/16/01 3:18	E_B	603713
Cadmium	ND	0.005	1		03/16/01 3:18	E_B	603713
Calcium	338	0.1	1		03/16/01 3:18	E_B	603713
Chromium	0.0469	0.01	1		03/16/01 3:18	E_B	603713

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID MW-12

Collected: 3/8/01 4:10:00 P SPL Sample ID: 01020760-10

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Magnesium	95.3	0.1	1		03/16/01 3:18	E_B	603713
Potassium	47.2	2	1		03/16/01 3:18	E_B	603713
Silver	ND	0.01	1		03/16/01 3:18	E_B	603713
Sodium	185	0.5	1		03/16/01 3:18	E_B	603713

Prep Method	Prep Date	Prep Initials
SW3010A	03/13/2001 9:00	MW

NITROGEN, NITRATE (AS N)	MCL	E300	Units: mg/L
Nitrogen, Nitrate (As N)	ND	0.1	1 03/09/01 11:53 KM 594842

POLYNUCLEAR AROMATIC HYDROCARBONS	MCL	SW8310	Units: ug/L
Acenaphthene	ND	0.13	1 03/15/01 9:20 KA 611382
Acenaphthylene	ND	0.13	1 03/15/01 9:20 KA 611382
Anthracene	ND	0.13	1 03/15/01 9:20 KA 611382
Benz(a)anthracene	ND	0.13	1 03/15/01 9:20 KA 611382
Benzo(a)pyrene	ND	0.13	1 03/15/01 9:20 KA 611382
Benzo(b)fluoranthene	ND	0.13	1 03/15/01 9:20 KA 611382
Benzo(g,h,i)perylene	ND	0.13	1 03/15/01 9:20 KA 611382
Benzo(k)fluoranthene	ND	0.13	1 03/15/01 9:20 KA 611382
Chrysene	ND	0.13	1 03/15/01 9:20 KA 611382
Dibenzo(a,h)anthracene	ND	0.13	1 03/15/01 9:20 KA 611382
Fluoranthene	ND	0.13	1 03/15/01 9:20 KA 611382
Fluorene	ND	0.13	1 03/15/01 9:20 KA 611382
Indeno(1,2,3-cd)pyrene	ND	0.13	1 03/15/01 9:20 KA 611382
Naphthalene	ND	0.13	1 03/15/01 9:20 KA 611382
Phenanthrene	ND	0.13	1 03/15/01 9:20 KA 611382
Pyrene	ND	0.13	1 03/15/01 9:20 KA 611382
Surr: 1-Fluoronaphthalene	35.4 %	15-96	1 03/15/01 9:20 KA 611382
Surr: Phenanthrene-d10	63.5 %	33-108	1 03/15/01 9:20 KA 611382

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

PURGEABLE AROMATICS	MCL	SW8021B	Units: ug/L
Benzene	14	1	1 03/19/01 17:52 D_R 606726
Ethylbenzene	ND	1	1 03/19/01 17:52 D_R 606726
Toluene	ND	1	1 03/19/01 17:52 D_R 606726
Xylenes, Total	ND	1	1 03/19/01 17:52 D_R 606726
Surr: 1,4-Difluorobenzene	102 %	72-137	1 03/19/01 17:52 D_R 606726
Surr: 4-Bromofluorobenzene	104 %	48-156	1 03/19/01 17:52 D_R 606726

SULFATE	MCL	E300	Units: mg/L
Sulfate	300	4	20 03/09/01 11:53 KM 594886

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
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 (713) 660-0901

Client Sample ID MW-13

Collected: 3/8/01 2:30:00 P SPL Sample ID: 01020760-11

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE							
Alkalinity, Bicarbonate	131	2	1	M2320 B	03/12/01 10:15	SN	597246
Units: mg/L							
ALKALINITY, CARBONATE							
Alkalinity, Carbonate	ND	2	1	M2320 B	03/12/01 10:15	SN	597346
Units: mg/L							
CHLORIDE, TOTAL							
Chloride	276	5	5	E325.3	03/20/01 11:30	CV	610216
Units: mg/L							
DIESEL RANGE ORGANICS							
Diesel Range Organics	2	0.24	1	SW8015B	03/20/01 19:55	AM	609620
Surr: n-Pentacosane	152MI	% 18-120	1	*	03/20/01 19:55	AM	609620
Units: mg/L							
<u>Prep Method</u>	<u>Prep Date</u>	<u>Prep Initials</u>					
SW3510B	03/10/2001 7:52	KL					
FLUORIDE-IC							
Fluoride	1.6	0.1	1	E300	03/09/01 11:53	KM	594822
Units: mg/L							
GASOLINE RANGE ORGANICS							
Gasoline Range Organics	ND	0.1	1	SW8015B	03/19/01 3:10	D_R	605451
Surr: 1,4-Difluorobenzene	89.3	% 74-121	1		03/19/01 3:10	D_R	605451
Surr: 4-Bromofluorobenzene	88.7	% 55-150	1		03/19/01 3:10	D_R	605451
Units: mg/L							
HARDNESS, TOTAL (TITRIMETRIC, EDTA)							
Hardness (As CaCO3)	670	50	10	E130.2	03/21/01 13:30	CV	612356
Units: mg/L							
HEADSPACE GAS ANALYSIS							
Ethane	ND	0.0025	1	RSK147	03/23/01 13:57	A_A	612898
Ethylene	ND	0.0032	1		03/23/01 13:57	A_A	612898
Methane	ND	0.0012	1		03/23/01 13:57	A_A	612898
Units: mg/L							
MERCURY, TOTAL							
Mercury	ND	0.0002	1	SW7470A	03/21/01 16:24	R_T	610996
Units: mg/L							
<u>Prep Method</u>	<u>Prep Date</u>	<u>Prep Initials</u>					
SW7470A	03/21/2001 13:40	R_T					
METALS BY METHOD 6010B, TOTAL							
Arsenic	0.00673	0.005	1	SW6010B	03/15/01 0:27	NS	601646
Lead	ND	0.005	1		03/15/01 0:27	NS	601646
Selenium	ND	0.005	1		03/15/01 0:27	NS	601646
Barium	0.171	0.005	1		03/16/01 3:33	E_B	603721
Cadmium	ND	0.005	1		03/16/01 3:33	E_B	603721
Calcium	198	0.1	1		03/16/01 3:33	E_B	603721
Chromium	0.0104	0.01	1		03/16/01 3:33	E_B	603721
Units: mg/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
 MI - Matrix Interference



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
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 (713) 660-0901

Client Sample ID MW-13

Collected: 3/8/01 2:30:00 P SPL Sample ID: 01020760-11

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Magnesium	52.3	0.1	1		03/16/01 3:33	E_B	603721
Potassium	2.26	2	1		03/16/01 3:33	E_B	603721
Silver	ND	0.01	1		03/16/01 3:33	E_B	603721
Sodium	142	0.5	1		03/16/01 3:33	E_B	603721

Prep Method	Prep Date	Prep Initials
SW3010A	03/13/2001 9:00	MW

NITROGEN, NITRATE (AS N)	MCL	E300	Units: mg/L
Nitrogen, Nitrate (As N)	ND	0.1	1 03/09/01 11:53 KM 594843

POLYNUCLEAR AROMATIC HYDROCARBONS	MCL	SW8310	Units: ug/L
Acenaphthene	ND	0.12	1 03/15/01 9:57 KA 611383
Acenaphthylene	ND	0.12	1 03/15/01 9:57 KA 611383
Anthracene	ND	0.12	1 03/15/01 9:57 KA 611383
Benz(a)anthracene	ND	0.12	1 03/15/01 9:57 KA 611383
Benzo(a)pyrene	ND	0.12	1 03/15/01 9:57 KA 611383
Benzo(b)fluoranthene	ND	0.12	1 03/15/01 9:57 KA 611383
Benzo(g,h,i)perylene	ND	0.12	1 03/15/01 9:57 KA 611383
Benzo(k)fluoranthene	ND	0.12	1 03/15/01 9:57 KA 611383
Chrysene	ND	0.12	1 03/15/01 9:57 KA 611383
Dibenzo(a,h)anthracene	ND	0.12	1 03/15/01 9:57 KA 611383
Fluoranthene	ND	0.12	1 03/15/01 9:57 KA 611383
Fluorene	ND	0.12	1 03/15/01 9:57 KA 611383
Indeno(1,2,3-cd)pyrene	ND	0.12	1 03/15/01 9:57 KA 611383
Naphthalene	ND	0.12	1 03/15/01 9:57 KA 611383
Phenanthrene	ND	0.12	1 03/15/01 9:57 KA 611383
Pyrene	ND	0.12	1 03/15/01 9:57 KA 611383
Surr: 1-Fluoronaphthalene	30.4	% 15-96	1 03/15/01 9:57 KA 611383
Surr: Phenanthrene-d10	56.2	% 33-108	1 03/15/01 9:57 KA 611383

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

PURGEABLE AROMATICS	MCL	SW8021B	Units: ug/L
Benzene	ND	1	1 03/19/01 18:19 D_R 606727
Ethylbenzene	1.2	1	1 03/19/01 18:19 D_R 606727
Toluene	ND	1	1 03/19/01 18:19 D_R 606727
Xylenes, Total	ND	1	1 03/19/01 18:19 D_R 606727
Surr: 1,4-Difluorobenzene	96.1	% 72-137	1 03/19/01 18:19 D_R 606727
Surr: 4-Bromofluorobenzene	83.6	% 48-156	1 03/19/01 18:19 D_R 606727

SULFATE	MCL	E300	Units: mg/L
Sulfate	380	10	50 03/09/01 11:53 KM 594887

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



HOUSTON LABORATORY
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Client Sample ID MW-14

Collected: 3/8/01 9:30:00 A SPL Sample ID: 01020760-12

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			MCL	SW8260B	Units: ug/L		
1,1,1,2-Tetrachloroethane	ND	5.0	1		03/20/01 20:46	LT	609264
1,1,1-Trichloroethane	ND	5.0	1		03/20/01 20:46	LT	609264
1,1,2,2-Tetrachloroethane	ND	5.0	1		03/20/01 20:46	LT	609264
1,1,2-Trichloroethane	ND	5.0	1		03/20/01 20:46	LT	609264
1,1-Dichloroethane	ND	5.0	1		03/20/01 20:46	LT	609264
1,1-Dichloroethene	ND	5.0	1		03/20/01 20:46	LT	609264
1,1-Dichloropropene	ND	5.0	1		03/20/01 20:46	LT	609264
1,2,3-Trichlorobenzene	ND	5.0	1		03/20/01 20:46	LT	609264
1,2,3-Trichloropropane	ND	5.0	1		03/20/01 20:46	LT	609264
1,2,4-Trichlorobenzene	ND	5.0	1		03/20/01 20:46	LT	609264
1,2,4-Trimethylbenzene	ND	5.0	1		03/20/01 20:46	LT	609264
1,2-Dibromo-3-chloropropane	ND	5.0	1		03/20/01 20:46	LT	609264
1,2-Dibromoethane	ND	5.0	1		03/20/01 20:46	LT	609264
1,2-Dichlorobenzene	ND	5.0	1		03/20/01 20:46	LT	609264
1,2-Dichloroethane	ND	5.0	1		03/20/01 20:46	LT	609264
1,2-Dichloropropane	ND	5.0	1		03/20/01 20:46	LT	609264
1,3,5-Trimethylbenzene	ND	5.0	1		03/20/01 20:46	LT	609264
1,3-Dichlorobenzene	ND	5.0	1		03/20/01 20:46	LT	609264
1,3-Dichloropropane	ND	5.0	1		03/20/01 20:46	LT	609264
1,4-Dichlorobenzene	ND	5.0	1		03/20/01 20:46	LT	609264
2,2-Dichloropropane	ND	5.0	1		03/20/01 20:46	LT	609264
2-Butanone	ND	20	1		03/20/01 20:46	LT	609264
2-Chloroethyl vinyl ether	ND	10	1		03/20/01 20:46	LT	609264
2-Chlorotoluene	ND	5.0	1		03/20/01 20:46	LT	609264
2-Hexanone	ND	10	1		03/20/01 20:46	LT	609264
4-Chlorotoluene	ND	5.0	1		03/20/01 20:46	LT	609264
4-Isopropyltoluene	ND	5.0	1		03/20/01 20:46	LT	609264
4-Methyl-2-pentanone	ND	10	1		03/20/01 20:46	LT	609264
Acetone	ND	100	1		03/20/01 20:46	LT	609264
Acrylonitrile	ND	50	1		03/20/01 20:46	LT	609264
Benzene	ND	5.0	1		03/20/01 20:46	LT	609264
Bromobenzene	ND	5.0	1		03/20/01 20:46	LT	609264
Bromochloromethane	ND	5.0	1		03/20/01 20:46	LT	609264
Bromodichloromethane	ND	5.0	1		03/20/01 20:46	LT	609264
Bromoform	ND	5.0	1		03/20/01 20:46	LT	609264
Bromomethane	ND	10	1		03/20/01 20:46	LT	609264
Carbon disulfide	ND	5.0	1		03/20/01 20:46	LT	609264
Carbon tetrachloride	ND	5.0	1		03/20/01 20:46	LT	609264
Chlorobenzene	ND	5.0	1		03/20/01 20:46	LT	609264
Chloroethane	ND	10	1		03/20/01 20:46	LT	609264

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-14

Collected: 3/8/01 9:30:00 A SPL Sample ID: 01020760-12

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Chloroform	ND	5.0	1		03/20/01 20:46	LT	609264
Chloromethane	ND	10	1		03/20/01 20:46	LT	609264
cis-1,3-Dichloropropene	ND	5.0	1		03/20/01 20:46	LT	609264
Dibromochloromethane	ND	5.0	1		03/20/01 20:46	LT	609264
Dibromomethane	ND	5.0	1		03/20/01 20:46	LT	609264
Dichlorodifluoromethane	ND	10	1		03/20/01 20:46	LT	609264
Ethylbenzene	ND	5.0	1		03/20/01 20:46	LT	609264
Hexachlorobutadiene	ND	5.0	1		03/20/01 20:46	LT	609264
Isopropylbenzene	ND	5.0	1		03/20/01 20:46	LT	609264
Methyl tert-butyl ether	ND	5.0	1		03/20/01 20:46	LT	609264
Methylene chloride	ND	5.0	1		03/20/01 20:46	LT	609264
n-Butylbenzene	ND	5.0	1		03/20/01 20:46	LT	609264
n-Propylbenzene	ND	5.0	1		03/20/01 20:46	LT	609264
Naphthalene	ND	5.0	1		03/20/01 20:46	LT	609264
sec-Butylbenzene	ND	5.0	1		03/20/01 20:46	LT	609264
Styrene	ND	5.0	1		03/20/01 20:46	LT	609264
tert-Butylbenzene	ND	5.0	1		03/20/01 20:46	LT	609264
Tetrachloroethene	ND	5.0	1		03/20/01 20:46	LT	609264
Toluene	ND	5.0	1		03/20/01 20:46	LT	609264
trans-1,3-Dichloropropene	ND	5.0	1		03/20/01 20:46	LT	609264
Trichloroethene	ND	5.0	1		03/20/01 20:46	LT	609264
Trichlorofluoromethane	ND	5.0	1		03/20/01 20:46	LT	609264
Vinyl acetate	ND	10	1		03/20/01 20:46	LT	609264
Vinyl chloride	ND	10	1		03/20/01 20:46	LT	609264
cis-1,2-Dichloroethene	ND	5.0	1		03/20/01 20:46	LT	609264
m,p-Xylene	ND	5.0	1		03/20/01 20:46	LT	609264
o-Xylene	ND	5.0	1		03/20/01 20:46	LT	609264
trans-1,2-Dichloroethene	ND	5.0	1		03/20/01 20:46	LT	609264
1,2-Dichloroethene (total)	ND	5.0	1		03/20/01 20:46	LT	609264
Xylenes, Total	ND	5.0	1		03/20/01 20:46	LT	609264
Surr: 1,2-Dichloroethane-d4	100	% 62-119	1		03/20/01 20:46	LT	609264
Surr: 4-Bromofluorobenzene	102	% 78-123	1		03/20/01 20:46	LT	609264
Surr: Toluene-d8	104	% 74-122	1		03/20/01 20:46	LT	609264

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL



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

Client Sample ID MW-15

Collected: 3/8/01 9:45:00 A SPL Sample ID: 01020760-13

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			MCL	SW8260B	Units: ug/L		
1,1,1,2-Tetrachloroethane	ND	5.0	1		03/20/01 21:14	LT	609265
1,1,1-Trichloroethane	ND	5.0	1		03/20/01 21:14	LT	609265
1,1,2,2-Tetrachloroethane	ND	5.0	1		03/20/01 21:14	LT	609265
1,1,2-Trichloroethane	ND	5.0	1		03/20/01 21:14	LT	609265
1,1-Dichloroethane	ND	5.0	1		03/20/01 21:14	LT	609265
1,1-Dichloroethene	ND	5.0	1		03/20/01 21:14	LT	609265
1,1-Dichloropropene	ND	5.0	1		03/20/01 21:14	LT	609265
1,2,3-Trichlorobenzene	ND	5.0	1		03/20/01 21:14	LT	609265
1,2,3-Trichloropropane	ND	5.0	1		03/20/01 21:14	LT	609265
1,2,4-Trichlorobenzene	ND	5.0	1		03/20/01 21:14	LT	609265
1,2,4-Trimethylbenzene	ND	5.0	1		03/20/01 21:14	LT	609265
1,2-Dibromo-3-chloropropane	ND	5.0	1		03/20/01 21:14	LT	609265
1,2-Dibromoethane	ND	5.0	1		03/20/01 21:14	LT	609265
1,2-Dichlorobenzene	ND	5.0	1		03/20/01 21:14	LT	609265
1,2-Dichloroethane	ND	5.0	1		03/20/01 21:14	LT	609265
1,2-Dichloropropane	ND	5.0	1		03/20/01 21:14	LT	609265
1,3,5-Trimethylbenzene	ND	5.0	1		03/20/01 21:14	LT	609265
1,3-Dichlorobenzene	ND	5.0	1		03/20/01 21:14	LT	609265
1,3-Dichloropropane	ND	5.0	1		03/20/01 21:14	LT	609265
1,4-Dichlorobenzene	ND	5.0	1		03/20/01 21:14	LT	609265
2,2-Dichloropropane	ND	5.0	1		03/20/01 21:14	LT	609265
2-Butanone	ND	20	1		03/20/01 21:14	LT	609265
2-Chloroethyl vinyl ether	ND	10	1		03/20/01 21:14	LT	609265
2-Chlorotoluene	ND	5.0	1		03/20/01 21:14	LT	609265
2-Hexanone	ND	10	1		03/20/01 21:14	LT	609265
4-Chlorotoluene	ND	5.0	1		03/20/01 21:14	LT	609265
4-Isopropyltoluene	ND	5.0	1		03/20/01 21:14	LT	609265
4-Methyl-2-pentanone	ND	10	1		03/20/01 21:14	LT	609265
Acetone	ND	100	1		03/20/01 21:14	LT	609265
Acrylonitrile	ND	50	1		03/20/01 21:14	LT	609265
Benzene	ND	5.0	1		03/20/01 21:14	LT	609265
Bromobenzene	ND	5.0	1		03/20/01 21:14	LT	609265
Bromochloromethane	ND	5.0	1		03/20/01 21:14	LT	609265
Bromodichloromethane	ND	5.0	1		03/20/01 21:14	LT	609265
Bromoform	ND	5.0	1		03/20/01 21:14	LT	609265
Bromomethane	ND	10	1		03/20/01 21:14	LT	609265
Carbon disulfide	ND	5.0	1		03/20/01 21:14	LT	609265
Carbon tetrachloride	ND	5.0	1		03/20/01 21:14	LT	609265
Chlorobenzene	ND	5.0	1		03/20/01 21:14	LT	609265
Chloroethane	ND	10	1		03/20/01 21:14	LT	609265

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



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

Client Sample ID MW-15

Collected: 3/8/01 9:45:00 A SPL Sample ID: 01020760-13

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Chloroform	ND	5.0	1		03/20/01 21:14	LT	609265
Chloromethane	ND	10	1		03/20/01 21:14	LT	609265
cis-1,3-Dichloropropene	ND	5.0	1		03/20/01 21:14	LT	609265
Dibromochloromethane	ND	5.0	1		03/20/01 21:14	LT	609265
Dibromomethane	ND	5.0	1		03/20/01 21:14	LT	609265
Dichlorodifluoromethane	ND	10	1		03/20/01 21:14	LT	609265
Ethylbenzene	ND	5.0	1		03/20/01 21:14	LT	609265
Hexachlorobutadiene	ND	5.0	1		03/20/01 21:14	LT	609265
Isopropylbenzene	ND	5.0	1		03/20/01 21:14	LT	609265
Methyl tert-butyl ether	ND	5.0	1		03/20/01 21:14	LT	609265
Methylene chloride	ND	5.0	1		03/20/01 21:14	LT	609265
n-Butylbenzene	ND	5.0	1		03/20/01 21:14	LT	609265
n-Propylbenzene	ND	5.0	1		03/20/01 21:14	LT	609265
Naphthalene	ND	5.0	1		03/20/01 21:14	LT	609265
sec-Butylbenzene	ND	5.0	1		03/20/01 21:14	LT	609265
Styrene	ND	5.0	1		03/20/01 21:14	LT	609265
tert-Butylbenzene	ND	5.0	1		03/20/01 21:14	LT	609265
Tetrachloroethene	ND	5.0	1		03/20/01 21:14	LT	609265
Toluene	ND	5.0	1		03/20/01 21:14	LT	609265
trans-1,3-Dichloropropene	ND	5.0	1		03/20/01 21:14	LT	609265
Trichloroethene	ND	5.0	1		03/20/01 21:14	LT	609265
Trichlorofluoromethane	ND	5.0	1		03/20/01 21:14	LT	609265
Vinyl acetate	ND	10	1		03/20/01 21:14	LT	609265
Vinyl chloride	ND	10	1		03/20/01 21:14	LT	609265
cis-1,2-Dichloroethene	ND	5.0	1		03/20/01 21:14	LT	609265
m,p-Xylene	ND	5.0	1		03/20/01 21:14	LT	609265
o-Xylene	ND	5.0	1		03/20/01 21:14	LT	609265
trans-1,2-Dichloroethene	ND	5.0	1		03/20/01 21:14	LT	609265
1,2-Dichloroethene (total)	ND	5.0	1		03/20/01 21:14	LT	609265
Xylenes, Total	ND	5.0	1		03/20/01 21:14	LT	609265
Surr: 1,2-Dichloroethane-d4	88.0	% 62-119	1		03/20/01 21:14	LT	609265
Surr: 4-Bromofluorobenzene	102	% 78-123	1		03/20/01 21:14	LT	609265
Surr: Toluene-d8	104	% 74-122	1		03/20/01 21:14	LT	609265

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



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

Client Sample ID Trip Blank 2/28/01

Collected: 3/9/01

SPL Sample ID: 01020760-16

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		03/18/01 4:29	D_R	605443
Surr: 1,4-Difluorobenzene	92.0	% 74-121	1		03/18/01 4:29	D_R	605443
Surr: 4-Bromofluorobenzene	91.0	% 55-150	1		03/18/01 4:29	D_R	605443
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		03/18/01 16:29	D_R	605323
Ethylbenzene	ND	1	1		03/18/01 16:29	D_R	605323
Toluene	ND	1	1		03/18/01 16:29	D_R	605323
Xylenes, Total	ND	1	1		03/18/01 16:29	D_R	605323
Surr: 1,4-Difluorobenzene	90.6	% 72-137	1		03/18/01 16:29	D_R	605323
Surr: 4-Bromofluorobenzene	87.6	% 48-156	1		03/18/01 16:29	D_R	605323

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



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

Client Sample ID MW-7

Collected: 3/9/01 9:50:00 A SPL Sample ID: 01020760-17

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
ALKALINITY, BICARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Bicarbonate	283	2	1		03/12/01 10:15	SN	597249
ALKALINITY, CARBONATE				MCL	M2320 B	Units: mg/L	
Alkalinity, Carbonate	ND	2	1		03/12/01 10:15	SN	597349
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/L	
Chloride	224	5	5		03/20/01 11:30	CV	610223
DIESEL RANGE ORGANICS				MCL	SW8015B	Units: mg/L	
Diesel Range Organics	1.2	0.25	1		03/20/01 18:38	AM	609615
Surr: n-Pentacosane	93.4 %	18-120	1		03/20/01 18:38	AM	609615

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 7:52	KL

FLUORIDE-IC				MCL	E300	Units: mg/L	
Fluoride	0.69	0.1	1		03/10/01 15:14	KM	594900
HARDNESS, TOTAL (TITRIMETRIC, EDTA)				MCL	E130.2	Units: mg/L	
Hardness (As CaCO3)	590	120	25		03/21/01 13:30	CV	612357
MERCURY, TOTAL				MCL	SW7470A	Units: mg/L	
Mercury	ND	0.0002	1		03/21/01 16:24	R_T	610997

Prep Method	Prep Date	Prep Initials
SW7470A	03/21/2001 13:40	R_T

METALS BY METHOD 6010B, TOTAL				MCL	SW6010B	Units: mg/L	
Arsenic	0.00694	0.005	1		03/15/01 0:48	NS	601649
Lead	ND	0.005	1		03/15/01 0:48	NS	601649
Selenium	0.00617	0.005	1		03/15/01 0:48	NS	601649
Barium	0.043	0.005	1		03/16/01 3:37	E_B	603724
Cadmium	ND	0.005	1		03/16/01 3:37	E_B	603724
Calcium	172	0.1	1		03/16/01 3:37	E_B	603724
Chromium	ND	0.01	1		03/16/01 3:37	E_B	603724
Magnesium	41.1	0.1	1		03/16/01 3:37	E_B	603724
Potassium	5.15	2	1		03/16/01 3:37	E_B	603724
Silver	ND	0.01	1		03/16/01 3:37	E_B	603724
Sodium	121	0.5	1		03/16/01 3:37	E_B	603724

Prep Method	Prep Date	Prep Initials
SW3010A	03/13/2001 9:00	MW

NITROGEN, NITRATE (AS N)				MCL	E300	Units: mg/L	
Nitrogen, Nitrate (As N)	2.82	0.1	1		03/10/01 15:14	KM	594963

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
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 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-7

Collected: 3/9/01 9:50:00 A SPL Sample ID: 01020760-17

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
POLYNUCLEAR AROMATIC HYDROCARBONS			MCL	SW8310	Units: ug/L		
Acenaphthene	ND	0.13	1		03/15/01 10:34	KA	611384
Acenaphthylene	ND	0.13	1		03/15/01 10:34	KA	611384
Anthracene	ND	0.13	1		03/15/01 10:34	KA	611384
Benz(a)anthracene	ND	0.13	1		03/15/01 10:34	KA	611384
Benzo(a)pyrene	ND	0.13	1		03/15/01 10:34	KA	611384
Benzo(b)fluoranthene	ND	0.13	1		03/15/01 10:34	KA	611384
Benzo(g,h,i)perylene	ND	0.13	1		03/15/01 10:34	KA	611384
Benzo(k)fluoranthene	ND	0.13	1		03/15/01 10:34	KA	611384
Chrysene	ND	0.13	1		03/15/01 10:34	KA	611384
Dibenzo(a,h)anthracene	ND	0.13	1		03/15/01 10:34	KA	611384
Fluoranthene	ND	0.13	1		03/15/01 10:34	KA	611384
Fluorene	ND	0.13	1		03/15/01 10:34	KA	611384
Indeno(1,2,3-cd)pyrene	ND	0.13	1		03/15/01 10:34	KA	611384
Naphthalene	ND	0.13	1		03/15/01 10:34	KA	611384
Phenanthrene	ND	0.13	1		03/15/01 10:34	KA	611384
Pyrene	ND	0.13	1		03/15/01 10:34	KA	611384
Surr: 1-Fluoronaphthalene	36.6	% 15-96	1		03/15/01 10:34	KA	611384
Surr: Phenanthrene-d10	51.6	% 33-108	1		03/15/01 10:34	KA	611384

Prep Method	Prep Date	Prep Initials
SW3510B	03/10/2001 8:00	KL

SULFATE	MCL	E300	Units: mg/L
Sulfate	260	4	20
			03/12/01 9:30 KM 596740

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
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 J - Estimated Value between MDL and PQL

Quality Control Documentation



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

Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Diesel Range Organics
 Method: SW8015B

WorkOrder: 01020760
 Lab Batch ID: 10779

Method Blank

Samples in Analytical Batch:

RunID: HP_V_010320D-609578 Units: mg/L
 Analysis Date: 03/20/2001 17:21 Analyst: AM
 Preparation Date: 03/10/2001 7:52 Prep By: KL Method SW3510B

Lab Sample ID	Client Sample ID
01020760-01B	MW-1
01020760-02B	MW-3
01020760-03B	MW-4
01020760-04B	MW-5
01020760-06B	MW-8
01020760-07B	MW-9
01020760-08B	MW-10
01020760-09B	MW-11A
01020760-10B	MW-12
01020760-11B	MW-13
01020760-15B	Duplicate
01020760-17B	MW-7

Analyte	Result	Rep Limit
Diesel Range Organics	ND	0.20
Surr: n-Pentacosane	115.8	18-120

Laboratory Control Sample (LCS)

RunID: HP_V_010320D-609581 Units: mg/L
 Analysis Date: 03/20/2001 18:00 Analyst: AM
 Preparation Date: 03/10/2001 7:52 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	2.0	81	21	175

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

Sample Spiked: 01020760-01
 RunID: HP_V_010320D-609588 Units: mg/L
 Analysis Date: 03/20/2001 19:17 Analyst: AM
 Preparation Date: 03/10/2001 7:52 Prep By: KL Method SW3510B

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	0.49	2.78	2.4	69.0	2.78	2.3	64.8	6.33	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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Headspace Gas Analysis
 Method: RSK147

WorkOrder: 01020760
 Lab Batch ID: R32043

Method Blank

Samples in Analytical Batch:

RunID: VARC_010323A-612649 Units: mg/L
 Analysis Date: 03/23/2001 8:33 Analyst: A_A

<u>Lab Sample ID</u>	<u>Client Sample ID</u>
01020760-01G	MW-1
01020760-02G	MW-3
01020760-03G	MW-4
01020760-04G	MW-5
01020760-05G	MW-7
01020760-06G	MW-8
01020760-07G	MW-9
01020760-08G	MW-10
01020760-09G	MW-11A
01020760-10G	MW-12
01020760-11G	MW-13

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

Sample Duplicate

Original Sample: 01020760-01
 RunID: VARC_010323A-612655 Units: mg/L
 Analysis Date: 03/23/2001 10:48 Analyst: A_A

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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Purgeable Aromatics
 Method: SW8021B

WorkOrder: 01020760
 Lab Batch ID: R31594

Method Blank

Samples in Analytical Batch:

RunID: HP_S_010316A-604388 Units: ug/L
 Analysis Date: 03/16/2001 16:13 Analyst: D_R

Lab Sample ID	Client Sample ID
01020760-02A	MW-3
01020760-03A	MW-4
01020760-04A	MW-5
01020760-05A	MW-7
01020760-06A	MW-8
01020760-07A	MW-9

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	92.2	72-137
Surr: 4-Bromofluorobenzene	102.7	48-156

Laboratory Control Sample (LCS)

RunID: HP_S_010316A-604361 Units: ug/L
 Analysis Date: 03/16/2001 14:54 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	46	92	70	130
Ethylbenzene	50	49	98	70	130
Toluene	50	48	95	70	130
Xylenes, Total	150	144	96	70	130

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

Sample Spiked: 01030495-03
 RunID: HP_S_010316A-604375 Units: ug/L
 Analysis Date: 03/17/2001 0:46 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
Benzene	ND	20	31	155	20	21	10637.6 *	21	32	164	
Ethylbenzene	ND	20	30	151 *	20	21	10436.9 *	19	52	142	
Toluene	ND	20	31	153	20	21	10438.6 *	20	38	159	
Xylenes, Total	ND	60	94	157 *	60	62	10341.0 *	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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Gasoline Range Organics
 Method: SW8015B

WorkOrder: 01020760
 Lab Batch ID: R31596

Method Blank

Samples in Analytical Batch:

RunID: HP_S_010316C-604412 Units: mg/L
 Analysis Date: 03/16/2001 4:13 Analyst: D_R

Lab Sample ID	Client Sample ID
01020760-02A	MW-3
01020760-03A	MW-4
01020760-04A	MW-5
01020760-05A	MW-7
01020760-06A	MW-8
01020760-07A	MW-9

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	91.7	74-121
Surr: 4-Bromofluorobenzene	110.7	55-150

Laboratory Control Sample (LCS)

RunID: HP_S_010316C-604410 Units: mg/L
 Analysis Date: 03/16/2001 3:20 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.76	76	70	130

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

Sample Spiked: 01030495-04
 RunID: HP_S_010316C-604414 Units: mg/L
 Analysis Date: 03/17/2001 1:40 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
Gasoline Range Organics	ND	0.9	0.52	58.0	0.9	0.56	61.9	6.51	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

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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Purgeable Aromatics
 Method: SW8021B

WorkOrder: 01020760
 Lab Batch ID: R31638

Method Blank

Samples in Analytical Batch:

RunID: HP_S_010318A-605320 Units: ug/L
 Analysis Date: 03/18/2001 15:24 Analyst: D_R

Lab Sample ID	Client Sample ID
01020760-08A	MW-10
01020760-09A	MW-11A
01020760-10A	MW-12
01020760-11A	MW-13
01020760-15A	Duplicate
01020760-16A	Trip Blank 2/28/01

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	92.6	72-137
Surr: 4-Bromofluorobenzene	87.0	48-156

Laboratory Control Sample (LCS)

RunID: HP_S_010318A-605314 Units: ug/L
 Analysis Date: 03/18/2001 13:53 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	53	107	70	130
Ethylbenzene	50	55	110	70	130
Toluene	50	54	107	70	130
Xylenes, Total	150	165	110	70	130

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

Sample Spiked: 01030432-02
 RunID: HP_S_010318A-606723 Units: ug/L
 Analysis Date: 03/19/2001 16:05 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
Benzene	ND	20	21	103	20	24	116	11.9	21	32	164
Ethylbenzene	ND	20	22	107	20	24	120	11.5	19	52	142
Toluene	ND	20	20	100	20	23	114	13.3	20	38	159
Xylenes, Total	ND	60	64	107	60	72	120	11.8	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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Gasoline Range Organics
 Method: SW8015B

WorkOrder: 01020760
 Lab Batch ID: R31641

Method Blank

Samples in Analytical Batch:

RunID: HP_S_010318B-605442 Units: mg/L
 Analysis Date: 03/18/2001 3:24 Analyst: D_R

Lab Sample ID	Client Sample ID
01020760-01A	MW-1
01020760-08A	MW-10
01020760-09A	MW-11A
01020760-10A	MW-12
01020760-11A	MW-13
01020760-15A	Duplicate
01020760-16A	Trip Blank 2/28/01

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	91.7	74-121
Surr: 4-Bromofluorobenzene	91.3	55-150

Laboratory Control Sample (LCS)

RunID: HP_S_010318B-605441 Units: mg/L
 Analysis Date: 03/18/2001 2:20 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.99	99	70	130

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

Sample Spiked: 01030432-04
 RunID: HP_S_010318B-605446 Units: mg/L
 Analysis Date: 03/18/2001 23:37 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
Gasoline Range Organics	ND	0.9	0.73	81.3	0.9	0.64	70.7	13.9	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

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Quality Control Report

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 01020760
Lab Batch ID: R32259

Method Blank

Samples in Analytical Batch:

RunID: HP_R_010327A-618008 Units: ug/L
Analysis Date: 03/27/2001 19:57 Analyst: D_R

Lab Sample ID: 01020760-01A
Client Sample ID: MW-1

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	107.3	72-137
Surr: 4-Bromofluorobenzene	84.6	48-156

Laboratory Control Sample (LCS)

RunID: HP_R_010327A-616660 Units: ug/L
Analysis Date: 03/27/2001 12:29 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	46	93	70	130
Ethylbenzene	50	48	96	70	130
Toluene	50	48	95	70	130
Xylenes, Total	150	144	96	70	130

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

Sample Spiked: 01030771-05
RunID: HP_R_010327A-617993 Units: ug/L
Analysis Date: 03/27/2001 21:39 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
Benzene	ND	20	23	116	20	21	104	11.2	21	32	164
Ethylbenzene	ND	20	23	116	20	21	106	9.04	19	52	142
Toluene	ND	20	24	118	20	22	107	9.82	20	38	159
Xylenes, Total	ND	60	71	118	60	65	108	8.82	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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Polynuclear Aromatic Hydrocarbons
 Method: SW8310

WorkOrder: 01020760
 Lab Batch ID: 10780

Method Blank

Samples in Analytical Batch:

RunID: 2_010314A-606020 Units: ug/L
 Analysis Date: 03/14/2001 20:58 Analyst: KA
 Preparation Date: 03/10/2001 8:00 Prep By: KL Method SW3510B

Lab Sample ID	Client Sample ID
01020760-01D	MW-1
01020760-02D	MW-3
01020760-03D	MW-4
01020760-04D	MW-5
01020760-06D	MW-8
01020760-07D	MW-9
01020760-08D	MW-10
01020760-09D	MW-11A
01020760-10D	MW-12
01020760-11D	MW-13
01020760-17D	MW-7

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	66.5	15-96
Surr: Phenanthrene-d10	72.9	33-108

Laboratory Control Sample (LCS)

RunID: 2_010314A-606067 Units: ug/L
 Analysis Date: 03/14/2001 21:35 Analyst: KA
 Preparation Date: 03/10/2001 8:00 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Acenaphthene	0.5	0.33	66	23	99
Acenaphthylene	0.5	0.41	83	29	104
Anthracene	0.5	0.32	63	28	126
Benz(a)anthracene	0.5	0.4	80	52	101
Benzo(a)pyrene	0.5	0.42	84	62	97
Benzo(b)fluoranthene	0.5	0.45	90	65	101
Benzo(g,h,i)perylene	0.5	0.41	82	36	117
Benzo(k)fluoranthene	0.5	0.43	85	64	104
Chrysene	0.5	0.43	87	64	124
Dibenzo(a,h)anthracene	0.5	0.38	76	33	111
Fluoranthene	0.5	0.39	78	51	100
Fluorene	0.5	0.39	78	20	105
Indeno(1,2,3-cd)pyrene	0.5	0.46	91	57	115
Naphthalene	0.5	0.35	71	19	95
Phenanthrene	0.5	0.52	104	29	105

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

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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Polynuclear Aromatic Hydrocarbons
 Method: SW8310

WorkOrder: 01020760
 Lab Batch ID: 10780

Laboratory Control Sample (LCS)

RunID: 2_010314A-606067 Units: ug/L
 Analysis Date: 03/14/2001 21:35 Analyst: KA
 Preparation Date: 03/10/2001 8:00 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Pyrene	0.5	0.37	75	55	105

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

Sample Spiked: 01020760-01
 RunID: 2_010314A-606023 Units: ug/L
 Analysis Date: 03/14/2001 22:49 Analyst: KA
 Preparation Date: 03/10/2001 8:00 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
Acenaphthene	ND	0.5	0.086	17.3	0.5	0.085	16.9	2.15	30	1	97
Acenaphthylene	ND	0.5	0.18	23.8	0.5	0.15	16.7	34.9 *	30	1	122
Anthracene	ND	0.5	0.099	19.8	0.5	0.088	17.6	12.1	30	1	106
Benz(a)anthracene	ND	0.5	0.12	23.9	0.5	0.1	20.6	14.8	30	12	119
Benzo(a)pyrene	ND	0.5	0.14	27.7	0.5	0.082	16.5	50.7 *	30	1	105
Benzo(b)fluoranthene	ND	0.5	0.15	30.6	0.5	0.11	21.4	35.1 *	30	6	127
Benzo(g,h,i)perylene	ND	0.5	0.34	67.0	0.5	0.11	21.5	103 *	30	1	107
Benzo(k)fluoranthene	ND	0.5	0.14	27.7	0.5	0.095	19.0	37.1 *	30	5	119
Chrysene	ND	0.5	0.25	49.7	0.5	0.19	39.0	24.3	30	1	144
Dibenz(a,h)anthracene	ND	0.5	0.31	61.0	0.5	0.12	23.3	89.5 *	30	1	114
Fluoranthene	ND	0.5	0.12	23.1	0.5	0.097	19.4	17.6	30	14	126
Fluorene	ND	0.5	0.095	19.0	0.5	0.096	19.2	0.967	30	1	107
Indeno(1,2,3-cd)pyrene	ND	0.5	0.15	29.4	0.5	0.069	13.8	72.2 *	30	1	109
Naphthalene	ND	0.5	0.12	13.6	0.5	0.13	16.2	17.5	30	1	90
Phenanthrene	ND	0.5	0.14	28.2	0.5	0.12	24.4	14.4	30	1	128
Pyrene	ND	0.5	0.12	23.2	0.5	0.096	19.1	19.0	30	1	135

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

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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
 Method: SW6010B

WorkOrder: 01020760
 Lab Batch ID: 10809

Method Blank

Samples in Analytical Batch:

RunID: TJA_010316C-605373 Units: mg/L
 Analysis Date: 03/17/2001 1:47 Analyst: E_B
 Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A

Lab Sample ID	Client Sample ID
01020760-01E	MW-1
01020760-02E	MW-3
01020760-03E	MW-4
01020760-04E	MW-5
01020760-06E	MW-8
01020760-07E	MW-9
01020760-08E	MW-10
01020760-09E	MW-11A

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_010316C-605374 Units: mg/L
 Analysis Date: 03/17/2001 1:51 Analyst: E_B
 Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Barium	2	2.04	102	80	120
Cadmium	2	2.07	103	80	120
Calcium	20	20.8	104	80	120
Chromium	2	2.06	103	80	120
Magnesium	20	20.3	102	80	120
Potassium	20	20.1	100	80	120
Silver	2	2.08	104	80	120
Sodium	20	19.7	99	80	120

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

Sample Spiked: 01030226-01
 RunID: TJA_010316C-605379 Units: mg/L
 Analysis Date: 03/17/2001 2:11 Analyst: E_B
 Preparation Date: 03/12/2001 15:00 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	98.3	10	103	47.6 *	10	104	52.5 *	9.8	20	75	125
Sodium	318	10	315	-24 *	10	312	-57 *	81.9 *	20	75	125

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

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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
 Method: SW6010B

WorkOrder: 01020760
 Lab Batch ID: 10809

Sample Spiked: 01030226-01
 RunID: TJA_010316C-605376 Units: mg/L
 Analysis Date: 03/17/2001 1:59 Analyst: E_B
 Preparation Date: 03/12/2001 15:00 Prep By: MME 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	0.14	1	1.14	100	1	1.12	98.7	1.76	20	75	125
Cadmium	ND	1	1.05	105	1	1.04	104	0.700	20	75	125
Calcium	98	10	112	139 *	10	110	117	17.4	20	75	125
Chromium	ND	1	1.02	102	1	1.02	102	0.0186	20	75	125
Magnesium	32	10	42.6	109	10	41.8	101	7.44	20	75	125
Potassium	ND	10	11.5	115	10	11.2	112	2.62	20	75	125
Silver	ND	1	1.04	104	1	1.03	103	0.973	20	75	125
Sodium	320	10	332	143 *	10	324	60.7 *	81.1 *	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

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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 01020760
Lab Batch ID: 10809-T

Method Blank

Samples in Analytical Batch:

RunID: TJAT_010315A-602595 Units: mg/L
Analysis Date: 03/15/2001 19:50 Analyst: NS
Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A

Lab Sample ID	Client Sample ID
01020760-01E	MW-1
01020760-02E	MW-3
01020760-03E	MW-4
01020760-04E	MW-5
01020760-06E	MW-8
01020760-07E	MW-9
01020760-08E	MW-10
01020760-09E	MW-11A

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

Laboratory Control Sample (LCS)

RunID: TJAT_010315A-602596 Units: mg/L
Analysis Date: 03/15/2001 19:55 Analyst: NS
Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Arsenic	4	3.89	97	80	120
Lead	2	2.1	105	80	120
Selenium	4	4.22	106	80	120

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

Sample Spiked: 01030226-01
RunID: TJAT_010315A-602601 Units: mg/L
Analysis Date: 03/15/2001 20:09 Analyst: NS
Preparation Date: 03/12/2001 15:00 Prep By: MME 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
Arsenic	ND	2	2.06	103	2	2.05	102	0.547	20	75	125
Lead	ND	1	1.07	107	1	1.07	107	0.374	20	75	125
Selenium	ND	2	2.24	112	2	2.24	112	0.0849	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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
 Method: SW6010B

WorkOrder: 01020760
 Lab Batch ID: 10809A

Method Blank

Samples in Analytical Batch:

RunID: TJA_010319B-606969 Units: mg/L
 Analysis Date: 03/19/2001 19:19 Analyst: E_B
 Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A

Lab Sample ID: 01020760-09E
 Client Sample ID: MW-11A

Analyte	Result	Rep Limit
Sodium	ND	0.5

Laboratory Control Sample (LCS)

RunID: TJA_010319B-606970 Units: mg/L
 Analysis Date: 03/19/2001 19:24 Analyst: E_B
 Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sodium	20	19.5	97	80	120

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

Sample Spiked: 01030226-01
 RunID: TJA_010319B-606975 Units: mg/L
 Analysis Date: 03/19/2001 19:44 Analyst: E_B
 Preparation Date: 03/12/2001 15:00 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
Sodium	312	10	312	3.1 *	10	312	1.7 *	59.5 *	20	75	125

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

Sample Spiked: 01030226-01
 RunID: TJA_010319B-606972 Units: mg/L
 Analysis Date: 03/19/2001 19:32 Analyst: E_B
 Preparation Date: 03/12/2001 15:00 Prep By: MME 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
Sodium	310	10	324	118	10	319	66.6 *	56.0 *	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

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Quality Control Report

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 01020760
Lab Batch ID: 10809B

Method Blank

Samples in Analytical Batch:

RunID: TJA_010320C-608941 Units: mg/L
Analysis Date: 03/20/2001 15:28 Analyst: E_B
Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A

Lab Sample ID: 01020760-09E
Client Sample ID: MW-11A

Analyte	Result	Rep Limit
Calcium	ND	0.1

Laboratory Control Sample (LCS)

RunID: TJA_010320C-608942 Units: mg/L
Analysis Date: 03/20/2001 15:32 Analyst: E_B
Preparation Date: 03/12/2001 15:00 Prep By: MME Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Calcium	20	20.5	102	80	120

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

Sample Spiked: 01030226-01
RunID: TJA_010320C-608944 Units: mg/L
Analysis Date: 03/20/2001 15:40 Analyst: E_B
Preparation Date: 03/12/2001 15:00 Prep By: MME 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
Calcium	98	10	110	124	10	107	92.3	29.2 *	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

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.



Quality Control Report

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 01020760
Lab Batch ID: 10826

Method Blank

Samples in Analytical Batch:

RunID: TJA_010315C-603697 Units: mg/L
Analysis Date: 03/16/2001 2:41 Analyst: E_B
Preparation Date: 03/13/2001 9:00 Prep By: MW Method SW3010A

Lab Sample ID	Client Sample ID
01020760-10E	MW-12
01020760-11E	MW-13
01020760-17E	MW-7

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_010315C-603698 Units: mg/L
Analysis Date: 03/16/2001 2:45 Analyst: E_B
Preparation Date: 03/13/2001 9:00 Prep By: MW Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Barium	2	2.03	102	80	120
Cadmium	2	2.11	105	80	120
Calcium	20	21.4	107	80	120
Chromium	2	2.14	107	80	120
Magnesium	20	20.4	102	80	120
Potassium	20	20.2	101	80	120
Silver	2	2.11	105	80	120
Sodium	20	20.1	100	80	120

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

Sample Spiked: 01030291-01
RunID: TJA_010315C-603707 Units: mg/L
Analysis Date: 03/16/2001 3:06 Analyst: E_B
Preparation Date: 03/13/2001 9:00 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	71.6	10	79.4	77.4	10	78.6	69.3 *	11.1	20	75	125
Sodium	121	10	125	45.0 *	10	126	56.0 *	21.7 *	20	75	125

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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
 Method: SW6010B

WorkOrder: 01020760
 Lab Batch ID: 10826

Sample Spiked: 01030291-01
 RunID: TJA_010315C-603700 Units: mg/L
 Analysis Date: 03/16/2001 2:53 Analyst: E_B
 Preparation Date: 03/13/2001 9:00 Prep By: MW 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	0.33	1	1.32	98.9	1	1.36	104	4.55	20	75	125
Cadmium	ND	1	1.04	104	1	1.06	106	1.69	20	75	125
Calcium	72	10	83.1	114	10	84.2	126 *	9.69	20	75	125
Chromium	ND	1	1.04	104	1	1.06	106	2.26	20	75	125
Magnesium	19	10	28.9	103	10	29.6	110	6.61	20	75	125
Potassium	ND	10	11	105	10	11.6	110	4.92	20	75	125
Silver	ND	1	1.04	104	1	1.07	107	2.80	20	75	125
Sodium	120	10	131	108	10	135	141 *	26.8 *	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

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Quality Control Report

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 01020760
Lab Batch ID: 10826-T

Method Blank

Samples in Analytical Batch:

RunID: TJAT_010314B-601637 Units: mg/L
Analysis Date: 03/14/2001 23:35 Analyst: NS
Preparation Date: 03/13/2001 9:00 Prep By: MW Method SW3010A

Lab Sample ID	Client Sample ID
01020760-10E	MW-12
01020760-11E	MW-13
01020760-17E	MW-7

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

Laboratory Control Sample (LCS)

RunID: TJAT_010314B-601638 Units: mg/L
Analysis Date: 03/14/2001 23:40 Analyst: NS
Preparation Date: 03/13/2001 9:00 Prep By: MW Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Arsenic	4	4.04	101	80	120
Lead	2	2.18	109	80	120
Selenium	4	4.36	109	80	120

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

Sample Spiked: 01030291-01
RunID: TJAT_010314B-601640 Units: mg/L
Analysis Date: 03/14/2001 23:54 Analyst: NS
Preparation Date: 03/13/2001 9:00 Prep By: MW 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
Arsenic	0.0065	2	2.08	104	2	2.15	107	3.17	20	75	125
Lead	ND	1	1.09	109	1	1.12	112	2.70	20	75	125
Selenium	ND	2	2.24	112	2	2.31	115	2.99	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

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Quality Control Report

Brown & Caldwell
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Analysis: Metals by Method 6010B, Total
 Method: SW6010B

WorkOrder: 01020760
 Lab Batch ID: 11057C-T

Method Blank

Samples in Analytical Batch:

RunID: TJAT_010321B-610668 Units: mg/L
 Analysis Date: 03/21/2001 13:35 Analyst: NS
 Preparation Date: 03/20/2001 12:35 Prep By: MME Method SW3010A

Lab Sample ID: 01020760-02E
 Client Sample ID: MW-3

Analyte	Result	Rep Limit
Selenium	ND	0.005

Laboratory Control Sample (LCS)

RunID: TJAT_010321B-610669 Units: mg/L
 Analysis Date: 03/21/2001 13:40 Analyst: NS
 Preparation Date: 03/20/2001 12:35 Prep By: MME Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Selenium	4	4.39	110	80	120

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

Sample Spiked: 01020760-02
 RunID: TJAT_010321B-610671 Units: mg/L
 Analysis Date: 03/21/2001 13:54 Analyst: NS
 Preparation Date: 03/20/2001 12:35 Prep By: MME 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
Selenium	0.0070	2	2.24	111	2	2.24	112	0.302	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

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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Mercury, Total
 Method: SW7470A

WorkOrder: 01020760
 Lab Batch ID: 11082

Method Blank

Samples in Analytical Batch:

RunID: HGL_010321E-610968 Units: mg/L
 Analysis Date: 03/21/2001 16:24 Analyst: R_T
 Preparation Date: 03/21/2001 13:40 Prep By: R_T Method SW7470A

Lab Sample ID	Client Sample ID
01020760-01E	MW-1
01020760-02E	MW-3
01020760-03E	MW-4
01020760-04E	MW-5
01020760-06E	MW-8
01020760-07E	MW-9
01020760-08E	MW-10
01020760-09E	MW-11A
01020760-10E	MW-12
01020760-11E	MW-13
01020760-17E	MW-7

Analyte	Result	Rep Limit
Mercury	ND	0.0002

Laboratory Control Sample (LCS)

RunID: HGL_010321E-610969 Units: mg/L
 Analysis Date: 03/21/2001 16:24 Analyst: R_T
 Preparation Date: 03/21/2001 13:40 Prep By: R_T Method E245.1

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Mercury	0.002	0.00179	90	80	120

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

Sample Spiked: 01020760-01
 RunID: HGL_010321E-610977 Units: mg/L
 Analysis Date: 03/21/2001 16:24 Analyst: R_T
 Preparation Date: 03/21/2001 13:40 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
Mercury	ND	0.002	0.00192	96.2	0.002	0.00197	98.6	2.41	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

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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 01020760
Lab Batch ID: R31836

Method Blank

Samples in Analytical Batch:

RunID: L_010320B-609255 Units: ug/L
Analysis Date: 03/20/2001 14:08 Analyst: LT

Lab Sample ID	Client Sample ID
01020760-12A	MW-14
01020760-13A	MW-15

Analyte	Result	Rep Limit
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
2-Chlorotoluene	ND	5.0
2-Hexanone	ND	10
4-Chlorotoluene	ND	5.0
4-Isopropyltoluene	ND	5.0
4-Methyl-2-pentanone	ND	10
Acetone	ND	100
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
Isopropylbenzene	ND	5.0
Methyl tert-butyl ether	ND	5.0
Methylene chloride	ND	5.0
n-Butylbenzene	ND	5.0

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

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.



Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 01020760
Lab Batch ID: R31836

Method Blank

RunID: L_010320B-609255 Units: ug/L
Analysis Date: 03/20/2001 14:08 Analyst: LT

Analyte	Result	Rep Limit
n-Propylbenzene	ND	5.0
Naphthalene	ND	5.0
sec-Butylbenzene	ND	5.0
Styrene	ND	5.0
tert-Butylbenzene	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	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	90.0	62-119
Surr: 4-Bromofluorobenzene	96.0	78-123
Surr: Toluene-d8	100.0	74-122

Laboratory Control Sample (LCS)

RunID: L_010320B-609254 Units: ug/L
Analysis Date: 03/20/2001 13:10 Analyst: LT

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
1,1-Dichloroethene	50	54	108	61	145
Benzene	50	51	102	76	127
Chlorobenzene	50	57	114	75	130
Toluene	50	56	112	76	125
Trichloroethene	50	58	116	71	120

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

Sample Spiked: 01030282-02
RunID: L_010320B-609257 Units: ug/L
Analysis Date: 03/20/2001 16:32 Analyst: LT

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

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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Volatile Organics by Method 8260B
 Method: SW8260B

WorkOrder: 01020760
 Lab Batch ID: R31836

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
1,1-Dichloroethene	ND	250	250	100	250	230	92	8	14	38	172
Benzene	490	250	750	104	250	730	96	8	11	66	134
Chlorobenzene	ND	250	270	108	250	270	108	0	13	67	115
Toluene	ND	250	250	100	250	260	104	4	13	59	125
Trichloroethene	ND	250	280	112	250	270	108	4	14	61	134

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

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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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Fluoride-IC
 Method: E300

WorkOrder: 01020760
 Lab Batch ID: R31137

Method Blank

Samples in Analytical Batch:

RunID: WET_0103090-594809 Units: mg/L
 Analysis Date: 03/09/2001 11:53 Analyst: KM

Lab Sample ID	Client Sample ID
01020760-01F	MW-1
01020760-02F	MW-3
01020760-03F	MW-4
01020760-04F	MW-5
01020760-07F	MW-9
01020760-09F	MW-11A
01020760-10F	MW-12
01020760-11F	MW-13

Analyte	Result	Rep Limit
Fluoride	ND	0.10

Laboratory Control Sample (LCS)

RunID: WET_0103090-594810 Units: mg/L
 Analysis Date: 03/09/2001 11:53 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Fluoride	10	9.1	91	90	110

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

Sample Spiked: 01020760-01
 RunID: WET_0103090-594812 Units: mg/L
 Analysis Date: 03/09/2001 11:53 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Fluoride	1.3	10	9.7	83.8	10	9.7	84.0	0.214	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

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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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Nitrogen, Nitrate (As N)
 Method: E300

WorkOrder: 01020760
 Lab Batch ID: R31139

Method Blank

RunID: WET_010309P-594830 Units: mg/L
 Analysis Date: 03/09/2001 11:53 Analyst: KM

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01020760-01F	MW-1
01020760-02F	MW-3
01020760-03F	MW-4
01020760-04F	MW-5
01020760-07F	MW-9
01020760-09F	MW-11A
01020760-10F	MW-12
01020760-11F	MW-13

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

Laboratory Control Sample (LCS)

RunID: WET_010309P-594831 Units: mg/L
 Analysis Date: 03/09/2001 11:53 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen, Nitrate (As N)	10	9.7	97	90	110

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

Sample Spiked: 01020760-01
 RunID: WET_010309P-594833 Units: mg/L
 Analysis Date: 03/09/2001 11:53 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Nitrogen, Nitrate (As N)	4.3	10	14.7	104	10	14.7	104	0.173	20	76	124

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

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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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Sulfate
 Method: E300

WorkOrder: 01020760
 Lab Batch ID: R31141

Method Blank

RunID: WET_010309Q-594871 Units: mg/L
 Analysis Date: 03/09/2001 11:53 Analyst: KM

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01020760-01F	MW-1
01020760-02F	MW-3
01020760-03F	MW-4
01020760-04F	MW-5
01020760-07F	MW-9
01020760-09F	MW-11A
01020760-10F	MW-12
01020760-11F	MW-13

Analyte	Result	Rep Limit
Sulfate	ND	0.20

Laboratory Control Sample (LCS)

RunID: WET_010309Q-594873 Units: mg/L
 Analysis Date: 03/09/2001 11:53 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10	11	107	90	110

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

Sample Spiked: 01020760-01
 RunID: WET_010309Q-594875 Units: mg/L
 Analysis Date: 03/09/2001 11:53 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	210	200	420	103	200	420	105	1.30	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

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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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Fluoride-IC
 Method: E300

WorkOrder: 01020760
 Lab Batch ID: R31142

Method Blank

Samples in Analytical Batch:

RunID: WET_010310C-594894 Units: mg/L
 Analysis Date: 03/10/2001 15:14 Analyst: KM

Lab Sample ID	Client Sample ID
01020760-06F	MW-8
01020760-08F	MW-10
01020760-17F	MW-7

Analyte	Result	Rep Limit
Fluoride	ND	0.10

Laboratory Control Sample (LCS)

RunID: WET_010310C-594895 Units: mg/L
 Analysis Date: 03/10/2001 15:14 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Fluoride	10	9	90	90	110

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

Sample Spiked: 01020760-06
 RunID: WET_010310C-594897 Units: mg/L
 Analysis Date: 03/10/2001 15:14 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Fluoride	0.66	10	8.6	79.7 *	10	8.7	80.4	0.775	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

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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Nitrogen, Nitrate (As N)
 Method: E300

WorkOrder: 01020760
 Lab Batch ID: R31144

Method Blank

Samples in Analytical Batch:

RunID: WET_010310D-594953 Units: mg/L
 Analysis Date: 03/10/2001 15:14 Analyst: KM

Lab Sample ID	Client Sample ID
01020760-06F	MW-8
01020760-08F	MW-10
01020760-17F	MW-7

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

Laboratory Control Sample (LCS)

RunID: WET_010310D-594954 Units: mg/L
 Analysis Date: 03/10/2001 15:14 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen, Nitrate (As N)	10	10.2	102	90	110

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

Sample Spiked: 01020760-06
 RunID: WET_010310D-594958 Units: mg/L
 Analysis Date: 03/10/2001 15:14 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Nitrogen, Nitrate (As N)	0.66	10	10.2	95.8	10	10.2	95.7	0.0627	20	76	124

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

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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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Sulfate
 Method: E300

WorkOrder: 01020760
 Lab Batch ID: R31222

Method Blank

Samples in Analytical Batch:

RunID: WET_010312E-596732 Units: mg/L
 Analysis Date: 03/12/2001 9:30 Analyst: KM

Lab Sample ID	Client Sample ID
01020760-06F	MW-8
01020760-08F	MW-10
01020760-17F	MW-7

Analyte	Result	Rep Limit
Sulfate	ND	0.20

Laboratory Control Sample (LCS)

RunID: WET_010312E-596733 Units: mg/L
 Analysis Date: 03/12/2001 9:30 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10	11	106	90	110

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

Sample Spiked: 01020760-06
 RunID: WET_010312E-596736 Units: mg/L
 Analysis Date: 03/12/2001 9:30 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	240	200	450	105	200	460	106	0.776	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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Alkalinity, Bicarbonate
 Method: M2320 B

WorkOrder: 01020760
 Lab Batch ID: R31246

Method Blank

Samples in Analytical Batch:

RunID: WET_010312K-597228 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

Lab Sample ID	Client Sample ID
01020760-01F	MW-1
01020760-02F	MW-3
01020760-03F	MW-4
01020760-04F	MW-5
01020760-06F	MW-8
01020760-07F	MW-9
01020760-08F	MW-10
01020760-09F	MW-11A
01020760-10F	MW-12

Analyte	Result	Rep Limit
Alkalinity, Bicarbonate	ND	2.0

Laboratory Control Sample (LCS)

RunID: WET_010312K-597231 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Bicarbonate	23.4	24.2	104	90	110

Sample Duplicate

Original Sample: 01020760-01
 RunID: WET_010312K-597232 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Alkalinity, Bicarbonate	90.9	90.9	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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Alkalinity, Bicarbonate
 Method: M2320 B

WorkOrder: 01020760
 Lab Batch ID: R31246A

Method Blank

Samples in Analytical Batch:

RunID: WET_010312K-597228 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

Lab Sample ID	Client Sample ID
01020760-11F	MW-13
01020760-17F	MW-7

Analyte	Result	Rep Limit
Alkalinity, Bicarbonate	ND	2.0

Laboratory Control Sample (LCS)

RunID: WET_010312K-597231 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Bicarbonate	23.4	24.2	104	90	110

Sample Duplicate

Original Sample: 01020760-11
 RunID: WET_010312K-597246 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Alkalinity, Bicarbonate	131	131	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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Alkalinity, Carbonate
 Method: M2320 B

WorkOrder: 01020760
 Lab Batch ID: R31248

Method Blank

RunID: WET_010312L-597328 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

Analyte	Result	Rep Limit
Alkalinity, Carbonate	ND	2.0

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01020760-01F	MW-1
01020760-02F	MW-3
01020760-03F	MW-4
01020760-04F	MW-5
01020760-06F	MW-8
01020760-07F	MW-9
01020760-08F	MW-10
01020760-09F	MW-11A
01020760-10F	MW-12

Laboratory Control Sample (LCS)

RunID: WET_010312L-597331 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Carbonate	23.4	24.2	104	90	110

Sample Duplicate

Original Sample: 01020760-01
 RunID: WET_010312L-597332 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Alkalinity, Carbonate
 Method: M2320 B

WorkOrder: 01020760
 Lab Batch ID: R31248A

Method Blank

Samples in Analytical Batch:

RunID: WET_010312L-597328 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

Lab Sample ID Client Sample ID
 01020760-11F MW-13
 01020760-17F MW-7

Analyte	Result	Rep Limit
Alkalinity, Carbonate	ND	2.0

Laboratory Control Sample (LCS)

RunID: WET_010312L-597331 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Alkalinity, Carbonate	23.4	24.2	104	90	110

Sample Duplicate

Original Sample: 01020760-11
 RunID: WET_010312L-597346 Units: mg/L
 Analysis Date: 03/12/2001 10:15 Analyst: SN

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

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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Chloride, Total
 Method: E325.3

WorkOrder: 01020760
 Lab Batch ID: R31909

Method Blank

Samples in Analytical Batch:

RunID: WET_010320U-610201 Units: mg/L
 Analysis Date: 03/20/2001 11:30 Analyst: CV

Lab Sample ID	Client Sample ID
01020760-01F	MW-1
01020760-02F	MW-3
01020760-03F	MW-4
01020760-04F	MW-5
01020760-06F	MW-8
01020760-07F	MW-9
01020760-08F	MW-10
01020760-09F	MW-11A
01020760-10F	MW-12
01020760-11F	MW-13

Analyte	Result	Rep Limit
Chloride	ND	1.0

Laboratory Control Sample (LCS)

RunID: WET_010320U-610203 Units: mg/L
 Analysis Date: 03/20/2001 11:30 Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	109	110	101	90	110

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

Sample Spiked: 01020760-01
 RunID: WET_010320U-610205 Units: mg/L
 Analysis Date: 03/20/2001 11:30 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
Chloride	180	250	431	99.9	250	431	99.9	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

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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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Chloride, Total
 Method: E325.3

WorkOrder: 01020760
 Lab Batch ID: R31909A

Method Blank

Samples in Analytical Batch:

RunID: WET_010320U-610201 Units: mg/L
 Analysis Date: 03/20/2001 11:30 Analyst: CV

Lab Sample ID Client Sample ID
 01020760-12B MW-14
 01020760-17F MW-7

Analyte	Result	Rep Limit
Chloride	ND	1.0

Laboratory Control Sample (LCS)

RunID: WET_010320U-610203 Units: mg/L
 Analysis Date: 03/20/2001 11:30 Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	109	110	101	90	110

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

Sample Spiked: 01020760-12
 RunID: WET_010320U-610218 Units: mg/L
 Analysis Date: 03/20/2001 11:30 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
Chloride	330	500	827	99.9	500	827	99.9	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

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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Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Hardness, Total (Titrimetric, EDTA)
 Method: E130.2

WorkOrder: 01020760
 Lab Batch ID: R32026

Method Blank

Samples in Analytical Batch:

RunID: WET_0103210-612335 Units: mg/L
 Analysis Date: 03/21/2001 13:30 Analyst: CV

Lab Sample ID	Client Sample ID
01020760-01E	MW-1
01020760-02E	MW-3
01020760-03E	MW-4
01020760-04E	MW-5
01020760-06E	MW-8
01020760-07E	MW-9
01020760-08E	MW-10
01020760-09E	MW-11A
01020760-10E	MW-12
01020760-11E	MW-13

Analyte	Result	Rep Limit
Hardness (As CaCO3)	ND	5.0

Laboratory Control Sample (LCS)

RunID: WET_0103210-612338 Units: mg/L
 Analysis Date: 03/21/2001 13:30 Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Hardness (As CaCO3)	153	150	97	94	108

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

Sample Spiked: 01020760-01
 RunID: WET_0103210-612342 Units: mg/L
 Analysis Date: 03/21/2001 13:30 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)	310	500	820	102	500	800	98.0	3.92	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

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Quality Control Report

Brown & Caldwell

BJ Service, Hobbs, NM

Analysis: Hardness, Total (Titrimetric, EDTA)
 Method: E130.2

WorkOrder: 01020760
 Lab Batch ID: R32026A

Method Blank

Samples in Analytical Batch:

RunID: WET_0103210-612335 Units: mg/L
 Analysis Date: 03/21/2001 13:30 Analyst: CV

Lab Sample ID: 01020760-17E
 Client Sample ID: MW-7

Analyte	Result	Rep Limit
Hardness (As CaCO3)	ND	5.0

Laboratory Control Sample (LCS)

RunID: WET_0103210-612338 Units: mg/L
 Analysis Date: 03/21/2001 13:30 Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Hardness (As CaCO3)	153	150	97	94	108

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

Sample Spiked: 01020760-17
 RunID: WET_0103210-612358 Units: mg/L
 Analysis Date: 03/21/2001 13:30 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)	590	1250	1800	98.0	1250	1800	98.0	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

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.

Analysis Request & Chain of Custody Record

SPL Worksheet No. 5/30

100825

page 1 of 2

Client Name: Brown & Caldwell

Address/Phone: 1415 Louisiana #2500 (713) 785-0934

Client Contact: Rexie Rejzorek

Project Name: BJSNCS

Project Number: D-532

Project Location: 40545

Invoice To: RCL RECORD

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Requested Analysis
MW-12	3-8-01	16:10			W	060	140	12	10	X VOL-8260 BTX-8021 PAH-8310 TPH-D20-8015 TPH-C20-8015 ACLA metals 1/4oz 3050-6010-7000 Ca Mg K Na 6010 CL @ NO ₃ S ₂ O ₄ P ₂ S ₂ S ₂ Recently analyzed 6/501 Methanol, Ethanol Gluconic Residue 175/47
MW-14	3-8-01	9:30			W	060	140	12	4	X
MW-15	3-8-01	5:45			W	060	140	12	3	X
MW-5	3-8-01	10:15			W	060	140	12	16	X
MW-7	3-8-01	10:50			W	060	140	12	16	X
MW-3	3-8-01	11:20			W	060	140	12	16	X
MW-9	3-8-01	11:50			W	060	140	12	16	X
MW-1	3-8-01	12:40			W	060	140	12	16	X
MW-4	3-8-01	13:45			W	060	140	12	16	X
MW-13	3-8-01	14:30			W	060	140	12	16	X

Client/Consultant Remarks:

Laboratory remarks:

PLISH

Intact? Y N

Requested TAT

Special Reporting Requirements

Fast Results

Raw Data

Special Detection Limits (ppm):

Final review (initials):

Standard QC

Level 3 QC

Level 4 QC

24hr 72hr

48hr Standard

Other

1. Relinquished by Sampler: *AKL*

3. Relinquished by:

5. Relinquished by:

date: 3-8-01 time: 7:30:00

date: time:

date: time:

2. Received by:

4. Received by:

6. Received by Laboratory: *Damon Reed*

3/9/01 3:30

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

500 Ambassador Caffery Parkway, Scott, LA 70583 (518) 237-4775

450-H...s D... Tra... Ci... 49... (616) 9...-57...



SPL, Inc.

SPL Workorder No.

100826

page 2 of 2

Analysis Request & Chain of Custody Record

Client Name: Brown & Caldwell

Address/Phone: 1415 Louisiana #1200 (713) 759-4495

Client Contact: Rick Reynolds

Project Name: BSTSUCS

Project Number: 12532

Project Location: 710 BBS

Invoice To: Rick Reynolds

Invoice To: SAMPLE ID DATE TIME comp grab

MW-11A 3-5-01 15:15

matrix bottle size pres. Number of Containers

W=water S=soil SL=sludge O=other: P=plastic A=amber glass G=glass V=vial

1=1 liter 4=4oz 40=vial 8=8oz 16=16oz

1=HCl 2=HNO3 3=H2SO4 O=other:

WJ PGV 140 12 16

Requested Analysis

WOC-8260 BSTX-8021

TPH ORO-8015

TPH GR0-8015

PAN 8010

REGR METALS - Heavy Metals

2050-60101 700

Cu, Mg, K, Na 6010

CL5 H2O, SO4, FC 315-3, 303.0

Bicarb Carl USA

Amel and Standard

GTHONG 151459204777

Client/Consultant Remarks:

Laboratory remarks:

Intact? BY DM Temp: 4

Requested TAT

Special Reporting Requirements

Fast Results

Raw Data

Special Detection Limits (specify):

Standard QC

Level 3 QC

Level 4 QC

1. Relinquished by Sampler:

date 3.5.01

time 18:30

3. Relinquished by:

date

time

5. Relinquished by:

date

time

6. Received by Laboratory:

date

time

2. Received by:

4. Received by:

Received by Laboratory: [Signature]

3/9/01 9:30

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-1715

459-H... [Signature]



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

Sample Receipt Checklist

Workorder:	01020760	Received By:	DS
Date and Time Received:	3/10/01 10:00:00 AM	Carrier name:	FedEx
Temperature:	2	Chilled by:	Water Ice

1. Shipping container/cooler in good condition? Yes No Not Present
2. Custody seals intact on shipping 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?
Sample was received but not listed on the chain of custody.
Aslo, the laboratory did not receive sample for MW-7. 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: Wyatt, Neandra

Contact Date & Time: 3/9/01 10:09:00 AM

Client Name Contacted: Tim Jenkins

Non Conformance Issues: Sample was received but not listed on the chain of custody. Aslo, the laboratory did not receive sample for MW-7.

Client Instructions: Logged in samples on hold until further notice. Spoke to Tim Jenkins when he called about Trip Blank. Tim said that MW-7 and COC for Trip Blank were be shipped for delivery on March 10, 2001. Received sample on March 10, 2001.

C



C



C



APPENDIX C
Groundwater Sampling Forms

WELL ID: MW-1

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 016 Date: 3-8-01 Time: 12:30
 Client: BJSUCS Personnel: Debra Raines
 Project Location: H266 Weather: Cloudy, cool

2. WELL DATA

Casing Diameter: 3 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 64.2 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 60.35 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: 3.85 feet Well Volume: 2.10 gal Screened Interval (from GS): _____
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s): _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
<u>12:35</u>	<u>106</u>	<u>8.27</u>	<u>17.1</u>	<u>99.4</u>	<u>86</u>	<u>6.58</u>	<u>59.5</u>		

4. SAMPLING DATA

Method(s): Bailer, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-1 Sample Time: 12:40 # of Containers: 16
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Insufficient water in well to purge with pump collected 9 ads sample with disposable bailer.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

WELL ID: MW-3

1. PROJECT INFORMATION

Project Number: 125832 Task Number: 016 Date: 3-8-01 Time: 11:10
 Client: BT3UCS Personnel: DEAN, RAMES
 Project Location: Hubs Weather: Cloudy cool

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 62 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 57.69 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: (4.3) feet Well Volume: 3.7 gal Screened Interval (from GS): _____
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 1.1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min
 Equipment Model(s):
 1. Kimble W-22
 2. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
<u>11:15</u>	<u>1.0L</u>	<u>7.8</u>	<u>15.8</u>	<u>136</u>	<u>137</u>	<u>5.56</u>	<u>7.8</u>		

4. SAMPLING DATA

Method(s): Bailer, Size: 1.1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-3 Sample Time: 11:20 # of Containers: 16
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: — mg/L
 DO: — mg/L
 Nitrate: — mg/L
 Sulfate: — mg/L
 Alkalinity: — mg/L

5. COMMENTS

Insufficient water to purge with pump. Collected grab sample with disposable bailer.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-4

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 216 Date: 3-8-01 Time: 13:35
 Client: BJSWS Personnel: Dean R. Miller
 Project Location: Hobbs Weather: cloudy, cool

2. WELL DATA

Casing Diameter: 10-3/4 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 10-2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 61.3 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 57.72 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: 3.58 feet Well Volume: 2.6 gal Screened Interval (from GS): _____
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 11 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s): _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
<u>13:40</u>	<u>1.0 L</u>	<u>7.81</u>	<u>16.5</u>	<u>138 µm</u>	<u>94</u>	<u>6.94</u>	<u>58.2</u>		

4. SAMPLING DATA

Method(s): Bailer, Size: 11 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-4 Sample Time: 13:45 # of Containers: 16
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS insufficient water column for purging with pump. collected static sample with disposable bailer.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Dean R. Miller
 Signature



GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: mw-5

1. PROJECT INFORMATION

Project Number: 12-832 Task Number: 016 Date: 3-5-01 Time: 10:00
 Client: BJSUCS Personnel: Dorin Reiter
 Project Location: Albale Weather: cloudy, cool

2. WELL DATA

Casing Diameter: 3 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 64.50 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 59.30 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: 5.14 feet Well Volume: 0.65 gal Screened Interval (from GS): _____
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 1 1/2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min
 Equipment Model(s):
 1. Alamiga U-2.5
 2. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
<u>10:10</u>	<u>0.50L</u>	<u>7.60</u>	<u>16.7</u>	<u>2.133</u>	<u>174</u>	<u>6.98</u>	<u>17.1</u>		

4. SAMPLING DATA

Method(s): Bailer, Size: 1 1/2 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW5 Sample Time: 10:15 # of Containers: 16
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: 0 mg/L
 DO: 5 mg/L
 Nitrate: - mg/L
 Sulfate: - mg/L
 Alkalinity: 240 mg/L

5. COMMENTS

INSUFFICIENT WATER IN WELL TO PURGE WITH PUMP. COLLECTED GRS SAMPLE WITH BAILEY.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

[Signature]
Signature

WELL ID: MW-7

1. PROJECT INFORMATION

Project Number: 12537 Task Number: 016 Date: 3-8-01 Time: 1240
 Client: BO SUGS Personnel: DANNY RAINES
 Project Location: 5-655 Weather: Cloudy/Cool

2. WELL DATA

Casing Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: <u>2</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>61.5</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Static Water: <u>58.25</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: <u>—</u> feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>3.21</u> feet	Well Volume: <u>0.5</u> gal
Screened Interval (from GS): _____ <small>Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft</small>	

3. PURGE DATA

Purge Method: Bailer, Size: 1" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Equipment Model(s)
 1. American U-22
 2. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
<u>10:45</u>	<u>1.06</u>	<u>7.14</u>	<u>15.9</u>	<u>2.174</u>	<u>164</u>	<u>5.06</u>	<u>26.6</u>		

4. SAMPLING DATA

Method(s): Bailer, Size: 1" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: _____ Field Filtered? Yes No

Sample ID: MW-7 Sample Time: 10:50 # of Containers: 14

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Well dry @ approx 1.5 liters purged, collected grab sample from well

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

[Signature]
 Signature

WELL ID: MW-8

1. PROJECT INFORMATION

Project Number: 12532 Task Number: 016 Date: 3-9-01 Time: 9:00
 Client: BJS SVCS Personnel: DEAN RAVER
 Project Location: 1165b Weather: Cloudy, cool

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 62.2 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 58.11 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: 4-9 feet Well Volume: 0.7 gal Screened Interval (from GS): _____
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 1.5 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s):
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
9:05	1.0 L	7.52	15.5	169 µm	166	5.50	2.18		

4. SAMPLING DATA

Method(s): Bailer, Size: 1.5 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-8 Sample Time: 9:10 # of Containers: 10
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

In SVCS report water samples with pump collected. 9:05 sample with disposable bailer.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

WELL ID: MW-9

1. PROJECT INFORMATION

Project Number: 12831 Task Number: 210 Date: 3-8-01 Time: 11:40
 Client: BJSVC Personnel: Deann, B. King
 Project Location: Halls Weather: cloudy, cool

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 60.5 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 57.03 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: 3.47 feet Well Volume: 2.58 gal Screened Interval (from GS): _____
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s): _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
<u>11:45</u>	<u>1.0L</u>	<u>7.90</u>	<u>16.2</u>	<u>3.10 mg/L</u>	<u>153</u>	<u>5.56</u>			

4. SAMPLING DATA

Method(s): Bailer, Size: 1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-9 Sample Time: 11:50 # of Containers: 16
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: - mg/L
 DO: - mg/L
 Nitrate: - mg/L
 Sulfate: - mg/L
 Alkalinity: - mg/L

5. COMMENTS

Insufficient water in well to purge with pump. Collected grab sample with disposable bailer.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

[Signature]
Signature



GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-10

1. PROJECT INFORMATION

Project Number: 12532 Task Number: 016 Date: 3-9-01 Time: 9:20
 Client: BJ Sykes Personnel: Dawn, Paul
 Project Location: Nutbs Weather: Cloudy, cool

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 62 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 59.31 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: 2.09 feet Well Volume: 0.4 gal Screened Interval (from GS): _____
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 111 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____ Equipment Model(s): Aluminum 4-22
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
9:25	1.06	7.23	16.0	224µm	-117	4.71	195		

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-10 Sample Time: 9:30 # of Containers: 13
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: 2.5 mg/L
 DO: 4.0 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: 750 mg/L

5. COMMENTS

In sufficient water in well to purge with pump. collected grab sample with disposable bailer.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

[Signature]
Signature

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW 11A

1. PROJECT INFORMATION

Project Number: 17-637- Task Number: 016 Date: 3-8-01 Time: 15:05
 Client: BTD SVU Personnel: DANNY ZAINES
 Project Location: _____ Weather: _____

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 67.5 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 59.72 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: 3.58 feet Well Volume: 0.6 gal Screened Interval (from GS): _____
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 1.11 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s): _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
15:10	1.0L	746	15.3	-630µ	-87	1.51	895		
							895		

4. SAMPLING DATA

Method(s): Bailer, Size: 1.11 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-11A Sample Time: 15:15 # of Containers: 1/2
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: 4.0 mg/L
 DO: 1.0 mg/L
 Nitrate: — mg/L
 Sulfate: — mg/L
 Alkalinity: 770 mg/L

5. COMMENTS

in sufficient water column to purge with pump. collected grab sample with bailer.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

[Signature]
 Signature

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-12

1. PROJECT INFORMATION

Project Number: 2532 Task Number: 016 Date: 3-8-01 Time: 1600
 Client: BT SVCS Personnel: Debra Reeves
 Project Location: Nobles Weather: Cloudy, Cool

2. WELL DATA

Casing Diameter: <u>3</u> inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Screen Diameter: _____ inches	Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless <input type="checkbox"/> Galv. Steel <input type="checkbox"/> Teflon® <input type="checkbox"/> Other: _____
Total Depth of Well: <u>60.8</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Static Water: <u>59.76</u> feet	From: <input checked="" type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Depth to Product: _____ feet	From: <input type="checkbox"/> Top of Well Casing (TOC) <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> Other: _____
Length of Water Column: <u>1.04</u> feet	Well Volume: <u>0.17</u> gal
Screened Interval (from GS): _____ <small>Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft</small>	

3. PURGE DATA

Purge Method: Bailor, Size: 1.1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: _____ gal/min

Equipment Model(s)
 1. Aladdin U-22
 2. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
<u>16:05</u>	<u>1.02</u>	<u>7.22</u>	<u>16.3</u>	<u>0.222</u>	<u>-110</u>	<u>4.50</u>	<u>5.5</u>		

4. SAMPLING DATA

Method(s): Bailor, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: _____ Field Filtered? Yes No

Sample ID: MW-12 Sample Time: 16:10 # of Containers: _____

Duplicate Sample Collected? Yes No ID: duplicate

Geochemical Analyses
 Ferrous Iron: 2.5 mg/L
 DO: 4.0 mg/L
 Nitrate: ~ mg/L
 Sulfate: ~ mg/L
 Alkalinity: 7.00 mg/L

5. COMMENTS

In sufficient water to purge with pump. Collected grab sample with disposable bailer.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: _____

WELL ID: MW-13

1. PROJECT INFORMATION

Project Number: 12832 Task Number: 016 Date: 3-8-01 Time: 14:20
 Client: BJ SUCS Personnel: DEAN R. ...
 Project Location: Hobbs Weather: cloudy, cool

2. WELL DATA

Casing Diameter: 3 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 65.2 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 57.9 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: 6.01 feet Well Volume: 1.0 gal Screened Interval (from GS): _____
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 1.11 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s): _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
<u>14:25</u>	<u>1.5L</u>	<u>7.80</u>	<u>17.2</u>	<u>178 µm</u>	<u>-47</u>	<u>6.47</u>	<u>37.5</u>		

4. SAMPLING DATA

Method(s): Bailer, Size: 1.11 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Well ID: MW-13 Sample Time: 14:30 # of Containers: 16
 Total Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: — mg/L
 DO: — mg/L
 Nitrate: — mg/L
 Sulfate: — mg/L
 Alkalinity: — mg/L

REMARKS Insufficient water in well for analysis with collected ground sampler with disposable bailer.

such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature _____

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-14

1. PROJECT INFORMATION

Project Number: 12537- Task Number: 015 Date: 3-8-01 Time: 9:20
 Client: BSUSS Personnel: Devin, Maris
 Project Location: Hubbs Weather: cloudy, cool

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 69.2 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 61.07 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: 8.13 feet Well Volume: 1.3 gal Screened Interval (from GS): _____
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 1.1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: _____ gal/min
 Equipment Model(s):
 1. Horiba U-20
 2. _____

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
9:25	0.2L	7.23	16	2255	270	6.62	2.24	-	

4. SAMPLING DATA

Method(s): Bailer, Size: 1.1 Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-14 Sample Time: 9:30 # of Containers: 4
 Duplicate Sample Collected? Yes No ID: _____
Geochemical Analyses
 Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Insufficient water in well to purge with pump. Collected grab sample with 0.3 disposable bailer.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: _____

WELL ID: MW-15

1. PROJECT INFORMATION

Project Number: 12837- Task Number: 016 Date: 3-8-01 Time: 9:40
 Client: B3 SVCS Personnel: Dwight Raines
 Project Location: 40668 Weather: Cloudy, cool

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 127 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 59.75 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: 7.25 feet Well Volume: 1.2 gal Screened Interval (from GS): _____
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: 1" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____ Equipment Model(s):
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. Horiba U-22
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable 2. _____
 Was well purged dry? Yes No Pumping Rate: _____ gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
9:40	1.26	7.31	16.7	2.149	2.14	5.79	18		

4. SAMPLING DATA

Method(s): Bailer, Size: 1" Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: Nylon
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-15 Sample Time: 9:45 # of Containers: 3
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: _____ mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: _____ mg/L

5. COMMENTS

Insufficient water in well to purge with pump. collected subs sample with PVC bailer

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

[Signature]
 Signature



BROWN AND CALDWELL

Suite 2500, 1415 Louisiana, Houston, TX 77002
(713) 759-0999 • (713) 308-3886

TRANSMITTAL MEMORANDUM

To: Mr. Wayne Price State of New Mexico Energy, Minerals, and Natural Resources Dept. Oil Conservation Division 2040 South Pacheco Street, State Land Office Bld. Santa Fe, New Mexico 87505	Date: January 10, 2002	Job No: 12832-016
	Subject: Hobbs, New Mexico Facility	
	Certified Mail No.:	
	Equipment No.:	
	Spec. Ref.:	
Submittal No.:		

WE ARE SENDING:	<input checked="" type="checkbox"/> Attached	<input type="checkbox"/> Under separate cover via US Mail the following items:			
<input type="checkbox"/> Shop Drawings	<input type="checkbox"/> Prints	<input type="checkbox"/> Plans	<input type="checkbox"/> Samples	<input type="checkbox"/> Specifications	
<input type="checkbox"/> Copy of letter	<input type="checkbox"/> Change Order	<input type="checkbox"/> Groundwater Sampling Report			

THESE ARE TRANSMITTED AS CHECKED BELOW:

- For Approval
- For your use
- As requested
- For review and comment
- With submittal review action noted

SUBMITTAL REVIEW ACTIONS:

- No exceptions taken
- Make revisions
- Amend and resubmit
- Rejected--see Remarks
- None

Copies	Date	No.	Description
1	01/07/02	1	June 2001 Groundwater Sampling Report, BJ Services Company, U.S.A., Hobbs, New Mexico
1	01/07/02	1	September 2001 Groundwater Sampling Report, BJ Services Company, U.S.A., Hobbs, New Mexico

REMARKS:

cc: Chris Williams, State of New Mexico
Jo Ann Cobb, BJ Services Company, U.S.A.
Brown and Caldwell Project File



Richard L. Rexroad, P.G.

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

**JUNE 2001 GROUNDWATER SAMPLING
REPORT
HOBBS, NEW MEXICO FACILITY**

BJ SERVICES COMPANY, U.S.A.

JANUARY 7, 2002

**JUNE 2001 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: 12832.016



Richard Rexroad
Project Manager

January 7, 2002

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

"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."

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DISTRIBUTION AND QA/QC REVIEWER'S SIGNATURE

FIGURES

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- 3 Benzene Isoconcentration and Total BTEX Distribution Map for June 21-22, 2001
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- 1 Site Chronology
- 2 Cumulative Groundwater Elevation Data
- 3 June 21-22, 2001 Field Screening Results for Groundwater Samples
- 4 Cumulative BTEX and TPH Analytical Results for Groundwater Samples
- 5 Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for Monitor Wells MW-5, MW-10, MW-11A, and MW-12
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- A Laboratory Analytical Reports for Groundwater Samples
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- D Laboratory Analytical Report for Confirmation Soil Samples



1.0 INTRODUCTION

Brown and Caldwell conducted field activities associated with the June 2001 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 June 21-22, 2001. Groundwater samples from monitor wells MW-14 and MW-15 were analyzed for chloride content. Groundwater samples from the remaining wells sampled in June 2001 were analyzed for gasoline- and diesel-range total petroleum hydrocarbons (TPH-G and TPH-D) and benzene, toluene, ethylbenzene, and xylenes (BTEX). This report presents a description of the groundwater sampling field activities, a summary of the analytical results, and an evaluation of remedial technologies being applied at the facility. A groundwater potentiometric surface map, a benzene concentration 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 are also presented in this report.

BJ Services removed three field waste tanks at 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.

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



2.0 FIELD ACTIVITIES AND RESULTS

Brown and Caldwell purged and sampled 10 groundwater monitor wells at the facility on June 21-22, 2001 to determine concentrations of dissolved-phase hydrocarbons in groundwater and to evaluate general groundwater quality in the area of the facility. Monitor well locations are shown in Figure 1. Brown and Caldwell installed and sampled four confirmation soil borings at the former fueling system area of the facility on July 23, 2001 to verify that cleanup goals for soil, as specified in the NMOCD-approved RAP for the facility, have been achieved. The following subsections describe the field activities conducted by Brown and Caldwell at the facility in June 2001 and July 2001 and present the results of the associated soil and groundwater analyses.

2.1 June 2001 Groundwater Sampling Activities

Groundwater level measurements were obtained from monitor wells prior to purging and sampling the wells. Groundwater levels were measured to the nearest 0.01 foot with an oil/water interface probe. Current and historic groundwater elevation data are presented in Table 2. The groundwater elevation data indicate that the groundwater flow direction is to the east/northeast, with a hydraulic gradient of approximately 0.008 foot/foot. A groundwater elevation map for June 21, 2001 is presented in Figure 2. The groundwater elevation data presented in Table 2 indicate that groundwater levels have declined in all monitor wells at the facility since late 1995. Monitor well OW-4 did not contain sufficient water in June 2001 for collection of a groundwater sample.

All monitor wells except MW-12 were purged and sampled using a bladder pump. Downhole tubing was decontaminated between each usage by pumping distilled water through the full length of the tubing to clean its interior and by rinsing its exterior with distilled water. The wells were sampled in general order of least impacted to most impacted (based on analytical results from the March 2001 sampling event) to further mitigate the potential for cross-contamination of wells. Monitor well MW-12 did not contain adequate water to facilitate use of the bladder pump, so the well was purged using a disposable bailer.

Field parameter measurements for pH, conductivity, oxidation-reduction (redox) potential, dissolved oxygen, and temperature were collected during and upon completion of well purging. Ferrous iron and alkalinity were measured in selected wells upon conclusion of purging activities to further assist in assessment of natural attenuation potential. Turbidity of groundwater was typically measured upon conclusion of purging activities. Field parameter readings were recorded on the groundwater sampling forms included in Appendix A. Field readings for the groundwater sampling event are summarized in Table 3.

Groundwater samples were collected directly from the discharge line of the bladder pump upon completion of purging operations in each well. The groundwater sample collected from monitor well MW-12 was collected using the bailer that was used for purging the well. Each sample was transferred to laboratory-prepared, clean glass or plastic containers sealed with Teflon[®]-lined lids, labeled, and placed on ice in an insulated cooler for shipment via overnight courier to Southern Petroleum Laboratory in Houston, Texas for analysis. Completed chain-of-custody documentation was provided for all samples.

Field measurement equipment was decontaminated prior to and after each usage. Decontamination procedures consisted of washing with fresh water and a non-phosphate detergent, then rinsing with deionized water. Purge water was discharged to an on-site water reclamation system for re-use by BJ Services.

2.2 Results of Groundwater Analyses

Groundwater samples collected from all wells during this sampling event except monitor wells MW-14 and MW-15 were analyzed for TPH-D and TPH-G by EPA Method 8015B and for BTEX by EPA Method 8021B. Groundwater samples from monitor wells MW-14 and MW-15 were analyzed for chloride by Method 325.3. Groundwater samples from selected wells were analyzed for nitrate and sulfate by Method 300.0 and for dissolved methane by Method RSK-SOP 147/175 to assist in evaluation of natural attenuation processes at the facility. The laboratory analytical

reports and chain-of-custody documentation for the groundwater samples collected during the June 2001 sampling event are provided in Appendix B.

Current and cumulative analytical results for BTEX, TPH-D, and TPH-G are presented in Table 4. The results for nitrate, sulfate, and dissolved methane analyses performed on groundwater samples from monitor wells MW-5, MW-10, MW-11A, and MW-12 are presented in Table 5.

Benzene concentrations in excess of the laboratory detection limit were reported in three of the 10 groundwater samples submitted for BTEX analysis during this sampling event. Benzene concentrations were below the New Mexico Water Quality Control Commission (NMWQCC) standard of 0.01 milligrams per liter (mg/L) in all wells except monitor well MW-12. The detection of benzene at 0.012 mg/L in monitor well MW-12 is the lowest benzene concentration ever measured in this well, however.

Benzene concentrations in monitor wells located near the former fuel island source area remained below the NMWQCC standard of 0.01 mg/L in June 2001. Benzene was not detected in monitor wells MW-3, MW-4, or MW-13, and has not been detected in these wells since June 1999, March 1999, and June 2000, respectively. Adjustments to the biosparging system in July 1999 and March 2000 to increase air flow to the monitor well MW-13 area resulted in decreases in the concentration of benzene in monitor well MW-13 from 1.5 mg/L on July 2, 1999 to the present non-detectable concentration.

Figure 3 presents a benzene concentration and total BTEX distribution map for the June 2001 sampling event. A total petroleum hydrocarbon distribution map for the June 2001 sampling event is presented in Figure 4.

Table 6 presents current and historic results for chloride analyses performed on groundwater samples collected at the facility. The chloride concentration of 222 mg/L in downgradient wells MW-14 and MW-15 in June 2001 is less than the NMWQCC standard of 250 mg/L for chloride.

The chloride concentration in monitor well MW-15 has remained essentially constant from the time of its installation in January 2001 to the present. The chloride concentration in monitor well MW-14 has decreased from 368 mg/L to 222 mg/L during this time period.

2.3 July 2001 Confirmation Soil Boring Installation and Sampling Activities

On July 23, 2001, Brown and Caldwell installed and sampled confirmation soil borings at four locations in the former fueling system area at which groundwater impact had previously been present, in accordance with the requirements specified in the RAP for the facility. The locations of these soil borings, which were designated as CSB-1 through CSB-4, are shown in Figures 3 and 4.

The confirmation soil borings were installed using an Ingersoll-Rand TH-60 truck-mounted air rotary drilling rig. The soil borings were advanced to the top of the water table. The depth to groundwater was measured prior to drilling at nearby monitor wells, using a decontaminated water level indicator, to verify the anticipated depth at which the saturated zone would be reached.

Soil cores were recovered at approximate 5-foot centers from a depth of 20 feet below grade to the total depth of each boring, scanned with a calibrated photoionization detector (PID), and classified using the Unified Soil Classification System (USCS). The soil cores were used in conjunction with soil cuttings derived from intervals not cored to create boring logs for each of the four soil borings, which are presented in Appendix C. PID screening of recovered soil cores was conducted using the following procedures:

1. A small quantity (i.e., a few ounces) of representative soil was removed from the recovered soil core and placed in a previously unused zip-lock bag;
2. The bag was sealed, and the exterior of the bag was labeled regarding soil boring identification and depth interval;
3. The sealed bag was placed in a sunny location for approximately 5 minutes;
4. The probe of the calibrated PID was inserted into the bag while simultaneously kneading the soil by hand through the exterior of the bag to further facilitate the release of volatile constituents that may have been present;

5. The maximum readout of the PID was recorded.

After completion of PID scanning and USCS classification, the remaining portion of each recovered soil core was separately wrapped in aluminum foil. The boring number and depth interval were marked on the exterior of the aluminum foil using waterproof ink, and the wrapped core was placed in an iced cooler until a determination is made as to whether a sample from the interval in question would be submitted for laboratory analysis. After determining which sample intervals were to be selected for laboratory analysis at a given sample location, wrapped soil cores were retrieved from the cooler, unwrapped, and appropriate sample containers were filled and labeled.

A soil sample from the interval immediately overlying the top of the saturated zone was collected from each confirmation boring and submitted for laboratory analysis. It was anticipated that a soil sample would also be collected for laboratory analysis from the interval of each confirmation soil boring that displayed the maximum PID response. No positive PID responses were obtained from cores recovered from any of the four confirmation soil borings, however. The sample submitted from an interval exclusive of the top of the saturated zone was therefore collected according to the following criteria:

1. If visual or olfactory evidence of contaminant impact in one or more soil cores from a given soil boring was observed, then the interval displaying the greatest apparent degree of visual or olfactory evidence of contaminant impact would have been selected for laboratory analysis. No visual or olfactory evidence of contaminant impact was observed in any of the recovered soil cores, however, so the following basis of soil sample selection was used.
2. Since there was no visual or olfactory evidence of contaminant impact in any of the recovered soil cores, a sample was submitted for laboratory analysis from an interval in which accumulation of downward-migrating contaminants would be anticipated based on vertical stratigraphic variation (e.g., a coarse-grained permeable interval overlying a fine grained interval, a coarse-grained permeable interval overlying a relatively impermeable, indurated layer, etc.) or, in the absence of this type of lithologic variation, from the second sample interval above the top of the saturated zone.

At the conclusion of sampling, the soil samples were delivered to an overnight courier for shipment to Southern Petroleum Laboratory in Houston, Texas. A completed chain-of-custody form was submitted to the analytical laboratory along with the samples. Each of the soil samples was analyzed for the following parameters:

- BTEX by EPA Method 8021B;
- TPH-D by EPA Method 8015; and
- TPH-G by EPA Method 8015.

The following section provides a discussion of the analytical results for the confirmation soil samples and a comparison of these results to the remediation goals for soil at the former fueling system area of the facility.

2.4 Results for Confirmation Soil Samples

Table 7 presents the analytical results for the confirmation soil samples collected at the BJ Services Hobbs, New Mexico facility on July 23, 2001. The associated laboratory analytical report is provided in Appendix D.

There were no detections of benzene in any of the eight confirmation soil samples. There were no detections of BTEX constituents, TPH-D, or TPH-G in any of the soil samples collected from confirmation soil borings CSB-3 and CSB-4, which were the two southernmost borings.

Confirmation soil boring CSB-2 was installed at a location in immediate proximity to the former fuel island. There were no detections of BTEX constituents in either of the samples from this boring. TPH-G concentrations ranged from less than 0.10 milligrams per kilogram (mg/kg) in the 54- to 56-foot sample interval to 0.23 mg/kg in the sample collected from the 35- to 37-foot interval. TPH-D was detected at respective concentrations of 33 mg/kg and 25 mg/kg in these samples.

Confirmation soil boring CSB-1 was installed in immediate proximity to the location of the former diesel and gasoline aboveground storage tanks (ASTs). There were no detections of BTEX constituents, TPH-D, or TPH-G in the soil sample collected from the capillary fringe at a depth of 54 feet to 56 feet in this boring. Ethylbenzene and xylenes were detected at respective concentrations of 0.0013 mg/kg and 0.0118 mg/kg in the 45- to 47-foot sample from this boring, and TPH-G and TPH-D were detected at respective concentrations of 0.12 mg/kg and 6.6 mg/kg in this sample. Benzene and toluene were not detected in the 45- to 47-foot sample from confirmation soil boring CSB-1.

The following remediation goals for unsaturated-contaminated soils were specified in the NMOCD-approved RAP for the facility:

Parameter	Remediation Goal
Benzene	10 ppm
Total BTEX	50 ppm
TPH	1000 ppm

Comparison of the analytical results for the soil samples collected from confirmation soil borings CSB-1 through CSB-4 as presented in Table 7 to the remediation goals specified above indicates that hydrocarbon concentrations in all soil samples are less than these remediation goals. Hydrocarbon concentrations in the confirmation soil samples were in fact typically as much as 2 to 4 orders of magnitude less than these remediation goals.

Based on the cumulative groundwater analytical results presented in Section 2.2 and the confirmation soil sample analytical results presented herein, the following course of action is prescribed in the NMOCD-approved RAP for the former fueling system area of the BJ Services Hobbs, New Mexico facility:

1. Continue quarterly groundwater monitoring for 1 year;

2. If groundwater analytical results do not exceed the groundwater remediation goals specified in the RAP during the 1-year quarterly monitoring period, then;
3. A biosparging system closure report will be submitted for the former fueling system area of the facility; and
4. The biosparging system will be decommissioned, and the remediation and applicable monitor wells will be plugged and abandoned (P&Ad).

The biosparging system may be re-activated in the event that groundwater remediation goals are exceeded during the 1-year quarterly monitoring period.



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 at Hobbs, New Mexico.

3.1 Biosparging System at the Former Fueling System Area

Based on the results of previous investigations conducted by Brown and Caldwell and Roberts/Schornick and Associates, Inc., Brown and Caldwell recommended the installation of a biosparging system at the former fueling system area of the facility in the 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 and expanded in April 1997 and February 1998. Operation of the biosparging system resulted in substantial decreases in hydrocarbon concentrations in former fueling system source area monitor wells MW-1, MW-3, MW-4, MW-9, and MW-13, as documented in the December 2000 groundwater sampling report for the facility.

Based on these favorable trends in hydrocarbon concentrations and in accordance with the recommendations presented in the report for the June 2000 groundwater sampling event, the biosparging system was deactivated on November 1, 2000. The June 2001 sampling event is the third sampling event completed since this shut down.

Benzene concentrations in former fueling system source area monitor wells MW-3, MW-4, MW-9, and MW-13 have remained at non-detectable levels since deactivation of the biosparging system. BTEX constituent concentrations in these wells and monitor well MW-1 have now remained below applicable NMWQCC standards for five consecutive quarters.

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 in this area. The analytical results for these soil samples, as

discussed in Section 2.4, indicate that remediation goals for soil in this area have successfully been achieved.

To further demonstrate the effectiveness of the biosparging system in remediating hydrocarbon-impacted soils in the former fueling system area, Figure 5 presents a comparison of BTEX and TPH data from soil samples collected in this area in July-August 1992 (prior to activation of the biosparging system in November 1995) to data from the July 2001 confirmation soil borings, which were installed after deactivation of the biosparging system in November 2000. Comparison of soil data from 1992 soil borings SB-2 and SB-6 to 2001 soil boring CSB-1, which were installed in the vicinity of the former diesel and gasoline AST locations, indicates that BTEX constituent concentrations have dropped by 2 to 5 orders of magnitude and that TPH-D concentrations have decreased by 2 to 3 orders of magnitude in this area as a result of operation of the biosparging system.

Soil boring SB-5 was installed in 1992 at the former fuel island location, and confirmation soil boring CSB-2 was installed in 2001 in close proximity to the SB-5 location. Comparison of soil samples collected from the capillary fringe in these two borings indicate that BTEX constituent concentrations have dropped by 2 to 4 orders of magnitude and that TPH-D concentrations have decreased by an order of magnitude in this area as a result of operation of the biosparging system.

Confirmation soil boring CSB-3 was installed in 2001 at a location downgradient of the former fuel island dispensers, in proximity to 1992 soil borings SB-1 and SB-4. Comparison of BTEX data from the confirmation soil samples to the 1992 soil samples indicates that BTEX constituent concentrations have typically decreased by 3 to 4 orders of magnitude. TPH-D concentrations have displayed decreases ranging from less than 1 order of magnitude to 3 orders of magnitude over this time period.

The data presented in Figure 5 also indicate that the upgradient extent of hydrocarbon impact to soil is defined by 1992 soil boring SB-7 and that the downgradient extent of hydrocarbon-impacted soil is defined by 2001 confirmation soil borings CSB-3 and CSB-4.

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).

The primary evidence of natural attenuation is plume behavior. 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 the field waste 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 natural attenuation rate of the area.

The June 2001 sampling event is the first in which there were no detections of BTEX constituents in former field waste tanks area monitor well MW-10. The concentrations of benzene and total BTEX measured in former field waste tanks area monitor well MW-12 in June 2001 are lower than at any time during the monitoring history of the well. These data provide primary evidence that natural attenuation of hydrocarbons is occurring in these areas.

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. The following lines of geochemical evidence 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 during intrinsic bioremediation. Dissolved oxygen concentrations should therefore be depressed in areas where intrinsic bioremediation is occurring. June 2001 dissolved oxygen data for the facility suggest that natural attenuation of hydrocarbons is ongoing at the facility.

Dissolved oxygen concentrations measured in non-hydrocarbon impacted monitor wells MW-3, MW-4, MW-5, MW-14 and MW-15 range from 3.33 mg/L to 4.61 mg/L.

Dissolved oxygen concentrations in former field waste tanks area monitor wells MW-10 and MW-11A were measured at 0.70 mg/L and 0.64 mg/L, respectively. Benzene was detected at a concentration of 0.0015 mg/L in monitor well MW-11A in June 2001, continuing a generally decreasing concentration trend in the well. Benzene was not detected in monitor well MW-10 in June 2001; this non-detection, the first in MW-10, also continues a generally declining trend in the well. It is anticipated that the dissolved oxygen content in monitor well MW-10 will begin, in the near future, to rebound to a concentration comparable to those measured in monitor wells MW-3, MW-4, MW-5, MW-14 and MW-15 in June 2001.

The dissolved oxygen content of former field waste tanks area monitor well MW-12 was not measured because oxygen is typically added to groundwater when a bailer is used for well purging and sampling. Hence, erroneous and potentially misleading dissolved oxygen data for monitor well MW-12 could have been generated had an attempt been made to measure the dissolved oxygen content of groundwater from this well.

The dissolved oxygen content of monitor well MW-13, which is located downgradient of the biosparging system at the former fueling system area, was measured at 1.40 mg/L in June 2001. This dissolved oxygen concentration is intermediate between the dissolved oxygen concentration measured in other non-hydrocarbon impacted monitor wells (i.e., MW-3, MW-4, MW-5, MW-14 and MW-15) and those exhibited by the former field waste tanks area monitor wells (i.e., MW-10 and MW-11A). Although no BTEX constituents were detected in monitor well MW-13, examination of the BTEX data presented in Table 4 indicates that decline in BTEX constituent concentrations in the well has been precipitous, with total BTEX concentrations of nearly 300 mg/L measured in the well as recently as March 2000. The intermediate dissolved oxygen concentration measured in monitor well MW-13 in June 2001 suggests that the concentration of

dissolved oxygen in this area is currently rebounding after the recent removal of hydrocarbons from groundwater in the area and the November 2000 deactivation of the biosparging system.

Historic evidence submitted to the NMOCD in previous quarterly groundwater monitoring reports for the facility has also indicated that dissolved oxygen concentrations are typically depressed in hydrocarbon-impacted monitor wells relative to non-impacted monitor wells at the facility, providing further evidence of the occurrence of natural attenuation of hydrocarbons at the facility.

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 concentrations were measured at less than 0.1 mg/L in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 during the June 2001 sampling event. These concentrations are less than the background nitrate concentration of 2.74 mg/L measured in monitor well MW-5 (see Table 5). The non-detections of nitrate in monitor wells MW-10, MW-11A, and MW-12 suggest that nitrate acts as an electron acceptor during natural attenuation of hydrocarbons that has occurred and continues to occur in the former field waste tanks area of the facility.

3. When dissolved oxygen and nitrate are depleted, anaerobic microbes that utilize other electron acceptors 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.

Ferrous iron was measured at respective concentrations of 6.5 mg/L and greater than 10 mg/L in former field waste tanks area monitor wells MW-11A and MW-10, as shown in Table 4. Ferrous iron was not detected in the background well, MW-5. The elevated ferrous iron concentrations in monitor wells MW-10 and MW-11A suggest that ferric iron is being used as an electron acceptor during natural attenuation of hydrocarbons at the former field waste tanks area.

Ferrous iron was measured at a concentration of 1.6 mg/L in monitor well MW-13. This ferrous iron concentration is intermediate between the ferrous iron concentration of 0 mg/L measured in the background well and those measured in former field waste tanks area monitor wells MW-10 and MW-11A (i.e., 6.5 mg/L and greater than 10 mg/L). The intermediate ferrous iron oxygen concentration measured in monitor well MW-13 in June 2001 provides further evidence that the groundwater geochemistry in the area of well MW-13 is currently returning to ambient conditions after the recent removal of hydrocarbons from groundwater in that area and the November 2000 deactivation of the biosparging system.

4. Microbes that utilize sulfate become active when dissolved oxygen, nitrate, and ferric iron are depleted. Sulfate concentrations should therefore decrease in areas where intrinsic bioremediation is occurring through use of sulfate as an electron acceptor. Sulfate concentrations in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 exceed the concentration of sulfate in background monitor well, MW-5, however (see Table 5). These data indicate 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, and its concentration should therefore increase in areas where concentrations of electron acceptors such as dissolved oxygen, nitrate, and ferric iron have diminished.

As shown in Table 5, methane was detected in the background well at a concentration of 0.0017 mg/L and at concentrations ranging from 0.0021 mg/L to 0.044 mg/L in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12. The elevated methane concentrations in monitor wells in the former field waste tanks area suggest that utilization of carbon dioxide as an electron acceptor, resulting in methanogenesis, has occurred during natural attenuation of hydrocarbons in this area, especially in the vicinity of monitor well MW-10, which displayed a methane concentration that is an order of magnitude greater than that of the background well, MW-5.

6. Redox potential is a measure of chemical energy in groundwater. The redox potential of groundwater from background well MW-5 was measured at 172.5 millivolts (mV). Redox values in other non-hydrocarbon impacted wells MW-3, MW-4, MW-14 and MW-15 ranged from 139.0 mV to 163.2 mV, as shown in Table 3. Redox values in monitor wells MW-10 and MW-11A, which are located in the vicinity of the former field wastes tanks, ranged from -103.8 mV to -104.5 mV. The negative redox values in the former field waste tank area monitor wells provide additional evidence that natural attenuation of hydrocarbons is occurring in the area of the former field waste tanks.

A groundwater redox potential of 94.0 mV was measured in monitor well MW-13. This value is intermediate between the redox values ranging from 139.0 mV to 172.5 mV in other non-hydrocarbon impacted wells (i.e., MW-3, MW-4, MW-5, MW-14 and MW-15) and the negative redox potentials measured in former field waste tanks area monitor wells MW-10 and MW-11A, providing further evidence that the groundwater geochemistry in the area of monitor well MW-13 is currently returning to ambient conditions after the recent removal of hydrocarbons in groundwater in that area and the November 2000 deactivation of the biosparging system

7. Alkalinity is expected to increase during natural attenuation processes, due to the leaching of carbonates from mineral substrates by microbially produced organic acids. Alkalinity data collected from monitor wells MW-4, MW-5, MW-7, MW-10, MW-11A and MW-13 in June 2001 are inconclusive, however.

In conclusion, dissolved oxygen and nitrate data from this and previous groundwater sampling events suggest that these constituents are acting as electron acceptors during intrinsic bioremediation processes that are ongoing at former field waste tanks area of the facility. Ferric iron also appears to be serving as an electron acceptor during natural attenuation of hydrocarbons, as evidenced by elevated ferrous iron concentrations in monitor wells at the former field waste tanks area. Redox data provide further evidence that natural attenuation of hydrocarbons is occurring in this area. The elevated methane concentrations detected in former field waste tanks area monitor wells suggest that carbon dioxide is also serving locally as an electron acceptor during intrinsic bioremediation of hydrocarbons in this area.

It is recommended that monitoring for natural attenuation evaluation parameters continue in former field waste tanks area monitor wells MW-10, MW-11A, and MW-12 and the background well, MW-5. Redox potential, dissolved oxygen content, and alkalinity are good indicators of the occurrence of aerobic bioremediation of hydrocarbons, so it is also recommended that field testing for these parameters be performed 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 June 2001 groundwater sampling event and the July 2001 confirmation soil sampling event conducted at the BJ Services Hobbs, New Mexico facility.

4.1 Conclusions

- Dissolved benzene, BTEX, and TPH concentrations in all monitor wells located near the former fueling system source area are non-detectable or below applicable standards and have remained at these levels for the past five quarterly groundwater sampling events.
- Benzene, total BTEX, and TPH concentrations in all confirmation soil samples collected at the former fueling system source area are less than the remediation goals for soil that were specified in the NMOCD-approved RAP for the facility.
- Operation of the biosparging system in the former fueling system source area has resulted in substantial reductions in hydrocarbon impacts and achievement of remediation goals for soil and groundwater in this area.
- For the second consecutive quarter, benzene and total BTEX concentrations measured in former field waste tanks area monitor wells MW-10 and MW-12 are lower than at any time during the monitoring history of these wells. The June 2001 sampling event is the first in which there were no detections of BTEX constituents in monitor well MW-10. Benzene concentrations in all monitor wells at the former field waste tanks area of the facility, except MW-12, are less than the New Mexico WQCC standard of 0.01 mg/L for benzene.
- Natural attenuation processes appear to be occurring in the vicinity of the former field waste tanks removed in March 1997, based on decreasing hydrocarbon concentrations in local monitor wells over time and as substantiated by geochemical data.
- Groundwater geochemistry in the vicinity of monitor well MW-13, which is located downgradient of the former fueling system source area and the biosparging system, appears to be returning to ambient conditions following removal of hydrocarbons and the November 2000 deactivation of the biosparging system.
- Chloride concentrations in monitor wells MW-14 and MW-15 are less than the NMQCC standard of 250 mg/L. Chloride concentrations are decreasing in monitor well MW-14 and

have remained essentially constant in monitor well MW-15 since the installation of these wells in January 2001.

4.2 Recommendations

- Continue the quarterly monitoring program for former field waste tank area monitor wells MW-10, MW-11A, and MW-12. Continue monitoring for natural attenuation parameters in these wells and the background monitor well MW-5, including field-testing for natural attenuation indicator parameters.
- Continue quarterly monitoring of wells pertaining to the former fueling system source area for 1 year.
- If analytical results for groundwater samples collected from monitor wells at the former fueling system source area do not exceed the groundwater remediation goals specified in the RAP during the 1-year quarterly monitoring period, then a biosparging system closure report will be submitted for the former fuel island portion of the facility.
- After submittal and approval of the biosparging system closure report by the NMOCD, decommission the biosparging system and P&A the injection wells, extraction wells, and applicable monitor wells.

DISTRIBUTION

June 2001 Groundwater Sampling Report
BJ Services Company, U.S.A.
Hobbs, New Mexico

January 7, 2002

Final Distribution as follows:

1 copy to: State of New Mexico
Energy, Minerals, and Natural Resources Dept.
Oil Conservation Division
2040 South Pacheco Street, State Land Office Building
Santa Fe, New Mexico 87505

Attention: Mr. Wayne Price

1 copy to: State of New Mexico
Oil Conservation Division, Hobbs District Office
1625 N. French Dr.
Post Office Box 1980
Hobbs, New Mexico 88240

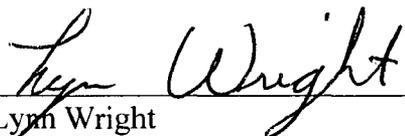
Attention: Mr. Chris Williams

1 copy to: BJ Services Company, U.S.A.
11211 FM 2920
Tomball, Texas 77375

Attention: Ms. Jo Ann Cobb

1 copy to: Brown and Caldwell, Project File

QUALITY CONTROL REVIEWER



Lynn Wright
Principal Geologist

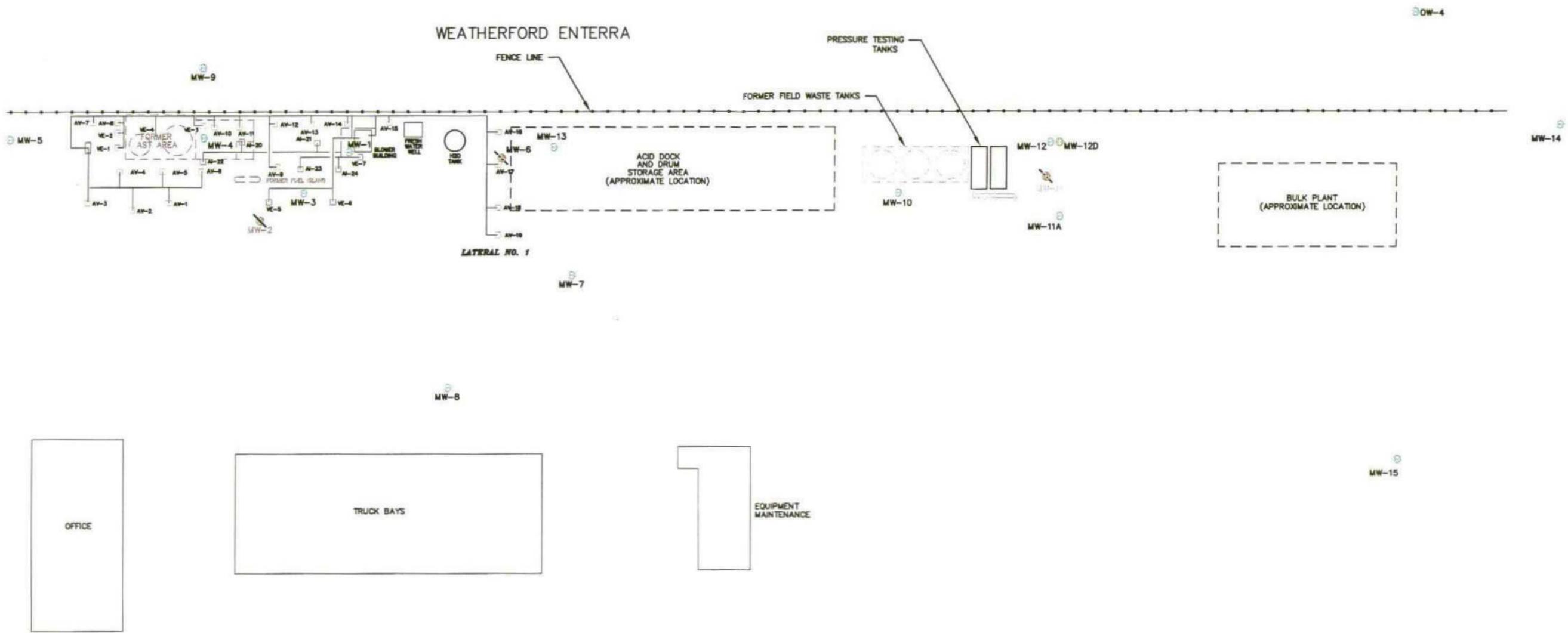
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FIGURES

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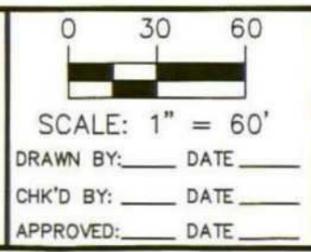


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HOUSTON, TEXAS

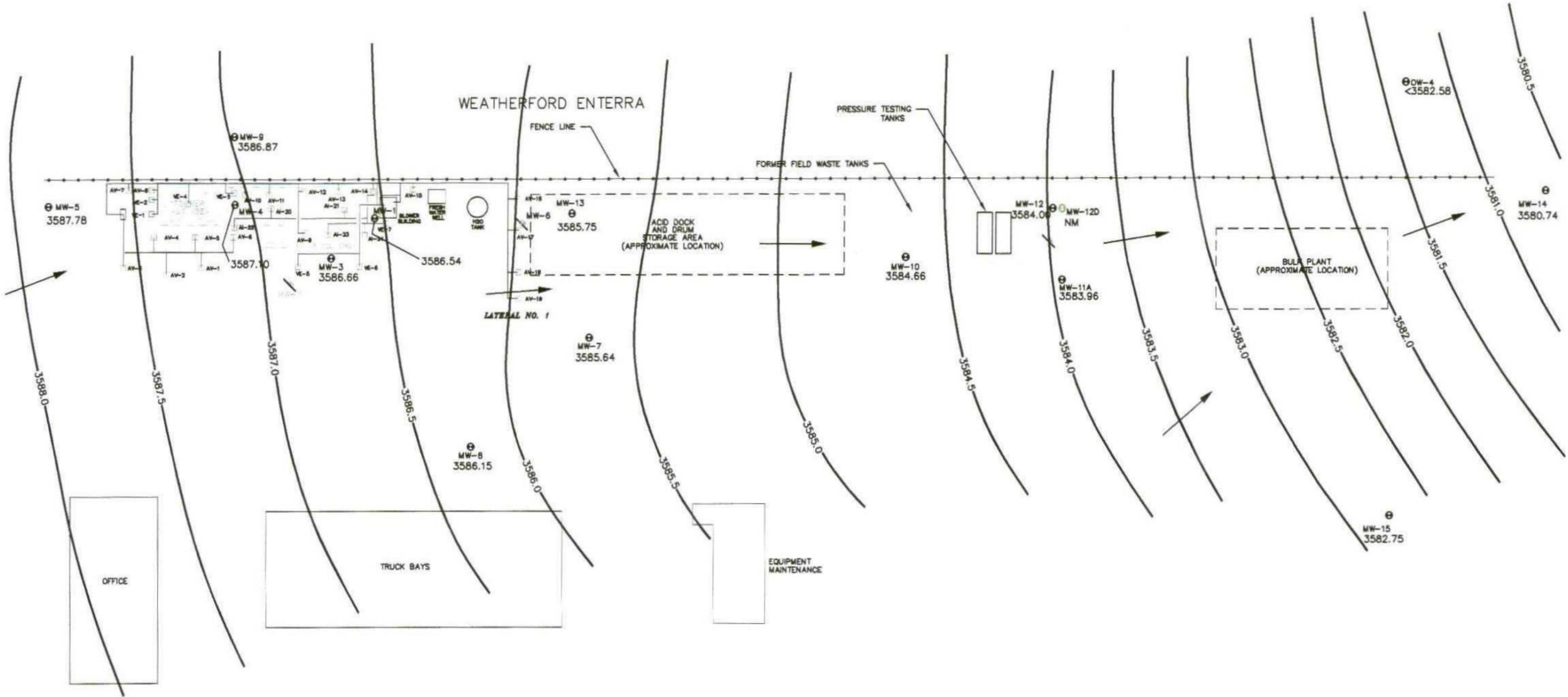
SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL



LEGEND	
	EXISTING MONITOR WELL LOCATION
	BIOSPARGING SYSTEM
	MONITOR WELL (PLUGGED AND ABANDONED)

TITLE	SITE MAP	DATE	8/15/01
CLIENT	BJ SERVICES COMPANY, U.S.A.	PROJECT NUMBER	12832.016
SITE	HOBBS, NEW MEXICO	FIGURE NUMBER	1



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HOUSTON, TEXAS

SUBMITTED: _____ DATE: _____
PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL

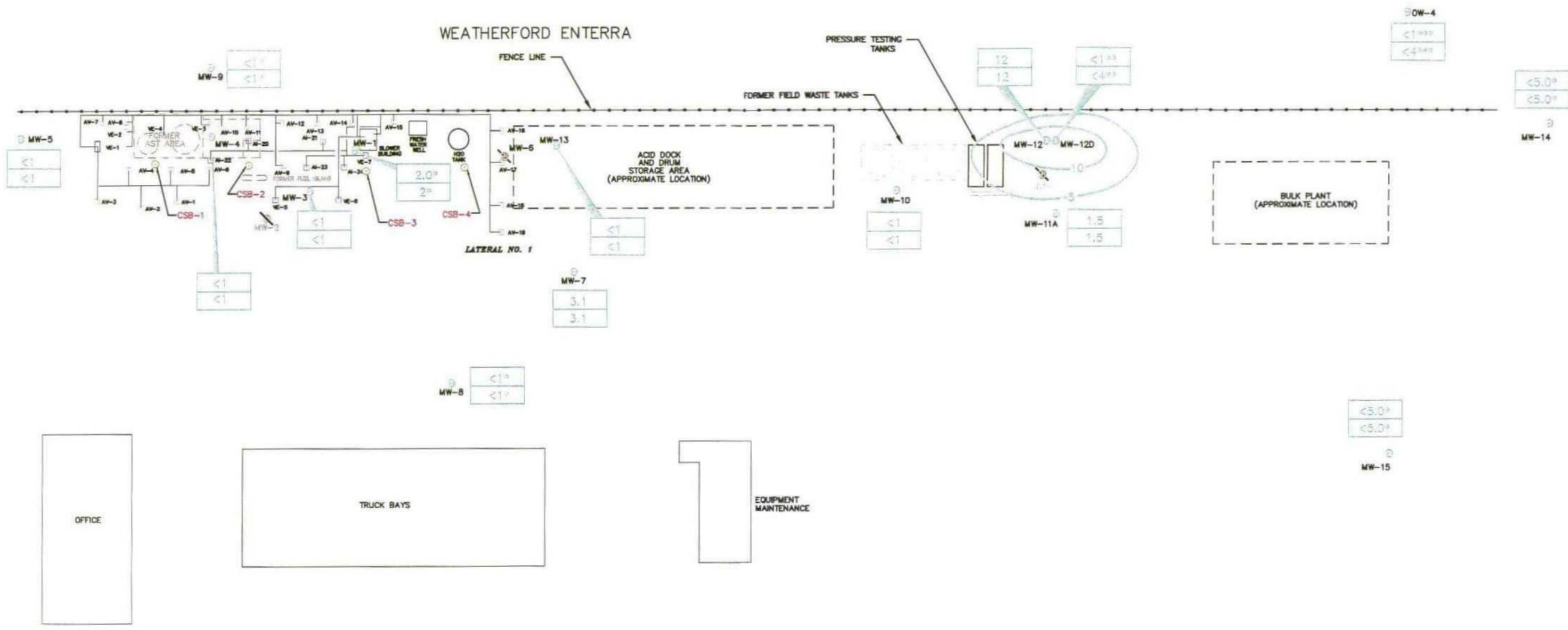
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SCALE: 1" = 60'
DRAWN BY: CLK DATE: 6/01
CHK'D BY: _____ DATE: _____
REV'D BY: CLK DATE: 1/02

LEGEND
3586.66
MW-3 MONITOR WELL LOCATION WITH GROUNDWATER ELEVATION (feet AMSL)
BIOSPARGING SYSTEM
GROUNDWATER FLOW DIRECTION
MW-2 MONITOR WELL (PLUGGED AND ABANDONED)

TITLE	GROUNDWATER ELEVATION MAP FOR JUNE 21, 2001
CLIENT	BJ SERVICES COMPANY, U.S.A.
SITE	HOBBS, NEW MEXICO

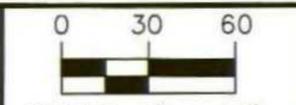
DATE	1/7/02
PROJECT NUMBER	12832.016
FIGURE NUMBER	2

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NOTE: MONITOR WELL MW-12D IS SCREENED IN A DEEPER PORTION OF THE AQUIFER THAN MONITOR WELL MW-12 AND THE OTHER MONITOR WELLS; DATA FROM MONITOR WELL MW-12D NOT INCLUDED IN CONTOURING.

BROWN AND CALDWELL
HOUSTON, TEXAS



SCALE: 1" = 60'
DRAWN BY: CLK DATE 6/01
CHK'D BY: _____ DATE _____
REV'D BY: _____ DATE _____

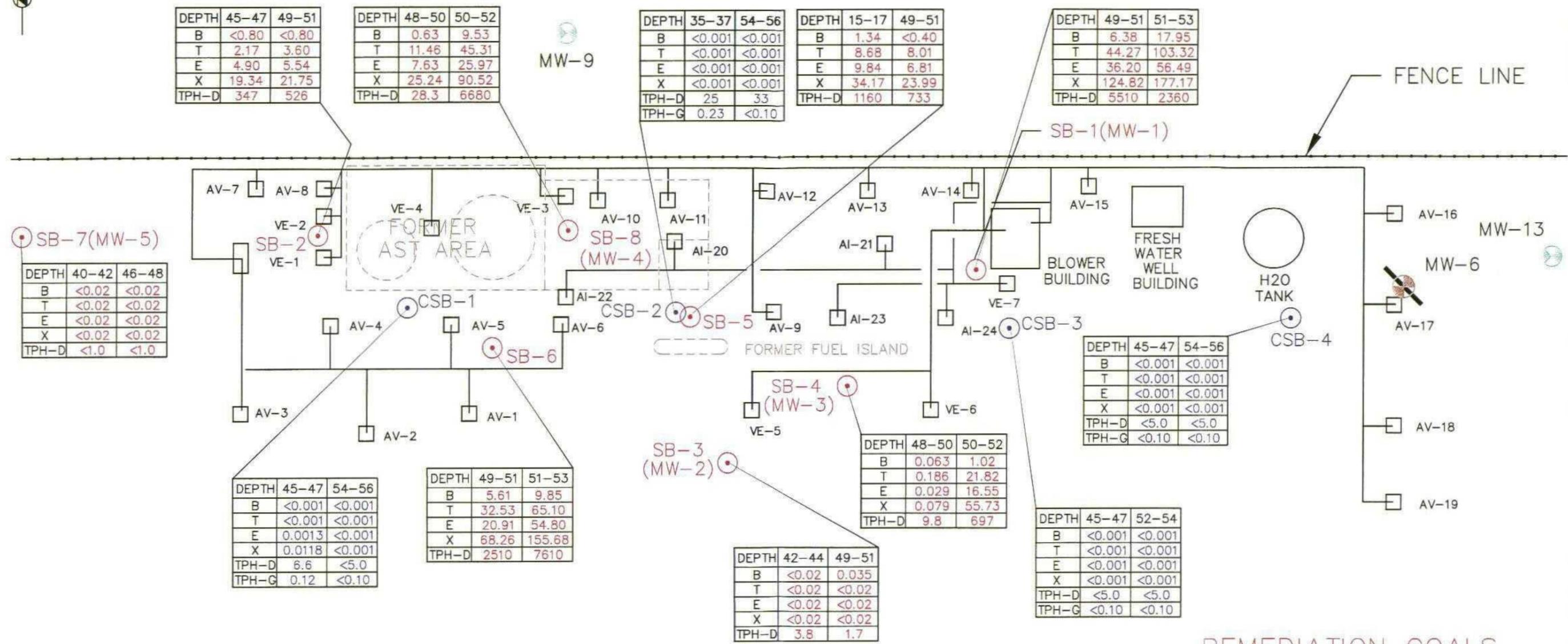
LEGEND

- MW-3 EXISTING MONITOR WELL LOCATION
- MW-2 MONITOR WELL (PLUGGED AND ABANDONED)
- BENZENE CONCENTRATION (ug/L)
- TOTAL BTEX CONCENTRATION (ug/L)
- * INDICATES WELL NOT SAMPLED JUNE 2001; DATA PRESENTED ARE FROM 3/8/01
- ** INDICATES WELL NOT SAMPLED JUNE 2001; DATA PRESENTED ARE FROM 6/8/00
- *** INDICATES WELL NOT SAMPLED JUNE 2001; DATA PRESENTED ARE FROM 9/13/00
- BIOSPARING SYSTEM
- - BENZENE ISOCONCENTRATION CONTOUR (ug/L)
- - CONFIRMATION SOIL BORING LOCATION

TITLE	BENZENE ISOCONCENTRATION AND TOTAL BTEX DISTRIBUTION MAP FOR JUNE 21-22, 2001	DATE	6/27/01
CLIENT	BJ SERVICES COMPANY, U.S.A.	PROJECT NUMBER	12832.016
SITE	HOBBS, NEW MEXICO	FIGURE NUMBER	3

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(WEATHERFORD ENTERRA PROPERTY)



REMEDIATION GOALS

BENZENE	10 mg/kg
TOTAL BTEX	50 mg/kg
TPH	1000 mg/kg

- NOTES:
- SOIL BORINGS SB-1 THROUGH SB-8 INSTALLED AND SAMPLED JULY-AUGUST 1992.
 - TPH-G ANALYSIS WAS NOT PERFORMED ON SAMPLES FROM SOIL BORINGS SB-1 THROUGH SB-8.
 - BIOSPARGING SYSTEM ACTIVATED NOVEMBER 1995, DEACTIVATED NOVEMBER 2000.
 - CONFIRMATION SOIL BORINGS CSB-1 THROUGH CSB-4 INSTALLED AND SAMPLED JULY 2001.

BROWN AND CALDWELL
HOUSTON, TEXAS

SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____
BROWN AND CALDWELL

0 10 20
SCALE: 1" = 20'

DRAWN BY: CLK DATE 6/01
CHK'D BY: _____ DATE _____
REV'D BY: _____ DATE _____

LEGEND

- MW-3 - EXISTING MONITOR WELL LOCATION
- MW-2 - MONITOR WELL (PLUGGED AND ABANDONED)
- CSB-3 - 2001 CONFIRMATION SOIL BORING LOCATION
- SB-1(MW-1) - 1992 SOIL BORING LOCATION AND SUBSEQUENT MONITOR WELL INSTALLATION, IF APPLICABLE.
- BIOSPARGING SYSTEM

DEPTH = DEPTH OF SAMPLE (FEET)

- B = BENZENE (mg/kg)
- T = TOLUENE (mg/kg)
- E = ETHYLBENZENE (mg/kg)
- X = XYLENES (mg/kg)
- TPH-D = DIESEL-RANGE TPH (mg/kg)
- TPH-G = GASOLINE-RANGE TPH (mg/kg)

TITLE COMPARISON OF HYDROCARBON CONCENTRATIONS IN SOIL BEFORE AND AFTER BIOSPARGING SYSTEM OPERATION

CLIENT BJ SERVICES COMPANY, U.S.A.

SITE HOBBS, NEW MEXICO

DATE 8/14/01

PROJECT NUMBER 12832.016

FIGURE NUMBER 5

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Tables



TABLES

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Table 1
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
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) 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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

Date	Activity
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.

Table 1 (Continued)
Site Chronology
BJ Services Company, U.S.A.
Hobbs, New Mexico

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.

Table 3
June 21-22, 2001 Field Screening Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Cumulative Liters Removed	pH	Temperature (°C)	Conductivity (umhos/cm)	Redox (mV)	Dissolved Oxygen (meter) (mg/L)	Dissolved Oxygen (Hach kit) (mg/L)	Ferrous Iron (mg/L)	Alkalinity (mg/L)	Turbidity NTUs ⁽¹⁾
MW-3	0.5	7.69	25.65	279	156.1	6.73	NM	NM	NM	NM
	1.0	7.27	24.63	861	155.4	5.47	NM	NM	NM	NM
	1.4	7.21	23.62	1082	150.3	4.35	NM	NM	NM	55
	1.8	7.20	23.56	1121	146.3	3.87	3.4	NM	NM	NM
MW-4	1.0	7.92	29.11	180	133.4	6.92	NM	NM	NM	9.9
	1.4	7.01	24.74	1243	150.4	5.35	NM	NM	NM	NM
	1.7	7.09	23.88	1286	153.4	4.65	NM	NM	NM	24.4
	2.0	7.11	23.78	1297	154.0	4.61	0.0	0.8	385	NM
MW-5	1.2	6.50	21.64	1229	147.9	5.94	NM	NM	NM	NM
	1.7	6.11	21.44	1222	156.1	4.94	NM	NM	NM	27.5
	2.2	5.85	21.23	1222	168.2	3.72	NM	NM	NM	NM
	2.5	5.79	21.33	1220	172.5	3.45	2.0	0.0	770	22.9
MW-7	1	6.37	26.55	901	172.2	5.62	NM	NM	NM	26.6
	1.6	6.53	25.75	1104	173.9	4.91	NM	NM	NM	NM
	2.1	6.61	25.65	1324	175.3	3.77	1.0	0	< 385	0.0
MW-10	0.6	7.60	24.66	504	-49.5	5.66	NM	NM	NM	NM
	1.0	6.73	23.03	1924	-63.3	3.57	NM	NM	NM	NM
	1.3	6.65	23.12	2502	-84.6	1.50	NM	NM	NM	NM
	1.6	6.64	22.80	2635	-98.1	0.92	NM	NM	NM	NM
	1.9	6.64	22.81	2663	-103.8	0.70	0.0	> 10	575	102
MW-11A	1.0	7.06	20.22	2830	-14.9	3.65	NM	NM	NM	NM
	1.5	7.05	20.42	3625	-81.6	1.21	NM	NM	NM	> 1000
	1.8	7.06	20.41	3707	-91.5	0.94	NM	NM	NM	NM
	2.1	7.06	20.44	3788	-104.5	0.64	0.0	6.5	770	521
MW-12	NM-B	NM-B	NM-B	NM-B	NM-B	NM-B	NM-B	NM-B	NM-B	NM-B
MW-13	1.0	7.49	20.86	2151	198.2	3.02	NM	NM	NM	NM
	1.5	7.39	20.84	2209	127.4	1.51	NM	NM	NM	315
	1.8	7.37	20.83	2210	94.0	1.40	0.8	1.6	193	88
MW-14	1.0	7.07	23.59	162.1	162.1	7.36	NM	NM	NM	NM
	1.6	6.97	20.21	165.0	165.0	2.56	NM	NM	NM	24.5
	2.0	6.95	19.79	165.3	165.3	3.31	NM	NM	NM	NM
	2.6	6.95	19.69	159.0	139.0	3.33	3.15	NM	NM	NM
MW-15	1.0	7.00	20.23	1414	160.9	3.97	NM	NM	NM	NM
	2.0	6.99	20.17	1422	160.4	3.81	NM	NM	NM	NM
	2.5	6.96	20.16	1422	163.2	3.90	4.0	NM	NM	5.9
OW-4 ⁽²⁾	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D

⁽¹⁾ NTUs = Nephelometric turbidity units

⁽²⁾ Well dry

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.

NM=Not Measured

NM-D=Not Measured (well dry)

NM-B=Not Measured (purged well with bailer)

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per 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	Regular	53.0	680.0	580.0	1400.0	1.4	9.2
	9/30/98	Regular	3.2	90.0	280.0	970.0	2.5	3.6
	12/10/98	Regular	<1.0	1.5	17.0	110.0	1.4	0.31
	3/10/99	Regular	<1.0	<1.0	8.2	110.0	0.62	0.85
	3/10/99	Duplicate	<1.0	<1.0	7.9	110.0	0.66	0.84
	6/10/99	Regular	<1.0	1.1	<1.0	28.0	0.53	0.55
	6/10/99	Duplicate	<1.0	1.8	<1.0	41.0	0.69	0.76
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	-	NS	NS	NS	NS	NS	NS
	3/9/00	Regular	< 1	< 1	< 1	9.1	14	1.3
	6/8/00	-	NS	NS	NS	NS	NS	NS
9/13/00	-	NS	NS	NS	NS	NS	NS	
12/7/00	-	NS	NS	NS	NS	NS	NS	
3/8/01	Regular	2.0	<1	<1	<1	0.49	0.58	
6/21/01	-	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	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
	8/23/96	Regular	330.0	2200.0	590.0	1500.0	NA	12
	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	

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-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
	9/30/98	Regular	42.0	470.0	450.0	530.0	1.0	3.8
	12/10/98	Regular	13.0	220.0	160.0	290.0	1.3	0.43
	3/10/99	Regular	3.2	7.4	42.0	32.0	0.2	0.44
	6/10/99	Regular	1.7	3.1	<1.0	36.0	<0.20	0.18
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/00	Regular	< 1	< 1	< 1	< 1	0.32	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	< 1	<0.22	< 0.1
	9/13/00	Regular	< 1	< 1	< 1	< 1	<0.2	< 0.1
	12/7/00	Regular	< 1	< 1	< 1	< 1	<0.25	< 0.1
	3/8/01	Regular	< 1	< 1	< 1	< 1	0.42	<0.1
	6/21/01	Regular	< 1	< 1	< 1	< 1	<0.22	<0.1
	MW-4	8/10/92	Regular	2594.0	10360.0	2160.0	6740.0	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
9/30/98		Regular	80.0	180.0	370.0	840.0	2.0	3.9
12/10/98		Regular	28.0	70.0	210.0	960.0	9.3	4.3
12/10/98		Duplicate	26.0	62.0	180.0	830.0	3.9	4.3
3/10/99		Regular	8.0	20.0	250.0	1400.0	13.0	13
6/10/99		Regular	<1.0	<1.0	12.0	12.0	0.44	0.63
9/14/99		Regular	< 1.0	< 1.0	3.3	13.1	0.35	0.17
12/9/99		Regular	< 1	2.5	2.3	20.1	2	0.53
3/10/00		Regular	< 1	< 1	< 1	3.6	2.6	0.15
6/8/00		Regular	< 1	< 1	< 1	< 1	0.44	0.23
9/13/00		Regular	< 1	< 1	< 1	< 1	0.61	<0.1
12/7/00	Regular	< 1	< 1	1.3	< 1	0.53	0.16	
3/8/01	Regular	< 1	< 1	< 1	< 1	0.43	0.16	
6/21/01	Regular	< 1	< 1	< 1	< 1	<0.25	<0.1	
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

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-5	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
	9/30/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	12/10/98	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	3/9/99	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	6/10/99	Regular	< 1.0	< 1.0	< 1.0	< 1.0	< 0.20	< 0.1
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	< 0.20	< 0.10
	12/9/99	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/00	Regular	< 1	< 1	< 1	< 1	0.55	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/00	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
12/7/00	Regular	< 1	< 1	< 1	< 1	< 0.25	< 0.1	
3/8/01	Regular	< 1	< 1	< 1	< 1	0.56	< 0.1	
6/21/01	Regular	< 1	< 1	< 1	< 1	0.26	< 0.1	
MW-6 ¹	8/10/92	Regular	NS	NS	NS	NS	NA	NS
	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	
9/30/98	Regular	1000.0	420.0	140.0	270.0	4.0	3.3	
12/10/98	Regular	7.6	6.6	1.7	5.8	2.0	< 0.1	
3/10/99	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

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-7	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
	9/30/98	Regular	<1.0	<1.0		<1.0	<0.20	<0.1
	12/10/98	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
	3/9/99	Regular	<1.0	<1.0	<1.0	<1.0	4.7	<0.1
	6/10/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
	9/13/99	Regular	<1.0	<1.0	<1.0	<2.0	<0.20	<0.10
	12/9/99	Regular	<5	<5	<5	<5	1.8	<0.5
	3/9/00	Regular	<1	<1	<1	<1	0.66	<0.1
	6/8/00	Regular	<1	<1	<1	<1	<0.21	<0.1
9/13/00	Regular	<1	<1	<1	<1	<0.2	<0.1	
12/7/00	Regular	<1	<1	<1	<1	<0.29	<0.1	
3/8/01	Regular	<1	<1	<1	<1	1.2	<0.1	
6/21/01	Regular		3.1	<1	<1	<1	<0.22	<0.1
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
	9/30/98	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
	12/10/98	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
	3/9/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
	6/10/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.1
	9/13/99	Regular	<1.0	<1.0	<1.0	<2.0	<0.20	<0.10
12/9/99	-	NS	NS	NS	NS	NS	NS	
3/9/00	Regular	<1	<1	<1	<1	0.55	<0.1	
6/8/00	-	NS	NS	NS	NS	NS	NS	

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-8	9/13/00	-	NS	NS	NS	NS	NS	NS
	12/7/00	-	NS	NS	NS	NS	NS	NS
	3/8/01	Regular	< 1	< 1	< 1	< 1	1.6	<0.1
	6/21/01	-	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
	11/15/95	Duplicate	170.0	18.0	10.0	120.0	NA	1.9
	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
	9/30/98	Regular	1.1	5.5	21.0	59.0	0.27	0.27
	12/10/98	Regular	< 1.0	1.9	17.0	79.0	5.1	0.25
	3/10/99	Regular	<1.0	<1.0	5.7	68.0	<0.2	0.22
	6/10/99	Regular	<1.0	1.8	1.8	71.0	<0.20	0.43
	9/13/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	-	NS	NS	NS	NS	NS	NS
3/9/00	Regular	< 1	< 1	< 1	64.0	0.66	1.3	
6/8/00	-	NS	NS	NS	NS	NS	NS	
9/13/00	-	NS	NS	NS	NS	NS	NS	
12/7/00	-	NS	NS	NS	NS	NS	NS	
3/8/01	Regular	< 1	< 1	< 1	< 1	1.4	<0.1	
6/21/01	-	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

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-10	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
	6/23/98	Regular	37.0	< 5	< 5	< 5	2.1	< 0.5
	9/30/98	Regular	84.0	3.2	30.0	2.2	1.4	0.36
	12/10/98	Regular	29.0	1.0	7.0	1.0	0.86	0.18
	3/9/99	Regular	28.0	<5.0	5.8	<5.0	0.92	<0.5
	6/10/99	Regular	17.0	<1.0	<1.0	<1.0	0.30	0.16
	9/14/99	Regular	10.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	23.0	< 1	< 1	1.2	0.44	0.16
	3/10/00	Regular	300.0	4.3	6.6	43.2	1.2	0.85
	6/8/00	Regular	78.0	1.7	7.2	9.0	0.67	0.74
	9/13/00	Regular	23.0	1.5	1.1	2.9	1.6	0.41
	12/7/00	Regular	7.2	<1	<1	<1	1.5	0.15
	3/8/01	Regular	3.4	1.1	<1	<1	3.4	0.2
6/22/01	Regular	< 1	< 1	< 1	< 1	1.2	<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
	9/30/98	Regular	9.3	3.7	2.2	7.0	<0.20	0.1
	12/10/98	Regular	1.7	<1.0	<1.0	<1.0	<0.20	<0.1
	3/10/99	Regular	<5	< 5	< 5	< 5	0.3	<0.5
	6/10/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.20	<0.10
	9/13/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	< 5	< 5	< 5	< 5	< 0.2	< 0.1
	3/9/00	Regular	1.2	< 1	< 1	< 1	0.43	< 0.1
	6/8/00	Regular	3.6	< 1	< 1	< 1	0.37	< 0.1
	9/13/00	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
6/22/01	Regular	1.5	< 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
	9/30/98	Regular	260.0	3.0	1.2	7.9	<0.20	0.62
	12/10/98	Regular	160.0	<1.0	<1.0	1.2	0.21	0.36
3/10/99	Regular	160.0	1.1	<1.0	2.9	0.38	0.45	

Table 4
Cumulative BTEX and TPH Analytical Results for Groundwater Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Monitor Well	Sample Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	TPH-G
			micrograms per liter, ug/L				milligrams per liter, mg/L	
MW-12	6/10/99	Regular	49.0	1.4	<1.0	<1.0	0.22	0.13
	9/14/99	Regular	75.0	< 1.0	< 1.0	< 2.0	<0.20	0.23
	12/9/99	Regular	64.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/00	Regular	93.0	< 1	< 1	< 1	< 0.2	0.21
	3/10/00	Duplicate	99.0	< 1	< 1	< 1	0.22	0.22
	6/8/00	Regular	62.0	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/00	Regular	34.0	< 1	< 1	< 1	0.23	< 0.1
	12/7/00	Regular	27	< 1	2.9	1.9	<0.25	<0.1
	3/8/01	Regular	14	< 1	< 1	< 1	2.1	0.1
	6/22/01	Regular	12	< 1	< 1	< 1	0.51	0.11
MW-12D	7/2/99	Regular	< 5	< 5	< 5	< 5	<0.20	<0.10
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	3/9/00	Regular	< 1	< 1	< 1	< 1	0.24	< 0.1
	6/8/00	Regular	< 1	< 1	< 1	< 1	< 0.2	< 0.1
	9/13/00	-	NS	NS	NS	NS	NS	NS
	12/7/00	-	NS	NS	NS	NS	NS	NS
MW-13	7/2/99	Regular	1500.0	23.0	750.0	58.0	2.2	5.1
	9/14/99	Regular	860.0	16.0	450.0	34.4	2.1	3.1
	12/9/99	Regular	430.0	16.0	410.0	40.9	0.46	3.2
	3/10/00	Regular	88.0	2.8	200.0	1.3	1.9	0.99
	6/8/00	Regular	6.0	< 1	63.0	3.3	1.1	0.91
	9/13/00	Regular	<1.0	<1.0	3.4	<1.0	0.44	0.12
	12/7/00	Regular	<1	<1	<1	<1	0.43	<0.1
	3/8/01	Regular	<1	<1	1.2	<1	2	<0.1
	6/22/01	Regular	< 1	< 1	< 1	< 1	0.31	<0.1
MW-14	1/14/01	Regular	<1	<1	<1	<1	<0.2	<0.1
	6/21/01	-	NS	NS	NS	NS	NS	NS
MW-15	1/14/01	Regular	<1	<1	<1	<1	<0.2	<0.1
	6/21/01	-	NS	NS	NS	NS	NS	NS
OW-4	6/10/99	Regular	<1.0	<1.0	<1.0	4.4	<0.2	<0.10
	9/14/99	Regular	< 1.0	< 1.0	< 1.0	< 2.0	<0.20	<0.10
	12/9/99	Regular	<1.0	<1.0	<1.0	<1.0	<0.2	<0.1
	3/9/00	Regular	<1.0	<1.0	<1.0	<1.0	0.25	<0.1
	6/8/00	Regular	<1.0	<1.0	<1.0	<1.0	<0.21	<0.1
	9/13/00	Regular	<1.0	<1.0	<1.0	<1.0	<0.2	<0.1
	12/7/00	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	3/8/01	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D
	6/21/01	-	NS-D	NS-D	NS-D	NS-D	NS-D	NS-D

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 5
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for
Monitor Wells MW-5, MW-10, MW-11A, and MW-12
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ¹ (mg/L)	Sulfate ¹ (mg/L)	Methane (mg/L)
MW-5	3/23/98	3.87	190	<0.0012
	3/9/99	<0.1	195	<0.0012
	6/10/99	4.73	209	<0.0012
	9/14/99	4.3	210	<0.0012
	12/9/99	4.2	210	<0.0012
	3/9/00	5.3	260	<0.0012
	6/8/00	4.7	240	<0.0012
	9/13/00	3.93	200	<0.0012
	12/7/00	3.27	160	<0.0012
	3/8/01	3.24	180	<0.0012
	6/21/01	2.74	150	0.0017
MW-10	3/23/98	0.07	320	0.91
	6/23/98	<0.1	325	0.55
	9/30/98	<0.1	204	0.81
	12/10/98	<0.1	180	0.091
	3/9/99	<0.1	142	0.035
			223 ³	
	9/14/99	<0.10	160	0.0049
	12/9/99	0.49	170	0.0039
	3/10/00	0.1	160	0.0056
	6/8/00	<0.1	150	0.031
	9/13/00	<0.1	160	0.031
	12/7/00	<0.1	190	0.17
	3/8/01	<0.1	270	<0.0012
6/22/01	<0.1	270	0.044	
MW-11A	3/23/98	<0.05	190	0.14
	6/23/98	<0.1	225	0.11
	9/30/98	0.4	196	0.043
	12/10/98	0.7	188	0.033
	3/10/99	<0.1	164	0.094
			<0.1 ²	
	6/10/99	<0.1	181	0.0036
	9/13/99	0.22	250	<0.0012
12/9/99	<0.1	290	0.0079	

Table 5
Current and Historical Nitrate, Sulfate, and Dissolved Methane Data for
Monitor Wells MW-5, MW-10, MW-11A, and MW-12
Hobbs, New Mexico
BJ Services Company, U.S.A.

Well	Date	Nitrate ¹ (mg/L)	Sulfate ¹ (mg/L)	Methane (mg/L)
MW-11A	3/9/00	0.11	270	0.037
	6/8/00	<0.1	240	0.0069
	9/13/00	<0.1	320	<0.0012
	12/7/00	<0.1	260	0.0096
	3/8/01	<0.1	330	0.0028
	6/22/01	<0.1	180	0.0074
MW-12	3/23/98	<0.05	240	<0.0012
	6/23/98	<0.1	240	<0.0012
	9/30/98	<0.1	168	<0.0012
	12/10/98	<0.1	202	<0.0012
	3/10/99	<0.1	137	<0.0012
		<0.1 ²	193 ³	
	6/10/99	<0.1	217	<0.0012
	9/14/99	<0.10	230	<0.0012
	12/9/99	<0.1	180	<0.0012
	3/10/00	<0.1	210	<0.0012
	6/8/00	<0.1	220	<0.0012
	9/13/00	<0.1	240	<0.0012
	12/7/00	<0.1	260	<0.0012
	3/8/01	<0.1	300	<0.0012
6/22/01	<0.1	360	0.0021	

1=By EPA Method 300, except as noted

2=By EPA Method 353.3

3=By EPA Method 375.4

mg/L = milligrams per liter

Table 6
Cumulative Results⁽¹⁾ for Chloride⁽²⁾ Analyses
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Sample Date	Monitor Wells ⁽³⁾																
	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-11A	MW-12	MW-12D	MW-13	MW-14	MW-15	OW-4
8/1/95	160	150	310	130	380	310	350	110	2200	3400	NA ⁽⁴⁾	NA	NA	NA	NA	NA	NA
8/23/96	130	140	100	99	210	250	360	140	2000	2900	NA	NA	NA	NA	NA	NA	NA
3/23-24/98	212	206	126	151	183	223	364	164	2390	NA	940	1200	NA	NA	NA	NA	NA
3/9-10/99	163	156	142	155	411	238	274	123	1160	NA	834	314	NA	NA	NA	NA	NA
6/10-7/2/99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	195	496	NA	NA	266
3/9-10/00	258	196	196	196	NA	224	241	131	474	NA	1290	327	117	276	NA	NA	258
1/14/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	368	219	NA
3/8-9/01	NA	165	172	152	NA	224	250	127	879	NA	1720	586	NA	276	327	NA	NA
6/21/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	222	222	NA

⁽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-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.

⁽⁴⁾ - NA indicates not analyzed.

Table 7
Analytical Results⁽¹⁾ for Confirmation Soil Samples
Hobbs, New Mexico Facility
BJ Services Company, U.S.A.

Confirmation Soil Boring ID	Depth Interval (feet below grade)	Benzene ⁽²⁾	Toluene	Ethylbenzene	Xylenes	Total BTEX ⁽³⁾	TPH-D	TPH-G	TPH-D plus TPH-G ⁽⁴⁾
CSB-1	45-47	<0.001	<0.001	0.0013	0.0118	0.0131	6.6	0.12	6.72
	54-56	<0.001	<0.001	<0.001	<0.001	<0.004	<5.0	<0.10	<5.1
CSB-2	35-37	<0.001	<0.001	<0.001	<0.001	<0.004	25	0.23	25.23
	54-56	<0.001	<0.001	<0.001	<0.001	<0.004	33	<0.10	33
CSB-3	45-47	<0.001	<0.001	<0.001	<0.001	<0.004	<5.0	<0.10	<5.1
	52-54	<0.001	<0.001	<0.001	<0.001	<0.004	<5.0	<0.10	<5.1
CSB-4	45-47	<0.001	<0.001	<0.001	<0.001	<0.004	<5.0	<0.10	<5.1
	54-56	<0.001	<0.001	<0.001	<0.001	<0.004	<5.0	<0.10	<5.1

⁽¹⁾ - in milligrams per kilogram (mg/kg)

⁽²⁾ - remediation goal for benzene = 10 parts per million (ppm or mg/kg)

⁽³⁾ - remediation goal for total BTEX = 50 ppm (50 mg/kg)

⁽⁴⁾ - remediation goal for TPH = 1000 ppm (1000 mg/kg)

Appendices



APPENDICES

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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."

A



APPENDIX A
Groundwater Sampling Forms

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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."

WELL ID: _____ MW-3

1. PROJECT INFORMATION

Project Number: _____ 12832 Task Number: _____ Date: 06/21/01 Time: 1530
 Client: BJ Svcs Personnel: Jenkins, Kelly
 Project Location: Hobbs Weather: 90, SUNNY, WINDY

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 62.0 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 58.34 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: _____ feet Well Volume: _____ gal Screened Interval (from GS): _____
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailor Stainless PVC Teflon® Other: _____ Equipment Model(s):
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. QED 17P15
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____ 2. YSI 600XL
 Dedicated Prepared Off-Site Field Cleaned Disposable 3. HANNA TURBID.
 Was well purged dry? Yes No Pumping Rate: 0.2 gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond. <u>CRP</u>	Dissolved Oxygen	Turbidity	Other:	Comments
1538	0.5	7.69	25.65	279	156.1	6.73		
1540	1.0	7.27	24.63	861	155.4	5.47		
1542	1.4	7.21	23.62	1082	150.3	4.35		55
1544	1.8	7.20	23.56	1121	146.3	3.87		

4. SAMPLING DATA

Method(s): Bailor, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-3 Sample Time: 1545 # of Containers: 4
 Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses

Ferrous Iron: _____ mg/L
 DO: 3.4 mg/L
 Nitrate: _____ mg/L
 Sulfate: _____ mg/L
 Alkalinity: 385 mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of _____ turns not on the field data sheet.

WELL ID: MW-4

1. PROJECT INFORMATION

Project Number: 12832 Task Number: Date: 6/21/01 Time: 1610
 Client: BJ Svcs Personnel: Jenkins, Kelly
 Project Location: Hobbs Weather: 95, SUNNY, WINDY

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Total Depth of Well: 6.3 feet From: Top of Well Casing (TOC) Top of Protective Casing Other:
 Depth to Static Water: 58.18 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: feet Well Volume: gal Screened Interval (from GS):
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other:

Materials: Pump/Bailor Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: 0.15 gal/min

Equipment Model(s)
 1. QED - MP15
 2. YSI-600XL
 3. HANNAH TURBED.

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
1615	1.0	7.92	29.11	180	133.4	6.92	9.9		
1618	1.4	7.01	24.74	150.4	150.4	5.35	-		
1620	1.7	7.09	23.88	1286	153.4	4.65	24.4		
1622	2.0	7.11	23.78	1297	154.0	4.61	-		

4. SAMPLING DATA

Method(s): Bailor, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other:

Materials: Pump/Bailor Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: Field Filtered? Yes No

Sample ID: MW-4 Sample Time: 1625 # of Containers: 4

Duplicate Sample Collected? Yes No ID:

Geochemical Analyses

Ferrous Iron: 0.8 mg/L
 DO: 0.0 mg/L
 Nitrate: - mg/L
 Sulfate: - mg/L
 Alkalinity: 385 mg/L

5. COMMENTS

Note: include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

WELL ID: MW-5

1. PROJECT INFORMATION

Project Number: 12832 Task Number: Date: 06/21/01 Time: 0945
 Client: BJ Svcs Personnel: Jenkins, Kelly
 Project Location: Hobbs Weather: 80, SUNNY, WINDY

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Total Depth of Well: 64.5 feet From: Top of Well Casing (TOC) Top of Protective Casing Other:
 Depth to Static Water: 59.94 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: 4.5 feet Well Volume: 0.7 gal Screened Interval (from GS):
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: Equipment Model(s):
 Materials: Pump/Bailer Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: 0.1 gal/min
L ORP 5

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
1025	1.2	6.50	21.64	1229	147.9	5.94	—		CLEAR
1030	2.7	6.11	21.44	1222	156.1	4.94	27.5		"
1035	2.2	5.85	21.23	1222	168.2	3.72	—		"
1038	2.5	5.79	21.33	1220	172.5	3.45	22.9		"

4. SAMPLING DATA

Method(s): Bailor, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other:
 Materials: Pump/Bailer Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: 59.98 Field Filtered? Yes No
 Sample ID: MW-5 Sample Time: 1045 # of Containers: 9
 Duplicate Sample Collected? Yes No ID:

Geochemical Analyses

Ferrous Iron: 0.0 mg/L
 DO: 2.0 mg/L
 Nitrate: mg/L
 Sulfate: mg/L
 Alkalinity: 770 mg/L

5. COMMENTS VERY LITTLE DRAWDOWN OBSERVED.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Signature]

WELL ID: MW-7

1. PROJECT INFORMATION

Project Number: 12832 Task Number: Date: 06/21/01 Time: 1240
 Client: BJ Svcs Personnel: Jenkins, Kelly
 Project Location: Hobbs Weather:

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Total Depth of Well: 61.5 feet From: Top of Well Casing (TOC) Top of Protective Casing Other:
 Depth to Static Water: 58.91 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: feet Well Volume: gal Screened interval (from GS):
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: Equipment Model(s):
 Materials: Pump/Bailor Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: 0.15 L/gal/min
 Equipment Model(s):
 1. QED-MP15
 2. YSE-600XL
 3. HANNAH TURBID.

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	Dissolved Oxygen	Turbidity	Other:	Comments
1255	1 L	6.37	26.55	901	172.2	5.62		
1258	1.6 L	6.53	25.75	1104	173.9	4.91		
1300	2.1 L	6.61	25.65	1324	175.3	3.77		

4. SAMPLING DATA

Method(s): Bailor, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other:
 Materials: Pump/Bailor Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: 59.8 Field Filtered? Yes No
 Sample ID: MW-7 Sample Time: 1300 # of Containers: 4
 Duplicate Sample Collected? Yes No ID:

Geochemical Analyses

Ferrous Iron: 0 mg/L
 DO: 1.0 mg/L
 Nitrate: - mg/L
 Sulfate: - mg/L
 Alkalinity: <385 mg/L

5. COMMENTS WELL PUMPED DRY PRIOR TO FILLING ALL CONTAINERS. AWAITED RECHARGE TO FILL CONTAINER.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature: [Handwritten Signature]

WELL ID: MW-10

1. PROJECT INFORMATION

Project Number: 12832 Task Number: Date: 06/22/01 Time: 0940
 Client: BJ Svcs Personnel: Jenkins, Kelly
 Project Location: Hobbs Weather: 90, SUNNY, WINDY

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Total Depth of Well: 62.0 feet From: Top of Well Casing (TOC) Top of Protective Casing Other:
 Depth to Static Water: 59.89 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: feet Well Volume: gal Screened Interval (from GS):
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

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):
 Materials: Pump/Bailer Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Was well purged dry? Yes No Pumping Rate: 0.15 gal/min
 1. QED-MP15
 2. YSE 60XL
 3. HANNAH TURB.

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP mV	Dissolved Oxygen	Turbidity	Other:	Comments
<u>0951</u>	<u>0.6</u>	<u>7.60</u>	<u>24.66</u>	<u>504</u>	<u>-49.5</u>	<u>5.66</u>	<u>—</u>		
<u>0953</u>	<u>1.0</u>	<u>6.73</u>	<u>23.03</u>	<u>1924</u>	<u>-63.3</u>	<u>3.57</u>	<u>—</u>		
<u>0955</u>	<u>1.3</u>	<u>6.65</u>	<u>23.12</u>	<u>2502</u>	<u>-84.6</u>	<u>1.50</u>	<u>—</u>		
<u>0957</u>	<u>1.6</u>	<u>6.64</u>	<u>22.80</u>	<u>2635</u>	<u>-98.1</u>	<u>0.92</u>	<u>—</u>		
<u>0959</u>	<u>1.9</u>	<u>6.64</u>	<u>22.81</u>	<u>2663</u>	<u>-103.8</u>	<u>0.70</u>	<u>102</u>		

4. SAMPLING DATA

Method(s): Bailer, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other:
 Materials: Pump/Bailer Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: Field Filtered? Yes No
 Sample ID: MW-10 Sample Time: 1000 # of Containers: 8
 Duplicate Sample Collected? Yes No ID:

Geochemical Analyses
 Ferrous Iron: 710 mg/L
 DO: 0.0 mg/L
 Nitrate: — mg/L
 Sulfate: — mg/L
 Alkalinity: 575 mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

[Signature]
 Signature



GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-11A

W. J. J.

1. PROJECT INFORMATION

Project Number: _____ 12832 Task Number: _____ Date: 06/22/01 *JP* 0815
 Client: BJ Svcs Personnel: Jenkins, Kelly Time: 1115
 Project Location: Hobbs Weather: 90, Sunny, Windy

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 63.3 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 60.28 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: _____ feet Well Volume: _____ gal Screened Interval (from GS): _____
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____ Equipment Model(s):
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. QED-MP15
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____ 2. YSE-600XL
 Dedicated Prepared Off-Site Field Cleaned Disposable 3. HANNAH TURBO
 Was well purged dry? Yes No Pumping Rate: 0.15 L/gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
0829	1.0	7.06	20.22	2830	-14.9	3.65	-		CLOUDY
0832	1.5	7.05	20.42	3625	-81.6	1.21	Max		SLIGHTLY CLOUDY
0834	1.8	7.06	20.41	3707	-91.5	0.94	-		
0836	2.1	7.06	20.44	3768	-104.5	0.64	521		CLOUDY

4. SAMPLING DATA

Method(s): Bailer, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____
 Materials: Pump/Bailer Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: _____ Field Filtered? Yes No
 Sample ID: MW-11A Sample Time: 0840 # of Containers: 8
 Duplicate Sample Collected? Yes No ID: DUP-06/22/01 0900 4 CONTAINERS

Geochemical Analyses

Ferrous Iron: 6.5 mg/L
 DO: 0.0 mg/L
 Nitrate: - mg/L
 Sulfate: - mg/L
 Alkalinity: 770 mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of _____

[Signature]
Signature

WELL ID: _____ MW-13

1. PROJECT INFORMATION

Project Number: _____ 12832 Task Number: _____ Date: 06/22/01 Time: 0710
 Client: _ BJ Svcs Personnel: Jenkins, Kelly
 Project Location: _____ Hobbs Weather: 75, CLOUDY, BREEZY

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other: _____
 Total Depth of Well: 65.2 feet From: Top of Well Casing (TOC) Top of Protective Casing Other: _____
 Depth to Static Water: 59.80 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: _____ feet Well Volume: _____ gal Screened Interval (from GS): _____
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Was well purged dry? Yes No Pumping Rate: 0.15 L/gal/min

Equipment Model(s)
 1. QED-MP15
 2. YSI 600XL
 3. HANNAH TURB.

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP	Dissolved Oxygen	Turbidity	Other:	Comments
0726	1.0	7.49	20.86	2151	198.2	3.02	—		
0729	1.5	7.39	20.84	2209	127.4	1.51	315		
0731	1.8	7.37	20.83	2210	94.0	1.40	86		

4. SAMPLING DATA

Method(s): Bailor, Size: _____ Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other: _____

Materials: Pump/Bailor Stainless PVC Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other: _____
 Dedicated Prepared Off-Site Field Cleaned Disposable

Depth to Water at Time of Sampling: _____ Field Filtered? Yes No

Sample ID: MW-13 Sample Time: 0735 # of Containers: 4

Duplicate Sample Collected? Yes No ID: _____

Geochemical Analyses
 Ferrous Iron: 1.6 mg/L
 DO: 0.8 mg/L
 Nitrate: — mg/L
 Sulfate: — mg/L
 Alkalinity: 193 mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature [Handwritten Signature]

WELL ID: MW-14

1. PROJECT INFORMATION

Project Number: 12832 Task Number: Date: 06/21/01 Time: 1400
 Client: BJ Svcs Personnel: Jenkins, Kelly
 Project Location: Hobbs Weather: 90, WINDY, SUNNY

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Total Depth of Well: 69.2 feet From: 3 Top of Well Casing (TOC) Top of Protective Casing Other:
 Depth to Static Water: 61.71 feet From: 3 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: ~7.5 feet Well Volume: gal Screened Interval (from GS):
Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: Equipment Model(s):
 Materials: Pump/Bailor Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable 1.
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable 2.
 Was well purged dry? Yes No Pumping Rate: 0.2 gal/min 3.

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	ORP mV	Dissolved Oxygen	Turbidity	Other:	Comments
1416	1.0	7.07	23.59	716	162.1	7.36	—		
1419	1.6	6.97	20.21	1610	165.0	3.56	24.5		
1421	2.0	6.95	19.79	1686	165.3	3.31	—		
1424	2.6	6.95	19.69	1691	139.0	3.33	—		

4. SAMPLING DATA

Method(s): Bailor, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other:
 Materials: Pump/Bailor Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: Field Filtered? Yes No
 Sample ID: MW-14 Sample Time: 1430 # of Containers: 1
 Duplicate Sample Collected? Yes No ID:

Geochemical Analyses

Ferrous Iron: — mg/L
 DO: 3.15 mg/L
 Nitrate: — mg/L
 Sulfate: — mg/L
 Alkalinity: — mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

[Signature]
Signature

WELL ID: MW-15

1. PROJECT INFORMATION

Project Number: 12832 Task Number: Date: 06/21/01 Time: 1445
 Client: BJ Svcs Personnel: Jenkins, Kelly
 Project Location: Hobbs Weather: 95, SUNNY, WINDY

2. WELL DATA

Casing Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Screen Diameter: 2 inches Type: PVC Stainless Galv. Steel Teflon® Other:
 Total Depth of Well: 67.0 feet From: Top of Well Casing (TOC) Top of Protective Casing Other:
 Depth to Static Water: 60.49 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: feet Well Volume: gal Screened Interval (from GS):
 Note: 2-inch well = 0.167 gal/ft 4-inch well = 0.667 gal/ft

3. PURGE DATA

Purge Method: Bailor, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Centrifugal Pump Peristaltic Pump Inertial Lift Pump Other: Equipment Model(s):
 Materials: Pump/Bailor Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable 1. QED-MP15
 Materials: Rope/Tubing Polyethylene Polypropylene Teflon® Other: 2. HANNAH-TURB
 Dedicated Prepared Off-Site Field Cleaned Disposable 3. YSI-600XL
 Was well purged dry? Yes No Pumping Rate: 0.2 gal/min

Time	Cum. Gallons Removed	pH	Temp	Spec. Cond.	<u>ORP</u>	Dissolved Oxygen	Turbidity	Other:	Comments
1500	1.5	7.00	20.23	1414	160.9	3.97	-		SIFTY, BROWN.
1502	2.0	6.99	20.17	1422	160.4	3.81	-		CLEARING
1504	2.5	6.96	20.16	1422	163.2	3.90	539		CLEARING

4. SAMPLING DATA

Method(s): Bailor, Size: Bladder Pump 2" Submersible Pump 4" Submersible Pump
 Peristaltic Pump Inertial Lift Pump Other:
 Materials: Pump/Bailor Stainless PVC Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Materials: Tubing/Rope Polyethylene Polypropylene Teflon® Other:
 Dedicated Prepared Off-Site Field Cleaned Disposable
 Depth to Water at Time of Sampling: Field Filtered? Yes No
 Sample ID: MW-15 Sample Time: 1505 # of Containers: 1
 Duplicate Sample Collected? Yes No ID:

Geochemical Analyses

Ferrous Iron: mg/L
 DO: 4.0 mg/L
 Nitrate: mg/L
 Sulfate: mg/L
 Alkalinity: ~385 mg/L

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature [Signature]

B



APPENDIX B

Laboratory Analytical Reports for Groundwater Samples



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

Brown & Caldwell

Certificate of Analysis Number:

01060768

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-Hobbs #12832-016 Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 7/10/01
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This Report Contains A Total Of 20 Pages

Excluding This Page

And

Chain Of Custody



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

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
01060768

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-Hobbs #12832-016 Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 7/10/01
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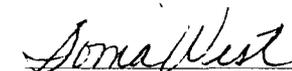
Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD 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.


Sonia West
Senior Project Manager

7/10/01
Date



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

Brown & Caldwell

Certificate of Analysis Number:
01060768

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-Hobbs #12832-016
Site: Hobbs, NM
Site Address:

PO Number:
State: New Mexico

State Cert. No.:
Date Reported: 7/10/01

Fax To: Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-5	01060768-01	Water	6/21/01 10:45:00 AM	6/22/01 9:30:00 AM	096668	<input type="checkbox"/>
MW-7	01060768-02	Water	6/21/01 1:00:00 PM	6/22/01 9:30:00 AM	096668	<input type="checkbox"/>
MW-14	01060768-03	Water	6/21/01 2:30:00 PM	6/22/01 9:30:00 AM	096668	<input type="checkbox"/>
MW-15	01060768-04	Water	6/21/01 3:05:00 PM	6/22/01 9:30:00 AM	096668	<input type="checkbox"/>
MW-3	01060768-05	Water	6/21/01 3:45:00 PM	6/22/01 9:30:00 AM	096668	<input type="checkbox"/>
MW-4	01060768-06	Water	6/21/01 4:25:00 PM	6/22/01 9:30:00 AM	096668	<input type="checkbox"/>
TB-6/21/01	01060768-07	Water	6/21/01	6/22/01 9:30:00 AM	096668	<input type="checkbox"/>

Sonia West
 Sonia West
 Senior Project Manager

7/10/01

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



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

Client Sample ID MW-5

Collected: 6/21/01 10:45:00 SPL Sample ID: 01060768-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	0.26	1		07/03/01 10:30 AM		727965
Surr: n-Pentacosane	85.7 %	18-120	1		07/03/01 10:30 AM		727965
<u>Prep Method</u>	<u>Prep Date</u>	<u>Prep Initials</u>					
SW3510B	06/22/2001 19:37	KL					
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		06/29/01 18:11 D_R		725868
Surr: 1,4-Difluorobenzene	106 %	74-121	1		06/29/01 18:11 D_R		725868
Surr: 4-Bromofluorobenzene	109 %	55-150	1		06/29/01 18:11 D_R		725868
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		07/05/01 17:32 DR		730543
Ethylene	ND	0.0032	1		07/05/01 17:32 DR		730543
Methane	0.0017	0.0012	1		07/05/01 17:32 DR		730543
NITROGEN, NITRATE (AS N)			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N)	2.74	0.1	1		06/22/01 10:00 KM		716089
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		06/29/01 18:11 D_R		725769
Ethylbenzene	ND	1	1		06/29/01 18:11 D_R		725769
Toluene	ND	1	1		06/29/01 18:11 D_R		725769
Xylenes, Total	ND	1	1		06/29/01 18:11 D_R		725769
Surr: 4-Bromofluorobenzene	103 %	48-156	1		06/29/01 18:11 D_R		725769
Surr: 1,4-Difluorobenzene	98.6 %	72-137	1		06/29/01 18:11 D_R		725769
SULFATE			MCL	E300	Units: mg/L		
Sulfate	150	4	20		06/22/01 10:00 KM		716096

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL

7/10/01 12:07:30 PM



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

Client Sample ID MW-7

Collected: 6/21/01 1:00:00

SPL Sample ID: 01060768-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	0.22	1		07/03/01 11:09 AM		727966
Surr: n-Pentacosane	88.2 %	18-120	1		07/03/01 11:09 AM		727966

Prep Method	Prep Date	Prep Initials
SW3510B	06/22/2001 19:37	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		06/29/01 18:38 D_R		725871
Surr: 1,4-Difluorobenzene	100 %	74-121	1		06/29/01 18:38 D_R		725871
Surr: 4-Bromofluorobenzene	111 %	55-150	1		06/29/01 18:38 D_R		725871

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	3.1	1	1		06/29/01 18:38 D_R		725772
Ethylbenzene	ND	1	1		06/29/01 18:38 D_R		725772
Toluene	ND	1	1		06/29/01 18:38 D_R		725772
Xylenes, Total	ND	1	1		06/29/01 18:38 D_R		725772
Surr: 4-Bromofluorobenzene	104 %	48-156	1		06/29/01 18:38 D_R		725772
Surr: 1,4-Difluorobenzene	99.2 %	72-137	1		06/29/01 18:38 D_R		725772

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



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

Client Sample ID MW-14 Collected: 6/21/01 2:30:00 SPL Sample ID: 01060768-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL			
Chloride	222	5		E325.3	07/06/01 11:10	CV	731560
				Units: mg/L			

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
* - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
J - Estimated Value between MDL and PQL



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

Client Sample ID MW-15

Collected: 6/21/01 3:05:00

SPL Sample ID: 01060768-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				E325.3	Units: mg/L		
Chloride	222	5	5		07/06/01 11:10	CV	731563

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

7/10/01 12:07:33 PM



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

Client Sample ID MW-3

Collected: 6/21/01 3:45:00

SPL Sample ID: 01060768-05

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	0.22	1		07/03/01 11:47 AM		727967
Surr: n-Pentacosane	77.8 %	18-120	1		07/03/01 11:47 AM		727967

Prep Method	Prep Date	Prep Initials
SW3510B	06/22/2001 19:37	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		06/30/01 0:09 D_R		725878
Surr: 1,4-Difluorobenzene	102 %	74-121	1		06/30/01 0:09 D_R		725878
Surr: 4-Bromofluorobenzene	100 %	55-150	1		06/30/01 0:09 D_R		725878

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		06/30/01 0:09 D_R		725807
Ethylbenzene	ND	1	1		06/30/01 0:09 D_R		725807
Toluene	ND	1	1		06/30/01 0:09 D_R		725807
Xylenes, Total	ND	1	1		06/30/01 0:09 D_R		725807
Surr: 4-Bromofluorobenzene	102 %	48-156	1		06/30/01 0:09 D_R		725807
Surr: 1,4-Difluorobenzene	98.0 %	72-137	1		06/30/01 0:09 D_R		725807

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID MW-4

Collected: 6/21/01 4:25:00

SPL Sample ID: 01060768-06

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	0.25	1		07/03/01 12:25 AM		727968
Surr: n-Pentacosane	100 %	18-120	1		07/03/01 12:25 AM		727968

Prep Method	Prep Date	Prep Initials
SW3510B	06/22/2001 19:37	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		06/30/01 0:36 D_R		725879
Surr: 1,4-Difluorobenzene	99.0 %	74-121	1		06/30/01 0:36 D_R		725879
Surr: 4-Bromofluorobenzene	100 %	55-150	1		06/30/01 0:36 D_R		725879

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		06/30/01 0:36 D_R		725808
Ethylbenzene	ND	1	1		06/30/01 0:36 D_R		725808
Toluene	ND	1	1		06/30/01 0:36 D_R		725808
Xylenes, Total	ND	1	1		06/30/01 0:36 D_R		725808
Surr: 4-Bromofluorobenzene	102 %	48-156	1		06/30/01 0:36 D_R		725808
Surr: 1,4-Difluorobenzene	98.4 %	72-137	1		06/30/01 0:36 D_R		725808

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL

7/10/01 12:07:35 PM



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

Client Sample ID TB-6/21/01

Collected: 6/21/01

SPL Sample ID: 01060768-07

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		07/05/01 14:46	D_R	730864
Surr: 1,4-Difluorobenzene	104	% 74-121	1		07/05/01 14:46	D_R	730864
Surr: 4-Bromofluorobenzene	105	% 55-150	1		07/05/01 14:46	D_R	730864
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		06/29/01 17:43	D_R	725766
Ethylbenzene	ND	1	1		06/29/01 17:43	D_R	725766
Toluene	ND	1	1		06/29/01 17:43	D_R	725766
Xylenes, Total	ND	1	1		06/29/01 17:43	D_R	725766
Surr: 4-Bromofluorobenzene	105	% 48-156	1		06/29/01 17:43	D_R	725766
Surr: 1,4-Difluorobenzene	98.3	% 72-137	1		06/29/01 17:43	D_R	725766

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

7/10/01 12:07:35 PM

Quality Control Documentation



Quality Control Report

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Diesel Range Organics
 Method: SW8015B

WorkOrder: 01060768
 Lab Batch ID: 12979

Method Blank

Samples in Analytical Batch:

RunID: HP_V_010703B-727960 Units: mg/L
 Analysis Date: 07/03/2001 5:22 Analyst: AM
 Preparation Date: 06/22/2001 19:37 Prep By: KL Method SW3510B

Lab Sample ID	Client Sample ID
01060768-01B	MW-5
01060768-02B	MW-7
01060768-05B	MW-3
01060768-06B	MW-4

Analyte	Result	Rep Limit
Diesel Range Organics	ND	0.20
Surr: n-Pentacosane	91.6	18-120

Laboratory Control Sample (LCS)

RunID: HP_V_010703B-727961 Units: mg/L
 Analysis Date: 07/03/2001 6:00 Analyst: AM
 Preparation Date: 06/22/2001 19:37 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	2.3	91	21	175

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

Sample Spiked: 01060738-02
 RunID: HP_V_010703B-727963 Units: mg/L
 Analysis Date: 07/03/2001 7:56 Analyst: AM
 Preparation Date: 06/22/2001 19:37 Prep By: KL Method SW3510B

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	0.70	5	2.1	27.5	5	2.1	28.5	3.66	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

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.



Quality Control Report

Brown & Caldwell
 BJ Service-Hobbs #12832-016

Analysis: Headspace Gas Analysis
 Method: RSK147

WorkOrder: 01060768
 Lab Batch ID: R38400

Method Blank

Samples in Analytical Batch:

RunID: VARC_010705A-730549 Units: mg/L
 Analysis Date: 07/05/2001 18:42 Analyst: DR

Lab Sample ID Client Sample ID
 01060768-01D MW-5

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

Sample Duplicate

Original Sample: 01060700-06
 RunID: VARC_010705A-735492 Units: mg/L
 Analysis Date: 07/06/2001 14:40 Analyst: DR

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	0.054	0.055	2	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

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.



Quality Control Report

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 01060768
Lab Batch ID: R38041

Method Blank

Samples in Analytical Batch:

RunID: HP_R_010629A-723625 Units: ug/L
Analysis Date: 06/29/2001 12:40 Analyst: D_R

Lab Sample ID	Client Sample ID
01060768-01A	MW-5
01060768-02A	MW-7
01060768-05A	MW-3
01060768-06A	MW-4
01060768-07A	TB-6/21/01

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	98.7	72-137
Surr: 4-Bromofluorobenzene	102.0	48-156

Laboratory Control Sample (LCS)

RunID: HP_R_010629A-723624 Units: ug/L
Analysis Date: 06/29/2001 10:40 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	51	101	70	130
Ethylbenzene	50	49	98	70	130
Toluene	50	50	101	70	130
Xylenes, Total	150	149	99	70	130

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

Sample Spiked: 01060768-01
RunID: HP_R_010629A-725760 Units: ug/L
Analysis Date: 06/29/2001 15:25 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
Benzene	ND	20	24	120	20	31	156	26.2 *	21	32	164
Ethylbenzene	ND	20	24	118	20	23	114	3.68	19	52	142
Toluene	ND	20	24	116	20	24	119	2.69	20	38	159
Xylenes, Total	ND	60	69	115	60	66	110	4.44	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

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.



Quality Control Report

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Gasoline Range Organics
 Method: SW8015B

WorkOrder: 01060768
 Lab Batch ID: R38135

Method Blank

Samples in Analytical Batch:

RunID: HP_R_010629C-725904 Units: mg/L
 Analysis Date: 06/29/2001 11:35 Analyst: D_R

Lab Sample ID	Client Sample ID
01060768-01A	MW-5
01060768-02A	MW-7
01060768-05A	MW-3
01060768-06A	MW-4

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	97.7	74-121
Surr: 4-Bromofluorobenzene	105.7	55-150

Laboratory Control Sample (LCS)

RunID: HP_R_010629C-725903 Units: mg/L
 Analysis Date: 06/29/2001 11:07 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.91	91	70	130

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

Sample Spiked: 01060768-02
 RunID: HP_R_010629C-725863 Units: mg/L
 Analysis Date: 06/29/2001 16:20 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
Gasoline Range Organics	ND	0.9	0.79	81.1	0.9	0.73	74.3	8.75	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 R - Recovery Outside Advisable QC Limits

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.



Quality Control Report

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Gasoline Range Organics
 Method: SW8015B

WorkOrder: 01060768
 Lab Batch ID: R38422

Method Blank

Samples in Analytical Batch:

RunID: HP_S_010705C-730863 Units: mg/L
 Analysis Date: 07/05/2001 13:12 Analyst: D_R

Lab Sample ID Client Sample ID
 01060768-07A TB-6/21/01

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	102.0	74-121
Surr: 4-Bromofluorobenzene	104.7	55-150

Laboratory Control Sample (LCS)

RunID: HP_S_010705C-730862 Units: mg/L
 Analysis Date: 07/05/2001 12:45 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	1	101	70	130

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

Sample Spiked: 01070023-03
 RunID: HP_S_010705C-730866 Units: mg/L
 Analysis Date: 07/05/2001 21:35 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
Gasoline Range Organics	1.7	0.9	2.4	74.7	0.9	2.4	74.2	0.687	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

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.



Quality Control Report

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Nitrogen, Nitrate (As N)
 Method: E300

WorkOrder: 01060768
 Lab Batch ID: R37664

Method Blank

Samples in Analytical Batch:

RunID: WET_010622U-716083 Units: mg/L
 Analysis Date: 06/22/2001 10:00 Analyst: KM

Lab Sample ID: 01060768-01C
 Client Sample ID: MW-5

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

Laboratory Control Sample (LCS)

RunID: WET_010622U-716084 Units: mg/L
 Analysis Date: 06/22/2001 10:00 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen, Nitrate (As N)	10	9.54	95	90	110

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

Sample Spiked: 01060771-01
 RunID: WET_010622U-716086 Units: mg/L
 Analysis Date: 06/22/2001 10:00 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Nitrogen, Nitrate (As N)	320	500	909	117	500	906	116	0.384	20	76	124

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

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.



Quality Control Report

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Sulfate
 Method: E300

WorkOrder: 01060768
 Lab Batch ID: R37665

Method Blank

Samples in Analytical Batch:

RunID: WET_010622V-716094 Units: mg/L
 Analysis Date: 06/22/2001 10:00 Analyst: KM

Lab Sample ID 01060768-01C
Client Sample ID MW-5

Analyte	Result	Rep Limit
Sulfate	ND	0.20

Laboratory Control Sample (LCS)

RunID: WET_010622V-716095 Units: mg/L
 Analysis Date: 06/22/2001 10:00 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10	11	108	90	110

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

Sample Spiked: 01060768-01
 RunID: WET_010622V-716097 Units: mg/L
 Analysis Date: 06/22/2001 10:00 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	150	200	360	107	200	360	107	0.0847	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

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.



Quality Control Report

Brown & Caldwell

BJ Service-Hobbs #12832-016

Analysis: Chloride, Total
 Method: E325.3

WorkOrder: 01060768
 Lab Batch ID: R38474

Method Blank

Samples in Analytical Batch:

RunID: WET_010706C-731557 Units: mg/L
 Analysis Date: 07/06/2001 11:10 Analyst: CV

Lab Sample ID	Client Sample ID
01060768-03A	MW-14
01060768-04A	MW-15

Analyte	Result	Rep Limit
Chloride	ND	1.0

Laboratory Control Sample (LCS)

RunID: WET_010706C-731559 Units: mg/L
 Analysis Date: 07/06/2001 11:10 Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	76.2	75.2	99	90	110

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

Sample Spiked: 01060768-03
 RunID: WET_010706C-731561 Units: mg/L
 Analysis Date: 07/06/2001 11:10 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
Chloride	220	250	470	99.1	250	470	99.1	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

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*



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

Sample Receipt Checklist

Workorder:	01060768	Received By:	RE
Date and Time Received:	6/22/01 9:30:00 AM	Carrier name:	FedEx
Temperature:	3	Chilled by:	Water Ice

1. Shipping container/cooler in good condition? Yes No Not Present
2. Custody seals intact on shipping 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:	<input type="text"/>	Contact Date & Time:	<input type="text"/>
Client Name Contacted:	<input type="text"/>		
Non Conformance Issues:	<input type="text"/>		
Client Instructions:	<input type="text"/>		



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Worksheet No:

01060768

096668

page 1 of 1

Client Name: BROWN AND CAIDWELL
 Address/Phone: 1415 LOUISIANA, STE 250, HOUSTON, TX 77054-0774
 Client Contact: RICK REYNOLDS
 Project Name: BT SERVICES - HOBBS
 Project Number: 12832-016
 Project Location: HOBBS, NM
 Invoice To: BC

SAMPLE ID	DATE	TIME	comp	grab	matrix		bottle	size	pres.	Number of Containers	Requested Analysis							
					S=soil	W=water					A=amber glass	V=vial	1=1 liter 4=4oz 40=vial	8=8oz 16=16oz	1=HCl 2=HNO3 3=H2SO4 0=other:	TFH (DROG) - 8015	Nitrate (300.0)*	Sulfate (300.0)
MW-5	06/21/01	1045		✓	W	P	PV 1,40	1	1	9	X	X	X	X				
MW-7	06/21/01	1300		✓	W	P	PV 1,40	1	1	4	X	X	X	X				
MW-14	06/21/01	1430		✓	W	P	P 1	1	1	1								
MW-15	06/21/01	1505		✓	W	P	P 1	1	1	1								
MW-3	06/21/01	1545		✓	W	P	PV 1,40	1	1	4	X	X	X	X				
MW-4	06/21/01	1625		✓	W	P	PV 1,40	1	1	4	X	X	X	X				
TS-06/21/01	06/21/01			✓	W	P	P 1,40	1	1	2	X	X	X	X				

Client/Consultant Remarks: NITRATE must be analyzed within 24 hours of sampling

Requested TAT: 24hr 72hr Standard

Standard QC Level 3 QC Level 4 QC

Special Reporting Requirements: Raw Data Far Results

1. Relinquished by Sampler: [Signature] date: 06/21/01

2. Received by: FEDEX time: 11:30

3. Relinquished by: [Signature] date: _____

4. Received by: _____ time: _____

5. Relinquished by: _____ date: _____

6. Received by Laboratory: [Signature] time: 06/20/01

Intact? Y N ON

Temp: 32 PM review (initial): [Signature]

Laboratory remarks: **RUSH**



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

Brown & Caldwell

Certificate of Analysis Number:
01060808

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, Hobbs, NM Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 7/10/01
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This Report Contains A Total Of 17 Pages

Excluding This Page
And
Chain Of Custody

7/10/01

Date



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

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
01060808

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, Hobbs, NM Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 7/10/01
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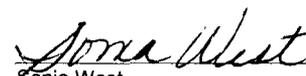
Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD 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.


Sonia West
Senior Project Manager

7/10/01

Date



Brown & Caldwell

Certificate of Analysis Number:
01060808

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, Hobbs, NM
Site: Hobbs, NM
Site Address:

PO Number:
State: New Mexico

State Cert. No.:
Date Reported: 7/10/01

Fax To: Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-13	01060808-01	Water	6/22/01 7:35:00 AM	6/23/01 10:00:00 AM	096670	<input type="checkbox"/>
MW-11A	01060808-02	Water	6/22/01 8:40:00 AM	6/23/01 10:00:00 AM	096670	<input type="checkbox"/>
MW-12	01060808-03	Water	6/22/01 10:45:00 AM	6/23/01 10:00:00 AM	096670	<input type="checkbox"/>
MW-10	01060808-04	Water	6/22/01 10:00:00 AM	6/23/01 10:00:00 AM	096670	<input type="checkbox"/>
Duplicate	01060808-05	Water	6/22/01 9:00:00 AM	6/23/01 10:00:00 AM	096670	<input type="checkbox"/>
TB- 6/15/01	01060808-06	Water	6/22/01	6/23/01 10:00:00 AM	096670	<input type="checkbox"/>

Sonia West
 Sonia West
 Senior Project Manager

7/10/01

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



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

Client Sample ID MW-13

Collected: 6/22/01 7:35:00

SPL Sample ID: 01060808-01

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	0.31	0.2	1		07/06/01 7:54 AM		731304
Surr: n-Pentacosane	90.0 %	18-120	1		07/06/01 7:54 AM		731304

Prep Method	Prep Date	Prep Initials
SW3510B	06/26/2001 15:52	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		06/29/01 19:33 D_R		725872
Surr: 1,4-Difluorobenzene	100 %	74-121	1		06/29/01 19:33 D_R		725872
Surr: 4-Bromofluorobenzene	106 %	55-150	1		06/29/01 19:33 D_R		725872

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		06/29/01 19:33 D_R		725779
Ethylbenzene	ND	1	1		06/29/01 19:33 D_R		725779
Toluene	ND	1	1		06/29/01 19:33 D_R		725779
Xylenes, Total	ND	1	1		06/29/01 19:33 D_R		725779
Surr: 4-Bromofluorobenzene	105 %	48-156	1		06/29/01 19:33 D_R		725779
Surr: 1,4-Difluorobenzene	98.7 %	72-137	1		06/29/01 19:33 D_R		725779

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



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

Client Sample ID MW-11A

Collected: 6/22/01 8:40:00

SPL Sample ID: 01060808-02

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	1	0.24	1		07/06/01 8:32 AM		731305
Surr: n-Pentacosane	91.6 %	18-120	1		07/06/01 8:32 AM		731305
<u>Prep Method</u>	<u>Prep Date</u>	<u>Prep Initials</u>					
SW3510B	06/26/2001 15:52	KL					
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	0.1	0.1	1		06/29/01 20:01 D_R		725873
Surr: 1,4-Difluorobenzene	104 %	74-121	1		06/29/01 20:01 D_R		725873
Surr: 4-Bromofluorobenzene	112 %	55-150	1		06/29/01 20:01 D_R		725873
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		07/06/01 20:05 DR		733031
Ethylene	ND	0.0032	1		07/06/01 20:05 DR		733031
Methane	0.0074	0.0012	1		07/06/01 20:05 DR		733031
NITROGEN, NITRATE (AS N)			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N)	ND	0.1	1		06/23/01 10:54 KM		716773
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	1.5	1	1		06/29/01 20:01 D_R		725785
Ethylbenzene	ND	1	1		06/29/01 20:01 D_R		725785
Toluene	ND	1	1		06/29/01 20:01 D_R		725785
Xylenes, Total	ND	1	1		06/29/01 20:01 D_R		725785
Surr: 4-Bromofluorobenzene	125 %	48-156	1		06/29/01 20:01 D_R		725785
Surr: 1,4-Difluorobenzene	99.6 %	72-137	1		06/29/01 20:01 D_R		725785
SULFATE			MCL	E300	Units: mg/L		
Sulfate	180	4	20		06/25/01 10:52 KM		718273

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



Client Sample ID MW-12

Collected: 6/22/01 10:45:00 SPL Sample ID: 01060808-03

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	0.51	0.22	1		07/06/01 9:11 AM		731307
Surr: n-Pentacosane	84.1 %	18-120	1		07/06/01 9:11 AM		731307
<u>Prep Method</u>	<u>Prep Date</u>	<u>Prep Initials</u>					
SW3510B	06/26/2001 15:52	KL					
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	0.11	0.1	1		06/29/01 21:24 D_R		725874
Surr: 1,4-Difluorobenzene	102 %	74-121	1		06/29/01 21:24 D_R		725874
Surr: 4-Bromofluorobenzene	134 %	55-150	1		06/29/01 21:24 D_R		725874
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		07/06/01 20:19 DR		733033
Ethylene	ND	0.0032	1		07/06/01 20:19 DR		733033
Methane	0.0021	0.0012	1		07/06/01 20:19 DR		733033
NITROGEN, NITRATE (AS N)			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N)	ND	0.1	1		06/23/01 10:54 KM		716774
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	12	1	1		06/29/01 21:24 D_R		725800
Ethylbenzene	ND	1	1		06/29/01 21:24 D_R		725800
Toluene	ND	1	1		06/29/01 21:24 D_R		725800
Xylenes, Total	ND	1	1		06/29/01 21:24 D_R		725800
Surr: 4-Bromofluorobenzene	111 %	48-156	1		06/29/01 21:24 D_R		725800
Surr: 1,4-Difluorobenzene	100 %	72-137	1		06/29/01 21:24 D_R		725800
SULFATE			MCL	E300	Units: mg/L		
Sulfate	360	10	50		06/25/01 10:52 KM		718276

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



Client Sample ID MW-10

Collected: 6/22/01 10:00:00 SPL Sample ID: 01060808-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	1.2	0.25	1		07/06/01 9:49 AM		731309
Surr: n-Pentacosane	63.0 %	18-120	1		07/06/01 9:49 AM		731309
<u>Prep Method</u>	<u>Prep Date</u>	<u>Prep Initials</u>					
SW3510B	06/26/2001 15:52	KL					
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		06/30/01 2:54 D_R		725880
Surr: 1,4-Difluorobenzene	101 %	74-121	1		06/30/01 2:54 D_R		725880
Surr: 4-Bromofluorobenzene	103 %	55-150	1		06/30/01 2:54 D_R		725880
HEADSPACE GAS ANALYSIS			MCL	RSK147	Units: mg/L		
Ethane	ND	0.0025	1		07/06/01 20:33 DR		733036
Ethylene	ND	0.0032	1		07/06/01 20:33 DR		733036
Methane	0.044	0.0012	1		07/06/01 20:33 DR		733036
NITROGEN, NITRATE (AS N)			MCL	E300	Units: mg/L		
Nitrogen, Nitrate (As N)	ND	0.1	1		06/23/01 10:54 KM		716776
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		06/30/01 2:54 D_R		727614
Ethylbenzene	ND	1	1		06/30/01 2:54 D_R		727614
Toluene	ND	1	1		06/30/01 2:54 D_R		727614
Xylenes, Total	ND	1	1		06/30/01 2:54 D_R		727614
Surr: 4-Bromofluorobenzene	103 %	48-156	1		06/30/01 2:54 D_R		727614
Surr: 1,4-Difluorobenzene	99.0 %	72-137	1		06/30/01 2:54 D_R		727614
SULFATE			MCL	E300	Units: mg/L		
Sulfate	270	4	20		06/25/01 10:52 KM		718277

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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

Client Sample ID TB- 6/15/01

Collected: 6/22/01

SPL Sample ID: 01060808-06

Site: Hobbs,NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		06/29/01 23:14	D_R	725876
Surr: 1,4-Difluorobenzene	97.3	% 74-121	1		06/29/01 23:14	D_R	725876
Surr: 4-Bromofluorobenzene	105	% 55-150	1		06/29/01 23:14	D_R	725876
PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		06/29/01 23:14	D_R	725805
Ethylbenzene	ND	1	1		06/29/01 23:14	D_R	725805
Toluene	ND	1	1		06/29/01 23:14	D_R	725805
Xylenes, Total	ND	1	1		06/29/01 23:14	D_R	725805
Surr: 4-Bromofluorobenzene	101	% 48-156	1		06/29/01 23:14	D_R	725805
Surr: 1,4-Difluorobenzene	98.1	% 72-137	1		06/29/01 23:14	D_R	725805

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

7/10/01 12:10:20 PM

Quality Control Documentation



Quality Control Report

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Diesel Range Organics
Method: SW8015B

WorkOrder: 01060808
Lab Batch ID: 13057

Method Blank

Samples in Analytical Batch:

RunID: HP_V_010706A-731280 Units: mg/L
Analysis Date: 07/06/2001 3:24 Analyst: AM
Preparation Date: 06/26/2001 15:52 Prep By: KL Method SW3510B

Lab Sample ID	Client Sample ID
01060808-01B	MW-13
01060808-02B	MW-11A
01060808-03B	MW-12
01060808-04B	MW-10
01060808-05B	Duplicate

Analyte	Result	Rep Limit
Diesel Range Organics	ND	0.20
Surr: n-Pentacosane	65.4	18-120

Laboratory Control Sample (LCS)

RunID: HP_V_010706A-731281 Units: mg/L
Analysis Date: 07/06/2001 4:02 Analyst: AM
Preparation Date: 06/26/2001 15:52 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	2	80	21	175

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

Sample Spiked: 01060861-04
RunID: HP_V_010706A-731285 Units: mg/L
Analysis Date: 07/06/2001 6:37 Analyst: AM
Preparation Date: 06/26/2001 15:52 Prep By: KL Method SW3510B

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	0.56	2.5	2.7	86.5	2.5	2.2	66.2	26.5	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

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.



Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Headspace Gas Analysis
 Method: RSK147

WorkOrder: 01060808.
 Lab Batch ID: R38526

Method Blank

Samples in Analytical Batch:

RunID: VARC_010706B-733056 Units: mg/L
 Analysis Date: 07/08/2001 12:02 Analyst: DR

Lab Sample ID	Client Sample ID
01060808-02D	MW-11A
01060808-03D	MW-12
01060808-04D	MW-10

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

Sample Duplicate

Original Sample: 01060810-10
 RunID: VARC_010706B-733061 Units: mg/L
 Analysis Date: 07/08/2001 13:00 Analyst: DR

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	0.01	0.011	9	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

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.



Quality Control Report

Brown & Caldwell
BJ Service, Hobbs, NM

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 01060808
Lab Batch ID: R38041

Method Blank

Samples in Analytical Batch:

RunID: HP_R_010629A-723625 Units: ug/L
Analysis Date: 06/29/2001 12:40 Analyst: D_R

Lab Sample ID	Client Sample ID
01060808-01A	MW-13
01060808-02A	MW-11A
01060808-03A	MW-12
01060808-04A	MW-10
01060808-05A	Duplicate
01060808-06A	TB- 6/15/01

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	98.7	72-137
Surr: 4-Bromofluorobenzene	102.0	48-156

Laboratory Control Sample (LCS)

RunID: HP_R_010629A-723624 Units: ug/L
Analysis Date: 06/29/2001 10:40 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	51	101	70	130
Ethylbenzene	50	49	98	70	130
Toluene	50	50	101	70	130
Xylenes, Total	150	149	99	70	130

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

Sample Spiked: 01060768-01
RunID: HP_R_010629A-725760 Units: ug/L
Analysis Date: 06/29/2001 15:25 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
Benzene	ND	20	24	120	20	31	156	26.2 *	21	32	164
Ethylbenzene	ND	20	24	118	20	23	114	3.68	19	52	142
Toluene	ND	20	24	116	20	24	119	2.69	20	38	159
Xylenes, Total	ND	60	69	115	60	66	110	4.44	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

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.



Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Gasoline Range Organics
 Method: SW8015B

WorkOrder: 01060808
 Lab Batch ID: R38135

Method Blank

RunID: HP_R_010629C-725904 Units: mg/L
 Analysis Date: 06/29/2001 11:35 Analyst: D_R

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01060808-01A	MW-13
01060808-02A	MW-11A
01060808-03A	MW-12
01060808-04A	MW-10
01060808-05A	Duplicate
01060808-06A	TB- 6/15/01

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	97.7	74-121
Surr: 4-Bromofluorobenzene	105.7	55-150

Laboratory Control Sample (LCS)

RunID: HP_R_010629C-725903 Units: mg/L
 Analysis Date: 06/29/2001 11:07 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.91	91	70	130

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

Sample Spiked: 01060768-02
 RunID: HP_R_010629C-725863 Units: mg/L
 Analysis Date: 06/29/2001 16:20 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
Gasoline Range Organics	ND	0.9	0.79	81.1	0.9	0.73	74.3	8.75	36	36	160

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

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.



Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Nitrogen, Nitrate (As N)
 Method: E300

WorkOrder: 01060808
 Lab Batch ID: R37702

Method Blank

Samples in Analytical Batch:

RunID: WET_010623I-716764 Units: mg/L
 Analysis Date: 06/23/2001 10:54 Analyst: KM

<u>Lab Sample ID</u>	<u>Client Sample ID</u>
01060808-02C	MW-11A
01060808-03C	MW-12
01060808-04C	MW-10

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

Laboratory Control Sample (LCS)

RunID: WET_010623I-716766 Units: mg/L
 Analysis Date: 06/23/2001 10:54 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen, Nitrate (As N)	10	9.54	95	90	110

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

Sample Spiked: 01060811-03
 RunID: WET_010623I-716769 Units: mg/L
 Analysis Date: 06/23/2001 10:54 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Nitrogen, Nitrate (As N)	2.6	10	12.2	96.0	10	12.2	96.5	0.499	20	76	124

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

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.



Quality Control Report

Brown & Caldwell
 BJ Service, Hobbs, NM

Analysis: Sulfate
 Method: E300

WorkOrder: 01060808
 Lab Batch ID: R37790

Method Blank

Samples in Analytical Batch:

RunID: WET_010625I-718271 Units: mg/L
 Analysis Date: 06/25/2001 10:52 Analyst: KM

Lab Sample ID	Client Sample ID
01060808-02C	MW-11A
01060808-03C	MW-12
01060808-04C	MW-10

Analyte	Result	Rep Limit
Sulfate	ND	0.20

Laboratory Control Sample (LCS)

RunID: WET_010625I-718272 Units: mg/L
 Analysis Date: 06/25/2001 10:52 Analyst: KM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10	11	107	90	110

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

Sample Spiked: 01060808-02
 RunID: WET_010625I-718274 Units: mg/L
 Analysis Date: 06/25/2001 10:52 Analyst: KM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	180	200	410	112	200	410	111	0.202	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

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*



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

Sample Receipt Checklist

Workorder:	01060808	Received By:	RE
Date and Time Received:	6/23/01 10:00:00 AM	Carrier name:	FedEx
Temperature:	4	Chilled by:	Water Ice

1. Shipping container/cooler in good condition? Yes No Not Present
2. Custody seals intact on shipping 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?
1. Received 1-40ml vial ID#MW-13 broken. 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:

Contact Date & Time:

Client Name Contacted:

Non Conformance Issues: 1. 2-40ml vials for ID#MW-13 left for analysis.

Client Instructions:



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

01060808

096670

page 1 of 1

Client Name: **BROWN AND CALDWELL**
 Address/Phone: **1415 LOUISIANA, STE 2500 HOUSTON, TX 77054 (713) 759-0999**
 Client Contact: **BUK REARAD**
 Project Name: **BJ SERVICES - HOBBS**
 Project Number: **12832-001**
 Project Location: **HOBBS, NM**
 Invoice To: **BC**

Number of Containers: **100**
 Requested Analysis: **Dissolved Nitrate (300.0) *
 Nitrate (300.0) *
 TP (P&G) - 8015
 BTEX (6021B)
 Ethane, Ethene (RST 12)**

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.
MW-13	06/22/01	0735	✓	✓	W	P=plastic A=amber glass V=vial	1=1 liter 4=4oz 40=vial 8=8oz 16=16oz	1=HCl 2=HNO3 3=H2SO4 0=other:
MW-11A	06/22/01	0840	✓	✓	W			
MW-12	06/21/01	0445	✓	✓	W			
MW-10	06/22/01	1000	✓	✓	W			
DUP-LICATE	06/22/01	0700	✓	✓	W			
TB-06/22/01	06/22/01				W			

Client/Consultant Remarks: **Nitrate must be analyzed within 24 hours of sampling**

Requested TAT: 24hr 72hr Standard Other

Standard QC: Level 3 QC Level 4 QC

Special Reporting Requirements / Fax Results: Raw Data Level 4 QC

1. Relinquished by Sampler: *[Signature]*
 2. Relinquished by: *[Signature]*
 3. Relinquished by: *[Signature]*
 4. Relinquished by: *[Signature]*
 5. Relinquished by: *[Signature]*

Intact? Y N
 Temp: **4c**

PM review (initial): **[Signature]**

2. Received by: **FLEX** time: **1630**
 4. Received by: *[Signature]* time: **6/29/01 1000**

5

C



APPENDIX C

Boring Logs for Confirmation Soil Borings

P:\Wp\BJSERV\12832\081r.doc

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

D



APPENDIX D

Laboratory Analytical Report for Confirmation Soil Samples



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

Brown & Caldwell

Certificate of Analysis Number:

01070914

<u>Report To:</u> Brown & Caldwell Rick Rexroad 1415 Louisiana Suite 2509 Houston TX 77002- ph: (713) 759-0999 fax: (713) 308-3886	<u>Project Name:</u> BJ Hobbs <u>Site:</u> Hobbs, NM <u>Site Address:</u> <u>PO Number:</u> <u>State:</u> New Mexico <u>State Cert. No.:</u> <u>Date Reported:</u> 8/9/01
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This Report Contains A Total Of 22 Pages

Excluding This Page

And

Chain Of Custody

8/9/01

Date



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

Case Narrative for:
Brown & Caldwell

Certificate of Analysis Number:
01070914

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 Site: Hobbs, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 8/9/01
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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.

Sonia West
Sonia West
Senior Project Manager

8/9/01

Date



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

Brown & Caldwell

Certificate of Analysis Number:

01070914

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
Site: Hobbs, NM
Site Address:

PO Number:
State: New Mexico

State Cert. No.:

Date Reported: 8/9/01

Fax To:

Brown & Caldwell
 Rick Rexroad fax : (713) 308-3886

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
CSB-4-45-47	01070914-01	Soil	7/23/01 10:56:00 AM	7/25/01 10:00:00 AM	095728	<input type="checkbox"/>
CSB-4-54-56	01070914-02	Soil	7/23/01 11:23:00 AM	7/25/01 10:00:00 AM	095728	<input type="checkbox"/>
CSB-3-45-47	01070914-03	Soil	7/23/01 12:32:00 PM	7/25/01 10:00:00 AM	095728	<input type="checkbox"/>
CSB-3-52-54	01070914-04	Soil	7/23/01 12:43:00 PM	7/25/01 10:00:00 AM	095728	<input type="checkbox"/>
CSB-2-35-37	01070914-05	Soil	7/23/01 1:33:00 PM	7/25/01 10:00:00 AM	095728	<input type="checkbox"/>
CSB-2-54-56	01070914-06	Soil	7/23/01 2:10:00 PM	7/25/01 10:00:00 AM	095728	<input type="checkbox"/>
CSB-1-45-47	01070914-07	Soil	7/23/01 3:39:00 PM	7/25/01 10:00:00 AM	095728	<input type="checkbox"/>
CSB--1-54-56	01070914-08	Soil	7/23/01 3:51:00 PM	7/25/01 10:00:00 AM	095728	<input type="checkbox"/>
CSB-RB	01070914-09	Water	7/23/01 4:05:00 PM	7/25/01 10:00:00 AM	095728	<input type="checkbox"/>

Sonia West
 Sonia West
 Senior Project Manager

8/9/01

Date

Joel Grice
 Laboratory Director

Ted Yen
 Quality Assurance Officer



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

Client Sample ID CSB-4-45-47

Collected: 7/23/01 10:56:00 SPL Sample ID: 01070914-01

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8100M	Units: mg/Kg		
Diesel Range Organics	ND	5.0	1		08/08/01 2:42 AM		781562
Surr: n-Pentacosane	72.8	% 20-154	1		08/08/01 2:42 AM		781562

Prep Method	Prep Date	Prep Initials
SW3550B	07/30/2001 15:54	EE

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/Kg		
Gasoline Range Organics	ND	0.10	1		07/27/01 22:11 TM		765890
Surr: 1,4-Difluorobenzene	94.7	% 63-122	1		07/27/01 22:11 TM		765890
Surr: 4-Bromofluorobenzene	107	% 39-150	1		07/27/01 22:11 TM		765890

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/Kg		
Benzene	ND	1	1		07/27/01 22:11 TM		765540
Ethylbenzene	ND	1	1		07/27/01 22:11 TM		765540
Toluene	ND	1	1		07/27/01 22:11 TM		765540
Xylenes, Total	ND	1	1		07/27/01 22:11 TM		765540
Surr: 1,4-Difluorobenzene	93.3	% 59-127	1		07/27/01 22:11 TM		765540
Surr: 4-Bromofluorobenzene	106	% 48-156	1		07/27/01 22:11 TM		765540

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID CSB-4-54-56

Collected: 7/23/01 11:23:00 SPL Sample ID: 01070914-02

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8100M	Units: mg/Kg		
Diesel Range Organics	ND	5.0	1		08/08/01 4:37 AM		781567
Surr: n-Pentacosane	94.8 %	20-154	1		08/08/01 4:37 AM		781567

Prep Method	Prep Date	Prep Initials
SW3550B	07/30/2001 15:54	EE

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/Kg		
Gasoline Range Organics	ND	0.10	1		07/27/01 22:39 TM		765891
Surr: 1,4-Difluorobenzene	93.7 %	63-122	1		07/27/01 22:39 TM		765891
Surr: 4-Bromofluorobenzene	106 %	39-150	1		07/27/01 22:39 TM		765891

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/Kg		
Benzene	ND	1	1		07/27/01 22:39 TM		765541
Ethylbenzene	ND	1	1		07/27/01 22:39 TM		765541
Toluene	ND	1	1		07/27/01 22:39 TM		765541
Xylenes, Total	ND	1	1		07/27/01 22:39 TM		765541
Surr: 1,4-Difluorobenzene	92.8 %	59-127	1		07/27/01 22:39 TM		765541
Surr: 4-Bromofluorobenzene	106 %	48-156	1		07/27/01 22:39 TM		765541

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID CSB-3-45-47

Collected: 7/23/01 12:32:00 SPL Sample ID: 01070914-03

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8100M	Units: mg/Kg		
Diesel Range Organics	ND	5.0	1		08/08/01 5:16 AM		781568
Surr: n-Pentacosane	96.3 %	20-154	1		08/08/01 5:16 AM		781568

Prep Method	Prep Date	Prep Initials
SW3550B	07/30/2001 15:54	EE

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/Kg		
Gasoline Range Organics	ND	0.10	1		07/27/01 23:07 TM		765892
Surr: 1,4-Difluorobenzene	94.7 %	63-122	1		07/27/01 23:07 TM		765892
Surr: 4-Bromofluorobenzene	107 %	39-150	1		07/27/01 23:07 TM		765892

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/Kg		
Benzene	ND	1	1		07/27/01 23:07 TM		765542
Ethylbenzene	ND	1	1		07/27/01 23:07 TM		765542
Toluene	ND	1	1		07/27/01 23:07 TM		765542
Xylenes, Total	ND	1	1		07/27/01 23:07 TM		765542
Surr: 1,4-Difluorobenzene	93.5 %	59-127	1		07/27/01 23:07 TM		765542
Surr: 4-Bromofluorobenzene	105 %	48-156	1		07/27/01 23:07 TM		765542

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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Client Sample ID CSB-3-52-54

Collected: 7/23/01 12:43:00 SPL Sample ID: 01070914-04

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8100M	Units: mg/Kg		
Diesel Range Organics	ND	5.0	1		08/08/01 5:54 AM		781570
Surr: n-Pentacosane	96.6 %	20-154	1		08/08/01 5:54 AM		781570

Prep Method	Prep Date	Prep Initials
SW3550B	07/30/2001 15:54	EE

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/Kg		
Gasoline Range Organics	ND	0.10	1		07/27/01 23:36 TM		765893
Surr: 1,4-Difluorobenzene	93.7 %	63-122	1		07/27/01 23:36 TM		765893
Surr: 4-Bromofluorobenzene	106 %	39-150	1		07/27/01 23:36 TM		765893

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/Kg		
Benzene	ND	1	1		07/27/01 23:36 TM		765543
Ethylbenzene	ND	1	1		07/27/01 23:36 TM		765543
Toluene	ND	1	1		07/27/01 23:36 TM		765543
Xylenes, Total	ND	1	1		07/27/01 23:36 TM		765543
Surr: 1,4-Difluorobenzene	93.0 %	59-127	1		07/27/01 23:36 TM		765543
Surr: 4-Bromofluorobenzene	104 %	48-156	1		07/27/01 23:36 TM		765543

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID CSB-2-35-37

Collected: 7/23/01 1:33:00

SPL Sample ID: 01070914-05

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8100M	Units: mg/Kg		
Diesel Range Organics	25	5.0	1		08/08/01 6:32 AM		781571
Surr: n-Pentacosane	97.8 %	20-154	1		08/08/01 6:32 AM		781571

Prep Method	Prep Date	Prep Initials
SW3550B	07/30/2001 15:54	EE

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/Kg		
Gasoline Range Organics	0.23	0.10	1		07/28/01 5:44 TM		768102
Surr: 1,4-Difluorobenzene	98.7 %	63-122	1		07/28/01 5:44 TM		768102
Surr: 4-Bromofluorobenzene	121 %	39-150	1		07/28/01 5:44 TM		768102

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/Kg		
Benzene	ND	1	1		07/28/01 5:44 TM		767651
Ethylbenzene	ND	1	1		07/28/01 5:44 TM		767651
Toluene	ND	1	1		07/28/01 5:44 TM		767651
Xylenes, Total	ND	1	1		07/28/01 5:44 TM		767651
Surr: 1,4-Difluorobenzene	97.2 %	59-127	1		07/28/01 5:44 TM		767651
Surr: 4-Bromofluorobenzene	118 %	48-156	1		07/28/01 5:44 TM		767651

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID CSB-2-54-56

Collected: 7/23/01 2:10:00

SPL Sample ID: 01070914-06

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8100M	Units: mg/Kg		
Diesel Range Organics	33	5.0	1		08/08/01 7:11 AM		781573
Surr: n-Pentacosane	103	% 20-154	1		08/08/01 7:11 AM		781573

Prep Method	Prep Date	Prep Initials
SW3550B	07/30/2001 15:54	EE

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/Kg		
Gasoline Range Organics	ND	0.10	1		07/28/01 6:12 TM		768103
Surr: 1,4-Difluorobenzene	94.0	% 63-122	1		07/28/01 6:12 TM		768103
Surr: 4-Bromofluorobenzene	110	% 39-150	1		07/28/01 6:12 TM		768103

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/Kg		
Benzene	ND	1	1		07/28/01 6:12 TM		767652
Ethylbenzene	ND	1	1		07/28/01 6:12 TM		767652
Toluene	ND	1	1		07/28/01 6:12 TM		767652
Xylenes, Total	ND	1	1		07/28/01 6:12 TM		767652
Surr: 1,4-Difluorobenzene	92.3	% 59-127	1		07/28/01 6:12 TM		767652
Surr: 4-Bromofluorobenzene	106	% 48-156	1		07/28/01 6:12 TM		767652

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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Client Sample ID CSB-1-45-47

Collected: 7/23/01 3:39:00

SPL Sample ID: 01070914-07

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8100M	Units: mg/Kg		
Diesel Range Organics	6.6	5.0	1		08/08/01 5:54	AM	781611
Surr: n-Pentacosane	96.5	% 20-154	1		08/08/01 5:54	AM	781611

Prep Method	Prep Date	Prep Initials
SW3550B	07/30/2001 15:54	EE

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/Kg		
Gasoline Range Organics	0.12	0.10	1		07/28/01 6:41	TM	768104
Surr: 1,4-Difluorobenzene	97.0	% 63-122	1		07/28/01 6:41	TM	768104
Surr: 4-Bromofluorobenzene	116	% 39-150	1		07/28/01 6:41	TM	768104

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/Kg		
Benzene	ND	1	1		07/28/01 6:41	TM	767653
Ethylbenzene	1.3	1	1		07/28/01 6:41	TM	767653
Toluene	ND	1	1		07/28/01 6:41	TM	767653
Xylenes, Total	11.8	1	1		07/28/01 6:41	TM	767653
Surr: 1,4-Difluorobenzene	93.4	% 59-127	1		07/28/01 6:41	TM	767653
Surr: 4-Bromofluorobenzene	108	% 48-156	1		07/28/01 6:41	TM	767653

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID CSB--1-54-56

Collected: 7/23/01 3:51:00

SPL Sample ID: 01070914-08

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8100M	Units: mg/Kg		
Diesel Range Organics	ND	5.0	1		08/08/01 6:32 AM		781612
Surr: n-Pentacosane	96.1 %	20-154	1		08/08/01 6:32 AM		781612

Prep Method	Prep Date	Prep Initials
SW3550B	07/30/2001 15:54	IEE

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/Kg		
Gasoline Range Organics	ND	0.10	1		07/28/01 7:09 TM		768105
Surr: 1,4-Difluorobenzene	94.0 %	63-122	1		07/28/01 7:09 TM		768105
Surr: 4-Bromofluorobenzene	107 %	39-150	1		07/28/01 7:09 TM		768105

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/Kg		
Benzene	ND	1	1		07/28/01 7:09 TM		767654
Ethylbenzene	ND	1	1		07/28/01 7:09 TM		767654
Toluene	ND	1	1		07/28/01 7:09 TM		767654
Xylenes, Total	ND	1	1		07/28/01 7:09 TM		767654
Surr: 1,4-Difluorobenzene	92.4 %	59-127	1		07/28/01 7:09 TM		767654
Surr: 4-Bromofluorobenzene	107 %	48-156	1		07/28/01 7:09 TM		767654

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL



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Client Sample ID CSB-RB

Collected: 7/23/01 4:05:00

SPL Sample ID: 01070914-09

Site: Hobbs, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Diesel Range Organics	ND	0.2	1		08/04/01 7:58 AM		777652
Surr: n-Pentacosane	82.2 %	18-120	1		08/04/01 7:58 AM		777652

Prep Method	Prep Date	Prep Initials
SW3510B	07/27/2001 15:37	KL

GASOLINE RANGE ORGANICS			MCL	SW8015B	Units: mg/L		
Gasoline Range Organics	ND	0.1	1		08/03/01 18:44 D_R		775091
Surr: 1,4-Difluorobenzene	89.0 %	74-121	1		08/03/01 18:44 D_R		775091
Surr: 4-Bromofluorobenzene	92.3 %	55-150	1		08/03/01 18:44 D_R		775091

PURGEABLE AROMATICS			MCL	SW8021B	Units: ug/L		
Benzene	ND	1	1		08/03/01 18:44 D_R		775062
Ethylbenzene	ND	1	1		08/03/01 18:44 D_R		775062
Toluene	ND	1	1		08/03/01 18:44 D_R		775062
Xylenes, Total	ND	1	1		08/03/01 18:44 D_R		775062
Surr: 4-Bromofluorobenzene	100 %	48-156	1		08/03/01 18:44 D_R		775062
Surr: 1,4-Difluorobenzene	96.6 %	72-137	1		08/03/01 18:44 D_R		775062

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



Quality Control Report

Brown & Caldwell

BJ Hobbs

Analysis: Diesel Range Organics
 Method: SW8015B

WorkOrder: 01070914
 Lab Batch ID: 13744a

Method Blank

Samples in Analytical Batch:

RunID: HP_V_010804B-777647 Units: mg/L
 Analysis Date: 08/04/2001 1:35 Analyst: AM
 Preparation Date: 07/27/2001 15:37 Prep By: KL Method SW3510B

Lab Sample ID Client Sample ID
 01070914-09B CSB-RB

Analyte	Result	Rep Limit
Diesel Range Organics	ND	0.20
Surr: n-Pentacosane	87.8	18-120

Laboratory Control Sample (LCS)

RunID: HP_V_010804B-777648 Units: mg/L
 Analysis Date: 08/04/2001 2:13 Analyst: AM
 Preparation Date: 07/27/2001 15:37 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	2.2	87	21	175

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

Sample Spiked: 01070903-02
 RunID: HP_V_010804B-777650 Units: mg/L
 Analysis Date: 08/04/2001 4:08 Analyst: AM
 Preparation Date: 07/27/2001 15:37 Prep By: KL Method SW3510B

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	2.5	1.8	69.2	2.5	1.8	68.1	1.54	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

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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Quality Control Report

Brown & Caldwell

BJ Hobbs

Analysis: Diesel Range Organics
 Method: SW8100M

WorkOrder: 01070914
 Lab Batch ID: 13826

Method Blank

Samples in Analytical Batch:

RunID: HP_V_010808B-781559 Units: mg/Kg
 Analysis Date: 08/08/2001 1:26 Analyst: AM
 Preparation Date: 07/30/2001 15:54 Prep By: EE Method SW3550B

Lab Sample ID	Client Sample ID
01070914-01B	CSB-4-45-47
01070914-02B	CSB-4-54-56
01070914-03B	CSB-3-45-47
01070914-04B	CSB-3-52-54
01070914-05B	CSB-2-35-37
01070914-06B	CSB-2-54-56
01070914-07B	CSB-1-45-47
01070914-08B	CSB--1-54-56

Analyte	Result	Rep Limit
Diesel Range Organics	ND	5.0
Surr: n-Pentacosane	101.0	20-154

Laboratory Control Sample (LCS)

RunID: HP_V_010808B-781560 Units: mg/Kg
 Analysis Date: 08/08/2001 2:04 Analyst: AM
 Preparation Date: 07/30/2001 15:54 Prep By: EE Method SW3550B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	83	83	100	50	150

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

Sample Spiked: 01070914-01
 RunID: HP_V_010808B-781563 Units: mg/Kg
 Analysis Date: 08/08/2001 3:21 Analyst: AM
 Preparation Date: 07/30/2001 15:54 Prep By: EE Method SW3550B

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	166	78	45.5	166	42	23.962.2 *		50	21	175

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

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.



Quality Control Report

Brown & Caldwell

BJ Hobbs

Analysis: Purgeable Aromatics
 Method: SW8021B

WorkOrder: 01070914
 Lab Batch ID: R40180

Method Blank

Samples in Analytical Batch:

RunID: HP_J_010727A-765523 Units: ug/Kg
 Analysis Date: 07/27/2001 11:42 Analyst: TM

Lab Sample ID	Client Sample ID
01070914-01A	CSB-4-45-47
01070914-02A	CSB-4-54-56
01070914-03A	CSB-3-45-47
01070914-04A	CSB-3-52-54

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	88.3	59-127
Surr: 4-Bromofluorobenzene	96.0	48-156

Laboratory Control Sample (LCS)

RunID: HP_J_010727A-765520 Units: ug/Kg
 Analysis Date: 07/27/2001 8:52 Analyst: TM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	51	101	60	120
Ethylbenzene	50	49	97	68	127
Toluene	50	50	99	64	122
Xylenes, Total	150	145	97	68	129

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

Sample Spiked: 01070905-14
 RunID: HP_J_010727A-765521 Units: ug/Kg
 Analysis Date: 07/27/2001 9:49 Analyst: TM

Analyte	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	19	93.6	20	18	88.3	5.85	34	35	139
Ethylbenzene	ND	20	18	88.2	20	16	80.9	8.71	35	31	137
Toluene	ND	20	18	89.5	20	17	84.0	6.39	28	31	137
Xylenes, Total	ND	60	53	88.3	60	48	80.0	9.90	38	19	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

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.



Quality Control Report

Brown & Caldwell

BJ Hobbs

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 01070914
Lab Batch ID: R40190

Method Blank

RunID: HP_J_010727C-765888 Units: mg/Kg
Analysis Date: 07/27/2001 11:42 Analyst: TM

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01070914-01A	CSB-4-45-47
01070914-02A	CSB-4-54-56
01070914-03A	CSB-3-45-47
01070914-04A	CSB-3-52-54

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	93.0	63-122
Surr: 4-Bromofluorobenzene	99.7	39-150

Laboratory Control Sample (LCS)

RunID: HP_J_010727C-765876 Units: mg/Kg
Analysis Date: 07/27/2001 9:20 Analyst: TM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	1.1	110	70	130

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

Sample Spiked: 01070905-14
RunID: HP_J_010727C-765880 Units: mg/Kg
Analysis Date: 07/27/2001 10:45 Analyst: TM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	1.3	0.9	2.3	108	0.9	2.1	93.8	14.1	50	26	147

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

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.



Quality Control Report

Brown & Caldwell

BJ Hobbs

Analysis: Purgeable Aromatics
 Method: SW8021B

WorkOrder: 01070914
 Lab Batch ID: R40268

Method Blank

Samples in Analytical Batch:

RunID: HP_J_010728B-767649 Units: ug/Kg
 Analysis Date: 07/28/2001 4:48 Analyst: TM

Lab Sample ID	Client Sample ID
01070914-05A	CSB-2-35-37
01070914-06A	CSB-2-54-56
01070914-07A	CSB-1-45-47
01070914-08A	CSB--1-54-56

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	88.8	59-127
Surr: 4-Bromofluorobenzene	92.8	48-156

Laboratory Control Sample (LCS)

RunID: HP_J_010728B-767646 Units: ug/Kg
 Analysis Date: 07/28/2001 1:57 Analyst: TM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	51	102	60	120
Ethylbenzene	50	51	102	68	127
Toluene	50	51	102	64	122
Xylenes, Total	150	151	101	68	129

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

Sample Spiked: 01070994-01
 RunID: HP_J_010728B-767647 Units: ug/Kg
 Analysis Date: 07/28/2001 2:54 Analyst: TM

Analyte	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	85.0	20	19	95.3	11.5	34	35	139
Ethylbenzene	ND	20	16	82.4	20	18	89.0	7.73	35	31	137
Toluene	ND	20	16	81.1	20	18	90.6	11.0	28	31	137
Xylenes, Total	ND	60	50	83.3	60	53	88.3	5.83	38	19	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

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.



Quality Control Report

Brown & Caldwell

BJ Hobbs

Analysis: Gasoline Range Organics
 Method: SW8015B

WorkOrder: 01070914
 Lab Batch ID: R40298

Method Blank

Samples in Analytical Batch:

RunID: HP_J_010728E-768100 Units: mg/Kg
 Analysis Date: 07/28/2001 4:48 Analyst: TM

Lab Sample ID	Client Sample ID
01070914-05A	CSB-2-35-37
01070914-06A	CSB-2-54-56
01070914-07A	CSB-1-45-47
01070914-08A	CSB--1-54-56

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	92.0	63-122
Surr: 4-Bromofluorobenzene	96.7	39-150

Laboratory Control Sample (LCS)

RunID: HP_J_010728E-768097 Units: mg/Kg
 Analysis Date: 07/28/2001 2:26 Analyst: TM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.91	91	70	130

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

Sample Spiked: 01070994-01
 RunID: HP_J_010728E-768098 Units: mg/Kg
 Analysis Date: 07/28/2001 3:51 Analyst: TM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	0.9	0.69	76.8	0.9	0.81	89.6	15.3	50	26	147

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

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.



Quality Control Report

Brown & Caldwell

BJ Hobbs

Analysis: Purgeable Aromatics
 Method: SW8021B

WorkOrder: 01070914
 Lab Batch ID: R40642

Method Blank

Samples in Analytical Batch:

RunID: HP_S_010803A-775055 Units: ug/L
 Analysis Date: 08/03/2001 13:10 Analyst: D_R

Lab Sample ID: 01070914-09A
 Client Sample ID: CSB-RB

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	99.9	72-137
Surr: 4-Bromofluorobenzene	99.5	48-156

Laboratory Control Sample (LCS)

RunID: HP_S_010803A-775054 Units: ug/L
 Analysis Date: 08/03/2001 11:51 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	52	103	70	130
Ethylbenzene	50	55	109	70	130
Toluene	50	53	106	70	130
Xylenes, Total	150	164	109	70	130

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

Sample Spiked: 01070990-02
 RunID: HP_S_010803A-775058 Units: ug/L
 Analysis Date: 08/03/2001 15:09 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
Benzene	ND	20	27	137	20	27	134	2.05	21	32	164
Ethylbenzene	ND	20	27	137	20	27	134	2.19	19	52	142
Toluene	ND	20	27	134	20	26	132	1.69	20	38	159
Xylenes, Total	ND	60	81	135	60	79	132	2.50	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

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, TEXAS 77054
 (713) 660-0901

Quality Control Report

Brown & Caldwell

BJ Hobbs

Analysis: Gasoline Range Organics
 Method: SW8015B

WorkOrder: 01070914
 Lab Batch ID: R40643

Method Blank

Samples in Analytical Batch:

RunID: HP_S_010803B-775087 Units: mg/L
 Analysis Date: 08/03/2001 1:10 Analyst: D_R

Lab Sample ID: 01070914-09A
 Client Sample ID: CSB-RB

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	91.7	74-121
Surr: 4-Bromofluorobenzene	96.3	55-150

Laboratory Control Sample (LCS)

RunID: HP_S_010803B-775086 Units: mg/L
 Analysis Date: 08/03/2001 12:17 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.75	75	70	130

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

Sample Spiked: 01070990-03
 RunID: HP_S_010803B-775088 Units: mg/L
 Analysis Date: 08/03/2001 16:02 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
Gasoline Range Organics	ND	0.9	0.88	97.2	0.9	0.9	99.5	2.29	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

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*



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

Sample Receipt Checklist

Workorder:	01070914	Received By:	DS
Date and Time Received:	7/25/01 10:00:00 AM	Carrier name:	FedEx
Temperature:	2	Chilled by:	Water Ice

1. Shipping container/cooler in good condition? Yes No Not Present
2. Custody seals intact on shipping 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:

Contact Date & Time:

Client Name Contacted:

Non Conformance Issues:

Client Instructions:



SPL, Inc.

SPL Workorder No:

095728

Analysis Request & Chain of Custody Record

01670914

page of

Requested Analysis

matrix bottle size pres.

W=water S=soil SL=sludge O=other: P=plastic A=amber glass G=glass V=vial 1=1 liter 4=4oz 40=vial 8=8oz 16=16oz 1=HCl 2=HNO3 3=H2SO4 O=other:

Number of Containers

BTEX 20213 TPH 2015

VP M 7/17/88

Intact? Y N Temp:

PK Review (initials): AN

Client Name: Brown & Caldwell

Address/Phone: 1115 Lewisising

Client Contact: Rick Braxton

Project Name: BSY/Hobbs

Project Number:

Project Location: Hobbs New Mexico

Invoice To:

SAMPLE ID DATE TIME comp grab

CSB-4-45-47 7-23 1050

CSB-4-54-56 103

CSB-3-45-47 1030

CSB-3-50-54 1043

CSB-3-35-37 1333

CSB-2-54-56 1410

CSB-1-45-47 1539

CSB-1-54-56 1551

CSB-R13 1605

Laboratory remarks:

Special Reporting Requirements

Standard QC Level 3 QC Raw Data Level 4 QC

1. Relinquished by Sampler: [Signature] date 7-24

3. Relinquished by: [Signature] date 7-24

5. Relinquished by: [Signature] date 7-25-88

2. Received By: [Signature] time 10:00

4. Received By: [Signature] time 10:00

6. Received by Laboratory: [Signature] time 10:00

Requested TAT

24hr 72hr

48hr Standard

Other

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

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

500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775

