

Groundwater Site Summary Report

Copies: WFS(1)
Operator (1)
NMOCD District Office (1)
NMOCD Santa Fe (1)

Quarter/Year: 4/96 & 1/97

Operator: Burlington Resources
Sec: 13 Twn: 30N Rng: 11W Unit: D
Canyon: Hampton Arroyo

Vulnerable Class: Original
OCD Ranking: 40
Lead Agency: NMOCD

Topo Map: previously submitted
Well Completion Diagram: Figure 1
Site Map with Analytical Results: Figure 2
Groundwater Contour Map: Figure 3 (January 1996)
Hydrograph: NA
Analytical Results: attached

Activities for Previous Two Quarters (Oct. - Dec. 1996 & Jan. - Mar. 1997):

On December 16, 1996, PNM conducted drilling at the Hampton 4M well site to determine the vertical extent of hydrocarbon contamination in soil beneath PNM's former pit. During drilling, groundwater was encountered at approximately 28 feet and a monitoring well, MW-2, was installed in the area of PNM's former pit. At the time of installation, the PNM field crew found evidence of free product in the soil boring. A groundwater sample taken from the new well contained a benzene concentration of 3840 ppb and a total benzene, toluene, ethylbenzene and xylenes (BTEX) concentration of 20620 ppb. PNM notified OCD in writing of groundwater contamination at the site on January 13, 1997. On January 28, PNM returned to the site to gauge the water level in MW-2 and discovered approximately 4 feet of free-phase floating product in the well. On January 31, 1997, PNM installed two up-gradient wells in an attempt to locate the source of the free product. Water level and product measurements were taken in each of the three monitoring wells at this time. PNM conducted groundwater sampling in the two up-gradient wells for chemical analyses of benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8020. Sampling was performed in strict compliance with EPA protocol. PNM hand delivered the samples to OnSite Technologies, Farmington, New Mexico.

As part of the January 31 investigation to locate the source of free product on site, PNM also collected samples of various product sources at the site for chemical fuel analysis. These sources included:

- Burlington Resources "Dakota" and "Mesa Verde" product tanks
- WFS separator discharges of "Dakota" and "Mesa Verde" fluids
- MW-2 monitoring well

Sampling was performed in strict compliance with EPA protocol. Fingerprint analysis was conducted on each product sample by Southern Petroleum Laboratory, Houston, Texas.

On February 4, 1997, PNM hosted OCD and Burlington Resources onsite to discuss possible options for addressing contamination at the site.

Results:

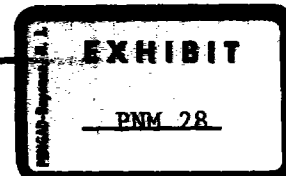
Figure 1 presents the Hampden 4M site map with BTEX analytical results. Figure 2 provides a groundwater contour map for the site in February 1997. The direction of groundwater flow is northwesterly beneath the site. From the results, PNM determined that MW-3, the well down-gradient from Burlington Resources' equipment and up-gradient from PNM's former equipment, is contaminated. MW-4, located cross-gradient from the direction of groundwater flow, is clean.

Public Service Company of New Mexico - Gas Services

Environmental Services Division - Alvarado Square, MS-0408
Albuquerque, NM 87158

Contact: Maureen Gannon

Telephone: 505-241-2974



PNMGS Well Site: Hampton 4M (continued)

Fingerprinting of the various sources of free product on site revealed that there is a marked similarity between the free product discovered in MW-2 and the Burlington Resources Dakota product tank. A hardcopy of the fuel analysis is attached.

Future Actions:

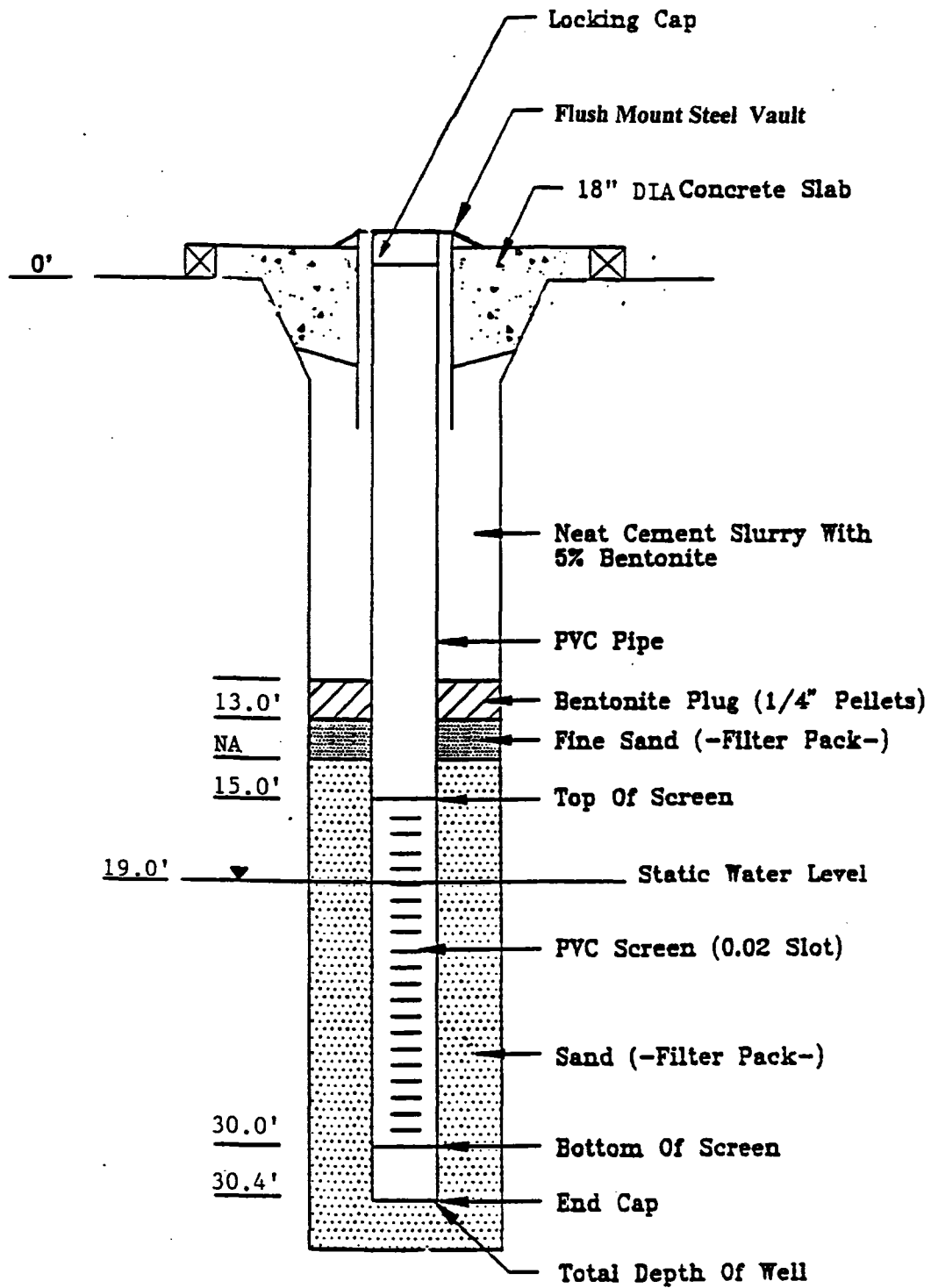
Based upon the fuel analysis, PNM believes the free product in MW-2 is coming from an on site source other than resulting from our previous activities at the site. The fuel analysis conducted on the product in MW-2 does not resemble typical drip product and may be the result of malfunctioning equipment and/or operations upstream of our former separator(s). Therefore, PNM will conduct no further activity at the site other than gauging the product and water levels in each well until further notice from OCD.

Public Service Company of New Mexico - Gas Services

Environmental Services Division - Alvarado Square, MS-0408
Albuquerque, NM 87158

Contact: Maureen Gannon

Telephone: 505-241-2974



CLIENT: PNM	
DATE:	REV. NO.: 0
AUTHOR: M.D.G.	DRAWN BY: M.P.
CK'D BY: M.D.G.	FILE: .DWG

Figure 1
Well Completion Diagram

Residence
~ 1000 ft.

Figure 2. Hampton 4M Site Map with Analytical Results
(Concentration in ppb)

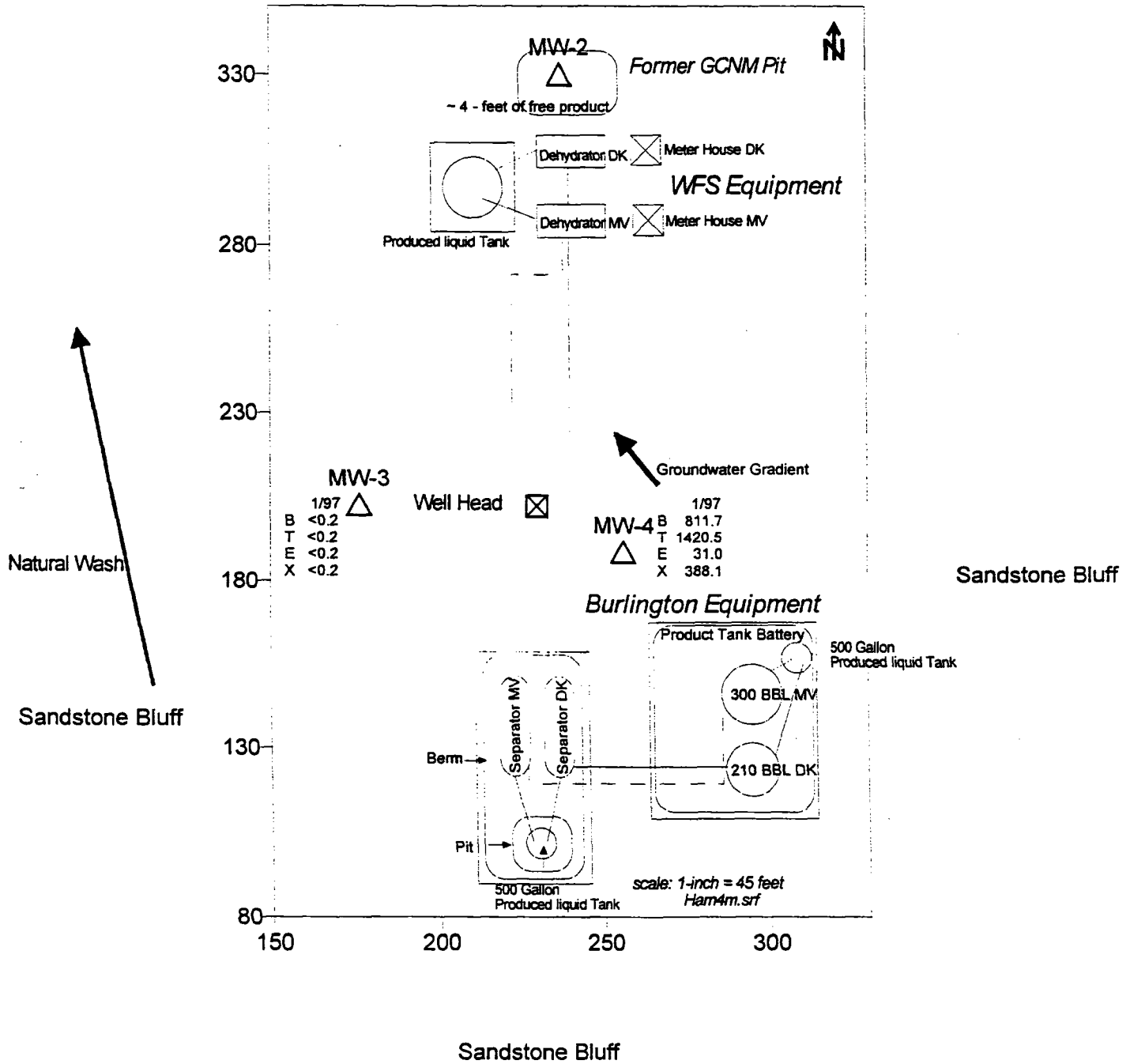
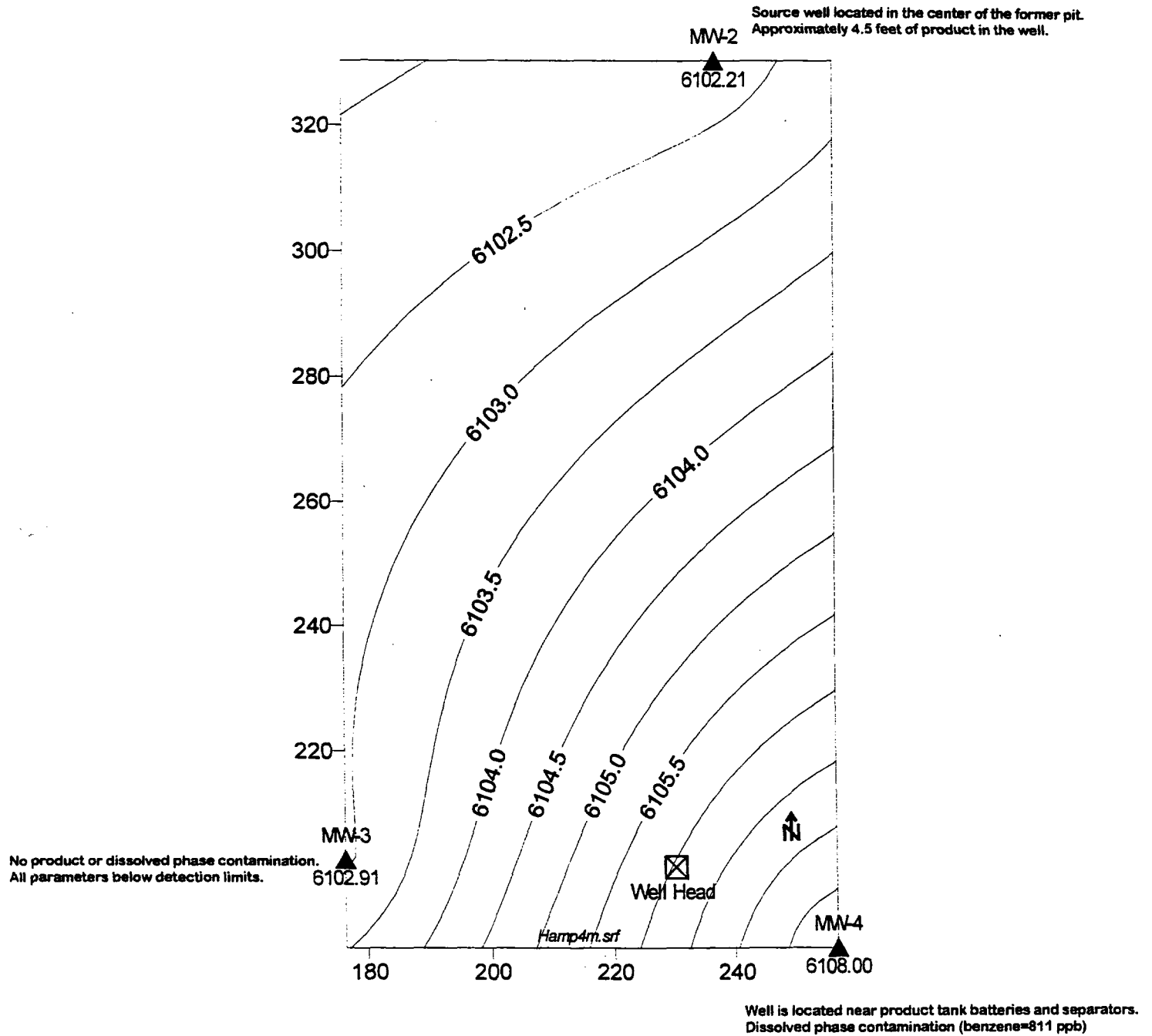


Figure 3. Hampton 4M Groundwater Contour Map (January 1997)



OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: *Denver Bearden*
Company: *PNM Gas Services*
Address: *603 W. Elm*
City, State: *Farmington, NM 87401*

Date: *3-Feb-97*
COC No.: *5735*
Sample No.: *13616*
Job No.: *2-1000*

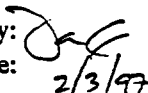
Project Name: *PNM Gas Services - Hampton 4M*
Project Location: *9701311500; MW-3*
Sampled by: *MS*
Analyzed by: *DC*
Sample Matrix: *Liquid*

Date: *31-Jan-97* Time: *15:00*
Date: *3-Feb-97*

Laboratory Analysis

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

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

Approved by: 
Date: *2/3/97*

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: *Denver Bearden*
Company: *PNM Gas Services*
Address: *603 W. Elm*
City, State: *Farmington, NM 87401*

Date: *3-Feb-97*
COC No.: *5735*
Sample No.: *13617*
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*
Project Location: *9701311530; MW-4*
Sampled by: *MS*
Analyzed by: *DC*
Sample Matrix: *Liquid*

Date: *31-Jan-97* Time: *15:30*
Date: *3-Feb-97*

Laboratory Analysis

Parameter	Result	Unit of Measure	Detection Limit	Unit of Measure
Benzene	811.7	ug/L	0.2	ug/L
Toluene	1420.5	ug/L	0.2	ug/L
Ethylbenzene	31.0	ug/L	0.2	ug/L
m,p-Xylene	303.8	ug/L	0.2	ug/L
o-Xylene	84.3	ug/L	0.2	ug/L
TOTAL		2651.4	ug/L	

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

Approved by: *[Signature]*
Date: *2/3/97*

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -



QUALITY ASSURANCE REPORT
for EPA Method 8020

Date Analyzed: 3-Feb-97

Internal QC No.: 0527-STD

Surrogate QC No.: 0528-STD

Reference Standard QC No.: 0417-QC

Method Blank

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

Calibration Check

Parameter	Unit of Measure	True Value	Analyzed Value	% Diff	Limit
Benzene	ppb	20.0	19.2	4	15%
Toluene	ppb	20.0	19.6	2	15%
Ethylbenzene	ppb	20.0	20.0	0	15%
m,p-Xylene	ppb	40.0	39.0	3	15%
o-Xylene	ppb	20.0	19.7	1	15%

Matrix Spike

Parameter	1 - Percent Recovered	2 - Percent Recovered	Limit	%RSD	Limit
Benzene	92	90	(39-150)	1	20%
Toluene	95	93	(46-148)	1	20%
Ethylbenzene	97	95	(32-160)	1	20%
m,p-Xylene	94	92	(35-145)	1	20%
o-Xylene	95	94	(35-145)	1	20%

Surrogate Recoveries

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
13616-5735	97				
13617-5735	96				

S1: Fluorobenzene

(12)

ON SITE

Date: 1/31/97

Page 1 of 1

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

Purchase Order No.:		Job No.	
Name: Denver Bearden		Name: Maureen Gannon	
Company: PNM Gas Services		Company: PNM Gas Services	
Address: 603 W. Elm Street		Mailing Address: Alverado Square, Mail Stop 0408	
City, State, Zip: Farmington, NM 87401		City, State, Zip: Albuquerque, NM 87158	
		Telephone No.: 505-848-2974	
		Telefax No.:	
SEND INVOICE TO		REPORT RESULTS TO	
Sampling Location: Hampton 4M		Number of Containers	
Sampler: Mark Sikelianos		ANALYSIS REQUESTED	
SAMPLE IDENTIFICATION		LAB ID	
MW-3 9701311500		13616-5735	
MW-4 97013115306		13617-5735	
DATE TIME		DATE TIME	
1/31/97 1500		1/31/97 1615	
1 1530			
DATE TIME		DATE TIME	
1/31/97 1615			
DATE TIME		DATE TIME	
1/31/97 1615			
Relinquished by:		Received by:	
Relinquished by:		Received by:	
Relinquished by:		Received by:	
Method of Shipment:		Rush	
Authorized by:		Special Instructions:	
Date: 1/31/97		Results to be sent to both parties.	

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



HOUSTON LABORATORY
6880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 680-0901

Certificate of Analysis No. 9702166-01A

Company: On Site Technologies
ID: B MV TANK 9701311300
Date: 01/31/97 @ 13:00

*1 Burlington
Mesa Verde Tank (300 BBL)
Product*

ATTN: David Cox

COLOR: Medium Straw
SP. GR. 0.7560
@ 60 F

ODOR: Fuel
API 55.65
@ 60 F

CARBON RANGE $C_2 - C_{25}$

MAJOR RANGE $C_6 - C_{12}$

PARAFFIN 21.856 Wt. %
ISOPARAFFINS 28.044 Wt. %
NAPHTHENICS 29.688 Wt. %
AROMATICS 15.863 Wt. %
OLEFINS 4.155 Wt. %
UNKNOWN 0.395 Wt. %
2,2,4-TRI 0.011 Wt. %
METHYLPENTANE

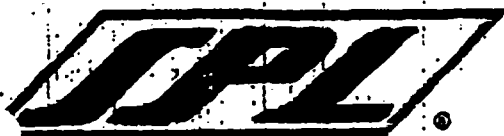
N-HEXANE 2.707 Wt. %
BENZENE 0.614 Wt. %
ETHYL BENZENE 0.493 Wt. %
TOLUENE 6.874 Wt. %
META XYLENE 3.182 Wt. %
PARA XYLENE 1.049 Wt. %
ORTHO XYLENE 0.868 Wt. %
XYLENES 5.099 Wt. %

RESEARCH OCTANE 71.34
LEAD NA
MTRX NA
 C_{17} 0.206 Wt. %
PRISTANE 0.076 Wt. %
NAPHTHALENE 0.078 Wt. %
1-METHYL 0.013 Wt. %
NAPHTHALENE

EDB NA
EDC NA
ETHANOL NA
 C_{18} 0.139 Wt. %
PHYTANE 0.029 Wt. %
2-METHYL 0.077 Wt. %
NAPHTHALENE

— GASOLINE RANGE: C_4, C_5 INDICATORS: 2,2,4-TRI; MIDE; OLEFINS, LEAD
— DIESEL RANGE: C_7, C_{20} INDICATORS: NO OLEFINS, PRISTANE, PHYTANE
— CONDENSATE RANGE: $C_2 - C_{25}$ INDICATORS: NO OLEFINS, LIGHT & HEAVIES
— HEAVY OIL: $C_{30}+$

COMMENTS:



HOUSTON LABORATORY
8800 INTERCHANGE DRIVE
HOUSTON, TEXAS 77064
PHONE (713) 860-0901

Certificate of Analysis No. 9702166-02A

Company: On Site Technologies
ID: B DK TANK 9701311330
Date: 01/31/97 @ 13:30

2 Burlington Dakota
210 BBL Product Tank

ATTN: David Cox

COLOR: Clear
SP. GR. 0.7427
@ 60 F

ODOR: Fuel
API 59.01
@ 60 F

CARBON RANGE $C_2 - C_{17}$

MAJOR RANGE $C_6 - C_9$

PARAFFIN 25.817 Wt. %
ISOPARAFFINS 28.530 Wt. %
NAPHTHENICS 25.421 Wt. %
AROMATICS 15.525 Wt. %
OLEFINS 4.034 Wt. %
UNKNOWN 0.673 Wt. %
2,2,4-TRI ND Wt. %
METHYLPENTANE

N-HEXANE 3.394 Wt. %
BENZENE 0.691 Wt. %
ETHYL BENZENE 0.379 Wt. %
TOLUENE 4.418 Wt. %
META XYLENE 3.273 Wt. %
PARA XYLENE 1.097 Wt. %
ORTHO XYLENE 0.909 Wt. %
XYLENES 5.279 Wt. %

RESEARCH OCTANE 70.49
LEAD NA
MTBE NA
 C_{17} 0.014 Wt. %
PRISTANE ND Wt. %
NAPHTHALENE 0.114 Wt. %
1-METHYL 0.019 Wt. %
NAPHTHALENE

EDB NA
EDC NA
ETHANOL NA
 C_{18} ND Wt. %
PHYTANE ND Wt. %
2-METHYL 0.061 Wt. %
NAPHTHALENE

— GASOLINE RANGE: $C_4 - C_{10}$ INDICATORS: 2,2,4-TMP; MTBE; OLEFINS, LEAD
— DIESEL RANGE: $C_7 - C_{20}$ INDICATORS: NO OLEFINS, PRISTANE, PHYTANE
— CONDENSATE RANGE: $C_3 - C_{25}$ INDICATORS: NO OLEFINS, LIGHT & HEAVIES
— HEAVY OIL: $C_{20}+$

COMMENTS:



HOUSTON LABORATORY
6680 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0801

Certificate of Analysis No. 9702166-03A

Company: On Site Technologies
ID: P DK SEP 9701311400
Date: 01/31/97 @ 14:00

3

PNM Dakota Separator

ATTN: David Cox

COLOR: Clear
SP. GR. 0.7073
@ 60 F

ODOR: Fuel
API 68.54
@ 60 F

CARBON RANGE $C_1 - C_{12}$
PARAFFIN 29.130 Wt. %
ISOPARAFFINS 34.558 Wt. %
NAPHTHENICS 24.411 Wt. %
AROMATICS 9.447 Wt. %
OLEFINS 2.453 Wt. %
UNKNOWN 0.000 Wt. %
2,2,4-TRI ND Wt. %
METHYLPENTANE

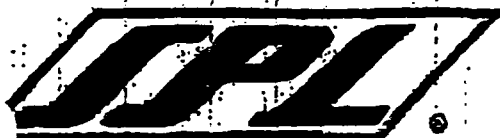
MAJOR RANGE $C_3 - C_8$
N-HEXANE 7.720 Wt. %
BENZENE 1.351 Wt. %
ETHYL BENZENE 0.216 Wt. %
TOLUENE 4.073 Wt. %
META XYLENE 1.798 Wt. %
PARA XYLENE 0.608 Wt. %
ORTHO XYLENE 0.461 Wt. %
XYLENES 2.867 Wt. %

RESEARCH OCTANE 59.81
LEAD NA
MTBE NA
 C_{17} ND Wt. %
PRISTANE ND Wt. %
NAPHTHALENE ND Wt. %
1-METHYL ND Wt. %
NAPHTHALENE

EDB NA
EDC NA
ETHANOL NA
 C_{18} ND Wt. %
PHYTANE ND Wt. %
2-METHYL ND Wt. %
NAPHTHALENE

___ GASOLINE RANGE: $C_4 - C_{13}$ INDICATORS: 2,2,4-TMP; MTBE; OLEFINS, LEAD
___ ~~CONDENSATE~~ RANGE: $C_7 - C_{20}$ INDICATORS: NO OLEFINS, PRISTANE, PHYTANE
___ CONDENSATE RANGE: $C_2 - C_{25}+$ INDICATORS: NO OLEFINS, LIGHT & HEAVIES
___ HEAVY OIL: $C_{20}+$

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 680-0901

Certificate of Analysis No. 9702166-04A

Company: On Site Technologies

ID: P MV Sep 9701311430

Date: 01/31/97 @ 14:30

PNM Nueva Verde Separator

ATTN: David Cox

COLOR: Dark

SP. GR. 0.7464

@ 60 F

ODOR: Fuel

API 58.08

@ 60 F

CARBON RANGE $C_1 - C_{14}$

PARAFFIN 19.506 Wt. %

ISOPARAFFINS 27.365 Wt. %

NAPHTHENICS 34.240 Wt. %

AROMATICS 14.775 Wt. %

OLEFINS 3.986 Wt. %

UNKNOWN 0.128 Wt. %

2,2,4-TRI 0.017 Wt. %

METHYLPENTANE

RESEARCH OCTANE 67.03

LEAD NA

MTBE NA

C_{17} ND Wt. %

PRISTANE ND Wt. %

NAPHTHALENE ND Wt. %

1-METHYL ND Wt. %

NAPHTHALENE

MAJOR RANGE $C_6 - C_9$

N-HEXANE 2.843 Wt. %

BENZENE 0.622 Wt. %

ETHYL BENZENE 0.280 Wt. %

TOLUENE 9.195 Wt. %

META XYLENE 2.116 Wt. %

PARA XYLENE 0.702 Wt. %

ORTHO XYLENE 0.578 Wt. %

XYLENES 3.396 Wt. %

EDB NA

EDC NA

ETHANOL NA

C_{18} 0.006 Wt. %

PHYTANE ND Wt. %

2-METHYL 0.009 Wt. %

NAPHTHALENE

— GASOLINE RANGE: $C_4 - C_{13}$ INDICATORS: 2,2,4-TMP; MTBE; OLEFINS, LEAD

— DIESEL RANGE: $C_7 - C_{20}$ INDICATORS: NO OLEFINS, PRISTANE, PHYTANE

— CONDENSATE RANGE: $C_2 - C_{25} +$ INDICATORS: NO OLEFINS, LIGHT & HEAVIES

— HEAVY OIL: $C_{20} +$

COMMENTS:



HOUSTON LABORATORY
8800 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 680-0801

Certificate of Analysis No. 9702166-05A

Company: On Site Technologies

ID: MW-2 9701311445

Date: 01/31/97 @ 14:45

5

Monitoring Well #2

ATTN: David Cox

COLOR: Light Straw

SP. GR. 0.7495

@ 60 F

ODOR: Fuel

API 57.29

@ 60 F

CARBON RANGE $C_3 - C_{17}$

MAJOR RANGE $C_6 - C_9$

PARAFFIN 25.352 Wt. %
ISOPARAFFINS 28.727 Wt. %
NAPHTHENICS 24.739 Wt. %
AROMATICS 16.229 Wt. %
OLEFINS 4.084 Wt. %
UNKNOWN 0.868 Wt. %
2,2,4-TRI ND Wt. %
METHYLPENTANE

N-HEXANE 3.435 Wt. %
BENZENE 0.642 Wt. %
ETHYL BENZENE 0.358 Wt. %
TOLUENE 4.102 Wt. %
META XYLENE 2.272 Wt. %
PARA XYLENE 1.092 Wt. %
ORTHO XYLENE 0.934 Wt. %
XYLENES 5.298 Wt. %

RESEARCH OCTANE 70.49

LEAD NA

MTBE NA

C_{17} 0.021 Wt. %

PRISTANE ND Wt. %

NAPHTHALENE 0.147 Wt. %

1-METHYL 0.026 Wt. %

NAPHTHALENE

EDB NA
EDC NA
ETHANOL NA
 C_{18} ND Wt. %
PHYTANE ND Wt. %
2-METHYL 0.081 Wt. %
NAPHTHALENE

___ GASOLINE RANGE: $C_4 - C_{13}$ INDICATORS: 2,2,4-TMP; MTBE; OLEFINS, LEAD
___ DIESEL RANGE: $C_7 - C_{20}$ INDICATORS: NO OLEFINS, PRISTANE, PHYTANE
___ CONDENSATE RANGE: $C_2 - C_{25}$ INDICATORS: NO OLEFINS, LIGHT & HEAVIES
___ HEAVY OIL: $C_{20}+$

COMMENTS:

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

[illegible]