GW - 97

WORK PLANS

1996

GW-97

FIELD WASTE TANK AND ACIDIC WASTE TANK CLOSURE PLAN

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

December 10, 1996

Prepared by

BJ Services Company, U.S.A.
8701 New Trails Drive
The Woodlands, Texas

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1.0 INTRODUCTION

BJ Services Company, U.S.A. (BJ Services) has developed this closure plan for the removal of two underground waste tanks at the BJ Services Farmington facility. The Farmington facility is located in Farmington, New Mexico at 3250 Southside River Road. A site location map (Figure 1) and site layout map (Figure 2) are attached.

The Field Waste Tank (FWT) is completely underground and is located near the northeastern corner of the facility. The Acidic Waste Tank (AWT) is completely underground and is located along the east property line of the facility near the acid dock. Both of these tanks received wastewater from activities associated with oil and gas well servicing.

This closure plan is prepared in general accordance with the New Mexico Oil Conservation Division (OCD) guidance document entitled, *Unlined Surface Impoundment Closure Guidelines* (1993). In accordance with the guidance document, this closure plan contains the following elements:

- The determination of general site characteristics and preliminary site ranking.
- The development of soil remediation levels for site closure.
- The procedures that will be used to conduct a site assessment for the closure of the waste tanks.
- The procedures that will be used to remove the waste tanks, collect verification samples, and manage, remediate or dispose of waste material and contaminated soil generated during closure activities.
- Reporting procedures that will be used to document the closure activities and obtain approval for final closure from the OCD.

2.0 SITE ASSESSMENT

In accordance with the OCD guidance document, BJ Services will perform an assessment prior to final site closure to determine the extent to which soils and/or groundwater may have been impacted by the operation of the waste tanks. Assessment information will include general site conditions, soil/waste characteristics, and groundwater quality if encountered. The results of the assessment will form the basis for any required remediation.

2.1 General Site Characteristics

The following general site characteristics have been determined for the Farmington facility in order to evaluate the site's potential risks, the need for remedial action, and if necessary, the level of cleanup required at the site: This information will be used to determine the appropriate soil remediation levels using a risk-based approach.

2.1.1 Depth to Groundwater

The depth to groundwater is defined as the vertical distance from the lowermost contaminants to the seasonal high water elevation of the groundwater.

The estimated depth to water near the waste tanks at the Farmington facility is 30 feet below ground surface (BGS). This estimated depth is based on cumulative groundwater elevation data collected as a part of post-removal assessment activity related to a petroleum storage tank at the facility. Considering the bottom of the waste tanks are at a depth of approximately 10 feet BGS, and that there is approximately a 5 foot upwards slope toward the waste tanks from the PST area, the approximate vertical distance from the lowermost potential contaminants to groundwater is estimated to be 25 feet.

Depth to Groundwater	Ranking Score	Site Score
< 50 feet	20	20
50 -99 feet	10	-
> 100 feet	0	-

2.1.2 Wellhead Protection Area

The horizontal distance from nearby water sources and private, domestic water sources has been determined for the site. A water source includes wells, springs, or other sources of fresh water extraction. Private, domestic water sources include those water sources used by less than five households for domestic or stock purposes.

Based on previous information collected for the Farmington facility, no potable water sources or private, domestic water sources are located within 1,000 feet of the site.

Wellhead Protection Area	Ranking Score	Site Score
< 1,000 feet from water source or;		
< 200 feet from private, domestic water source		
Yes	20	0
No	0	-

2.1.3 Distance To Nearest Surface Water Body

The horizontal distance to nearby downgradiant surface water bodies has been determined. Surface water bodies are defined as perennial rivers, streams, creeks, irrigation canals and ditches, lakes, and ponds.

Groundwater flow at the site is to the south/southwest. This is based on cumulative groundwater elevation data for monitoring wells related to the PST removal. The Echo Irrigation Ditch is an unlined ditch located approximately 125 feet west of the site. Water is diverted from the Animas River to supply the Echo Ditch. The water level varies in this ditch depending on the time of year.

Distance to Surface Water Body	Ranking Score	Site Score
< 200 horizontal feet	20	20
200 - 1,000 horizontal feet	10	-
> 1,000 horizontal feet	0	

2.2 Preliminary Site Ranking

Based wholly on the groundwater information available and presented above, the site ranking for the Farmington facility is 40. According to the OCD guidance document, a site ranking of >19 requires remediation levels as presented in Table 1 - Soil Remediation Levels.

2.3 Soil/Waste Characteristics

BJ Services intends to permanently remove the waste tanks from service at the Farmington facility. According to facility personnel, the FWT is completely empty, while the acidic waste UST is currently in use, but scheduled to be replaced with an aboveground system prior to removal. Prior to removal of the AWT, residual liquids will be removed from the AWT and used as mix water for another acid job. Following tank removal, the tanks and associated lines will be transported to an offsite facility for recycling or disposal. Upon completion of the tank removal activities impacted soils will be field screened and excavated for treatment and/or disposal.

Based on visual observation, highly petroleum contaminated/saturated soils will be excavated for treatment or disposal in accordance with the OCD guidance document.

Highly petroleum contaminated/saturated soils are those soils which contain observable free petroleum hydrocarbons or immiscible phases and gross staining.

Unsaturated petroleum contaminated soils encountered during the removal activities will be field screened with an organic vapor monitor (OVM) and remediated in accordance with the OCD guidance document. Unsaturated petroleum contaminated soils are those that are not highly contaminated as described above, but contain measurable concentrations of petroleum contaminants.

Soil verification samples will be collected following removal of the waste tanks and excavation of petroleum contaminated soil. One composite soil sample will be collected for laboratory analysis from beneath each waste tank and each excavation sidewall. The samples from beneath each waste tank will be composited from five grab samples collected from the one to three foot interval of soil from the excavation floor. The sample from each sidewall of the tank excavation will also be composited from five grab samples collected from the lower 1/3 of the excavation sidewall.

Soil samples will be collected with decontaminated sampling equipment and composited in the field. The composited samples will be placed in laboratory supplied jars, labeled, and placed on ice in an insulated cooler for shipment via overnight carrier to the laboratory. Each cooler will be accompanied by completed chain-of-custody documentation. Water generated during decontamination of sampling equipment will be collected in steel drums or other appropriate containers pending treatment or disposal.

Soil samples will be analyzed for Total Petroleum Hydrocarbons (TPH) by EPA Method 8015 modified for diesel range organics and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020 and the eight RCRA metals.

In accordance with the OCD guidance document, all highly petroleum contaminated/saturated soils encountered during the tank removal activities will be remediated in-situ or excavated to the maximum extent practicable. Unsaturated contaminated soils may require remediation based on the general site characteristics presented in this closure plan and used to determine the appropriate soil remediation levels using a risk based approach. Soils contaminated with substances other than petroleum hydrocarbons may be required to be remediated based on the nature of the contamination and their potential to impact public health and the environment.

Tank removal activities are tentatively scheduled for the week of February 9, 1998. The removal activities are planned to be completed within 30 days of start-up.

3.0 SITE ASSESSMENT REPORT

The field procedures and analytical results documenting closure of the waste tanks will be presented in a site assessment report. The report will be submitted to the OCD within 45 days after field activities are completed. The report will include a description of the tank removal activities, excavation of impacted soil, verification sampling procedures and analytical results, and disposition of waste materials associated with the tank removals. A figure showing the layout of the former tanks and the locations of verification samples will also be included. The sample results will be used in conjunction with the ranking score to verify final closure in accordance with the OCD guidance document.

If analytical results indicate additional assessment or remediation is not necessary, the assessment report will propose no further action and BJ Services will request approval for final closure of the former waste tanks.

3.1 Soil Remediation Levels

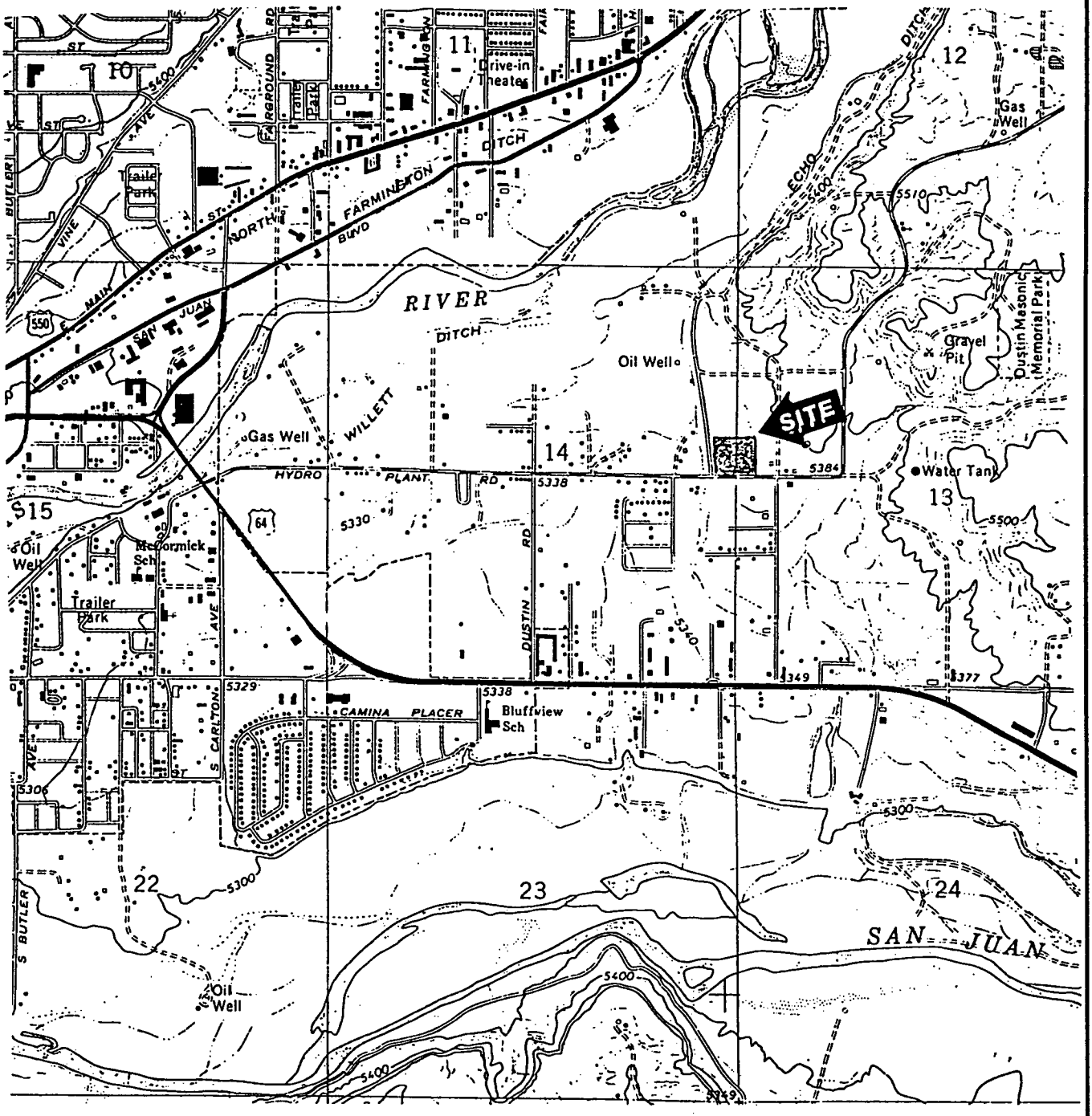
Upon removal of the waste tanks, BJ Services will determine the extent of contaminated soils, if any, by field screening with an OVM and collecting soil samples from the excavation for laboratory analyses. When sample analytical results are obtained, they will be compared to the soil remediation levels for particular constituents. Soil remediation levels for the removal of the waste tanks and associated petroleum contaminated soils are presented in Table 1.

3.2 Remediation Alternatives

If soil analytical results exceed the soil remediation levels, BJ Services may propose alternate remediation levels (if warranted by site specific conditions) for OCD review and approval, or propose no further action by conducting a baseline risk assessment utilizing the site assessment data.

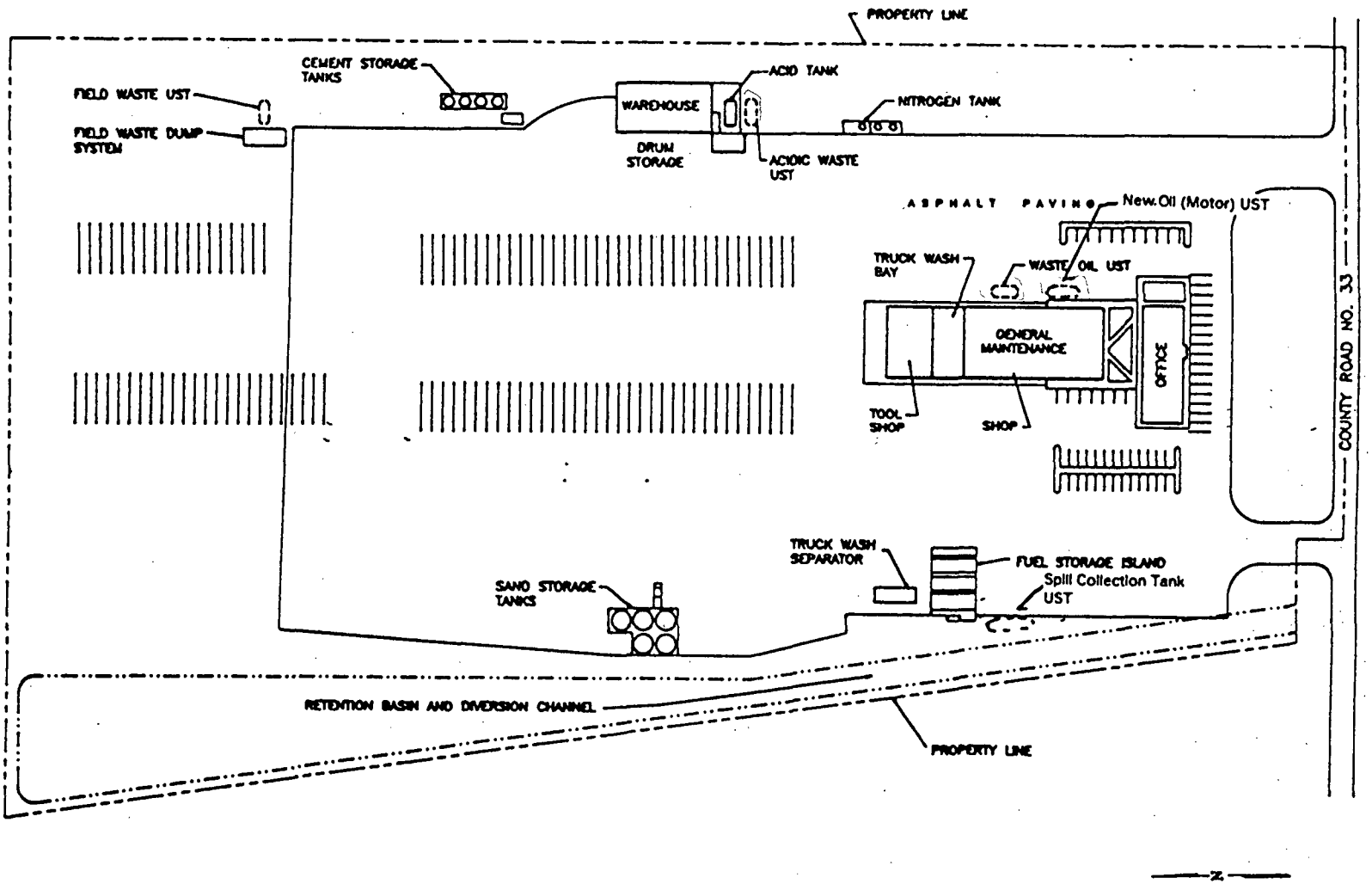
If remediation is determined to be necessary, feasible remediation alternatives will be presented in the site assessment report. Remediation alternatives may include: further excavation and offsite disposal, landfarming of impacted soil, or in-situ treatment such as vapor sparging, bioremediation, and bioattenuation. BJ Services will not commence further remediation until the OCD has reviewed and approved the recommended remediation alternatives.

FIGURES



Source: USGS Quadrangle Map, 7.5 Minute Series, Scale: 1"=2000'

	Figure 1: Site Location Map Last Revised: 12/9/97
BJ Services Company, U.S.A. 8701 New Trails Drive The Woodlands, TX 77381	Facility Name: BJ Services Company, U.S.A. Facility Address: 3250 Southside River Rd. Farmington, NM



BJ Services Company, U.S.A. 8701 New Trails Drive The Woodlands, Texas 77381	**Figure 2: Site Map** Facility Name: BJ Services Company, U.S.A. Facility Address: 3250 Southside River Rd. Farmington, NM

TABLES

TABLE 1

Soil Remediation Levels

Contaminant	Regulatory Remediation Level
Benzene	*10 ppm
Total BTEX	*50 ppm
TPH	*100 ppm
RCRA Metals	
Arsenic	5.0 (mg/L TCLP)
Barium	100.0 (mg/L TCLP)
Cadmium	1.0 (mg/L TCLP)
Chromium	5.0 (mg/L TCLP)
Lead	5.0 (mg/L TCLP)
Mercury	0.2 (mg/L TCLP)
Selenium	1.0 (mg/L TCLP)
Silver	5.0 (mg/L TCLP)

* These limits are based on a ranking score of > 19, and are outlined in the OCD guidance document.

January 23, 1998

Mr. Mark Ashley
OCD
2040 S. Pacheco St.
State Land Office Building
Santa Fe, NM 87505

Re: Phase I Groundwater Monitoring Report #1
BJ Farmington, NM Facility #965002

Dear Mr. Ashley,

As requested, attached is the Farmington Monitoring Report #1.

If you require additional information, please contact me at 281-363-7521.

Sincerely,

Rick N. Johnson
Environmental Specialist
:bb

March 25, 1997

CERTIFIED MAIL NO. P 414 631 826
Return Receipt Requested

Mr. David Nye, Project Manager
New Mexico Environmental Department, USTB
District I Office
4131 Montgomery, NE
Albuquerque, NM 87109

RE: Follow-up Phase I Groundwater Monitoring Report #1
BJ Services Company, U.S.A. - Facility No. 965002
3250 Southside River Road
Farmington, NM

Dear Mr. Nye,

Please find enclosed one (1) copy of the above referenced report prepared by On-Site Technologies, LTD. If you have any questions or concerns regarding the information presented, please call me at (281) 363-7521, or Mike Lane at (505) 325-5667.

Sincerely,

Rick N. Johnson
Environmental Specialist

att: Follow-up Phase I Groundwater Monitoring Report #1

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

March 20, 1997

Mr. Rick Johnson
Environmental Services
BJ Services Company, USA
8701 New Trails Drive
The Woodlands, TX 77381

RE: Follow-up Phase I Ground Water Monitoring: Report #1
BJ Services Facility
3250 Southside River Road
Farmington, NM

On Site Project: 4-1349

Enclosed are four bound copies of Report #1 for the referenced BJ Services facility. Please review and if acceptable, acknowledgment and distribution (i.e. 1-copy for BJ Services Houston, 1- copy BJ Services Farmington, 1-copy NMED, and 1-copy On Site).

Mr. David Nye of the NMED USTB was contacted regarding an extension for submittal of this report, and is anticipating receipt by March 28, 1997. Mr. Nye's mailing address is:

Mr. David Nye, Project Manager
New Mexico Environmental Department, USTB
District I Office
4131 Montgomery, NE
Albuquerque, NM 87109

This report completes the first semi-annual sampling event that On Site Technologies, Ltd. has been contacted to perform. The next sampling event is scheduled for September 1997. Please contact Ms. Cindy Gray or me at (505) 325-5667 with any comments, questions or modifications. It has been a pleasure working with you on this project.

Respectfully submitted,
ON SITE TECHNOLOGIES, LTD.

Michael K. Lane, P.E.
Senior Geological Engineer
Certified New Mexico Environmental Scientist #175

encl.: (4) Follow-up Phase I Ground Water Monitoring: Report #1

MKL/csg

FILE: 41349rp1.ltr

FOLLOW-UP PHASE I GROUND WATER MONITORING REPORT #1

BJ Services Company, USA
BJ Services: Farmington Facility
3250 Southside River Road
Farmington, San Juan County, NM

Facility No: 965002

Prepared for:

BJ Services Company, USA
8701 New Trails Rd.
The Woodlands, TX 77381
Attn: Mr. Rick Johnson

Prepared by:

Michael K. Lane, PE, CES #175
On Site Technologies, Ltd.
612 E. Murray Dr.
Farmington, NM 87401
(505) 325-5667

On Site Project No: 4-1349

Report Date: March 20, 1997
NMED/USTB Release Notification: July 12, 1995

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STATEMENT OF FAMILIARITY

I, the undersigned, am personally familiar with the information submitted in this report and the attached documents and attest that it is true and complete.

Signature: _____

Name: Michael K. Lane, PE, CES

Affiliation: On Site Technologies, Ltd.

Title: Senior Engineer

Certified Scientist 175

Date: _____

RESPONSIBLE PARTY ACKNOWLEDGEMENT

I, the undersigned, as a representative for the responsible party, am familiar with the findings, conclusions and recommendations documented in this report.

Signature: _____

Name: Rick N. Johnson

Affiliation: BJ Services Company, USA

Title: Environmental Specialist

Date: 3-25-97

I. EXECUTIVE SUMMARY

Follow-up Phase I monitoring of ground water quality per the New Mexico Underground Storage Tank Regulations (USTR §1216) is being completed by On Site Technologies, Ltd. at the BJ Services Company - Farmington Facility located at 3250 Southside River Road, Farmington, New Mexico. The intent of this additional ground water monitoring is to establish the next phase of corrective action.

The results of the Hydrogeologic (Phase I) Investigation were presented in a report (On Site, 7-31-96) prepared by On Site Technologies, and submitted by BJ Services to the New Mexico Environment Department (NMED) in August of 1996. Based on the findings of the Phase I Report, the New Mexico Environment Department (NMED) requested additional ground water monitoring data to determine the next phase of corrective action.

A workplan (On Site, 10-24-96) was prepared and submitted to the NMED outlining the scope of work and cost schedule for the follow-up monitoring. The scope of work for this monitoring was semi-annual ground water monitoring for a period of one year, and sampling and testing of only three wells located at the center of the ground water plume (MW-1, MW-3, and MW-4). The workplan was approved by the NMED in a letter from Mr. Peter Maggiore, Director of the NMED, dated January 27, 1997. Due to delays with mail, the approval letter was not received by On Site until February 18, 1997.

This document reports the findings of the first follow-up monitor events, which were to be completed by February 28, 1997. The field effort was completed by On Site on February 19, 1997, one day after receipt of the NMED approval letter. Results of the lab analyses for PAH was not received until March 11, 1997. A request for an extension of time for this report submittal was made on February 28, 1997 since the lab results had not been received by the NMED specified completion date.

The most significant finding from this first monitor event was the observation of four (4) inches of free product in MW-4. No product had been observed in the well during any of the earlier MSA and Phase I investigations. Based on olfactory and visual field observation and discussion with the lab, the product is suspected to be weathered diesel and/or motor oil.

The following summarizes the results of the field efforts and lab analysis completed as part of this follow-up Phase I ground water monitoring conducted during February 18, 1997. The format is the Standard Form 1216, as required by the USTB effective November, 1995.

II. ACTIVITIES PERFORMED

A. Brief description of remediation system and date installed (Figure 1):

No system in place at this time.

B. Description of activities performed to keep system operating properly:

Not applicable at this time.

C. Monitoring Activities:

On February 19, 1997, Michael Lane and Duane Aspaas of On Site Technologies, measured the static depth to water in all nine (9) wells using an electronic water level indicator. Refer to the Site Map for approximate locations of the monitor wells. Water elevations were determined by correcting the water levels to the site datum established during the MSA investigation. Water level measurements are summarized in Table 4.

As specified in the workplan, water samples were collected from only MW-1, MW-3 and MW-4. Following water level measurements and prior to collection of the water samples, each well was purged by removal of at least three (3) well volumes using disposable bailers. During purging, pH, temperature and conductivity were measured. Refer to the Field Notes included in Appendix 3.

During the purging of MW-1 and MW-4, free product was observed on the first bail. Less than 1/4 inch of product was noted on MW-1, similar to the findings during the Phase I investigation. However, greater than four (4) inches of product were measured on the water from MW-4. Water and product recovered during the purging was disposed of in the oil/water separator system operated by BJ Services at the site. This oil/water separator is used for handling wash-bay and shop rinsate.

Water samples were collected following the NMED Guidelines (NMED, 4-95). Samples for BTEX analysis were placed in 40 mil VOA vials with Teflon® septum lids, and PAH samples were placed in amber one-liter glass bottles with Teflon® lined lids. Once collected and sealed, samples were labeled, and placed on ice for delivery to the laboratory. Proper Chain-of-custody protocol was followed. Table 1 summarizes the laboratory results of the February 19, 1997 ground water sampling and the previous Phase I and MSA investigations. Appendix 6 is the laboratory package for this sampling event including chain-of-custody and quality assurance/quality control documentation.

Following discussions with Mr. Rick Johnson of BJ Services and his correspondence with Mr. David Nye, NMED Project Manager, on February 21, 1997, the analysis of the water samples from MW-4 were canceled due to the presence of free product. Table 6 summarizes the free product levels as of February 19, 1997.

D. System performance and effectiveness:

Not applicable at this time.

E. Statement verifying containment of release:

Based on the finding of the Phase I investigation and apparent ground water gradient, we believe the extent of contamination has not increase significantly from the earlier estimates.

III. CONCLUSIONS & RECOMMENDATIONS

A. Discussion of any Trends or Changes:

Based on the findings of this sampling and the earlier investigations, the following conclusions can be drawn:

1) Static ground water levels have dropped an average of 4.95 feet from the July 1996 levels. This drop may be attributed to several seasonal factors including seasonal flows in the Animas and San Juan Rivers, minimal flow in the unlined irrigation ditch located west of the site, and minimal irrigation in the up-gradient recharge areas east of the site. Refer to the Site Vicinity Map for the proximity of the noted drainage features.

2) The static water elevations indicate there exists a ground water depression in the proximity of the former UST system with MW-4 at the approximate low. The previous investigations have indicated the local ground water gradient direction varies; during the MSA (9/95) to the southwest and during the Phase 1 (7/96) to east-southeast. The measure gradients have also been relatively flat from 0.001 to 0.005 feet/foot.

3) Approximately four (4) inches of free product were observed in MW-4 under the former diesel UST. This product may have accumulated as a result of the seasonally low water table, as free product was not observed in any of the previous investigations. The extent of the free product is estimated to involve not more than approximately 1,392 square feet (i.e. area within ground water surface contour 70.60). It is estimated that from 700 to 1,000 gallons of free product may remain in place. Refer to the calculations in Appendix 2.

4) It is believed that the free product plume and associated dissolved phase plume are relatively stationary, somewhat isolated from surrounding ground water systems, and shift slightly when the ground water gradient becomes seasonally steeper.

A. Ongoing Assessment of Remediation System:
No applicable at this time.

B. Recommendations:

Based on the findings of this sampling and the earlier investigations, the following corrective actions are recommended to address the residual hydrocarbon contamination of soil and ground water at the subject site:

1) Make an attempt to recover free product in the area of MW-4. This action may need to be taken relatively quickly to utilize the low static water level conditions which may be a key contributing factor in its accumulation. As required by the NMED USTR, a workplan, cost estimate and NMED approval for this effort will be needed before initiation.
2) Follow-up monitoring of ground water conditions and quality should continue.

IV. CLOSURE AND LIMITATIONS

This report documents visual observations of the site, subsurface conditions measured, and analysis of ground water samples collected during this sampling event. This report does not reflect subsurface variations which may exist between sampling points, or subsurface changes which may occur due to seasonal variations.

The scope of our services was limited to the performance of follow-up Phase I ground water monitoring. This follow-up monitoring was limited to the measurement of water levels in nine wells, collection of water samples from three wells, submittal of water samples to a laboratory for BTEX and PAH analyses, and preparation of a summary document using the USTB Form 1216 format. All work has been performed following the pre-approved workplan, and in accordance with generally accepted professional practices in geotechnical/environmental engineering and hydrogeology.

This report has been prepared for the exclusive use of BJ Services Company, USA, and for the New Mexico Environmental Department as it pertains to BJ Services property at 3250 Southside River Road, Farmington, San Juan County, New Mexico.

V. REFERENCES

NMED, April, 1995. *UST for Soil/Water Sampling and Disposal Guidelines.*

On Site Technologies, Ltd., July 31, 1996. *HYDROGEOLOGIC INVESTIGATION REPORT, BJ Services Company, USA: Farmington Facility, 3250 Southside River Road, Farmington, San Juan County, New Mexico. Project No. 4-1276.*

On Site Technologies, Ltd., Oct. 24, 1996. *Follow-up Phase I Ground Water Monitoring Workplan, Hydrogeologic Investigation, BJ Services Company Facility, 3250 Southside River Road, Farmington, San Juan County, New Mexico.*

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Keywords:	
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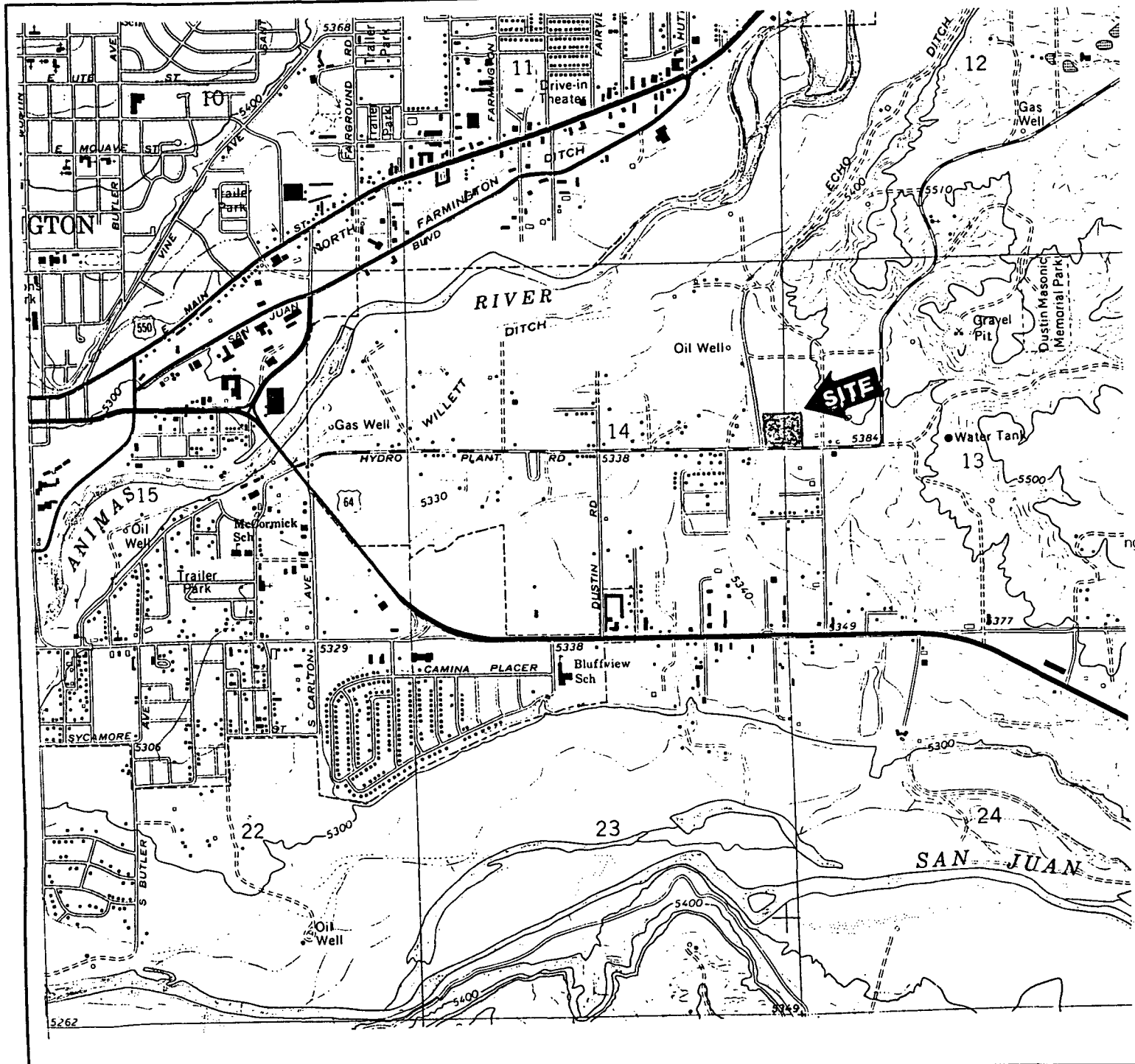

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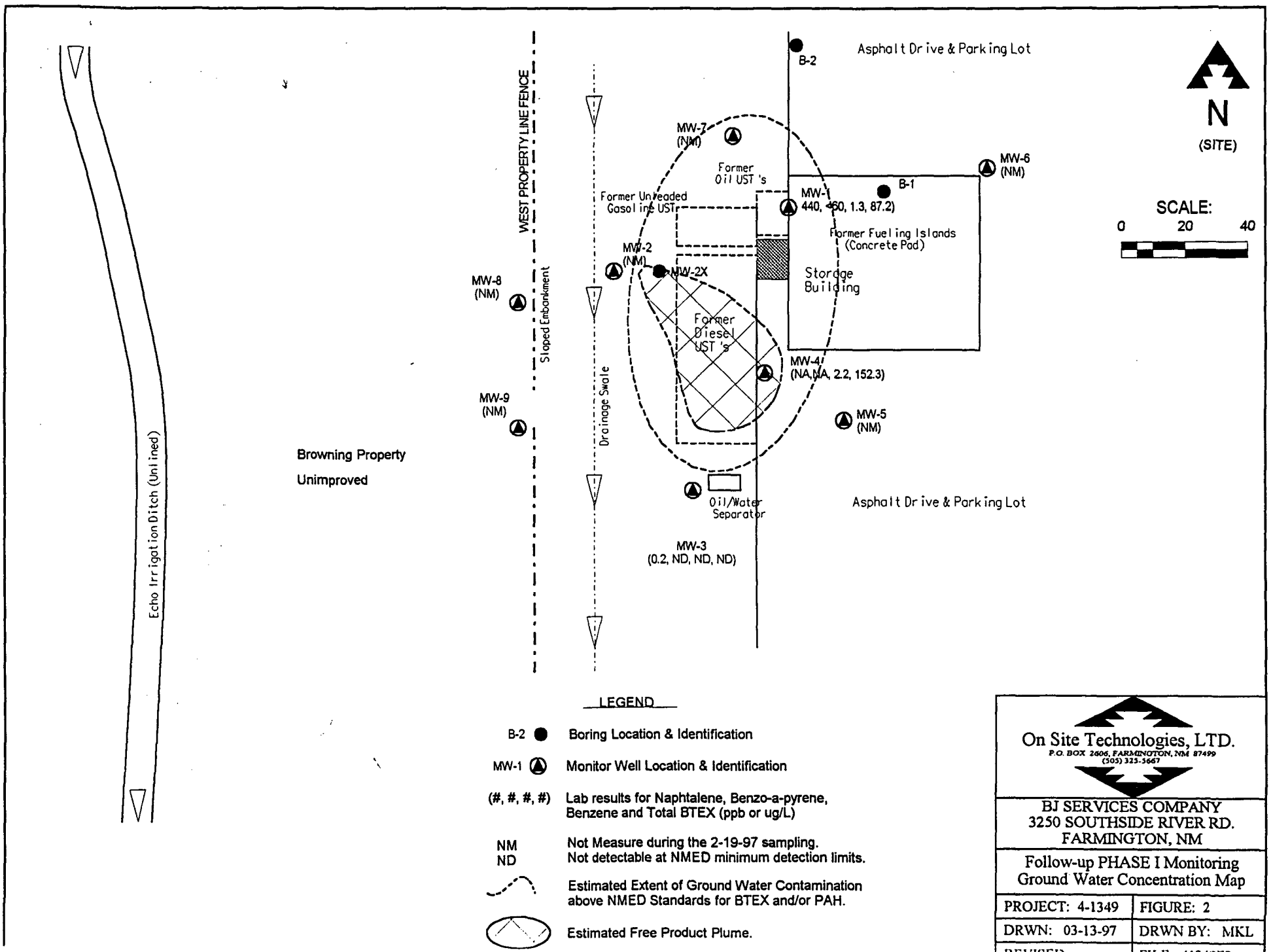
P O BOX 2606, FARMINGTON, NM 87499
(505) 325-5667

BJ SERVICES COMPANY
3250 SOUTHSIDE RIVER RD.
FARMINGTON, NM

Follow-up PHASE I Monitoring
Site Map

PROJECT: 4-1349	FIGURE: 1
DRWN: 03-13-97	DRWN BY: MKL
REVISED:	FILE: 41349F1



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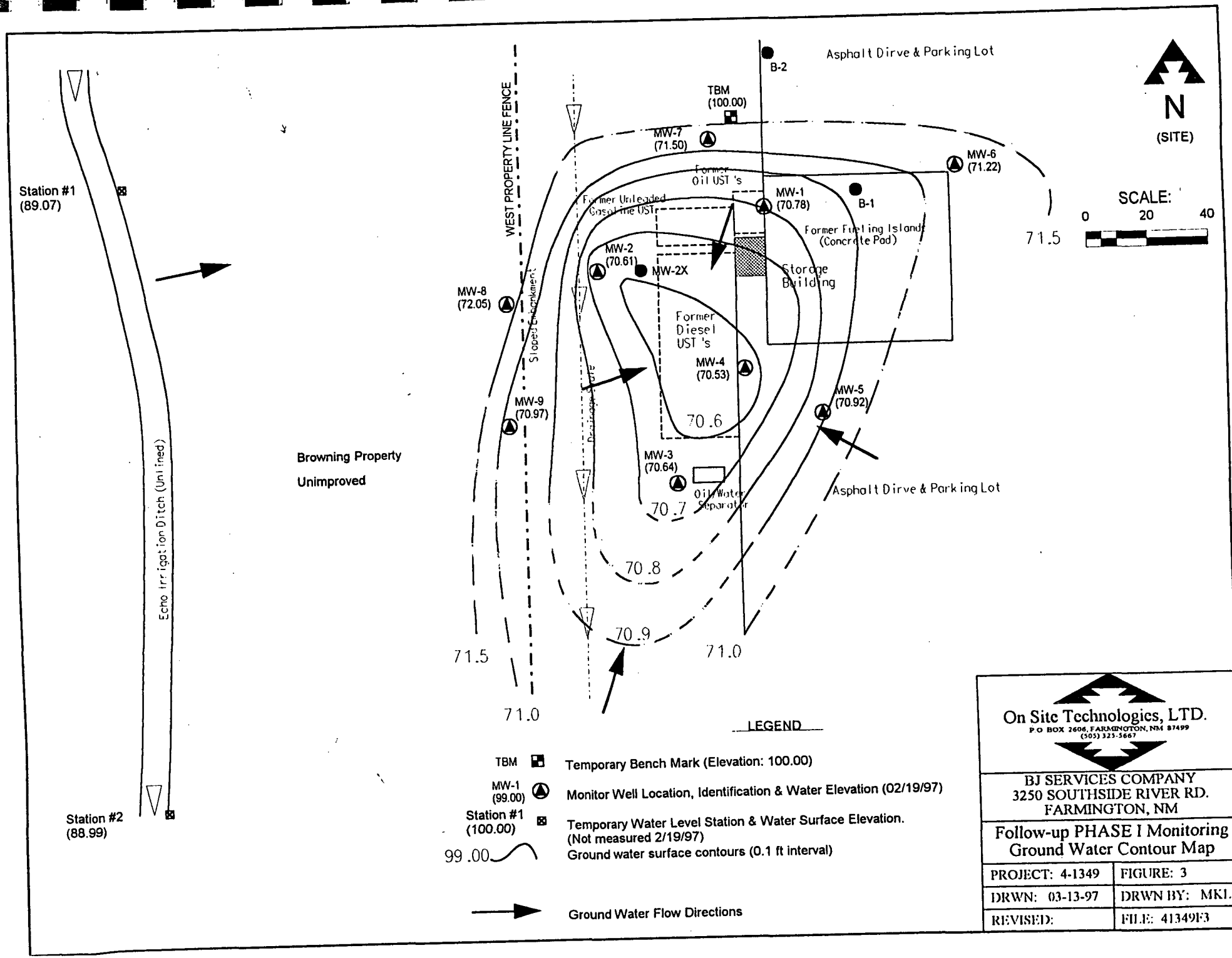
BJ SERVICES COMPANY
3250 SOUTHSIDE RIVER RD.
FARMINGTON, NM

Follow-up PHASE I Monitoring
Ground Water Concentration Map

PROJECT: 4-1349	FIGURE: 2
DRWN: 03-13-97	DRWN BY: MKL
REVISED:	FILE: 41349F2



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BJ SERVICES COMPANY
3250 SOUTHSIDE RIVER RD.
FARMINGTON, NM

Follow-up PHASE I Monitoring
Ground Water Contour Map

PROJECT: 4-1349	FIGURE: 3
DRWN: 03-13-97	DRWN BY: MKL
REVISED:	FILE: 41349F3

TABLE 1: SUMMARY OF WATER SAMPLE RESULTS
(ppb or ug/L)

Sample Location	Date	Water Elevation	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Napthalene	1&2 Methyl-napthalene	Benzo-a-pyrene	Phenan-threne
MW-1	09/09/95	73.21	ND	1	17	42	130	NR	<15	<200
MW-1	07/01/96	75.96	ND	ND	1.5	12.5	<90	<200	<30	<200
MW-1	02/19/97	70.78	1.3	0.8	20.2	64.8	440	2700	<60	<200
MW-2	09/09/95	72.80	14	ND	ND	ND	ND	NR	ND	2
MW-2	07/01/96	76.06	5.8	0.3	16.4	ND	ND.	ND	ND	ND
MW-3	09/09/95	72.89	ND	ND	ND	ND	NA	NA	NA	NA
MW-3	07/01/96	75.89	8.0	0.3	ND	0.6	ND	ND	ND	ND
MW-3	02/19/97	70.64	ND	ND	ND	0.6	0.2	1.6	ND	ND
MW-4	09/09/95	73.09	6	2	35	55	91	NR	<15	<100
MW-4	07/01/96	75.91	ND	ND	1.6	8.3	33	207	<6.0	<40
MW-4	02/19/97	70.53(7)	2.2	0.7	40.0	109.4	NA	NA	NA	NA
MW-5	07/01/96	75.92	ND	ND	ND	ND	ND	ND	ND	ND
MW-6	07/01/96	75.97	ND	ND	ND	ND	ND	ND	ND	ND
MW-7	07/01/96	76.03	ND	ND	ND	ND	ND	ND	<1.5	<10
MW-8	07/01/96	76.09	ND	ND	ND	ND	ND	ND	ND	ND
MW-9	07/01/96	75.98	ND	ND	ND	ND	ND	ND	ND	ND
Action Levels	04/1995		10	750	750	620	30	30	0.7	--

Notes:
(1) Water elevations based on site bench mark of 100.00.
(2) Samples taken 09/09/95 collected as part of MSA and taken 07/01/96 as part of the Phase I Investigation.
(3) NA: Not analyze.
(4) NR: Not reported by analytical lab. No reason given in MSA report.
(5) ND: Not detected at or above NMED specificed detection limits.
(6) No action level lists for phenanthrene in NMED or NMWQCC regulations as of July 1, 1996.
(7) MW-4 water elevation adjusted for 4 inches of product to an equivalent static water elevation

TABLE 4: SUMMARY OF WATER ELEVATION DATA

On Site Technologies, Ltd.
Project No: 4-1349

MONITOR WELL	Date	Top of Casing Elevation	Total Well Depth (ft)	Depth to Ground Water (ft)	Ground Water Elevation	Change in Water Elevation
MW-1	09/09/95	100.91	33.0	27.67	73.24[1]	--
MW-1	07/01/96	100.91	33.11	24.95	75.96	+2.72
MW-1	02/19/97	100.91	33.05	30.13	70.78	-5.18
MW-2	09/09/95	96.73	29.5	23.93	72.80	--
MW-2	07/01/96	96.73	29.40	20.67	76.06	+3.26
MW-2	02/19/97	96.73	29.40	26.12	70.61	-5.45
MW-3	09/09/95	98.54	33.0	25.65	72.89	--
MW-3	07/01/96	98.54	32.35	22.65	75.89	+2.91
MW-3	02/19/97	98.54	31.40	27.90	70.64	-5.25
MW-4	09/09/95	100.00	32.5	26.91	73.09	--
MW-4	07/01/96	100.00	32.40	24.09	75.91	+2.82
MW-4	02/19/97	100.00	32.42	29.75	70.25 (70.53)	-5.66 (-5.38)
MW-5	07/01/96	99.87	31.45	23.95	75.92	--
MW-5	02/19/97	99.87	31.41	28.95	70.92	-5.00
MW-6	07/01/96	100.72	30.60	24.75	75.97	--
MW-6	02/19/97	100.72	30.36	29.50	71.22	-4.75
MW-7	07/01/96	99.39	28.50	23.36	76.03	--
MW-7	02/19/97	99.39	29.50	27.89	71.50	-4.53
MW-8	07/01/96	95.20	23.40	19.11	76.09	--
MW-8	02/19/97	95.20	23.44	23.15	72.05	-4.04
MW-9	07/01/96	94.86	23.90	18.88	75.98	--
MW-9	02/19/97	94.86	24.09	23.89	70.97	-5.01

Notes:
(1) Water elevation reported in MSA Report: Table 2 as 73.21.
(2) Water level along the unlined Echo Irrigation Ditch no measured 2/19/97.
(3) Static water level in MW-4 corrected for free product thickness of 4 inches (0.33 ft). Refer to Appendix 2 for summary of calculations.

TABLE 6: SUMMARY OF FREE PRODUCT LEVELS

On Site Technologies, Ltd.
Project No: 4-1349

MONITOR WELL	Date	Product Thickness (ft)	Depth to Ground Water (ft)	Ground Water Elevation	Adjusted Static Water Elevation	Change in Product Thickness (ft)
MW-1	07/01/96	Sheen	24.95	75.96	75.96	--
MW-1	02/19/97	Sheen	30.13	70.78	70.78	--
MW-4	07/01/96	NM	24.09	75.91	73.09	--
MW-4	02/19/97	0.33	29.75	70.25	70.53	0.33

Notes:

(1) Sheen: < 1/8 inch of product measured.
(2) NM: No product observed and/or measured.
(3) Refer to Appendix 2 for calculations to correct static water levels for free product.

FOLLOW-UP PHASE I GROUND WATER MONITORING
REPORT #1
BJ Services Company, USA
BJ Services: Farmington Facility

APPENDIX 1: Sampling Protocol

Methods and procedures outlined in the current NMED USTB Soil and Ground Water Sampling and Disposal Guidelines were followed.

FOLLOW-UP PHASE I GROUND WATER MONITORING REPORT #1
BJ Services Company, USA
BJ Services: Farmington Facility

APPENDIX 2: Calculations, Estimates and Assumptions

The following summarizes the calculations, estimates for free product and ground water contamination. Simplifying assumptions are given where applicable.

Static Water Level Correction:

The following corrects the measured water table elevation in MW-4 due to the presence of free product.

Specific Gravity of Diesel:	0.85		
Product Thickness:	0.33 ft (4 in)		
MW-4 Water Elevation:	70.25		
Equivalent Water Column Thickness:	0.33 ft X 0.85	=	0.28 ft
Adjusted MW-4 Water Elevation:	70.25 + 0.28	=	70.53

Free Product Plume:

Free product is noted in the area of MW-4. MW-4 is located in an apparent ground water depression within the ground water surface contour of 70.60, shown on Figure 3. Assuming a probable "worst-case" the free product plume may involve the entire area within the 70.60 contour as shown on Figure 2. At the time of this sampling event, February 19, 1997, the product thickness was measured at four (4) inches. Subsequent monitoring by the facility personnel has observed six (6) to eight (8) inches of product.

Plume Area: based on planimeter of contoured interval(s) and Figure 3 scale of 1" = 40':

Elevation 70.60:	0.87 sq. inches X (1600 sq. ft./sq. in.)	=	1392 sq. ft.

Product Volume: Assuming 0.33 ft (i.e. 4 inches) thickness within contour, porosity of 25% for sands and gravel, and product saturation of 100%:

0.33 ft. X 1,392 sq. ft X 0.25 X 1.00	=	115 cubic ft.
115 cu. ft. X 7.48 gallons/cu. ft.	=	859 gallons

Net volume of remaining free product in place: 859 gallons

Ground Water Contamination:

The outlined plume in Figure 3 denotes the estimated extent of dissolved phase contamination of ground water exceeding the current NM USTR action levels for PAH and/or BTEX. The plume is assumed to be have not changed significantly from the Phase I report (7/31/96). Affected area was planimetered as 3.39 sq. in. (Scale: 1" = 40'):

Impacted Area:	3.39 sq. inches X (1600 sq. ft./sq. in.)	=	5,420 sq. ft.

Form 1216
Site Name: BJ Services - Farmington Facility
USTB Facility #: 965002
Report Date: March 17, 1997

FOLLOW-UP PHASE I GROUND WATER MONITORING REPORT #1
BJ Services Company, USA
BJ Services: Farmington Facility

APPENDIX 3: Field Notes

BJ Services
Farmington, NM Facility
On Site Tech #: 4-1849
Water Sampling
By: MKL & DMA
Date: 2/19/97 (PM)

Water Level Measurements:

	TD	WL	Vol Wtr
MW1	33.05	30.13	0.48 gal
MW2	29.40	26.12	
MW3	31.40	27.90	0.57 gal
MW4	32.42	29.75	0.44 gal *
MW5	31.41	28.95	
MW6	30.36	29.50	
MW7	29.50	27.89	
MW8	23.44	23.15	Almost Dry!
MW9	24.09	23.89	

While Purging First Bail had ~1" free product. Diesel odor.

Purge Notes:

Well	pH	Cond	Temp	Vol.
MW-1	6.41	3470	18.7	½ gal
	6.28	3360	18.9	1 gal
	6.38	3400	18.0	2 gal
MW-3	7.11	3500	17.8	½ gal
	7.20	3470	18.3	1 gal
	7.15	3470	18.1	1½ gal
MW-4	6.55	3520	18.4	½ gal
	6.75	3570	18.4	1 gal
	6.90	3530	18.9	2 gal

Form 1216
Site Name: BJ Services - Farmington Facility
USTB Facility #: 965002
Report Date: March 17, 1997

FOLLOW-UP PHASE I GROUND WATER MONITORING REPORT #1
BJ Services Company, USA
BJ Services: Farmington Facility

APPENDIX 6: Laboratory Results and QA/QC

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Michael Lane*	Date:	24-Feb-97
Company:	*On Site Technologies, Ltd. c/o BJ Services*	COC No.:	*5019*
Address:	*612 E. Murray Drive*	Sample No.:	*13712*
City, State:	*Farmington, NM 87401*	Job No.:	*4-1349*

Project Name:	***BJ Services Farmington Facility***				
Project Location:	***MW1***				
Sampled by:	MKL	Date:	19-Feb-97	Time:	15:30
Analyzed by:	DC	Date:	24-Feb-97		
Sample Matrix:	*Liquid*				

Laboratory Analysis

Parameter	*Result*	*Unit of Measure*	*Detection Limit*	*Unit of Measure*
Benzene	1.3	ug/L	0.2	ug/L
Toluene	0.8	ug/L	0.2	ug/L
Ethylbenzene	20.2	ug/L	0.2	ug/L
m,p-Xylene	24.3	ug/L	0.2	ug/L
o-Xylene	40.5	ug/L	0.2	ug/L
TOTAL	87.2	ug/L		

Method - *SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: DaC

Date: 2/24/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Michael Lane*	Date:	24-Feb-97
Company:	*On Site Technologies, Ltd. c/o BJ Services*	COC No.:	*5019*
Address:	*612 E. Murray Drive*	Sample No.:	*13713*
City, State:	*Farmington, NM 87401*	Job No.:	*4-1349*

Project Name:	***BJ Services Farmington Facility***				
Project Location:	***MW4***				
Sampled by:	MKL	Date:	19-Feb-97	Time:	15:55
Analyzed by:	DC	Date:	24-Feb-97		
Sample Matrix:	*Liquid*				

Laboratory Analysis

Parameter	*Result*	*Unit of Measure*	*Detection Limit*	*Unit of Measure*
Benzene	2.2	ug/L	0.2	ug/L
Toluene	0.7	ug/L	0.2	ug/L
Ethylbenzene	40.0	ug/L	0.2	ug/L
m,p-Xylene	36.9	ug/L	0.2	ug/L
o-Xylene	72.5	ug/L	0.2	ug/L
TOTAL	152.3	ug/L		

Method - *SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 2/24/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Michael Lane*	Date:	24-Feb-97
Company:	*On Site Technologies, Ltd. c/o BJ Services*	COC No.:	*5019*
Address:	*612 E. Murray Drive*	Sample No.:	*13714*
City, State:	*Farmington, NM 87401*	Job No.:	*4-1349*

Project Name:	***BJ Services Farmington Facility***				
Project Location:	***MW3***				
Sampled by:	MKL	Date:	19-Feb-97	Time:	16:05
Analyzed by:	DC	Date:	21-Feb-97		
Sample Matrix:	*Liquid*				

Laboratory Analysis

Parameter	*Result*	*Unit of Measure*	*Detection Limit*	*Unit of Measure*
Benzene	<0.2	ug/L	0.2	ug/L
Toluene	<0.2	ug/L	0.2	ug/L
Ethylbenzene	<0.2	ug/L	0.2	ug/L
m,p-Xylene	<0.2	ug/L	0.2	ug/L
o-Xylene	<0.2	ug/L	0.2	ug/L
TOTAL	<0.2	ug/L		

Method - *SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 2/24/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 21-Feb-97

Internal QC No.: 0527-STD
Surrogate QC No.: 0528-STD
Reference Standard QC No.: 0417-QC

Method Blank

Parameter	*Result*	*Unit of Measure*
Average Amount of All Analytes In Blank	<0.2	ppb

Calibration Check

Parameter	*Unit of Measure*	*True Value*	*Analyzed Value*	*% Diff*	*Limit*
Benzene	ppb	20.0	19.2	4	15%
Toluene	ppb	20.0	21.3	7	15%
Ethylbenzene	ppb	20.0	20.5	3	15%
m,p-Xylene	ppb	40.0	39.7	1	15%
o-Xylene	ppb	20.0	20.5	2	15%

Matrix Spike

Parameter	*1- Percent Recovered*	*2 - Percent Recovered*	*Limit*	*%RSD*	*Limit*
Benzene	83	79	(39-150)	3	20%
Toluene	90	79	(46-148)	8	20%
Ethylbenzene	82	78	(32-160)	4	20%
m,p-Xylene	77	73	(35-145)	3	20%
o-Xylene	77	74	(35-145)	3	20%

Surrogate Recoveries

Laboratory Identification	*S1 Percent Recovered*	*S2 Percent Recovered*	*Laboratory Identification*	*S1 Percent Recovered*	*S2 Percent Recovered*
Limit Percent Recovered	(70-130)		*Limit Percent Recovered*	(70-130)	
13714-5019	96				

S1: *Flourobenzene*

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 24-Feb-97

Internal QC No.: 0527-STD
Surrogate QC No.: 0528-STD
Reference Standard QC No.: 0417-QC

Method Blank

Parameter	Result	Unit of Measure
Average Amount of All Analytes In Blank	<0.2	ppb

Calibration Check

Parameter	Unit of Measure	True Value	Analyzed Value	% Diff	Limit
Benzene	ppb	20.0	20.4	2	15%
Toluene	ppb	20.0	21.4	7	15%
Ethylbenzene	ppb	20.0	22.0	10	15%
m,p-Xylene	ppb	40.0	42.7	7	15%
o-Xylene	ppb	20.0	21.8	9	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	%RSD	Limit
Benzene	83	79	(39-150)	3	20%
Toluene	90	79	(46-148)	8	20%
Ethylbenzene	82	78	(32-160)	4	20%
m,p-Xylene	77	73	(35-145)	3	20%
o-Xylene	77	74	(35-145)	3	20%

Surrogate Recoveries

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
13712-5019	96				
13713-5019	95				

S1: Flourobenzene

(nc)

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

March 11, 1997

Mr. David Cox
ON SITE TECHNOLOGIES
612 East Murray
Farmington, NM 87401

The following report contains analytical results for samples received at Southern Petroleum Laboratories (SPL) on February 21, 1997. The samples were assigned to Certificate of Analysis No. 9702939 and analyzed for all parameters as listed on the chain of custody.

There were no analytical problems encountered with this group of samples and all quality control data was within acceptance limits.

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

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

Southern Petroleum Laboratories

Ed Fry
Project Manager

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

SOUTHERN PETROLEUM LABORATORIES, INC.

Certificate of Analysis Number: 97-02-939

Approved for Release by:

Ed Fry, Project Manager

Date: 3/11/97

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

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

Certificate of Analysis No. H9-9702939-01

On Site Technologies
612 East Murray
Farmington, NM 87401
ATTN: David Cox

P.O.# 5710
03/11/97

PROJECT: BJ Services Farmington Fac.
SITE: Farmington, NM
SAMPLED BY: On Site Technologies, LTD.
SAMPLE ID: MW1 13712-5022

PROJECT NO: 4-1349
MATRIX: WATER
DATE SAMPLED: 02/19/97 15:30:00
DATE RECEIVED: 02/21/97

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	440	180.00	ug/L
Acenaphthylene	ND	100.00	ug/L
Acenaphthene	ND	200.0	ug/L
Fluorene	ND	400.0	ug/L
Phenanthrene	ND	400.0	ug/L
Anthracene	ND	200.0	ug/L
Fluoranthene	ND	200.0	ug/L
Pyrene	ND	200.0	ug/L
Chrysene	ND	160.00	ug/L
Benzo (a) anthracene	ND	160.00	ug/L
Benzo (b) fluoranthene	ND	120.00	ug/L
Benzo (k) fluoranthene	ND	140.00	ug/L
Benzo (a) pyrene	ND	60.00	ug/L
Dibenzo (a,h) anthracene	ND	140.00	ug/L
Benzo (g,h,i) perylene	ND	200.0	ug/L
Indeno (1,2,3-cd) pyrene	ND	160.00	ug/L
1-Methylnaphthalene	1200	400.0	ug/L
2-Methylnaphthalene	1500	400.0	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Biphenyl	200 ug/L	D	50	150
Coronene	200 ug/L	D	50	150

ANALYZED BY: KA DATE/TIME: 03/01/97 09:33:15
EXTRACTED BY: AM DATE/TIME: 02/25/97 08:00:00
METHOD: 8310 Polynuclear Aromatic Hydrocarbons
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed
D - Diluted, control limits not applicable.

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

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

Certificate of Analysis No. H9-9702939-03

On Site Technologies
612 East Murray
Farmington, NM 87401
ATTN: David Cox

P.O.# 5710
03/11/97

PROJECT: BJ Services Farmington Fac. **PROJECT NO:** 4-1349
SITE: Farmington, NM **MATRIX:** WATER
SAMPLED BY: On Site Technologies, LTD. **DATE SAMPLED:** 02/19/97 16:05:00
SAMPLE ID: MW3 13714-5022 **DATE RECEIVED:** 02/21/97

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	0.2	0.09	ug/L
Acenaphthylene	ND	0.05	ug/L
Acenaphthene	ND	0.1	ug/L
Fluorene	ND	0.2	ug/L
Phenanthrene	ND	0.2	ug/L
Anthracene	ND	0.1	ug/L
Fluoranthene	ND	0.1	ug/L
Pyrene	ND	0.1	ug/L
Chrysene	ND	0.08	ug/L
Benzo (a) anthracene	ND	0.08	ug/L
Benzo (b) fluoranthene	ND	0.06	ug/L
Benzo (k) fluoranthene	ND	0.07	ug/L
Benzo (a) pyrene	ND	0.03	ug/L
Dibenzo (a,h) anthracene	ND	0.07	ug/L
Benzo (g,h,i) perylene	ND	0.1	ug/L
Indeno (1,2,3-cd) pyrene	ND	0.08	ug/L
1-Methylnaphthalene	0.8	0.2	ug/L
2-Methylnaphthalene	0.8	0.2	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Biphenyl	200 ug/L	74	50	150
Coronene	200 ug/L	154 MI	50	150

ANALYZED BY: KA DATE/TIME: 03/01/97 08:53:28
EXTRACTED BY: AM DATE/TIME: 02/25/97 08:00:00
METHOD: 8310 Polynuclear Aromatic Hydrocarbons
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed
MI - Matrix Interference.

COMMENTS:

QUALITY ASSURANCE: *These analyses are performed in accordance* with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION

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

** SPL BATCH QUALITY CONTROL REPORT **

METHOD EPA 8310

Matrix: Aqueous

Batch Id: 1970228073541

Units: ug/L

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
Naphthalene	ND	0.50	0.33	66.0	33 - 122
Acenaphthylene	ND	0.50	0.30	60.0	42 - 138
Acenaphthene	ND	0.50	0.37	74.0	25 - 123
Fluorene	ND	0.50	0.46	92.0	19 - 142
Phenanthrene	ND	0.50	0.38	76.0	40 - 121
Anthracene	ND	0.50	0.27	54.0	32 - 121
Fluoranthene	ND	0.50	0.36	72.0	51 - 115
Pyrene	ND	0.50	0.39	78.0	45 - 117
Chrysene	ND	0.50	0.38	76.0	44 - 122
Benzo (a) anthracene	ND	0.50	0.35	70.0	57 - 118
Benzo (b) fluoranthene	ND	0.50	0.37	74.0	62 - 121
Benzo (k) fluoranthene	ND	0.50	0.34	68.0	63 - 117
Benzo (a) pyrene	ND	0.50	0.37	74.0	42 - 120
Dibenzo (a,h) anthracene	ND	0.50	0.36	72.0	53 - 118
Benzo (g,h,i) perylene	ND	0.50	0.39	78.0	51 - 116
Indeno (1,2,3-cd) pyrene	ND	0.50	0.37	74.0	60 - 116

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike Result <1>	Matrix Spike Recovery <4>	Matrix Spike Duplicate Result <1>	Matrix Spike Duplicate Recovery <5>	MS/MSD Relative % Difference	QC Limits(***) (Advisory) RPD Max.	Recovery Range
NAPHTHALENE	0.11	0.5	0.19	16.0	0.27	32.0	66.7 *	30	1 - 122
ACENAPHTHYLENE	ND	0.5	0.42	84.0	0.58	116	32.0 *	30	1 - 124
ACENAPHTHENE	ND	0.5	0.20	40.0	0.20	40.0	0	30	1 - 124
FLUORENE	0.61	0.5	0.52	-18.0	0.62	2.00	250 *	30	1 - 142
PHENANTHRENE	ND	0.5	0.24	48.0	0.26	52.0	8.00	30	1 - 155
ANTHRACENE	ND	0.5	0.15	30.0	0.16	32.0	6.45	30	1 - 126
FLUORANTHENE	ND	0.5	0.18	36.0	0.20	40.0	10.5	30	14 - 123
PYRENE	ND	0.5	0.17	34.0	0.18	36.0	5.71	30	1 - 140
CHRYSENE	ND	0.5	0.18	36.0	0.18	36.0	0	30	1 - 199
BENZO (A) ANTHRACENE	ND	0.5	0.16	32.0	0.17	34.0	6.06	30	12 - 135
BENZO (B) FLUORANTHENE	ND	0.5	0.17	34.0	0.17	34.0	0	30	6 - 150
BENZO (K) FLUORANTHENE	ND	0.5	0.16	32.0	0.15	30.0	6.45	30	1 - 159
BENZO (A) PYRENE	ND	0.5	0.15	30.0	0.15	30.0	0	30	1 - 128
DIBENZO (A,H) ANTHRACENE	ND	0.5	0.16	32.0	0.15	30.0	6.45	30	1 - 110
BENZO (G,H,I) PERYLENE	ND	0.5	0.17	34.0	0.18	36.0	5.71	30	1 - 116
INDENO (1,2,3-CD) PYRENE	ND	0.5	0.17	34.0	0.15	30.0	12.5	30	1 - 116

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

** SPL BATCH QUALITY CONTROL REPORT **

METHOD EPA 8310

Matrix: Aqueous

Batch Id: 1970228073541

Units: ug/L

Analyst: KA

Sequence Date: 02/28/97

SPL ID of sample spiked: 9702966-01B

Sample File ID: 970303A\006-0101

Method Blank File ID:

Blank Spike File ID: 970228B\004-0401

Matrix Spike File ID: 970303A\007-0101

Matrix Spike Duplicate File ID: 970303A\008-0101

* = Values Outside QC Range. « = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = [(<1> - <2>) / <3>] x 100

LCS % Recovery = (<1> / <3>) x 100

Relative Percent Difference = |(<4> - <5> | / [(<4> + <5>) x 0.5] x 100

(**) = Source: SPL-Houston Historical Data (3rd Q '96)

(***) = Source: Temporary Limits

SAMPLES IN BATCH(SPL ID):

9702881-09B	9702881-05B	9702881-01B	9702966-03B
9702966-04B	9702966-08B	9702966-01B	9702966-02B
9702966-06B	9702966-05B	9702939-03A	9702939-01A
9702881-02B	9702881-04B	9702881-06B	9702881-07B
9702881-08B	9702881-03B		

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

ON SITE TECHNOLOGIES, LTD.

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

CHAIN OF CUSTODY RECORD

5019

Date: 2/19/97

Purchase Order No.:
Job No. 4-1249

SEND INVOICE TO
Name c/o Michael Lane - On Site
Company [illegible] Services
Dept. —
Address —
City, State, Zip Houston, TX

REPORT RESULTS TO
Name
Title
Company
Mailing Address
City, State, Zip
Telephone No.
Telefax No.

Sampling Location: EJ Services Farmington Facility, Farmington, NM

Sampler: Michael K. Lane

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	MATRIX	PRES.	Number of Containers	8310 PAH	8020 BTEX							LAB ID
MW1	2/14	1530	WTR	[illegible]	4	✓	✓							13712-5019
MW4	↓	1555	↓	↓	4	✗	✓							13713
MW2	↓	1605	↓	↓	4	✓	✓							13714 ↓

Cancel per [illegible] Lane 2/16/97

Relinquished by: [signature] Date/Time 2/14/97 : 1645
Received by: [signature] Date/Time 2/14/97 1645
Relinquished by: Date/Time
Received by: Date/Time
Relinquished by: Date/Time
Received by: Date/Time

Method of Shipment:

Rush | 24-48 Hours | 10 Working Days | Special Instructions:

Authorized by: [signature] Date 2/14/97
(Client Signature Must Accompany Request)

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

CHAIN OF CUSTODY RECORD

9702939 5022

ON SITE TECHNOLOGIES, LTD.

~~657 W. Maple~~ • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 2/20/97 Page 1 of 1

Purchase Order No.: 5019	Job No. 4-1349		
SEND INVOICE TO: Name	ACCOUNTS PAYABLE	REPORT RESULTS TO: Name	DAVID COX Title
Company	ON SITE Dept.	Company	ON SITE TECHNOLOGIES
Address	P.O. BOX 2606	Mailing Address	612 E. MURRAY DR.
City, State, Zip	FARMINGTON, NM 87499	City, State, Zip	FARMINGTON, NM 87401
		Telephone No.	505 325-2432 Telefax No. 505 325-6256

Sampling Location: BJ SERVICES FARMINGTON FACILITY

Sampler: MKL

SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	MATRIX	PRES.	Number of Containers	PAH 8310	LAB ID
MW 1	2/19/97	1530	H_2O	COOL	1	✓	13712-5022
~~MW 4~~		1555			1	✓	13713
MW 3		1605			1	✓	13714

Cancell Analysis for MW-4 per David Cox 2/21/97 CAT

Relinquished by:	Date/Time 2/20/97 1630	Received by: S West 6°C	Date/Time 2/21/97 0930
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment: UPS NEXT DAY AIR

Authorized by: _____ Date 2/20/97
(Client Signature Must Accompany Request)

Rush	24-48 Hours	10 Working Days	Special Instructions:
			MW1 & MW4 ARE PROBABLY "HOT" AS THERE WAS PRODUCT IN WELL. Thx

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

SPL Houston Environmental Laboratory

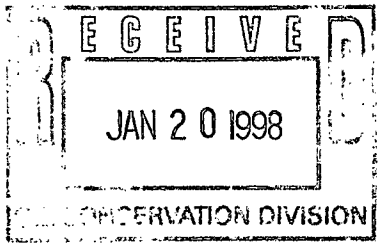
Sample Login Checklist

Date:	Time:
2/21/97	0930

SPL Sample ID:
9702939

			Yes	No
1	Chain-of-Custody (COC) form is present.		✓	
2	COC is properly completed.		✓	
3	If no, Non-Conformance Worksheet has been completed.			
4	Custody seals are present on the shipping container.		✓	
5	If yes, custody seals are intact.		✓	
6	All samples are tagged or labeled.		✓	
7	If no, Non-Conformance Worksheet has been completed.			
8	Sample containers arrived intact		✓	
9	Temperature of samples upon arrival:		6° C	
10	Method of sample delivery to SPL:	SPL Delivery		
		Client Delivery		
		FedEx Delivery (airbill #)		
		Other:	UPS	
11	Method of sample disposal:	SPL Disposal	✓	
		HOLD		
		Return to Client		

Name:	Date:
S West	2/21/97



January 15, 1998

Mr. Mark Ashley
State of New Mexico
Energy, Minerals & Natural Resources Dept.
Oil Conservation Division
2040 South Pacheco
State Land Office Building
Santa Fe, New Mexico 87505

Re: Ground Water Monitoring Report #2

Dear Mr. Ashley,

As you requested, enclosed is the **Follow-Up Phase I Ground Water Monitoring Report #2.**

If you require additional information, please contact me.

Sincerely,

Rick Johnson
Environmental Specialist
281/363-7521

REPORT #1)
NO GW IMPACT
REPORTED TO OCD.
CALL RICK J.

FOLLOW-UP PHASE I GROUND WATER MONITORING REPORT #2

BJ Services Company, USA
BJ Services: Farmington Facility
3250 Southside River Road
Farmington, San Juan County, NM

Facility No: 965002

Prepared for:

BJ Services Company, USA
8701 New Trails Rd.
The Woodlands, TX 77381
Attn: Mr. Rick Johnson

Prepared by:

Larry Trujillo, Environmental Technician
Michael K. Lane, PE, CES #175
On Site Technologies, Ltd.
612 E. Murray Dr.
Farmington, NM 87401
(505) 325-5667

On Site Project No: 4-1349

Report Date: September 26, 1997
NMED/USTB Release Notification: July 12, 1995

TABLE OF CONTENTS

STATEMENT OF FAMILIARITY

I, the undersigned, am personally familiar with the information submitted in this report and the attached documents and attest that it is true and complete.

Signature: [signature]

Name: Michael K. Lane, PE, CES

Affiliation: On Site Technologies, Ltd.

Title: Senior Engineer

Certified Scientist 175

Date: 9.26.97

RESPONSIBLE PARTY ACKNOWLEDGMENT

I, the undersigned, As a representative for the responsible party, am familiar with the findings, conclusions and recommendations documented in this report.

Signature: [signature]

Name: RICK N. JOHNSON

Affiliation: BJ Services Company, USA

Title: ENVIRONMENTAL SPECIALIST

Date: 9-29-97

I. EXECUTIVE SUMMARY

This report has been prepared by On Site Technologies Limited Partnership of behalf of BJ Services Company, USA (BJ Services). This is the second report documenting the Follow-up Phase I monitoring of ground water quality per the New Mexico Underground Storage Tank Regulations (USTR §1216) is being completed by On Site Technologies. at the BJ Services - Farmington Facility located at 3250 Southside River Road, Farmington, New Mexico. The intent of this additional ground water monitoring is to establish the next phase of corrective action.

The approved workplan (On Site, 10-24-96) for this monitoring specifies semi-annual ground water monitoring for a period of one year, and sampling and testing of only three wells located at the approximate center of the ground water plume (i.e. MW-1, MW-3 and MW-4).

The results of the first sampling event in February, 1997 (On Site, 3-20-97) found: the water levels were approximately two to three feet below average; a ground water depression appear to be present in the proximity of the former UST system; and four (4) inches of phase separated product was measured in MW-4. Following the discovery of free product, a passive hydrocarbon skimmer system has been installed by On Site Technologies in MW-4 on March 31, 1997, and maintained and operated by BJ Services. Approximately 2.35 gallons of product were recovered before ground water levels rose and only a product sheen remained in MW-4. Water The rise in ground water is a result of seasonal recharge from irrigation and runoff to the Animas and San Juan Rivers.

The field effort for this second sample event was completed by On Site on August 20, 1997. Based on the field observations and lab test results, the follow are the key findings: ground water appears to slope slightly to the west-southwest at 0.0125 feet/foot; contamination does not appear to have spread; slightly more than 1/8-inch of free product was measured in MW-1 and only a slight sheen was observed in MW-4.

The following summarizes the results of the field efforts and lab analysis completed as part of this follow-up Phase I ground water monitoring conducted during August 20, 1997. The format is the Standard Form 1216, as required by the USTB effective November, 1995.

II. ACTIVITIES PERFORMED

A. Brief description of remediation system and date installed:

A passive hydro-skimmer manufactured by Welex Environmental of Houston, Texas has been installed in MW-4 to recover free product.

B. Description of activities performed to keep system operating properly:

Details of the skimmer system and current summary of the free product recovery effort are documented in a concurrent report being prepared by On Site, *(Phase 2 Free Product Recovery, Report #1, dated 9/26/97).*

C. Monitoring Activities:

This second sampling event was performed on August 20, 1997 by Michael Lane and Larry Trujillo of On Site Technologies. The static depth to water was measured in the seven (7) on site wells using an electronic water level indicator. MW-8 and MW-9 were inaccessible and could not be measured. Refer to the Site Map (Figure 1) for approximate location of the monitor wells. Water elevations were determined by correcting the water levels to the site datum established during the MSA investigation. Water level measurements are summarized in Table 4.

As specified in the workplan, water samples were collected from only MW-1, MW-3 and MW-4. Following water level measurements and prior to collection of the water samples, each well was purged by removal of at least three (3) well volumes using disposable bailers. During purging, pH, and conductivity were measured. Refer to the Field Note included in Appendix 3.

During the purging of MW-1, approximately 3/16 of an inch (0.01 feet) of phase separated product was observed on the first bail. This observation was similar to the findings during the Phase I investigation and first sampling event which reported a sheen less than 1/8 inch of product in MW-1. MW-4 had a strong petroleum odor and purged water had a slight sheen. MW-3 appeared to have no sheen or odor. Water and product recovered during the purging was disposed of in the oil/water separator system operated by BJ Services at the site. This oil/water separator is used to handing wash-bay and shop rinsate.

Water samples were collected following the NMED Guidelines (NMED, 4-95). Samples for BTEX analysis were placed in 40 mil VOA vials with Teflon® septum lids, and PAH samples were placed in amber one-liter glass bottles with Teflon® lined lids. Once collected and sealed, samples were labeled, and placed on ice for delivery to the laboratory. Proper Chain-of-custody protocol was followed. Table 1 summarizes the laboratory results of the August 20, 1997 ground water sampling and the previous Phase I and MSA investigations. Appendix 6 is the laboratory package for this sampling event including chain-of-custody and quality assurance/quality control documentation.

Following discussions with Mr. Rick Johnson of BJ Services on August 20, 1997, the analysis of the water samples from MW-1 and MW-4 were canceled due to the observed free product. Table 6 summarizes the free product levels as of August 20, 1997.

D. System performance and effectiveness:

Refer to the Phase 2: Free Product Recovery Report (On Site, 9-26-97).

E. Statement verifying containment of release:

Based on the finding of the Phase I investigation and apparent ground water gradient, we believe the extent of contamination has not increase significantly from the earlier estimates. Figure 3 shows the estimated aerial extent of the ground water dissolved phase and sheen.

III. CONCLUSIONS & RECOMMENDATIONS

A. Discussion of any Trends or Changes:

Based on the findings of this sampling and the earlier investigations, the following conclusions can be drawn:

1. Static ground water levels have dropped an average of 2.00 feet from the July 1996 levels and risen an average of 0.85 feet from the February 19, 1997 levels. This change in static ground water levels may be attributed to several seasonal factors including: seasonal flows in the Animas and San Juan Rivers, changing flow pattern in the unlined irrigation ditch, and irrigation in the up-gradient recharge areas east of the site. Refer to the Site Vicinity Map for the proximity of the noted drainage features.
2. The static water elevations indicates a ground water gradient of 0.0125 feet/foot to the west-southwest. The direction is consistent with the findings of the MSA (9/95), but the gradient is flatter. No ground water depression as noted during the last sample event was apparent.

3. Substantial free product in MW-4 appears to accumulate only during low water table periods, specifically the winter months. This phenomena has been noted at other sites with hydrocarbon contamination, similar subsurface geology and fluctuating water tables.
4. It is believed that the free product plume and associated dissolved phase plume are relatively stationary and stable, moving only slightly when the ground water gradient becomes seasonally steeper.

B. Ongoing Assessment of Remediation System:

BJ Services presently has installed a hydro-skimmer free product recovery system in MW-4. The system is passive and appears to be effective when the water table is low and substantial free product accumulates in MW-4. The appearance of free product in MW-4 was first notice last February, 1997, and additional historic data is needed to fully assess the extent and severity of the free product at this site. Refer to the Phase 2: Free Product Recovery Report (On Site, 9-26-97) for additional information on the remediation system.

C. Recommendations:

Based on the findings of this sampling and the earlier investigations, no additional corrective measures are recommended to address the residual hydrocarbon contamination of soil and ground water at the subject site until completion of the free product recovery effort.

IV. CLOSURE AND LIMITATIONS

This report documents visual observations of the site, subsurface conditions measured, and analysis of ground water samples collected during this sampling event. This report does not reflect subsurface variations which may exist between sampling points, or subsurface changes which may occur due to seasonal variations.

The scope of our services was limited to the performance of follow-up Phase I ground water monitoring. This follow-up monitoring was limited to the measurement of water levels in nine wells, collection of water samples from three wells, submittal of water samples to a laboratory for BTEX and PAH analyses, and preparation of a summary document using the USTB Form 1216 format. All work has been performed following the pre-approved workplan, and in accordance with generally accepted professional practices in geotechnical/environmental engineering and hydrogeology.

This report has been prepared for the exclusive use of BJ Services Company, USA, and for the New Mexico Environmental Department as it pertains to BJ Services property at 3250 Southside River Road, Farmington, San Juan County, New Mexico.

Written By:
Larry Trujillo
Senior Environmental Technician

V. REFERENCES

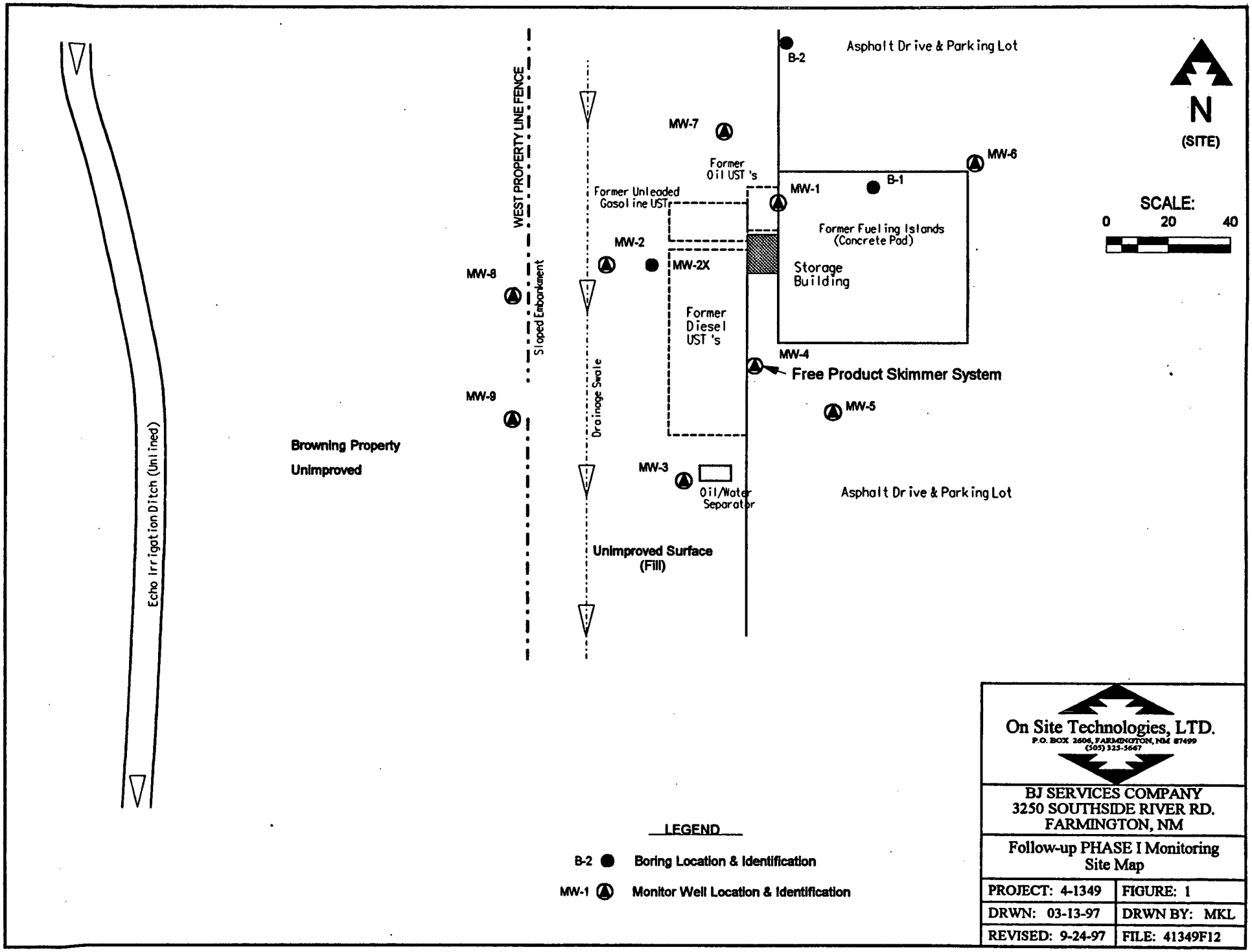
NMED, April, 1995. *Guidelines for Soil/Water Sampling and Disposal.*

On Site Technologies, Ltd., July 31, 1996. *HYDROGEOLOGIC INVESTIGATION REPORT, BJ Services Company, USA: Farmington Facility, 3250 Southside River Road, Farmington, San Juan County, New Mexico. Project No. 4-1276.*

On Site Technologies, Ltd., Oct. 24, 1996. *Follow-up Phase I Ground Water Monitoring Workplan, Hydrogeologic Investigation, BJ Services Company Facility, 3250 Southside River Road, Farmington, San Juan County, New Mexico.*

On Site Technologies, Ltd., March 20, 1997. *Follow-up Phase I Ground Water Monitoring Report #1, BJ Services Company Facility, 3250 Southside River Road, Farmington, San Juan County, New Mexico.*

On Site Technologies Ltd. Partnership, September 26, 1997. *Phase 2 Free Product Recovery, Report #1, BJ Services Company Facility, 3250 Southside River Road, Farmington, San Juan County, New Mexico.*

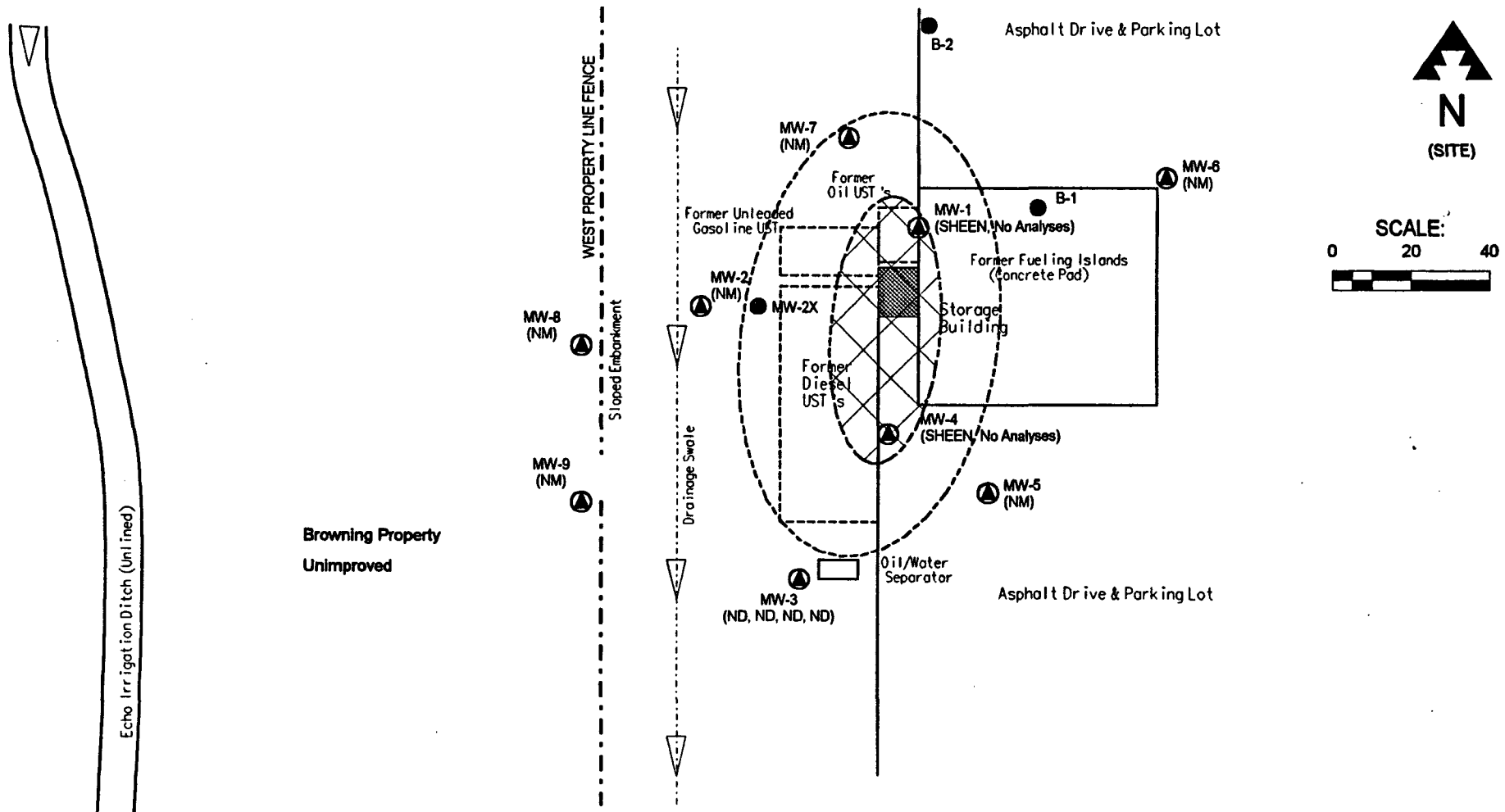


On Site Technologies, LTD.
P.O. BOX 2606, FARMINGTON, NM 87499
(505) 325-5667

BJ SERVICES COMPANY
3250 SOUTHSIDE RIVER RD.
FARMINGTON, NM

Follow-up PHASE I Monitoring
Site Map

PROJECT: 4-1349	FIGURE: 1
DRWN: 03-13-97	DRWN BY: MKL
REVISED: 9-24-97	FILE: 41349F12



LEGEND

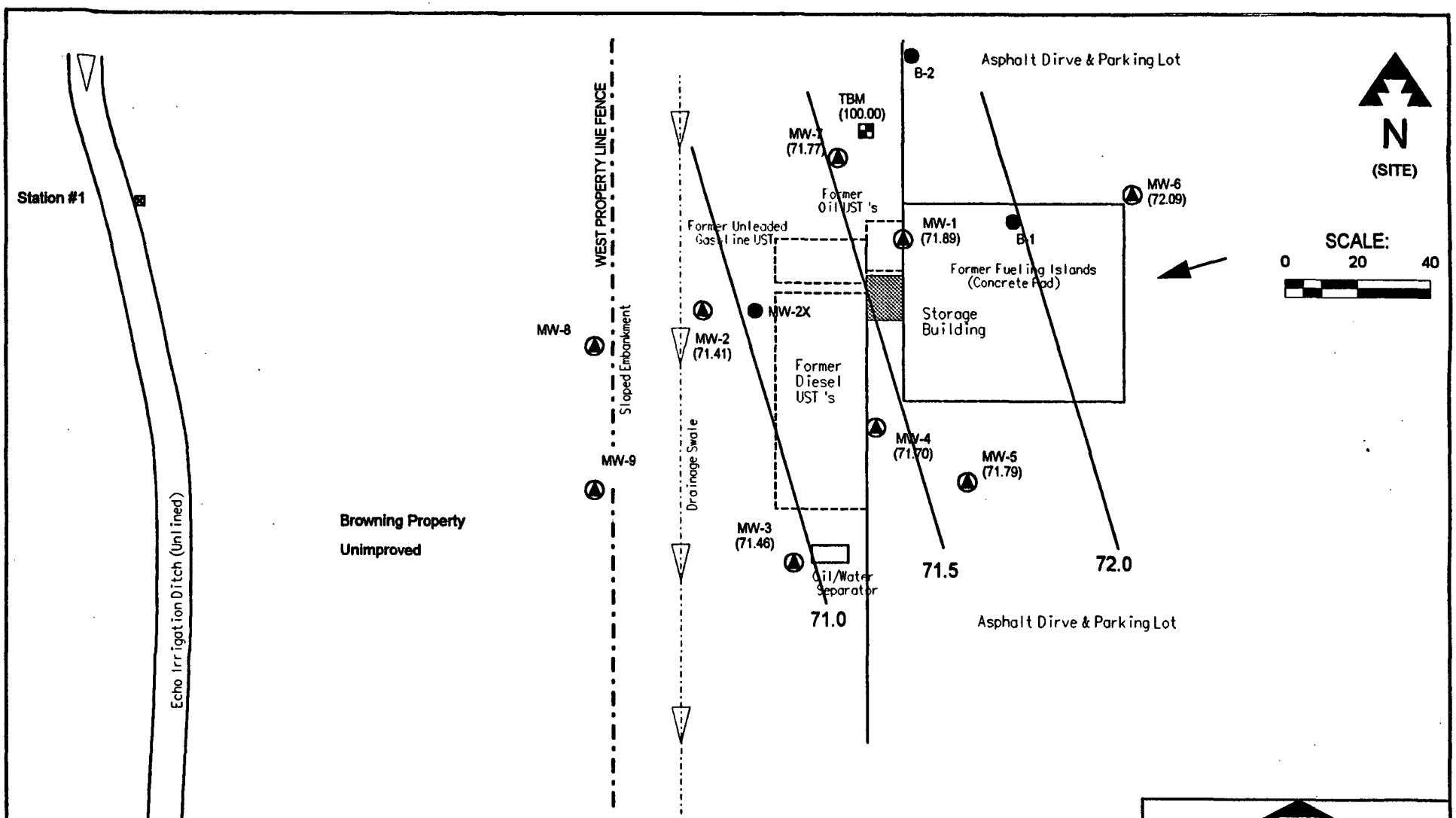
B-2 ●	Boring Location & Identification
MW-1 ▲	Monitor Well Location & Identification
(#, #, #, #)	Lab results for Naphtalene, Benzo-a-pyrene, Benzene and Total BTEX (ppb or ug/L)
NM	Not Measure during the 8-20-97 sampling.
ND	Not detectable at NMED minimum detection limits.
~	Estimated Extent of Ground Water Contamination above NMED Standards for BTEX and/or PAH.
⊗	Apparent Sheen.

On Site Technologies, LTD.
P.O. BOX 2606, FARMINGTON, NM 87499
(505) 325-5667

BJ SERVICES COMPANY
3250 SOUTHSIDE RIVER RD.
FARMINGTON, NM

Follow-up PHASE I Monitoring
Ground Water Concentration Map

PROJECT: 4-1349	FIGURE: 2
DRWN: 03-13-97	DRWN BY: MKL
REVISED: 9-24-97	FILE: 41349F22



LEGEND

TBM — Temporary Bench Mark (Elevation: 100.00)

MW-1 (99.00) — Monitor Well Location, Identification & Water Elevation (02/19/97)

Station #1 (100.00) — Temporary Water Level Station & Water Surface Elevation. (Not measured 8/20/97)

99.00 — Ground water surface contours (0.25 ft interval)

Ground Water Flow Directions

On Site Technologies, LTD.
P.O. BOX 2606, FARMINGTON, NM 87499
(505) 325-5667

BJ SERVICES COMPANY
3250 SOUTHSIDE RIVER RD.
FARMINGTON, NM

Follow-up PHASE I Monitoring Ground Water Contour Map

PROJECT: 4-1349	FIGURE: 3
DRWN: 03-13-97	DRWN BY: MKL
REVISED: 9-25-97	FILE: 41349F32

TABLE 1: SUMMARY OF WATER SAMPLE RESULTS
(ppb or ug/L)

Sample Location	Date	Water Elevation	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Napthalene	1&2 Methyl-napthalene	Benzo-a-pyrene	Phenan-threne
MW-1	09/09/95	73.21	ND	1	17	42	130	NR	<15	<200
MW-1	07/01/96	75.96	ND	ND	1.5	12.5	<90	<200	<30	<200
MW-1	02/19/97	70.78	1.3	0.8	20.2	64.8	440	2700	<60	<200
MW-1	08/20/97	71.89(7)	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	09/09/95	72.80	14	ND	ND	ND	ND	NR	ND	2
MW-2	07/01/96	76.06	5.8	0.3	16.4	ND	ND.	ND	ND	ND
MW-3	09/09/95	72.89	ND	ND	ND	ND	NA	NA	NA	NA
MW-3	07/01/96	75.89	8.0	0.3	ND	0.6	ND	ND	ND	ND
MW-3	02/19/97	70.64	ND	ND	ND	0.6	0.2	1.6	ND	ND
MW-3	08/20/97	71.46	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	09/09/95	73.09	6	2	35	55	91	NR	<15	<100
MW-4	07/01/96	75.91	ND	ND	1.6	8.3	33	207	<6.0	<40
MW-4	02/19/97	70.53(7)	2.2	0.7	40.0	109.4	NA	NA	NA	NA
MW-4	08/20/97	71.70	NA	NA	NA	NA	NA	NA	NA	NA
MW-5	07/01/96	75.92	ND	ND	ND	ND	ND	ND	ND	ND
MW-6	07/01/96	75.97	ND	ND	ND	ND	ND	ND	ND	ND
MW-7	07/01/96	76.03	ND	ND	ND	ND	ND	ND	<1.5	<10
MW-8	07/01/96	76.09	ND	ND	ND	ND	ND	ND	ND	ND
MW-9	07/01/96	75.98	ND	ND	ND	ND	ND	ND	ND	ND
Action Levels	04/1995		10	750	750	620	30	30	0.7	--

Notes:
(1) Water elevations based on site bench mark of 100.00.
(2) Samples taken 09/09/95 collected as part of MSA and taken 07/01/96 as part of the Phase I Investigation.
(3) NA: Not analyze. For MW-1 & MW-4, samples not analyzed due to sheen observed during 8/20/97 sampling.
(4) NR: Not reported by analytical lab. No reason given in MSA report.
(5) ND: Not detected at or above NMED specificed detection limits.
(6) No action level lists for phenanthrene in NMED or NMWQCC regulations as of July 1, 1996.
(7) Water elevations adjusted for phase separated product to an equivalent static water elevation.

TABLE 4: SUMMARY OF WATER ELEVATION DATA

On Site Technologies, Ltd.
Project No: 4-1349

MONITOR WELL	Date	Top of Casing Elevation	Total Well Depth (ft)	Depth to Ground Water (ft)	Ground Water Elevation	Change in Water Elevation
MW-1	09/09/95	100.91	33.0	27.67	73.24[1]	--
MW-1	07/01/96	100.91	33.11	24.95	75.96	+2.72
MW-1	02/19/97	100.91	33.05	30.13	70.78	-5.18
MW-1	08/20/97	100.91	33.11	29.03	71.88 (71.89)	+ 1.1 (+1.11)
MW-2	09/09/95	96.73	29.5	23.93	72.80	--
MW-2	07/01/96	96.73	29.40	20.67	76.06	+3.26
MW-2	02/19/97	96.73	29.40	26.12	70.61	-5.45
MW-2	08/20/97	96.73	29.40	25.32	71.41	+ 0.80
MW-3	09/09/95	98.54	33.0	25.65	72.89	--
MW-3	07/01/96	98.54	32.35	22.65	75.89	+2.91
MW-3	02/19/97	98.54	31.40	27.90	70.64	-5.25
MW-3	08/20/97	98.54	32.33	27.08	71.46	+ 0.85
MW-4	09/09/95	100.00	32.5	26.91	73.09	--
MW-4	07/01/96	100.00	32.40	24.09	75.91	+2.82
MW-4	02/19/97	100.00	32.42	29.75	70.25 (70.53)	-5.66 (-5.38)
MW-4	08/20/97	100.00	32.37	28.30	71.70	+ 1.17
MW-5	07/01/96	99.87	31.45	23.95	75.92	--
MW-5	02/19/97	99.87	31.41	28.95	70.92	-5.00
MW-5	08/20/97	99.87	31.41	28.08	71.79	+0.87
MW-6	07/01/96	100.72	30.60	24.75	75.97	--
MW-6	02/19/97	100.72	30.36	29.50	71.22	-4.75
MW-6	08/20/97	100.72	30.36	28.63	72.09	+ 0.86
MW-7	07/01/96	99.39	28.50	23.36	76.03	--
MW-7	02/19/97	99.39	29.50	27.89	71.50	-4.53
MW-7	08/20/97	99.39	29.50	27.62	71.77	+ 0.27
MW-8	07/01/96	95.20	23.40	19.11	76.09	--
MW-8	02/19/97	95.20	23.44	23.15	72.05	-4.04
MW-9	07/01/96	94.86	23.90	18.88	75.98	--
MW-9	02/19/97	94.86	24.09	23.89	70.97	-5.01

Notes:
(1) Water elevation reported in MSA Report: Table 2 as 73.21.
(2) Water level along the unlined Echo Irrigation Ditch no measured 2/19/97.
(3) Static water level in MW-4 corrected for free product thickness of 4 inches (0.33 ft). Refer to Appendix 2 for summary of calculaions.

TABLE 6: SUMMARY OF FREE PRODUCT LEVELS

On Site Technologies, Ltd.
Project No: 4-1349

MONITOR WELL	Date	Product Thickness (ft)	Depth to Ground Water (ft)	Ground Water Elevation	Adjusted Static Water Elevation	Change in Product Thickness (ft)
MW-1	07/01/96	Sheen	24.95	75.96	75.96	--
MW-1	02/19/97	Sheen	30.13	70.78	70.78	--
MW-1	08/20/97	0.01	29.03	71.88	71.89	0.01
MW-4	07/01/96	NM	24.09	75.91	73.09	--
MW-4	02/19/97	0.33	29.75	70.25	70.53	0.33
MW-4	08/20/97	Sheen	28.30	71.70	71.70	-0.33

Notes:

(1) Sheen: < 1/8 inch of product measured.
(2) NM: No product observed and/or measured.
(3) Refer to Appendix 2 for calculations to correct static water levels for free product.

Form 1216: Appendix
Site Name: BJ Services - Farmington Facility
USTB Facility #: 965002
Report Date: September 26, 1997

FOLLOW-UP PHASE I GROUND WATER MONITORING REPORT #2
BJ Services Company, USA
BJ Services: Farmington Facility

APPENDIX 1: Sampling Protocol

Methods and procedures outlined in the current NMED USTB Soil and Ground Water Sampling and Disposal Guidelines were followed.

FOLLOW-UP PHASE I GROUND WATER MONITORING REPORT #2
BJ Services Company, USA
BJ Services: Farmington Facility

APPENDIX 2: Calculations, Estimates and Assumptions

The following summarizes the calculations, estimates for free product and ground water contamination. Simplifying assumptions are given where applicable.

Static Water Level Correction:

The following corrects the measured water table elevation in MW-1 due to the presence of free product. No corrects or adjustments have been made to MW-4, which only had a sheen less than 1/8 inch thick.

Specific Gravity of Diesel:	0.85		
Product Thickness:	0.015 ft (1/8 to 3/16 in.)		
MW-1 Water Elevation:	71.88		
Equivalent Water Column Thickness:	0.015 ft X 0.85	=	0.01 ft
Adjusted MW-1 Water Elevation:	71.88 + 0.01	=	71.89

Free Product Plume:

Free product was noted in the area of MW-4 during the February, 1997 sampling event. Only a sheen or very thin layer of phase separated product has been noted in MW-1 and MW-4 during the August, 1997 event. It is estimated that a sheen of product might be anticipated in the area of MW-1 and MW-4 as shown on Figure 2.

Plume Area: based on planimeter of the sheen ellipse and Figure 2 scale of 1" = 40':

0.92 sq. inches X (1600 sq. ft./sq. in.)	=	1,472 sq. ft.

Ground Water Dissolved Phase Contamination:

The outlined plume in Figure 2 denotes the estimated extent of dissolved phase contamination of ground water exceeding the current NM USTR action levels for PAH and/or BTEX. The plume is assumed to be have not changed significantly from the Phase I report (7/31/96). Affected area was planimetered as 3.39 sq. in. (Scale: 1" = 40'):

Impacted Area:	3.39 sq. inches X (1600 sq. ft./sq. in.)	=	5,420 sq. ft.

Form 1216: Appendix
Site Name: BJ Services - Farmington Facility
USTB Facility #: 965002
Report Date: September 26, 1997

FOLLOW-UP PHASE I GROUND WATER MONITORING REPORT #2
BJ Services Company, USA
BJ Services: Farmington Facility

APPENDIX 3: Field Notes

SITE LOCATION

BJ Services Farmington facility Semi Annual Sampling

NUMBER OF MONITORING WELLS:

WELL	TOTAL WELL DEPTH	DEPTH TO WATER	1 VOLUME	3 VOLUME
MW #1	33.11	29.03	0.67	2.00
MW #2		25.32		
MW #3	32.33	27.08	0.86	2.55
MW #4	32.37	28.30	0.66	1.99
MW #5		28.08		
MW #6		28.63		
MW #7		27.62		
MW #8	unaccessible			
MW #9	"			

Monitoring Well # 1 Date 8-20-97

Volume	pH	Conductivity
#1	6.94	300
#2	7.00	300
#2	7.00	280

Monitoring Well # 3 Date 8-20-97

Volume	pH	Conductivity
#1	6.98	2.80
#2	7.06	2.90
#3	7.06	3.00

Monitoring Well # 4 Date 8-20-97

Volume	pH	Conductivity
#1	6.95	2.60
#2	~~7.08~~ 7.02	2.90
#3	6.92	2.80

Monitoring Well # Date

Volume	pH	Conductivity

Monitoring Well # Date

Volume	pH	Conductivity

Form 1216: Appendix
Site Name: BJ Services - Farmington Facility
USTB Facility #: 965002
Report Date: September 26, 1997

FOLLOW-UP PHASE I GROUND WATER MONITORING REPORT #2
BJ Services Company, USA
BJ Services: Farmington Facility

APPENDIX 6: Laboratory Results and QA/QC

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Larry Trujillo*	Date:	28-Aug-97
Company:	*On Site Technologies, Ltd. c/o B.J. Services*	COC No.:	*6710*
Address:	*612 E. Murray Drive*	Sample No.:	*15832*
City, State:	*Farmington, NM 87401*	Job No.:	*4-1349*

Project Name:	***B.J. Services***				
Project Location:	***MW-3***				
Sampled by:	LT	Date:	20-Aug-97	Time:	12:53
Analyzed by:	DC	Date:	25-Aug-97		
Sample Matrix:	*Liquid*				

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	ND	ug/L	0.2	ug/L
Toluene	ND	ug/L	0.2	ug/L
Ethylbenzene	ND	ug/L	0.2	ug/L
m,p-Xylene	ND	ug/L	0.2	ug/L
o-Xylene	ND	ug/L	0.2	ug/L
TOTAL	ND	ug/L		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By:
Date: 8/28/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 25-Aug-97

Internal QC No.: 0527-STD
Surrogate QC No.: 0528-STD
Reference Standard QC No.: 0529/30-QC

Method Blank

Parameter	*Result*	*Unit of Measure*
Average Amount of All Analytes In Blank	<0.2	ppb

Calibration Check

Parameter	*Unit of Measure*	*True Value*	*Analyzed Value*	*RPD*	*Limit*
Benzene	ppb	20.0	19.5	3	15%
Toluene	ppb	20.0	20.4	2	15%
Ethylbenzene	ppb	20.0	20.7	3	15%
m,p-Xylene	ppb	40.0	39.5	1	15%
o-Xylene	ppb	20.0	20.5	2	15%

Matrix Spike

Parameter	*1- Percent Recovered*	*2 - Percent Recovered*	*Limit*	*RPD*	*Limit*
Benzene	98	89	(39-150)	3	20%
Toluene	99	97	(46-148)	2	20%
Ethylbenzene	99	96	(32-160)	3	20%
m,p-Xylene	96	94	(35-145)	3	20%
o-Xylene	98	96	(35-145)	2	20%

Surrogate Recoveries

Laboratory Identification	*S1 Percent Recovered*	*S2 Percent Recovered*	*Laboratory Identification*	*S1 Percent Recovered*	*S2 Percent Recovered*
Limit Percent Recovered	(70-130)		*Limit Percent Recovered*	(70-130)	
15832-6710	96				
				JHR	QC
				8/29/97	8/28/97

S1: *Flourobenzene*

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

September 10, 1997

Mr. David Cox
ON SITE TECHNOLOGIES
612 East Murray
Farmington, NM 87401

The following report contains analytical results for samples received at Southern Petroleum Laboratories (SPL) on August 26, 1997. The samples were assigned to Certificate of Analysis No.(s) 9708A79 and analyzed for all parameters as listed on the chain of custody.

There were no analytical problems encountered with this group of samples and all quality control data was within acceptance limits.

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

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

Southern Petroleum Laboratories

Siok Hong Chen
Project Manager

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

SOUTHERN PETROLEUM LABORATORIES, INC.

Certificate of Analysis Number: 97-08-A79

Approved for Release by:

Siok Hong Chen, Project Manager

Date: 9/10/97

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

RECEIVED SEP 15 1997
HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708A79-01

On Site Technologies
612 East Murray
Farmington, NM 87401
ATTN: David Cox

P.O.# 6710
09/10/97

PROJECT: Water Analysis
SITE: B & J Service
SAMPLED BY: On Site Technologies
SAMPLE ID: 15832-6710 MW-2

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/20/97 12:52:00
DATE RECEIVED: 08/26/97

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	0.1	ug/L
Acenaphthylene	ND	0.1	ug/L
Acenaphthene	ND	0.3	ug/L
Fluorene	ND	0.3	ug/L
Phenanthrene	ND	0.1	ug/L
Anthracene	ND	0.1	ug/L
Fluoranthene	ND	0.1	ug/L
Pyrene	ND	0.1	ug/L
Chrysene	ND	0.1	ug/L
Benzo (a) anthracene	ND	0.1	ug/L
Benzo (b) fluoranthene	ND	0.1	ug/L
Benzo (k) fluoranthene	ND	0.1	ug/L
Benzo (a) pyrene	ND	0.1	ug/L
Dibenzo (a,h) anthracene	ND	0.1	ug/L
Benzo (g,h,i) perylene	ND	0.1	ug/L
Indeno (1,2,3-cd) pyrene	ND	0.1	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1-Fluoronaphthalene	0.20 ug/L	60	50	150
Phenanthrene d-10	0.20 ug/L	75	50	150

ANALYZED BY: KA DATE/TIME: 08/29/97 08:48:09
EXTRACTED BY: RN DATE/TIME: 08/27/97 10:00:00
METHOD: 8310 Polynuclear Aromatic Hydrocarbons
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION

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

** SPL BATCH QUALITY CONTROL REPORT **
Method 8310 ***

Matrix: Aqueous
Units: ug/L

Batch Id: 2970829031600

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
Naphthalene	ND	0.50	0.38	76.0	32 - 148
Acenaphthylene	ND	0.50	0.37	74.0	42 - 138
Acenaphthene	ND	0.50	0.39	78.0	22 - 133
Fluorene	ND	0.50	0.41	82.0	11 - 148
Phenanthrene	ND	0.50	0.39	78.0	40 - 121
Anthracene	ND	0.50	0.35	70.0	32 - 121
Fluoranthene	ND	0.50	0.41	82.0	45 - 133
Pyrene	ND	0.50	0.39	78.0	39 - 136
Chrysene	ND	0.50	0.41	82.0	44 - 122
Benzo (a) anthracene	ND	0.50	0.39	78.0	53 - 137
Benzo (b) fluoranthene	ND	0.50	0.42	84.0	62 - 121
Benzo (k) fluoranthene	ND	0.50	0.42	84.0	66 - 128
Benzo (a) pyrene	ND	0.50	0.43	86.0	42 - 120
Dibenzo (a,h) anthracene	ND	0.50	0.41	82.0	59 - 129
Benzo (g,h,i) perylene	ND	0.50	0.42	84.0	67 - 124
Indeno (1,2,3-cd) pyrene	ND	0.50	0.44	88.0	65 - 125

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike Result <1>	Matrix Spike Recovery <4>	Matrix Spike Duplicate Result <1>	Matrix Spike Duplicate Recovery <5>	MS/MSD Relative % Difference	QC Limits(***) (Advisory) RPD Max.	QC Limits(***) (Advisory) Recovery Range
NAPHTHALENE	ND	0.5	0.37	74.0	0.28	56.0	27.7	30	1 - 122
ACENAPHTHYLENE	ND	0.5	0.26	52.0	0.21	42.0	21.3	30	1 - 124
ACENAPHTHENE	ND	0.5	0.33	66.0	0.27	54.0	20.0	30	1 - 124
FLUORENE	ND	0.5	0.35	70.0	0.28	56.0	22.2	30	1 - 142
PHENANTHRENE	ND	0.5	0.37	74.0	0.36	72.0	2.74	30	1 - 155
ANTHRACENE	ND	0.5	0.31	62.0	0.28	56.0	10.2	30	1 - 126
FLUORANTHENE	ND	0.5	0.50	100	0.55	110	9.52	30	14 - 123
PYRENE	ND	0.5	0.49	98.0	0.54	108	9.71	30	1 - 140
CHRYSENE	ND	0.5	0.49	98.0	0.53	106	7.84	30	1 - 199
BENZO (A) ANTHRACENE	ND	0.5	0.43	86.0	0.44	88.0	2.30	30	12 - 135
BENZO (B) FLUORANTHENE	0.12	0.5	0.55	86.0	0.65	106	20.8	30	6 - 150
BENZO (K) FLUORANTHENE	ND	0.5	0.46	92.0	0.50	100	8.33	30	1 - 159
BENZO (A) PYRENE	ND	0.5	0.52	104	0.59	118	12.6	30	1 - 128
DIBENZO (A,H) ANTHRACENE	ND	0.5	0.37	74.0	0.36	72.0	2.74	30	1 - 110
BENZO (G,H,I) PERYLENE	0.16	0.5	0.58	84.0	0.74	116	32.0 *	30	1 - 116
INDENO (1,2,3-CD) PYRENE	ND	0.5	0.49	98.0	0.48	96.0	2.06	30	1 - 116

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

** SPL BATCH QUALITY CONTROL REPORT **
Method 8310 ***

Matrix: Aqueous
Units: ug/L

Batch Id: 2970829031600

Analyst: KA
Sequence Date: 08/29/97
SPL ID of sample spiked: 9708A73-02B
Sample File ID: 970828C\026-2601
Method Blank File ID:
Blank Spike File ID: 970828C\018-1801
Matrix Spike File ID: 970828C\027-2601
Matrix Spike Duplicate File ID: 970828C\028-2801

* = Values Outside QC Range. « = Data outside Method Specification limits.
NC = Not Calculated (Sample exceeds spike by factor of 4 or more)
ND = Not Detected/Below Detection Limit
% Recovery = [(<1> - <2>) / <3>] x 100
LCS % Recovery = (<1> / <3>) x 100
Relative Percent Difference = |(<4> - <5> | / [(<4> + <5>) x 0.5] x 100
(**) = Source: SPL-Houston Historical Data (1st Q '97)
(***) = Source: Temporary Limits

SAMPLES IN BATCH(SPL ID): 9708A79-01A 9708B09-05D 9708A73-02B 9708A73-01B 9708A73-03B 9708A78-01A

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

CHAIN OF CUSTODY RECORD

6710

ON SITE TECHNOLOGIES, LTD.

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 8-20-97

Page 1 of 1

Purchase Order No.: | Job No. 4-1349

SEND INVOICE TO
Name: Larry Trujillo
Company: B.J. Services. | Dept.
Address:
City, State, Zip:

REPORT RESULTS TO
Name | Title
Company: Larry Trujillo
Mailing Address: BJ Services
City, State, Zip:
Telephone No. | Telefax No.

Sampling Location: BJ. Services

Sampler: Larry Trujillo

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	MATRIX	PRES.	Number of Containers	PAH 8310	BTEX 8020							LAB ID
MW # 3	8/20/97	1252	H_2O		1	✓								15832-6710
MW # 3 Dup.	8/20/97	1252	H_2O		1									
~~MW # 4~~	~~8/20/97~~	1312	H_2O		1	✓		Do not Run 8/20/97						15833-6710
~~MW # 4 Dup.~~	8/20/97	1312	H_2O		1			Do not Run 8/20/97						
~~MW # 1~~	8/20/97	1326	H_2O		1	✓			Do not Run 8/20/97					15834-6710
~~MW # 1 Dup~~	8/20/97	1326	H_2O		1				Do not Run 8/20/97					
MW # 3 1	8/20/97	1253	H_2O		2		✓							15832
~~MW #4~~	~~8/20/97~~	1315	H_2O		2		✓		Do not Run 8/20/97					15833
~~MW #1~~	~~8/20/97~~	1325	H_2O		2		✓		Do not Run 8/20/97					15834

Relinquished by: Larry Trujillo | Date/Time 8/20/97 1419 | Received by: Heidi Reese | Date/Time 8/20/97 1430
Relinquished by: | Date/Time | Received by: | Date/Time
Relinquished by: | Date/Time | Received by: | Date/Time

Method of Shipment:

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

Rush	24-48 Hours	10 Working Days	Special Instructions:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

6729

CHAIN OF CUSTODY RECORD

ON SITE TECHNOLOGIES, LTD.
657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 8/25/97 8/28/97

9708A79

Purchase Order No.: 6710 **Job No.:**

SEND INVOICE TO
- Name: ACCOUNTS REC.
- Company: ON SITE Dept.:
- Address:
- City, State, Zip:

REPORT RESULTS TO
- Name: DAVID COX Title:
- Company: ON SITE TECH
- Mailing Address: 612 E. MURRAY
- City, State, Zip: FARMINGTON, NM 87401
- Telephone No.: 505 325-2432 Telefax No.: 325 6256

Sampling Location: B.J. SERVICES

Sampler: LT

SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	MATRIX	PRES.	Number of Containers	ANALYSIS REQUESTED: PAH 8310	LAB ID
B.J. SERVICES MW-2	8/20/97	1252	H_2O	COOL	1	✓	15832-6710

intact ROT 4°

Relinquished by: [signature]	Date/Time 8/25/97 1410	Received by: [signature]	Date/Time 8/26/97 0945
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Authorized by: [signature] Date 8/25/97
(Client Signature Must Accompany Request)

Rush | 24-48 Hours | 10 Working Days | Special Instructions:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

FED EX [illegible]

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 8/26/97	Time: 1300

SPL Sample ID: 9708

			Yes	No
1	Chain-of-Custody (COC) form is present.		✓	
2	COC is properly completed.		✓	
3	If no, Non-Conformance Worksheet has been completed.			
4	Custody seals are present on the shipping container.		✓	
5	If yes, custody seals are intact.		✓	
6	All samples are tagged or labeled.		✓	
7	If no, Non-Conformance Worksheet has been completed.			
8	Sample containers arrived intact		✓	
9	Temperature of samples upon arrival:		4 C	
10	Method of sample delivery to SPL:	SPL Delivery		
		Client Delivery		
		FedEx Delivery (airbill #)	419276702 5	
		Other:		
11	Method of sample disposal:	SPL Disposal	✓	
		HOLD		
		Return to Client		

Name: Ruben Estrada	Date: 8/26/97