

3R - 174

REPORTS

DATE:

2000



Certified Mail: #7000 1670 0012 7260 6739

February 26, 2001

Mr. William C. Olson
New Mexico Oil Conservation Division
1220 St. Francis Dr.
Santa Fe, NM 87504

RECEIVED

FEB 28 2001

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

RE: 2000 Pit Project Annual Groundwater Report

Dear Mr. Olson:

In accordance with reporting requirements, El Paso Field Services (EPFS) has enclosed annual updates for the 32 remaining groundwater impacted sites that were identified during our pit closure project of 1994 / 1995.

Of the 32 reports (Volumes 1-4), EPFS hereby requests closure of six sites. The six sites EPFS is requesting closure on are presented in one separate binder entitled "San Juan Basin Pit Closures, El Paso Field Services, Pit Closure Reports". Four of the six sites were submitted in last years report and a decision has not been made on closure. The remaining two sites have been submitted in previous years and denied closure.

The Jaquez Com. C #1 and Jaquez Com. E #1 site is not included in with this years report and will be submitted by the required deadline of April 1, 2001

EPFS has also included for your information six Navajo sites in a separate binder.

If you have any questions concerning the enclosed reports or closure requests, please call me at (505) 599-2124.

Sincerely,

A handwritten signature in black ink, appearing to read 'Scott T. Pope', with a stylized flourish at the end.

Scott T. Pope P.G.
Senior Environmental Scientist

xc: Mr. Denny Foust, NMOCD, Aztec - w / enclosures; **Certified Mail # 7000 1670 0012 7260 6722**
Mr. Bill Liesse, BLM - w / enclosures (federal sites only), **Certified Mail # 7000 1670 0012 7260 6715**

SAN JUAN BASIN PIT CLOSURES
San Juan Basin, New Mexico

El Paso Field Services
Pit Project Groundwater Report
Annual Report
Volume II

March 2001

Prepared For

El Paso Field Services
Farmington, New Mexico

Project 62800398



178

EPFS GROUNDWATER PITS

2000 ANNUAL GROUNDWATER REPORT

FOGELSON 4-1 COM #14

Meter/Line ID - 73220

SITE DETAILS

Legals - Twn: 29N Rng: 11W Sec: 4 Unit: P
NMOCD Hazard Ranking: 10 Land Type: FEDERAL
Operator: BURLINGTON RESOURCES

PREVIOUS ACTIVITIES

Site Assessment: Mar-94 Excavation: Apr-94 (65 cy) Soil Boring: Oct-95
Monitor Well: Oct-95 Geoprobe: Dec-96 Quarterly Sampling Initiated: Dec-96
Annual Sampling Initiated: Jun-98 Quarterly Sampling Resumed: Jun-00
Additional Monitor Wells: Jun-00

2000 ACTIVITIES

Quarterly Groundwater Monitoring – Quarterly groundwater monitoring was resumed in June of 2000 for MW-1.

Monitor Well Installation – The groundwater gradient was estimated from topography and down gradient wells were drilled, as recommended in the 1999 Annual Groundwater Report to define the extent of hydrocarbon migration.

SUMMARY TABLES

Groundwater analytical data is presented in Table 1. Copies of the laboratory data sheets and the associated quality assurance/quality control data are presented in Attachment 1.

SITE MAP

A site map for the last two quarters of 2000, with groundwater elevations and gradients, are presented as Figures 1 and 2.

GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

Drilling activities were conducted on June 29-30, 2000, and the geologic logs and well completion diagrams are presented in Attachment 2.

DISPOSITION OF GENERATED WASTES

There were no wastes generated at this site in 2000.

ISOCONCENTRATION MAPS

Isoconcentration maps were generated for benzene, toluene, ethyl benzene, and total xylenes and are included as Figures 3-6.

CONCLUSIONS

Quarterly sampling was resumed in June of 2000. Analytical results of groundwater samples from MW-1 show levels of benzene, ethyl benzene and total xylenes above NMWQCC groundwater standards.

EPFS GROUNDWATER PITS 2000 ANNUAL GROUNDWATER REPORT

Additional monitoring wells, MW-2 and MW-3, were installed downgradient of MW-1 so that the extent of hydrocarbon migration could be defined. Groundwater elevation data from each of the three monitor wells reveal the groundwater flow trends to the west-southwest at this site. Laboratory analyses of groundwater samples from MW-2 show no detectable levels of any analytes, except for trace amounts of ethyl benzene. Analytical results of groundwater samples from MW-3 indicate all analytes, except benzene, are below the NMWQCC groundwater standards.

Pertinent data from past groundwater reports include the following:

The operator was notified that up-gradient production pits might be causing contamination of groundwater. Quarterly sampling was discontinued in June of 1998 while EPFS waited for the operator to investigate the unlined pit associated with their operations at the location. In 1999, the operator excavated the unlined pit, backfilled the pit, and installed a monitoring well.

RECOMMENDATIONS

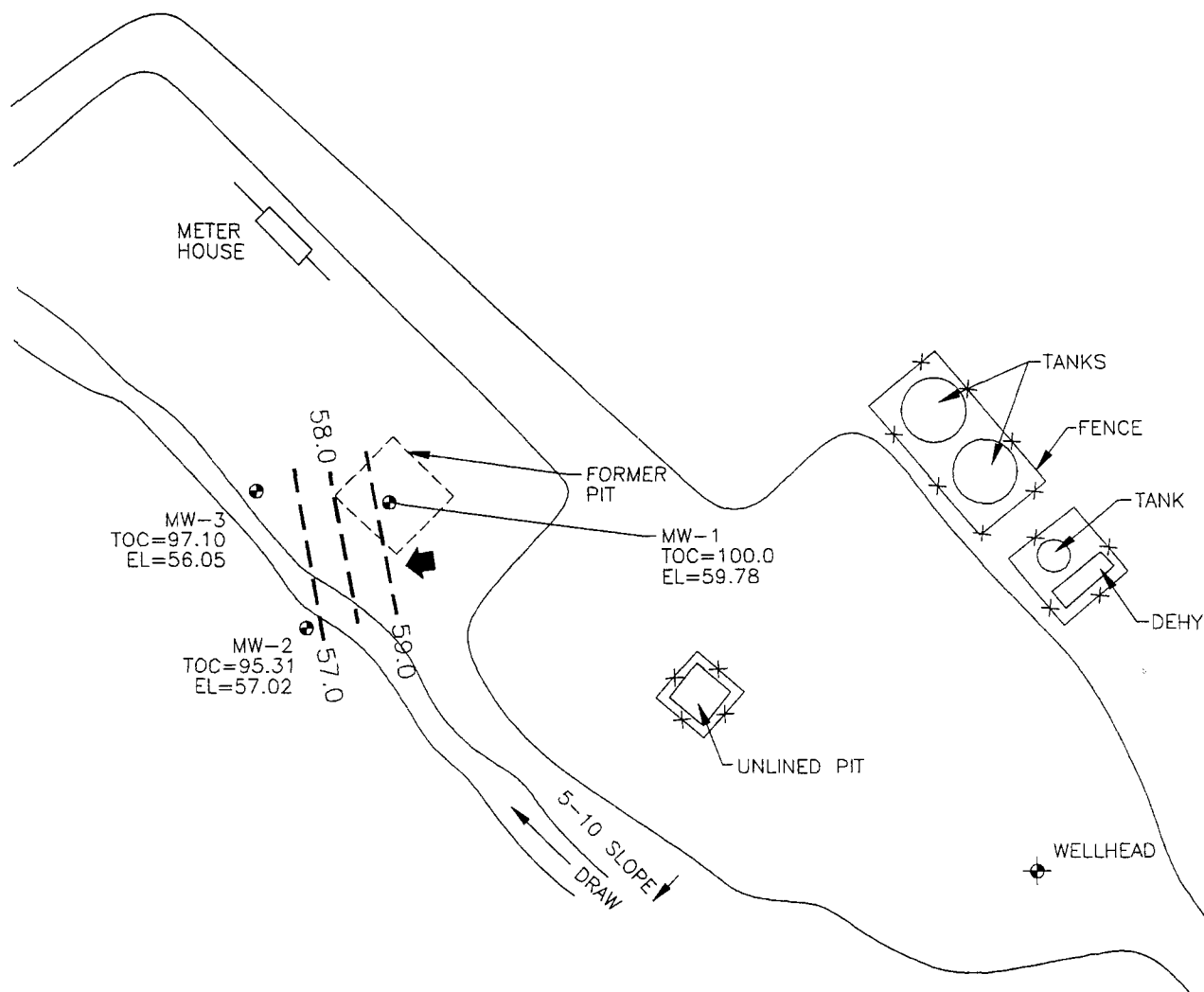
- EPFS proposes to conduct nutrient injection in MW-1 to enhance bioremediation and natural attenuation in the former pit.
- Conduct semi-annual groundwater sampling of MW-1 until analytical results indicate hydrocarbon constituents are near New Mexico groundwater standards then sample quarterly for closure.
- Annual groundwater sampling of MW-2 and MW-3.
- EPFS will continue to work with the operator at this location and has supplied the operator with data collected by EPFS.
- Following OCD approval for closure MW-1, MW-2, and MW-3 will be abandoned using OCD approved abandonment procedures.

Table 1

March 2001

Sample #	Meter / Line #	Site Name	Sample Date	MW #	Project	Benzene (PPB)	Toluene (PPB)	Ethyl/ Benzene (PPB)	Total Xylenes (PPB)	Total BTEX (PPB)
FOG-0006-MW1	73220	FOGELSON 4-1 COM. #14	06/19/2000	1	Sample 4 - 9th Quarter	= 790	= 280	= 1,100	= 9,300	11,470
FOG-0010-MW1	73220	FOGELSON 4-1 COM. #14	09/27/2000	1	Sample 4 - 10th Quarter	= 580	= 600	= 950	= 8,000	10,130
FOG-0012-MW1	73220	FOGELSON 4-1 COM. #14	12/05/2000	1	Sample 4 - 11th Quarter	= 420	= 610	= 770	= 6,000	7,800
FOG-0007-MW2	73220	FOGELSON 4-1 COM. #14	07/27/2000	2	Sample 1 - 1st Annual	< 0.5	< 0.5	= 8.8	< 0.5	8.8
FOG-0007-MW3	73220	FOGELSON 4-1 COM. #14	07/27/2000	3	Sample 1 - 1st Annual	= 27	= 35	= 170	= 520	752

Sample 1 - Annual Sampling
Sample 4 - Quarterly Sampling



LEGEND

- MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER
- TOC TOP OF CASING ELEVATION
- EL GROUNDWATER ELEVATION
- 58 GROUNDWATER POTENTIOMETRIC SURFACE
- ➔ GROUNDWATER GRADIENT

0 40
FEET



COL. 628\002198K-003

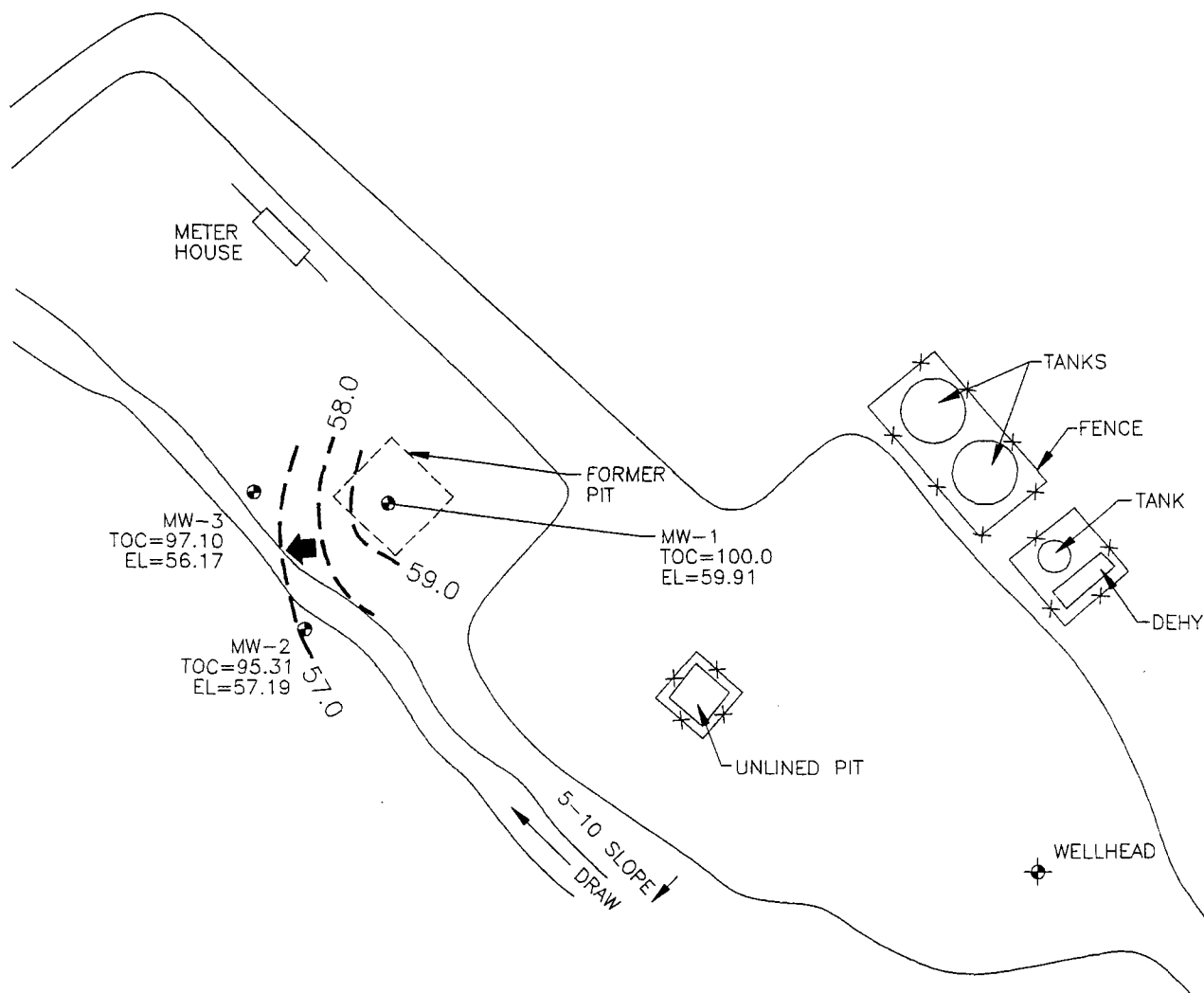


TITLE:
FOGELSON 4-1 #14
METER 73220
SEPTEMBER 27, 2000

DWN: TMM	DES.: LW
CHKD: LW	APPD: MN
DATE: 1/31/01	REV.: 0

PROJECT NO.: 62800219
EPFS GW PITS

FIGURE 1



LEGEND

- MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER
- TOC TOP OF CASING ELEVATION
- EL GROUNDWATER ELEVATION
- 58 GROUNDWATER POTENTIOMETRIC SURFACE
- ➔ GROUNDWATER GRADIENT

0 40
FEET



COL 628\00219BK-004

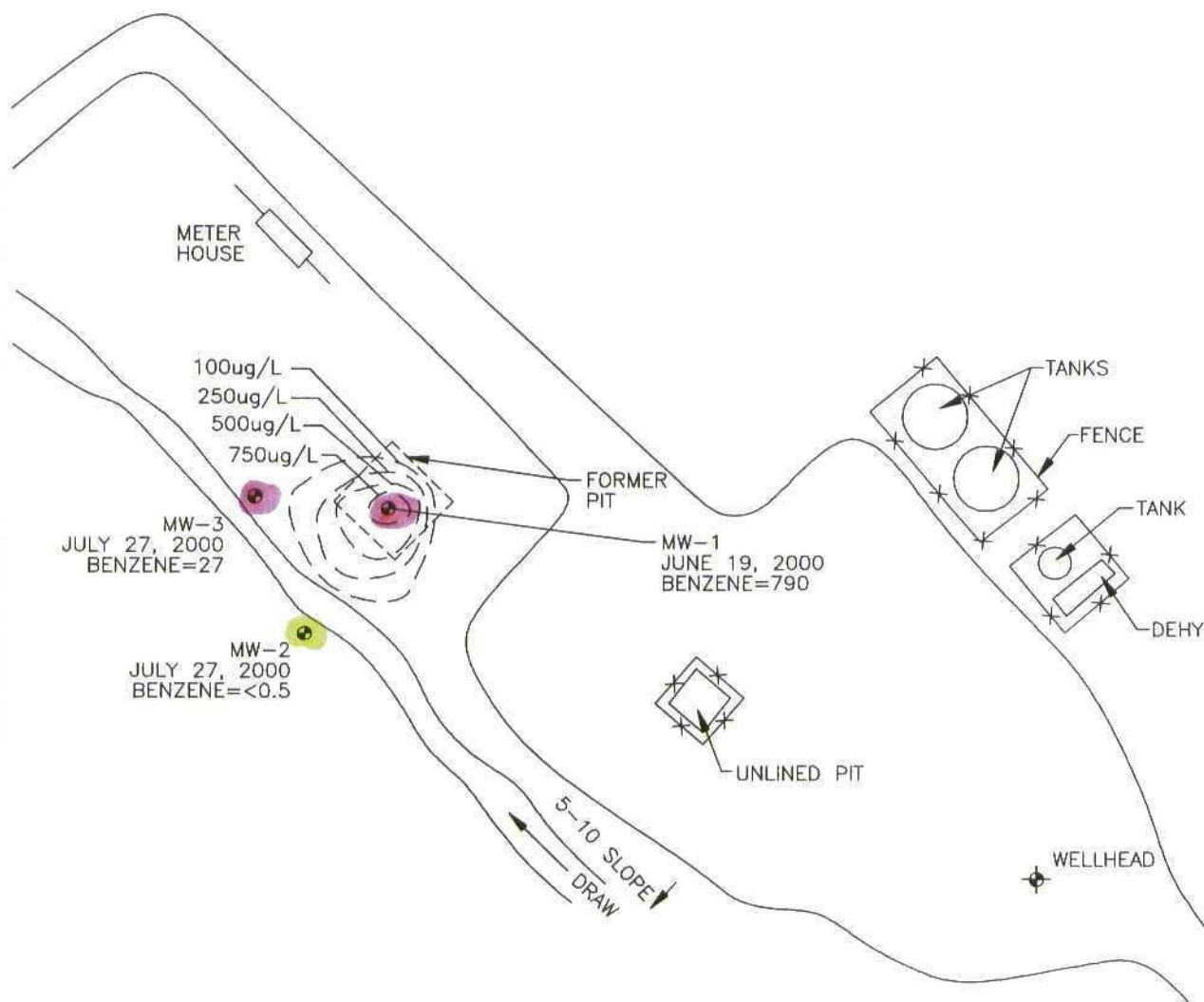


TITLE:
FOGELSON 4-1 #14
METER 73220
DECEMBER 5, 2000

DWN: TMM	DES.: LW
CHKD: LW	APPD: MN
DATE: 1/31/01	REV.: 0

PROJECT NO.: 62800219
EPFS GW PITS

FIGURE 2



LEGEND

- MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER
- B BENZENE (ug/L)
- 58 GROUNDWATER POTENTIOMETRIC SURFACE
- ug\L MICROGRAMS PER LITER

NOTE: Well locations are to scale, relative to each other. The surface features are not to scale.

0 40
FEET



COL 628\00219BK-005

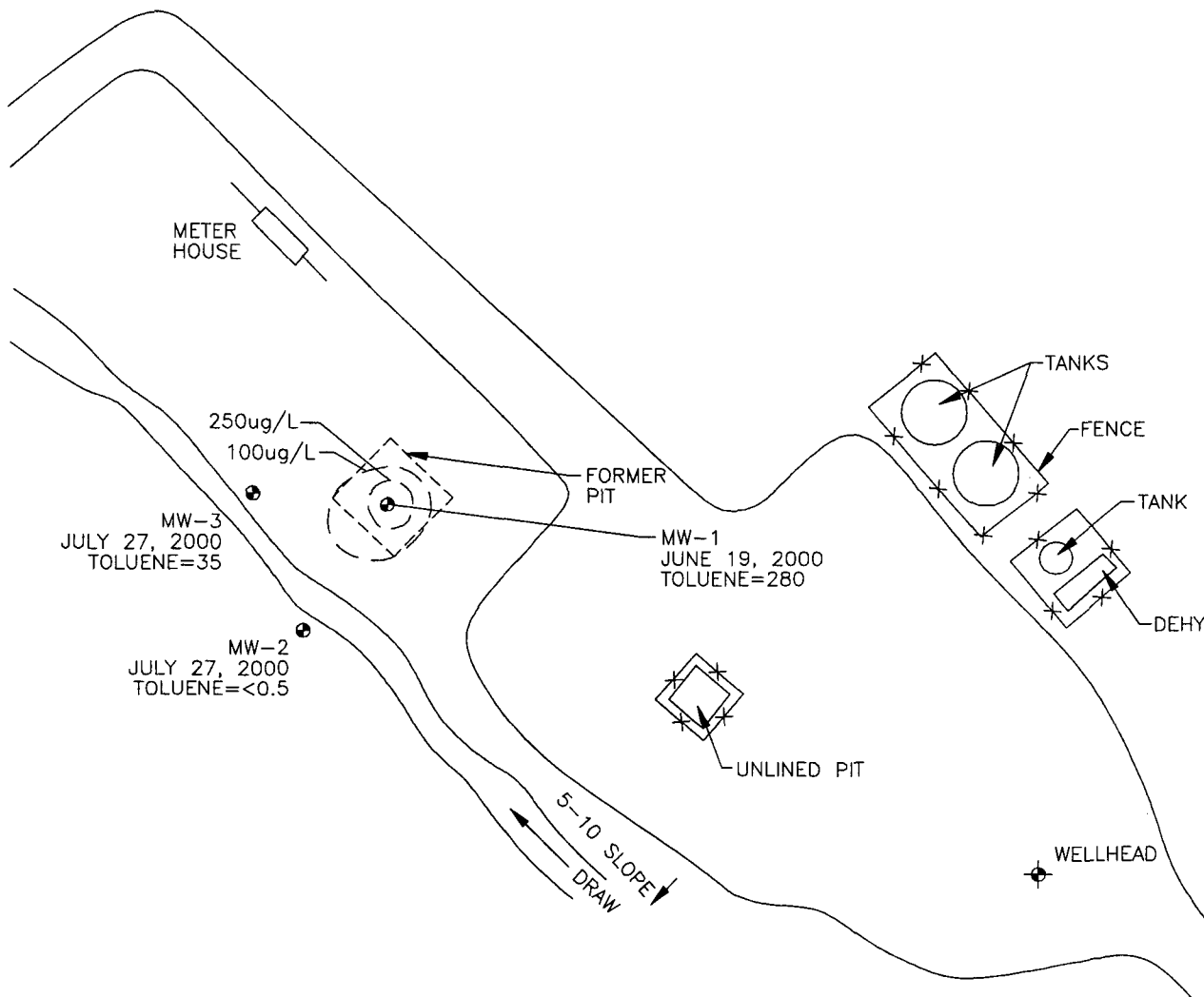


TITLE:
FOGELSON 4-1 #14 METER 73220
JULY 27, 2000 ISOCONCENTRATION
MAP- BENZENE

DWN:	TMM	DES.:	LW
CHKD:	LW	APPD:	MN
DATE:	2/20/01	REV.:	0

PROJECT NO.: 62800219
EPFS GW PITS

FIGURE 3



LEGEND

- MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER
- T TOLUENE (ug/L)
- 58 — GROUNDWATER POTENTIOMETRIC SURFACE
- ug\L MICROGRAMS PER LITER

NOTE: Well locations are to scale, relative to each other. The surface features are not to scale.

0 40
FEET



COL. 628\00219BK-006



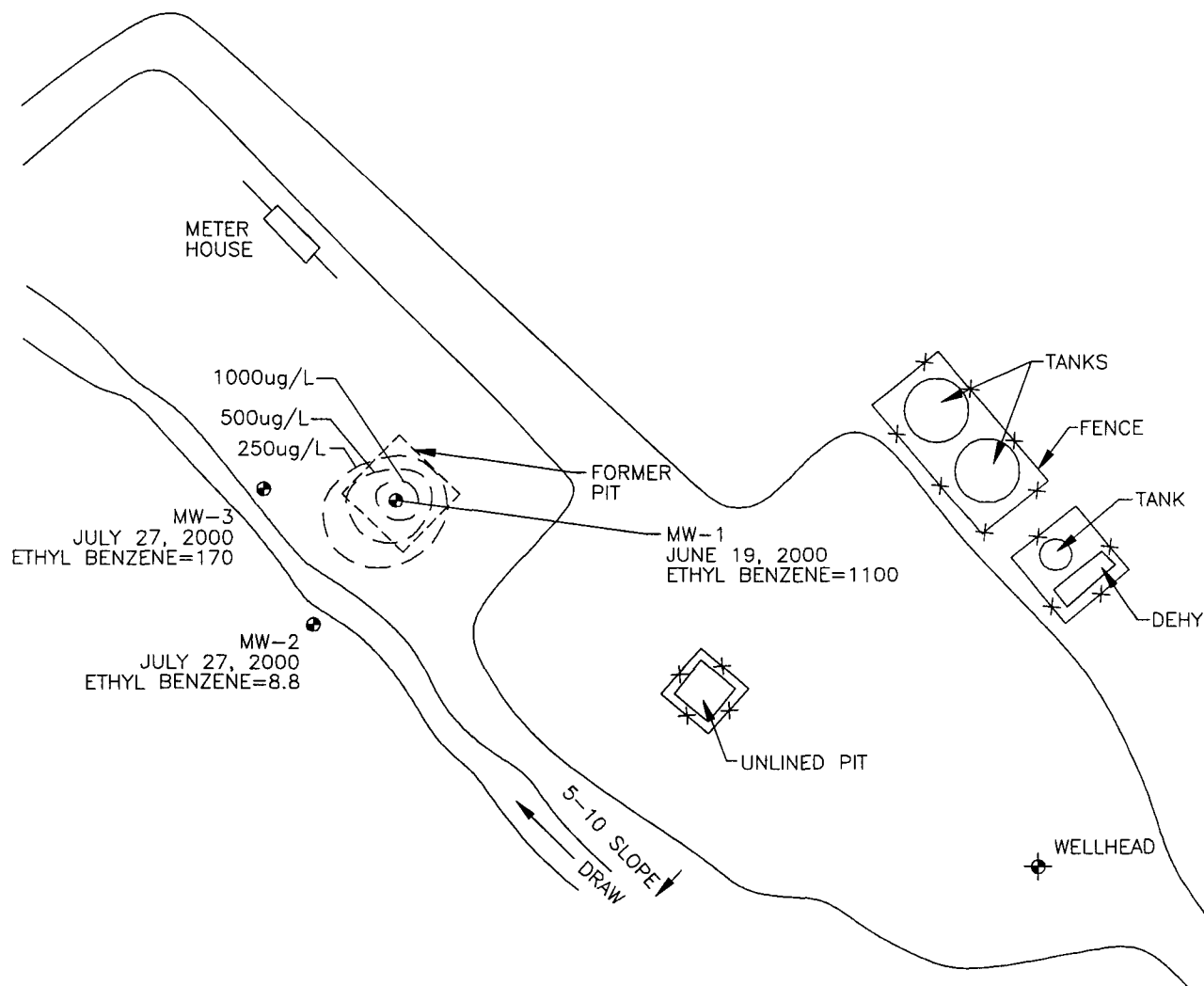
TITLE:
FOGELSON 4-1 #14 METER 73220
JULY 27, 2000 ISOCONCENTRATION
MAP- TOLUENE

DWN: TMM
CHKD: LW
DATE: 2/20/01

DES.: LW
APPD: MN
REV.: 0

PROJECT NO.: 62800219
EPFS GW PITS

FIGURE 4



LEGEND

- MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER
- E ETHYL BENZENE (ug/L)
- 58 — GROUNDWATER POTENTIOMETRIC SURFACE
- ug\ L MICROGRAMS PER LITER

NOTE: Well locations are to scale, relative to each other. The surface features are not to scale.

0 40
FEET



COL 628\00219BK-007

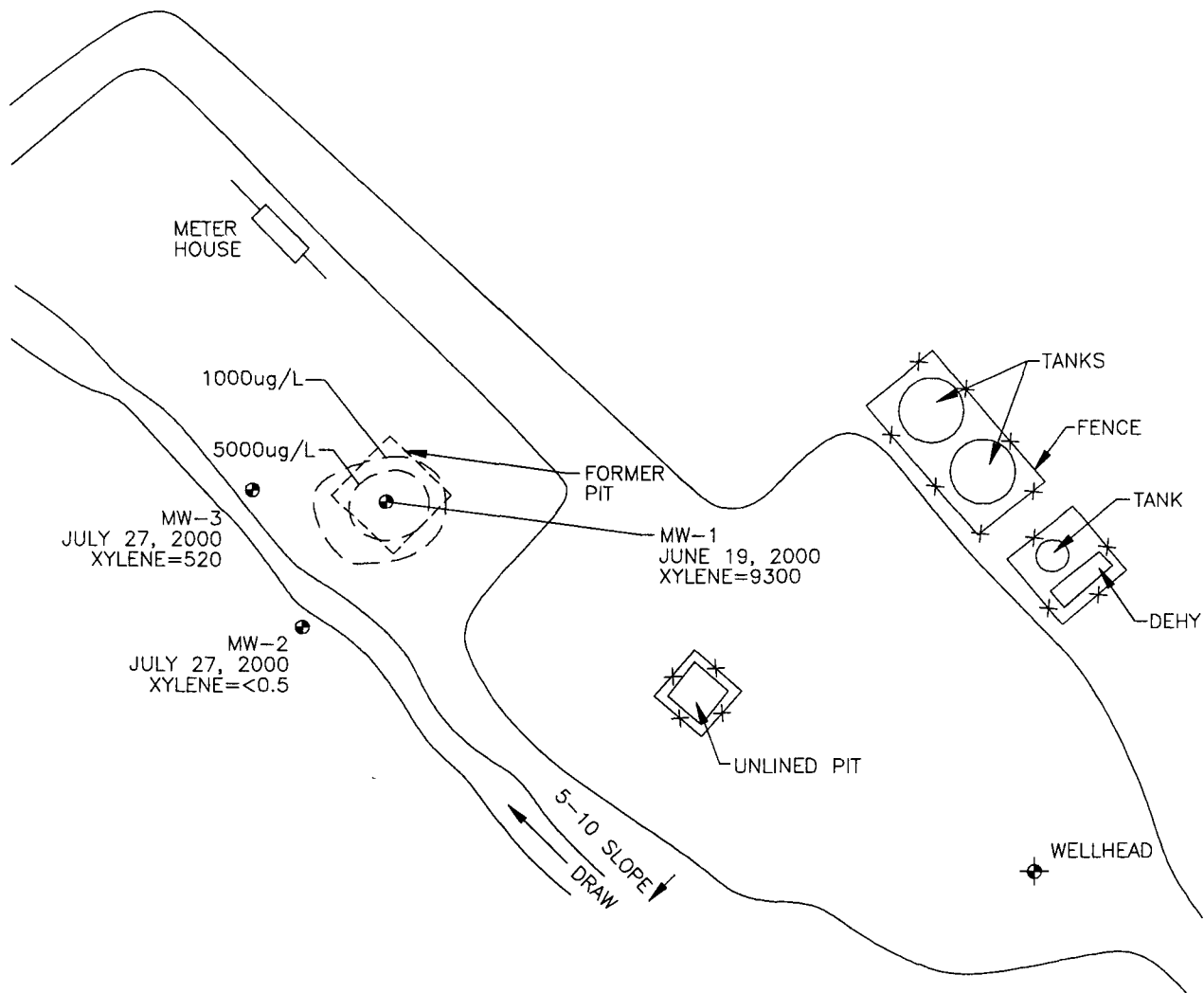


TITLE:
FOGELSON 4-1 #14 METER 73220
JULY 27, 2000 ISOCONCENTRATION
MAP- ETHYL BENZENE

DWN: TMM
CHKD: LW
DATE: 2/20/01
DES.: LW
APPD: MN
REV.: 0

PROJECT NO.: 62800219
EPFS GW PITS

FIGURE 5



LEGEND

- MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER
- x XYLENE (ug/L)
- 58 GROUNDWATER POTENTIOMETRIC SURFACE
- ug\L MICROGRAMS PER LITER

NOTE: Well locations are to scale, relative to each other. The surface features are not to scale.

0 40
FEET



COL 628\00219BK-008



TITLE:
FOGELSON 4-1 #14 METER 73220
JULY 27, 2000 ISOCONCENTRATION
MAP- XYLENE

DWN: TMM
CHKD: LW
DATE: 2/20/01

DES.: LW
APPD: MN
REV.: 0

PROJECT NO.: 62800219
EPFS GW PITS

FIGURE 6

ATTACHMENT 1

2000 GROUNDWATER ANALYTICAL

Project Name EPFS QUARTERLY SAMPLING

Project Manager R. THOMPSON

Project No. 62800107

Client Company EPFS

Phase/Task No. 0301

Site Name FOGELSON 4-1 COM #14(13220) 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) 77.78 TOR
Initial Depth to Water (feet) 40.17 RGR
Height of Water Column in Well (feet) 7.61
Diameter (inches): Well 4 Gravel Pack

Item	Water Volume in Well	Gallons to be Removed
Well Casing	Cubic Feet <u>7.61</u>	Gallons <u>497 x 3</u>
Gravel Pack		<u>14.9</u>
Drilling Fluids		
Total		<u>14.9</u>

Methods of Development

- Pump Bailer
☐ Centrifugal ☒ Bottom Valve
☐ Submersible ☐ Double Check Valve
☐ Peristaltic ☐ Stainless-steel Kemmerer
☐ Other

Instruments

- Serial No. (if applicable)
☒ pH Meter HYDAC
☐ DO Monitor
☒ Conductivity Meter HYDAC
☒ Temperature Meter HYDAC
☐ Other

Water Disposal

KV12 SEPARATOR, BIOGAS FIELD, NM

Water Removal Data

Date	Time	Development Method Pump/Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
						Increment	Cumulative	Increment	Cumulative					
6/19/00	1356	X				3	3			26.1	6.91	14300		CLEAR, HC ODOR, SHEET
"	1404	X				3	6			23.1	6.90	13990		"
"	1410	X				3	9			22.9	6.89	14180		SLIGHTLY YELLOW,
"	1416	X				3	12			23.0	6.92	15460		"
"	1422	X				3	15			22.2	6.95	15540		"

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

Comments Sampled for BTEX at 1434. Water is clear to yellow with slight HC odor and slight sheen.

Developer's Signature(s) Jean Wagner

Date 6/19/00

Reviewer RT

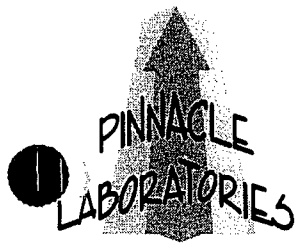
Date 6/21/00

PHILIP

COC Serial No. C 2558

[illegible]

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) _____ ☐ Other (Specify) _____	Carrier: <u>GREYHOUND LINES</u> Airbill No. <u>GLF160691852</u> Shipping and Lab Notes:
---	--



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

Pinnacle Lab ID number **006081**
June 27, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELY STREET
FARMINGTON, NM 87401

Project Name EPFS QUARTERLY SAMPLING
Project Number 62800107

Attention: ROBERT THOMPSON/LEAUDRA STANLEY

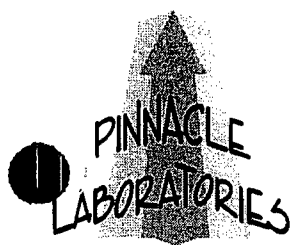
On 06/22/00 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are 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

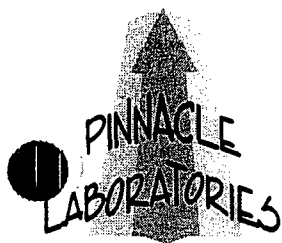
MR: jt

Enclosure



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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 006081
PROJECT #	: 62800107	DATE RECEIVED	: 06/22/00
PROJECT NAME	: EPFS QUARTERLY SAMPLING	REPORT DATE	: 06/27/00
PIN			
D. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	FOG-0006-MW01	AQUEOUS	06/19/00
02	TRIP BLANK	AQUEOUS	06/19/00



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 # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

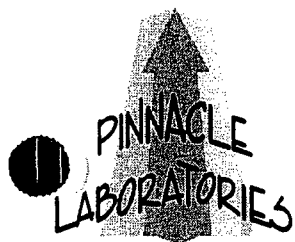
PINNACLE I.D.: 006081

SAMPLE			DATE	DATE	DATE	DIL.
D. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
1	FOG-0006-MW01	AQUEOUS	06/19/00	NA	06/23/00	25
2	TRIP BLANK	AQUEOUS	06/19/00	NA	06/23/00	1

PARAMETER	DET. LIMIT	UNITS	FOG-0006-MW01	TRIP BLANK
BENZENE	0.5	UG/L	790	< 0.5
TOLUENE	0.5	UG/L	280	< 0.5
ETHYLBENZENE	0.5	UG/L	1100	< 0.5
TOTAL XYLENES	0.5	UG/L	9300	< 0.5

SURROGATE:
BROMOFLUOROBENZENE (%) 120 94
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.	: 006081
BLANK I. D.	: 062300	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 06/23/00
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QUARTERLY 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 (%) 105

SURROGATE LIMITS: (80 - 120)

CH 1 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 # : 062300
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D. : 006081
DATE EXTRACTED : NA
DATE ANALYZED : 06/23/00
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	17.9	90	18.4	92	3	(80 - 120)	20
TOLUENE	<0.5	20.0	20.1	101	20.8	104	3	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.9	105	21.6	108	3	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	64.5	108	65.5	109	2	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401

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

006080 006081 2558
COC Serial No. C

[illegible]

Relinquished by:

Received By:

Signature	Date	Time	Signature	Date	Time
<i>James Wagon</i>	6/22/00	1528	<i>John Caldwell</i>	6/22/00	0900

Samples Iced: ☒ Yes ☐ No		Carrier: GREYHOUND LINES	Airbill No. GLF16006918523
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) _____ ☐ Other (Specify) _____		Samples @ 4°C There are 2 coolers with this shipment.	

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401

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

COC Serial No. C 2464

[illegible]

Relinquished by:

Received By:

Signature	Date	Time	Signature	Date	Time
<i>Chris A. May</i>	09-27-00	1500			

Samples Iced:

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>HSC1</u>	
☐ Other (Specify) _____	

Carrier:

Shipping and Lab Notes:

Airbill No. GLI 140691 8676



OCT 12 2000

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

Pinnacle Lab ID number 010006
October 09, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELY STREET
FARMINGTON, NM 87401

Project Name EPFS QUARTERLY SAMPLING
Project Number 62800107

Attention: ROBERT THOMPSON/LEAUDRA STANLEY

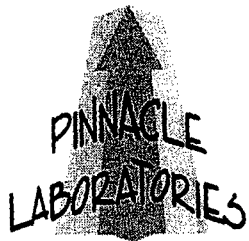
On 10/03/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

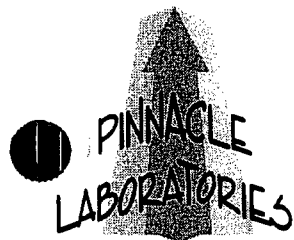


2709-D Pan American Freeway I
Albuquerque, New Mexico 8710
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE ID : 010006
DATE RECEIVED : 10/03/00
REPORT DATE : 10/09/00

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	FOG-0010-MW01	AQUEOUS	10/02/00
02	TRIP BLANK	AQUEOUS	10/02/00



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

GAS CHROMATOGRAPHY RESULTS

EST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

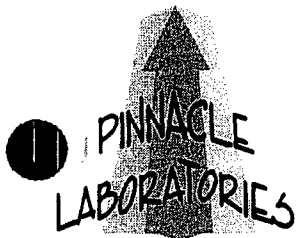
PINNACLE I.D.: 010006

AMPLE			DATE	DATE	DATE	DIL.
S. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
1	FOG-0010-MW01	AQUEOUS	10/02/00	NA	10/08/00	20
2	TRIP BLANK	AQUEOUS	10/02/00	NA	10/08/00	1

PARAMETER	DET. LIMIT	UNITS	FOG-0010-MW01	TRIP BLANK
BENZENE	0.5	UG/L	580	< 0.5
TOLUENE	0.5	UG/L	600	< 0.5
ETHYLBENZENE	0.5	UG/L	950	< 0.5
OXYXYLENES	0.5	UG/L	8000	< 0.5

UNDETERMINED:
MONOCHLOROBENZENE (%) 119 107
UNDETERMINED LIMITS (80 - 120)

ANALYST NOTES:



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

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

EST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 010006
LAB I. D.	: 100600	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 10/06/00
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QUARTERLY SAMPLING		

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

UNROGATE:
ROMOFLUOROBENZENE (%) 101
UNROGATE LIMITS: (80 - 120)
HEMISIT NOTES:
/A



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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

EST : EPA 8021 MODIFIED
ISMSD # : 100600
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D. : 010006
DATE EXTRACTED : NA
DATE ANALYZED : 10/06/00
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
ENZENE	<0.5	20.0	19.4	97	19.6	98	1	(80 - 120)	20
OLUENE	<0.5	20.0	20.7	104	21.0	105	1	(80 - 120)	20
THYLBENZENE	<0.5	20.0	21.9	110	21.9	110	0	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	66.1	110	69.3	116	5	(80 - 120)	20

HEMIST NOTES:
/A

(Spike Sample Result - Sample Result)

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

(Sample Result - Duplicate Result)

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

PHILIP

4000 Monroe Road
Farmington, NM 87401

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

COC Serial No. C 2803

[illegible]

Relinquished by:

Received By:

[illegible]**Samples Iced:**

☒ Yes ☐ No

Samples Iced: ☒ Yes ☐ No

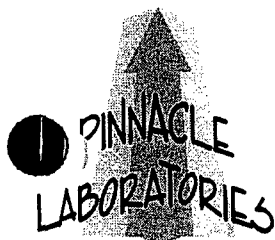
Preservatives (ONLY for Water Samples)

percentages (Select for water samples)

☐ Cyanide	Sodium hydroxide (NaOH)
☐ Volatile Organic Analysis	Hydrochloric acid (HCl)
☐ Metals	Nitric acid (HNO ₃)
☐ TPH (#18.1)	Sulfuric acid (H ₂ SO ₄)
☒ Other (Specify) <u>ACG17</u>	
☐ Other (Specify) _____	

Carrier: Greyhound
Shipping and Lab Notes:

Airbill No. GLT 1606919985



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

Pinnacle Lab ID number **012034**
December 13, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELLY STREET
FARMINGTON, NM 87401

Project Name EPFS QUARTERLY SAMPLING
Project Number 62800107

Attention: ROBERT THOMPSON/SCOTT POPE

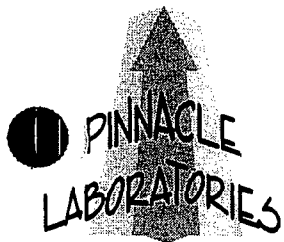
On 12/08/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

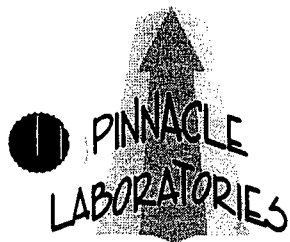
MR: jt

Enclosure



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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 012034
PROJECT #	: 62800107	DATE RECEIVED	: 12/08/00
PROJECT NAME	: EPFS QUARTERLY SAMPLING	REPORT DATE	: 12/13/00
PINNACLE			DATE
ID #	CLIENT DESCRIPTION	MATRIX	COLLECTED
012034 - 01	FOG-0012-MW01	AQUEOUS	12/05/00



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 # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D.: 012034

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	FOG-0012-MW01	AQUEOUS	12/05/00	NA	12/12/00	200
PARAMETER		DET. LIMIT	UNITS	FOG-0012-MW01		
BENZENE		0.5	UG/L	420		
TOLUENE		0.5	UG/L	610		
ETHYLBENZENE		0.5	UG/L	770		
TOTAL XYLENES		0.5	UG/L	6000		

SURROGATE:

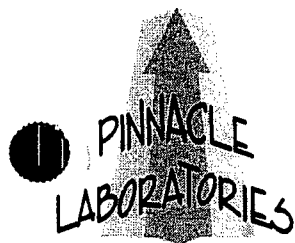
BROMOFLUOROBENZENE (%)

99

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.	: 012034
BLANK I. D.	: 121200	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 12/12/00
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QUARTERLY 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:

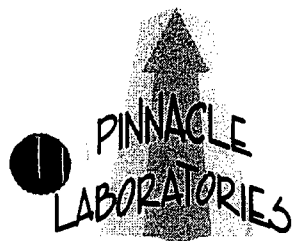
BROMOFLUOROBENZENE (%)

96

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 # : 012033-01
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D. : 012034
DATE EXTRACTED : NA
DATE ANALYZED : 12/12/00
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	19.7	99	19.9	100	1	(80 - 120)	20
TOLUENE	<0.5	20.0	19.2	96	19.4	97	1	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.7	104	20.9	105	1	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	60.5	101	61.1	102	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

ENVIRONMENTAL

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401

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

012034

COC Serial No. C 2803

Project Name <i>EpFS Quarterly Sampling</i>		Type of Analysis and Bottle	
Project Number <i>62800107 Phase 1 Task 0301</i>		Total Number of Bottles	
Samplers <i>C-Maez</i>		BTEX 8021	
Laboratory		LAB ID #	
Name <i>PINNACLE</i>		01	
Location <i>ALBQ N.M.</i>		Foselson 4-1 #14 (73220)	
Sample Number (and depth)	Date	Time	Matrix
<i>F05-0012 - Mw 01</i>	<i>12-05-00</i>	<i>1515</i>	<i>H₂O</i>
		<i>2</i>	<i>X</i>

Relinquished by:

Received By:

Signature	Date	Time	Signature	Date	Time
<i>Chris A. May</i>	<i>12-02-00</i>	<i>1430</i>	<i>Shane J. Jaramo</i>	<i>12/8/00</i>	<i>1005</i>

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide
- ☐ Volatile Organic Analysis
- ☐ Metals
- ☐ TPH (418.1)
- ☒ Other (Specify) *HgCl₂*
- ☐ Other (Specify)
- ☐ Sodium hydroxide (NaOH)
- ☐ Hydrochloric acid (HCl)
- ☐ Nitric acid (HNO₃)
- ☐ Sulfuric acid (H₂SO₄)

Carrier: *Greyhound*

Shipping and Lab Notes:

Rec'd @ 4:30

Airbill No. *GLI/606919985*

Project Name EPS DRILLING

Project Manager: S. STELLAVATO

Project No. 62800219

Client Company: EPFS Phase Task No. _____

Site Name FOGELSON #14
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) 47.23 TOR
Initial Depth to Water (feet) 38.25 TOR
Height of Water Column in Well (feet) 8.98
Diameter (inches): Well 2 Gravel Pack

Methods of Development

- Pump**
☐ Centrifugal
☐ Submersible
☐ Peristaltic
☐ Other
- Bailer**
☒ Bottom Valve
☐ Double Check Valve
☐ Stainless-steel Kemmerer

Instruments

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

Serial No. (If applicable)

HYDAC

Water Disposal

KUTZ SEPARATOR, Bloomfield, NM

Water Removal Data

[illegible]

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

Comments
Sampled for BTEX at 1442

Developer's Signature(s) cm Date 7/27/00
Reviewer _____ Date _____

Project Name EPFS DRILLING Project Manager S. STELLAVANO Project No. 62800219

Client Company EPFS Phase Task No. _____

Site Name FOREMAN 4-1 #14 Site Address _____

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 51.93 TOR
Initial Depth to Water (feet) 41.21 TOR
Height of Water Column in Well (feet) 10.72
Diameter (inches): Well 2 Gravel Pack _____

Item	Water Volume in Well	Gallons to be
	Cubic Feet	Removed
Well Casing	10.72	1.75 x 3
Gravel Pack		5.2
Drilling Fluids		
Total		5.0

Methods of Development

- Pump ☐ Centrifugal ☐ Bailer
☐ Submersible ☐ Bottom Valve
☐ Peristaltic ☐ Double Check Valve
☐ Stainless-steel Kemmerer
☐ Other _____

Instruments

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

Serial No. (if applicable) _____

Water Disposal

CUT SEPARATOR, BLOOMFIELD, NM

Water Removal Data

Date	Time	Development Method	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (umhos/cm)	Dissolved Oxygen (mg/l)	Comments
						Increment	Cumulative					
7/27/00	1454	X				1	1	21.9	7.32	11090		CLOUDY BROWN
"	1459	X				1	2	21.8	7.06	10680		"
"	1504	X				1	3	23.9	6.91	10770		"
"	1508	X				1	4	23.2	6.85	10620		"
"	1511	X				1	5	21.7	6.93	9700		"

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

Comments Sampled BTEX at 1520. Rinsed out HCl preservative;
water reacted with HCl created bubbles.

Developer's Signature(s) Jean Wagon Date 7/27/00 Reviewer _____ Date _____

PHILIP

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

4000 Monroe Road
Farmington, NM 87401

COC Serial No. C 2611

[illegible]

Relinquished by:

Received By:

[illegible]

Samples Iced:

Yes ☒ No ☐

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)

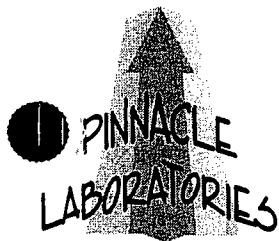
☐ Cyanide Sodium hydroxide (NaOH)
☒ Volatile Organic Analysis Hydrochloric acid (HCl)
☐ Metals Nitric acid (HNO₃)
☐ TPH (418.1) Sulfuric acid (H₂SO₄)
☐ Other (Specify) _____
☐ Other (Specify) _____

Carrier: GLAXO CVS

Carrier: Shuttle

Shipping and Lab Notes:

Alrbill No. 647 606 Dec 5 11 01



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

Pinnacle Lab ID number 007081
August 03, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELY STREET
FARMINGTON, NM 87401

Project Name EPFS DRILLING
Project Number 62800219

Attention: ROBERT THOMPSON/LEAUDRA STANLEY

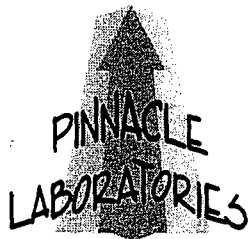
On 07/28/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

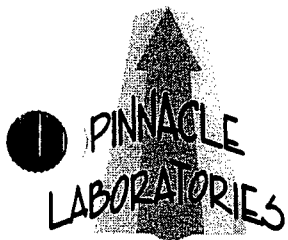


2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800219
PROJECT NAME : EPFS DRILLING

PINNACLE ID : 007081
DATE RECEIVED : 07/28/00
REPORT DATE : 08/03/00

PIN	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	FOG-0007-MW2	AQUEOUS	07/27/00
02	FOG-0007-MW3	AQUEOUS	07/27/00



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 # : 62800219
PROJECT NAME : EPFS DRILLING

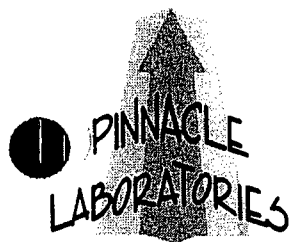
PINNACLE I.D.: 007081

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	FOG-0007-MW2	AQUEOUS	07/27/00	NA	08/01/00	1
02	FOG-0007-MW3	AQUEOUS	07/27/00	NA	08/01/00	10

PARAMETER	DET. LIMIT	UNITS	FOG-0007-MW2	FOG-0007-MW3
BENZENE	0.5	UG/L	< 0.5	27
TOLUENE	0.5	UG/L	< 0.5	35
ETHYLBENZENE	0.5	UG/L	8.8	170
T XYLENES	0.5	UG/L	< 0.5	520

SURROGATE:
BROMOFLUOROBENZENE (%) 104 112
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.	: 007081
BLANK I. D.	: 080100	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 08/01/00
PROJECT #	: 62800219	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS DRILLING		

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

SURROGATE:

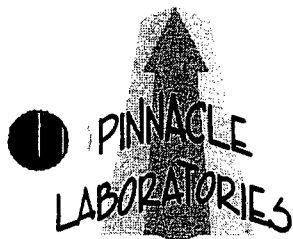
BROMOFLUOROBENZENE (%)

95

SPRINT GATE 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 # : 007079-01
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800219
PROJECT NAME : EPFS DRILLING

PINNACLE I.D. : 007081
DATE EXTRACTED : NA
DATE ANALYZED : 08/01/00
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	17.3	87	16.7	84	4	(80 - 120)	20
TOLUENE	<0.5	20.0	21.3	107	20.1	101	6	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	23.0	115	21.9	110	5	(80 - 120)	20
TOTAL XYLENES	1.1	60.0	70.4	116	66.9	110	5	(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

ENVIRONMENTAL
ANALYSIS & TESTING

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401
(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2611

007081

Project Name EPFS DRILLING		Type of Analysis and Bottle	
Project Number 62800219 Phase 1 Task		Total Number of Bottles	
Samplers J. WAGON		Type of Analysis and Bottle	
Laboratory		Type of Analysis and Bottle	
Name PINNACLE LABS		Type of Analysis and Bottle	
Location AUBURN, NM		Type of Analysis and Bottle	
Sample Number (and depth)	Date	Time	Matrix
F06-0007-mw2	7/27/00	1442	H2O
F06-0007-mw3	7/27/00	1520	H2O
Comments			
F06ELSON 4-1 #14 mw02			
F06ELSON 4-1 #14 mw03			

Relinquished by:

Received By:

Signature	Date	Time	Signature	Date	Time
J. Wagon	7/28/00	10:10	J. Wagon	7/28/00	1640

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide
 - ☒ Volatile Organic Analysis
 - ☐ Metals
 - ☐ TPH (418.1)
 - ☐ Other (Specify)
 - ☐ Other (Specify)
- Sodium hydroxide (NaOH)
Hydrochloric acid (HCl)
Nitric acid (HNO3)
Sulfuric acid (H2SO4)

Carrier: **GRAYHOUND LINES**

Airbill No. **616600651101**

Shipping and Lab Notes:

Rec'd @ 3.12

ATTACHMENT 2

**2000 MONITOR WELL
INSTALLATION RECORDS**

RECORD OF SUBSURFACE EXPLORATION

PHILIP SERVICES CORP.

4000 Monroe Road

Farmington, New Mexico 87401

326-2262 FAX (505) 326-2388

Borehole # MW-2

Well # 1

Page 1 of 2

Project Number 62800219 Phase 35

Project Name EPFS Drilling

Project Location S4, T29, R11 NMPM

SAN JUAN COUNTY, NM

Elevation

Borehole Location Fogelson 4-1 #14

GWL Depth -37.5'

Drilled By K PADILLA

Well Logged By S STELLAVATO

Date Started 6/23/00

Date Completed 6/29/00

Weather: Sunny, dry, hot, $\approx 85^{\circ}\text{F}$ ↑

Drilling Method 4 1/4 ID HSA

Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM BZ BH S			Drilling Conditions & Blow Counts
015				0-7' light-brown fine (+) SAND, (-) little clay						24-COUNTS
	1	5-7'	18"							
				7-12' medium-brown Medium (+) to (-) fine SAND.						
	2	10-12'	24"						4.5	22-COUNTS
				12-17' light-brown fine (+) to med (-) SAND. minor clay. Caliche lenses,						
	3	15-17'	10"						6.3	39-COUNTS
1038				Very HARD 17'-22' med to light-brown med (+) SAND. Caliche lenses, white						
	4	20-22'	6"						7.1	43-COUNTS
				Very Hard (+) med to light brown med (+) SAND.						
	5		0							
				Groundwater						
1119 23/00										

Comments:

Drill rig broke down at 1119. Major weld on mast.
Field Headspace reading collected by using PID on sample
collected in Ziplock bag and heated.

Geologist Signature

Stephen Stellavato

RECORD OF SUBSURFACE EXPLORATION

PHILIP SERVICES CORP.

4000 Monroe Road

Farmington, New Mexico 87401

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

Borehole # MW-2

Well # 3

Page 2 of 2

Project Number 62000219 Phase 35

Project Name EPFS

Project Location S 4, T 29, R 11 NMPM
SAN JUAN COUNTY, NM

Weather conditions: P-Cloudy, dry,
hot, $\approx 90^{\circ}\text{F}$ $\uparrow$

Elevation

Borehole Location Fogelson 4-1 #14

GWL Depth -37.5'

Drilled By K PADILLA

Well Logged By S STELLAVATO

Date Started 6/23/00

Date Completed 6/29/00

Drilling Method 4 1/4 ID HSA

Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM			Drilling Conditions & Blow Counts
							BZ	BH	S	
30/00 00										
40	6	40-42	12	40'-42' medium brown med (+) sand			ϕ	ϕ	ϕ	42 - counts
120 45										
				TD = 45 feet BGS						
50										
55										
60										
65										
30										
35										
40										

Comments:

No evidence of Hydrocarbon contamination.

Geologist Signature

Stephen Stellavato

MONITOR WELL INSTALLATION FORM

Philip Services Corp.

4000 Monroe Rd.

Farmington, NM 87401

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

Borehole MW-2

Well # 1

Page 1 of 1

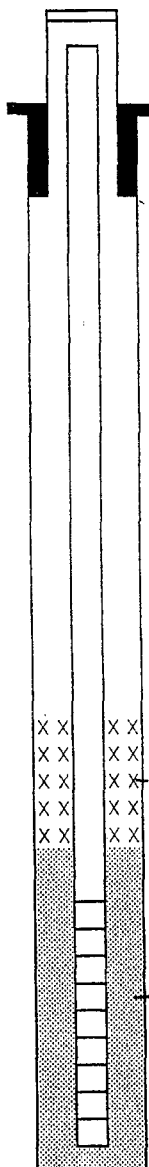
Project Name EPFS DRILLING
Project Number 62800219 Phase 35
Site Location S4 T29 R11
SAN JUAN COUNTY, NM

On-Site Geologist S. STELLAVATO
Personnel On-Site RYAN LAFREBRE, JEN WAGNON
Contractors On-Site NONE
Client Personnel On-Site NONE

Elevation _____
Well Location S4 T29 R11
GWL Depth _____
Installed By K PADILLA

Date/Time Started 6/23/00
Date/Time Complete 6/29/00

Depths in Reference to Ground Surface		
Item	Material	Depth (feet)
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	ZIA Type I-II cement	0
Bottom of Grout	ZIA Type I-II cement	-26
Top of Well Riser	SCH 20	+3
Bottom of Well Riser		
Top of Well Screen	SCH 20 0.01	-30
Bottom of Well Screen	SCH 20 0.01	-45
Top of Peltonite Seal	Holeplug 3/8	-26
Bottom of Peltonite Seal	Holeplug 3/8	-28
Top of Gravel Pack	Colorado Silica Sand 10x20	-28
Bottom of Gravel Pack	Colorado Silica Sand 10x20	-45
Top of Natural Cave-in		
Bottom of Natural Cave-in		
Top of Groundwater		-37.5'
Total Depth of Borehole		-45'



Top of Protective Casing +3.05

Top of Riser (survey elev.) +3

Ground Surface 0

QUICK-SET (1 BAG)

ZIA Type I-II cement

Top of Seal -26

HOLE PLUG 3/8 (1 BAG)

Top of Gravel Pack -28

Top of Screen -30

Silica Sand 10x20 (8 BAGS)

Bottom of Screen -45

Bottom of Borehole -45

Comments Completed 1250.

Geologist Signature S. Stellavato

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corporation

4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Borehole # MW-3
Well # _____
Page 1 of 2

Project Name EPFS DRILLING
Project Number 62800219 Cost Code 35
Project Location S4, T29, R11, N40m

Elevation _____
Borehole Location FOGELSON 4-1#14
GWL Depth 41.45'
Logged By J. WAGNON
Drilled By K. PADILLA
Date/Time Started 6/29/00
Date/Time Completed 6/30/00

Well Logged By J. WAGNON
Personnel On-Site RYAN LEBRE, S. STELLAVATO
Contractors On-Site NONE
Client Personnel On-Site NONE
Drilling Method 4 1/4 ID USA (2" WELL)
Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ BH PID			Drilling Conditions & Blow Counts
1305		0								
1308	1	5'-7'	16"	0-7' MED-FINE BROWN SEMI COMPETENT- COMPETENT SAND				3.4 ppm		14 COUNTS
1311	2	10'-12'	15"	7-12' MED-FINE GR. BROWN, SEMI COMPETENT SAND				2.2 ppm		12 COUNTS
1320	3	15'-17'	18"	12-17' COMPETENT FINE- MED. BROWN SAND				5.7 ppm		18 COUNTS
1330	4	20'-22'	12"	17-22' MOIST, COMPACTED, BROWN MED-FINE SAND				1.4 ppm		12 COUNTS
1336	5	25'-27'	12"	22-27' VERY COMPACT, MOIST, BROWN FINE-MED. SAND CALICHE LENSES, MINOR CLAY				2.5 ppm		24 COUNTS
1352	6	30'-32'	10"	27-32' MOIST, COMPACT FINE- MED. BROWN-GRAY SAND, TOP 1" WET CLAY, CALICHE.				5.1 ppm		27 COUNTS
				NO RECOVERY; NO SAMPLES TAKEN						

Comments:

Geologist Signature

J. Wagnon

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corporation

4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Borehole # mw-3
Well # _____
Page 2 of 2

Project Name EPFS DRILLING
Project Number 62800219 Cost Code 35
Project Location S4, T29, R11, N10M

Elevation _____
Borehole Location FOGELSON 4-1 #14
GWL Depth 41.45'
Logged By J. WAGNON
Drilled By K. PADILLA
Date/Time Started 6/29/00
Date/Time Completed 6/30/00

Well Logged By J. WAGNON
Personnel On-Site RYAN LEFEBRE, S. STELLAVATO
Contractors On-Site NONE
Client Personnel On-Site NONE
Drilling Method 4 1/4" D HSA (2" WELL)
Air Monitoring Method PID

Depth (Feet)	Sample Number	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	7	40-42	5"	37-42' FINE - CSE BROWN, SEMI CONSOLIDATED SAND 1/2" GREY W/OODOR			3.4 PPM	47 BLOWS
45	8	45-47	6"	42-47' FINE-MED BLUE-GREY, SEMI CONSOLIDATED SAND. DRY, VERY DENSE			2.8 PPM	50 BLOWS
50	9	50-52	5"	47-52' AS ABOVE			5.4 PPM	43 BLOWS
55				TD = 52' BGS				
60								
65								
70								
75								
80								

Comments: 6/29 HIT DENSE GREY-BLUE SAND DRILLED 50', LEFT OVERNIGHT TO FILL. HIT DENSE BLUE GREY LAYER AT 43'. 6/30 0820 PREPARED RIG FOR AUGER REMOVAL/INSTALLATION OF WELL. 0828 - WATER AT 42.51' BGS. WILL COMPLETE WELL.

Geologist Signature

J. Wagon

MONITORING WELL INSTALLATION RECORD

Philip Services Corporation

4000 Monroe Road

Farmington, New Mexico 87401

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

Borehole # mw-3

Well # _____

Page 1 of 1

Project Name EPFS DRILLING

Project Number 62800219 Cost Code 35

Project Location S4, T29, R11

Elevation _____

Well Location FOGELSON 4-1 #14

GWL Depth 41.45'

Installed By K. PADILLA

On-Site Geologist J. WAGNON

Personnel On-Site RYAN LEFEBRE, S. STELLANATO

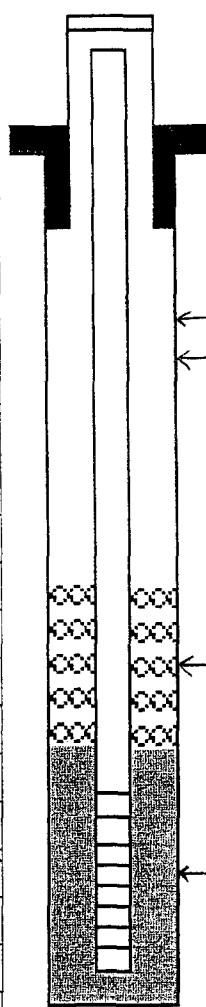
Contractors On-Site NONE

Client Personnel On-Site NONE

Date/Time Started 6/29/00

Date/Time Completed 6/30/00

Depths in Reference to Ground Surface				
Item	Material	Depth (feet)		
Top of Protective Casing		3	Top of Protective Casing <u>3.05</u>	
Bottom of Protective Casing		0	Top of Riser <u>3.00</u>	
Top of Permanent Borehole Casing		0	Ground Surface <u>0</u>	
Bottom of Permanent Borehole Casing		-50		
Top of Concrete		0.04		
Bottom of Concrete		0		
Top of Grout		0		
Bottom of Grout		-31		
Top of Well Riser		3		
Bottom of Well Riser		-50		
Top of Well Screen		-35		
Bottom of Well Screen		-50		
Top of Peltonite Seal	BENTONITE	-31		
Bottom of Peltonite Seal		-33		
Top of Gravel Pack		-33		
Bottom of Gravel Pack		-50		
Top of Natural Cave-In				
Bottom of Natural Cave-In				
Top of Groundwater		-41.45		
Total Depth of Borehole		-50		



Comments: _____

Geologist Signature J. Wagon