

3R - 71

REPORTS

DATE:

2000

BURLINGTON RESOURCES

SAN JUAN DIVISION
March 27, 2001

Certified: 709932200028981 4004

REG

MAR 29 2001

CONSERVATION DIVISION

Bill Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

**RE: 2000 Annual Groundwater Investigation and Remediation Reports
San Juan Basin, New Mexico**

Dear Mr. Olson:

As required in Burlington Resources' approved Groundwater Investigation and Remediation Plan dated August, 1998, enclosed are the 2000 annual reports for Burlington's groundwater impact sites in the San Juan Basin. Separate reports are enclosed for the following locations:

Cozzens B#1
Fogelson #4-1
Hampton #4M
Johnson Federal #4 Metering Station
Standard Oil Com. #1
Taylor Com. #2A
Maddox Com 1A

If you have questions or additional information is needed, please contact me at (505) 326-9537.

Sincerely,



Gregg Wurtz
Sr. Environmental Representative

Attachments - Groundwater Investigation and Remediation Reports

cc: Denny Foust - NMOCD Aztec
Bruce Gantner - BR
WFS - Mark Harvey (Cozzens B#1, Hampton #4M)
EPFS - Scott Pope (Fogelson #4-1, Johnson Fed. #4, Standard Oil Com.#1)
Facility and Correspondence Files

3271
MAR 29 2001

BURLINGTON RESOURCES 2000 ANNUAL GROUNDWATER REPORT

Johnson Federal #4 Metering Facility

SITE DETAILS

Location: Unit Letter M, Section 27, Township 31N, Range 9W; San Juan County, New Mexico
Land Type: Federal

PREVIOUS ACTIVITIES

El Paso Field Services (EPFS) excavated approximately 60 cubic yards from their pit at this location in 1994 and installed a monitoring well in 1995. Please note that in past reports, EPFS has incorrectly shown the location of their monitoring wells at the Johnson Federal #4 producing location, which is in a different section from where the metering facility and groundwater impact are located.

Burlington Resources conducted the initial site assessments of our two pits in August 1998. The separator pit tested clean and was closed. The tank drain pit had levels above standards and excavation of approximately 3055 cubic yards of impacted soil to a depth of 30 feet occurred in December 1998.

1999 ACTIVITIES

Prior to backfilling, the excavation was sprayed with 20 barrels of Oxy-1. Clean overburden and soils from a nearby wash were used to backfill the excavation. Vertical extent drilling encountered groundwater at approximately 43 feet and a groundwater monitoring well was installed on May 13, 1999. After developing the well and allowing it to stabilize, the well was purged and sampled on May 25, 1999.

2000 ACTIVITIES

Quarterly groundwater monitoring continued through 2000. A new laboratory was added for analysis, ACZ Laboratories in Steamboat Colorado starting in the fourth quarter. Groundwater analytical data are presented in Table 1. A site map, which was taken from EPFS's 1998 Annual Groundwater Report and modified with Burlington's information, is presented as Figure 1.

CONCLUSIONS

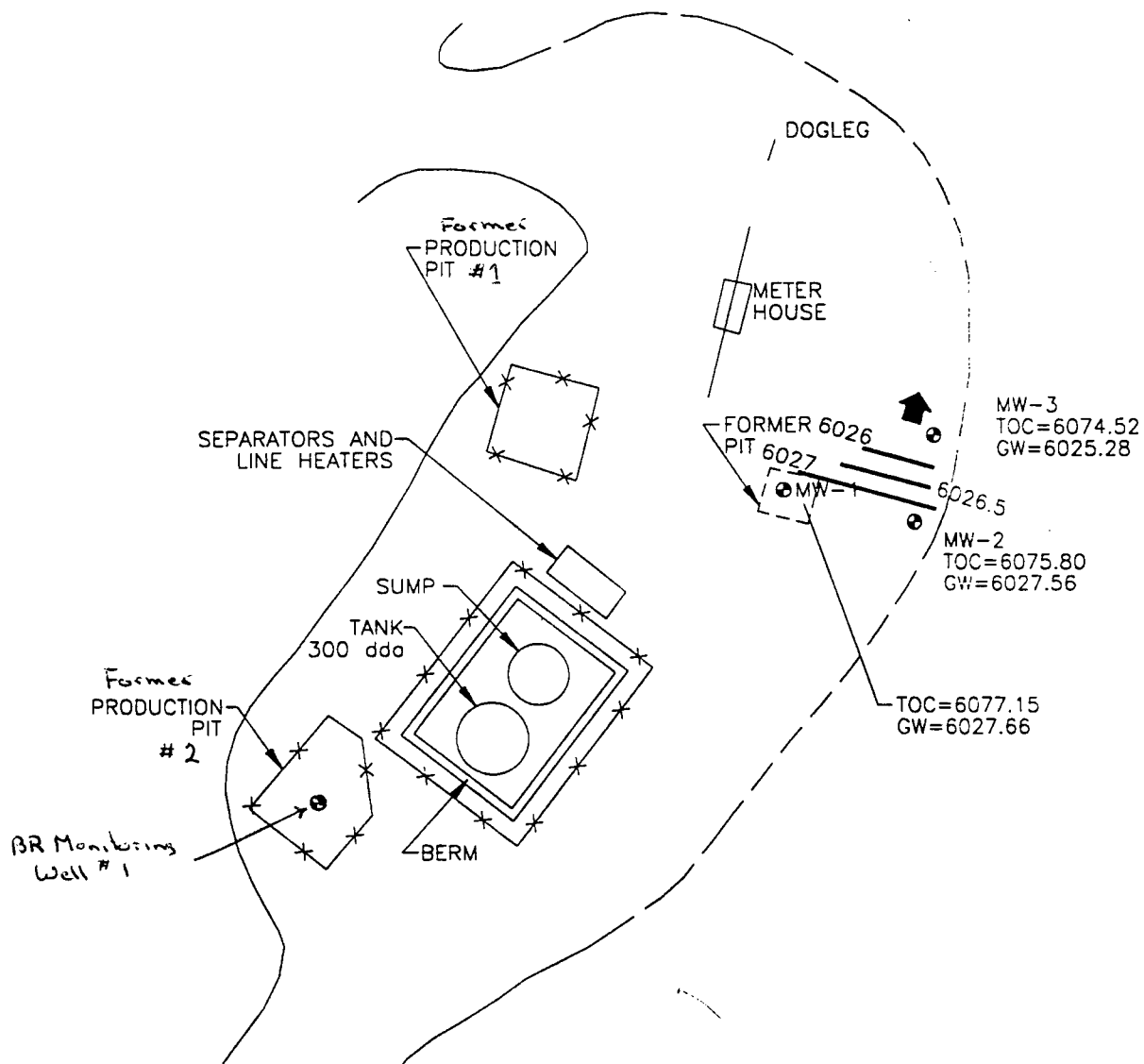
Analytical results of groundwater sampling from the monitoring well in 2000 show levels of benzene, toluene, ethylbenzene and total xylenes above New Mexico Groundwater Standards except for the fourth quarter.

RECOMMENDATIONS

- Burlington Resources proposes to continue quarterly sampling at this site.
- Burlington Resources will initiate discussions with EPFS to assure proper assessment and closure of this site.

Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
2000 Groundwater Analytical Results
Letter to Olson dated July 29, 1999 including the Drilling Log/Wellbore Diagram

Figure 1



LEGEND

- ⊙ MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER
- TOC TOP OF CASING ELEVATION
- GW GROUNDWATER POTENTIOMETRIC SURFACE
- ➔ GROUNDWATER GRADIENT
- 25.0 GROUNDWATER POTENTIOMETRIC SURFACE



COL 17520BP-003



TITLE:

JOHNSTON FEDERAL NO. 4

METER 70194

2/23/99

(BR Mod. P. red)
3/22/00

DWN:

TMM

CHKD:

CC

DATE:

3/22/99

DES.:

CC

APPD:

REV.:

0

PROJECT NO.:

17520

EPFS GW PITS

FIGURE 1

Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	DTW (1) (ft)
<i>Standard</i>			10	750	750	620		
Johnson Fed #4 (EPNG)	1	5/25/1999	8700	2900	2800	29000	43400	
		9/1/1999	Product Thickness = .005 ft				No Sample.	47.015*
		12/1/1999	4700	1300	900	10000	16900	46.96
		1/18/2000	3600	820	840	7500	12760	44.05
		5/17/2000	6900	1100	1500	17000	26500	46.90
		9/8/2000	4600	620	930	10000	16150	46.91
		12/20/2000	<0.2	0.5	34	61	95.5	46.88
Note #1								

* Depth to Product.

(1) measured from top of casing

Note #1 lab analysis was performed by new lab, ACZ Laboratories

2000 GROUNDWATER ANALYTICAL RESULTS

Well Number MW4
Serial No. WDPD

☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Project Name GR WEL SAMPLING

Project Manager ROBERT THOMPSON

Project No. 12800228

Client Company BURLINGTON RESOURCES

Phase/Task No. 0301

Site Name JOHNSON FEDERAL #4

Site Address RURAL SAN JUAN CO

Development Criteria

- ☒ 3 to 5 Casing Volumes of Water Removal
☒ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 52.11 TOR
Initial Depth to Water (feet) 46.90 TOR
Height of Water Column in Well (feet) 5.21
Diameter (inches): Well 2 Gravel Pack

Item	Water Volume in Well Cubic Feet	Gallons	Gallons to be Removed
Well Casing	<u>5.21</u>	<u>0.85 x 3</u>	<u>2.55</u>
Gravel Pack			
Drilling Fluids			
Total			<u>2.55</u>

Instruments

- ☒ pH Meter
☐ DO Monitor
☒ Conductivity Meter
☒ Temperature Meter
☐ Other

Serial No. (if applicable)
HYDAC
HYDAC

Water Disposal

IN PIT ON SITE

Water Removal Data

Date	Time	Development Method Pump	Boiler	Removal Rate (gal/min)	Initial Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)	Product Volume Recovery (gallons)	Temperature (°F)	pH	Conductivity (microhm/cm)	Dissolved Oxygen (mg/l)	Comments
5/17/00	1005	X					1	1	17.0	6.86	1910		GREY BLACK SLIGHT DOE
"	1007	X					1	2	15.7	6.62	1920		"
"		X					1	3	15.0	6.71	1760		"

Circle the date and time that the development criteria are met.

Comments SAMPLED AT 1010

Developer's Signature(s)

Robert Thompson

Date 5/17/00

Reviewer

Date

130205

COC Serial No. C 2841

Project Name <u>B.R. Well Sampling</u>				
Project Number <u>62800228</u> Phase . Task <u>0301</u>				
Samplers <u>C. Maez</u>				
Laboratory	Name <u>A.C.Z. LABS</u>			
	Location <u>Steam Boat Springs CO.</u>			
Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles
<u>Johnston Fed #4 Mw 01</u>	<u>12-13-00</u>	<u>1314</u>	<u>H 20</u>	
				2
Type of Analysis and Bottle				
Comments				

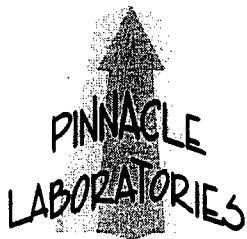
Relinquished by:

Signature	Date	Time
[Signature]	12-18-00	1500

Signature	Date	Time
[Signature] / Act.	12/19	10:30

Received By:

Signature		Date	Time	Signature	Date	Time
<i>Chris A. Quinn</i>		12-18-00	1500	<i>[Signature]</i>	12/19	10:30
Samples Iced: ☒ Yes ☐ No		Carrier: <i>Cosy Howard</i> U.P.S.				
Preservatives (ONLY for Water Samples)		Shipping and Lab Notes:				
☐ Cyanide Sodium hydroxide (NaOH)						
☐ Volatile Organic Analysis Hydrochloric acid (HCl)						
☐ Metals Nitric acid (HNO ₃)						
☐ TPH (418.1) Sulfuric acid (H ₂ SO ₄)						
☒ Other (Specify) <i>HgCd</i>						
☐ Other (Specify)						



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **005080**
May 26, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name BR WELL SAMPLING
Project Number 62800228

Attention: ROBERT THOMPSON

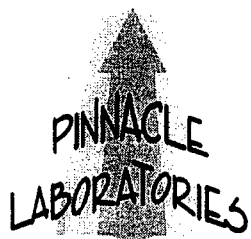
On 05/19/00 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

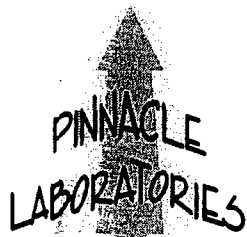
MR: jt

Enclosure



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 005080
PROJECT #	: 62800228	DATE RECEIVED	: 05/19/00
PROJECT NAME	: BR WELL SAMPLING	REPORT DATE	: 05/26/00
PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	JOHNSON FEDERAL #4 MW4	AQUEOUS	05/17/00



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800228
PROJECT NAME : BR WELL SAMPLING

PINNACLE I.D.: 005080

SAMPLE	DATE	DATE	DATE	DIL.
ID. #	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	05/17/00	NA	05/23/00	50

PARAMETER	DET. LIMIT	UNITS	JOHNSON FEDERAL #4 MW4
BENZENE	0.5	UG/L	6900
TOLUENE	0.5	UG/L	1100
ETHYLBENZENE	0.5	UG/L	1500
TOTAL XYLENES	0.5	UG/L	17000

SURROGATE:

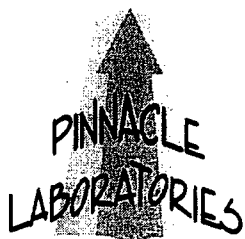
BROMOFLUOROBENZENE (%)

112

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A



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Albuquerque, New Mexico 87107
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GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 005080
BLANK I. D.	: 052300	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 05/23/00
PROJECT #	: 62800228	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BR WELL SAMPLING		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5

SURROGATE:

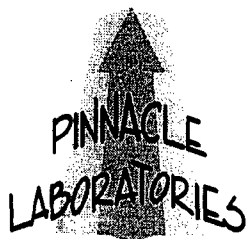
BROMOFLUOROBENZENE (%)

106

SURROGATE LIMITS: (80 - 120)

CHEMIST NOTES:

N/A



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Albuquerque, New Mexico 87107
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Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 005081-02
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800228
PROJECT NAME : BR WELL SAMPLING

PINNACLE I.D. : 005080
DATE EXTRACTED : NA
DATE ANALYZED : 05/23/00
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	20.4	102	20.1	101	1	(80 - 120)	20
TOLUENE	<0.5	20.0	20.5	103	20.6	103	0	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.8	104	20.8	104	0	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	63.0	105	62.1	104	1	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

PHILIP

Chain of Custody Record

008080



4000 Monroe Road
Farmington, NM 87401

(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2544

Project Name **BR WEIL SAMPLING**

Project Number **62800228** Phase, Task **0301.**

Sampler **R. THOMASON**

Laboratory Name **PINNACCE LABS**

Location **ALBUQUERQUE, NM**

Sample Number (and depth) **JOHNSON FEDERAL #4 MHT** Date **5/17/00** Time **1010** Matrix **H2O**

Total Number of Bottles **2**

Type of Analysis and Bottle

BTEX for 021

Comments

Relinquished by:

Signature

R. Thomason

Date

5/19/00

Time

0825

Signature

Arthur J. ...

Date

5/19

Time

16:45

Received By:

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)

☐ Cyanide ☐ Sodium hydroxide (NaOH)

☒ Volatile Organic Analysis ☐ Hydrochloric acid (HCl)

☐ Metals ☐ Nitric acid (HNO3)

☐ TPH (418.1) ☐ Sulfuric acid (H2SO4)

☐ Other (Specify) _____

Carrier: **GREYHOUND LINES**

Shipping and Lab Notes:

on ice

Airbill No. **GLE 100 645 0760**

4.6°C

PHILIP

Well Number MW-04

☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA

ENVIRONMENTAL

Serial No. WDPD

Page 1 of 1

Project Name BR well Developing

Project Manager R Thompson

Project No. 62800228

Client Company Burlington Resources

Phase/Jack No. 0301

Site Name Johnston Fed #4

Site Address Rural San Juan Co.

Development Criteria

☒ 3 to 5 Casing Volumes of Water Removal
☒ Stabilization of Indicator Parameters

☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 52.09
Initial Depth to Water (feet) 46.41
Height of Water Column in Well (feet) 5.18
Diameter (inches): Well 2" Gravel Pack

Instruments

Serial No. (if applicable)

☒ pH Meter

Hydac

☐ DO Monitor

☒ Conductivity Meter

Hydac

☒ Temperature Meter

Hydac

☐ Other

Methods of Development
☐ Pump
☐ Centrifugal
☐ Submersible
☐ Peristaltic
☐ Other

Item	Water Volume In Well	Gallons to be Removed
Well Casing	5.18	84 x 3
Gravel Pack		2.52
Drilling Fluids		
Total		2.52

Water Disposal in pit on site

Water Removal Data

Date	Time	Development Method	Removal Rate (gal/min)	Initial Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)	Product Volume Removed (gallons)	Temperature (°C)	pH	Conductivity (microhm/cm)	Dissolved Oxygen (mg/l)	Comments
01-09-00	10:15	X				1.75	1.75	16.7	7.04	2160		Black in color
	10:19	X				.75	1.5	15.9	7.04	1940		standing water color
	10:27	X				.75	2.25	15.5	7.05	1960		"
	10:30	X				.75	3	15.3	7.05	1920		"
	10:33	X				.75	3.75	15.3	7.15	1980		Returned to same

Circle the date and time that the development criteria are met.

Comments Sampled for BTEX 10:35 AM

Developer's Signature(s) LA A M

Date 09-08-00 Reviewer RT Date 9/19/00



SEP 15 2000

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number 009064
September 13, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name BURLINGTON WELL SAMP
Project Number 62800228

Attention: ROBERT THOMPSON

On 09/12/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800228
PROJECT NAME : BURLINGTON WELL SAMP

PINNACLE ID : 009064
DATE RECEIVED : 09/12/00
REPORT DATE : 09/13/00

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	JOHNSTON FED #4	AQUEOUS	09/08/00
02	JOHNSTON FED #4 (DUP)	AQUEOUS	09/08/00



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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800228
PROJECT NAME : BURLINGTON WELL SAMP

PINNACLE I.D.: 009064

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	JOHNSTON FED #4	AQUEOUS	09/08/00	NA	09/12/00	50
02	JOHNSTON FED #4 (DUP)	AQUEOUS	09/08/00	NA	09/12/00	50

PARAMETER	DET. LIMIT	UNITS	JOHNSTON FED #4	JOHNSTON FED #4 (DUP)
BENZENE	0.5	UG/L	4600	4800
TOLUENE	0.5	UG/L	660	620
ETHYLBENZENE	0.5	UG/L	930	960
TOTAL XYLENES	0.5	UG/L	10000	10000

SURROGATE:

BROMOFLUOROBENZENE (%)

119

118

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A



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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 009064
BLANK I. D.	: 091200	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 09/12/00
PROJECT #	: 62800228	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BURLINGTON WELL SAMP		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5

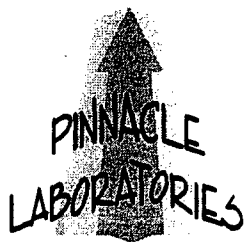
SURROGATE:

BROMOFLUOROBENZENE (%)	103
------------------------	-----

SURROGATE LIMITS: (80 - 120)

CHEMIST NOTES:

N/A



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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 009064
MSMSD #	: 009065-01	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 09/12/00
PROJECT #	: 62800228	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BURLINGTON WELL SAMP	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	140	20.0	159	95	156	80	2	(80 - 120)	20
TOLUENE	18	20.0	40.5	113	39.6	108	2	(80 - 120)	20
ETHYLBENZENE	0.8	20.0	23.3	113	23.2	112	0	(80 - 120)	20
TOTAL XYLENES	7.6	60.0	74.8	112	75.0	112	0	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

COC Serial No. C 2452

Project Name				Burlington well Sampling			
Project Number				62800228 Phase. Task 0301.			
Samplers				C. Maez			
Laboratory		Name		pinnacle			
Location		ALBQ		N.M.			
Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles			
Johnston Fed #4	09-07-00	10:35 AM	H2O	2	X	BTex 8021	
Johnston Fed #4 (Dup)	09-08-00	10:35 AM	H2O	2	X	01	Lab ID#
Johnston Fed #4				Duplicates			

Relinquished by:

Received By:

Signature	Date	Time	Signature	Date	Time
Alex H. Gm - Y	09 11 00	1600	[Signature]	9/12/00	1035

Samples Iced: ☒ Yes ☐ No Preservatives (ONLY for Water Samples) ☐ Cyanide Sodium hydroxide (NaOH) ☐ Volatile Organic Analysis Hydrochloric acid (HCl) ☐ Metals Nitric acid (HNO ₃) ☐ TPH (418.1) Sulfuric acid (H ₂ SO ₄) ☒ Other (Specify) <u>H₂SO₄</u> ☐ Other (Specify) _____	Carrier: <u>Greyhound Bus Lines</u> Shipping and Lab Notes: <u>Rec'd @ AD's</u>	AIRBILL NO: <u>6111606918209</u>
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WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Project No. 62800228

Phase, Task No. 0301

Rural San Juan Co.

Serial No. (If applicable)

Hydro-

FLYDAS

Adas

3

4.

Water Disposal
in pit on Location

Water Disposal in pit on location

Conductivity (microhm/cm)	Dissolved Oxygen (mg/l)	Comments
3030		C10-41, 9-grav carbon egg odor
3120		
3170		
3300		
3320		

Reviewer RT Date 12/18/00

ACZ Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO 80487
(800) 334-5493

Lab Sample ID: **L30205-03**
Client Sample ID: *Johnston Fed 4 MW 01*
Client Project ID: **62800228**
ACZ Report ID: **RG137218**

Philip Services
4000 Monroe Road
Farmington, NM 87401
Robert Thompson

Date Sampled: *12/13/00 13:14*
Date Received: *12/19/00*
Date Reported: *12/31/00*

Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylenes

Analysis Method: **M8020**

Extract Method: **M5030**

Analyst: *smp*
Extract Date: *12/20/00*
Analysis Date: *12/20/00*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2		U	ug/L	0.2	0.5
Toluene	000108-88-3	0.5		ug/L	0.2	1
Ethylbenzene	000100-41-4	34		ug/L	0.2	1
Xylenes (total)	001330-20-7	61		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
4-Bromofluorobenzene (Surr)	000460-00-4	116	%	80	120

Organic Notes and Qualifiers

MDL = Method Detection Limit; PQL = Practical Quantitation Limit

LCL = Lower Control Limit; UCL = Upper Control Limit

Qualifiers: (Based on EPA CLP 3/90)

U = Analyte was analyzed for but not detected at the indicated MDL

J = Analyte concentration detected at a value between MDL and PQL

B = Analyte found in daily method blank

Organic Supervisor: *[Signature]* Paul Leschensky

BURLINGTON RESOURCES

SAN JUAN DIVISION

July 29, 1999

Certified Mail: Z 186 732 886

Bill Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

**RE: Johnson Federal #4 Metering Location
Unit Letter M, Section 27, Township 31N, Range 9W
Notification of Groundwater Impact**

Dear Mr. Olson:

As per the e-mail notification dated June 1, 1999 (Mr. Hasely to Mr. Olson), this letter is Burlington Resources' (BR) written notification of groundwater impact at the subject location. The final analytical results and final paperwork from the consultant did not make it to my attention until recently.

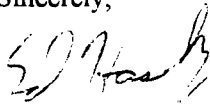
Due to El Paso having groundwater impacts at this location, BR conducted initial assessments of two earthen pits on the Johnson Federal #4 metering location. The separator pit tested clean and was closed. The tank drain earthen pit had levels above closure standards and BR excavated soils to 30 feet below ground surface. At that point, soil samples from the bottom of the excavation were collected and tested above pit closure standards. The excavation was sprayed with 20 barrels of Oxy-1 and backfilled with clean fill. BR conducted vertical extent determination in the center of BR's former earthen pit and encountered groundwater at approximately 43 feet. BR installed a temporary groundwater monitoring well. After developing the well and allowing it to stabilize for one week, the well was purged and sampled on May 25, 1999. The sample results are as follows:

Benzene	8700 ppb
Toluene	2900 ppb
Ethylbenzene	2800 ppb
Total Xylenes	29000 ppb

Included with this letter are the original Pit Remediation and Closure Reports for the BR earthen pits along with the analytical results of the soil testing. Also attached are the groundwater lab analysis, the drilling log, the monitoring well installation record, and a location diagram from El Paso's 1997 Annual Groundwater Report.

The temporary monitoring well has since been completed as permanent. BR will conduct future activities at the site pursuant to Burlington Resources' Groundwater Management Plan, and it is our plan to work in conjunction with El Paso to assure proper assessment and closure. If you have questions or additional information is needed, please contact me at (505) 326-9841.

Sincerely,



Ed Hasely
Sr. Staff Environmental Representative

Attachments: Pit Remediation and Closure Reports (Pit #1)
Pit Remediation and Closure Reports (Pit #2)
Drilling Log/Wellbore Diagram
Analytical Results - Groundwater
Location Diagram

cc: Denny Foust - NMOCD Aztec
Sandra Miller - El Paso
Rob Stanfield
Gary Osborne
Bruce Gantner
Facility File
Correspondence

Pit Remediation and Closure Reports (Pit #1)

P.O. Box 1980, Hobbs, NM

District II

P.O. Drawer DD, Artesia, NM 88211

District III

1000 Rio Brazos Rd. Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO
APPROPRIATE
DISTRICT OFFICE
AND 1 COPY TO
SANTA FE OFFICE

(Revised 3/9/94)

PIT REMEDIATION AND CLOSURE REPORT

operator: Burlington Resources Telephone: (505) 326-9700

Address: 3535 E. 30th Farmington NM 87402

Facility Or: Johnston Federal #4 (Metering Location) Pit # 1
Well Name _____

Location: Unit or Qtr/Qtr Sec H Sec 27 T 31N R 9W County San Juan

Pit Type: Separator X Dehydrator Other

Land Type: BLM X, State , Fee , Other

Pit Location: Pit dimensions: length 19', width 12', depth 4'
(Attach diagram)

Reference: wellhead___, other Dogleg

Footage from reference: 81.5'

Direction from reference: 55 Degrees East North
 of
 X West South X

Depth To Ground Water:

(Vertical distance from
contaminants to seasonal
high water elevation of
ground water) :

Less than 50 feet (20 points)
50 feet to 99 feet (10 points)
Greater than 100 feet (0 Points) 20

Wellhead Protection Area:

(Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)

Yes (20 points)
No (0 points) 0

Distance To Surface Water:

(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)

Less than 200 feet (20 points)
200 feet to 1000 feet (10 points)
Greater than 1000 feet (0 points)

RANKING SCORE (TOTAL POINTS): 20



PRODUCTION PIT ASSESSMENT FORM

Pit # 1

WELL NAME: Johnston Federal

WELL NUMBER: 4

DP NO.:
NDA NAME B154

OPERATOR NAME: Burlington Resources

PIL DISTRICT:

COORDINATES: TOWNSHIP 31N RANGE 9W SECTION 27 LETTER H

PIT TYPE: DEHYDRATOR ☐ SEPARATOR ☐ BLOW PIT ☐ OTHER:

CATHODIC PROTECTION WELL: ☐ YES ☒ NO

UNKNOWN

SITE ASSESSMENT DATE: 8/10/98

MOI FOREMAN NO.

AREA:

NMOCD ZONE: (from NMOCD Maps): Inside ☒ Outside ☐

LAND TYPE: BLM ☒ (1) STATE ☐ (2) FEE ☐ (3) INDIAN:

DEPTH TO GROUNDWATER: LESS THAN 50 FT (1) ☒ (20 POINTS)
50 FT TO 99 FT (2) ☐ (10 POINTS)
GREATER THAN 100 FT (3) ☐ (0 POINTS)

WELLHEAD PROTECTION AREA: Is it less than 1,000 feet from wells, springs, or other sources of fresh water extraction?, or; is it less than 200 ft from a private domestic water source (or 1,000' on Navajo surface)?

YES ☐ (20 POINTS)

NO ☒ (0 POINTS)

HORIZONTAL DISTANCE TO SURFACE WATER BODY: LESS THAN 200 FT (1) ☐ (20 POINTS)
200 FT TO 1,000 FT (2) ☐ (10 POINTS)
GREATER THAN 1,000 FT (3) ☒ (0 POINTS)

NAME OF SURFACE WATER BODY

SURFACE WATER BODY: PERENNIAL RIVERS, STREAMS, CREEKS, IRRIGATION CANALS, DITCHES, LAKES, PONDS

DISTANCE TO NEAREST EPHEMERAL STREAM

(1) ☐ <100 FEET (NAVAJO PITS ONLY)

(2) ☐ >100 FEET

TOTAL HAZARD RANKING SCORE: 20 POINTS

GENERAL

SITE ASSESSMENT



Certificate of Analysis No. 9803038-02

FARMINGTON LABORATORY

807 S. CARLTON
FARMINGTON, NM 87499-1289
(505) 326-2588Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Cory Chance

Date: 08/17/98

Project: BR Misc.
Site: Johnston Fed. #4, Pit #1
Sampled By: Holly Bradbury
Sample ID: BR8B1541AVProject No: 19074
Matrix: Soil
Date Sampled: 08/10/98
Date Received: 08/11/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	1.2	0.1 (P)	mg/kg
Surrogate	% Recovery		
1,4-Difluorobenzene	147		
4-Bromofluorobenzene	310MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 08/12/98			
Total Petroleum Hydrocarbons-Diesel	ND	10 (P)	mg/kg
Surrogate	% Recovery		
n-Pentacosane	118		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 08/14/98			

ND-Not Detected

MI-Matrix Interference

(P)-Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Billy G. Rich, Lab Director

Pit Remediation and Closure Reports (Pit #2)

P.O. Box 1980, Hobbs, NM

District II

P.O. Drawer DD, Arcata, NM 98211

District III

1000 Rio Brazos Rd. Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO
APPROPRIATE
DISTRICT OFFICE
AND 1 COPY TO
SANTA FE OFFICE

(Revised 3/9/94)

PIT REMEDIATION AND CLOSURE REPORT

Operator: Buckington Resources Telephone: (505) 326-9700

Address: 3535 E. 30th Farmington NM 87402

Facility Or: Johnston Federal #4 (Metering Location) Pit # 2
Well Name _____

Location: Unit or Qtr/Qtr Sec 14 Sec 27 T 31 N R 9 W County San Juan

Pit Type: Separator Dehydrator other Tank Drain

Land Type: ELM ☒, State ☐, Fee ☐, Other ☐

Pit Location: Pit dimensions: length 21, width 20, depth 3

(Attach diagram)

Reference: wellhead , other Douglas

Footage from reference: 173'

Direction from reference: 45 Degrees — East North —
of
X West South X

Depth To Ground Water:

(Vertical distance from
contaminants to seasonal
high water elevation of
ground water)

Less than 50 feet (20 points)
50 feet to 99 feet (10 points)
Greater than 100 feet (0 Points) 20

Wellhead Protection Area:

(Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)

Yes (20 points)
No (0 points) G

Distance To Surface Water:

(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)

Less than 200 feet (20 points)
200 feet to 1000 feet (10 points)
Greater than 1000 feet (0 points) ○

RANKING SCORE (TOTAL POINTS): 20



Pit # 2

PRODUCTION PIT ASSESSMENT FORM

WELL NAME: Johnston Federal

WELL NUMBER: 4

DP NO.:
WDE NAME: B154

OPERATOR NAME: Burlington Resources

PIL DISTRICT:

COORDINATES: TOWNSHIP 31N RANGE 9W SECTION 27 LETTER H

PIT TYPE: DEHYDRATOR ☐

SEPARATOR ☐

BLOW PIT ☐

OTHER:

CATHODIC PROTECTION WELL: ☐ YES ☒ NO

UNKNOWN

SITE ASSESSMENT DATE: 8/10/98

MOI FOREMAN NO.

AREA:

NMOCD ZONE: (from NMOCD Maps):

Inside ☒

Outside ☐

LAND TYPE:

BLM ☒ (1)

STATE ☐ (2)

FEE ☐ (3)

INDIAN:

DEPTH TO GROUNDWATER:

LESS THAN 50 FT (1) ☒ (20 POINTS)

50 FT TO 99 FT (2) ☐ (10 POINTS)

GREATER THAN 100 FT (3) ☐ (0 POINTS)

WELLHEAD PROTECTION AREA: Is it less than 1,000 feet from wells, springs, or other sources of fresh water extraction?, or, is it less than 200 ft from a private domestic water source (or 1,000' on Navajo surface)?

YES ☐ (20 POINTS)

NO ☒ (0 POINTS)

HORIZONTAL DISTANCE TO SURFACE WATER BODY:

LESS THAN 200 FT (1) ☐ (20 POINTS)

200 FT TO 1,000 FT (2) ☐ (10 POINTS)

GREATER THAN 1,000 FT (3) ☒ (0 POINTS)

NAME OF SURFACE WATER BODY _____

SURFACE WATER BODY: PERENNIAL RIVERS, STREAMS, CREEKS, IRRIGATION CANALS, DITCHES, LAKES, PONDS

DISTANCE TO NEAREST EPHEMERAL STREAM

(1) ☐ <100 FEET (NAVAJO PITS ONLY)

(2) ☐ >100 FEET

TOTAL HAZARD RANKING SCORE: 20 POINTS

GENERAL

SITE ASSESSMENT



Certificate of Analysis No. 9803038-03a

FARMINGTON LABORATORY

807 S. CARLTON
FARMINGTON, NM 87499-1289
(505) 326-2588

Philip Environmental Services

4000 Monroe Road

Farmington, NM 87401

Attn: Cory Chance

Date: 08/17/98

Project: BR Misc.

Project No: 19074

Site: Johnston Fed #4, Pit #2

Matrix: Soil

Sampled By: Holly Bradbury

Date Sampled: 08/10/98

Sample ID: BR8B1541BV

Date Received: 08/11/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Benzene	81000	5000 (P)	µg/Kg
Toluene	41000	5000 (P)	µg/Kg
Ethylbenzene	85000	5000 (P)	µg/Kg
Total Xylene	780000	5000 (P)	µg/Kg
Total Volatile Aromatic Hydrocarbons	987000		µg/Kg

Surrogate

% Recovery

1,4-Difluorobenzene

120

4-Bromofluorobenzene

193MI

Method 8020A***

Analyzed by: AA

Date: 08/13/98

ND-Not Detected

MI-Matrix Interference

(P)-Practical Quantitation Limit

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Billy G. Rich, Lab Director



Certificate of Analysis No. 9803038-03b

FARMINGTON LABORATORY

807 S. CARLTON
FARMINGTON, NM 87499-1289
(505) 326-2588

Philip Environmental Services

4000 Monroe Road

Farmington, NM 87401

Attn: Cory Chance

Date: 08/17/98

Project: BR Misc.

Project No: 19074

Site: Johnston Fed #4, Pit #2

Matrix: Soil

Sampled By: Holly Bradbury

Date Sampled: 08/10/98

Sample ID: BR8B1541BV

Date Received: 08/11/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	17000	1000 (P)	mg/kg
Surrogate	% Recovery		
1,4-Difluorobenzene	123		
4-Bromofluorobenzene	367MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 08/13/98			
Total Petroleum Hydrocarbons-Diesel	2700	200 (P)	mg/kg
Surrogate	% Recovery		
n-Pentacosane	D		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 08/14/98			

MI_Matrix Interference (P)-Practical Quantitation Limit D-Diluted, limits not applicable.

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Comments:

Sample contains petroleum hydrocarbons from C10 - C24 that do not resemble a diesel pattern. (C10 - C24) RR

Billy G. Rich, Lab Director



PRODUCTION PIT REMEDIATION FORM

WELL NAME: Johnston Fed #4 WELL No.: _____ DP No.: _____
OPERATOR NAME: Burlington Resources P/L DISTRICT: _____
COORDINATES: LETTER: H SECTION: 27 TOWNSHIP: 31N RANGE: 9W
PIT TYPE: DEHYDRATOR: _____ LOCATION DRIP: _____ LINE DRIP: _____ OTHER: X
FOREMAN No.: GARY OSBORNE AREA: Aster TANK DRAIN PIT

INITIAL REMEDIATION ACTIVITIES

DATE: 12-17-98 TIME: _____

GROUND WATER ENCOUNTERED? ☐ Y / ☒ N

INSIDE NMOCD ZONE

FINAL EXCAVATION DIMENSIONS: LENGTH: 58 WIDTH: 45 DEPTH: 30

APPROX. CUBIC YARDS: 4,702 FINAL PID READING: 1967 ppm

REMEDICATION METHOD: ONSITE LANDFARM _____

OFFSITE LANDFARM X

LOCATION: Johnston F022R 4

OTHER _____

LANDFARM DIMENSIONS: LENGTH: _____ WIDTH: _____

OUTSIDE NMOCD ZONE

FINAL SAMPLE DEPTH: _____ FINAL PID READING: _____

EXCAVATION SAMPLING INFORMATION

IF PID READINGS ARE LESS THAN 100 PPM, SAMPLE TAKEN DURING EXCAVATION)

SAMPLE DATE: _____ SAMPLE NOS _____

SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

IF PID READINGS ARE GREATER THAN 100 PPM, NO SAMPLE WILL BE TAKEN DURING EXCAVATION.
THE EXCAVATION WILL BE SAMPLED PRIOR TO BACKFILLING (SEE ADDITIONAL SAMPLING SECTION).

REMARKS: Contaminated Soil 3,055 cu. yd
Clean Soil 1,647 cu. yd.

SIGNATURE: Pat Champion

DATE: 12/17/98



Certificate of Analysis No. 9812150-01a

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Philip Environmental Services

4000 Monroe Road

Farmington, NM 87401

Attn: Robert Thompson

Date: 01/06/99

Project: BR Pits

Project No: 20440

Site: Farmington

Matrix: Soil

Sampled By: R. Thompson

Date Sampled: 12/28/98

Sample ID: 12281416 - BOTTOM

Date Received: 12/30/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Benzene	ND	500 (P)	µg/Kg
Toluene	20000	500 (P)	µg/Kg
Ethylbenzene	8100	500 (P)	µg/Kg
Total Xylene	120000	500 (P)	µg/Kg
Total Volatile Aromatic Hydrocarbons	148100		µg/Kg

Surrogate

% Recovery

1,4-Difluorobenzene

100

4-Bromofluorobenzene

160MI

Method 8020A***

Analyzed by: AA

Date: 01/05/99

ND-Not Detected

MI-Matrix Interference

(P)-Practical Quantitation Limit

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Billy G. Rich, Lab Director



Certificate of Analysis No. 9812150-01b

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Philip Environmental Services

4000 Monroe Road

Farmington, NM 87401

Attn: Robert Thompson

Date: 01/06/99

Project: BR Pits

Project No: 20440

Site: Farmington

Matrix: Soil

Sampled By: R. Thompson

Date Sampled: 12/28/98

Sample ID: 12281416 - BOTTOM

Date Received: 12/30/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	2100	50 (P)	mg/kg
Surrogate	% Recovery		
1,4-Difluorobenzene	80		
4-Bromofluorobenzene	613MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 01/05/99			
Total Petroleum Hydrocarbons-Diesel	430	250 (P)	mg/kg
Surrogate	% Recovery		
n-Pentacosane	96		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 01/04/99			

MI-Matrix Interference

(P)-Practical Quantitation Limit

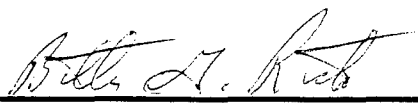
ND-Not Detected

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.


Billy G. Rich, Lab Director



Certificate of Analysis No. 9812150-02a

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Philip Environmental Services

4000 Monroe Road

Farmington, NM 87401

Attn: Robert Thompson

Date: 01/06/99

Project: BR Pits

Project No: 20440

Site: Farmington

Matrix: Soil

Sampled By: R. Thompson

Date Sampled: 12/28/98

Sample ID: 12281410 - WALLS

Date Received: 12/30/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Benzene	ND	500 (P)	µg/Kg
Toluene	6100	500 (P)	µg/Kg
Ethylbenzene	3400	500 (P)	µg/Kg
Total Xylene	75000	500 (P)	µg/Kg
Total Volatile Aromatic Hydrocarbons	84500		µg/Kg

Surrogate

% Recovery

1,4-Difluorobenzene

100

4-Bromofluorobenzene

167MI

Method 8020A***

Analyzed by: AA

Date: 01/05/99

ND-Not Detected

MI-Matrix Interference

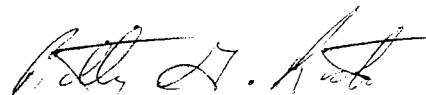
(P)-Practical Quantitation Limit

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.


Billy G. Rich, Lab Director



Certificate of Analysis No. 9812150-02b

307 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

Date: 01/06/99

Project: BR Pits

Project No: 20440

Site: Farmington

Matrix: Soil

Sampled By: R. Thompson

Date Sampled: 12/28/98

Sample ID: 12281410 - WAUS

Date Received: 12/30/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	1600	50 (P)	mg/kg
Surrogate	% Recovery		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	667MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 01/05/99			
Total Petroleum Hydrocarbons-Diesel	250	50 (P)	mg/kg
Surrogate	% Recovery		
n-Pentacosane	92		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 01/04/99			

MI-Matrix Interference (P)-Practical Quantitation Limit

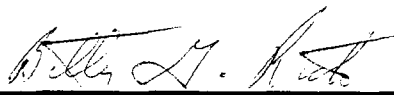
D-Diluted, limits not applicable

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.


Billy G. Rich, Lab Director

PHILIPPHILIP
LABORATORY

Lab. # 9812150
Chain of Custody Record — Nonchemical Samples

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230(618) 281-7173 Phone
(618) 281-5120 FAXCOC Serial No. **G 3232**

Project Name BE PITS				Lab	Name SPL			
Project Number 20440		Phase . Task 1000 . 77			Location Farmington			
Samplers Paul Archuleta				Analysis Type				
Sample Number	Date	Time	Matrix	X	X		Comments	
12281416	12-28-98	1416	Soil	TPH	BTEX		PIG 1416 ppm	
12281410	12-28-98	1410	Soil	TPH	BTEX		PIG 2026 ppm	

Relinquished by:

Received By:

Signature	Date	Time	Signature	Date	Time
<i>Detlev Samlet</i>	12/30/98	1333hrs	<i>T. J. C. L.</i>	12/20/98	1333hrs.

Carrier:

Airbill No.

Shipping and Lab Notes:

Drilling Log/Wellbore Diagram

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

(505) 326-2262 FAX (505) 326-2388

Borehole # 2
Well # mw-BZ
Page 1 of 2

Project Name Burlington
Project Number 21057 Phase 1000.99
Project Location Johnson Fed #4

Elevation _____
Borehole Location _____
GWL Depth 43'
Logged By P. Cheney
Drilled By K. Padilla
Date/Time Started 5/13/99 0920
Date/Time Completed 5/13/99 1200

Well Logged By P. Cheney
Personnel On-Site Cheney, K. Padilla, P. Padilla
Contractors On-Site _____
Client Personnel On-Site Ed Haseley
Drilling Method 4 1/4" ID 1 1/2" A
Air Monitoring Method PID

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU			Drilling Conditions & Blow Counts
						BZ	BH	S	
0			Pit has been excavated and back filled to 30' (ed Haseley) First sample will be from 30'-32'. Back fill is a yellowish brown, medium to coarse grained sand						
5									
10									
15									
20									
25									
30									
35	35	55 1/8"	gray to dark gray clay. Approx 5-10% sand. Soft, low plasticity. strong itc odor		30'	0.1	9.1	1064	BC = 5 S/H S = 1133
37	37		dark gray, fine grained clayey sand, strong itc odor			0.2	11.5	560	BC = 12 S/H S = 1103
40									

Comments:

Geologist Signature _____

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

(505) 326-2282 FAX (505) 326-2388

Borehole # 1
Well # MW-B1
Page 2 of 2

Project Name Burlington
Project Number 21057 Phase 1000.99
Project Location Johnston Fed #4

Elevation _____
Borehole Location _____
GWL Depth _____
Logged By P. Cheney
Drilled By K. Padilla
Date/Time Started 5/13/99 0920
Date/Time Completed 5/13/99 1200

Well Logged By P. Cheney
Personnel On-Site P. Cheney, K. Padilla, D. Padilla
Contractors On-Site _____
Client Personnel On-Site Ed Kisely
Drilling Method 4 1/4" ID HSA
Air Monitoring Method PID

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU			Drilling Conditions & Blow Counts
						BZ	BH	S	
40	40		light gray, fine to medium grained clayey sand, firm			1.6	5.0	1015	BC = 7 S/Hs = 291
42	42								
45	45		gray, very coarse grained sand w/ 5% small gravel. Strong odor. Approx 2" of yellowish brown consolidated sand at 47'			6.2		946	BC = 36 S/Hs = 256
47	47								
50	50		gray, fine to medium grained sand. 2-5% black mineral grains well consolidated			0.3		77	BC = 50 (7") S/Hs = 141
52	52								
55			TD = 50' Set Screen 35-50						
20									
25									
30									
35									
40									

Comments:

Materials: 1 silt trap 1-10' screen 1-5' screen, 4-10' risers, 1-5' riser
7 sacks silica sand

Geologist Signature _____

MONITORING WELL INSTALLATION RECORD

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Borehole # 1
Well # MW-B1
Page 1 of 1

Project Name Burlington Drilling

Project Number 21057 Phase POPP-09
Project Location Johnson Federal #4

On-Site Geologist P Chenoy
Personnel On-Site K Padilla J Padilla
Contractors On-Site
Client Personnel On-Site Ed Haseley

Elevation _____
Well Location _____
GWL Depth 43'
Installed By K Padilla
J Padilla
Date/Time Started 5/13/99 1300
Date/Time Completed 6/4/99 1300

Depths in Reference to Ground Surface			
Item	Material	Depth	
Top of Protective Casing			Top of Protective Casing <u>±3'</u>
Bottom of Protective Casing			Top of Riser <u>±2'</u>
Top of Permanent Borehole Casing			Ground Surface _____
Bottom of Permanent Borehole Casing			
Top of Concrete			
Bottom of Concrete			
Top of Grout			
Bottom of Grout			
Top of Well Riser			
Bottom of Well Riser			
Top of Well Screen			Top of Seal <u>31</u>
Bottom of Well Screen			
Top of Peltonite Seal			Top of Gravel Pack <u>33</u>
Bottom of Peltonite Seal			Top of Screen <u>35</u>
Top of Gravel Pack			
Bottom of Gravel Pack			
Top of Natural Cave-In			
Bottom of Natural Cave-In			
Top of Groundwater			Bottom of Screen <u>50'</u>
Total Depth of Borehole			Bottom of Borehole <u>52'</u>

Comments: _____

Geologist Signature

Paul Chenoy for Paul Chenoy

Analytical Results - Groundwater



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **905083**
July 14, 1999

PHILIP SERVICES
4000 MONROE RD.
FARMINGTON, NM 87401

Project Name BURL. PITS
Project Number 21057

Attention: C. IRBY

On 5/22/99 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Due to the lateness of this report, there will be no charge for the analyses.

EPA method 8021 was performed by Pinnacle Laboratories,
Inc., Albuquerque, NM.

All other parameters were performed by ESL (OR) Inc., Portland, OR.

If you have any questions or comments, please do not hesitate to contact us
at (505)344-3777.

A handwritten signature in black ink, appearing to read "Kimberly D. McNeill".

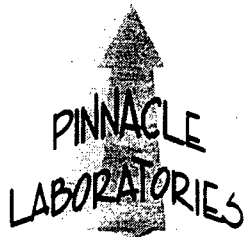
Kimberly D. McNeill
Project Manager

A handwritten signature in black ink, appearing to read "H. Mitchell Rubenstein".

H. Mitchell Rubenstein, Ph. D.
General Manager

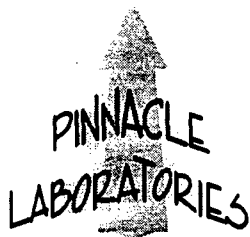
MR: mt

Enclosure



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: PHILIP SERVICES	PINNACLE ID	: 905083
PROJECT #	: 21057	DATE RECEIVED	: 5/22/99
PROJECT NAME	: BURL. PITS	REPORT DATE	: 7/14/99
PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	PC-03JF6A89232	AQUEOUS	5/21/99
02	PC-04JF470194	AQUEOUS	5/21/99



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP SERVICES
PROJECT # : 21057
PROJECT NAME : BURL. PITS

PINNACLE I.D.: 905083

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	PC-03JF6A89232	AQUEOUS	5/21/99	NA	5/25/99	1
02	PC-04JF470194	AQUEOUS	5/21/99	NA	5/25/99	100

PARAMETER	DET. LIMIT	UNITS	PC-03JF6A89232	PC-04JF470194
BENZENE	0.5	UG/L	< 0.5	8700
TOLUENE	0.5	UG/L	< 0.5	2900
ETHYLBENZENE	0.5	UG/L	< 0.5	2800
TOTAL XYLENES	0.5	UG/L	0.5	29000
1,3,5-TRIMETHYLBENZENE	0.5	UG/L	< 0.5	1100
1,2,4-TRIMETHYLBENZENE	0.5	UG/L	< 0.5	2300
METHYL-t-BUTYL ETHER	2.5	UG/L	< 2.5	< 250

SURROGATE:

BROMOFLUOROBENZENE (%)

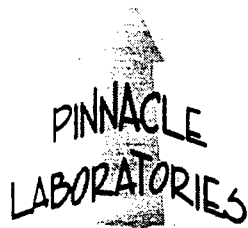
103

82

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 905083
BLANK I. D.	: 052599	DATE EXTRACTED	: NA
CLIENT	: PHILIP SERVICES	DATE ANALYZED	: 5/25/99
PROJECT #	: 21057	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BURL. PITS		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5
1,3,5-TRIMETHYLBENZENE	UG/L	<0.5
1,2,4-TRIMETHYLBENZENE	UG/L	<0.5

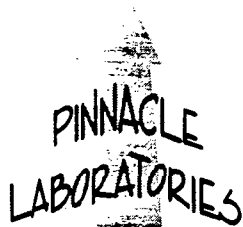
SURROGATE:

BROMOFLUOROBENZENE (%)	102
------------------------	-----

SURROGATE LIMITS: (80 - 120)

CHEMIST NOTES:

N/A



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 905065-03
CLIENT : PHILIP SERVICES
PROJECT # : 21057
PROJECT NAME : BURL. PITS

PINNACLE I.D. : 905083
DATE EXTRACTED : NA
DATE ANALYZED : 5/25/99
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	10.0	10.3	103	10.9	109	6	(80 - 120)	20
TOLUENE	<0.5	10.0	10.5	105	10.6	106	1	(80 - 120)	20
ETHYLBENZENE	<0.5	10.0	10.7	107	10.6	106	1	(80 - 120)	20
TOTAL XYLENES	<0.5	30.0	31.9	106	32.0	107	0	(80 - 120)	20
METHYL-T-BUTYL ETHER	<2.5	10.0	9.6	96	9.4	94	2	(70 - 133)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Environmental Services Laboratory, Inc.



17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 670-8520

July 09, 1999

Kim McNeill
Pinnacle Laboratories
2709-D Pan American Fwy NE
Albuquerque, NM 87107

TEL: 505-344-3777

FAX (505) 344-4413

RE: 905083/PHIL/Barl. Pits

Order No.: 9905121

Dear Kim McNeill,

Environmental Services Laboratory received 2 samples on 05/25/99 for the analyses presented in the following report.

The Samples were analyzed for the following tests:

CHLORIDE (Chloride)
ICP Metals (ICPMET)
MERCURY (Mercury)
Nitrate/Nitrite (Nitrogen)
Sulfate (Sulfate)
TOTAL DISSOLVED SOLIDS (E160.1)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval from the Laboratory.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Kimberly Hill
Project Manager

Technical Review

ANALYTICAL SERVICES FOR THE ENVIRONMENT

Environmental Services Laboratory

Date: 13-Jul-99

CLIENT: Pinnacle Laboratories
Lab Order: 9905121
Project: 905083/PHIL/Barl. Pits
Lab ID: 9905121-01A

Client Sample ID: 905083-01
Tag Number:
Collection Date: 05/21/99
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE		EPA 325.3				Analyst: kfl
Chloride	15	50		mg/L	20	05/26/99
NITRATE/NITRITE		EPA 353.3				Analyst: sld
Nitrogen, N+N	ND	0.05		mg/L	1	05/28/99
SULFATE		EPA 375.4				Analyst: sld
Sulfate	1100	420		mg/L	83.3	05/27/99
TOTAL DISSOLVED SOLIDS		EPA 160.1				Analyst: kfl
Total Dissolved Solids (Residue, Filterable)	2000	10		mg/L	1	05/25/99
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.002		mg/L	1	06/08/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Arsenic	ND	0.05		mg/L	1	06/16/99
Barium	ND	0.3		mg/L	1	06/16/99
Cadmium	ND	0.005		mg/L	1	06/16/99
Chromium	ND	0.05		mg/L	1	06/16/99
Lead	ND	0.05		mg/L	1	06/16/99
Selenium	ND	0.05		mg/L	1	06/16/99
Silver	ND	0.05		mg/L	1	06/16/99

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: 13-Jul-99

CLIENT: Pinnacle Laboratories
Lab Order: 9905121
Project: 905083/PHIL/Barl. Pits
Lab ID: 9905121-02A

Client Sample ID: 905083-02
Tag Number:
Collection Date: 05/21/99
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE		EPA 325.3				Analyst: kfl
Chloride	75	50		mg/L	100	05/26/99
NITRATE/NITRITE		EPA 353.3				Analyst: sld
Nitrogen, N+N	ND	0.05		mg/L	1	05/28/99
SULFATE		EPA 375.4				Analyst: sld
Sulfate	170	62		mg/L	12.5	05/27/99
TOTAL DISSOLVED SOLIDS		EPA 160.1				Analyst: kfl
Total Dissolved Solids (Residue, Filterable)	1800	10		mg/L	1	05/25/99
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.002		mg/L	1	06/08/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Arsenic	ND	0.05		mg/L	1	06/16/99
Barium	ND	0.3		mg/L	1	06/16/99
Cadmium	ND	0.005		mg/L	1	06/16/99
Chromium	ND	0.05		mg/L	1	06/16/99
Lead	ND	0.05		mg/L	1	06/16/99
Selenium	ND	0.05		mg/L	1	06/16/99
Silver	ND	0.05		mg/L	1	06/16/99

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

BURLINGTON RESOURCES

SAN JUAN DIVISION

NOV 17 2000

Certified Mail: Z 186 732 886

July 29, 1999

Bill Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

Johnston
RE: **Johnson Federal #4 Metering Location**
Unit Letter M, Section 27, Township 31N, Range 9W
Notification of Groundwater Impact

JUL 30 1999
OIL CON. DIV.
DIST. 3

Dear Mr. Olson:

As per the e-mail notification dated June 1, 1999 (Mr. Hasely to Mr. Olson), this letter is Burlington Resources' (BR) written notification of groundwater impact at the subject location. The final analytical results and final paperwork from the consultant did not make it to my attention until recently.

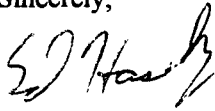
Due to El Paso having groundwater impacts at this location, BR conducted initial assessments of two earthen pits on the Johnson Federal #4 metering location. The separator pit tested clean and was closed. The tank drain earthen pit had levels above closure standards and BR excavated soils to 30 feet below ground surface. At that point, soil samples from the bottom of the excavation were collected and tested above pit closure standards. The excavation was sprayed with 20 barrels of Oxy-1 and backfilled with clean fill. BR conducted vertical extent determination in the center of BR's former earthen pit and encountered groundwater at approximately 43 feet. BR installed a temporary groundwater monitoring well. After developing the well and allowing it to stabilize for one week, the well was purged and sampled on May 25, 1999. The sample results are as follows:

Benzene	8700 ppb
Toluene	2900 ppb
Ethylbenzene	2800 ppb
Total Xylenes	29000 ppb

Included with this letter are the original Pit Remediation and Closure Reports for the BR earthen pits along with the analytical results of the soil testing. Also attached are the groundwater lab analysis, the drilling log, the monitoring well installation record, and a location diagram from El Paso's 1997 Annual Groundwater Report.

The temporary monitoring well has since been completed as permanent. BR will conduct future activities at the site pursuant to Burlington Resources' Groundwater Management Plan, and it is our plan to work in conjunction with El Paso to assure proper assessment and closure. If you have questions or additional information is needed, please contact me at (505) 326-9841.

Sincerely,



Ed Hasely
Sr. Staff Environmental Representative

Attachments: Pit Remediation and Closure Reports (Pit #1)
Pit Remediation and Closure Reports (Pit #2)
Drilling Log/Wellbore Diagram
Analytical Results - Groundwater
Location Diagram

cc: ~~Denny Foust - NMOC/D Aztec~~
Sandra Miller - El Paso
Rob Stanfield
Gary Osborne
Bruce Gantner
Facility File
Correspondence

P.O. Box 1980, Hobbs, NM

District II

P.O. Drawer DD, Artesia, NM 88211

District III

1000 Rio Brazos Rd. Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO
APPROPRIATE
DISTRICT OFFICE
AND 1 COPY TO
SANTA FE OFFICE

(Revised 3/9/94)

PIT REMEDIATION AND CLOSURE REPORT

Operator: Burlington Resources Telephone: (505) 326-9700

Address: 3535 E. 30th Farmington NM 87402

Facility Or: Johnston Federal #4 (Metering Location) P.t #1
Well Name _____

Location: Unit or Qtr/Qtr Sec H Sec 27 T 31N R 9W County San Juan

Pit Type: Separator X Dehydrator Other

Land Type: BLM X, State , Fee , Other

Pit Location: Pit dimensions: length 19', width 12', depth 4'
(Attach diagram)

Reference: wellhead___, other Dogleg

Footage from reference: 81.5'

Direction from reference: 55 Degrees East North
 of
 X West South X

Depth To Ground Water:

(Vertical distance from
contaminants to seasonal
high water elevation of
ground water) :

Less than 50 feet (20 points)
50 feet to 99 feet (10 points)
Greater than 100 feet (0 Points) 20

Wellhead Protection Area:

(Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)

Yes (20 points)
No (0 points) 0

Distance To Surface Water:

(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)

Less than 200 feet (20 points)
200 feet to 1000 feet (10 points)
Greater than 1000 feet (0 points) 0

RANKING SCORE (TOTAL POINTS): 20

Date Remediation Started: 8/10/98 Date Completed: 8/10/98

Remediation Method: Excavation - Approx. cubic yards -
(Check all appropriate sections) Landfarmed - Insitu Bioremediation -
Other -

Remediation Location: Onsite - Offsite -
(ie. landfarmed onsite, name and location of offsite facility)

General Description Of Remedial Action: -

Initial assessment showed the pit met the
closure standards.

Ground Water Encountered: No X Yes - Depth -

Final Pit:
Closure Sampling:
(if multiple samples,
attach sample results
and diagram of sample
locations and depths)

Sample location Center of Pit

Sample depth 3'

Sample date 8/10/98 Sample time -

Sample Results

Benzene(ppm) -

Total BTEX(ppm) -

Field headspace(ppm) 0

TPH 1.2

Ground Water Sample: Yes - No X (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 7/29/99

SIGNATURE Ed Hasely

PRINTED NAME
AND TITLE

Ed Hasely
Sr. Staff Environmental Rep.

Pit Remediation and Closure Reports (Pit #1)

Pit #1



PRODUCTION PIT ASSESSMENT FORM

GENERAL

WELL NAME: JOHNSTON FEDERAL

WELL NUMBER: 4

DP NO.: ~~NO NAME~~ B154

OPERATOR NAME: BURLINGTON RESOURCES

PIL DISTRICT:

COORDINATES:

TOWNSHIP 31N

RANGE 9W

SECTION 27

LETTER H

PIT TYPE: DEHYDRATOR ☐SEPARATOR ☐BLOW PIT ☐

OTHER:

CATHODIC PROTECTION WELL: ☐ YES ☒ NO

UNKNOWN

SITE ASSESSMENT DATE: 8/10/98

MOI FOREMAN NO.

AREA:

NMOCD ZONE: (from NMOCD Maps):

Inside ☒Outside ☐

LAND TYPE:

BLM ☒ (1)STATE ☐ (2)FEE ☐ (3)

INDIAN:

DEPTH TO GROUNDWATER:

LESS THAN 50 FT (1) ☒ (20 POINTS)50 FT TO 99 FT (2) ☐ (10 POINTS)GREATER THAN 100 FT (3) ☐ (0 POINTS)

WELLHEAD PROTECTION AREA: Is it less than 1,000 feet from wells, springs, or other sources of fresh water extraction?, or; is it less than 200 ft from a private domestic water source (or 1,000' on Navajo surface)?

YES ☐ (20 POINTS)NO ☒ (0 POINTS)

HORIZONTAL DISTANCE TO SURFACE WATER BODY:

LESS THAN 200 FT (1) ☐ (20 POINTS)200 FT TO 1,000 FT (2) ☐ (10 POINTS)GREATER THAN 1,000 FT (3) ☒ (0 POINTS)

NAME OF SURFACE WATER BODY _____

SURFACE WATER BODY: PERENNIAL RIVERS, STREAMS, CREEKS, IRRIGATION CANALS, DITCHES, LAKES, PONDS

DISTANCE TO NEAREST EPHEMERAL STREAM

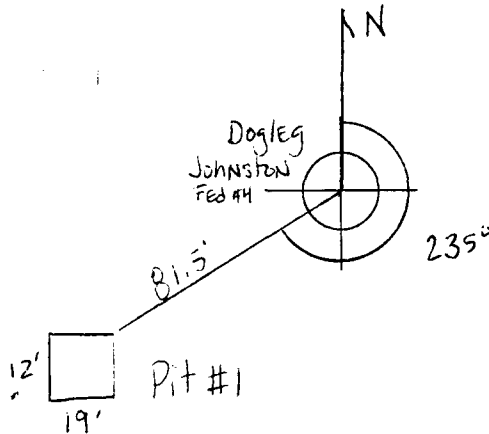
(1) ☐ <100 FEET (NAVAJO PITS ONLY)(2) ☐ >100 FEET

SITE ASSESSMENT

TOTAL HAZARD RANKING SCORE: 20 POINTS

ORIGINAL PIT LOCATION

ORIGINAL PIT: (A) DEGREES FROM NORTH 235° FOOTAGE FROM WELLHEAD 81.5'
CORRECTED 13° FOR MAGNETIC NORTH DOGLEG
(B) LENGTH: 19' WIDTH: 12' DEPTH: 4'



SAMPLE

SAMPLE SENT TO LAB FOR: ☐ BTEX ☒ TPH ☐ NO SAMPLE TAKEN

PID - FIELD HEADSPACE READING: 0 ppm

SAMPLE NUMBER: BR8131541A V

REMARKS

SAMPLE WAS COLLECTED AT 3 FEET. SENT TO LAB FOR TPH
B154 IS NODE NAME TAKEN FROM INSIDE METER HOUSE

BEARING TAKEN FROM JOHNSTON FED #4 DOGLEG

COMPLETED BY: H BRADLEY Holly Bradley DATE: 8/10/98
SIGNATURE



Certificate of Analysis No. 9803038-02

FARMINGTON LABORATORY

807 S. CARLTON
FARMINGTON, NM 87499-1289
(505) 326-2588

Philip Environmental Services

4000 Monroe Road

Farmington, NM 87401

Attn: Cory Chance

Date: 08/17/98

Project: BR Misc.

Project No: 19074

Site: Johnston Fed. #4, Pit #1

Matrix: Soil

Sampled By: Holly Bradbury

Date Sampled: 08/10/98

Sample ID: BR8B1541AV

Date Received: 08/11/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	1.2	0.1 (P)	mg/kg
Surrogate	% Recovery		
1,4-Difluorobenzene	147		
4-Bromofluorobenzene	310MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 08/12/98			
Total Petroleum Hydrocarbons-Diesel	ND	10 (P)	mg/kg
Surrogate	% Recovery		
n-Pentacosane	118		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 08/14/98			

ND-Not Detected

MI-Matrix Interference

(P)-Practical Quantitation Limit

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Billy G. Rich, Lab Director

Pit Remediation and Closure Reports (Pit #2)

RANKING SCORE (TOTAL POINTS): 20

Date Remediation Started: 12/17/98 Date Completed: _____

Remediation Method: Excavation x Approx. cubic yards 3055
(Check all appropriate sections) Landfarmed x Insitu Bioremediation _____
Other _____

Remediation Location: Onsite _____ Offsite Johnston Field #4 NE Sec 33-31N-9W
(ie. landfarmed onsite, name and location of offsite facility) Johnston Field #22R NE Sec 33-31N-9W

General Description Of Remedial Action: Soils were removed to an approximate depth of 30 ft which was the practical extent. Soil samples were collected. The walls and bottom of the excavation were sprayed with 20 bbls of Oxy-1 and then backfilled with clean sand. A groundwater monitoring well was installed in the center of the old pit.

Ground Water Encountered: No x Yes _____ Depth _____

Final Pit: Sample location Bottom of excavation
Closure Sampling: _____
(if multiple samples, attach sample results and diagram of sample locations and depths)
Sample depth 30'
Sample date 12/28/98 Sample time 2:10 pm
Sample Results

Benzene(ppm) ND

Total BTEX(ppm) 148.1

Field headspace(ppm) 1967

TPH 2530

Ground Water Sample: Yes _____ No x (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 7/29/99

SIGNATURE EJ Hasely

PRINTED NAME
AND TITLE

Ed Hasely
Sr Staff Environmental Rep.



PRODUCTION PIT REMEDIATION FORM

WELL NAME: Johnston Fed. #4 WELL No.: _____ DP No.: _____
OPERATOR NAME: Burlington Resources P/L DISTRICT: _____
COORDINATES: LETTER: H SECTION: 27 TOWNSHIP: 31N RANGE: 9W
PIT TYPE: DEHYDRATOR: _____ LOCATION DRIP: _____ LINE DRIP: _____ OTHER: X
FOREMAN No.: GARY OSBORNE AREA: Aster TANK DRAIN PIT

INITIAL REMEDIATION ACTIVITIES

DATE: 12-17-98 TIME: _____

GROUND WATER ENCOUNTERED? ☐ Y / ☒ N

INSIDE NMOCD ZONE

FINAL EXCAVATION DIMENSIONS: LENGTH: 58 WIDTH: 45 DEPTH: 30

APPROX. CUBIC YARDS: 4,702 FINAL PID READING: 1967 ppm

REMEDICATION METHOD: ONSITE LANDFARM _____

OFFSITE LANDFARM X

LOCATION: Johnston FD 22 R & 4

OTHER _____

LANDFARM DIMENSIONS: LENGTH: _____ WIDTH: _____

OUTSIDE NMOCD ZONE

FINAL SAMPLE DEPTH: _____ FINAL PID READING: _____

EXCAVATION SAMPLING INFORMATION

IF PID READINGS ARE LESS THAN 100 PPM, SAMPLE TAKEN DURING EXCAVATION)

SAMPLE DATE: _____ SAMPLE NOS _____

SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

IF PID READINGS ARE GREATER THAN 100 PPM, NO SAMPLE WILL BE TAKEN DURING EXCAVATION.
THE EXCAVATION WILL BE SAMPLED PRIOR TO BACKFILLING (SEE ADDITIONAL SAMPLING SECTION).

REMARKS: Contaminated Soil 3,055 cu. yd
Clean Soil 1,647 cu. yd.

SIGNATURE: Pat Champion

DATE: 12/17/98

ADDITIONAL REMEDIATION ACTIVITIES

SOIL TILLING

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

ADDITIONAL SAMPLING INFORMATION

EXCAVATION SAMPLING(IF REQUIRED)

IF NO SAMPLE WAS TAKEN DURING EXCAVATION, THE EXCAVATION WILL BE SAMPLED BEFORE BACKFILLING).

SAMPLE DATE: _____ SAMPLE NOS _____

SIGNATURE: _____

IF PID READINGS ARE LESS THAN 100 PPM , SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

IF PID READINGS ARE GREATER THAN 100 PPM, SAMPLE ANALYSES: BTEX METHOD 8020 AND TPH METHOD 8015 MODIFIED

SOIL REMEDIATION VERIFICATION SAMPLE

SAMPLE DATE: _____ SAMPLE NOS _____

SIGNATURE: _____

SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

BACKFILLING INFORMATION

DATE: _____ TIME: _____

BACKFILL SOURCE: ONSITE LANDFARM: _____

OFFSITE SOURCE: _____ APPROX. VOLUME: _____

REMARKS: _____

SIGNATURE: _____

DATE: _____



Certificate of Analysis No. 9812150-01a

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Philip Environmental Services

4000 Monroe Road

Farmington, NM 87401

Attn: Robert Thompson

Date: 01/06/99

Project: BR Pits

Project No: 20440

Site: Farmington

Matrix: Soil

Sampled By: R. Thompson

Date Sampled: 12/28/98

Sample ID: 12281416 - BOTTOM

Date Received: 12/30/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Benzene	ND	500 (P)	µg/Kg
Toluene	20000	500 (P)	µg/Kg
Ethylbenzene	8100	500 (P)	µg/Kg
Total Xylene	120000	500 (P)	µg/Kg
Total Volatile Aromatic Hydrocarbons	148100		µg/Kg

Surrogate % Recovery
1,4-Difluorobenzene 100
4-Bromofluorobenzene 160MI
Method 8020A***
Analyzed by: AA
Date: 01/05/99

ND-Not Detected

MI-Matrix Interference

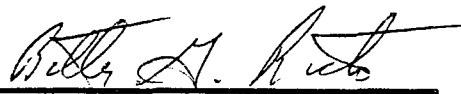
(P)-Practical Quantitation Limit

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.


Billy G. Rich, Lab Director



Certificate of Analysis No. 9812150-01b

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

Date: 01/06/99

Project: BR Pits
Site: Farmington
Sampled By: R. Thompson
Sample ID: 12281416 - BOTTOM

Project No: 20440

Matrix: Soil

Date Sampled: 12/28/98

Date Received: 12/30/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	2100	50 (P)	mg/kg
Surrogate	% Recovery		
1,4-Difluorobenzene	80		
4-Bromofluorobenzene	613MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 01/05/99			
Total Petroleum Hydrocarbons-Diesel	430	250 (P)	mg/kg
Surrogate	% Recovery		
n-Pentacosane	96		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 01/04/99			

MI-Matrix Interference (P)-Practical Quantitation Limit

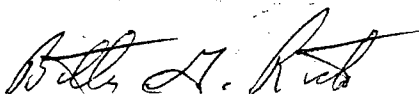
ND-Not Detected

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.


Billy G. Rich, Lab Director



Certificate of Analysis No. 9812150-02a

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Philip Environmental Services

4000 Monroe Road

Farmington, NM 87401

Attn: Robert Thompson

Date: 01/06/99

Project: BR Pits

Project No: 20440

Site: Farmington

Matrix: Soil

Sampled By: R. Thompson

Date Sampled: 12/28/98

Sample ID: 12281410 - WAUS

Date Received: 12/30/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Benzene	ND	500 (P)	µg/Kg
Toluene	6100	500 (P)	µg/Kg
Ethylbenzene	3400	500 (P)	µg/Kg
Total Xylene	75000	500 (P)	µg/Kg
Total Volatile Aromatic Hydrocarbons	84500		µg/Kg

Surrogate	% Recovery
1,4-Difluorobenzene	100
4-Bromofluorobenzene	167MI
Method 8020A***	
Analyzed by: AA	
Date: 01/05/99	

ND-Not Detected

MI-Matrix Interference

(P)-Practical Quantitation Limit

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Billy G. Rich, Lab Director



Certificate of Analysis No. 9812150-02b

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

Date: 01/06/99

Project: BR Pits
Site: Farmington
Sampled By: R. Thompson
Sample ID: 12281410 - WAUS

Project No: 20440

Matrix: Soil

Date Sampled: 12/28/98

Date Received: 12/30/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	1600	50 (P)	mg/kg
Surrogate	% Recovery		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	667MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 01/05/99			
Total Petroleum Hydrocarbons-Diesel	250	50 (P)	mg/kg
Surrogate	% Recovery		
n-Pentacosane	92		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 01/04/99			

MI-Matrix Interference

(P)-Practical Quantitation Limit

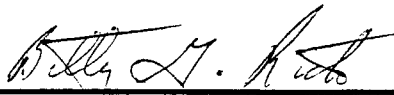
D-Diluted, limits not applicable

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.


Billy G. Rich, Lab Director

PHILIP**ENVIRONMENTAL**

Lab. NO #: 9812150
Chain of Custody Record — Nonchemical Samples

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(618) 281-5120 FAX

COC Serial No.

G 3232

Project Name BE PITS				Lab	Name SPL			
Project Number 20440		Phase . Task 1000 . 77			Location Flemington			
Samplers Paul Archuleta				Analysis Type				Comments
Sample Number	Date	Time	Matrix	X	X			
12281416	12-28-98	1416	Soil	TPH	BTEX			PIV (avg) 1467 ppm
12281410	12-28-98	1410	Soil	TPH	BTEX			PIV (avg) 2026 ppm

Relinquished by:

Received By:

Signature	Date	Time	Signature	Date	Time
<i>Detlev Jambert</i>	12/30/98	1333hrs	<i>R. J. C. L.</i>	12/30/98	1333hrs

Carrier:

Airbill No.

Shipping and Lab Notes:

Drilling Log/Wellbore Diagram



Pit # 2

PRODUCTION PIT ASSESSMENT FORM

WELL NAME: Johnston Federal

WELL NUMBER: 4

DP NO.:
WDE NAME: B154

OPERATOR NAME: Burlington Resources

PIL DISTRICT:

COORDINATES: TOWNSHIP 31N RANGE 9W SECTION 27 LETTER H

PIT TYPE: DEHYDRATOR ☐

SEPARATOR ☐

BLOW PIT ☐

OTHER:

CATHODIC PROTECTION WELL: ☐ YES ☒ NO

UNKNOWN

SITE ASSESSMENT DATE: 8/10/98

MOI FOREMAN NO.

AREA:

NMOCD ZONE: (from NMOCD Maps):

Inside ☒

Outside ☐

LAND TYPE: BLM ☒ (1)

STATE ☐ (2)

FEE ☐ (3)

INDIAN:

DEPTH TO GROUNDWATER:

LESS THAN 50 FT (1) ☒ (20 POINTS)

50 FT TO 99 FT (2) ☐ (10 POINTS)

GREATER THAN 100 FT (3) ☐ (0 POINTS)

WELLHEAD PROTECTION AREA: Is it less than 1,000 feet from wells, springs, or other sources of fresh water extraction?, or, is it less than 200 ft from a private domestic water source (or 1,000' on Navajo surface)?

YES ☐ (20 POINTS)

NO ☒ (0 POINTS)

HORIZONTAL DISTANCE TO SURFACE WATER BODY:

LESS THAN 200 FT (1) ☐ (20 POINTS)

200 FT TO 1,000 FT (2) ☐ (10 POINTS)

GREATER THAN 1,000 FT (3) ☒ (0 POINTS)

NAME OF SURFACE WATER BODY _____

SURFACE WATER BODY: PERENNIAL RIVERS, STREAMS, CREEKS, IRRIGATION CANALS, DITCHES, LAKES, PONDS

DISTANCE TO NEAREST EPHEMERAL STREAM

(1) ☐ <100 FEET (NAVAJO PITS ONLY)

(2) ☐ >100 FEET

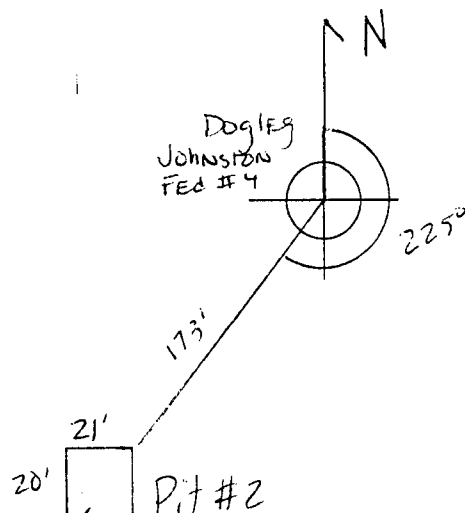
TOTAL HAZARD RANKING SCORE: 20 POINTS

GENERAL

SITE ASSESSMENT

ORIGINAL PIT LOCATION

ORIGINAL PIT: (A) DEGREES FROM NORTH 225 FOOTAGE FROM WELLHEAD 173'
CORRECTED 13° FOR MAGNETIC NORTH DOGIEg
(B) LENGTH: 21' WIDTH: 20' DEPTH: 3'



SAMPLE

SAMPLE SENT TO LAB FOR: ☒ BTEX ☒ TPH ☐ NO SAMPLE TAKEN

PID - FIELD HEADSPACE READING: 767 ppm

SAMPLE NUMBER: BR8B1541BV

REMARKS

SAMPLE WAS COLLECTED AT 3 FEET. SENT TO LAB FOR
BTEX & TPH

BEARING TAKEN FROM JOHNSTON FED #4 DOGIEg
B154 IS NODE NAME TAKEN FROM INSIDE METER HOSE

COMPLETED BY:

H. Bradbury

SIGNATURE

H. Bradbury

DATE: 8/10/98



Certificate of Analysis No. 9803038-03b

FARMINGTON LABORATORY

807 S. CARLTON
FARMINGTON, NM 87499-1289
(505) 326-2588

Philip Environmental Services

4000 Monroe Road

Farmington, NM 87401

Attn: Cory Chance

Date: 08/17/98

Project: BR Misc.

Project No: 19074

Site: Johnston Fed #4, Pit #2

Matrix: Soil

Sampled By: Holly Bradbury

Date Sampled: 08/10/98

Sample ID: BR8B1541BV

Date Received: 08/11/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	17000	1000 (P)	mg/kg
Surrogate	% Recovery		
1,4-Difluorobenzene	123		
4-Bromofluorobenzene	367MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 08/13/98			
Total Petroleum Hydrocarbons-Diesel	2700	200 (P)	mg/kg
Surrogate	% Recovery		
n-Pentacosane	D		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 08/14/98			

MI_Matrix Interference (P)-Practical Quantitation Limit D-Diluted, limits not applicable.

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Comments: Sample contains petroleum hydrocarbons from C10 - C24 that do no resemble a diesel pattern. (C10 - C24) RR

Billy G. Rich, Lab Director



Certificate of Analysis No. 9803038-03a

FARMINGTON LABORATORY

807 S. CARLTON
FARMINGTON, NM 87499-1289
(505) 326-2588

Philip Environmental Services

4000 Monroe Road

Farmington, NM 87401

Attn: Cory Chance

Date: 08/17/98

Project: BR Misc.

Project No: 19074

Site: Johnston Fed #4, Pit #2

Matrix: Soil

Sampled By: Holly Bradbury

Date Sampled: 08/10/98

Sample ID: BR8B1541BV

Date Received: 08/11/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Benzene	81000	5000 (P)	µg/Kg
Toluene	41000	5000 (P)	µg/Kg
Ethylbenzene	85000	5000 (P)	µg/Kg
Total Xylene	780000	5000 (P)	µg/Kg
Total Volatile Aromatic Hydrocarbons	987000		µg/Kg

Surrogate

% Recovery

1,4-Difluorobenzene

120

4-Bromofluorobenzene

193MI

Method 8020A***

Analyzed by: AA

Date: 08/13/98

ND-Not Detected

MI-Matrix Interference

(P)-Practical Quantitation Limit

Notes:

*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA

**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed

***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Billy G. Rich, Lab Director

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

(505) 326-2282 FAX (505) 326-2388

Borehole # 1
Well # nw-B2
Page 1 of 2

Project Name Burlington
Project Number 21057 Phase 1000.99
Project Location Johnson Fed #4

Elevation _____
Borehole Location _____
GWL Depth 43'
Logged By P. Cheney
Drilled By K. Padilla
Date/Time Started 5/13/99 0920
Date/Time Completed 5/13/99 1200

Well Logged By P. Cheney
Personnel On-Site P. Cheney, K. Padilla, D. Padilla
Contractors On-Site _____
Client Personnel On-Site Ed Haseley
Drilling Method 4 1/4" ID HSA
Air Monitoring Method PEA

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU			Drilling Conditions & Blow Counts
						BZ	BH	S	
0			Pit has been excavated and back filled to 30' (ed Haseley) First sample will be from 30'-32' Back fill is a yellowish brown, medium to coarse grained sand						
5									
10									
15									
20									
25									
30									
35	35-37	55%	gray to dark gray clay. Approx 5-10% sand. soft, low plasticity. strong ITC odor		30'	0.1	9.1	1064	BC = 5 S/H = 1133
40			dark gray, fine grained clayey sand, strong ITC odor			0.2	11.5	860	BC = 12 S/H = 1103

Comments:

Geologist Signature _____

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

(505) 326-2282 FAX (505) 326-2388

Borehole # 1
Well # MW-B1
Page 2 of 2

Project Name Burlington
Project Number 21057 Phase 1000.99
Project Location Johnston Fed #4

Elevation _____
Borehole Location _____
GWL Depth _____
Logged By P. Cheney
Drilled By K. Padilla
Date/Time Started 5/13/99 6920
Date/Time Completed 5/13/99 1200

Well Logged By P. Cheney
Personnel On-Site P. Cheney, K. Padilla, D. Padilla
Contractors On-Site _____
Client Personnel On-Site Ed Kelsey
Drilling Method 4 1/4" ID HSA
Air Monitoring Method PID

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ BH S			Drilling Conditions & Blow Counts
40	40		light gray, fine to medium grained clayey sand, firm			11.6	5.0	1015	BC = 7 S/H = 291
42	42								
45	45		gray, very coarse grained sand w/ 5% small gravel. Strong odor. Approx 2", yellowish brown consolidated sand at 47'			6.2		946	BC = 36 S/H = 256
47	47								
50	50		gray, fine to medium grained sand. 2-5% black mineral grains. well consolidated			0.3		77	BC = 50 (7") S/H = 141
52	52								
55			TD = 50' Set Screen 35-50						
20									
25									
30									
35									
40									

Comments:

Materials: 1 silt trap, 1 10' screen, 1 5' screen, 4 10' risers, 1 5' riser
7 sacks silica sand.

Geologist Signature _____

MONITORING WELL INSTALLATION RECORD

Philip Environmental Services Corp.
1000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Borehole # 1
Well # MW-B1
Page 1 of 1

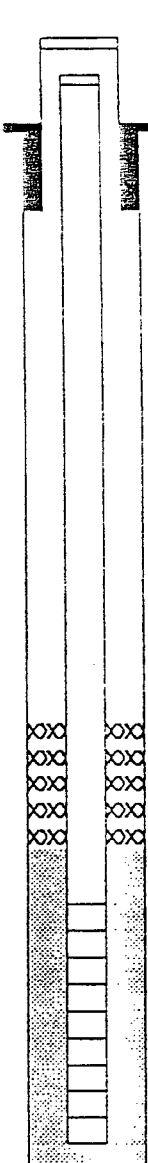
Project Name Durington Drilling

Project Number 21057 Phase POD-99
Project Location Johnson Federal #4

On-Site Geologist P Cheney
Personnel On-Site K Padilla, D Padilla
Contractors On-Site
Client Personnel On-Site Ed Haseley

Elevation _____
Well Location _____
GWL Depth 42'
Installed By K Padilla
D Padilla
Date/Time Started 5/13/99 1300
Date/Time Completed 6/4/99 1300

Depths in Reference to Ground Surface		
Item	Material	Depth
Top of Protective Casing		
Bottom of Protective Casing		
Top of Permanent Borehole Casing		
Bottom of Permanent Borehole Casing		
Top of Concrete		
Bottom of Concrete		
Top of Grout		
Bottom of Grout		
Top of Well Riser		
Bottom of Well Riser		
Top of Well Screen		
Bottom of Well Screen		
Top of Peltonite Seal		
Bottom of Peltonite Seal		
Top of Gravel Pack		
Bottom of Gravel Pack		
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		
Total Depth of Borehole		



Top of Protective Casing ±3'

Top of Riser ±2'

Ground Surface 0'

Top of Seal 31'

Top of Gravel Pack 33'

Top of Screen 35'

Bottom of Screen 50'

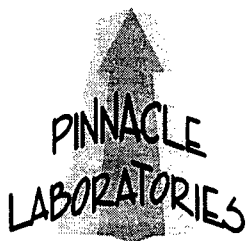
Bottom of Borehole 52'

Comments: _____

Geologist Signature

Paul Cheney For Paul Cheney

Analytical Results - Groundwater



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **905083**
July 14, 1999

PHILIP SERVICES
4000 MONROE RD.
FARMINGTON, NM 87401

Project Name BURL. PITS
Project Number 21057

Attention: C. IRBY

On 5/22/99 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Due to the lateness of this report, there will be no charge for the analyses.

EPA method 8021 was performed by Pinnacle Laboratories, Inc., Albuquerque, NM.

All other parameters were performed by ESL (OR) Inc., Portland, OR.

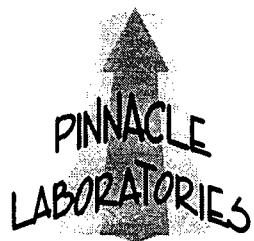
If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

Kimberly D. McNeill
Project Manager

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: mt

Enclosure

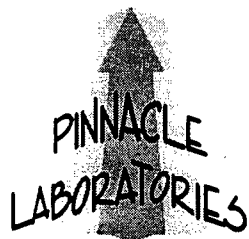


2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT : PHILIP SERVICES
PROJECT # : 21057
PROJECT NAME : BURL. PITS

PINNACLE ID : 905083
DATE RECEIVED : 5/22/99
REPORT DATE : 7/14/99

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	PC-03JF6A89232	AQUEOUS	5/21/99
02	PC-04JF470194	AQUEOUS	5/21/99



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP SERVICES
PROJECT # : 21057
PROJECT NAME : BURL. PITS

PINNACLE I.D.: 905083

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	PC-03JF6A89232	AQUEOUS	5/21/99	NA	5/25/99	1
02	PC-04JF470194	AQUEOUS	5/21/99	NA	5/25/99	100

PARAMETER	DET. LIMIT	UNITS	PC-03JFGA89232	PC-04JF470194
BENZENE	0.5	UG/L	< 0.5	8700
TOLUENE	0.5	UG/L	< 0.5	2900
ETHYLBENZENE	0.5	UG/L	< 0.5	2800
TOTAL XYLENES	0.5	UG/L	0.5	29000
1,3,5-TRIMETHYLBENZENE	0.5	UG/L	< 0.5	1100
1,2,4-TRIMETHYLBENZENE	0.5	UG/L	< 0.5	2300
METHYL-t-BUTYL ETHER	2.5	UG/L	< 2.5	< 250

SURROGATE:

BROMOFLUOROBENZENE (%)

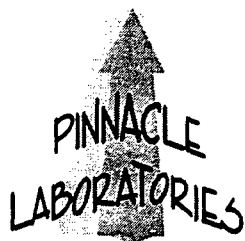
103

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SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 905083
BLANK I. D.	: 052599	DATE EXTRACTED	: NA
CLIENT	: PHILIP SERVICES	DATE ANALYZED	: 5/25/99
PROJECT #	: 21057	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BURL. PITS		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5
1,3,5-TRIMETHYLBENZENE	UG/L	<0.5
1,2,4-TRIMETHYLBENZENE	UG/L	<0.5

SURROGATE:

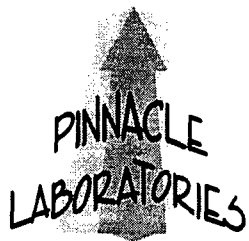
BROMOFLUOROBENZENE (%)

102

SURROGATE LIMITS: (80 - 120)

CHEMIST NOTES:

N/A



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 905065-03
CLIENT : PHILIP SERVICES
PROJECT # : 21057
PROJECT NAME : BURL. PITS

PINNACLE I.D. : 905083
DATE EXTRACTED : NA
DATE ANALYZED : 5/25/99
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	10.0	10.3	103	10.9	109	6	(80 - 120)	20
TOLUENE	<0.5	10.0	10.5	105	10.6	106	1	(80 - 120)	20
ETHYLBENZENE	<0.5	10.0	10.7	107	10.6	106	1	(80 - 120)	20
TOTAL XYLENES	<0.5	30.0	31.9	106	32.0	107	0	(80 - 120)	20
METHYL-T-BUTYL ETHER	<2.5	10.0	9.6	96	9.4	94	2	(70 - 133)	20

CHEMIST NOTES:
N/A

% Recovery = $\frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$

RPD (Relative Percent Difference) = $\frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$

Environmental Services Laboratory, Inc.

17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 670-8520

July 09, 1999

Kim McNeill
Pinnacle Laboratories
2709-D Pan American Fwy NE
Albuquerque, NM 87107

TEL: 505-344-3777
FAX (505) 344-4413

RE: 905083/PHIL/Barl. Pits

Order No.: 9905121

Dear Kim McNeill,

Environmental Services Laboratory received 2 samples on 05/25/99 for the analyses presented in the following report.

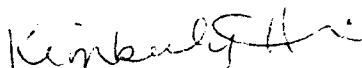
The Samples were analyzed for the following tests:

CHLORIDE (Chloride)
ICP Metals (ICPMET)
MERCURY (Mercury)
Nitrate/Nitrite (Nitrogen)
Sulfate (Sulfate)
TOTAL DISSOLVED SOLIDS (E160.1)

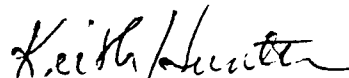
There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval from the Laboratory.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,



Kimberly Hill
Project Manager



Technical Review

ANALYTICAL SERVICES FOR THE ENVIRONMENT

Environmental Services Laboratory

Date: 13-Jul-99

CLIENT: Pinnacle Laboratories
Lab Order: 9905121
Project: 905083/PHIL/Barl. Pits
Lab ID: 9905121-01A

Client Sample ID: 905083-01
Tag Number:
Collection Date: 05/21/99
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE		EPA 325.3				Analyst: kfl
Chloride	15	50		mg/L	20	05/26/99
NITRATE/NITRITE		EPA 353.3				Analyst: sld
Nitrogen, N+N	ND	0.05		mg/L	1	05/28/99
SULFATE		EPA 375.4				Analyst: sld
Sulfate	1100	420		mg/L	83.3	05/27/99
TOTAL DISSOLVED SOLIDS		EPA 160.1				Analyst: kfl
Total Dissolved Solids (Residue, Filterable)	2000	10		mg/L	1	05/25/99
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.002		mg/L	1	06/08/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Arsenic	ND	0.05		mg/L	1	06/16/99
Barium	ND	0.3		mg/L	1	06/16/99
Cadmium	ND	0.005		mg/L	1	06/16/99
Chromium	ND	0.05		mg/L	1	06/16/99
Lead	ND	0.05		mg/L	1	06/16/99
Selenium	ND	0.05		mg/L	1	06/16/99
Silver	ND	0.05		mg/L	1	06/16/99

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: 13-Jul-99

CLIENT: Pinnacle Laboratories
 Lab Order: 9905121
 Project: 905083/PHIL/Barl. Pits
 Lab ID: 9905121-02A

Client Sample ID: 905083-02
 Tag Number:
 Collection Date: 05/21/99
 Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE		EPA 325.3				Analyst: kfl
Chloride	75	50		mg/L	100	05/26/99
NITRATE/NITRITE		EPA 353.3				Analyst: sld
Nitrogen, N+N	ND	0.05		mg/L	1	05/28/99
SULFATE		EPA 375.4				Analyst: sld
Sulfate	170	62		mg/L	12.5	05/27/99
TOTAL DISSOLVED SOLIDS		EPA 160.1				Analyst: kfl
Total Dissolved Solids (Residue, Filterable)	1800	10		mg/L	1	05/25/99
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.002		mg/L	1	06/08/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Arsenic	ND	0.05		mg/L	1	06/16/99
Barium	ND	0.3		mg/L	1	06/16/99
Cadmium	ND	0.005		mg/L	1	06/16/99
Chromium	ND	0.05		mg/L	1	06/16/99
Lead	ND	0.05		mg/L	1	06/16/99
Selenium	ND	0.05		mg/L	1	06/16/99
Silver	ND	0.05		mg/L	1	06/16/99

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 * - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 E - Value above quantitation range

Environmental Services Laboratory

Date: 09-Jul-99

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT Method Blank

Sample ID: MBlank	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/26/99	Prep Date:
Client ID: 9905121	Run ID: NO INST_990526A			SeqNo: 9937	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	ND	0.5			
Sample ID: MBlank	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/07/99	Prep Date:
Client ID: 9905121	Run ID: NO INST_990507B			SeqNo: 11086	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	ND	0.5			
Sample ID: MBlank	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/17/99	Prep Date:
Client ID: 9905121	Run ID: NO INST_990517C			SeqNo: 11134	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	ND	0.5			
Sample ID: MBlank	Batch ID: 01 N+N-6/2/9	Test Code: Nitrogen	Units: mg/L	Analysis Date 05/28/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990528B			SeqNo: 11800	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Nitrogen, N+N	ND	0.05			
Sample ID: MBlank	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/21/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990521B			SeqNo: 9661	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	ND	5			

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT
Method Blank

Sample ID: MBlank	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/27/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990527A		SeqNo: 9765		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	ND		5		
Sample ID: MBlank	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 04/29/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990429A		SeqNo: 10621		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	ND		5		
Sample ID: MBlank	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/12/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990512B		SeqNo: 10869		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	ND		5		
Sample ID: MBlank	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/20/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990520A		SeqNo: 10997		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	ND		5		
Sample ID: MBlank	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/25/99	Prep Date:
Client ID: 9905121	Run ID: NO INST_990525C		SeqNo: 10233		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Total Dissolved Solids (Residue, Filtera	ND		10		

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT
Method Blank

Sample ID: MBlank	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/26/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990526C	SeqNo: 10284	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera ND 10					
Sample ID: MBlank	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 04/28/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990428C	SeqNo: 11254	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera ND 10					
Sample ID: MBlank	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/05/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990505B	SeqNo: 11272	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera ND 10					
Sample ID: MBlank	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/11/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990511D	SeqNo: 11287	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera ND 10					
Sample ID: MBlank	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/18/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990518B	SeqNo: 11307	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera ND 10					

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT
Method Blank

Sample ID: MB-489	Batch ID: 489	Test Code: ICPMET	Units: mg/L	Analysis Date: 06/16/99	Prep Date: 05/28/99
Client ID: 9905121	Run ID: ICP_990616D	SeqNo: 16862			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.05									
Barium	ND	0.3									
Cadmium	ND	0.005									
Calcium	ND	0.1									
Chromium	ND	0.05									
Copper	ND	0.02									
Iron	ND	0.1									
Lead	ND	0.05									
Magnesium	ND	0.02									
Manganese	ND	0.02									
Potassium	ND	0.1									
Selenium	ND	0.05									
Silver	ND	0.05									
Sodium	ND	0.2									
Zinc	ND	0.02									

Sample ID: MB-513	Batch ID: 513	Test Code: Mercury	Units: mg/L	Analysis Date: 06/08/99	Prep Date: 06/07/99
Client ID: 9905121	Run ID: MERC_990608A	SeqNo: 13237			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0002									

Qualifiers: NND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

Environmental Services Laboratory

Date: 09-Jul-99

CLIENT: Pinnacle Laboratories
Work Order: 9905121

QC SUMMARY REPORT

Project: 905083/PHIL/Bart. Pits

Sample Duplicate

Sample ID: 9904166-01A DUP	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/07/99	Prep Date:	
Client ID:	9905121	Run ID:	NO INST_990507B	SeqNo: 11108		
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chloride	38	5	0	0	0.0%	0 0 40 5.1% 20
Sample ID: 9904166-02A DUP	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/07/99	Prep Date:	
Client ID:	9905121	Run ID:	NO INST_990507B	SeqNo: 11112		
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chloride	32	5	0	0	0.0%	0 0 35 9.0% 20
Sample ID: 9905030-01A DUP	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/17/99	Prep Date:	
Client ID:	9905121	Run ID:	NO INST_990517C	SeqNo: 11137		
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chloride	140	5	0	0	0.0%	0 0 130 7.4% 20
Sample ID: 9905097-02A DUP	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/26/99	Prep Date:	
Client ID:	9905121	Run ID:	NO INST_990526A	SeqNo: 9944		
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chloride, Diss	5	0.5	0	0	0.0%	0 0 5.25 4.9% 20
Sample ID: 9905133-05A DUP	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/26/99	Prep Date:	
Client ID:	9905121	Run ID:	NO INST_990526A	SeqNo: 9959		
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chloride, Diss	17.5	5	0	0	0.0%	0 0 17.5 0.0% 20

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

B - Analyte detected in the associated Method Blank

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT

Sample Duplicate

Sample ID: 9904111-01A DUP	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 04/29/99	Prep Date:	
Client ID: 9905121	Run ID: HIT MAN_990429A		SeqNo: 10624			
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	59.02	12	0	0	0.0%	80 120 56.18 4.9% 20
Sample ID: 9904157-03A DUP	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 04/29/99	Prep Date:	
Client ID: 9905121	Run ID: HIT MAN_990429A		SeqNo: 10662			
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	233.1	62	0	0	0.0%	80 120 203.9 13.4% 20
Sulfate, Diss	ND	62	0	0	0.0%	80 120 0 0.0% 20
Sample ID: 9904166-01A DUP	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/12/99	Prep Date:	
Client ID: 9905121	Run ID: HIT MAN_990512B		SeqNo: 10872			
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	126.9	62	0	0	0.0%	80 120 130.2 2.6% 20
Sample ID: 9905045-01A DUP	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/20/99	Prep Date:	
Client ID: 9905121	Run ID: HIT MAN_990520A		SeqNo: 11008			
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	134.4	25	0	0	0.0%	80 120 121 10.5% 20
Sample ID: 9905078-01A DUP	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/21/99	Prep Date:	
Client ID: 9905121	Run ID: HIT MAN_990521B		SeqNo: 9668			
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	574.8	120	0	0	0.0%	80 120 494 15.1% 20

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL./Barl. Pits

QC SUMMARY REPORT
Sample Duplicate

Sample ID: 9905097-02A DUP		Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/27/99	Prep Date:					
Client ID:	9905121	Run ID:	HIT MAN_990527A	SeqNo: 9769							
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate, Diss	13	5	0	0	0.0%	80	120	13	0.0%	20	-
Sample ID: 9904140-04A DUP		Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 04/28/99	Prep Date:					
Client ID:	9905121	Run ID:	NO INST_990428C	SeqNo: 11267							
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	510	10	0	0	0.0%	0	0	480	6.1%	20	
Sample ID: 9905011-03A DUP		Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/05/99	Prep Date:					
Client ID:	9905121	Run ID:	NO INST_990505B	SeqNo: 11286							
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	470	10	0	0	0.0%	0	0	470	0.0%	20	
Sample ID: 9905026-01A DUP		Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/11/99	Prep Date:					
Client ID:	9905121	Run ID:	NO INST_990511D	SeqNo: 11290							
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	430	10	0	0	0.0%	0	0	420	2.4%	20	
Sample ID: 9905053-01A DUP		Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/18/99	Prep Date:					
Client ID:	9905121	Run ID:	NO INST_990518B	SeqNo: 11310							
Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	440	10	0	0	0.0%	0	0	420	4.7%	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT
Sample Duplicate

Sample ID: 9905098-01A DUP Batch ID: 01 TDS-6/1/99 Test Code: E160.1 Units: mg/L Analysis Date: 05/26/99 Prep Date:

Client ID: 9905121 Run ID: NO INST_990525C SeqNo: 10238

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Lowlimit	Highlimit	RPD Ref Val	%RPD	RPDLimit	Qual
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Total Dissolved Solids (Residue, Filtera	15	10	0	0	0.0%	0	0	34	77.6%	20	R,T
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Sample ID: 9905133-03A DUP Batch ID: 01 TDS-6/1/99 Test Code: E160.1 Units: mg/L Analysis Date: 05/26/99 Prep Date:

Client ID: 9905121 Run ID: NO INST_990526C SeqNo: 10287

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Lowlimit	Highlimit	RPD Ref Val	%RPD	RPDLimit	Qual
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Total Dissolved Solids (Residue, Filtera	110	10	0	0	0.0%	0	0	130	16.7%	20	
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Sample ID: 9905102-01A DUP Batch ID: 489 Test Code: ICPMET Units: mg/L Analysis Date: 06/16/99 Prep Date: 05/28/99

Client ID: 9905121 Run ID: ICP_990616D SeqNo: 16864

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Lowlimit	Highlimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.05	0	0	0.0%	0	0	0	0.0%	20	
Barium	ND	0.3	0	0	0.0%	0	0	0	0.0%	20	
Cadmium	ND	0.005	0	0	0.0%	0	0	0	0.0%	20	
Calcium	2.91	0.1	0	0	0.0%	0	0	2.5	15.2%	20	
Chromium	ND	0.05	0	0	0.0%	0	0	0	0.0%	20	
Copper	ND	0.02	0	0	0.0%	0	0	0	0.0%	20	
Iron	ND	0.1	0	0	0.0%	0	0	0	0.0%	20	
Lead	ND	0.05	0	0	0.0%	0	0	0	0.0%	20	
Magnesium	2.02	0.02	0	0	0.0%	0	0	2.01	0.5%	20	
Manganese	.678	0.02	0	0	0.0%	0	0	0.668	1.5%	20	
Potassium	.772	0.1	0	0	0.0%	0	0	0.911	16.5%	20	
Selenium	ND	0.05	0	0	0.0%	0	0	0	0.0%	20	
Silver	ND	0.05	0	0	0.0%	0	0	0	0.0%	20	
Sodium	4.73	0.2	0	0	0.0%	0	0	4.67	1.3%	20	
Zinc	ND	0.02	0	0	0.0%	0	0	0	0.0%	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT
Sample Duplicate

Sample ID: 9906044-12A DUP Batch ID: 513 Test Code: Mercury Units: mg/L Analysis Date 06/08/99 Prep Date: 06/07/99

Client ID: 9905121 Run ID: MERC_990608A SeqNo: 13240

Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0002	0	0	0.0%	0	0	0	0.0%	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

Environmental Services Laboratory

Date: 09-Jul-99

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9904166-01A MS	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/07/99	Prep Date:
Client ID: 9905121	Run ID: NO INST_990507B			SeqNo: 11109	
Analyte	Result	POL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	82	5	50	40	84.0% 75 125 0
Sample ID: 9904166-01A MSD	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/07/99	Prep Date:
Client ID: 9905121	Run ID: NO INST_990507B			SeqNo: 11110	
Analyte	Result	POL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	85	5	50	40	90.0% 75 125 82 3.6% 20
Sample ID: 9904166-02A MS	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/07/99	Prep Date:
Client ID: 9905121	Run ID: NO INST_990507B			SeqNo: 11113	
Analyte	Result	POL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	90	5	50	35	110.0% 75 125 0
Sample ID: 9904166-02A MSD	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/07/99	Prep Date:
Client ID: 9905121	Run ID: NO INST_990507B			SeqNo: 11114	
Analyte	Result	POL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	80	5	50	35	90.0% 75 125 90 11.8% 20
Sample ID: 9905030-01A MS	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/17/99	Prep Date:
Client ID: 9905121	Run ID: NO INST_990517C			SeqNo: 11138	
Analyte	Result	POL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	240	5	100	130	110.0% 75 125 0

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

B - Analyte detected in the associated Method Blank

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT
 Sample Matrix Spike Duplicate

Sample ID: 9905030-01A MSD	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/17/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990517C	SeqNo: 11139	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	230	5	100	130	100.0% 75 125 240 4.3% 20
Sample ID: 9905097-02A MS	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/26/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990526A	SeqNo: 9945	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride, Diss	16	0.5	10	5.25	107.5% 75 125 0 6.5% 20
Sample ID: 9905097-02A MSD	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/26/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990526A	SeqNo: 9946	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride, Diss	15	0.5	10	5.25	97.5% 75 125 16 6.5% 20
Sample ID: 9905133-05A MS	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/26/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990526A	SeqNo: 9960	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride, Diss	122.5	5	100	17.5	105.0% 75 125 0
Sample ID: 9905133-05A MSD	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/26/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990526A	SeqNo: 9961	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride, Diss	117.5	5	100	17.5	100.0% 75 125 122.5 4.2% 20

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT
Sample Matrix Spike

Sample ID: 9904111-01A MS	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 04/29/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990429A	SeqNo: 10625			
Analyle	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual

Sulfate	96.15	25	50	56.18	80.0%	75	125	0	
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Sample ID: 9904111-01A MSD	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 04/29/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990429A	SeqNo: 10626			
Analyle	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual

Sulfate	96.15	25	50	56.18	80.0%	75	125	96.15	0.0%	20	
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Sample ID: 9904157-03A MS	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 04/29/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990429A	SeqNo: 10663			
Analyle	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual

Sample ID: 9904157-03A MSD	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 04/29/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990429A	SeqNo: 10664			
Analyle	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual

Sample ID: 9904166-01A MS	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/12/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990512B	SeqNo: 10873			
Analyle	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual

Sulfate	1064	500	800	130.2	116.7%	75	125	0		
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Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT

Sample Matrix Spike Duplicate

Sample ID: 9904166-01A MSD **Batch ID:** 01 SULFATE **Test Code:** Sulfate **Units:** mg/L **Analysis Date:** 05/12/99 **Prep Date:**

Client ID: 9905121 **Run ID:** HIT MAN_990512B **SeqNo:** 10874

Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	1063	500	800	130.2	116.6%	75	125	1064	0.1%	20	

Sample ID: 9905045-01A MS **Batch ID:** 01 SULFATE **Test Code:** Sulfate **Units:** mg/L **Analysis Date:** 05/20/99 **Prep Date:**

Client ID: 9905121 **Run ID:** HIT MAN_990520A **SeqNo:** 11010

Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	98.85	42	66	121	-33.6%	75	125	0			S,H

Sample ID: 9905045-01A MSD **Batch ID:** 01 SULFATE **Test Code:** Sulfate **Units:** mg/L **Analysis Date:** 05/20/99 **Prep Date:**

Client ID: 9905121 **Run ID:** HIT MAN_990520A **SeqNo:** 11012

Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	99.02	42	66	121	-33.3%	75	125	98.85	0.2%	20	S,H

Sample ID: 9905078-01A MS **Batch ID:** 01 SULFATE **Test Code:** Sulfate **Units:** mg/L **Analysis Date:** 05/21/99 **Prep Date:**

Client ID: 9905121 **Run ID:** HIT MAN_990521B **SeqNo:** 9669

Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	839.8	120	300	494	115.3%	75	125	0			

Sample ID: 9905078-01A MSD **Batch ID:** 01 SULFATE **Test Code:** Sulfate **Units:** mg/L **Analysis Date:** 05/21/99 **Prep Date:**

Client ID: 9905121 **Run ID:** HIT MAN_990521B **SeqNo:** 9670

Analyte	Result	POL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	803	120	300	494	103.0%	75	125	839.8	4.5%	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9905097-02A MS	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date: 05/27/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990527A	SeqNo: 9770			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate, Diss	20.2	5	8	13	90.0% 75 125 0
Sample ID: 9905097-02A MSD	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date: 05/27/99	Prep Date:
Client ID: 9905121	Run ID: HIT MAN_990527A	SeqNo: 9771			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate, Diss	20.3	5	8	13	91.3% 75 125 20.2 0.5% 20
Sample ID: 9905102-01A MS	Batch ID: 489	Test Code: ICPMET	Units: mg/L	Analysis Date: 06/16/99	Prep Date: 05/28/99
Client ID: 9905121	Run ID: ICP_990616D	SeqNo: 16865			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Arsenic	.445	0.05	0.5	0	89.0% 80 120 0
Barium	.475	0.3	0.5	0	95.0% 80 120 0
Cadmium	.45	0.005	0.5	0	90.0% 80 120 0
Calcium	8.02	0.1	5	2.5	110.4% 80 120 0
Chromium	.45	0.05	0.5	0	90.0% 80 120 0
Copper	.416	0.02	0.5	0	83.2% 80 120 0
Iron	5.08	0.1	5	0	101.6% 80 120 0
Lead	.434	0.05	0.5	0	86.8% 80 120 0
Magnesium	6.85	0.02	5	2.01	96.8% 80 120 0
Manganese	1.13	0.02	0.5	0.668	92.4% 80 120 0
Potassium	5.59	0.1	5	0.911	93.6% 80 120 0
Selenium	.478	0.05	0.5	0	95.6% 80 120 0
Silver	.451	0.05	0.5	0	90.2% 80 120 0
Sodium	9.6	0.2	5	4.67	98.6% 80 120 0
Zinc	.438	0.02	0.5	0	87.6% 80 120 0

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QCC SUMMARY REPORT Sample Matrix Spike Duplicate

Sample ID: 9905102-01A MSD Batch ID: 489 Test Code: ICPMET Units: mg/L Analysis Date 06/16/99 Prep Date: 05/28/99

Client ID: 9905121 Run ID: ICP_990616D SeqNo: 16866

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	.442	0.05	0.5	0	88.4%	80	120	0.445	0.7%	20	
Barium	.468	0.3	0.5	0	93.6%	80	120	0.475	1.5%	20	
Cadmium	.445	0.005	0.5	0	89.0%	80	120	0.45	1.1%	20	
Calcium	7.96	0.1	5	2.5	109.2%	80	120	8.02	0.8%	20	
Chromium	.42	0.05	0.5	0	84.0%	80	120	0.45	6.9%	20	
Copper	.409	0.02	0.5	0	81.8%	80	120	0.416	1.7%	20	
Iron	5.04	0.1	5	0	100.8%	80	120	5.08	0.8%	20	
Lead	.43	0.05	0.5	0	86.0%	80	120	0.434	0.9%	20	
Magnesium	6.75	0.02	5	2.01	94.8%	80	120	6.85	1.5%	20	
Manganese	1.12	0.02	0.5	0.668	90.4%	80	120	1.13	0.9%	20	
Potassium	5.5	0.1	5	0.911	91.8%	80	120	5.59	1.6%	20	
Selenium	.444	0.05	0.5	0	88.8%	80	120	0.478	7.4%	20	
Silver	.445	0.05	0.5	0	89.0%	80	120	0.451	1.3%	20	
Sodium	9.39	0.2	5	4.67	94.4%	80	120	9.6	2.2%	20	
Zinc	.425	0.02	0.5	0	85.0%	80	120	0.438	3.0%	20	

Sample ID: 9906044-12A MSD Batch ID: 513 Test Code: Mercury Units: mg/L Analysis Date 06/08/99 Prep Date: 06/07/99

Client ID: 9905121 Run ID: MERC_990608A SeqNo: 13241

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	.00217	0.0002	0.002	0	108.5%	75	125	0			

Sample ID: 9906044-12A MSD Batch ID: 513 Test Code: Mercury Units: mg/L Analysis Date 06/08/99 Prep Date: 06/07/99

Client ID: 9905121 Run ID: MERC_990608A SeqNo: 13242

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	.00216	0.0002	0.002	0	108.0%	75	125	0.00217	0.5%	20	

Environmental Services Laboratory

Date: 09-Jul-99

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/26/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990526A	SeqNo: 9938	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	10	0.5	10	0	100.0% 85 115 0
Sample ID: LCS	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/07/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990507B	SeqNo: 11087	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	9.5	0.5	10	0	95.0% 85 115 0
Sample ID: LCS	Batch ID: 01 CL A-6/1/9	Test Code: Chloride	Units: mg/L	Analysis Date 05/17/99	Prep Date:
Client ID:	9905121	Run ID:	NO INST_990517C	SeqNo: 11135	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Chloride	10.3	0.5	10	0	103.0% 85 115 0
Sample ID: LCS	Batch ID: 01 N+N-6/2/9	Test Code: Nitrogen	Units: mg/L	Analysis Date 05/28/99	Prep Date:
Client ID:	9905121	Run ID:	HIT MAN_990528B	SeqNo: 11801	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Nitrogen, N+N	.324	0.05	0.3	0	108.0% 85 115 0
Sample ID: LCS	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/21/99	Prep Date:
Client ID:	9905121	Run ID:	HIT MAN_990521B	SeqNo: 9662	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	12	5	12	0	100.0% 85 115 0

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

B - Analyte detected in the associated Method Blank

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT
Laboratory Control Spike - generic

Sample ID: LCS	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/27/99	Prep Date:
Client ID:	9905121	Run ID: HIT MAN_990527A	SeqNo: 9766		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	7.816	5	8	0	97.7% 85 115 0
Sample ID: LCS	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 04/29/99	Prep Date:
Client ID:	9905121	Run ID: HIT MAN_990429A	SeqNo: 10622		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	10	5	10	0	100.0% 85 115 0
Sample ID: LCS	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/12/99	Prep Date:
Client ID:	9905121	Run ID: HIT MAN_990512B	SeqNo: 10870		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	7.43	5	8	0	92.9% 85 115 0
Sample ID: LCS	Batch ID: 01 SULFATE	Test Code: Sulfate	Units: mg/L	Analysis Date 05/20/99	Prep Date:
Client ID:	9905121	Run ID: HIT MAN_990520A	SeqNo: 10999		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Sulfate	7.03	5	8	0	87.9% 85 115 0
Sample ID: LCS	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/25/99	Prep Date:
Client ID:	9905121	Run ID: NO INST_990525C	SeqNo: 10234		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC Lowlimit Highlimit RPD Ref Val %RPD RPDlimit Qual
Total Dissolved Solids (Residue, Filtera	3674	10	3966	0	92.6% 85 115 0

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QCC SUMMARY REPORT
Laboratory Control Spike - generic

Sample ID: LCS	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/26/99	Prep Date:	
Client ID:	9905121	Run ID: NO INST_990526C		SeqNo: 10285		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	4080	10	3966	0	102.9%	85 115 0
Sample ID: LCS	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 04/28/99	Prep Date:	
Client ID:	9905121	Run ID: NO INST_990428C		SeqNo: 11255		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	3550	10	3966	0	89.5%	85 115 0
Sample ID: LCS	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/05/99	Prep Date:	
Client ID:	9905121	Run ID: NO INST_990505B		SeqNo: 11273		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	3490	10	3966	0	88.0%	85 115 0
Sample ID: LCS	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/11/99	Prep Date:	
Client ID:	9905121	Run ID: NO INST_990511D		SeqNo: 11288		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	3630	10	3966	0	91.5%	85 115 0
Sample ID: LCS	Batch ID: 01 TDS-6/1/99	Test Code: E160.1	Units: mg/L	Analysis Date 05/18/99	Prep Date:	
Client ID:	9905121	Run ID: NO INST_990518B		SeqNo: 11308		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	3610	10	3966	0	91.0%	85 115 0

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Bart. Pits

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS-489 Batch ID: 489 Test Code: ICPMET Units: mg/L Analysis Date 06/16/99 Prep Date: 06/28/99

Client ID: 9905121 Run ID: ICP_990616D SeqNo: 16861

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	.438	0.05	0.5	0	87.6%	80	120	0			
Barium	.426	0.3	0.5	0	85.2%	80	120	0			
Cadmium	.437	0.005	0.5	0	87.4%	80	120	0			
Calcium	4.85	0.1	5	0	97.0%	80	120	0			
Chromium	.414	0.05	0.5	0	82.8%	80	120	0			
Copper	.4	0.02	0.5	0	80.0%	80	120	0			
Iron	4.96	0.1	5	0	99.2%	80	120	0			
Lead	.429	0.05	0.5	0	85.8%	80	120	0			
Magnesium	4.57	0.02	5	0	91.4%	80	120	0			
Manganese	.435	0.02	0.5	0	87.0%	80	120	0			
Potassium	4.49	0.1	5	0	89.8%	80	120	0			
Selenium	.438	0.05	0.5	0	87.6%	80	120	0			
Silver	.432	0.05	0.5	0	86.4%	80	120	0			
Sodium	4.56	0.2	5	0	91.2%	80	120	0			
Zinc	.42	0.02	0.5	0	84.0%	80	120	0			

Sample ID: LCS-513 Batch ID: 513 Test Code: Mercury Units: mg/L Analysis Date 06/08/99 Prep Date: 06/07/99

Client ID: 9905121 Run ID: MERC_990608A SeqNo: 13238

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	.00101	0.0002	0.001	0	101.0%	80	120	0			

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

Environmental Services Laboratory

Date: 09-Jul-99

CLIENT: Pinnacle Laboratories
Work Order: 9905121
Project: 905083/PHIL/Barl. Pits

QC SUMMARY REPORT Initial Calibration Verification Standard

Sample ID: ICV	Batch ID: 513	Test Code: Mercury	Units: mg/L	Analysis Date: 06/08/99	Prep Date: 06/07/99
Client ID:	9905121	Run ID: MERC_990608A		SeqNo: 13260	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	.00216	0.0002	0.002	0	108.0% 90 110 0

Qualifiers: NID - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

Network Project Manager: Kimberly D. McNeill

Pinnacle Laboratories, Inc.

2709-D Pan American Freeway, NE
Albuquerque, New Mexico 87107

(505) 344-3777 Fax (505) 344-4413

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Metals (8) RCRA	RCRA TCLP METALS	Metals-13 PP List	Metals-TAL	TOX	TOC	Gen Chemistry : Cl, SO ₄ , TDS	Total NO ₂ /NO ₃	Oil and Grease	Volatile Organics GC/MS (8260)	BOD	COD	PESTICIDES/PCB (608/8080)	8270 BY GC/MS	PNA (8310)	8240 (TCLP 1311) ZHE	Herbicides (615/8150)	Base/Neutral Acid Compounds GC/MS (625/8270)	URANIUM	RADIUM 226+228	Gross Alpha/Beta	TO-14	NUMBER OF CONTAINERS
905083-01	5/21	1200	AQ	01	X						X	X															
-02	"	1245	"	02	X						X	X															

PROJECT INFORMATION

SAMPLE RECEIPT

SAMPLES SENT TO:

RELINQUISHED BY:

RELINQUISHED BY:

PROJECT #: 905083

Total Number of Containers

PENSACOLA - STL-FL

Signature: *Kimberly D. McNeill* Time: 1:00

Signature: _____ Time: _____

PROJ. NAME: PHL

Chain of Custody Seals

PORTLAND - ESL-OR

Signature: _____ Time: _____

Signature: _____ Time: _____

QC LEVEL: STD IV

Received Intact?

STL - CT

Printed Name: *Kimberly D. McNeill* Date: 5/24/99

Printed Name: _____ Date: _____

QC REQUIRED: MS MSD BLANK

Received Good Cond./Cold

STL - NEW JERSEY

Printed Name: *Kimberly D. McNeill* Date: 5/24/99

Printed Name: _____ Date: _____

TAT: STANDARD RUSH!!

LAB NUMBER:

N. CREEK

Signature: _____ Time: _____

Signature: _____ Time: _____

DUE DATE: 6/4

COMMENTS:

BARRINGER

Signature: _____ Time: _____

Signature: _____ Time: _____

RUSH SURCHARGE: -

SEQUOIA

Signature: _____ Time: _____

Signature: _____ Time: _____

CLIENT DISCOUNT: -

PRINTED NAME:

Signature: _____ Time: _____

Signature: _____ Time: _____

SPECIAL CERTIFICATION

PRINTED NAME:

Signature: _____ Time: _____

Signature: _____ Time: _____

REQUIRED: YES (NO)

PRINTED NAME:

Signature: _____ Time: _____

Signature: _____ Time: _____

SHADED AREAS ARE FOR LAB USE ONLY.

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 5/21/99 PAGE: 1 OF 7

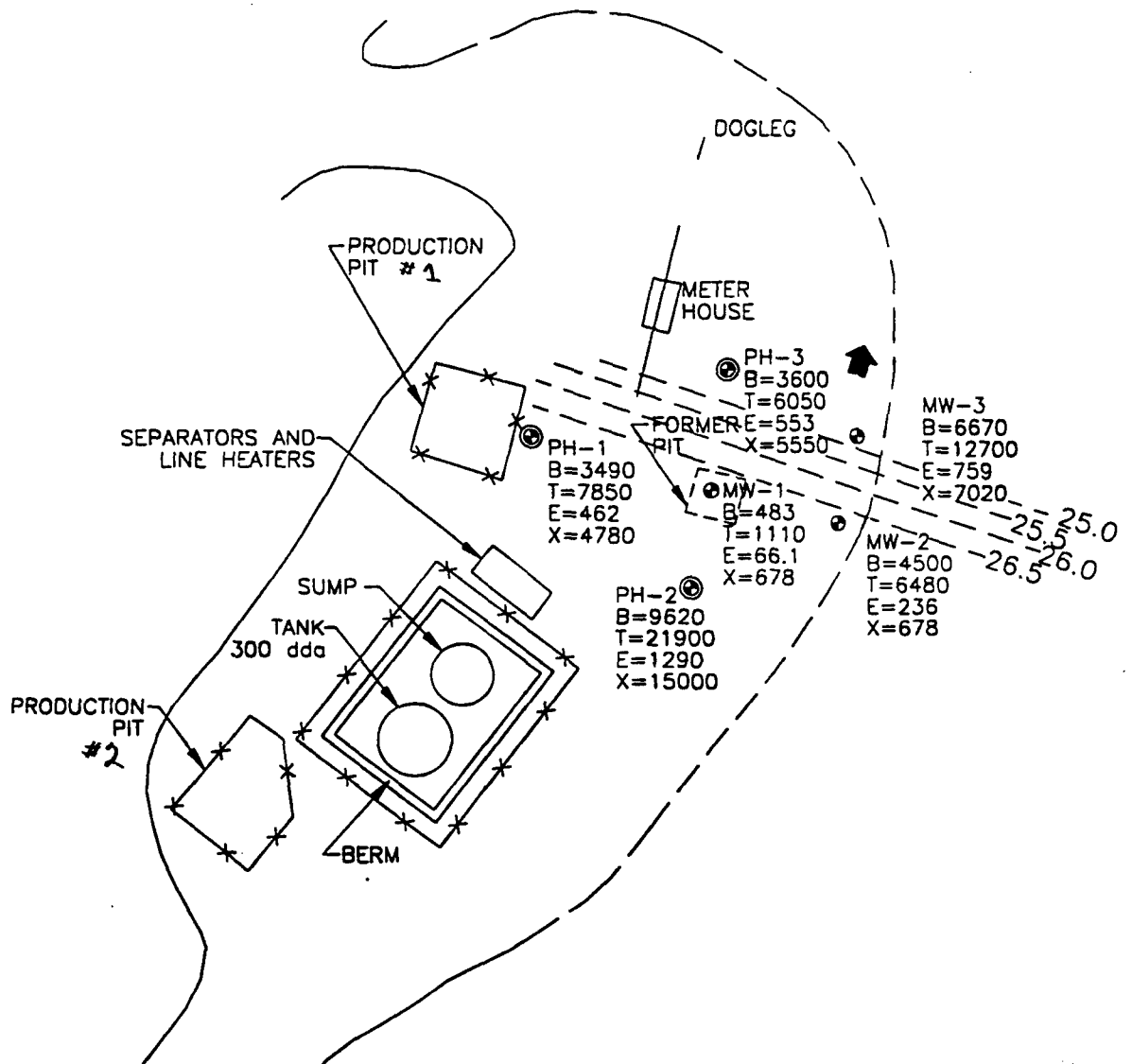
PLI Accession # 01

905083

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Location Diagram



LEGEND

⊙ PZ-1 APPROXIMATE PIEZOMETER LOCATION AND NUMBER

⊙ MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER

B BENZENE (ug\L)
T TOLUENE (ug\L)
E ETHYL BENZENE (ug\L)
X XYLENE (ug\L)

ug\L MICROGRAMS PER LITER

25.0 GROUNDWATER POTENTIOMETRIC SURFACE

➔ APPROXIMATE GROUNDWATER GRADIENT

0 40
FEET

COL. 17520BP-001



TITLE:

JOHNSTON FEDERAL NO. 4
70194

OWNER:

TMM

DES.:

CC

PROJECT NO.:

17520

EPFS GW PITS

CHKD:

CC

APPD:

DATE:

1/21/98

REV.:

0

FIGURE 1