

3R - 325

REPORTS

DATE:

2001

3R325



Environmental Services
187 County Road 4980
Bloomfield, New Mexico 87413
(505) 632-4409 (office)
(505) 632-4405 (fax)

March 20, 2002

Mr. William Olson
Hydrologist
Oil Conservation Division
1220 S. St. Francis Dr.
Santa Fe, NM 87505

RECEIVED

APR 04 2002

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

RE: 2001 GROUND WATER SUMMARY REPORT

Dear Mr. Olson:

Enclosed for your review is the 2001 Ground Water Summary Report. The report presents monitoring data for eighteen sites having petroleum hydrocarbon impacted ground water, which resulted from the past use of unlined surface impoundments. The sites included in the report are listed in Table 1.

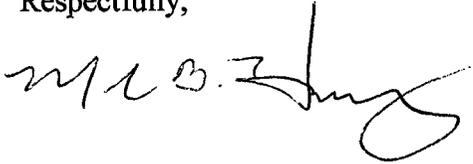
In 2001, three sites met the required remediation standards and were closed with OCD approval. The sites, listed in Table 2, achieved clean closure through a combination of contaminant source removal actions and monitored natural attenuation. Ground water cleanup objectives at each site were met in roughly three years, or less.

Of the eighteen active sites, five have accumulations of LNAPL in one or more monitoring well. In December 2001, the LNAPL accumulations were removed from these wells to evaluate LNAPL recovery rates and to augment the natural attenuation process. In 2002, passive LNAPL collection devices will be deployed or manual LNAPL removal events will be scheduled at some of the sites.

The remaining thirteen active sites either contain concentrations of dissolved BTEX in excess of cleanup standards or have met cleanup standards but have not yet demonstrated four consecutive clean quarters. Pursuant to discussions on the subject with OCD, Williams intends to implement various methods to accelerate the attenuation at select sites. These augmentation methods will be incorporated into an addendum to the Ground Water Management plan.

Thank you for your time to review this submittal. If you have any questions regarding the report, you may call me at (505) 632-4409 or Jim Struhs at (505) 632-4457.

Respectfully,



Mark B. Harvey
Project Coordinator
Mark.Harvey@Williams.com



James P. Struhs
Project Hydrogeologist
Jim.Struhs@Williams.com

Attachment
Enclosure

c: Denny Foust, OCD Aztec District Office
Bill Liess, BLM Farmington District Office

Table 1. List of Active Sites for 2001 Report

Count	Site Name	Unit Letter	Section	Township	Range	Longitude	Latitude	OCD Initial Notification
1	Blanco Wash Drip	J	31	27N	8W	-107.721574	36.530995	19-Feb-99
2	Chamberlain 1	F	14	32N	12W	-108.068853	36.990549	30-Sep-99
3	Davis 1	E	11	31N	12W	-108.068919	36.916257	2-Mar-99
4	Dogie East Pit	D	4	25N	6W	-107.478874	36.434196	7-Jul-97
5	Dogie North Pit	D	4	25N	6W	-107.479158	36.435784	7-Jul-97
6	Florance 124	C	27	29N	9W	-107.76698	36.70209	12-Aug-96
7	Florance 40	G	21	30N	8W	-107.67775	36.800088	27-Jan-97
8	Florance M 47X	G	5	30N	9W	-107.799823	36.843166	27-Jan-97
9	Grenier 4A	M	7	31N	11W	-108.036001	36.910167	18-Oct-99
10	Honolulu Drip	B	15	26N	4W	-107.238469	36.492341	18-Jun-96
11	Ice Canyon Drip	J	13	26N	7W	-107.52226	36.484972	1-Dec-97
12	Jicarilla Contract 147-6	C	6	25N	5W	-107.402363	36.433963	13-Aug-98
13	Kaufman 1	H	33	31N	13W	-108.202128	36.860121	9-Mar-00
14	O' Shea 1M	F	3	31N	13W	-108.193596	36.932228	6-Jun-98
15	Patterson A Com A1	G	2	31N	12W	-108.061165	36.930755	2-Mar-99
16	Pritchard 2	J	6	30N	8W	-107.712068	36.837817	22-Feb-99
17	Wilmerding 1M	C	10	31N	13W	-108.193158	36.91846	5-Jun-98
18	Zachry 18E	O	11	28N	10W	-107.860007	36.670885	6-Sep-96

Table 2. List of Sites Closed in 2001

Count	Site Name	Unit Letter	Section	Township	Range	Longitude	Latitude	OCD Initial Notification	Status
1	Albright #4 Drip	F	22	29N	10W	-107.868451	36.715299	9-Jul-99	Approved; Wells Abandoned
2	Miles Federal 1E Drip	N	5	26N	7W	-107.602489	36.510939	23-Jun-97	Approved; Wells Abandoned
3	Randleman 1	K	13	31N	11W	-107.945067	36.896329	9-May-97	Pending OCD Approval

Site Summary Report

Site Name: Jicarilla Contract 147-6

Reporting Period: 2001

Location: Unit C, Sec 6, Twn 25N, Rng 5W

Canyon: Tapicito

Operator: Amoco

Vulnerable Class: expanded

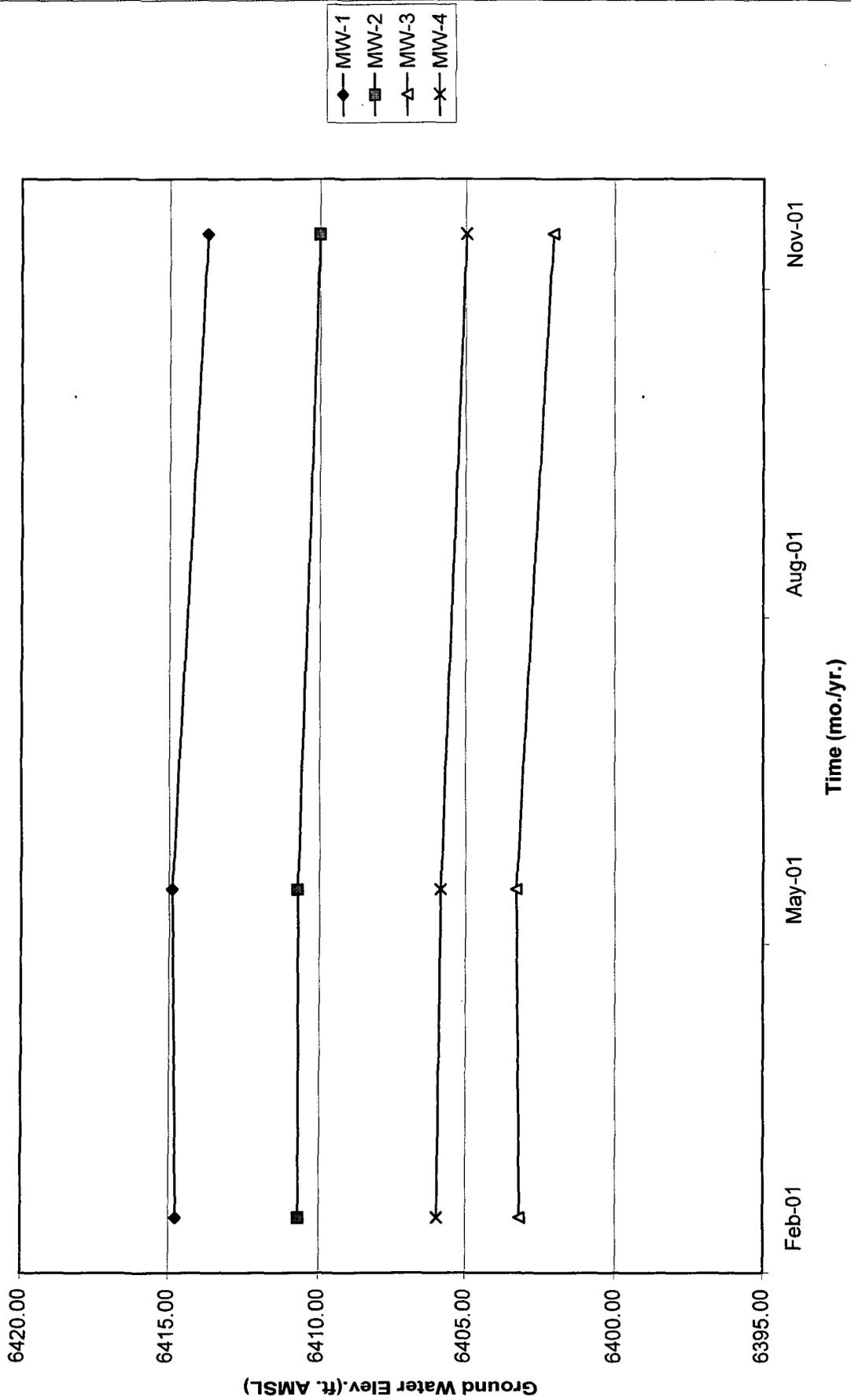
OCD Ranking: 40

Lead Agency: NMOCD / JAEPO

Status Narrative

This site has ten monitoring wells, with nine quarters of ground water monitoring completed to date. Sentinel well, MW-9, had no detectable BTEX during the first two quarters. In the fourth quarter, benzene was detected at 150 ug/l, yet toluene, ethylbenzene and xylene were not detected. This may indicate laboratory contamination of the sample. The results from year 2002 sampling should help to confirm or refute this premise.

Jicarilla 147-6 Hydrograph



Analytical Data Summary

Site Name:

Jicarilla Contract 147-6

Reporting Period:

7/1/00 To 12/31/01

Well ID	Sample Date	Sample ID	Benzene ug/l	Toluene ug/l	Ethylbenzene ug/l	Xylene (Total) ug/l
MW-1						
	2/13/01	161113FEB01	<1	<1	<1	<1
	5/9/01	124209MAY01	<1	<1	<1	<1
	11/2/01	104602NOV01	<1.0	3.1	<2.0	<2.0
MW-10						
	2/13/01	161613FEB01	<1	<1	<1	<1
	5/9/01	125309MAY01	<1	<1	<1	<1
	11/2/01	103502NOV01	<1.0	<2.0	<2.0	<2.0
MW-2						
	2/13/01	162813FEB01	124	14.8	72.3	681
	5/9/01	130209MAY01	35.4	15.1	27	23
	11/2/01	122302NOV01	150	3.4	120	1200
MW-3						
	2/13/01	165013FEB01	7250	1660	305	5800
	5/9/01	132009MAY01	7810	1860	531	7610
	11/2/01	125102NOV01	6700	7400	420	7900
MW-4						
	2/13/01	163513FEB01	353	3.85	69.5	59.8
	5/9/01	132609MAY01	684	6.10	110	97.2
	11/2/01	124902NOV01	480	7.9	84	34
MW-5						
	2/13/01	164213FEB01	3.94	<1	222	31.5
	5/9/01	133309MAY01	4.68	20.8	244	28.7
	11/2/01	123902NOV01	2.8	<2.0	200	13
MW-6						
	2/13/01	165813FEB01	22300	60.0	358	1560
	5/9/01	134609MAY01	33900	2310	577	3820
	11/2/01	131102NOV01	31000	2200	730	4500
MW-7						
	2/13/01	170513FEB01	<1	<1	<1	<1
	5/9/01	140209MAY01	4.00	<1	<1	<1
	11/2/01	130702NOV01	16	<2.0	<2.0	<2.0
MW-8						
	2/13/01	172113FEB01	613	16.2	13.0	12.4
	5/9/01	131009MAY01	182	3.65	6.98	2.41
	11/2/01	123102NOV01	370	<2.0	8.9	2.0

Site Name:
Jicarilla Contract 147-6

Reporting Period:
7/1/00 To 12/31/01

Well ID	Sample Date	Sample ID	Benzene ug/l	Toluene ug/l	Ethylbenzene ug/l	Xylene (Total) ug/l
MW-9						
	2/13/01	171013FEB01	<1	<1	<1	<1
	5/9/01	135309MAY01	<1	<1	<1	<1
	11/2/01	125902NOV01	150	<2.0	<2.0	<2.0

Q W A L L A B O R A T O R I E S, I N C.

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0102448

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS
 PROJECT: WES/JICARILLA 147-6

DATE REPORTED: 02/22/01
 DATE COLLECTED: 02/13/01
 DATE RECEIVED: 02/16/01

Reference Fraction: 0102448-10A
 Sample ID: JIC147-6-UG-MW1
 Sample Date Collected: 02/13/01 16:11:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		ND	UG/L	1.0	02/19/01	MB
TOLUENE		ND	UG/L	1.0	02/19/01	MB
ETHYLBENZENE		ND	UG/L	1.0	02/19/01	MB
TOTAL XYLENES		ND	UG/L	1.0	02/19/01	MB
BFB (SURROGATE)		93	125	75		

N=NONE DETECTED
 P=PRACTICAL QUANTITAION LIMIT
 SU=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY:


 TERRY KOESTER
 LABORATORY DIRECTOR


Q W A L L A B O R A T O R I E S, I N C.

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0102448

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS
 PROJECT: WES/JICARILLA 147-6

DATE REPORTED: 02/22/01
 DATE COLLECTED: 02/13/01
 DATE RECEIVED: 02/16/01

Reference Fraction:0102448-05A
 Sample ID: JIC147-6-SA-MW2
 Sample Date Collected: 02/13/0116:28:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		124	UG/L	1.0	02/19/01	MB
TOLUENE		14.8	UG/L	1.0	02/19/01	MB
ETHYLBENZENE		72.3	UG/L	1.0	02/19/01	MB
TOTAL XYLENES		681	UG/L	1.0	02/19/01	MB
BFB (SURROGATE)		91	125	75		

N=NONE DETECTED
 P=PRACTICAL QUANTITAION LIMIT
 SU=STANDARD UNITS
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APPROVED BY:


 TERRY KOESTER
 LABORATORY DIRECTOR


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2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0102448

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS
 PROJECT: WES/JICARILLA 147-6

DATE REPORTED: 02/22/01
 DATE COLLECTED: 02/13/01
 DATE RECEIVED: 02/16/01

Reference Fraction: 0102448-07A
 Sample ID: JIC147-6-DG-MW3
 Sample Date Collected: 02/13/01 16:50:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		7250	UG/L	100	02/20/01	MB
TOLUENE		1660	UG/L	100	02/20/01	MB
ETHYLBENZENE		305	UG/L	100	02/20/01	MB
TOTAL XYLENES		5800	UG/L	100	02/20/01	MB
BFB (SURROGATE)		91	125	75		

ND=NONE DETECTED
 P=PRACTICAL QUANTITATION LIMIT
 S=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY:


 TERRY KOESTER
 LABORATORY DIRECTOR


Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0102448

SENT **WILLIAMS GAS PIPELINE**
 TO: **187 COUNTY ROAD # 4980**
BLOOMFIELD, NM 87413
JIM STRUHS
 PROJECT: WES/JICARILLA 147-6

DATE REPORTED: 02/22/01
 DATE COLLECTED: 02/13/01
 DATE RECEIVED: 02/16/01

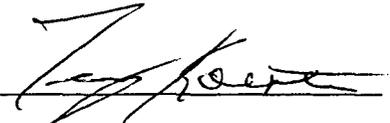
Reference Fraction: 0102448-03A
 Sample ID: JIC147-6-DG-MW4
 Sample Date Collected: 02/13/01 16:35:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		353	UG/L	1.0	02/19/01	MB
TOLUENE		3.85	UG/L	1.0	02/19/01	MB
ETHYLBENZENE		69.5	UG/L	1.0	02/19/01	MB
TOTAL XYLENES		59.8	UG/L	1.0	02/19/01	MB
BFB (SURROGATE)		116	125	75		

ND=NONE DETECTED
 PL=PRACTICAL QUANTITAION LIMIT
 SU=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY:



TERRY KOESTER
 LABORATORY DIRECTOR



Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0102448

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS
 PROJECT: WES/JICARILLA 147-6

DATE REPORTED: 02/22/01
 DATE COLLECTED: 02/13/01
 DATE RECEIVED: 02/16/01

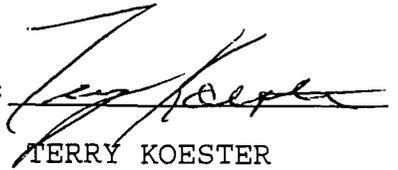
Reference Fraction: 0102448-06A
 Sample ID: JIC147-6-DG-MW5
 Sample Date Collected: 02/13/01 16:42:00

Sample Matrix: WATR

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		3.94	UG/L	1.0	02/19/01	MB
TOLUENE		ND	UG/L	1.0	02/19/01	MB
ETHYLBENZENE		222	UG/L	1.0	02/19/01	MB
TOTAL XYLENES		31.5	UG/L	1.0	02/19/01	MB
BFB (SURROGATE)		87	125	75		

ND=NONE DETECTED
 =PRACTICAL QUANTITAION LIMIT
 SU=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY:



TERRY KOESTER
 LABORATORY DIRECTOR



Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0102448

SENT WILLIAMS GAS PIPELINE
TO: 187 COUNTY ROAD # 4980
BLOOMFIELD, NM 87413
JIM STRUHS
PROJECT: WES/JICARILLA 147-6

DATE REPORTED: 02/22/01
DATE COLLECTED: 02/13/01
DATE RECEIVED: 02/16/01

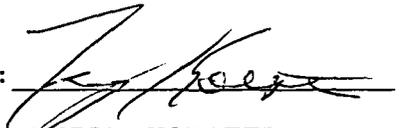
Reference Fraction:0102448-02A
Sample ID: JIC147-6-DG-MW6
Sample Date Collected: 02/13/0116:58:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED BY
BTEX	OA1/8021B			3.0	
BENZENE		22300 D	UG/L	10	02/19/01 MB
TOLUENE		60.0	UG/L	10	02/19/01 MB
ETHYLBENZENE		358	UG/L	10	02/19/01 MB
TOTAL XYLENES		1560	UG/L	10	02/19/01 MB
BFB (SURROGATE)		108	125	75	

NONE DETECTED
P= PRACTICAL QUANTIFICATION LIMIT
SU= STANDARD UNITS
B= DETECTED IN METHOD BLANK

APPROVED BY:


TERRY KOESTER
LABORATORY DIRECTOR


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2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0102448

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS

DATE REPORTED: 02/22/01
 DATE COLLECTED: 02/13/01
 DATE RECEIVED: 02/16/01

PROJECT: WES/JICARILLA 147-6

Reference Fraction: 0102448-01A

Sample ID: JIC147-6-DG-MW7

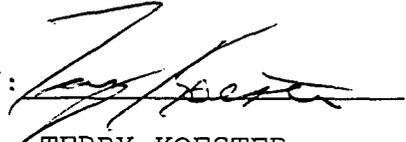
Sample Matrix: WATER

Sample Date Collected: 02/13/01 17:05:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		ND	UG/L	1.0	02/19/01	MB
TOLUENE		ND	UG/L	1.0	02/19/01	MB
ETHYLBENZENE		ND	UG/L	1.0	02/19/01	MB
TOTAL XYLENES		ND	UG/L	1.0	02/19/01	MB
BFB (SURROGATE)		101	125	75		

ND=NONE DETECTED
 PL=PRACTICAL QUANTITATION LIMIT
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APPROVED BY:


 TERRY KOESTER
 LABORATORY DIRECTOR
 PK

Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0102448

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS

DATE REPORTED: 02/22/01
 DATE COLLECTED: 02/13/01
 DATE RECEIVED: 02/16/01

PROJECT: WES/JICARILLA 147-6

Reference Fraction: 0102448-04A

Sample ID: JIC147-6-SA-MW8

Sample Matrix: WATER

Sample Date Collected: 02/13/01 17:21:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		613 D	UG/L	1.0	02/19/01	MB
TOLUENE		16.2	UG/L	1.0	02/19/01	MB
ETHYLBENZENE		13.0	UG/L	1.0	02/19/01	MB
TOTAL XYLENES		12.4	UG/L	1.0	02/19/01	MB
BFB (SURROGATE)		95	125	75		

ND=NONE DETECTED
 PL=PRACTICAL QUANTITATION LIMIT
 SU=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY: 
 TERRY KOESTER
 LABORATORY DIRECTOR

Q W A L L A B O R A T O R I E S, I N C.

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0102448

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS

DATE REPORTED: 02/22/01
 DATE COLLECTED: 02/13/01
 DATE RECEIVED: 02/16/01

PROJECT: WES/JICARILLA 147-6

Reference Fraction: 0102448-08A

Sample ID: JIC147-6-DG-MW9

Sample Matrix: WATER

Sample Date Collected: 02/13/01 17:10:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		ND	UG/L	1.0	02/19/01	MB
TOLUENE		ND	UG/L	1.0	02/19/01	MB
ETHYLBENZENE		ND	UG/L	1.0	02/19/01	MB
TOTAL XYLENES		ND	UG/L	1.0	02/19/01	MB
BFB (SURROGATE)		96	125	75		

ND=NONE DETECTED

PQL=PRACTICAL QUANTIFICATION LIMIT

SU=STANDARD UNITS

B=DETECTED IN METHOD BLANK

APPROVED BY:


 TERRY KOESTER
 LABORATORY DIRECTOR


Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0102448

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS

DATE REPORTED: 02/22/01
 DATE COLLECTED: 02/13/01
 DATE RECEIVED: 02/16/01

PROJECT: WES/JICARILLA 147-6

Reference Fraction: 0102448-09A

Sample ID: JIC147-6-UG-MW10

Sample Matrix: WATER

Sample Date Collected: 02/13/01 16:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		ND	UG/L	1.0	02/19/01	MB
TOLUENE		ND	UG/L	1.0	02/19/01	MB
ETHYLBENZENE		ND	UG/L	1.0	02/19/01	MB
TOTAL XYLENES		ND	UG/L	1.0	02/19/01	MB
BFB (SURROGATE)		105	125	75		

ND=NONE DETECTED
 P=PRACTICAL QUANTITATION LIMIT
 SU=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY: 
 TERRY KOESTER
 LABORATORY DIRECTOR


Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0105414

SENT WILLIAMS GAS PIPELINE
TO: 187 COUNTY ROAD # 4980
BLOOMFIELD, NM 87413
JIM STRUHS

DATE REPORTED: 05/22/01
DATE COLLECTED: 05/09/01
DATE RECEIVED: 05/15/01

PROJECT: JICARILLA CONTRACT 147-6

Reference Fraction: 0105414-04A

Sample ID: JIC1476-UG-MW1

Sample Matrix: WATER

Sample Date Collected: 05/09/01 12:42:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		ND	UG/L	1.0	05/17/01	MB
TOLUENE		ND	UG/L	1.0	05/17/01	MB
ETHYLBENZENE		ND	UG/L	1.0	05/17/01	MB
TOTAL XYLENES		ND	UG/L	1.0	05/17/01	MB
BFB (SURROGATE)		103	125	75		

N=NONE DETECTED

L=PRACTICAL QUANTITATION LIMIT

SU=STANDARD UNITS

B=DETECTED IN METHOD BLANK

APPROVED BY:


TERRY KOESTER
LABORATORY DIRECTOR

Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0105414

SENT WILLIAMS GAS PIPELINE
TO: 187 COUNTY ROAD # 4980
BLOOMFIELD, NM 87413
JIM STRUHS

DATE REPORTED: 05/22/01
DATE COLLECTED: 05/09/01
DATE RECEIVED: 05/15/01

PROJECT: JICARILLA CONTRACT 147-6

Reference Fraction:0105414-09A

Sample ID: JIC1476-SA-MW2

Sample Matrix: WATER

Sample Date Collected: 05/09/0113:02:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		35.4	UG/L	1.0	05/17/01	MB
TOLUENE		15.1	UG/L	1.0	05/17/01	MB
ETHYLBENZENE		27.0	UG/L	1.0	05/17/01	MB
TOTAL XYLENES		23.0	UG/L	1.0	05/17/01	MB
BFB (SURROGATE)		103	125	75		

ND=NONE DETECTED

=PRACTICAL QUANTITAION LIMIT

SU=STANDARD UNITS

B=DETECTED IN METHOD BLANK

APPROVED BY:


TERRY KOESTER
LABORATORY DIRECTOR



Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0105414

SENT WILLIAMS GAS PIPELINE
TO: 187 COUNTY ROAD # 4980
BLOOMFIELD, NM 87413
JIM STRUHS

DATE REPORTED: 05/22/01
DATE COLLECTED: 05/09/01
DATE RECEIVED: 05/15/01

PROJECT: JICARILLA CONTRACT 147-6

Reference Fraction: 0105414-02A

Sample ID: JIC1476-DG-MW3

Sample Matrix: WATER

Sample Date Collected: 05/09/01 13:20:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		7810	UG/L	100	05/17/01	MB
TOLUENE		1860	UG/L	100	05/17/01	MB
ETHYLBENZENE		531	UG/L	100	05/17/01	MB
TOTAL XYLENES		7610	UG/L	100	05/17/01	MB
BFB (SURROGATE)		91	125	75		

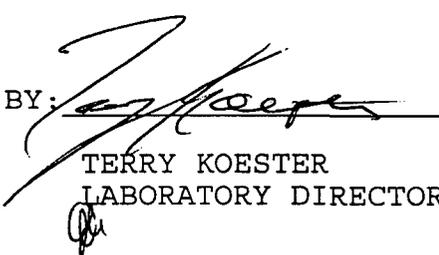
ND=NONE DETECTED

P= PRACTICAL QUANTIFICATION LIMIT

SU=STANDARD UNITS

B=DETECTED IN METHOD BLANK

APPROVED BY:


TERRY KOESTER
LABORATORY DIRECTOR

Q W A L L A B O R A T O R I E S, I N C.

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0105414

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS

DATE REPORTED: 05/22/01
 DATE COLLECTED: 05/09/01
 DATE RECEIVED: 05/15/01

PROJECT: JICARILLA CONTRACT 147-6

Reference Fraction: 0105414-07A

Sample ID: JIC1476-DG-MW4

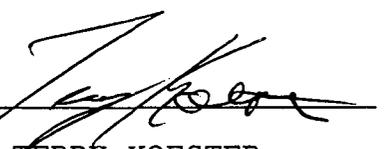
Sample Matrix: WATER

Sample Date Collected: 05/09/01 13:26:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		684 D	UG/L	1.0	05/17/01	MB
TOLUENE		6.10	UG/L	1.0	05/17/01	MB
ETHYLBENZENE		110	UG/L	1.0	05/17/01	MB
TOTAL XYLENES		97.2	UG/L	1.0	05/17/01	MB
BFB (SURROGATE)		111	125	75		

ND=NONE DETECTED
 P=PRACTICAL QUANTITAION LIMIT
 SU=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY:



TERRY KOESTER
 LABORATORY DIRECTOR



Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0105414

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS

DATE REPORTED: 05/22/01
 DATE COLLECTED: 05/09/01
 DATE RECEIVED: 05/15/01

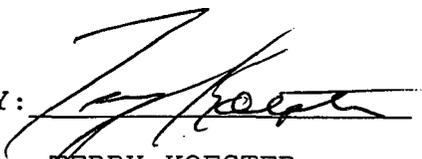
PROJECT: JICARILLA CONTRACT 147-6

Reference Fraction: 0105414-08A
 Sample ID: JIC1476-DG-MW5
 Sample Date Collected: 05/09/0113:33:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED BY
BTEX	OA1/8021B			3.0	
BENZENE		4.68	UG/L	1.0	05/17/01 MB
TOLUENE		20.8	UG/L	1.0	05/17/01 MB
ETHYLBENZENE		244	UG/L	1.0	05/17/01 MB
TOTAL XYLENES		28.7	UG/L	1.0	05/17/01 MB
BFB (SURROGATE)		104	125	75	

ND=NONE DETECTED
 PL=PRACTICAL QUANTITAION LIMIT
 SU=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY: 
 JERRY KOESTER
 LABORATORY DIRECTOR


Q W A L L A B O R A T O R I E S, I N C.

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0105414

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS

DATE REPORTED: 05/22/01
 DATE COLLECTED: 05/09/01
 DATE RECEIVED: 05/15/01

PROJECT: JICARILLA CONTRACT 147-6

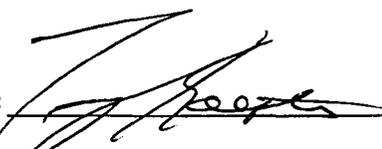
Reference Fraction: 0105414-06A
 Sample ID: JIC1476-DG-MW6
 Sample Date Collected: 05/09/0113:46:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		33900	UG/L	100	05/18/01	MB
TOLUENE		2310	UG/L	100	05/18/01	MB
ETHYLBENZENE		577	UG/L	100	05/18/01	MB
TOTAL XYLENES		3820	UG/L	100	05/18/01	MB
BFB (SURROGATE)		113	125	75		

N=NONE DETECTED
 P=PRACTICAL QUANTITATION LIMIT
 SU=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY:



TERRY KOESTER
 LABORATORY DIRECTOR



Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0105414

SENT WILLIAMS GAS PIPELINE
TO: 187 COUNTY ROAD # 4980
BLOOMFIELD, NM 87413
JIM STRUHS

DATE REPORTED: 05/22/01
DATE COLLECTED: 05/09/01
DATE RECEIVED: 05/15/01

PROJECT: JICARILLA CONTRACT 147-6

Reference Fraction:0105414-10A

Sample ID: JIC1476-DG-MW7

Sample Matrix: WATER

Sample Date Collected: 05/09/0114:02:00

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		4.00	UG/L	1.0	05/17/01	MB
TOLUENE		ND	UG/L	1.0	05/17/01	MB
ETHYLBENZENE		ND	UG/L	1.0	05/17/01	MB
TOTAL XYLENES		ND	UG/L	1.0	05/17/01	MB
BFB (SURROGATE)		100.0	125	75		

ND-NONE DETECTED

P= PRACTICAL QUANTITATION LIMIT

SU=STANDARD UNITS

B=DETECTED IN METHOD BLANK

APPROVED BY:



TERRY KOESTER
LABORATORY DIRECTOR



Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0105414

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS

DATE REPORTED: 05/22/01
 DATE COLLECTED: 05/09/01
 DATE RECEIVED: 05/15/01

PROJECT: JICARILLA CONTRACT 147-6

Reference Fraction: 0105414-01A
 Sample ID: JIC1476-SA-MW8
 Sample Date Collected: 05/09/0113:10:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		182	UG/L	1.0	05/17/01	MB
TOLUENE		3.65	UG/L	1.0	05/17/01	MB
ETHYLBENZENE		6.98	UG/L	1.0	05/17/01	MB
TOTAL XYLENES		2.41	UG/L	1.0	05/17/01	MB
BFB (SURROGATE)		97	125	75		

ND=NONE DETECTED
 P=PRACTICAL QUANTITAION LIMIT
 SU=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY:

Terry Koester
 TERRY KOESTER
 LABORATORY DIRECTOR

Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0105414

SENT WILLIAMS GAS PIPELINE
 TO: 187 COUNTY ROAD # 4980
 BLOOMFIELD, NM 87413
 JIM STRUHS

DATE REPORTED: 05/22/01
 DATE COLLECTED: 05/09/01
 DATE RECEIVED: 05/15/01

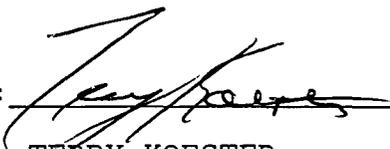
PROJECT: JICARILLA CONTRACT 147-6

Reference Fraction: 0105414-05A
 Sample ID: JIC1476-DG-MW9
 Sample Date Collected: 05/09/0113:53:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
BTEX	OA1/8021B			3.0		
BENZENE		ND	UG/L	1.0	05/17/01	MB
TOLUENE		ND	UG/L	1.0	05/17/01	MB
ETHYLBENZENE		ND	UG/L	1.0	05/17/01	MB
TOTAL XYLENES		ND	UG/L	1.0	05/17/01	MB
BFB (SURROGATE)		112	125	75		

ND=NONE DETECTED
 =PRACTICAL QUANTITAION LIMIT
 SU=STANDARD UNITS
 B=DETECTED IN METHOD BLANK

APPROVED BY: 
 TERRY KOESTER
 LABORATORY DIRECTOR


Q W A L L A B O R A T O R I E S , I N C .

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT:

REFERENCE #: 0105414

SENT WILLIAMS GAS PIPELINE
TO: 187 COUNTY ROAD # 4980
BLOOMFIELD, NM 87413
JIM STRUHS

DATE REPORTED: 05/22/01
DATE COLLECTED: 05/09/01
DATE RECEIVED: 05/15/01

PROJECT: JICARILLA CONTRACT 147-6

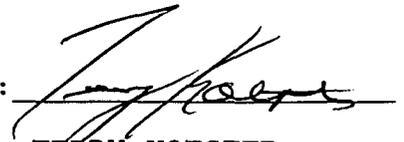
Reference Fraction: 0105414-03A
Sample ID: JIC1476-UG-MW10
Sample Date Collected: 05/09/0112:53:00

Sample Matrix: WATER

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED BY
BTEX	OA1/8021B			3.0	
BENZENE		ND	UG/L	1.0	05/17/01 MB
TOLUENE		ND	UG/L	1.0	05/17/01 MB
ETHYLBENZENE		ND	UG/L	1.0	05/17/01 MB
TOTAL XYLENES		ND	UG/L	1.0	05/17/01 MB
BFB (SURROGATE)		98	125	75	

ND=NONE DETECTED
PQL=PRACTICAL QUANTITAION LIMIT
SU=STANDARD UNITS
B=DETECTED IN METHOD BLANK

APPROVED BY:


TERRY KOESTER
LABORATORY DIRECTOR



ORGANIC ANALYSIS REPORT

AMERICAN
WEST
ANALYTICAL
LABORATORIES

Client: Mile High Environmental
Collected: November 2, 2001
Received: November 6, 2001
Analysis Requested: SW8260B/5030A

Contact: Jim Struhs
Analyzed: November 15, 2001

Lab Sample ID: L48276-01A
Field Sample ID: JIC 147-6-UG-MW1
Site ID: JIC 147-6 / JPS-110501-01

463 West 3600 South
Salt Lake City, Utah
84115

Analytical Results

MBTEXN/TPH-P

Units = mg/L

Final Dilution Factor: 1

Compound

Reporting
Limit

Amount
Detected

Benzene

0.0010

< 0.0010

Toluene

0.0020

0.0031

Ethylbenzene

0.0020

< 0.0020

Total Xylene

0.0020

< 0.0020

Surr: Surr 1,2-Dichloroethane

71-136

85.5 %

Surr: Surr Toluene-d8

87-111

96.9 %

(801) 263-8686
Toll Free (888) 263-8686
Fax (801) 263-8687
e-mail: awal@xmission.com

Kyle F. Gross
Laboratory Director

Peggy McNicol
QA Officer

Released by:

Laboratory Supervisor

Report Date:

November 20, 2001

Page 1 of 1



ORGANIC ANALYSIS REPORT

Client: Mile High Environmental
Collected: November 2, 2001
Received: November 6, 2001

Contact: Jim Struhs
Analyzed: November 15, 2001

AMERICAN
WEST
ANALYTICAL
LABORATORIES

Analysis Requested: SW8260B/5030A

Lab Sample ID: L48276-02A
Field Sample ID: JIC 147-6-SA-MW2
Site ID: JIC 147-6 / JPS-110501-01

463 West 3600 South
Salt Lake City, Utah
84115

Analytical Results

MBTEXN/TPH-P

Units = mg/L

Final Dilution Factor: 1

Compound

Reporting
Limit

Amount
Detected

Benzene

0.0010

0.15

Toluene

0.0020

0.0034

Ethylbenzene

0.0020

0.12

Total Xylene

0.020

1.2 +

Surr: Surr 1,2-Dichloroethane

71-136

70.8 % *

Surr: Surr Toluene-d8

87-111

99.4 %

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Kyle F. Gross
Laboratory Director

Peggy McNicol
QA Officer

+ This analyte was obtained from a 1:10 dilution.

* Outlying QC recoveries were observed in the undiluted analysis of this sample indicating a possible matrix effect. While the diluted analysis yielded passing QC, there was insufficient sample volume to confirm matrix effect in the original analysis. The Method Blank and Laboratory Control Sample demonstrate method control.

Released by: 
Laboratory Supervisor

Report Date: November 20, 2001 Page 1 of 1



ORGANIC ANALYSIS REPORT

Client: Mile High Environmental
Collected: November 2, 2001
Received: November 6, 2001

Contact: Jim Struhs
Analyzed: November 15, 2001

AMERICAN
WEST
ANALYTICAL
LABORATORIES

Analysis Requested: SW8260B/5030A

Lab Sample ID: L48276-03A

Field Sample ID: JIC 147-6-MW3

Site ID: JIC 147-6 / JPS-110501-01

463 West 3600 South
Salt Lake City, Utah
84115

Analytical Results

MBTEXN/TPH-P

Units = mg/L

Final Dilution Factor: 1

Compound

Reporting
Limit

Amount
Detected

Benzene

0.10

6.7

+

Toluene

0.20

7.4

+

Ethylbenzene

0.20

0.42

+

Total Xylene

0.20

7.9

+

Surr: Surr 1,2-Dichloroethane

71-136

61.9 %

*

Surr: Surr Toluene-d8

87-111

100 %

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Kyle F. Gross
Laboratory Director

Peggy McNicol
QA Officer

+ These analytes were obtained from a 1:100 dilution.

* Outlying QC recoveries were observed in the undiluted analysis of this sample indicating a possible matrix effect. While the diluted analysis yielded passing QC, there was insufficient sample volume to confirm matrix effect in the original analysis. The Method Blank and Laboratory Control Sample demonstrate method control.

Released by:

Laboratory Supervisor

Report Date:

November 20, 2001

Page 1 of 1



ORGANIC ANALYSIS REPORT

Client: Mile High Environmental
Collected: November 2, 2001
Received: November 6, 2001

Contact: Jim Struhs
Analyzed: November 15, 2001

AMERICAN
WEST
ANALYTICAL
LABORATORIES

Analysis Requested: SW8260B/5030A

Lab Sample ID: L48276-04A
Field Sample ID: JIC 147-6-DG-MW4
Site ID: JIC 147-6 / JPS-110501-01

463 West 3600 South
Salt Lake City, Utah
84115

Analytical Results

MBTEXN/TPH-P

Units = mg/L

Final Dilution Factor: 1

Compound

Reporting Limit	Amount Detected
-----------------	-----------------

Benzene	0.0010	0.48 *
---------	--------	--------

Toluene	0.0020	0.0079
---------	--------	--------

Ethylbenzene	0.0020	0.084
--------------	--------	-------

Total Xylene	0.0020	0.034
--------------	--------	-------

Surr: Surr 1,2-Dichloroethane	71-136	86.6 %
-------------------------------	--------	--------

Surr: Surr Toluene-d8	87-111	100 %
-----------------------	--------	-------

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Kyle F. Gross
Laboratory Director

Peggy McNicol
QA Officer

* This analyte was obtained from a 1:10 dilution.

Released by:

Laboratory Supervisor

Report Date: November 20, 2001 Page 1 of 1



ORGANIC ANALYSIS REPORT

AMERICAN
WEST
ANALYTICAL
LABORATORIES

Client: Mile High Environmental
Collected: November 2, 2001
Received: November 6, 2001
Analysis Requested: SW8260B/5030A

Contact: Jim Struhs
Analyzed: November 15, 2001

Lab Sample ID: L48276-05A
Field Sample ID: JIC 147-6-DG-MW5
Site ID: JIC 147-6 / JPS-110501-01

463 West 3600 South
Salt Lake City, Utah
84115

Analytical Results

MBTEXN/TPH-P

Units = mg/L

Final Dilution Factor: 1

Compound

Reporting
Limit

Amount
Detected

Benzene

0.0010

0.0028

Toluene

0.0020

< 0.0020

Ethylbenzene

0.0020

0.20

Total Xylene

0.0020

0.013

Surr: Surr 1,2-Dichloroethane

71-136

85.5 %

Surr: Surr Toluene-d8

87-111

98.6 %

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Kyle F. Gross
Laboratory Director

Peggy McNicol
QA Officer

Released by:

Laboratory Supervisor

Report Date:

November 20, 2001

Page 1 of 1



ORGANIC ANALYSIS REPORT

AMERICAN
WEST
ANALYTICAL
LABORATORIES

Client: Mile High Environmental
Collected: November 2, 2001
Received: November 6, 2001

Contact: Jim Struhs
Analyzed: November 15, 2001

Analysis Requested: SW8260B/5030A

Lab Sample ID: L48276-06A
Field Sample ID: JIC 147-6-MW6
Site ID: JIC 147-6 / JPS-110501-01

463 West 3600 South
Salt Lake City, Utah
84115

Analytical Results

MBTEXN/TPH-P

Units = mg/L

Final Dilution Factor: 1

Compound

Reporting
Limit

Amount
Detected

Benzene

0.10

31

E

Toluene

0.20

2.2

*

Ethylbenzene

0.20

0.73

*

Total Xylene

0.20

4.5

*

Surr: Surr 1,2-Dichloroethane

71-136

97.0 %

Surr: Surr Toluene-d8

87-111

109 %

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mail: awal@xmission.com

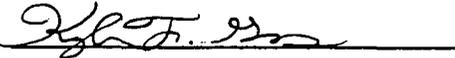
Kyle F. Gross
Laboratory Director

Peggy McNicol
QA Officer

E - Estimated value. The amount exceeds the linear working range of the instrument. This analyte was obtained from a 1:100 dilution.

The pH of the sample was >2.

* These analytes were obtained from a 1:100 dilution.

Released by: 
Laboratory Supervisor

Report Date: November 20, 2001 Page 1 of 1



ORGANIC ANALYSIS REPORT

Client: Mile High Environmental
Collected: November 2, 2001
Received: November 6, 2001

Contact: Jim Struhs
Analyzed: November 15, 2001

AMERICAN
WEST
ANALYTICAL
LABORATORIES

Analysis Requested: SW8260B/5030A

Lab Sample ID: L48276-08A
Field Sample ID: JIC 147-6-MW7
Site ID: JIC 147-6 / JPS-110501-01

463 West 3600 South
Salt Lake City, Utah
84115

Analytical Results

MBTEXN/TPH-P

Units = mg/L

Final Dilution Factor: 1

Compound

Reporting
Limit

Amount
Detected

Benzene

0.0010

0.016

Toluene

0.0020

< 0.0020

Ethylbenzene

0.0020

< 0.0020

Total Xylene

0.0020

< 0.0020

Surr: Surr 1,2-Dichloroethane

71-136

86.2 %

Surr: Surr Toluene-d8

87-111

98.5 %

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Kyle F. Gross
Laboratory Director

Peggy McNicol
QA Officer

Released by:

Laboratory Supervisor

Report Date:

November 20, 2001

Page 1 of 1



ORGANIC ANALYSIS REPORT

Client: Mile High Environmental
Collected: November 2, 2001
Received: November 6, 2001

Contact: Jim Struhs
Analyzed: November 15, 2001

AMERICAN
WEST
ANALYTICAL
LABORATORIES

Analysis Requested: SW8260B/5030A

Lab Sample ID: L48276-07A
Field Sample ID: JIC 147-6-SA-MW8
Site ID: JIC 147-6 / JPS-110501-01

463 West 3600 South
Salt Lake City, Utah
84115

Analytical Results

MBTEXN/TPH-P

Units = mg/L

Final Dilution Factor: 1

Compound

Reporting
Limit

Amount
Detected

Benzene

0.0010

0.37 E

Toluene

0.0020

< 0.0020

Ethylbenzene

0.0020

0.0089

Total Xylene

0.0020

0.0020

Surr: Surr 1,2-Dichloroethane

71-136

83.1 %

Surr: Surr Toluene-d8

87-111

99.3 %

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Kyle F. Gross
Laboratory Director

Peggy McNicol
QA Officer

E - Estimated value. The amount exceeds the linear working range of the instrument.

Released by:

Laboratory Supervisor

Report Date: November 20, 2001 Page 1 of 1



ORGANIC ANALYSIS REPORT

Client: Mile High Environmental
Collected: November 2, 2001
Received: November 6, 2001

Contact: Jim Struhs
Analyzed: November 15, 2001

AMERICAN
WEST
ANALYTICAL
LABORATORIES

Analysis Requested: SW8260B/5030A

Lab Sample ID: L48276-09A
Field Sample ID: JIC 147-6-MW9
Site ID: JIC 147-6 / JPS-110501-01

463 West 3600 South
Salt Lake City, Utah
84115

Analytical Results

MBTEXN/TPH-P

Units = mg/L

Final Dilution Factor: 1

Compound

Reporting
Limit

Amount
Detected

Benzene

0.0010

0.15

Toluene

0.0020

< 0.0020

Ethylbenzene

0.0020

< 0.0020

Total Xylene

0.0020

< 0.0020

Surr: Surr 1,2-Dichloroethane

71-136

90.0 %

Surr: Surr Toluene-d8

87-111

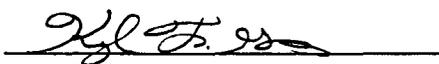
100 %

(801) 263-8686
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e-mail: awal@xmission.com

Kyle F. Gross
Laboratory Director

Peggy McNicol
QA Officer

Released by:


Laboratory Supervisor

Report Date:

November 20, 2001

Page 1 of 1



ORGANIC ANALYSIS REPORT

AMERICAN
WEST
ANALYTICAL
LABORATORIES

Client: Mile High Environmental
Collected: November 2, 2001
Received: November 6, 2001

Contact: Jim Struhs
Analyzed: November 15, 2001

Analysis Requested: SW8260B/5030A

Lab Sample ID: L48276-10A
Field Sample ID: JIC 147-6-UG-MW10
Site ID: JIC 147-6 / JPS-110501-01

463 West 3600 South
Salt Lake City, Utah
84115

Analytical Results

MBTEXN/TPH-P

Units = mg/L

Final Dilution Factor: 1

Compound

Reporting Limit	Amount Detected
-----------------	-----------------

Benzene 0.0010 < 0.0010

Toluene 0.0020 < 0.0020

Ethylbenzene 0.0020 < 0.0020

Total Xylene 0.0020 < 0.0020

Surr: Surr 1,2-Dichloroethane 71-136 88.6 %

Surr: Surr Toluene-d8 87-111 97.1 %

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Report Date: November 20, 2001 Page 1 of 1