

3R - 100

REPORTS

DATE:

1999

CROSS TIMBERS OIL COMPANY

GROUNDWATER REMEDIATION REPORT

1999

**ABRAMS J #1
(I) SECTION 29, T29N, R10W, NMPM
SAN JUAN COUNTY, NEW MEXICO**

RECEIVED

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ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

***PREPARED FOR:
MR. WILLIAM C. OLSON
NEW MEXICO OIL CONSERVATION DIVISION***

FEBRUARY 2000

***PREPARED BY:
BLAGG ENGINEERING, INC.***

***Consulting Petroleum / Reclamation Services
P.O. Box 87
Bloomfield, New Mexico 87413***

Cross Timbers Oil Company
Abrams J # 1 - Blow & Separator Pit
Ne/4 Se/4 Sec. 29, T29N, R10W

Monitor Well Sampling Dates:

Jan. 25, May 11, Aug. 25, Nov. 30, 1999
Dec. 6th (MW #7 only - reverification)

Groundwater Monitor Well Sampling Procedures:

Groundwater samples were collected from site monitor wells (MW's) following USEPA: SW-846 protocol. The samples were collected using new disposable bailers and placed in new laboratory supplied 40 ml glass vials with teflon septa caps. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) per USEPA Method 8021. The samples were preserved cool and with mercuric chloride, then hand delivered to a qualified laboratory for testing. Waste generated during monitor well sampling and development was disposed of utilizing the separator tank pit located on the well site.

Water Quality Information:

BTEX results for all 1999 quarterly sampling events are summarized in the following tables. Currently, the site's groundwater condition is only being monitored with MW's # 4, # 5, # 7, # 8R, # 9 sampled quarterly and #1, #3, #6, and # 10 annually. The existing air sparge reclamation system has not been operational since early January, 1997.

Summary, Conclusions and Recommendations:

Based on the enclosed documentation, it appears that the data from all the MW's reveals either decrease BTEX values or steady state conditions. However, it does appear that hydrocarbon contamination may be potentially migrating laterally and in the down gradient directions according to the most recent sampling of MW's #7 and #8R.

During the November 30th sampling event, the benzene level for MW #7 appeared very suspicious which prompted a resampling on December 6th. A duplicate was collected and given a fake identification (Valencia #1M - MW #1) for lab QA/QC. The resampling data seems to confirm the suspicion with the duplicate revealing very acceptable repeatability. In addition, the groundwater gradient, although relative flat, during each quarterly sampling indicated flow in the northwest direction in the vicinity of MW #7 which intuitively would have driven the hydrocarbon contamination observed from the source areas away from MW #7.

It is recommended to continue monitoring the site quarterly and annually (dependant on BTEX findings) until the results demonstrate otherwise. If during the first quarterly sampling event, it is evident that down gradient BTEX levels continue to escalate, it would be recommended to reinstate the air sparge system to contain any further migration.

CROSS TIMBERS GROUNDWATER MONITOR WELL LABORATORY RESULTS
SUBMITTED BY BLAGG ENGINEERING, INC.

IBRAMS J # 1 - SEPARATOR PIT
UNIT I, SEC. 29, T29N, R10W

REVISED DATE: DECEMBER 6, 1999

FILENAME: (AB-4Q-99.WK4) NJV

SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. umhos	pH	PRODUCT (ft.)	BTEX EPA METHOD 8020 (PPB)			
								Benzene	Toluene	Ethyl Benzene	Total Xylene
11-Jun-96	MW #1	45.17	45.73				0.58				
07-Apr-97		-					1.80				
27-Jun-97		-					0.70				
15-Sep-97		-					0.01				
30-Dec-97		44.59						748	3280	1050	5490
25-Jan-99		44.35			1,200	6.9		214	3130	707	7090
11-Jun-96	MW #2	42.30	50.00	435	600	7.5		ND	ND	ND	ND
07-Apr-97		42.86		394	700	7.5		ND	ND	ND	ND
19-May-97		43.13						ND	ND	ND	0.7
15-Sep-97		42.45						ND	ND	0.3	0.6
25-Jan-99		MONITOR WELL NOT FOUND - PRESUMED DESTROYED									
11-Jun-96	MW #3	44.58	50.00				0.33				
07-Apr-97		-					1.55				
27-Jun-97		-					1.10				
15-Sep-97		-					0.01				
30-Dec-97		44.11						78.1	891	138	3731
25-Jan-99		43.93			1,400	7.3		18.9	123	71	3809
11-May-99		45.00			1,300	6.9		18.3	52	76.4	3482
16-Aug-96	MW #4	43.75	50.00					ND	0.56	ND	ND
07-Apr-97		44.93		2815	2,400	7.0		ND	ND	ND	ND
27-Jun-97		45.90			2,100	6.7		139	1.6	1.6	9.4
15-Sep-97		44.38						ND	8.3	ND	1.1
30-Dec-97		44.35						0.6	1.5	0.4	2.6
25-Jan-99		44.11			1,400	7.1		324	ND	13.0	ND
11-May-99		45.18			2,200	6.9		0.9	4.4	4.0	37.3
25-Aug-99		44.80			2,200	6.8		1.5	2.1	0.2	3.5
30-Nov-99		44.97			2,600	6.6		8.7	7.6	ND	8.9
16-Aug-96	MW #5	45.28	50.00					553	1300	74.3	1077
07-Apr-97		46.44		1487	2,000	7.0		161	394	25.6	313.6
27-Jun-97		46.18			1,800	6.9		286	474	238	492
15-Sep-97		45.95						5.9	5.8	1.1	42.5
30-Dec-97		45.86						1.3	1.7	0.2	4.3
25-Jan-99		45.63			2,000	7.0		10.9	3.5	96.6	39.7
11-May-99		46.71			1,800	6.4		10.1	3.3	54.0	84.3
25-Aug-99		46.41			2,000	6.4		11.9	3.9	0.2	40.5
30-Jun-96	MW #6	-	50.00				0.70				
07-Apr-97		-					1.15				
27-Jun-97		-					1.25				
15-Sep-97		-					0.05				
30-Dec-97		45.08						782	2560	465	5240
25-Jan-99		44.86			900	7.3		327	1940	508	4810
11-May-99		45.94			1,000	6.9		420	1940	500	3822

CROSS TIMBERS GROUNDWATER MONITOR WELL LABORATORY RESULTS
SUBMITTED BY BLAGG ENGINEERING, INC.

BRAMS J #1 - SEPARATOR PIT
UNIT I, SEC. 29, T29N, R10W

REVISED DATE: DECEMBER 6, 1999

FILENAME: (AB-4Q-99.WK4) NJV

SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. umhos	pH	PRODUCT (ft.)	BTEX EPA METHOD 8020 (PPB)			
								Benzene	Toluene	Ethyl Benzene	Total Xylene
16-Aug-96	MW #7	43.32	50.00					ND	ND	ND	ND
07-Apr-97		44.55		414	700	7.5		ND	0.73	ND	0.54
15-Sep-97		43.88						ND	ND	ND	0.5
30-Dec-97		43.91						1.1	3.7	0.2	18.3
25-Jan-99		43.69			600	7.5		1.6	ND	ND	ND
25-Aug-99		44.33			500	7.2		2.6	0.5	1.0	16.0
30-Nov-99		44.51			600	7.3		32.6	3.6	5.9	6.2
06-Dec-99		44.53						6.9	2.9	6.1	13.2
06-Dec-99	dup.	"						7.3	3.9	12.3	13.1
07-Apr-97	MW #8R	45.10	53.10	2439	2,200	7.3		ND	1.06	ND	0.54
19-May-97		45.10						ND	0.3	0.3	1.6
27-Jun-97		45.09			1,800	7.3		ND	ND	0.2	0.7
15-Sep-97		44.32						ND	ND	ND	ND
30-Dec-97		44.49						ND	0.3	ND	0.1
25-Jan-99		44.25			2,300	7.1		2.2	ND	ND	ND
25-Aug-99		44.78			2,100	7.2		0.9	0.3	0.9	2.4
30-Nov-99		45.02			2,400	7.3		8.5	2.9	0.5	2.7
16-Aug-96	MW #9	44.59	50.00					74.8	ND	ND	ND
07-Apr-97		45.84		6397	3,900	6.9		341	0.86	0.64	ND
27-Jun-97		45.86			3,800	6.9		48.6	0.2	0.2	1.0
15-Sep-97		45.09						113	0.8	1.4	20.3
30-Dec-97		45.24						0.9	0.4	0.3	2.4
25-Jan-99		44.98			2,000	7.1		13.9	ND	ND	2.6
11-May-99		46.01			1,900	7.0		0.9	1.0	1.6	5.2
25-Aug-99		45.54			2,200	6.8		5.3	2.3	ND	1.8
30-Nov-99		45.75			2,200			3.6	2.0	2.3	3.7
16-Aug-96	MW #10	44.71	50.00					1600	6280	511	6190
07-Apr-97		45.88		1164	1,500	6.9		1010	1940	66.8	514
19-May-97		46.20						0.5	23.8	152	752
27-Jun-97		46.65			1,600	6.9		5.0	0.5	7.1	56.6
15-Sep-97		45.39						492	329	426	1038
30-Dec-97		45.30						96.8	6.6	60.9	660
25-Jan-99		45.06			1,800	6.8		43.6	53.0	253.0	1397
11-May-99		46.16			1,800	6.9		27.0	65.1	162	723
16-Aug-96	MW #11	45.76	50.00					ND	ND	ND	ND
07-Apr-97		47.02		315	700	7.5		ND	ND	ND	ND
25-Jan-99		46.16			600	7.3		ND	ND	ND	0.7

FIGURE 1



MW #8R

MW #8
(DRY HOLE)

MW #9

MW #4

MW #6

MW #7

KEYS GC D1E
WELL
HEAD

SOLAR PANELS

BERM

MW #3

PROD
TANK

TANK
PIT

FENCE

MW #5

MW #1

NEAL DOYLE
PROPERTY

SEP

SEP

MW #10

SEP

TANK
PIT

FENCE

TANK
PIT

FENCE

MW #2

PROD
TANK

PROD
TANK

BERM

MW #11

29 FT.

102 FT.

ABRAMS J1
WELL
HEAD

JUDSON STONEBRAKER
PROPERTY

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE
AS THE INSTRUMENTS USED IN OBTAINING THE
FOOTAGE AND BEARING FROM THE WELL HEAD.
(BRUNTON COMPASS AND LASER RANGE FINDER).
ALL OTHER STRUCTURES DISPLAYED ON THE SITE
MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO
SCALE.

0 50 100 FT.

AMOCO PRODUCTION COMPANY

ABRAMS J1

NE/4 SE/4 SEC. 29, T29N. R10W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: 1/4 ly SAMP.

DRAWN BY: NJV

FILENAME: 04-07-97

GROUNDWATER

CONTOUR

MAP

4/97



FIGURE 2 (1st 1/4, 1999)

MW #8R
(51.53)

MW #9
(51.56)

MW #4
(51.80)

SOLAR PANELS

MW #6
(51.75)

MW #7
(51.93)

KEYS GC D1E
WELL
HEAD



MW #3
(51.90)



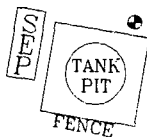
FENCE

MW #5
(52.15)

MW #1
(52.13)

SEP

52.25



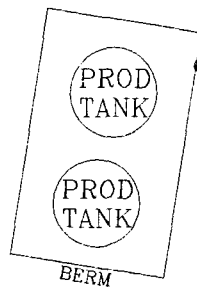
MW #10
(52.22)

FENCE



FENCE

MW #2



BERM

MW #11
(52.45)

⊕
ABRAMS J1
WELL
HEAD

LEGEND

52.85

RELATIVE GROUNDWATER ELEVATION
CONTOUR (IN FEET)

MW #11
(52.90)

GROUNDWATER MONITOR WELL LOCATION
(with relative groundwater elevation)



APPARENT GROUNDWATER FLOW
DIRECTION

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE
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0 50 100 FT.

AMOCO PRODUCTION COMPANY

ABRAMS J1

NE/4 SE/4 SEC. 29, T29N, R10W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: 1/4 ly SAMP.

DRAWN BY: NJV

FILENAME: 01-25-GW

GROUNDWATER

CONTOUR

MAP

1/99



FIGURE 3 (2nd 1/4, 1999)

KEYS GC D1E
WELL
HEAD



⊕
ABRAMS J1
WELL
HEAD

52.85

RELATIVE GROUNDWATER ELEVATION
CONTOUR (IN FEET)

MW #11
(52.90)

GROUNDWATER MONITOR WELL LOCATION
(with relative groundwater elevation)

APPARENT GROUNDWATER FLOW
DIRECTION

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE
AS THE INSTRUMENTS USED IN OBTAINING THE
FOOTAGE AND BEARING FROM THE WELL HEAD
(BRUNTON COMPASS AND LASER RANGE FINDER).
ALL OTHER STRUCTURES DISPLAYED ON THE SITE
MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO
SCALE.

0 50 100 FT.

AMOCO PRODUCTION COMPANY
ABRAMS J1
NE/4 SE/4 SEC. 29, T29N, R10W
SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

PROJECT: 1/4 ly SAMP.
DRAWN BY: NJV
FILENAME: 05-11-GW

GROUNDWATER
CONTOUR
MAP
5/99

BLAGG ENGINEERING, INC.
MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6345

ABRAMS J # 1

LABORATORY (S) USED : ENVIROTECH, INC.

UNIT I, SEC. 29, T29N, R10W

Date : January 25, 1999

SAMPLER : N J V

Filename : 01-25-99.WK3

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	96.48	52.13	44.35	45.73	1425	6.9	1,200	0.70	-
2	MONITOR WELL NOT FOUND - PRESUMED DESTROYED								
3	95.83	51.90	43.93	50.00	1325	7.3	1,400	3.25	-
4	95.91	51.80	44.11	50.00	1345	7.1	1,400	3.00	-
5	97.78	52.15	45.63	50.00	1400	7.0	2,000	2.00	-
6	96.61	51.75	44.86	50.00	1310	7.3	900	2.50	-
7	95.62	51.93	43.69	50.00	1115	7.5	600	3.00	-
8R	95.78	51.53	44.25	53.10	1150	7.1	2,300	4.50	-
9	96.54	51.56	44.98	50.00	1220	7.1	2,000	2.50	-
10	97.28	52.22	45.06	50.00	1410	6.8	1,800	2.50	-
11	98.61	52.45	46.16	50.00	1045	7.3	600	2.00	-

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$.

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

MW #'s 4, 9, & 10 - poor recovery, #5 - very poor. Collected BTEX for all MW listed above except MW #2. Air sparge system not operational @ time of sampling.

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 1	Date Reported:	01-27-99
Chain of Custody:	6435	Date Sampled:	01-25-99
Laboratory Number:	E578	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-27-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	214	5	0.9
Toluene	3,130	5	0.8
Ethylbenzene	707	5	0.8
p,m-Xylene	4,980	5	1.1
o-Xylene	2,110	5	0.5
Total BTEX	11,140		

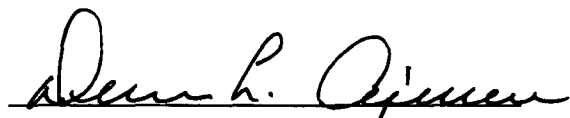
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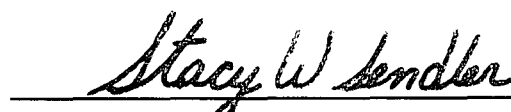
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 3	Date Reported:	01-27-99
Chain of Custody:	6435	Date Sampled:	01-25-99
Laboratory Number:	E577	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-27-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	18.9	5	0.9
Toluene	123	5	0.8
Ethylbenzene	70.9	5	0.8
p,m-Xylene	3,020	5	1.1
o-Xylene	789	5	0.5

Total BTEX 4,020

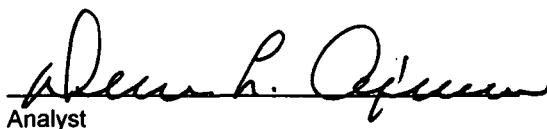
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Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 4	Date Reported:	01-26-99
Chain of Custody:	6435	Date Sampled:	01-25-99
Laboratory Number:	E573	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-26-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	324	1	0.2
Toluene	ND	1	0.2
Ethylbenzene	13.0	1	0.2
p,m-Xylene	ND	1	0.2
o-Xylene	ND	1	0.1

Total BTEX 337

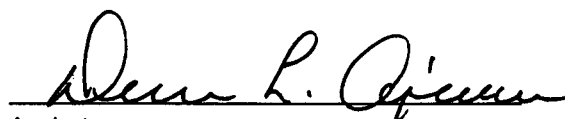
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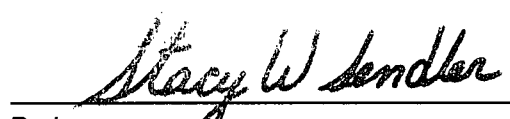
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

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Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 5	Date Reported:	01-26-99
Chain of Custody:	6435	Date Sampled:	01-25-99
Laboratory Number:	E575	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-26-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	10.9	1	0.2
Toluene	3.5	1	0.2
Ethylbenzene	96.6	1	0.2
p,m-Xylene	38.9	1	0.2
o-Xylene	0.9	1	0.1

Total BTEX 151

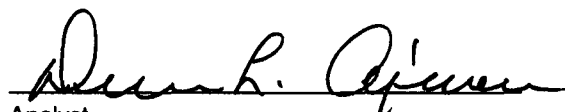
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 6	Date Reported:	01-27-99
Chain of Custody:	6435	Date Sampled:	01-25-99
Laboratory Number:	E579	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-27-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	327	5	0.9
Toluene	1,940	5	0.8
Ethylbenzene	508	5	0.8
p,m-Xylene	3,650	5	1.1
o-Xylene	1,160	5	0.5

Total BTEX 7,590

ND - Parameter not detected at the stated detection limit.

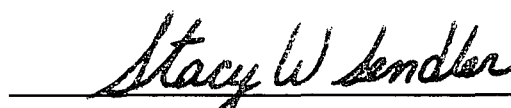
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromofluorobenzene	97 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 7	Date Reported:	01-26-99
Chain of Custody:	6435	Date Sampled:	01-25-99
Laboratory Number:	E571	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-26-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	1.6	1	0.2
Toluene	ND	1	0.2
Ethylbenzene	ND	1	0.2
p,m-Xylene	ND	1	0.2
o-Xylene	ND	1	0.1

Total BTEX 1.6

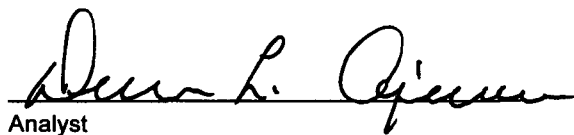
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	101 %
	Bromofluorobenzene	101 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 8R	Date Reported:	01-26-99
Chain of Custody:	6435	Date Sampled:	01-25-99
Laboratory Number:	E572	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-26-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	2.2	1	0.2
Toluene	ND	1	0.2
Ethylbenzene	ND	1	0.2
p,m-Xylene	ND	1	0.2
o-Xylene	ND	1	0.1

Total BTEX 2.2

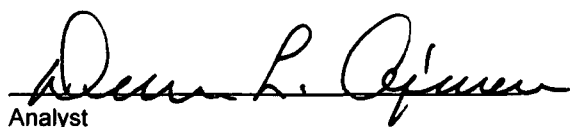
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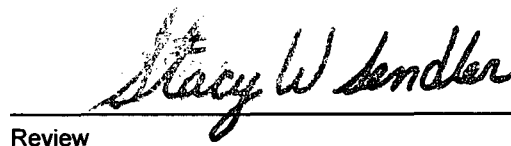
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 9	Date Reported:	01-26-99
Chain of Custody:	6435	Date Sampled:	01-25-99
Laboratory Number:	E574	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-26-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	13.9	1	0.2
Toluene	ND	1	0.2
Ethylbenzene	ND	1	0.2
p,m-Xylene	ND	1	0.2
o-Xylene	2.6	1	0.1

Total BTEX 16.5

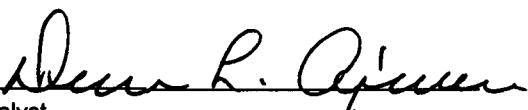
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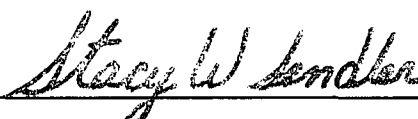
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromofluorobenzene	97 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 10	Date Reported:	01-27-99
Chain of Custody:	6435	Date Sampled:	01-25-99
Laboratory Number:	E576	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-27-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	43.6	1	0.2
Toluene	53.0	1	0.2
Ethylbenzene	253	1	0.2
p,m-Xylene	1,110	1	0.2
o-Xylene	287	1	0.1

Total BTEX 1,750

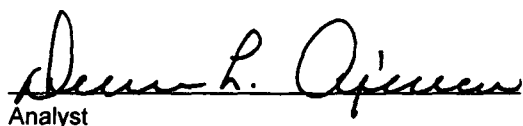
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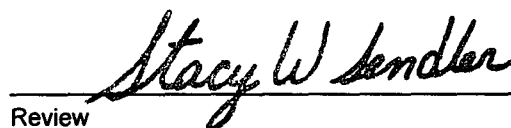
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	101 %
	Bromofluorobenzene	101 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 11	Date Reported:	01-26-99
Chain of Custody:	6435	Date Sampled:	01-25-99
Laboratory Number:	E570	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-26-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	ND	1	0.2
Toluene	ND	1	0.2
Ethylbenzene	ND	1	0.2
p,m-Xylene	ND	1	0.2
o-Xylene	0.7	1	0.1

Total BTEX 0.7

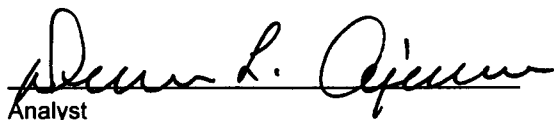
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	99 %
	Bromofluorobenzene	99 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

CHAIN OF CUSTODY RECORD

6435

Client / Project Name			Project Location			ANALYSIS / PARAMETERS											
BAGG / Cross Timbers			ABRAMS T#1														
Sampler: REP			Client No. 04054-10														
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	Remarks											
MW # 11	1/25/99	1045	ES70	WATER	2	All samples											
MW # 7	1/25/99	1115	ES71	WATER	2	RESERV - HSC12											
MW # 8R	1/25/99	1150	ES72	WATER	2	t cool											
MW # 4	1/25/99	1345	ES73	WATER	2												
MW # 9	1/25/99	1220	ES74	WATER	2												
MW # 5	1/25/99	1400	ES75	WATER	2												
MW # 10	1/25/99	1410	ES76	WATER	2												
MW # 3	1/25/99	1425	ES77	WATER	2												
MW # 1	1/25/99	1425	ES78	WATER	2												
MW # 6	1/25/99	1310	ES79	WATER	2												
Relinquished by: (Signature) Ed Porter			Date 1/26/99			Time 0645			Received by: (Signature) John V. S.			Date 1/26/99			Time 0645		
Relinquished by: (Signature) John V. S.			Date 1/26/99			Time 0659			Received by: (Signature) Andrew P. Green			Date 1/26/99			Time 0659		
Relinquished by: (Signature)			Date			Time			Received by: (Signature)			Date			Time		

BAG CUC 6435-6436

ENVIROTECH INC.

5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 632-0615

Sample Receipt

Received Intact	Y	N	N/A
Cool - Ice/Blue Ice	✓		

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	01-26-BTEX QA/QC	Date Reported:	01-26-99
Laboratory Number:	E570	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	01-26-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff	Blank Conc	Detect Limit
		Accept. Range 0 - 15%			
Benzene	1.0822E-001	1.0857E-001	0.32%	ND	0.2
Toluene	5.6859E-002	5.6972E-002	0.20%	ND	0.2
Ethylbenzene	6.8692E-002	6.8982E-002	0.42%	ND	0.2
p,m-Xylene	6.7811E-002	6.7824E-002	0.02%	ND	0.2
o-Xylene	7.0740E-002	7.0953E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff	Accept Limit
Benzene	ND	ND	0.0%	0 - 30%
Toluene	ND	ND	0.0%	0 - 30%
Ethylbenzene	ND	ND	0.0%	0 - 30%
p,m-Xylene	ND	ND	0.0%	0 - 30%
o-Xylene	0.7	0.7	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	ND	50.0	50.0	100%	39 - 150
Toluene	ND	50.0	50.0	100%	46 - 148
Ethylbenzene	ND	50.0	50.0	100%	32 - 160
p,m-Xylene	ND	100.0	100.0	100%	46 - 148
o-Xylene	0.7	50.0	50.7	100%	46 - 148

ND - Parameter not detected at the stated detection limit.

* - Administrative Limits set at 80 - 120%.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for samples E570 - E575.

Analyst

Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	01-27-BTEX QA/QC	Date Reported:	01-27-99
Laboratory Number:	E580	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	01-27-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF	C-Cal RF	%Diff	Blank Conc	Detect. Limit
		Accept Range 0 - 15%			
Benzene	1.0822E-001	1.0857E-001	0.32%	ND	0.2
Toluene	5.6859E-002	5.6972E-002	0.20%	ND	0.2
Ethylbenzene	6.8692E-002	6.8982E-002	0.42%	ND	0.2
p,m-Xylene	6.7811E-002	6.7824E-002	0.02%	ND	0.2
o-Xylene	7.0740E-002	7.0953E-002	0.30%	ND	0.1

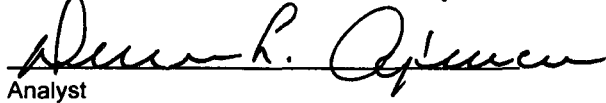
Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff	Accept Limit
Benzene	ND	ND	0.0%	0 - 30%
Toluene	0.7	0.7	0.0%	0 - 30%
Ethylbenzene	26.7	25.8	3.4%	0 - 30%
p,m-Xylene	172	172	0.0%	0 - 30%
o-Xylene	47.9	46.1	3.8%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	ND	50.0	50.0	100%	39 - 150
Toluene	0.7	50.0	50.7	100%	46 - 148
Ethylbenzene	26.7	50.0	75.6	99%	32 - 160
p,m-Xylene	172	100.0	264	97%	46 - 148
o-Xylene	47.9	50.0	95.3	97%	46 - 148

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for samples E576 - E580.


Analyst


Review

BLAGG ENGINEERING, INC.**MONITOR WELL SAMPLING DATA**CLIENT : AMOCO PRODUCTION CO.CHAIN-OF-CUSTODY # : 6673

ABRAMS J # 1

LABORATORY (S) USED : ENVIROTECH, INC.

UNIT I, SEC. 29, T29N, R10W

Date : May 11, 1999SAMPLER : N J VFilename : 05-11-99.WK3PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	96.48	51.04	45.44	45.73	-	-	-	-	-
2	MONITOR WELL NOT FOUND - PRESUMED DESTROYED								
3	95.83	50.83	45.00	50.00	1100	6.9	1,300	2.50	-
4	95.91	50.73	45.18	50.00	1155	6.9	2,200	2.50	-
5	97.78	51.07	46.71	50.00	1000	6.4	1,800	1.75	-
6	96.61	50.67	45.94	50.00	1230	6.9	1,000	2.00	-
7	95.62	50.86	44.76	50.00	-	-	-	-	-
8R	95.78	50.52	45.26	53.10	-	-	-	-	-
9	96.54	50.53	46.01	50.00	1035	7.0	1,900	2.00	-
10	97.28	51.12	46.16	50.00	1125	6.9	1,800	2.00	-
11	98.61	51.33	47.28	50.00	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$.

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".MW #'s 4, 9, & 10 - poor recovery, # 5 - very poor. Collected BTEX for all MW listed above except MW # 2. Air sparge system not operational @ time of sampling .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #3	Date Reported:	05-12-99
Chain of Custody:	6673	Date Sampled:	05-11-99
Laboratory Number:	F198	Date Received:	05-11-99
Sample Matrix:	Water	Date Analyzed:	05-12-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	18.3	10	1.8
Toluene	52.4	10	1.7
Ethylbenzene	76.4	10	1.5
p,m-Xylene	2,770	10	2.2
o-Xylene	712	10	1.0

Total BTEX 3,630

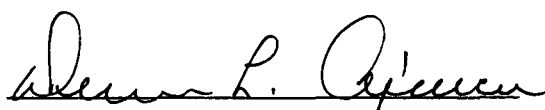
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	99 %
	Bromofluorobenzene	99 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #4	Date Reported:	05-12-99
Chain of Custody:	6673	Date Sampled:	05-11-99
Laboratory Number:	F200	Date Received:	05-11-99
Sample Matrix:	Water	Date Analyzed:	05-12-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	0.9	1	0.2
Toluene	4.4	1	0.2
Ethylbenzene	4.0	1	0.2
p,m-Xylene	31.4	1	0.2
o-Xylene	5.9	1	0.1

Total BTEX 46.6

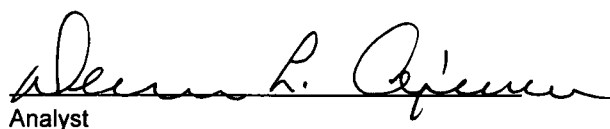
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Abrams J #1.**


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #5	Date Reported:	05-12-99
Chain of Custody:	6673	Date Sampled:	05-11-99
Laboratory Number:	F196	Date Received:	05-11-99
Sample Matrix:	Water	Date Analyzed:	05-12-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	10.1	1	0.2
Toluene	3.3	1	0.2
Ethylbenzene	54.0	1	0.2
p,m-Xylene	73.7	1	0.2
o-Xylene	10.6	1	0.1

Total BTEX 152

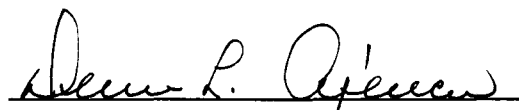
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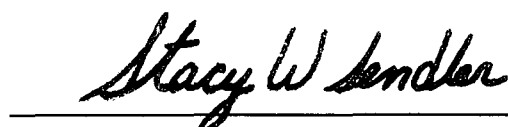
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Abrams J #1.**


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #6	Date Reported:	05-12-99
Chain of Custody:	6673	Date Sampled:	05-11-99
Laboratory Number:	F201	Date Received:	05-11-99
Sample Matrix:	Water	Date Analyzed:	05-12-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	420	10	1.8
Toluene	1,940	10	1.7
Ethylbenzene	500	10	1.5
p,m-Xylene	2,990	10	2.2
o-Xylene	832	10	1.0

Total BTEX 6,680

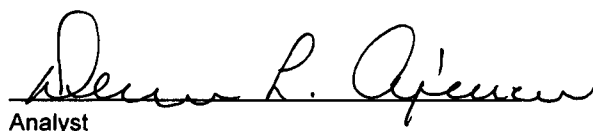
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromofluorobenzene	95 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #9	Date Reported:	05-12-99
Chain of Custody:	6673	Date Sampled:	05-11-99
Laboratory Number:	F197	Date Received:	05-11-99
Sample Matrix:	Water	Date Analyzed:	05-12-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	0.9	1	0.2
Toluene	1.0	1	0.2
Ethylbenzene	1.6	1	0.2
p,m-Xylene	4.0	1	0.2
o-Xylene	1.2	1	0.1

Total BTEX 8.7

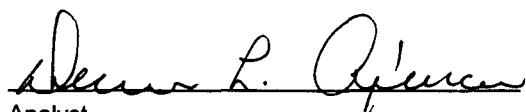
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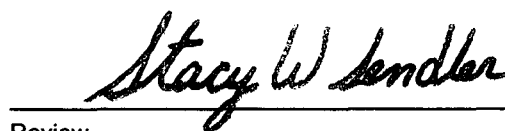
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	96 %
	Bromofluorobenzene	96 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #10	Date Reported:	05-12-99
Chain of Custody:	6673	Date Sampled:	05-11-99
Laboratory Number:	F199	Date Received:	05-11-99
Sample Matrix:	Water	Date Analyzed:	05-12-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	27.0	1	0.2
Toluene	65.1	1	0.2
Ethylbenzene	162	1	0.2
p,m-Xylene	516	1	0.2
o-Xylene	207	1	0.1

Total BTEX 977

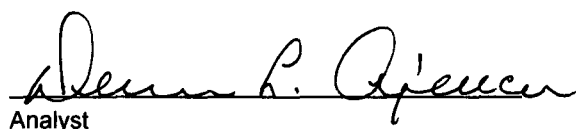
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromofluorobenzene	95 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

CHAIN OF CUSTODY RECORD

6673

Client / Project Name			Project Location			ANALYSIS / PARAMETERS																			
BLADE/CROSS TIMBERS			ABRAMS J #1																						
Sampler: NTU			Client No. 403410																						
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers						Remarks														
MW #5	5/11/99	1000	F194	WATER	2	BTEX (8021)					All samples -														
MW #9	5/11/99	1035	F197	WATER	2	✓					PRESERV. HCL + COOL														
MW #3	5/11/99	1100	F198	WATER	2	✓																			
MW #10	5/11/99	1125	F199	WATER	2	✓																			
MW #4	5/11/99	1155	F200	WATER	2	✓																			
MW #6	5/11/99	1230	F201	WATER	2	✓																			
Relinquished by: (Signature)			Date			Time			Received by: (Signature)			Date			Time										
[Signature]			5/11/99			1403			[Signature]			5.11.99			1405										
Relinquished by: (Signature)									Received by: (Signature)																
Relinquished by: (Signature)									Received by: (Signature)																
ENVIROTECH INC. 5796 U.S. Highway 64 Farmingington, New Mexico 87401 (505) 632-0615															Sample Receipt <table border="1"> <tr> <td>Received Intact</td> <td>Y</td> <td>N</td> <td>N/A</td> </tr> <tr> <td>Cool - Ice/Blue Ice</td> <td>✓</td> <td></td> <td></td> </tr> </table>			Received Intact	Y	N	N/A	Cool - Ice/Blue Ice	✓		
Received Intact	Y	N	N/A																						
Cool - Ice/Blue Ice	✓																								

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	05-12-BTEX QA/QC	Date Reported:	05-12-99
Laboratory Number:	F196	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	05-12-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF	C-Cal RF	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	4.5104E-002	4.5248E-002	0.32%	ND	0.2
Toluene	2.2820E-002	2.2825E-002	0.02%	ND	0.2
Ethylbenzene	3.1405E-002	3.1443E-002	0.12%	ND	0.2
p,m-Xylene	3.1037E-002	3.1043E-002	0.02%	ND	0.2
o-Xylene	2.9125E-002	2.9213E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	10.1	9.8	3.0%	0 - 30%
Toluene	3.3	3.2	3.0%	0 - 30%
Ethylbenzene	54.0	52.6	2.6%	0 - 30%
p,m-Xylene	73.7	74.4	0.9%	0 - 30%
o-Xylene	10.6	10.3	2.8%	0 - 30%

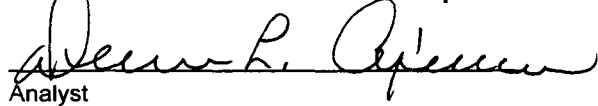
Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	10.1	50.0	59.9	100%	39 - 150
Toluene	3.3	50.0	53.2	100%	46 - 148
Ethylbenzene	54.0	50.0	102	98%	32 - 160
p,m-Xylene	73.7	100.0	171	98%	46 - 148
o-Xylene	10.6	50.0	60.1	99%	46 - 148

ND - Parameter not detected at the stated detection limit.

* - Administrative Limits set at 80 - 120%.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for samples F176 and F196 - F201.


Analyst


Review

BLAGG ENGINEERING, INC.**MONITOR WELL SAMPLING DATA**CLIENT : **CROSS TIMBERS OIL CO.**

CHAIN-OF-CUSTODY # : 6700

ABRAMS J # 1

LABORATORY (S) USED : ENVIROTECH, INC.

UNIT I, SEC. 29, T29N, R10W

Date : August 25, 1999

SAMPLER : NJV

Filename : 08-25-99.WK4

PROJECT MANAGER : NJV

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1			-	45.73	-	-	-	-	-
2	MONITOR WELL NOT FOUND - PRESUMED DESTROYED								
3			-	50.00	-	-	-	-	-
4	95.91	51.11	44.80	50.00	1155	6.8	2,200	2.50	-
5	97.78	51.37	46.41	50.00	1120	6.4	2,000	1.75	-
6			-	50.00	-	-	-	-	-
7	95.62	51.29	44.33	50.00	1040	7.2	500	2.75	-
8R	95.78	51.00	44.78	53.10	1005	7.2	2,100	4.00	-
9	96.54	51.00	45.54	50.00	1235	6.9	2,000	2.25	-
10			-	50.00	-	-	-	-	-
11	98.61	51.64	46.97	50.00	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$.

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".MW #'s 4, & 9 - poor recovery, #5 - very poor . Collected BTEX in MW #'s 4, 5, 7, 8R, & 9 .Air sparge system not operational @ time of sampling .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 4	Date Reported:	08-27-99
Chain of Custody:	6700	Date Sampled:	08-25-99
Laboratory Number:	F994	Date Received:	08-26-99
Sample Matrix:	Water	Date Analyzed:	08-26-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	1.5	1	0.2
Toluene	2.1	1	0.2
Ethylbenzene	0.2	1	0.2
p,m-Xylene	2.8	1	0.2
o-Xylene	0.7	1	0.1
Total Xylene	3.5		
Total BTEX	7.3		

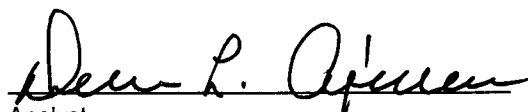
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 5	Date Reported:	08-27-99
Chain of Custody:	6700	Date Sampled:	08-25-99
Laboratory Number:	F995	Date Received:	08-26-99
Sample Matrix:	Water	Date Analyzed:	08-26-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	11.9	1	0.2
Toluene	3.9	1	0.2
Ethylbenzene	0.2	1	0.2
p,m-Xylene	38.5	1	0.2
o-Xylene	2.0	1	0.1
Total Xylene	40.5		
Total BTEX	56.5		

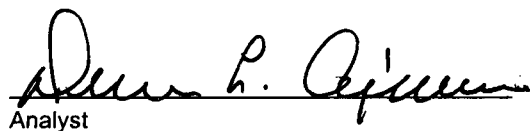
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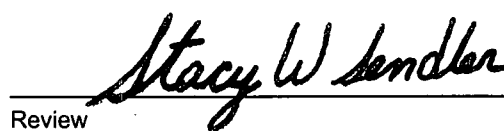
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 7	Date Reported:	08-27-99
Chain of Custody:	6700	Date Sampled:	08-25-99
Laboratory Number:	F996	Date Received:	08-26-99
Sample Matrix:	Water	Date Analyzed:	08-26-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	2.6	1	0.2
Toluene	0.5	1	0.2
Ethylbenzene	1.0	1	0.2
p,m-Xylene	13.5	1	0.2
o-Xylene	2.5	1	0.1
Total Xylene	16.0		
Total BTEX	20.1		

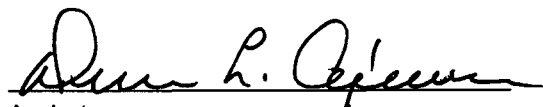
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromofluorobenzene	97 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 8 R	Date Reported:	08-27-99
Chain of Custody:	6700	Date Sampled:	08-25-99
Laboratory Number:	F997	Date Received:	08-26-99
Sample Matrix:	Water	Date Analyzed:	08-26-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	0.9	1	0.2
Toluene	0.3	1	0.2
Ethylbenzene	0.9	1	0.2
p,m-Xylene	1.5	1	0.2
o-Xylene	0.9	1	0.1
Total Xylene	2.4		
Total BTEX	4.5		

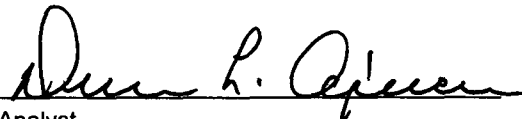
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	99 %
	Bromofluorobenzene	99 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 9	Date Reported:	08-27-99
Chain of Custody:	6700	Date Sampled:	08-25-99
Laboratory Number:	F998	Date Received:	08-26-99
Sample Matrix:	Water	Date Analyzed:	08-26-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	5.3	1	0.2
Toluene	2.3	1	0.2
Ethylbenzene	ND	1	0.2
p,m-Xylene	1.3	1	0.2
o-Xylene	0.5	1	0.1
Total Xylene	1.8		
Total BTEX	9.4		

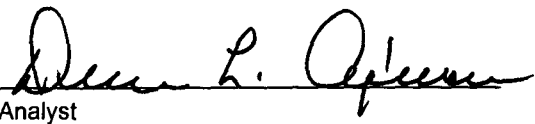
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromofluorobenzene	95 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

CHAIN OF CUSTODY RECORD

6700

Client / Project Name			Project Location			ANALYSIS / PARAMETERS					
BAGG / CROSS TUNERS			ABIGONS T # 1								
Sampler: NTV			Client No. 403410								
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	Remarks					
MW # 4	8/25/99	1155	F994	WATER	2	✓	ALL SAMPLES				
MW # 5	8/25/99	1120	F995	WATER	2	✓	RESERV. - H ₂ C ₂				
MW # 7	8/25/99	1040	F996	WATER	2	✓	+ COOL				
MW # 8R	8/25/99	1005	F997	WATER	2	✓					
MW # 9	8/25/99	1235	F998	WATER	2	✓					
Relinquished by: (Signature) <i>[Signature]</i> Date 8/26/99 Time 0714 Received by: (Signature) <i>[Signature]</i> Date 8-26-99 Time 0714											
Relinquished by: (Signature) <i>[Signature]</i> Received by: (Signature)											
Relinquished by: (Signature)											

ENVIROTECH INC.

5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 632-0615

Sample Receipt			
Received Intact	Y	N	N/A
Cool - Ice/Blue Ice	✓		

BLAGG ENGINEERING, INC.**MONITOR WELL SAMPLING DATA**CLIENT : **CROSS TIMBERS OIL CO.**

CHAIN-OF-CUSTODY # : 7444

ABRAMS J # 1

LABORATORY (S) USED : ENVIROTECH, INC.

UNIT I, SEC. 29, T29N, R10W

Date : November 30, 1999

SAMPLER : NJV

Filename : 11-30-99.WK4

PROJECT MANAGER : NJV

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1			-	45.73	-	-	-	-	-
2	MONITOR WELL NOT FOUND - PRESUMED DESTROYED								
3			-	50.00	-	-	-	-	-
4	95.91	50.94	44.97	50.00	0945	6.6	2,600	2.50	-
5			46.41	50.00	-	-	-	-	-
6			-	50.00	-	-	-	-	-
7	95.62	51.11	44.51	50.00	1135	7.3	600	2.75	-
8R	95.78	50.76	45.02	53.10	1020	7.3	2,400	4.00	-
9	96.54	50.79	45.75	50.00	1100	6.9	2,200	2.25	-
10			-	50.00	-	-	-	-	-
11	98.61	51.52	47.09	50.00	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$.

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

MW #'s 4 - poor recovery . Collected BTEX in MW #'s 4, 7, 8R, & 9 .

Air sparge system not operational @ time of sampling .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 4	Date Reported:	12-01-99
Chain of Custody:	7444	Date Sampled:	11-30-99
Laboratory Number:	G512	Date Received:	11-30-99
Sample Matrix:	Water	Date Analyzed:	12-01-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	8.7	1	0.2
Toluene	7.6	1	0.2
Ethylbenzene	ND	1	0.2
p,m-Xylene	7.6	1	0.2
o-Xylene	1.3	1	0.1
Total Xylene	8.9		
Total BTEX	25.2		

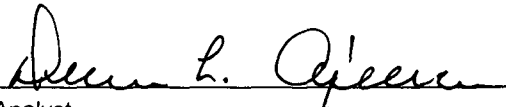
ND - Parameter not detected at the stated detection limit.

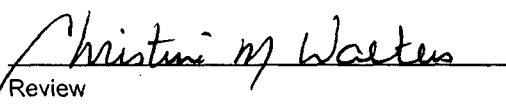
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 7	Date Reported:	12-01-99
Chain of Custody:	7444	Date Sampled:	11-30-99
Laboratory Number:	G513	Date Received:	11-30-99
Sample Matrix:	Water	Date Analyzed:	12-01-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	32.6	1	0.2
Toluene	3.6	1	0.2
Ethylbenzene	5.9	1	0.2
p,m-Xylene	5.2	1	0.2
o-Xylene	1.0	1	0.1
Total Xylene	6.2		
Total BTEX	48.3		

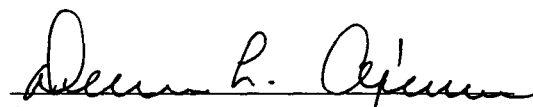
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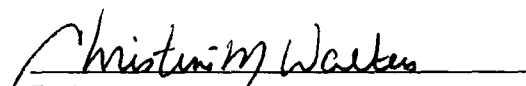
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	99 %
	Bromofluorobenzene	99 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 8R	Date Reported:	12-01-99
Chain of Custody:	7444	Date Sampled:	11-30-99
Laboratory Number:	G514	Date Received:	11-30-99
Sample Matrix:	Water	Date Analyzed:	12-01-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	8.5	1	0.2
Toluene	2.9	1	0.2
Ethylbenzene	0.5	1	0.2
p,m-Xylene	2.1	1	0.2
o-Xylene	0.6	1	0.1
Total Xylene	2.7		
Total BTEX	14.6		

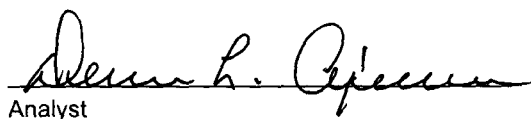
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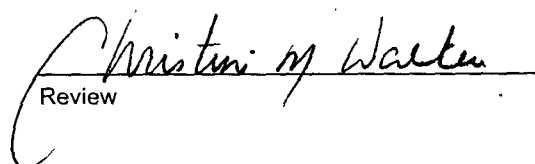
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromofluorobenzene	95 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 9	Date Reported:	12-01-99
Chain of Custody:	7444	Date Sampled:	11-30-99
Laboratory Number:	G515	Date Received:	11-30-99
Sample Matrix:	Water	Date Analyzed:	12-01-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	10.4	1	0.2
Toluene	3.6	1	0.2
Ethylbenzene	2.0	1	0.2
p,m-Xylene	2.3	1	0.2
o-Xylene	0.7	1	0.1
Total Xylene	3.0		
Total BTEX	19.0		

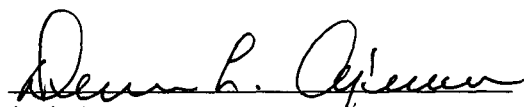
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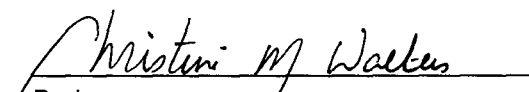
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Abrams J #1.


Analyst


Review

7444

[illegible]

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	12-01-BTEX QA/QC	Date Reported:	12-01-99
Laboratory Number:	G512	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	12-01-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff.	Blank Conc	Detect Limit
		Accept. Range 0 - 15%			
Benzene	1.5148E-001	1.5197E-001	0.32%	ND	0.2
Toluene	1.3889E-001	1.3892E-001	0.02%	ND	0.2
Ethylbenzene	4.5310E-002	4.5364E-002	0.12%	ND	0.2
p,m-Xylene	1.6102E-002	1.6105E-002	0.02%	ND	0.2
o-Xylene	1.5199E-002	1.5244E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	8.7	8.8	1.1%	0 - 30%
Toluene	7.6	7.9	3.9%	0 - 30%
Ethylbenzene	ND	ND	0.0%	0 - 30%
p,m-Xylene	7.6	7.9	3.9%	0 - 30%
o-Xylene	1.3	1.3	0.0%	0 - 30%

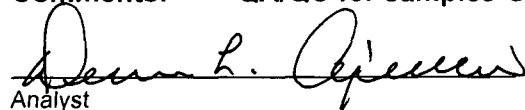
Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	8.7	50.0	58.7	100%	39 - 150
Toluene	7.6	50.0	57.6	100%	46 - 148
Ethylbenzene	ND	50.0	50.0	100%	32 - 160
p,m-Xylene	7.6	100.0	108	100%	46 - 148
o-Xylene	1.3	50.0	51.3	100%	46 - 148

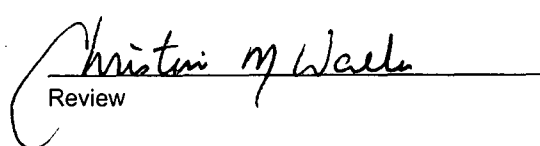
ND - Parameter not detected at the stated detection limit.

* - Administrative level set at 80 - 120.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for samples G512 - G517.


Analyst


Review

BLAGG ENGINEERING, INC.
MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OIL CO.

CHAIN-OF-CUSTODY # : 7449

ABRAMS J # 1

LABORATORY (S) USED : ENVIROTECH, INC.

UNIT I, SEC. 29, T29N, R10W

Date : December 6, 1999

SAMPLER : N J V

Filename : 12-06-99.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME LISTED	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
7	95.62	51.09	44.53	50.00	1230/1300	-	-	2.75	-

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$.

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Collected duplicate also (sample ID - MW # 2) , chain of custody record listed as Amoco Valencia # 1M
for QA / QC purposes . Collected BTEX only for MW # 7 .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	403410
Sample ID:	MW # 1	Date Reported:	12-07-99
Chain of Custody:	7449	Date Sampled:	12-06-99
Laboratory Number:	G544	Date Received:	12-06-99
Sample Matrix:	Water	Date Analyzed:	12-06-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	6.9	1	0.2
Toluene	2.9	1	0.2
Ethylbenzene	6.1	1	0.2
p,m-Xylene	8.1	1	0.2
o-Xylene	5.1	1	0.1
Total Xylene	13.2		
Total BTEX	29.1		

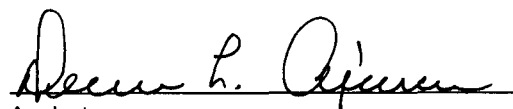
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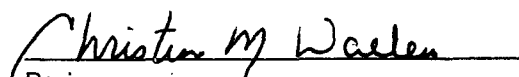
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Valencia # 1M.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	403410
Sample ID:	MW # 2	Date Reported:	12-07-99
Chain of Custody:	7449	Date Sampled:	12-06-99
Laboratory Number:	G545	Date Received:	12-06-99
Sample Matrix:	Water	Date Analyzed:	12-06-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	7.3	1	0.2
Toluene	3.9	1	0.2
Ethylbenzene	12.3	1	0.2
p,m-Xylene	8.7	1	0.2
o-Xylene	4.4	1	0.1
Total Xylene	13.1		
Total BTEX	36.6		

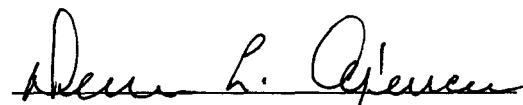
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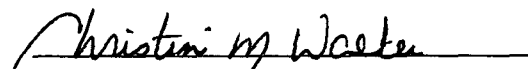
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromofluorobenzene	97 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Valencia # 1M.


Analyst


Review

7449

ENVIROTECH INC.

5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 632-0615

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	12-06-BTEX QA/QC	Date Reported:	12-07-99
Laboratory Number:	G538	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	12-06-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	1.0021E+000	1.0054E+000	0.32%	ND	0.2
Toluene	6.8221E-001	6.8234E-001	0.02%	ND	0.2
Ethylbenzene	6.1562E-002	6.1636E-002	0.12%	ND	0.2
p,m-Xylene	5.6170E-002	5.6181E-002	0.02%	ND	0.2
o-Xylene	5.1027E-002	5.1180E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	42.7	41.1	3.7%	0 - 30%
Toluene	119	119	0.0%	0 - 30%
Ethylbenzene	113	110	2.8%	0 - 30%
p,m-Xylene	1,100	1,080	1.8%	0 - 30%
o-Xylene	540	524	2.9%	0 - 30%

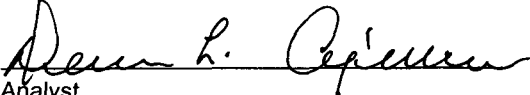
Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	42.7	50.0	93.0	100%	39 - 150
Toluene	119	50.0	172	102%	46 - 148
Ethylbenzene	113	50.0	165	101%	32 - 160
p,m-Xylene	1,100	100.0	1,200	100%	46 - 148
o-Xylene	540	50.0	600	102%	46 - 148

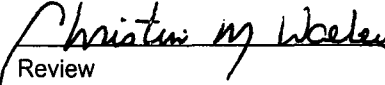
ND - Parameter not detected at the stated detection limit.

* - Administrative level set at 80 - 120.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for samples G538 - G545.


Analyst


Review