ENVIRO-RISK
CONSULTING GROUP, INC.

Enviro-Risk Consulting Group, Inc.
1176 Silverwood Bay
St. Paul, Minnesota 55125
Phone: 651.735.7001
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www.enviro-risk.com

September 23, 2004

Ms. Jessica Ebertz
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

Re: Annual Monitoring Report & CAD System Monitoring Worksheet
Jordan Texaco, 255 Triangle Lane, Jordan, MN
LEAK #11991

Dear Ms. Ebertz:

Enclosed is the Annual Monitoring Report and the Corrective Action Design System Monitoring Worksheet for the Jordan Texaco site in Jordan, MN (LEAK #11991). The free product recovery system is currently not operating.

Enviro-Risk has recommended continued monthly manual recovery of free product and sampling of the wells on a semi-annual basis. The next groundwater sampling round is scheduled for December 2004.

If you have any questions, please contact me at 651-735-7001.

Sincerely,

Enviro-Risk Consulting Group, Inc.

Brad M. Burke, PE
Senior Consultant / Principal

c/enc: T. Yocum, Yocum Oil Company

Leaking Petroleum Storage Tanks
Minnesota Pollution Control Agency
http://www.pca.state.mn.us/programs/lust_p.html

Annual Monitoring Report

Fact Sheet 3.26

After the Corrective Action Design (CAD) has been approved, update and submit this worksheet annualy. If a remedial system has been installed, submit fact sheet 3.31 *CAD System Monitoring Worksheet* along with this worksheet.

Under certain circumstances Minnesota Pollution Control Agency (MPCA) staff may request submittal of the monitoring information on a quarterly schedule. This should be conducted according to fact sheet 3.25, *Quarterly Monitoring Report*.

MPCA Site ID: Leak000 ***11991*** Date: ***9/23/04***

Responsible Party: **Yocum Oil Company** R.P. phone #: ***651-739-9141***

Consultant: ***Enviro-Risk Consulting Group, Inc.*** Consultant phone #: ***651-735-7001***

Facility Name: ***Jordan Texaco Oil Company***

Facility Address: ***255 Triangle Lane*** City: ***Jordan***

County: ***Scott*** Zip Code: ***55352***

Site location: The required coordinate scheme for reporting site location is Universal Transverse Mercator (UTM), Extended Zone 15, 1983 North American Datum (NAD83). Refer to **http://www.ot.state.mn.us/ot_files/handbook/standard/std17-1.html** for Minnesota spatial data standards, or **http://mac.usgs.gov/mac/isb/pubs/factsheets/fs15799.html** for more information about UTM Coordinates.

X coordinate (Easting) ***449475*** meters
Y coordinate (Northing) ***4946352*** meters

What feature does the coordinate represent? (i.e. center of parcel, approximate center of source area, etc. Please describe) ***The retail gasoline station building at Jordan Texaco (Figures 1 & 2).***

What method was used to determine the coordinate? (i.e. GPS receiver, map interpolation, address matching, etc. Please describe) ***UTM coordinates were obtained utilizing on-line mapping at www.maptech.com to pinpoint the location of the Jordan Texaco site.***

If a paper map, digital map, aerial photo or digital orthophotoquad was used to find the site location, please provide the scale of the map or photo (i.e. 1:24,000, etc.)
1:24,000

Section 1. GROUND WATER MONITORING

Discuss the groundwater monitoring results, including water level measurements and analytical results, performed since the remedial investigation (RI) report or the last progress report submitted. Indicate whether samples were purged or unpurged (see fact sheet 3.23). If purged, indicate purging method.

Water Level Elevations

Recent water elevation data, summarized in Table 2, indicates that groundwater levels in the three monitoring wells vary 3 to 5 feet throughout the year. Cyclic highs water levels occur during the spring and summer months and cyclic lows occur during the fall and winter months. Water elevation data also indicate that for much of the year water levels are above the screened interval of the monitoring wells. This obviously prevents free product from accumulating in the wells during cyclic high water levels periods.

Based on water elevation data, it appears the groundwater flow direction fluctuates from north to east (Figures 3 through 8). For wells exhibiting free product, potentiometric water elevations were estimated based on the groundwater-product interface elevation plus 85% of the free product thickness (product specific gravity ≈ 0.85). There doesn't appear to be any correlation to cyclic high-low water levels and the groundwater flow direction. However due to the shallow groundwater table, it is suspected that site drainage and possibly the use of the car wash likely influences localized groundwater flow.

A free product collection system at the site has been inoperable since Enviro-Risk began monitoring of the site in 2002. The system consists of two pneumatic submersible pumps installed in MW-2 and MW-3, which are designed to automatically remove free product from the wells and discharge into an aboveground storage tank located on site. The air compressor for the pneumatic pumps does not work, and one of the pumps appears to be damaged. Therefore manual free product recovery (hand bailing) continues to be conducted on a periodic basis at the site.

Monitoring well MW-2 has had no free product detected since Enviro-Risk began monitoring, except for the three months of October, November, and December 2003. The maximum free product thickness observed in the well was 0.39 feet (Figure 10). Monitoring well MW-3 has had free product detected on a more consistent basis than MW-2. The maximum free product thickness observed in MW-3 was 0.31 feet (Figure 11).

Monitoring well MW-1 was not configured as part of the pneumatic free product collection system. However, MW-1 has consistently exhibited detectable free product since it was first detected in the July 23, 2002 monitoring event. Prior to July 2002, MW-1 historically had not contained free product. Because of the steady increase in product thickness to as much as 1.54 feet in September 2003, a fingerprint test was conducted of the product to determine whether the free product in MW-1 was related to the September 1998 release. A product sample was collected from MW-1 on September 9, 2003 and submitted to Flint Hills Resources – Pine Bend Refinery for comparison with Blue Planet (Holiday) gasoline, which was currently stored in the tanks. The sulfur content of the sample was 0.0358% which is greater than the maximum specification of Blue Planet (Holiday) gasoline for sulfur, which is 0.0080%. Therefore product from MW-1 is likely associated with the 1998 release, when the station was branded Texaco.

Groundwater Analytical Data

Enviro-Risk collected groundwater samples from site monitoring wells in March, June, and September 2003, and again in June 2004. Quarterly sampling rounds were skipped in December 2003 and March 2004 because free product was present in 2 of the 3 monitoring wells. Wells sampled were purged of at least 3 well volumes prior to collecting a groundwater sample. Based on groundwater analytical data, summarized in Table 3, dissolved-phase contaminant concentrations have been primarily stable in MW-2 and increased slightly in MW-3. Contaminant levels in MW-2 and MW-3 were significantly above HRLs for all sampling rounds. The thickness of free product has steadily increased in MW-1 during cyclic water table lows.

Section 2. VAPOR IMPACT MONITORING

If vapor impacts were detected during previous assessments, discuss the results of follow-up vapor monitoring. Include in your discussion the sampling instrument and sampling method.

NO VAPOR MONITORING PERFORMED

NOTE: If vapor concentrations exceed 10 percent of the lower explosive limit, exit the building and contact the local fire department immediately. Then contact the Minnesota Duty Officer (24 hours) at 651/649-5451 (metro and outside Minnesota) or 1-800/422-0798 (Greater Minnesota). TTY users call 651/297-5353 (V/TTY) or 1-800/627-3529 (V/TTY).

Section 3. RECOMMENDATIONS

Discuss your recommendations. Your recommendation should be based on fact sheet #3.1, *Leaking Underground Storage Tank Program.*

Based on the above, Enviro-Risk recommends continuing manual free product collection on a monthly basis through June 2005. If significant levels of free product return to MW-2 or MW-3, then the free product recovery system may be repaired and/or reconfigured for product collection from existing wells.

If additional corrective action is recommended, please provide your justification.

If significant reduction of risk has been achieved at the site, recommendations and rationale for the reduction or termination of corrective actions may be presented.

The free product recovery system has removed more than 2,430 gallons of free product since the release (see attached CAD System Monitoring Worksheet). Because the total quantity released was undetermined, but believed to be in excess of 1,000 gallons, it is feasible that the free product recovery system has removed the majority of product associated with the 1998 release. Given this possibility, and the lack of measured free product in MW-2 and MW-3, resuming operation of the free product recovery system may not be justified.

If additional monitoring is recommended, indicate the proposed monitoring schedule and frequency.

Free product recovery / monitoring should continue on a monthly basis for monitoring wells MW-1, MW-2, and MW-3 at least through June 2005. Enviro-Risk recommends collecting groundwater samples from MW-1, MW-2, and MW-3 for laboratory analysis on a semi-annual basis, at least through June 2005. The next sampling round would be in December 2004. Groundwater samples will be analyzed for BTEX, MTBE, & GRO.

If closure is recommended, summarize significant site investigative events and describe how site specific risk issues have been adequately addressed or minimized to acceptable low risk levels.

Section 4: CONSULTANT (OR OTHER) INFORMATION

By signing this document, I/we acknowledge that we are submitting this document on behalf of and as agents of the responsible person or volunteer for this leaksite. I/we acknowledge that if information in this document is inaccurate or incomplete, it will delay the completion of remediation and may harm the environment and may result in reduction of reimbursement awards. In addition, I/we acknowledge on behalf of the responsible person or volunteer for this leaksite that if this document is determined to contain a false material statement, representation, or certification, or if it omits material information, the responsible person or volunteer may be found to be in violation of Minn. Stat. § 115.075 (1994) or Minn. Rules 7000.0300 (Duty of Candor), and that the responsible person or volunteer may be liable for civil penalties.

MPCA staff are instructed to reject unsigned monitoring reports or if the report form has been altered.

Name and Title:	Signature:	Date signed:
Brad M. Burke, PE Proj Mgr Enviro-Risk Consulting Group, Inc.		9/23/2004

Company and mailing address: Enviro-Risk Consulting Group, Inc.
1176 Silverwood Bay
St. Paul, MN 55125

Phone: (651) 735-7001
Fax: (651) 738-3039

Attach Tables:

- Table 1 - Monitoring Well Completion Information
- Table 2 - Summary of Water Levels Measurements
- Table 3 - Analytical Results of Water Samples
- Table 4 - Other Contaminants Detected in Water Samples (Petroleum or Non-petroleum Derived)
- Table 5 - Results of Natural Attenuation
- Table 6 - Results of Vapor Monitoring

Table 1
Monitoring Well Completion Information

Well Number	Unique Well Number	Date Installed	Surface Elevation	Top of Riser Elevation	Bottom of Well (Elevation)	Screen Interval (Elev. - Elev.)
MW-1	616538	11/2/98	753.54	752.83	733.0	733.0 – 743.0
MW-2	616539	11/2/98	752.71	751.95	734.7	734.7 – 744.7
MW-3	616540	11/2/98	753.12	752.49	735.1	735.1 – 745.1

Notes: 1) *Above elevations expressed in feet above MSL based on an assumed elevation of 754 feet for the top nut of fire hydrant located on SE corner of property.*
2) *Construction details on wells MW-1 through MW-3 obtained through MDH Well and Boring Records; All wells are flush mounted construction.*
3) *Bottom of Well depths measured in the field (MW-1: 19.85 feet btoc; MW-2: 17.30 feet btoc; MW-3: 17.35 feet btoc).*

Table 2
Water Level Measurements

Well Number	Date	Depth of Water from Top of Riser (feet)	Product Thickness (feet)	Depth of Water Below Grade (feet)	Relative Groundwater Elevation (feet above MSL)	Water Level Above Screen (Y/N)
MW-1	6/13/02	7.77	0.00	8.5	745.06	Y
	6/29/02	6.37	0.00	7.1	746.46	Y
	7/10/02	6.57	0.00	7.3	746.26	Y
	7/23/02	7.90	0.15	8.6	744.93	Y
	9/30/02	7.69	0.25	8.4	745.14	Y
	10/30/02	7.82	0.38	8.5	745.01	Y
	11/20/02	8.65	0.63	9.4	744.18	Y
	12/6/02	8.97	0.80	9.7	743.86	Y
	2/26/03	9.71	1.00	10.4	743.12	Y
	3/26/03	8.26	0.00	9.0	744.57	Y
	4/24/03	7.41	0.01	8.1	745.42	Y
	5/23/03	6.79	0.29	7.5	746.04	Y
	6/26/03	7.45	0.31	8.2	745.38	Y
	7/31/03	9.52	1.32	10.2	743.31	Y
	9/9/03	10.57	1.54	11.3	742.26	N
	9/30/03	9.80	0.65	10.5	743.03	N
	10/31/03	9.96	0.45	10.7	742.87	N
	11/25/03	9.72	0.18	10.4	743.11	Y

	12/18/03	9.78	0.16	10.5	743.05	Y
	2/27/04	8.57	0.02	9.3	744.26	Y
	3/31/04	7.37	0.05	8.1	745.46	Y
	5/27/04	6.43	0.12	7.1	746.40	Y
	6/22/04	7.88	0.03	8.6	744.95	Y
MW-2	6/13/02	6.86	0.00	7.6	745.09	Y
	6/29/02	5.47	0.00	6.2	746.48	Y
	7/10/02	5.83	0.00	6.6	746.12	Y
	7/23/02	6.95	0.00	7.7	745.00	Y
	9/30/02	6.62	0.00	7.4	745.33	Y
	10/30/02	6.67	0.00	7.4	745.28	Y
	11/20/02	7.30	0.00	8.1	744.65	N
	12/6/02	7.45	0.00	8.2	744.50	N
	2/26/03	8.06	0.00	8.8	743.89	N
	3/26/03	7.50	0.00	8.3	744.45	N
	4/24/03	6.55	0.00	7.3	745.40	Y
	5/23/03	5.67	0.00	6.4	746.28	Y
	6/26/03	6.31	0.00	7.1	745.64	Y
	7/31/03	7.62	0.00	8.4	744.33	N
	9/9/03	8.50	0.00	9.3	743.45	N
	9/30/03	8.41	0.00	9.2	743.54	N
	10/31/03	9.06	0.23	9.8	742.89	N
	11/25/03	8.99	0.39	9.8	742.96	N
	12/18/03	9.07	0.39	9.8	742.88	N
	2/27/04	7.69	0.00	8.5	744.26	N
	3/31/04	6.49	0.00	7.3	745.46	Y
	5/27/04	5.39	0.00	6.2	746.56	Y
	6/22/04	6.02	0.00	6.8	745.93	Y
MW-3	6/13/02	7.48	0.11	8.1	745.01	N
	6/29/02	6.01	0.02	6.6	746.48	Y
	7/10/02	6.85	0.01	7.5	745.64	Y
	7/23/02	7.44	0.00	8.1	745.05	N
	9/30/02	7.13	0.00	7.8	745.36	Y
	10/30/02	7.15	0.00	7.8	745.34	Y
	11/20/02	7.82	0.00	8.5	744.67	N
	2/26/03	5.57	0.00	6.2	746.92	Y
	3/26/03	7.97	0.16	8.6	744.52	N
	4/24/03	7.10	0.04	7.7	745.39	Y
	5/23/03	6.23	0.00	6.9	746.26	Y
	6/26/03	6.84	0.00	7.5	745.65	Y

	7/31/03	8.13	0.00	8.8	744.36	N
	9/9/2003	9.05	0.03	9.7	743.44	N
	9/30/03	8.99	0.06	9.6	743.50	N
	10/31/03	8.51	0.31	9.1	743.98	N
	11/25/03	9.44	0.28	10.1	743.05	N
	12/18/03	9.52	0.30	10.2	742.97	N
	2/27/04	8.45	0.29	9.1	744.04	N
	3/31/04	7.04	0.02	7.7	745.45	Y
	5/27/04	6.00	0.00	6.6	746.49	Y
	6/22/04	6.55	0.00	7.2	745.94	Y

Describe the methods and procedures used to measure water levels and product thickness.

Notes: 1) Water level data collected from Nov. 1998 until Dec. 2001 not available; obtained by Arden Environmental & IT Corporation.
2) Water level data collected June 2002 to present was collected with a Solinst Water Level Meter or Oil/Water Interface Probe referenced to top of casing elevations; Above groundwater elevations based on site survey conducted in September 2003.
*3) * = Groundwater elevation inaccurate due to existence of free product.*

Table 3
Analytical Results of Water Samples

Well #	Date	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	GRO	DRO	Lab Type
MW-1	9/30/02		*Not Sampled due to Free Product*						
	12/6/02		*Not Sampled due to Free Product*						
	3/26/03	**19,000**	**49,000**	**6500**	**44,000**	**250**	**270,000**		Fixed
	6/26/03		*Not Sampled due to Free Product*						
	9/30/03		*Not Sampled due to Free Product*						
	6/22/04		*Not Sampled due to Free Product*						
MW-2	9/30/02	**28,000**	**27,000**	**1700**	**8900**	**<40**	**110,000**	NA	Fixed
	12/6/02	**23,000**	**19,000**	**1800**	**9700**	**<400**	**80,000**	NA	Fixed
	3/26/03	**17,000**	**31,000**	**2500**	**15,500**	**<200**	**120,000**	NA	Fixed
	6/26/03	**19,000**	**21,000**	**1500**	**11,400**	**<100**	**74,000**	NA	Fixed
	9/30/03	**17,000**	**13,000**	**1400**	**8200**	**<120**	**58,000**	NA	Fixed
	6/22/04	**25,000**	**31,000**	**2200**	**18,400**	**<100**	**120,000**	NA	Fixed
MW-3	9/30/02	**9200**	**16,000**	**870**	**5100**	**<40**	**46,000**	NA	Fixed

	12/6/02	**9100**	**17,000**	**1200**	**7400**	**<400**	**51,000**	NA	Fixed
	3/26/03	**23,000**	**30,000**	**2800**	**17,400**	**<200**	**130,000**	NA	Fixed
	6/26/03	**6900**	**13,000**	**1000**	**6500**	**<50**	**42,000**	NA	Fixed
	9/30/03	**8800**	**14,000**	**1000**	**6300**	**<120**	**44,000**	NA	Fixed
	6/22/04	**18,000**	**32,000**	**2200**	**15,600**	**<100**	**100,000**	NA	Fixed
Trip Blk	12/6/02	<1.0	<1.0	<1.0	<3.0	<4.0	<100	NA	Fixed
	3/26/03	<1.0	<1.0	<1.0	<3.0	<1.0	<50	NA	Fixed
	6/26/03	<1.0	<1.0	<1.0	<3.0	<1.0	<50	NA	Fixed
	9/30/03	<1.0	<1.0	<1.0	<3.0	<1.0	<50	NA	Fixed
	6/22/04	<1.0	<1.0	<1.0	<3.0	<1.0	<50	NA	Fixed
Lab Blank									
HRL(ug/L)		10	1000	700	10000				

Notes: 1) Pre-2002 data from previous reports submitted by others.
2) All values expressed in micrograms per liter (ug/L).
3) ***NA = Not Analyzed.***

Table 4
Other Contaminants Detected in Water Samples
(Petroleum or Non-petroleum Derived)

Well Number	Date Sampled	1,2 DCA	EDB				
MW-1							
MW-2							
MW-3			***NO OTHER CONTAMINANTS IDENTIFIED***				
Field Blank							
Trip Blank							
Lab Blank							
HRL (ug/L)		4	0.004				

Report results in ug/L. Indicate other contaminants (either petroleum or non-petroleum derived) detected in water samples collected from the borings, temporary wells or push probes.
Notes:

Table 5
Natural Attenuation Parameters

Monitoring Well	Sample Date	Temp. °C	PH	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	(Fe II) (mg/L)	(H_2S, HS^-) (mg/L)
MW-1							
MW-2							
MW-3							

Notes:

Table 6
Results of Vapor Monitoring

Location #	Date	PID reading (ppm)	Percent of the LEL

Notes:

Attach Figures:

Figures - (all maps are to include a north arrow, scale and legend) *Approximate scales are not acceptable.*

- Site location map. Adapt this map from a U.S. Geological Survey 7.5 minute quadrangle and identify the name of the 7.5 minute quadrangle.
- Site map showing the locations of all ground water and vapor monitoring points.
- Updated ground water contour maps, using water level elevations from all rounds of water level measurements since the last report. Show all wells at the site, and differentiate wells constructed in different aquifers. Label ground water contours and elevations at each data point used for contouring.
- Hydrograph for all monitoring and recovery wells.
- Graph(s) showing contaminant concentrations over time for all monitoring and recovery wells.

Attach Appendices:

The appendix section of the report contains sufficient information to document all activities completed since the last report. All reproduced data must be legible.

- Copies of most recent laboratory reports for ground water analyses, including a copy of the Chain of Custody and the MDH laboratory certification number.
- Sample collection information, including procedure, equipment, and decontamination.
- Field or sampling data sheets.

Web pages and phone numbers

MPCA staff	http://data.pca.state.mn.us/pca/emplsearch.html
MPCA toll free	**1-800-657-3864**
LUST web page	http://www.pca.state.mn.us/programs/lust_p.html
MPCA Infor. Request	http://www.pca.state.mn.us/about/inforequest.html
PetroFund Web Page	http://www.commerce.state.mn.us/mainpf.htm
PetroFund Phone	**651-297-1119**, or **1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**

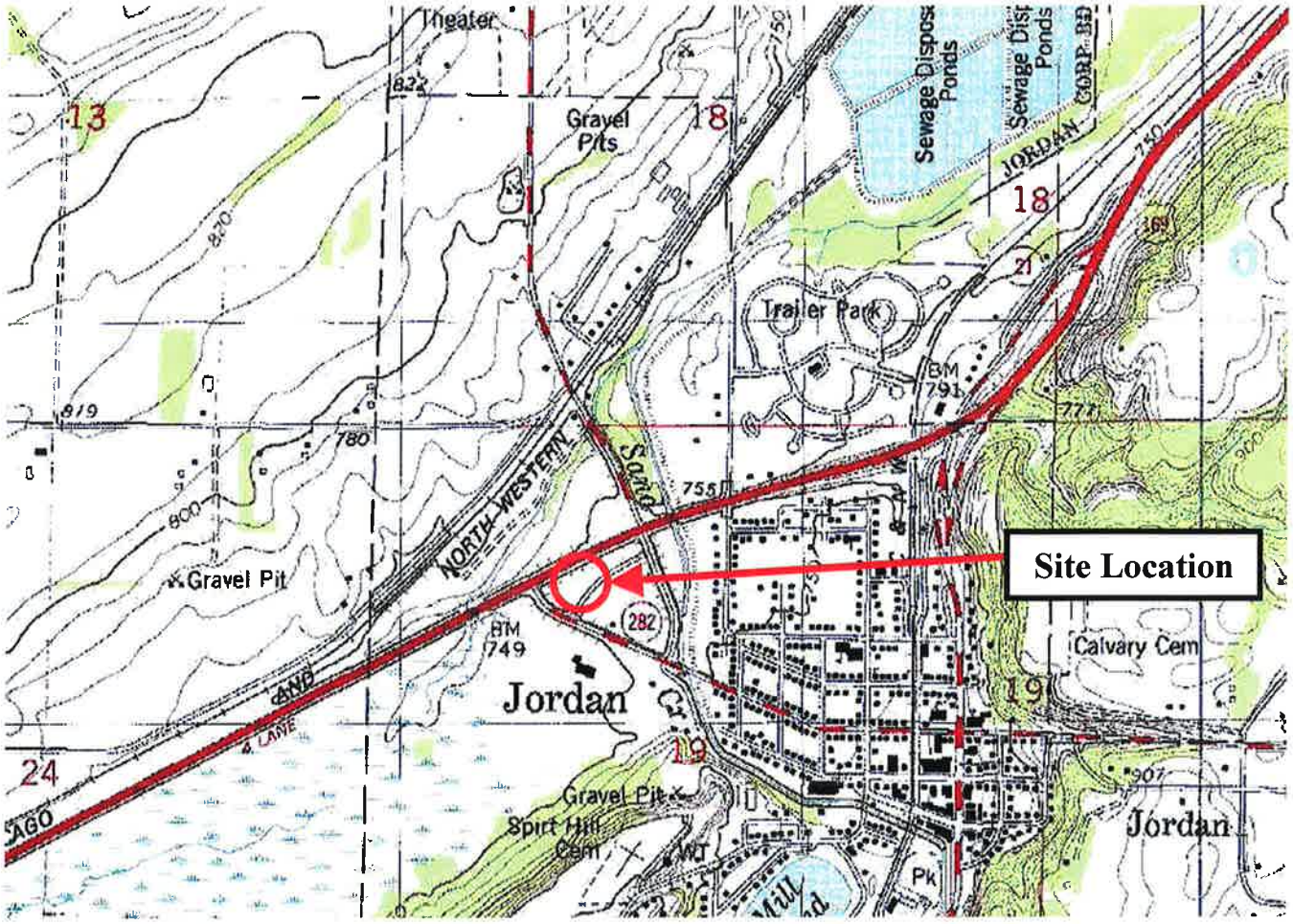
FIGURES

Drawing Number:

Checked By:

Approved By:

Drawn By: KH



N

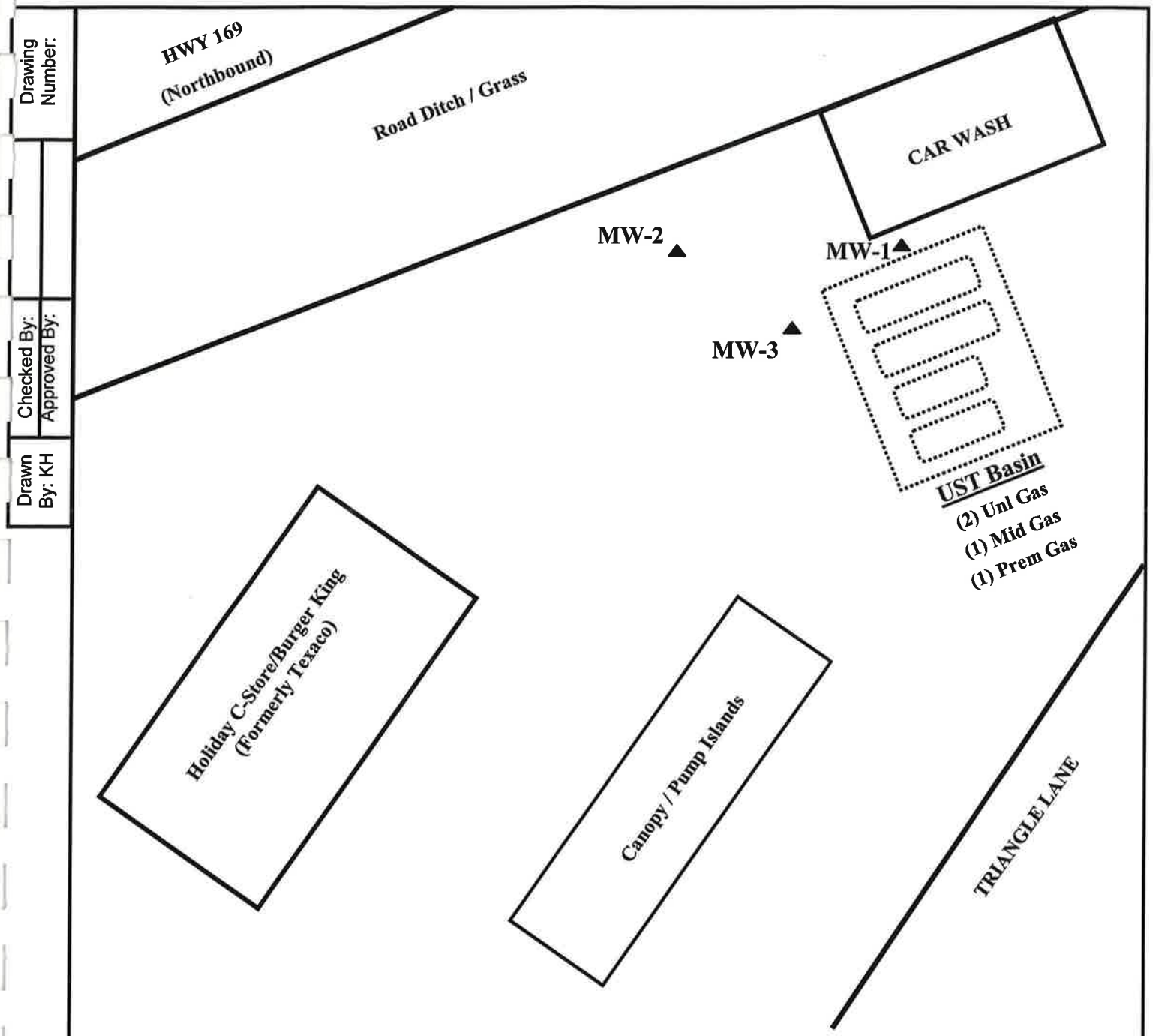
Approximate Scale:
1 inch = 1500 feet

Figure 1
Site Location Map

Jordan Texaco
255 Triangle Lane
Jordan, MN

ENVIRO-RISK
CONSULTING GROUP, INC.

"Do Not Scale Up Drawing"



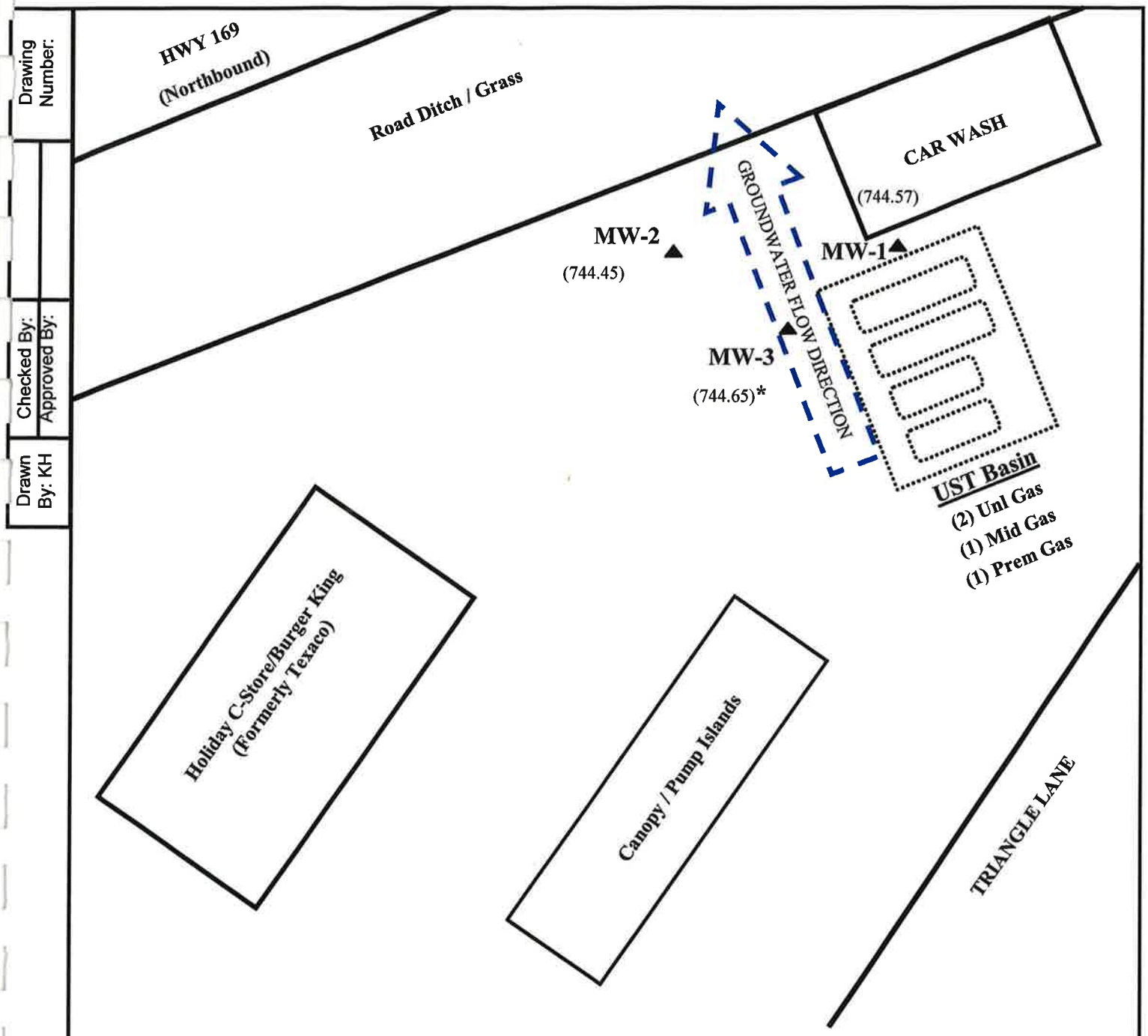
Approximate Scale:
1 inch = 30 feet

Figure 2
Site Map

Jordan Texaco
255 Triangle Lane
Jordan, MN

ENVIRO-RISK
CONSULTING GROUP, INC.

"Do Not Scale Up Drawing"



N

Approximate Scale:
1 inch = 30 feet

LEGEND:

(744.45) = Groundwater Elevation (feet above MSL

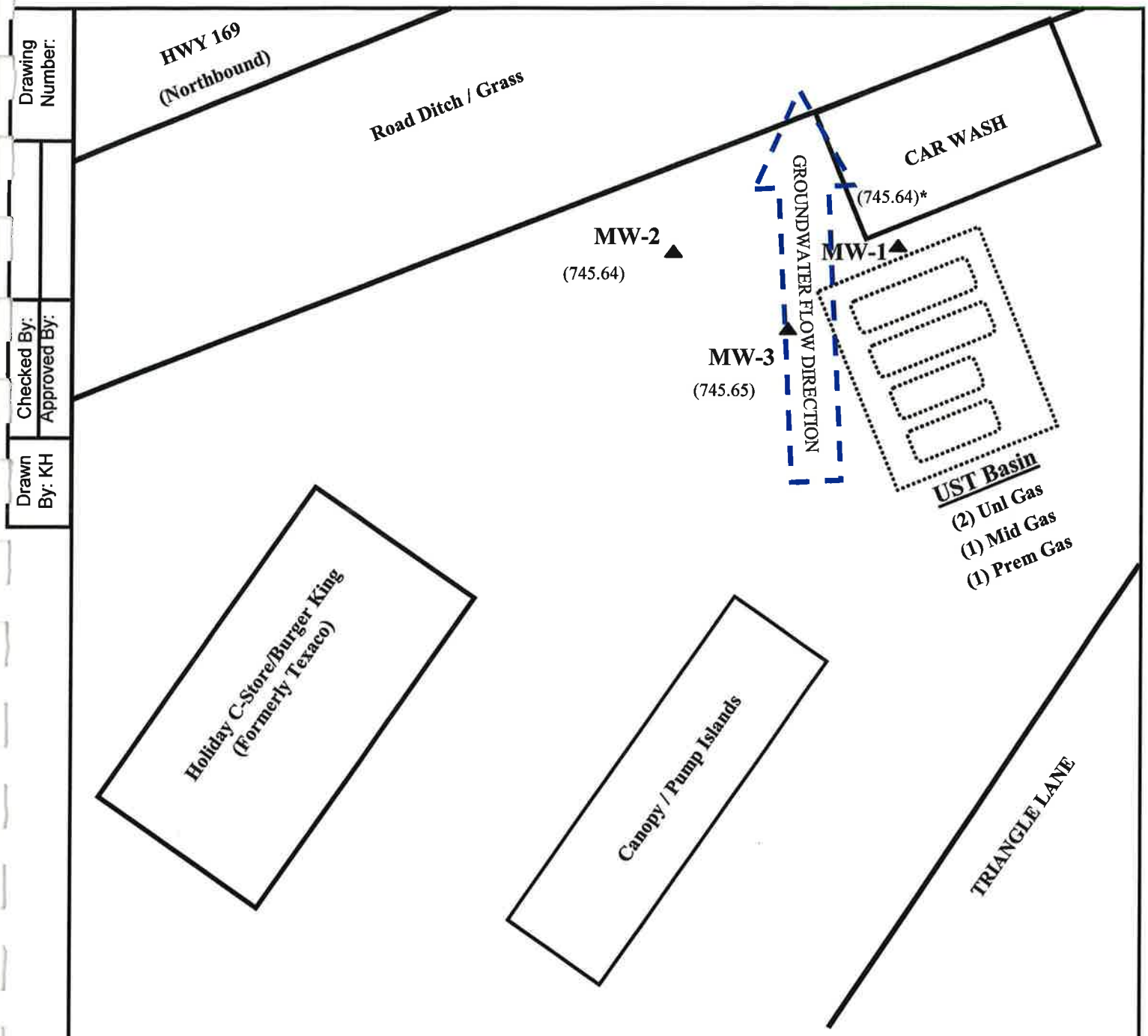
* = Free Product Present in Well ; Groundwater Elevation based on groundwater / product interface elevation plus (0.85 density of product * product thickness).

Figure 3
Groundwater Flow Direction
March 26, 2003

Jordan Texaco
255 Triangle Lane
Jordan, MN

ENVIRO-RISK
CONSULTING GROUP, INC.

"Do Not Scale Up Drawing"



N

Approximate Scale:
1 inch = 30 feet

LEGEND:

(744.45) = Groundwater Elevation (feet above MSL

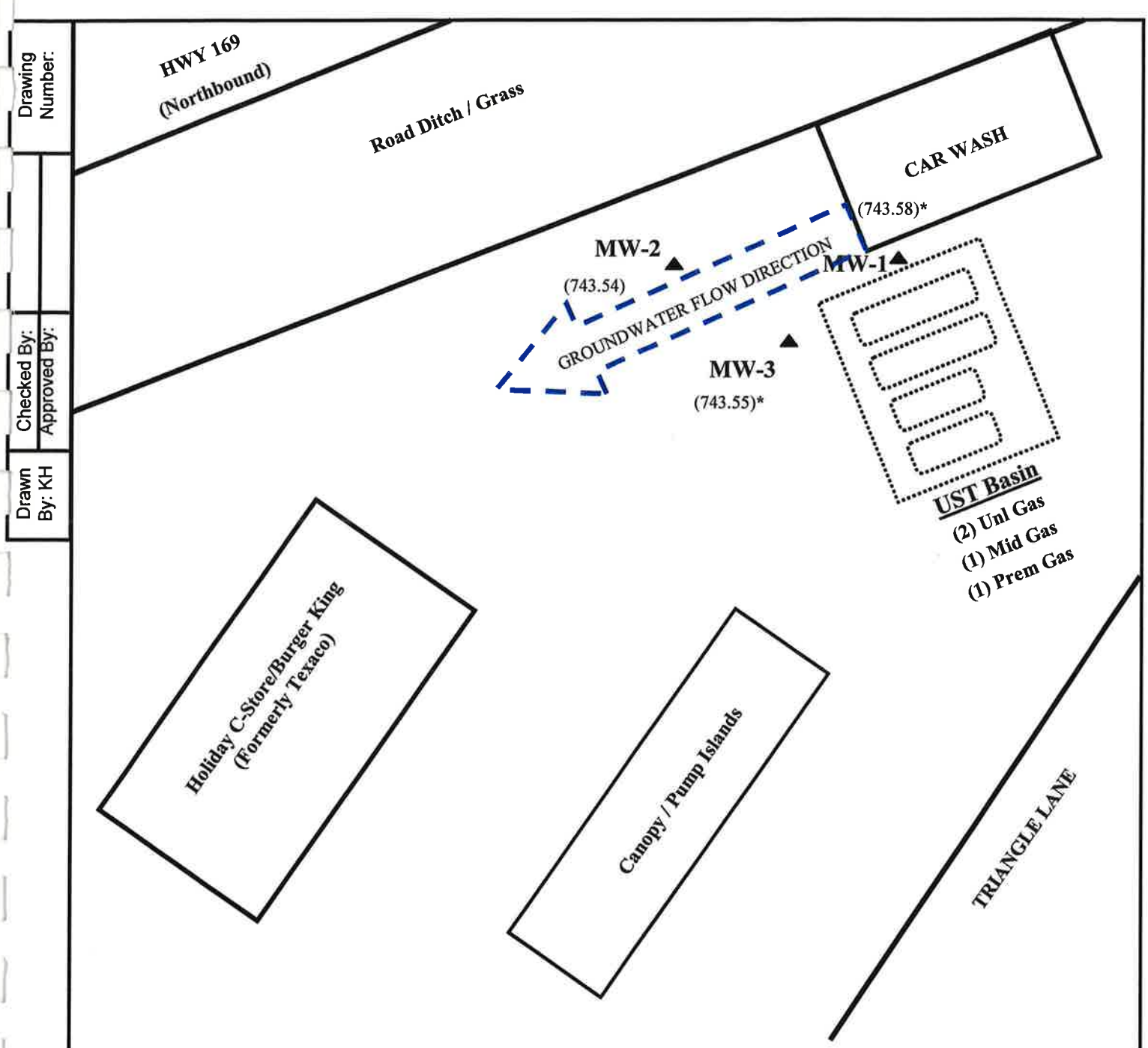
* = Free Product Present in Well ; Groundwater Elevation based on groundwater / product interface elevation plus (0.85 density of product * product thickness).

Figure 4
Groundwater Flow Direction
June 26, 2003

Jordan Texaco
255 Triangle Lane
Jordan, MN

ENVIRO-RISK
CONSULTING GROUP, INC.

"Do Not Scale Up Drawing"



Approximate Scale:
1 inch = 30 feet

Figure 5
Groundwater Flow Direction
September 30, 2003

Jordan Texaco
255 Triangle Lane
Jordan, MN

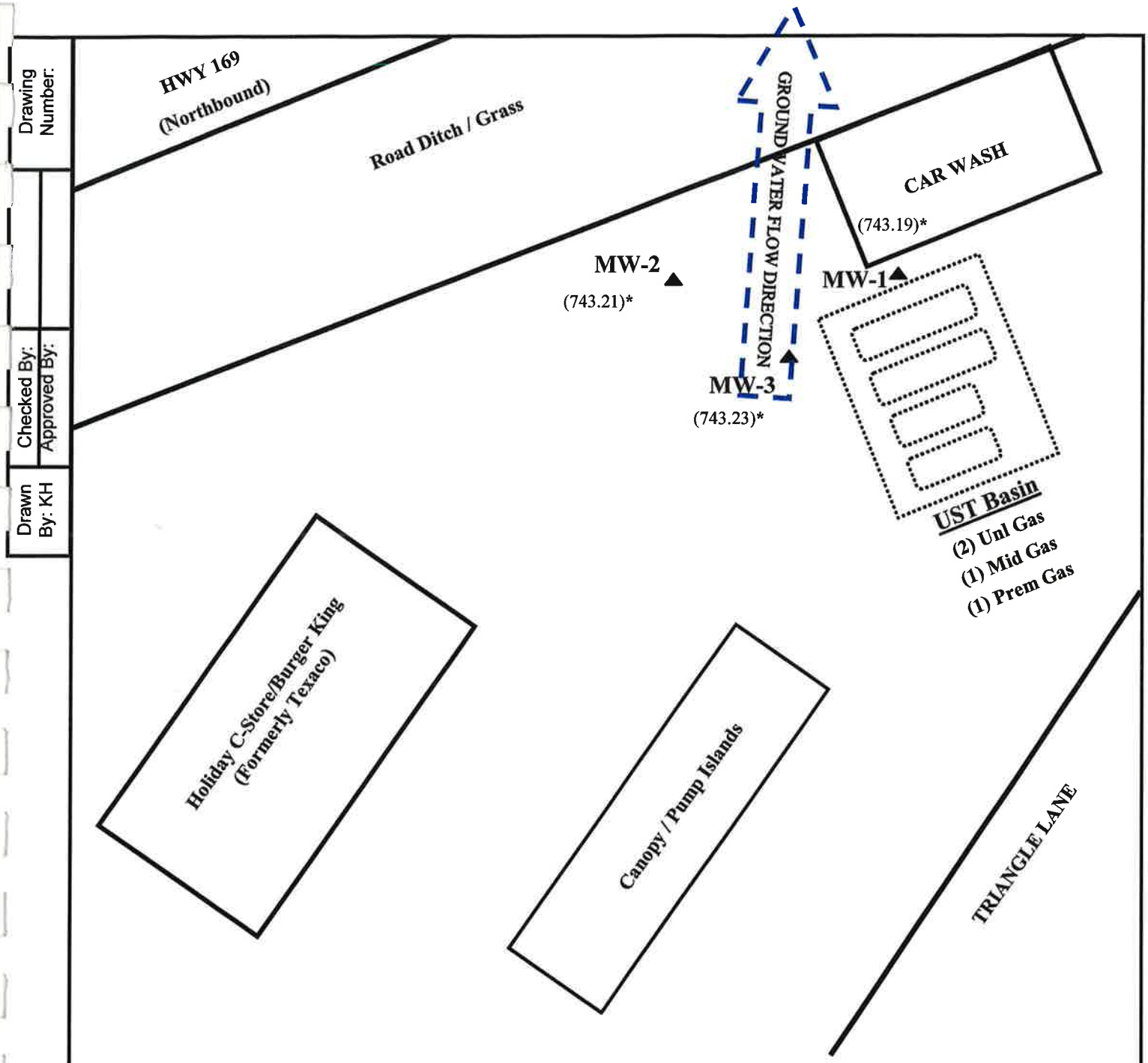
LEGEND:

(744.45) = Groundwater Elevation (feet above MSL

* = Free Product Present in Well ; Groundwater Elevation based on groundwater / product interface elevation plus (0.85 density of product * product thickness).

ENVIRO-RISK
CONSULTING GROUP, INC.

"Do Not Scale Up Drawing"



Approximate Scale:
1 inch = 30 feet

LEGEND:

(744.45) = Groundwater Elevation (feet above MSL

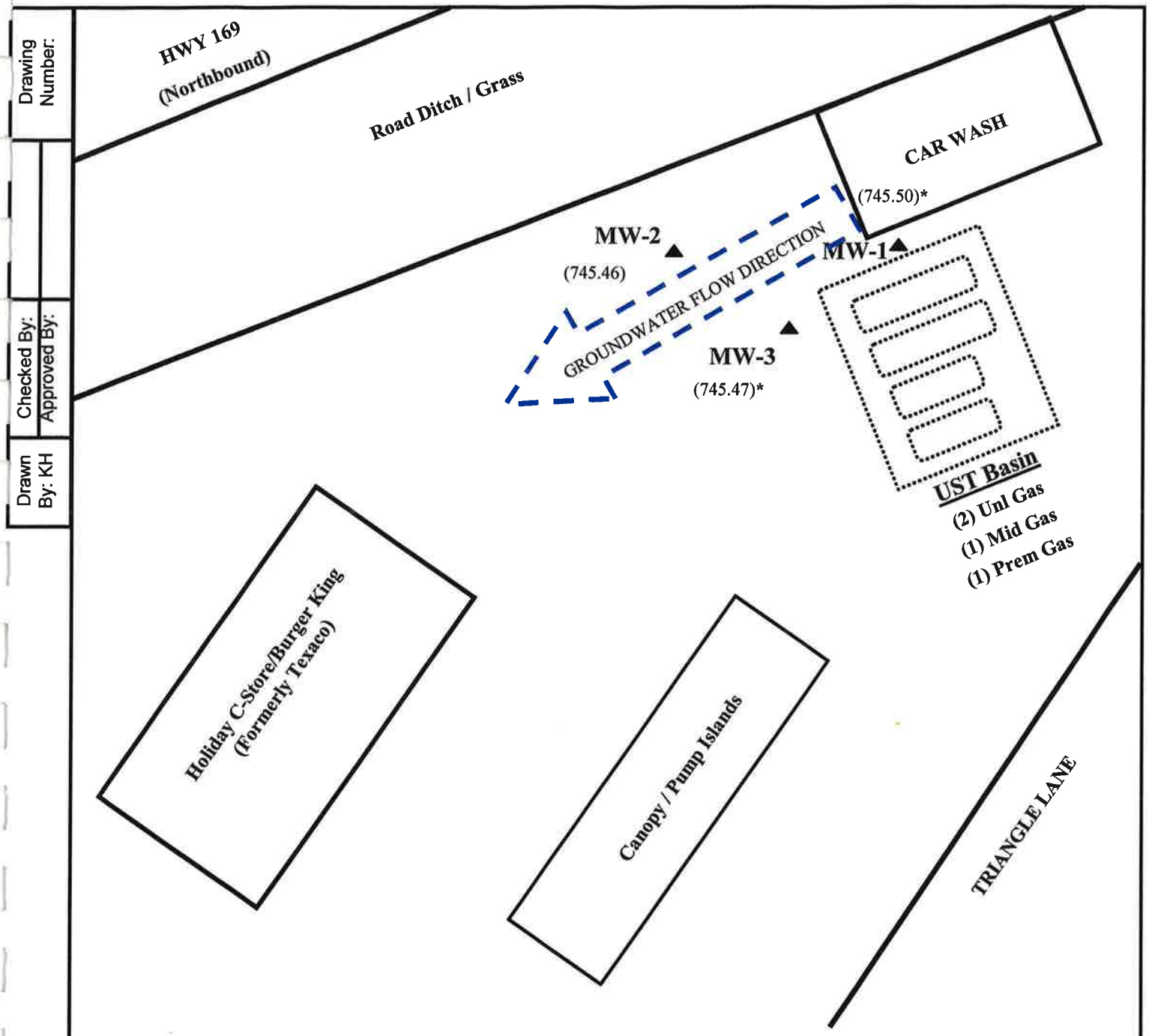
* = Free Product Present in Well ; Groundwater Elevation based on groundwater / product interface elevation plus (0.85 density of product * product thickness).

Figure 6
Groundwater Flow Direction
December 18, 2003

Jordan Texaco
255 Triangle Lane
Jordan, MN

ENVIRO-RISK
CONSULTING GROUP, INC.

"Do Not Scale Up Drawing"



N

Approximate Scale:
1 inch = 30 feet

LEGEND:

(744.45) = Groundwater Elevation (feet above MSL

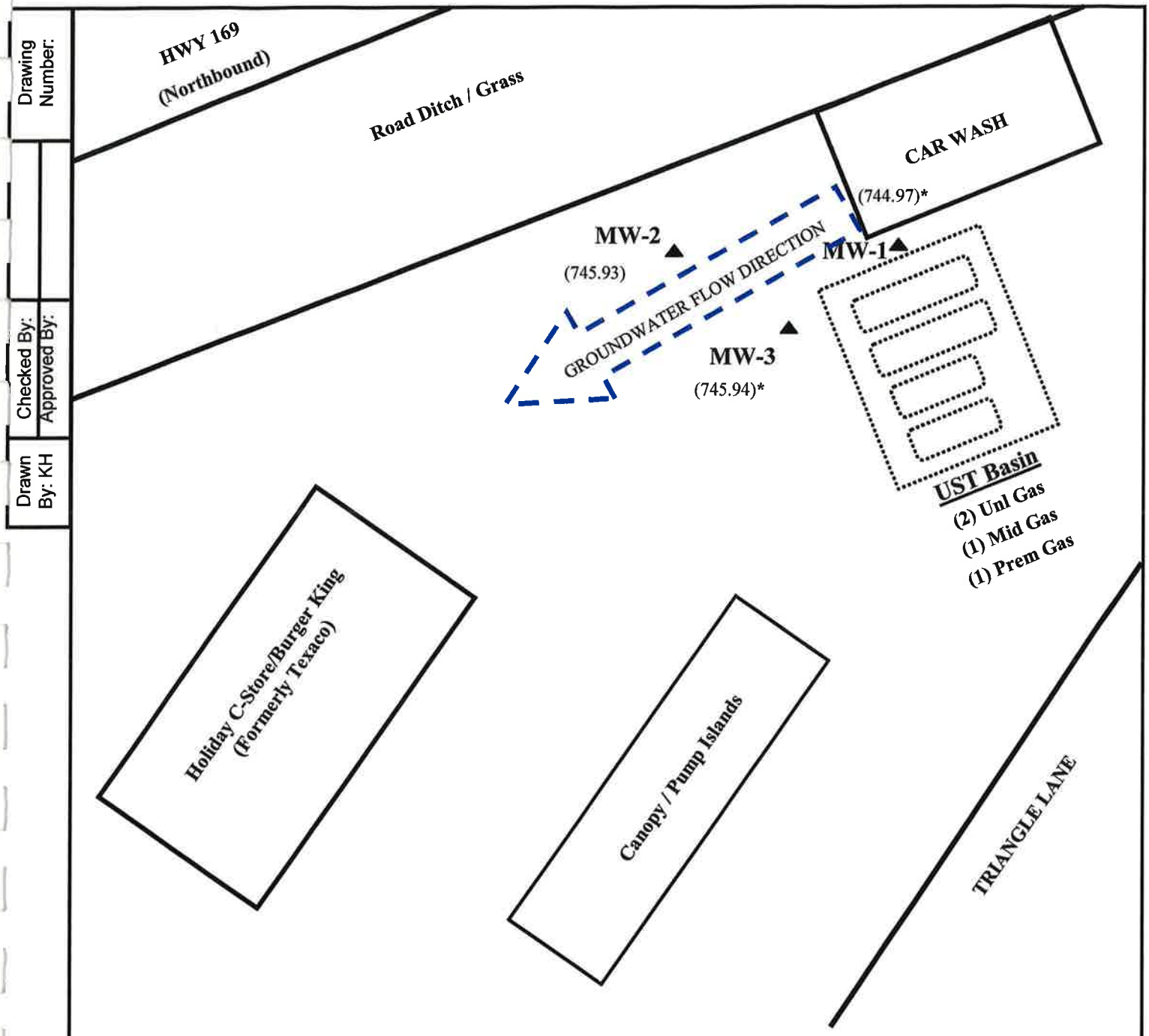
* = Free Product Present in Well ; Groundwater Elevation based on groundwater / product interface elevation plus (0.85 density of product * product thickness).

Figure 7
Groundwater Flow Direction
March 31, 2004

Jordan Texaco
255 Triangle Lane
Jordan, MN

ENVIRO-RISK
CONSULTING GROUP, INC.

"Do Not Scale Up Drawing"



N

Approximate Scale:
1 inch = 30 feet

LEGEND:

(744.45) = Groundwater Elevation (feet above MSL

* = Free Product Present in Well ; Groundwater Elevation based on groundwater / product interface elevation plus (0.85 density of product * product thickness).

Figure 8
Groundwater Flow Direction
June 22, 2004

Jordan Texaco
255 Triangle Lane
Jordan, MN

ENVIRO-RISK
CONSULTING GROUP, INC.

"Do Not Scale Up Drawing"

FIGURE 9: MW-1 Hydrograph &
Free Product Thickness Comparison

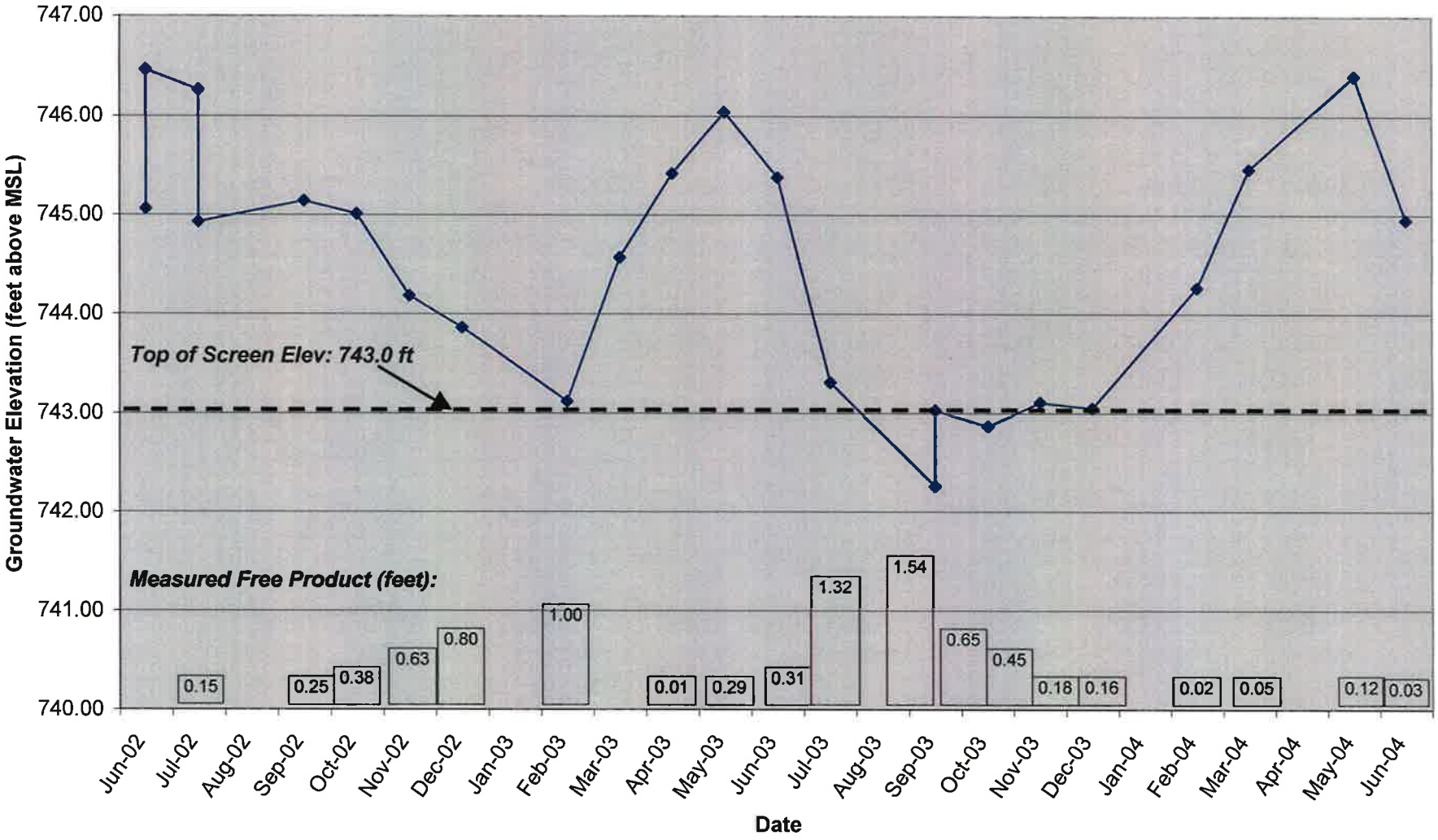


FIGURE 10: MW-2 Hydrograph &
Free Product Thickness Comparison

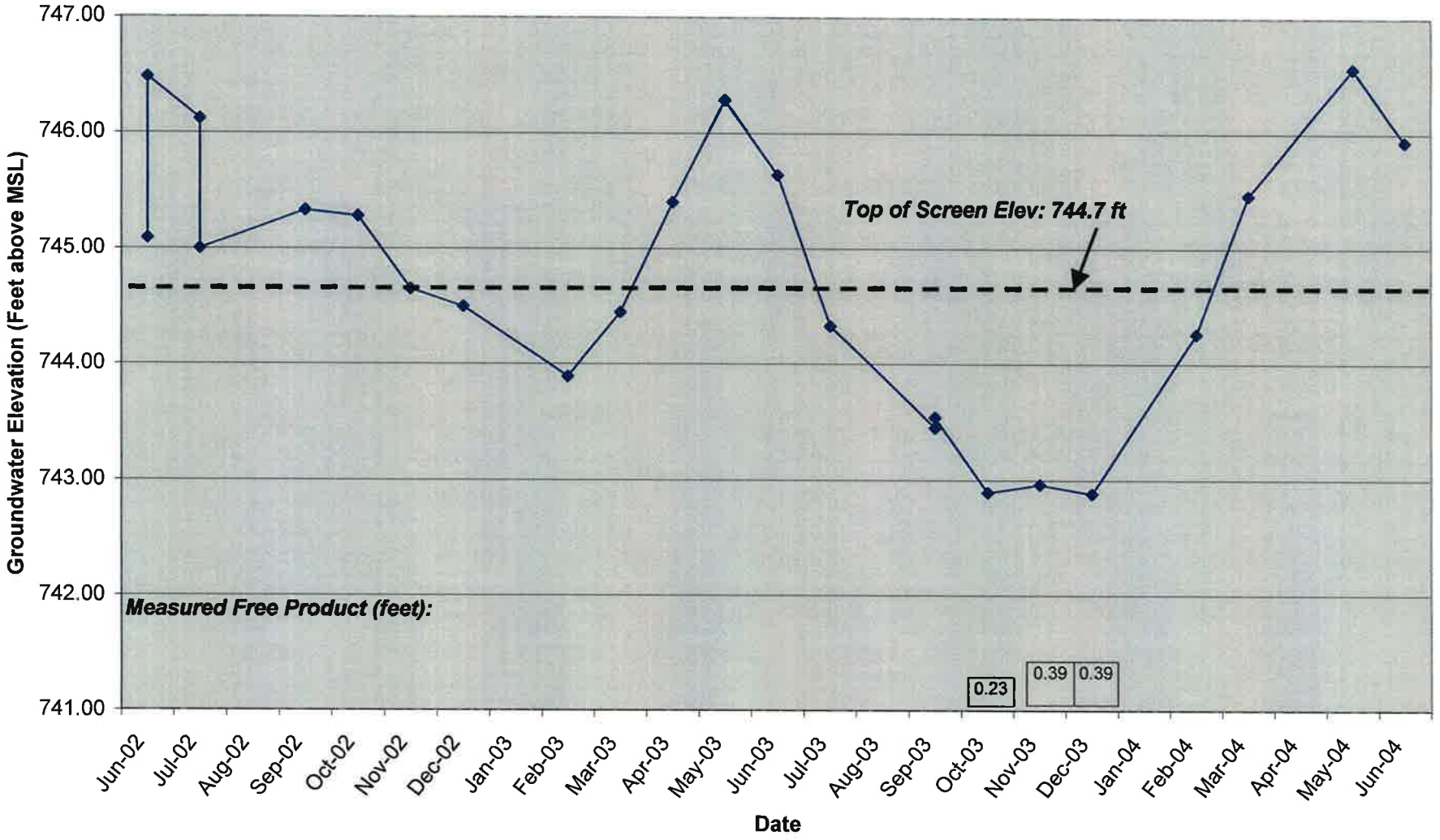
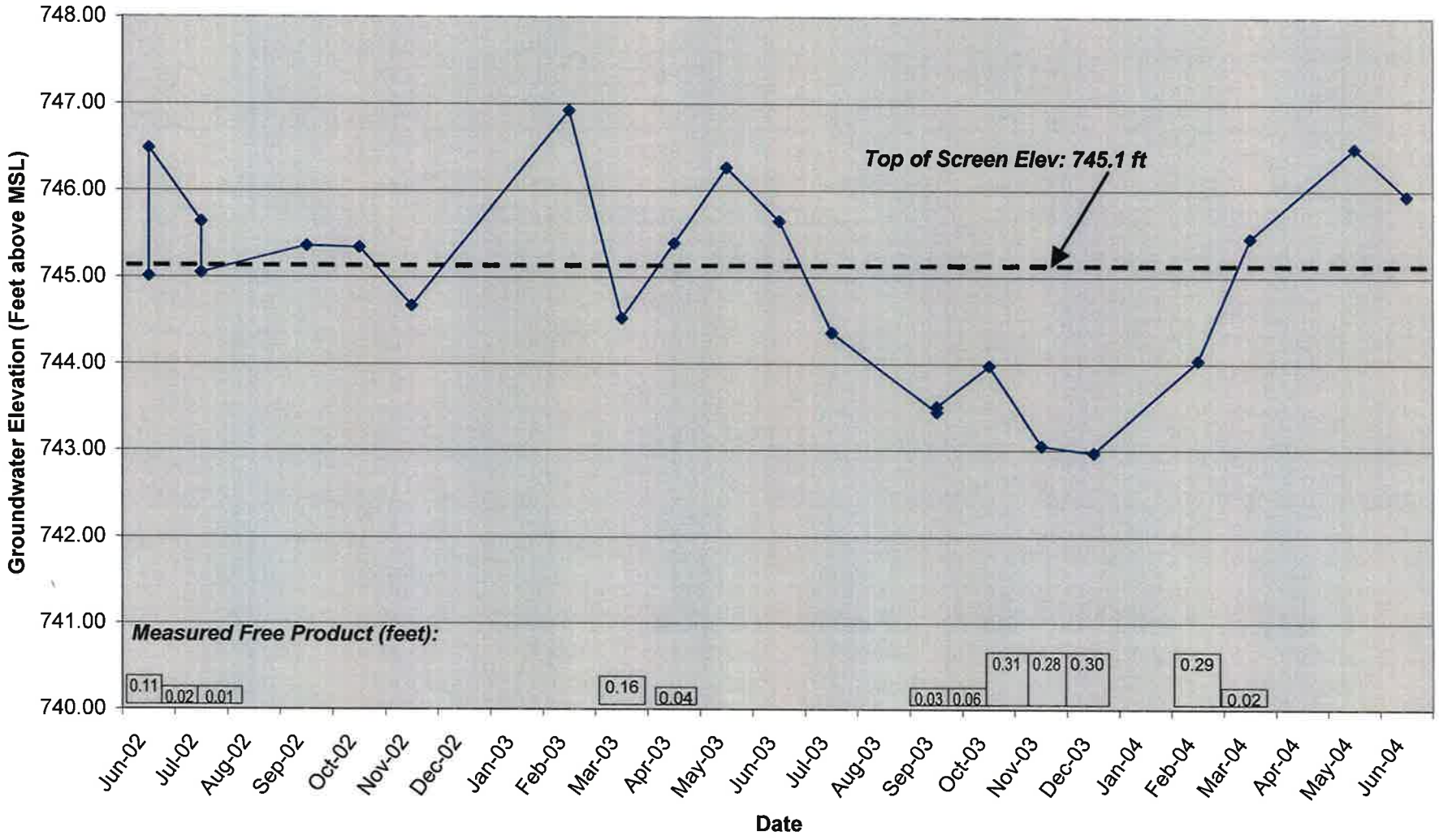


FIGURE 11: MW-3 Hydrograph
& Free Product Thickness Comparison



APPENDIX 1

LABORATORY ANALYTICAL REPORTS

EN CHEM INC.

Corporate Office & Laboratory
1241 Bellevue Street, Suite 9 • Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827 • 800-7-ENCHEM
www.enchem.com

- Analytical Report -

Project Name : YOCUM-JORDAN

Project Number : 20 02014

MDH LAB ID : 055-999-334

Client: ENVIRO-RISK CONSULTING GROUP

Sample No.	Field ID	Collection Date	Sample No.	Field ID	Collection Date
832588-001	JOR-MW01-100	03/26/03			
832588-002	JOR-MW02-100	03/26/03			
832588-003	JOR-MW03-100	03/26/03			
832588-004	JOR-MW01-300	03/26/03			

Please visit our Internet homepage at: www.enchem.com

Soil VOC detects are corrected for the total solids, unless otherwise noted.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. Reported results shall not be reproduced, except in full, without the written approval of the lab. The sample results relate only to the analytes of interest tested.

Approval Signature

4/1/03
Date

En Chem, Inc. Cooler Receipt Log

Batch No. 832588

Project Name or ID Yocum - Jordan No. of Coolers: 1 Temps: 4.0°C

A. Receipt Phase: Date cooler was opened: 3/27/03 **By:** KM

1: Were samples received on ice? (Must be ≤ 6 C)	(YES)	NO[2]	
2. Was there a Temperature Blank?	YES	(NO)	
3: Were custody seals present and intact? (Record on COC)	YES	(NO)	
4: Are COC documents present?	(YES)	NO[2]	
5: Does this Project require quick turn around analysis?	YES	(NO)	
6: Is there any sub-work?	YES	(NO)	
7: Are there any short hold time tests?	YES	(NO)	
8: Are any samples nearing expiration of hold-time? (Within 2 days)	YES[1]	(NO)	Contacted by/Who
9: Do any samples need to be Filtered or Preserved in the lab?	YES[1]	(NO)	Contacted by/Who

B. Check-in Phase: Date samples were Checked-in: 3/27/03 **By:** KM

1: Were all sample containers listed on the COC received and intact?	(YES)	NO[2]	NA
2: Sign the COC as received by En Chem. Completed	(YES)	NO	
3: Do sample labels match the COC?	(YES)	NO[2]	
4: Check sample pH of preserved samples. (Not VOCs) Completed	YES	NO	(NA)
5: Do samples have correct chemical preservation?	(YES)	NO[2]	NA
6: Are dissolved parameters field filtered?	YES	NO[2]	(NA)
7: Are sample volumes adequate for tests requested?	(YES)	NO[2]	
8: Are VOC samples free of bubbles >6mm	(YES)	NO[2]	NA
9: Enter samples into logbook. Completed	(YES)	NO	
10: Place laboratory sample number on all containers and COC. Completed	(YES)	NO	
11: Complete Laboratory Tracking Sheet (LTS). Completed	YES	NO	(NA)
12: Start Nonconformance form.	YES	NO	(NA)
13: Initiate Subcontracting procedure. Completed	YES	NO	(NA)
14: Check laboratory sample number on all containers and COC. JR	(YES)	NO	NA

Short Hold-time tests:

48 Hours or less	7 days	Footnotes
Coliform (6 hrs)	Flashpoint	1 Notify proper lab group immediately.
Hexavalent Chromium (24 Hrs)	TSS	
BOD	Total Solids	2 Complete nonconformance memo.
Nitrite or Nitrate	TDS	
Low Level Mercury	Sulfide	
Ortho Phosphorus	Free Liquids	
Turbidity	Total Volatile Solids	
Surfactants	Aqueous Extractable Organics- ALL	
Sulfite	Unpreserved VOC's	
En Core Preservation	Ash	
Color		

Rev. 9/5/2001, Attachment to 1-REC-5.
Subject to QA Audit.

Reviewed by/date TMT 3/27/03

p:/everyone/forms/samplereceiving/crl.doc

En Chem Inc.

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Fax: 920-469-8827

Lab#:	TestGroupID:	Comment:
832588-001	GRO-W	Early and late eluting peaks were present outside the window of analysis.
JOR-MW01-100		
832588-002	GRO-W	Early and late eluting peaks were present outside the window of analysis.
JOR-MW02-100		
832588-003	GRO-W	Early and late eluting peaks were present outside the window of analysis.
JOR-MW03-100		

En Chem Inc.

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Green Bay, WI 54302
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800-7-ENCHEM
Fax: 920-469-8827

- Analytical Report -

Project Name : YOCUM-JORDAN
Project Number : 20 02014
Field ID : JOR-MW01-100
Lab Sample Number : 832588-001
MDH LAB ID : 055-999-334

Client : ENVIRO-RISK CONSULTING GROUP
Report Date : 04/01/03
Collection Date : 03/26/03
Matrix Type : WATER

Organic Results

BTEX + MTBE - WATER **Prep Method:** SW846 5030B **Prep Date:** 03/28/03 **Analyst:** PMS

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	95	---	%Recov		03/31/03	WI MOD GRO
Benzene	19000	250	ug/l		03/31/03	WI MOD GRO
Ethylbenzene	6500	250	ug/l		03/31/03	WI MOD GRO
Methyl-tert-butyl-ether	250	250	ug/l		03/31/03	WI MOD GRO
Toluene	49000	250	ug/l		03/31/03	WI MOD GRO
Xylenes, -m, -p	31000	500	ug/l		03/31/03	WI MOD GRO
Xylene, -o	13000	250	ug/l		03/31/03	WI MOD GRO

Organic Results

BTEX BLANK **Prep Method:** **Prep Date:** 03/28/03 **Analyst:**

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
BTEX - Blank	1219-44					

Organic Results

GASOLINE RANGE ORGANICS - WATER **Prep Method:** Wi MOD GRO **Prep Date:** 03/28/03 **Analyst:** PMS

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
Gasoline Range Organics	270000	12000	ug/l		03/31/03	Wi MOD GRO
Blank Spike	100	---	%Recov		03/31/03	Wi MOD GRO
Blank Spike Duplicate	97	---	%Recov		03/31/03	Wi MOD GRO
Blank	< 50	50	ug/l		03/31/03	Wi MOD GRO

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- Analytical Report -

Project Name : YOCUM-JORDAN
Project Number : 20 02014
Field ID : JOR-MW02-100
Lab Sample Number : 832588-002
MDH LAB ID : 055-999-334

Client : ENVIRO-RISK CONSULTING GROUP
Report Date : 04/01/03
Collection Date : 03/26/03
Matrix Type : WATER

Organic Results

BTEX + MTBE - WATER **Prep Method:** SW846 5030B **Prep Date:** 03/28/03 **Analyst:** PMS

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	94	---	%Recov		03/31/03	WI MOD GRO
Benzene	17000	200	ug/l		03/31/03	WI MOD GRO
Ethylbenzene	2500	200	ug/l		03/31/03	WI MOD GRO
Methyl-tert-butyl-ether	< 200	200	ug/l		03/31/03	WI MOD GRO
Toluene	31000	200	ug/l		03/31/03	WI MOD GRO
Xylenes, -m, -p	11000	400	ug/l		03/31/03	WI MOD GRO
Xylene, -o	4500	200	ug/l		03/31/03	WI MOD GRO

Organic Results

BTEX BLANK **Prep Method:** **Prep Date:** 03/28/03 **Analyst:**

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
BTEX - Blank	1219-44					

Organic Results

GASOLINE RANGE ORGANICS - WATER **Prep Method:** Wi MOD GRO **Prep Date:** 03/28/03 **Analyst:** PMS

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
Gasoline Range Organics	120000	10000	ug/l		03/31/03	Wi MOD GRO
Blank Spike	100	---	%Recov		03/31/03	Wi MOD GRO
Blank Spike Duplicate	97	---	%Recov		03/31/03	Wi MOD GRO
Blank	< 50	50	ug/l		03/31/03	Wi MOD GRO

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- Analytical Report -

Project Name : YOCUM-JORDAN
Project Number : 20 02014
Field ID : JOR-MW03-100
Lab Sample Number : 832588-003
MDH LAB ID : 055-999-334

Client : ENVIRO-RISK CONSULTING GROUP
Report Date : 04/01/03
Collection Date : 03/26/03
Matrix Type : WATER

Organic Results

BTEX + MTBE - WATER **Prep Method:** SW846 5030B **Prep Date:** 03/28/03 **Analyst:** PMS

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	95	---	%Recov		03/31/03	WI MOD GRO
Benzene	23000	200	ug/l		03/31/03	WI MOD GRO
Ethylbenzene	2800	200	ug/l		03/31/03	WI MOD GRO
Methyl-tert-butyl-ether	< 200	200	ug/l		03/31/03	WI MOD GRO
Toluene	30000	200	ug/l		03/31/03	WI MOD GRO
Xylenes, -m, -p	12000	400	ug/l		03/31/03	WI MOD GRO
Xylene, -o	5400	200	ug/l		03/31/03	WI MOD GRO

Organic Results

BTEX BLANK **Prep Method:** **Prep Date:** 03/28/03 **Analyst:**

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
BTEX - Blank	1219-44					

Organic Results

GASOLINE RANGE ORGANICS - WATER **Prep Method:** Wi MOD GRO **Prep Date:** 03/28/03 **Analyst:** PMS

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
Gasoline Range Organics	130000	10000	ug/l		03/31/03	Wi MOD GRO
Blank Spike	100	---	%Recov		03/31/03	Wi MOD GRO
Blank Spike Duplicate	97	---	%Recov		03/31/03	Wi MOD GRO
Blank	< 50	50	ug/l		03/31/03	Wi MOD GRO

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- Analytical Report -

Project Name : YOCUM-JORDAN
Project Number : 20 02014
Field ID : JOR-MW01-300
Lab Sample Number : 832588-004
MDH LAB ID : 055-999-334

Client : ENVIRO-RISK CONSULTING GROUP
Report Date : 04/01/03
Collection Date : 03/26/03
Matrix Type : WATER

Organic Results

BTEX + MTBE - WATER **Prep Method:** SW846 5030B **Prep Date:** 03/28/03 **Analyst:** PMS

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	96	---	%Recov		03/31/03	WI MOD GRO
Benzene	< 1.0	1.0	ug/l		03/31/03	WI MOD GRO
Ethylbenzene	< 1.0	1.0	ug/l		03/31/03	WI MOD GRO
Methyl-tert-butyl-ether	< 1.0	1.0	ug/l		03/31/03	WI MOD GRO
Toluene	< 1.0	1.0	ug/l		03/31/03	WI MOD GRO
Xylenes, -m, -p	< 2.0	2.0	ug/l		03/31/03	WI MOD GRO
Xylene, -o	< 1.0	1.0	ug/l		03/31/03	WI MOD GRO

Organic Results

BTEX BLANK **Prep Method:** **Prep Date:** 03/28/03 **Analyst:**

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
BTEX - Blank	1219-44					

Organic Results

GASOLINE RANGE ORGANICS - WATER **Prep Method:** Wi MOD GRO **Prep Date:** 03/28/03 **Analyst:** PMS

Analyte	Result	EQL	Units	Code	Analysis Date	Analysis Method
Gasoline Range Organics	< 50	50	ug/l		03/31/03	Wi MOD GRO
Blank Spike	100	---	%Recov		03/31/03	Wi MOD GRO
Blank Spike Duplicate	97	---	%Recov		03/31/03	Wi MOD GRO
Blank	< 50	50	ug/l		03/31/03	Wi MOD GRO

Effective Date: 07/01/2002

Surrogates - 2002
En Chem - Green Bay

	Aqueous		Low Level Solids		Methanol Solids	
Surrogate - GC VOA	LCL	UCL	LCL	UCL	LCL	UCL
α,α,α–Trifluorotoluene	61	149	54	144	62	154

	Aqueous		Low Level Solids		Methanol Solids	
Surrogate - GCMS VOA	LCL	UCL	LCL	UCL	LCL	UCL
Dibromofluoromethane	61	136	51	127	57	118
Toluene-d_8	63	140	62	126	72	115
4-Bromoflurobenzene	55	136	60	109	67	112

	Aqueous		Solids	
Surrogate - GCMS PAH	LCL	UCL	LCL	UCL
Nitrobenzene-$_{d5}$	30	170	35	126
2-Fluorobiphenyl	30	126	44	110
Terphenyl-d_{14}	56	148	38	145

	Aqueous		Solids	
Surrogate - GCMS BNA	LCL	UCL	LCL	UCL
2-Fluorophenol	13	70	35	114
Phenol-$_{d5}$	8	44	29	114
2-Chlorophenol-$_{d4}$	29	104	34	107
1,2-Dichlorobenzene-$_{d4}$	34	112	27	116
Nitrobenezene-$_{d5}$	34	126	26	126
2-Fluorobiphenyl	36	126	26	126
2,4,6-Tribromophenol	39	133	17	129
Terphenyl-$_{d14}$	56	139	23	141

	Aqueous		Solids	
Surrogate - GC PCB	LCL	UCL	LCL	UCL
Decachlorobiphenyl	22	133	11	142

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKV 1219-44

Lab Name: ENCHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO2-033103

Matrix: (soil/water) WATER Lab Sample ID: BLKV 1219-44

Sample wt/vol: _____ (g/mL) ML Lab File ID: 002F0101

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-38-3	m/p-Xylene	2.000	U
71-43-2	Benzene	1.000	U
95-47-6	o-Xylene	1.000	U
108-88-3	Toluene	1.000	U
100-41-4	Ethylbenzene	1.000	U
1634-04-4	Methyl tert-butyl ether	1.000	U
----------	Total Xylenes	3.000	U
108-67-8	1,3,5-Trimethylbenzene	1.000	U
95-63-6	1,2,4-Trimethylbenzene	1.000	U
91-20-3	Naphthalene	1.000	U

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENCHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO2-033103

Matrix Spike - Sample No.: 831815-064

Batch QC

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
m/p-Xylene	40.000	6.031	35.087	73	65-134
Benzene	20.000	1.734	17.589	79	62-135
o-Xylene	20.000	1.703	16.714	75	68-132
Toluene	20.000	2.328	17.945	78	69-132
Ethylbenzene	20.000	2.768	17.579	74	61-137
Methyl tert-butyl ether	20.000	0.0000	16.417	82	77-118
Total Xylenes	60.000	7.734	51.802	73	69-132
1,3,5-Trimethylbenzene	20.000	0.8422	14.673	69	57-136
1,2,4-Trimethylbenzene	20.000	2.437	16.011	68	59-134
Naphthalene	20.000	0.8163	15.028	71	42-145

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
m/p-Xylene	40.000	38.526	81	9	27	65-134
Benzene	20.000	18.864	86	7	30	62-135
o-Xylene	20.000	18.180	82	8	21	68-132
Toluene	20.000	19.294	85	7	21	69-132
Ethylbenzene	20.000	19.137	82	8	22	61-137
Methyl tert-butyl ether	20.000	17.272	86	5	21	77-118
Total Xylenes	60.000	56.706	82	9	30	69-132
1,3,5-Trimethylbenzene	20.000	16.467	78	12	33	57-136
1,2,4-Trimethylbenzene	20.000	17.756	76	10	31	59-134
Naphthalene	20.000	16.196	77	7	34	42-145

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 10 outside limits
Spike Recovery: 0 out of 20 outside limits

COMMENTS: _____

FORM 3
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ENCHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO2-033103

Matrix Spike - Sample No.: BLKV 1219-44

COMPOUND	SPIKE ADDED (ug/L)	BLANK CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
m/p-Xylene	40.000	0.0000	36.562	91	80-120
Benzene	20.000	0.0000	19.087	95	80-120
o-Xylene	20.000	0.0000	18.487	92	80-120
Toluene	20.000	0.0000	18.747	94	80-120
Ethylbenzene	20.000	0.0000	18.236	91	80-120
Methyl tert-butyl ether	20.000	0.0000	19.718	98	80-120
Total Xylenes	60.000	0.0000	55.049	92	80-120
1,3,5-Trimethylbenzene	20.000	0.0000	17.531	88	80-120
1,2,4-Trimethylbenzene	20.000	0.0000	17.414	87	80-120
Naphthalene	20.000	0.0000	18.200	91	80-120

COMPOUND	SPIKE ADDED (ug/L)	BSD CONCENTRATION (ug/L)	BSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
m/p-Xylene	40.000	36.153	90	1	20	80-120
Benzene	20.000	18.797	94	2	20	80-120
o-Xylene	20.000	18.232	91	1	20	80-120
Toluene	20.000	18.450	92	2	20	80-120
Ethylbenzene	20.000	17.927	90	2	20	80-120
Methyl tert-butyl ether	20.000	19.184	96	3	20	80-120
Total Xylenes	60.000	54.385	91	1	20	80-120
1,3,5-Trimethylbenzene	20.000	17.392	87	1	20	80-120
1,2,4-Trimethylbenzene	20.000	17.270	86	1	20	80-120
Naphthalene	20.000	17.504	88	4	20	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

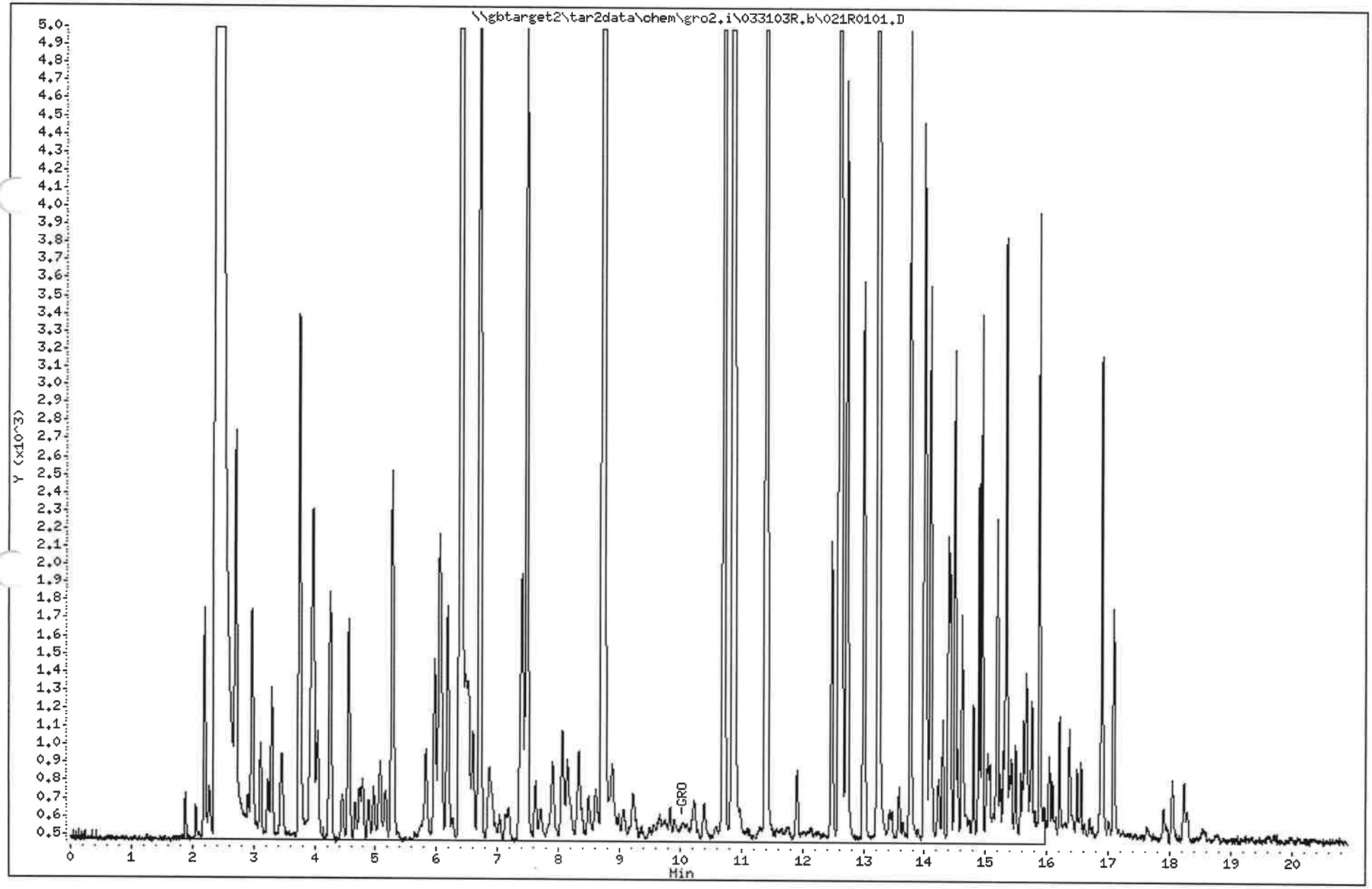
RPD: 0 out of 10 outside limits
Spike Recovery: 0 out of 20 outside limits

COMMENTS: _____

Data File: \\gbtarget2\tar2data\chem\gro2.i\033103R.b\021R0101.D
Date : 31-MAR-2003 18:27
Client ID: 832588-001
Sample Info: 32588B001WCV250
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro2.i

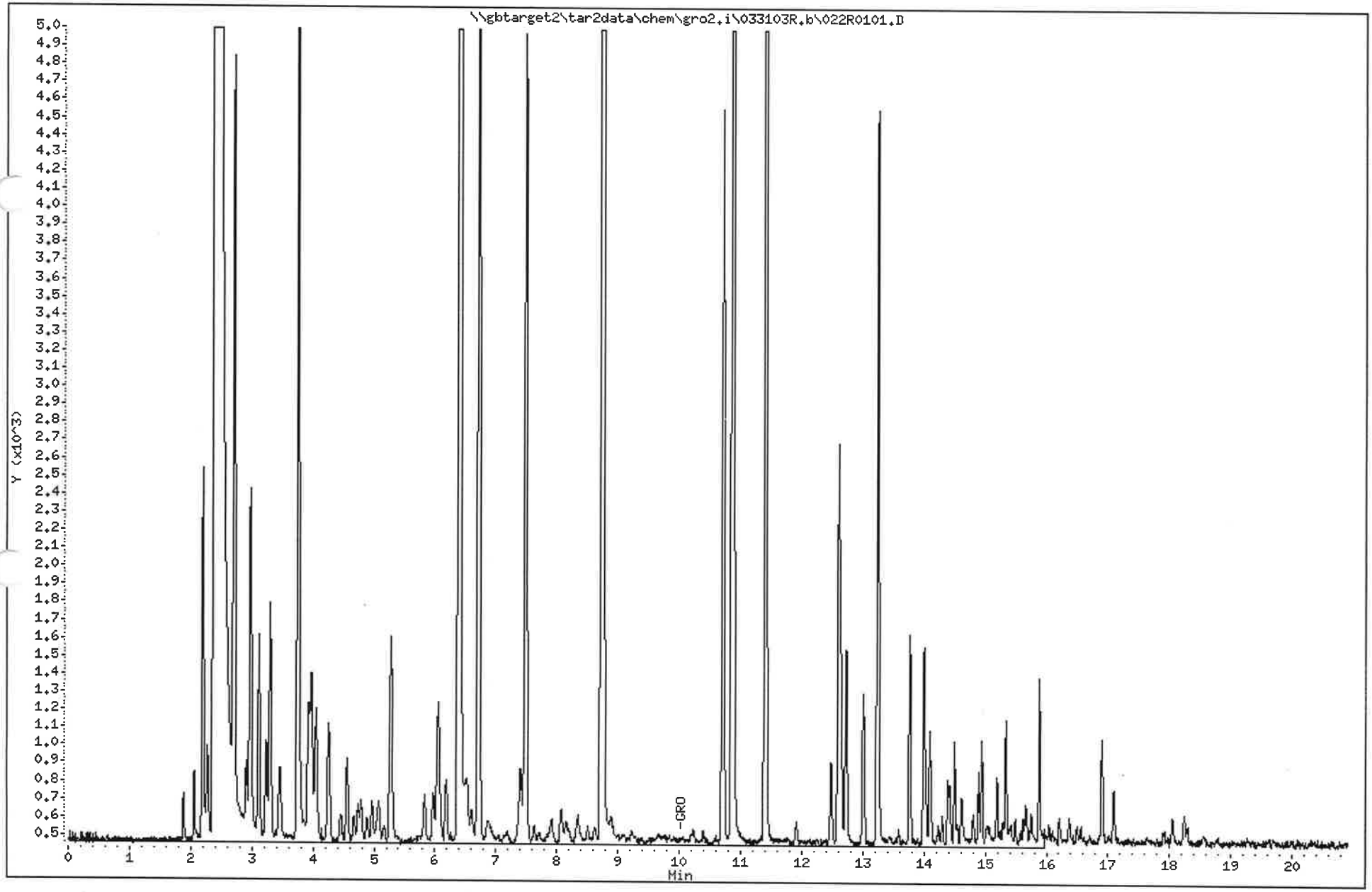
Operator: PMS
Column diameter: 0.32



Data File: \\gbtarget2\tar2data\chem\gro2.i\033103R.b\022R0101.D
Date : 31-MAR-2003 18:53
Client ID: 832588-002
Sample Info: 32588B002WCV200
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro2.i

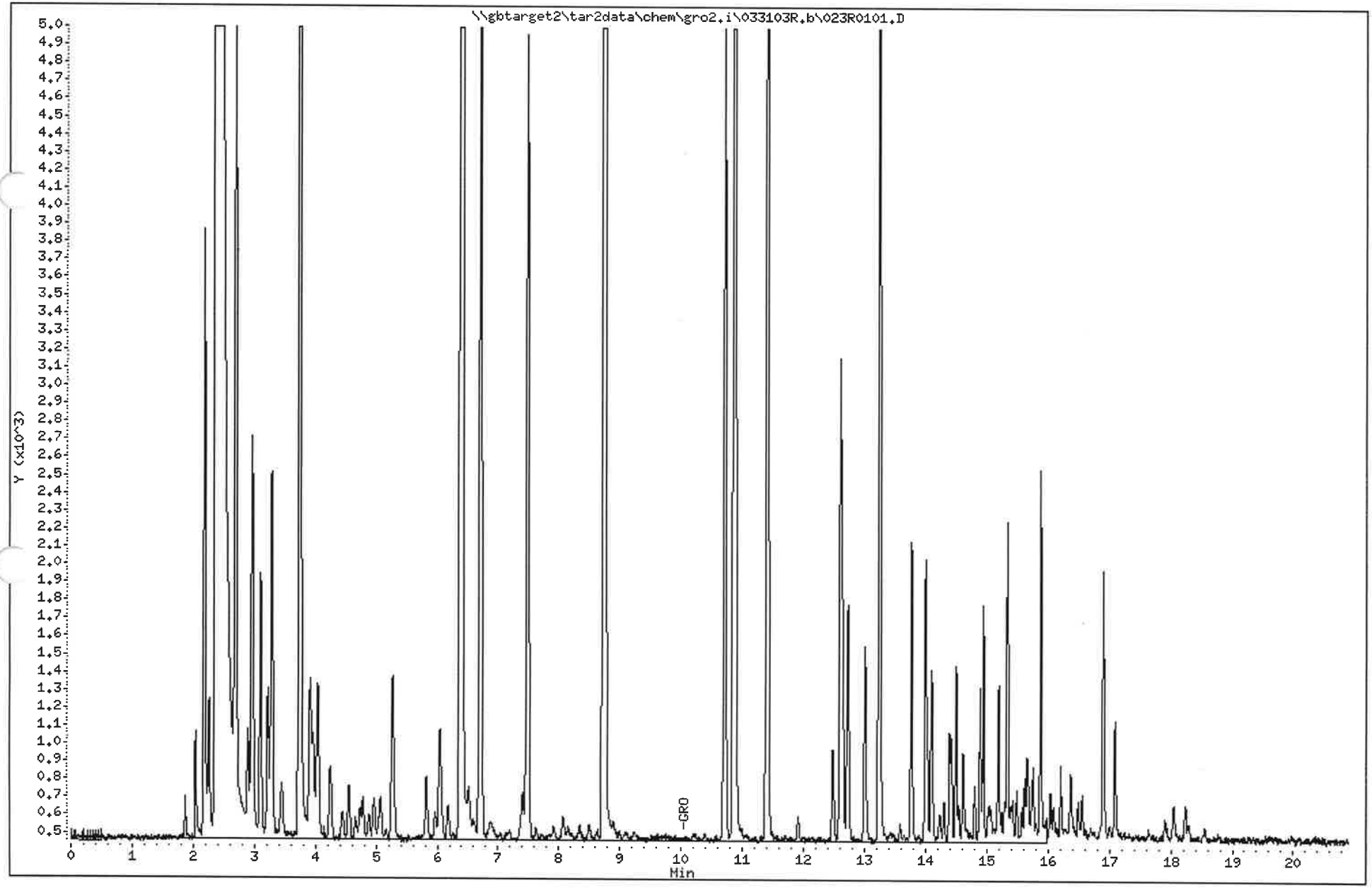
Operator: PMS
Column diameter: 0.32



Data File: \\gbtarget2\tar2data\chem\gro2.i\033103R.b\023R0101.D
Date : 31-MAR-2003 19:18
Client ID: 832588-003
Sample Info: 32588B003WCV200
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro2.i

Operator: PMS
Column diameter: 0.32



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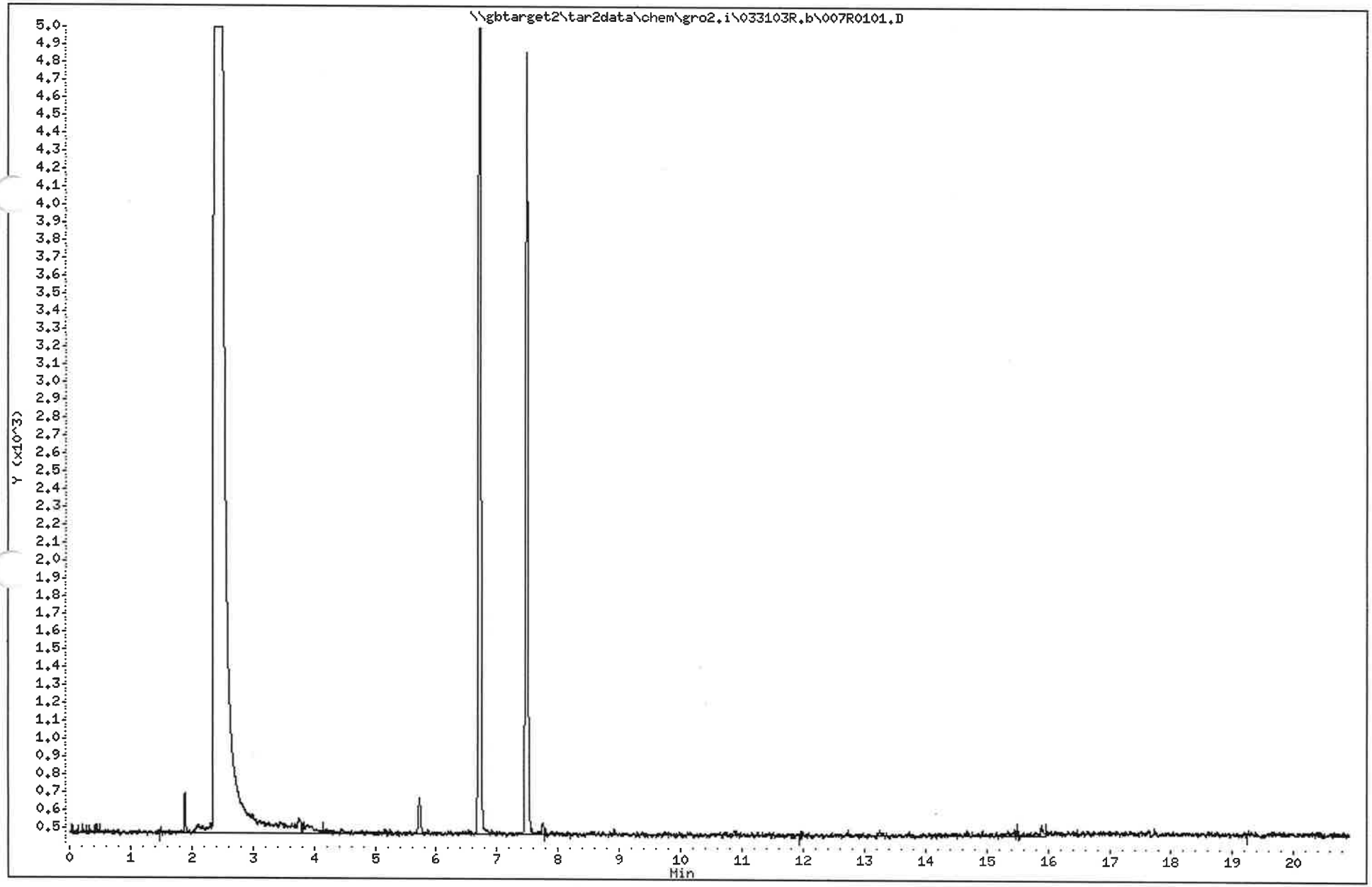
Date : 31-MAR-2003 12:26
Client ID: 832588-004
Sample Info: 32588B004WCV1
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro2.i

Operator: PMS
Column diameter: 0.32



(Please Print Legibly)
Company Name: ENVIRO-RISK CONSULTING
Branch or Location: ST. PAUL
Project Contact: BRAD BURKE
Telephone: 651-735-7001
Project Number: 26 0204
Project Name: YOCUM-JORDAN
Project State: MN
Sampled By (Print): C. ROGERS

EN CHEM INC.
1241 Bellevue St., Suite 9
Green Bay, WI 54302
920-469-2436
FAX 920-469-8827

VJR

CHAIN OF CUSTODY

101151

Page 1 of 1

P.O. # _____ Quote # _____

Mail Report To: BRAD BURKE
Company: ENVIRO-RISK CONSULTING
Address: 1176 SILVERWOOD BAY
ST. PAUL, MN 55125

Invoice To: BRAD BURKE
Company: _____
Address: AS ABOVE

Mail Invoice To: _____

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=EnCore F=Methanol G=NaOH
H = Sodium Bisulfate Solution I = Sodium Thiosulfate J = Other

Data Package Options - (please circle if requested)
Sample Results Only (no QC) MN
EPA Level II (Subject to Surcharge)
EPA Level III (Subject to Surcharge)
EPA Level IV (Subject to Surcharge)

Regulatory Program: UST, RCRA, SDWA, NPDES, CERCLA

Matrix Codes: W=Water, S=Soil, A=Air, C=Charcoal, B=Biota, Sl=Sludge

LABORATORY ID (Lab Use Only)	FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	ANALYSES REQUESTED: BTEX, MTBE + GRO	TOTAL # OF BOTTLES SENT	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
001	JOR-MW01-100	03-26-03	1400	W	N	B	✓	3	Sheen/Strong odor	3-40ml B
002	JOR-MW03-100	03-26-03	1320	W	N	B	✓	3	Slight sheen	
003	JOR-MW03-150	03-26-03	1310	W	N	B	✓	3	Sheen/Strong odor	
004	JOR-MW01-300	03-26-03	0000	W	N	B	✓	3		↓ New En Chem T.B. KP03-2703
										1600

Rush Turnaround Time Requested (TAT) - Prelim
(Rush TAT subject to approval/surcharge)
Date Needed: NORMAL TAT
Transmit Prelim Rush Results by (circle):
Phone Fax E-Mail
Phone #: 651-735-7001
Fax #: 651-738-3039
E-Mail Address: BBurke@enviro-risk.com

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
[illegible] Rogers	03-26-03/1530	[illegible]	3-26
[illegible]	3-26	[illegible] Dunham	
Dunham	3/27/03 0750	Karl Hardouin	3/27/03 0750

En Chem Project No. 832588
Sample Receipt Temp. 4.0°C
Sample Receipt pH (Wet/Metals) N/A
Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Version 2.0: 1/02

EN CHEM INC.

Corporate Office & Laboratory
1241 Bellevue Street, Suite 9 • Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827 • 800-7-ENCHEM
www.enchem.com

Analytical Report Number: 836132

Client : ENVIRO-RISK CONSULTING GROUP

Project Name : YOCUM OIL

Project Number : 20-02014

Lab Sample Number	Field ID	Matrix	Collection Date
836132-001	MW-2	WATER	06/26/03
836132-002	MW-3	WATER	06/26/03
836132-003	TRIP BLANK	WATER	06/26/03

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. Reported results shall not be reproduced, except in full, without the written approval of the lab. The sample results relate only to the analytes of interest tested.

Tom Trainor

Approval Signature

7/9/03

Date

En Chem Inc.

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800-7-ENCHEM
Fax: 920-469-8827

Analytical Report Number: 836132

Client : ENVIRO-RISK CONSULTING GROUP
Project Name : YOCUM OIL
Project Number : 20-02014
Field ID : MW-2

Matrix Type : WATER
Collection Date : 06/26/03
Report Date : 07/03/03
Lab Sample Number : 836132-001

BTEX + MTBE

Prep Date: 07/02/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Benzene		19000	100	100	ug/l		07/02/03	SW846 5030B	WI MOD GRO
Ethylbenzene		1500	100	100	ug/l		07/02/03	SW846 5030B	WI MOD GRO
Methyl-tert-butyl-ether	<	100	100	100	ug/l		07/02/03	SW846 5030B	WI MOD GRO
Toluene		21000	100	100	ug/l		07/02/03	SW846 5030B	WI MOD GRO
Xylene, o		3400	100	100	ug/l		07/02/03	SW846 5030B	WI MOD GRO
Xylenes, m + p		8000	200	100	ug/l		07/02/03	SW846 5030B	WI MOD GRO
a,a,a-Trifluorotoluene		98	---	1	%Recov		07/02/03	SW846 5030B	WI MOD GRO

BTEX BLANK

Prep Date: 07/02/03

Analyte	Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
BTEX Blank ID	1257-66		1					

GASOLINE RANGE ORGANICS

Prep Date: 07/02/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Gasoline Range Organics		74000	5000	100	ug/l		07/02/03	WI MOD GRO	WI MOD GRO
GRO Blank	<	50	50	1	ug/l		07/02/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike		88	---	1	%Recov		07/02/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		86	---	1	%Recov		07/02/03	WI MOD GRO	WI MOD GRO

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800-7-ENCHEM
Fax: 920-469-8827

Analytical Report Number: 836132

Client : ENVIRO-RISK CONSULTING GROUP
Project Name : YOCUM OIL
Project Number : 20-02014
Field ID : MW-3

Matrix Type : WATER
Collection Date : 06/26/03
Report Date : 07/03/03
Lab Sample Number : 836132-002

BTEX + MTBE

Prep Date: 07/02/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Benzene		6900	50	50	ug/l		07/02/03	SW846 5030B	WI MOD GRO
Ethylbenzene		1000	50	50	ug/l		07/02/03	SW846 5030B	WI MOD GRO
Methyl-tert-butyl-ether	<	50	50	50	ug/l		07/02/03	SW846 5030B	WI MOD GRO
Toluene		13000	50	50	ug/l		07/02/03	SW846 5030B	WI MOD GRO
Xylene, o		1900	50	50	ug/l		07/02/03	SW846 5030B	WI MOD GRO
Xylenes, m + p		4600	100	50	ug/l		07/02/03	SW846 5030B	WI MOD GRO
a,a,a-Trifluorotoluene		96	---	1	%Recov		07/02/03	SW846 5030B	WI MOD GRO

BTEX BLANK

Prep Date: 07/02/03

Analyte	Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
BTEX Blank ID	1257-66		1					

GASOLINE RANGE ORGANICS

Prep Date: 07/02/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Gasoline Range Organics		42000	2500	50	ug/l		07/02/03	WI MOD GRO	WI MOD GRO
GRO Blank	<	50	50	1	ug/l		07/02/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike		88	---	1	%Recov		07/02/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		86	---	1	%Recov		07/02/03	WI MOD GRO	WI MOD GRO

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Fax: 920-469-8827

Analytical Report Number: 836132

Client : ENVIRO-RISK CONSULTING GROUP
Project Name : YOCUM OIL
Project Number : 20-02014
Field ID : TRIP BLANK

Matrix Type : WATER
Collection Date : 06/26/03
Report Date : 07/03/03
Lab Sample Number : 836132-003

BTEX + MTBE

Prep Date: 07/03/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Benzene	<	1.0	1.0	1	ug/l		07/03/03	SW846 5030B	WI MOD GRO
Ethylbenzene	<	1.0	1.0	1	ug/l		07/03/03	SW846 5030B	WI MOD GRO
Methyl-tert-butyl-ether	<	1.0	1.0	1	ug/l		07/03/03	SW846 5030B	WI MOD GRO
Toluene	<	1.0	1.0	1	ug/l		07/03/03	SW846 5030B	WI MOD GRO
Xylene, o	<	1.0	1.0	1	ug/l		07/03/03	SW846 5030B	WI MOD GRO
Xylenes, m + p	<	2.0	2.0	1	ug/l		07/03/03	SW846 5030B	WI MOD GRO
a,a,a-Trifluorotoluene		100	---	1	%Recov		07/03/03	SW846 5030B	WI MOD GRO

BTEX BLANK

Prep Date: 07/02/03

Analyte	Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
BTEX Blank ID	1257-66		1					

GASOLINE RANGE ORGANICS

Prep Date: 07/03/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Gasoline Range Organics	<	50	50	1	ug/l		07/03/03	WI MOD GRO	WI MOD GRO
GRO Blank	<	50	50	1	ug/l		07/03/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike		88	---	1	%Recov		07/03/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		86	---	1	%Recov		07/03/03	WI MOD GRO	WI MOD GRO

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Lab Number	TestGroupID	Field ID	Comment
836132-001	GRO-W	MW-2	Early and late eluting peaks were present outside the window of analysis.
836132-002	GRO-W	MW-3	Early and late eluting peaks were present outside the window of analysis.

Qualifier Codes

Flag	Applies To	Explanation
A	Inorganic	Analyte is detected in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
B	Inorganic	The analyte has been detected between the method detection limit and the reporting limit.
B	Organic	Analyte is present in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
C	All	Elevated detection limit.
D	All	Analyte value from diluted analysis or surrogate result not applicable due to sample dilution.
E	Inorganic	Estimated concentration due to matrix interferences. During the metals analysis using the inductively coupled plasma (ICP), the serial dilution failed to meet the established control limits of 0-10% and the sample concentration is greater than 50 times the IDL (100 times the IDL for analysis done on the ICP-MS). The result was flagged with the E qualifier to indicate that a physical interference was observed.
E	Organic	Analyte concentration exceeds calibration range.
F	Inorganic	Due to potential interferences for this analysis by Inductively Coupled Plasma techniques (SW-846 Method 6010), this analyte has been confirmed by and reported from an alternate method.
F	Organic	Surrogate results outside control criteria.
H	All	Preservation, extraction or analysis performed past holding time.
J	Inorganic	The analyte has been detected between the method detection limit and the reporting limit.
J	Organic	Concentration detected is greater than the method detection limit but less than the reporting limit.
K	Inorganic	Sample received unpreserved. Sample was either preserved at the time of receipt or at the time of sample preparation.
K	Organic	Detection limit may be elevated due to the presence of an unrequested analyte.
L	All	Elevated detection limit due to low sample volume.
N	All	Spiked sample recovery not within control limits.
P	Organic	The relative percent difference between the two columns for detected concentrations was greater than 40%.
Q	All	The analyte has been detected between the limit of detection (LOD) and limit of quantitation (LOQ). The results are qualified due to the uncertainty of analyte concentrations within this range.
S	Organic	The relative percent difference between quantitation and confirmation columns exceeds internal quality control criteria. Because the result is unconfirmed, it has been reported as a non-detect with an elevated detection limit.
U	All	The analyte was not detected at or above the reporting limit.
V	All	Sample received with headspace.
W	All	A second aliquot of sample was analyzed from a container with headspace.
X	All	See Sample Narrative.
&	All	Laboratory Control Spike recovery not within control limits.
*	All	Precision not within control limits.
<	All	The analyte was not detected at or above the reporting limit.
1	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses passed QC based on precision criteria.
2	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses failed QC based on precision criteria.
3	Inorganic	BOD result is estimated due to the BOD blank exceeding the allowable oxygen depletion.
4	Inorganic	BOD duplicate precision not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
5	Inorganic	BOD result is estimated due to insufficient oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
6	Inorganic	BOD laboratory control sample not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
7	Inorganic	BOD result is estimated due to complete oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.

En Chem Inc.

Analysis Summary by Laboratory

1241 Bellevue Street
Green Bay, WI 54302

1090 Kennedy Avenue
Kimberly, WI 54136

Test Group Name	836132-001	836132-002	836132-003
BTEX + MTBE	G	G	G
BTEX BLANK	G	G	G
GASOLINE RANGE ORGANICS	G	G	G

Minnesota Certification	
G = En Chem Green Bay	055-999-334
K = En Chem Kimberly	055-999-107
S = Subcontracted Analysis	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKX 1257-66

Lab Name: ENCHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO3-070203

Matrix: (soil/water) WATER Lab Sample ID: BLKX 1257-66

Sample wt/vol: _____ (g/mL) ML Lab File ID: 003F0101

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 07/02/03

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	Methyl tert-butyl ether	1.000	U
71-43-2	Benzene	1.000	U
108-88-3	Toluene	1.000	U
100-41-4	Ethylbenzene	1.000	U
108-38-3	m/p-Xylene	2.000	U
95-47-6	o-Xylene	1.000	U
108-67-8	1,3,5-Trimethylbenzene	1.000	U
95-63-6	1,2,4-Trimethylbenzene	1.000	U
91-20-3	Naphthalene	1.000	U
----------	Total Xylenes	3.000	U

FORM 3
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ENCHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO3-070203

Matrix Spike - Sample No.: BLKX 1257-66

COMPOUND	SPIKE ADDED (ug/L)	BLANK CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Methyl tert-butyl ether	20.000	0.0000	20.247	101	80-120
Benzene	20.000	0.0000	20.027	100	80-120
Toluene	20.000	0.0000	20.039	100	80-120
Ethylbenzene	20.000	0.0000	19.377	97	80-120
m/p-Xylene	40.000	0.0000	39.024	98	80-120
o-Xylene	20.000	0.0000	19.409	97	80-120
1,3,5-Trimethylbenzene	20.000	0.0000	19.101	96	80-120
1,2,4-Trimethylbenzene	20.000	0.0000	18.533	93	80-120
Naphthalene	20.000	0.0000	17.246	86	80-120
Total Xylenes	60.000	0.0000	58.434	97	80-120

COMPOUND	SPIKE ADDED (ug/L)	BSD CONCENTRATION (ug/L)	BSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Methyl tert-butyl ether	20.000	19.569	98	3	20	80-120
Benzene	20.000	20.073	100	0	20	80-120
Toluene	20.000	19.663	98	2	20	80-120
Ethylbenzene	20.000	19.146	96	1	20	80-120
m/p-Xylene	40.000	38.687	97	1	20	80-120
o-Xylene	20.000	19.312	96	0	20	80-120
1,3,5-Trimethylbenzene	20.000	18.987	95	0	20	80-120
1,2,4-Trimethylbenzene	20.000	18.152	91	2	20	80-120
Naphthalene	20.000	16.771	84	3	20	80-120
Total Xylenes	60.000	57.998	97	1	20	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 10 outside limits
Spike Recovery: 0 out of 20 outside limits

COMMENTS: _____

_____

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENCHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO3-070203

Matrix Spike - Sample No.: 835266-064

Batch QC

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Methyl tert-butyl ether	20.000	0.0000	19.741	99	77-118
Benzene	20.000	0.0000	19.967	100	62-135
Toluene	20.000	0.0000	19.937	100	69-132
Ethylbenzene	20.000	0.0000	19.215	96	61-137
m/p-Xylene	40.000	0.0000	38.577	96	65-134
o-Xylene	20.000	0.0000	19.234	96	68-132
1,3,5-Trimethylbenzene	20.000	0.0000	18.720	94	57-136
1,2,4-Trimethylbenzene	20.000	0.0000	18.244	91	59-134
Naphthalene	20.000	0.0000	17.417	87	42-145
Total Xylenes	60.000	0.0000	57.812	96	69-132

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Methyl tert-butyl ether	20.000	20.755	104	5	21	77-118
Benzene	20.000	21.192	106	6	30	62-135
Toluene	20.000	20.988	105	5	21	69-132
Ethylbenzene	20.000	20.186	101	5	22	61-137
m/p-Xylene	40.000	40.370	101	4	27	65-134
o-Xylene	20.000	20.125	101	4	21	68-132
1,3,5-Trimethylbenzene	20.000	19.648	98	5	33	57-136
1,2,4-Trimethylbenzene	20.000	19.005	95	4	31	59-134
Naphthalene	20.000	17.546	88	1	34	42-145
Total Xylenes	60.000	60.495	101	4	30	69-132

Column to be used to flag recovery and RPD values with an asterisk

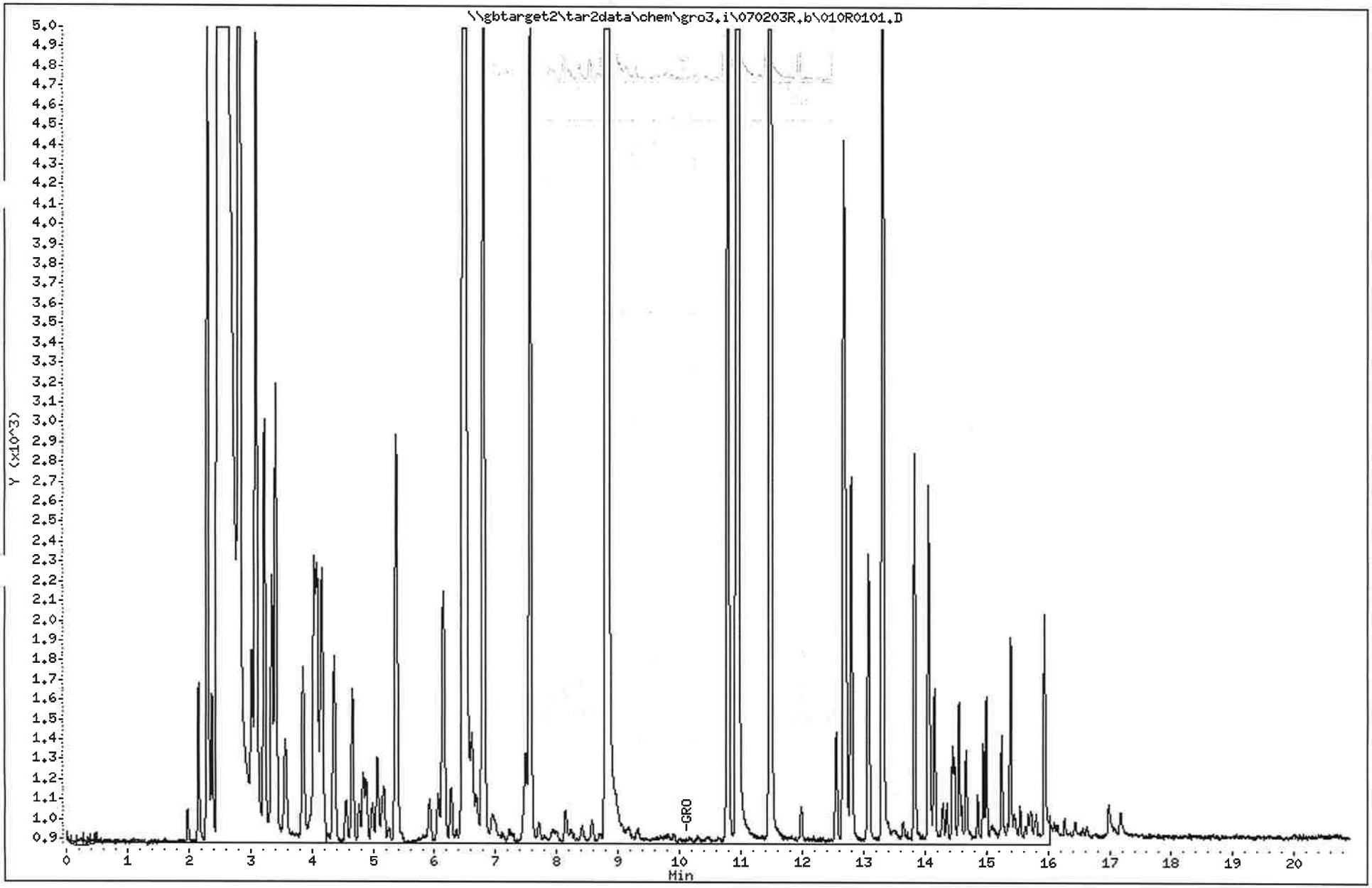
* Values outside of QC limits

RPD: 0 out of 10 outside limits
Spike Recovery: 0 out of 20 outside limits

COMMENTS: _____

Data File: \\gbtarget2\tar2data\chem\gro3.i\070203R.b\010R0101.D
Date : 02-JUL-2003 17:59
Client ID: 836132-001
Sample Info: 36132B001WCX100
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro3.i
Operator: SES
Column diameter: 0.32



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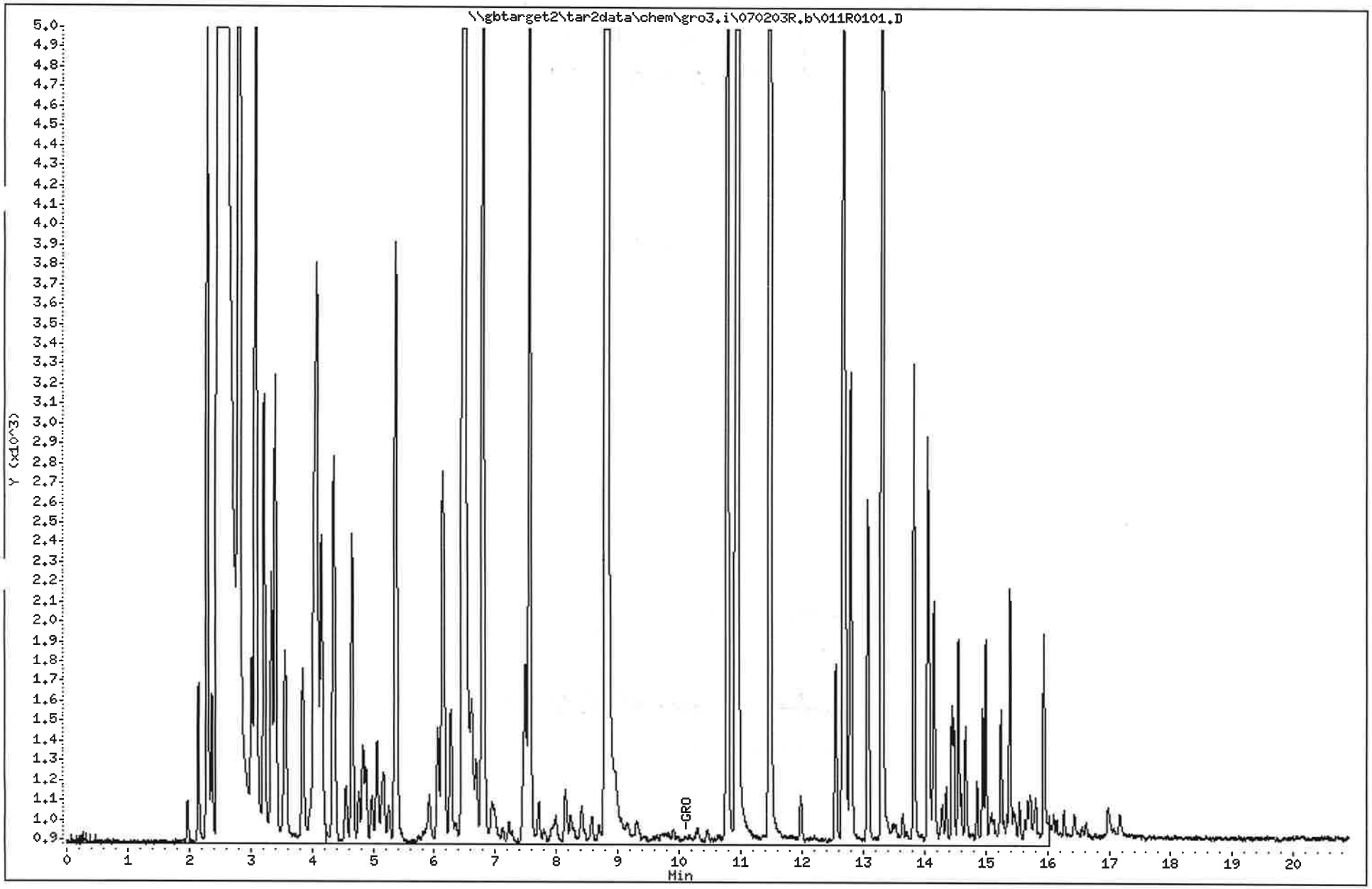
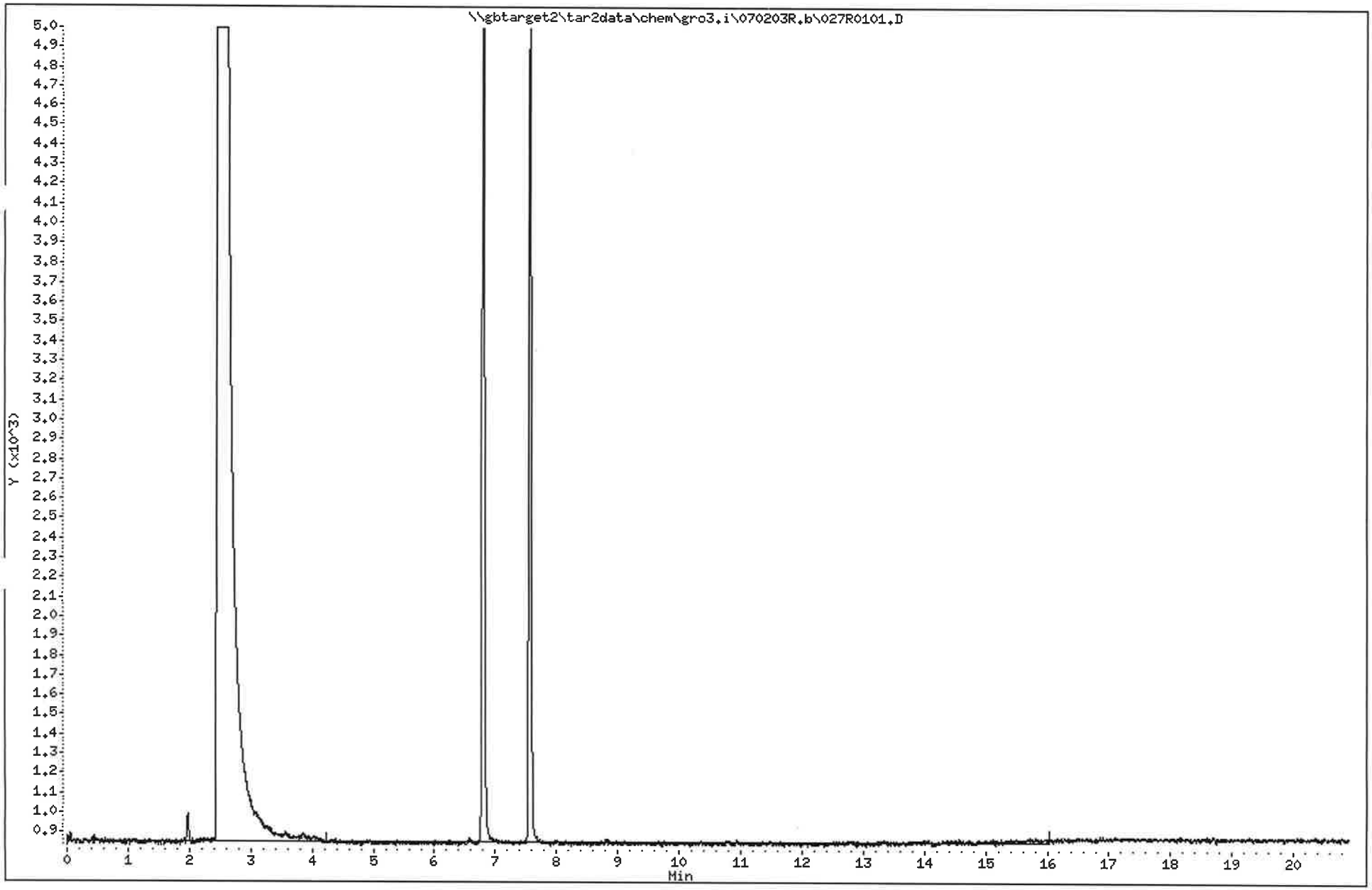
Date : 02-JUL-2003 18:25
Client ID: 836132-002
Sample Info: 36132B002WCX50
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro3.i
Operator: SES
Column diameter: 0.32



Data File: \\gbtarget2\tar2data\chem\gro3.i\070203R.b\027R0101.D
Date : 03-JUL-2003 01:21
Client ID: 836132-003
Sample Info: 36132B003WCX1
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro3.i
Operator: SES
Column diameter: 0.32



Effective Date: 07/01/2002

Surrogates - 2002
En Chem - Green Bay

	Aqueous		Low Level Solids		Methanol Solids	
Surrogate - GC VOA	LCL	UCL	LCL	UCL	LCL	UCL
α,α,α–Trifluorotoluene	61	149	54	144	62	154

	Aqueous		Low Level Solids		Methanol Solids	
Surrogate - GCMS VOA	LCL	UCL	LCL	UCL	LCL	UCL
Dibromofluoromethane	61	136	51	127	57	118
Toluene-d_8	63	140	62	126	72	115
4-Bromoflurobenzene	55	136	60	109	67	112

	Aqueous		Solids	
Surrogate - GCMS PAH	LCL	UCL	LCL	UCL
Nitrobenzene-$_{d5}$	30	170	35	126
2-Fluorobiphenyl	30	126	44	110
Terphenyl-d_{14}	56	148	38	145

	Aqueous		Solids	
Surrogate - GCMS BNA	LCL	UCL	LCL	UCL
2-Fluorophenol	13	70	35	114
Phenol-$_{d5}$	8	44	29	114
2-Chlorophenol-$_{d4}$	29	104	34	107
1,2-Dichlorobenzene-$_{d4}$	34	112	27	116
Nitrobenezene-$_{d5}$	34	126	26	126
2-Fluorobiphenyl	36	126	26	126
2,4,6-Tribromophenol	39	133	17	129
Terphenyl-$_{d14}$	56	139	23	141

	Aqueous		Solids	
Surrogate - GC PCB	LCL	UCL	LCL	UCL
Decachlorobiphenyl	22	133	11	142

En Chem, Inc. Cooler Receipt Log

Batch No. 836132

Project Name or ID Vacuum Oil No. of Coolers: 1 Temps: 1.0°C

A. Receipt Phase: Date cooler was opened: 7-1-03 **By:** AY

1: Were samples received on ice? (Must be ≤ 6 C)	(YES)	NO[2]	
2. Was there a Temperature Blank?	(YES)	NO	
3: Were custody seals present and intact? (Record on COC)	YES	(NO)	
4: Are COC documents present?	(YES)	NO[2]	
5: Does this Project require quick turn around analysis?	YES	(NO)	
6: Is there any sub-work?	YES	(NO)	
7: Are there any short hold time tests?	YES	(NO)	
8: Are any samples nearing expiration of hold-time? (Within 2 days)	YES[1]	(NO)	Contacted by/Who
9: Do any samples need to be Filtered or Preserved in the lab?	YES[1]	(NO)	Contacted by/Who

B. Check-in Phase: Date samples were Checked-in: 7-1-03 **By:** AY

1: Were all sample containers listed on the COC received and intact?	(YES)	NO[2]	NA
2: Sign the COC as received by En Chem. Completed	(YES)	NO	
3: Do sample labels match the COC?	(YES)	NO[2]	
4: Completed pH check on preserved samples.. *(This statement does not apply to water: VOC, O&G, TOC, DRO, Total Rec. Phenolics)*	YES	NO	(NA)
5: Do samples have correct chemical preservation? *(This statement does not apply to water: VOC, O&G, TOC, DRO, Total Rec. Phenolics)*	YES	NO[2]	(NA)
6: Are dissolved parameters field filtered?	YES	NO[2]	(NA)
7: Are sample volumes adequate for tests requested?	(YES)	NO[2]	
8: Are VOC samples free of bubbles >6mm	(YES)	NO[2]	NA
9: Enter samples into logbook. Completed	(YES)	NO	
10: Place laboratory sample number on all containers and COC. Completed	(YES)	NO	
11: Complete Laboratory Tracking Sheet (LTS). Completed	YES	NO	(NA)
12: Start Nonconformance form.	YES	NO	(NA)
13: Initiate Subcontracting procedure. Completed	YES	NO	(NA)
14: Check laboratory sample number on all containers and COC. KB	(YES)	NO	NA

Short Hold-time tests:

48 Hours or less	7 days	Footnotes
Coliform (6 hrs)	Flashpoint	1 Notify proper lab group immediately.
Hexavalent Chromium (24 Hrs)	TSS	2 Complete nonconformance memo.
BOD	Total Solids	
Nitrite or Nitrate	TDS	
Low Level Mercury	Sulfide	
Ortho Phosphorus	Free Liquids	
Turbidity	Total Volatile Solids	
Surfactants	Aqueous Extractable Organics- ALL	
Sulfite	Unpreserved VOC's	
En Core Preservation	Ash	
Color		

Rev. 4/11/03, Attachment to 1-REC-5.
Subject to QA Audit.

Reviewed by/date TM & 7/1/03

p:/everyone/forms/samplereceiving/crl.doc

(Please Print Legibly)
Company Name: Enviro-Risk Consulting Group, Inc.
Branch or Location: Woodbury, MN
Project Contact: Brad Burke
Telephone: 651-735-7001
Project Number: #20-02014
Project Name: Yocum Oil
Project State: MN
Sampled By (Print): B. Burke
PO #: 20-02014

EN CHEM INC.
1241 Bellevue St., Suite 9
Green Bay, WI 54302
920-469-2436
FAX 920-469-8827

CHAIN OF CUSTODY

104950

Page 1 of 1

Quote #:
Mail Report To: Brad Burke
Company: Enviro-Risk Consulting
Address: 1176 Silverwood Bay
St. Paul, MN 55125
Invoice To:
Company: Same as above
Address:
Mail Invoice To:

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=EnCore F=Methanol G=NaOH
H = Sodium Bisulfate Solution I = Sodium Thiosulfate J = Other

Data Package Options - (please circle if requested)
Sample Results Only (no QC)
EPA Level II (Subject to Surcharge)
EPA Level III (Subject to Surcharge)
EPA Level IV (Subject to Surcharge)

Regulatory Program: UST, RCRA, SDWA, NPDES, CERCLA

Matrix Codes: W=Water, S=Soil, A=Air, C=Charcoal, B=Biota, Sl=Sludge

					BTEX, MTBE	GRO							
FILTERED? (YES/NO)					N	N							
PRESERVATION (CODE)*					B	B							
LABORATORY ID (Lab Use Only)	**FIELD ID**	**COLLECTION DATE**	**COLLECTION TIME**	**MATRIX**	**ANALYSES REQUESTED: BTEX, MTBE**	**GRO**					**TOTAL # OF BOTTLES SENT**	**CLIENT COMMENTS**	**LAB COMMENTS (Lab Use Only)**
001	MW-2	6/26/02	8:45	W	X	X					3		3) 40 ml vials
002	MW-3	6/26/02	8:05	W	X	X					3		↓
003	Trip Blank			W	X	X					2		2) 40 ml vials - t-blk
							15 cw						

Rush Turnaround Time Requested (TAT) - Prelim
(Rush TAT subject to approval/surcharge)
Date Needed: Standard
Transmit Prelim Rush Results by (circle):
Phone Fax E-Mail
Phone #:
Fax #:
E-Mail Address:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
[signature]	6-27	[signature]	
[signature]	6-30	[signature]	
Dunham	7-1-03 820	Annette Yanke	7-1-03 820

En Chem Project No.: 836132
Sample Receipt Temp.: 1.0°C
Sample Receipt pH (Wet/Metals): NA
Cooler Custody Seal
Present / Not Present (circled: Not Present)
Intact / Not Intact

Version 3.0: 03/03

EN CHEM INC.

Corporate Office & Laboratory
1241 Bellevue Street, Suite 9, Green Bay, WI 54302
920-469-2436, 800-7-ENCHEM, Fax: 920-469-8827
www.enchem.com

Analytical Report Number: 839434

Client : ENVIRO-RISK CONSULTING GROUP

Project Name : YOCUM OIL-JORDAN HOLIDAY

Project Number : #20-02014

Lab Sample Number	Field ID	Matrix	Collection Date
839434-001	MW-2	WATER	09/30/03
839434-002	MW-3	WATER	09/30/03
839434-003	TRIP BLANK	WATER	09/30/03

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. Reported results shall not be reproduced, except in full, without the written approval of the lab. The sample results relate only to the analytes of interest tested.

Tom Trainor — **Approval Signature**

10/7/03 — **Date**

En Chem Inc.

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Fax: 920-469-8827

Analytical Report Number: 839434

Client : ENVIRO-RISK CONSULTING GROUP
Project Name : YOCUM OIL-JORDAN HOLIDAY
Project Number : #20-02014
Field ID : MW-2

Matrix Type : WATER
Collection Date : 09/30/03
Report Date : 10/07/03
Lab Sample Number : 839434-001

BTEX + MTBE

Prep Date: 10/03/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Benzene		17000	120	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Ethylbenzene		1400	120	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Methyl-tert-butyl-ether	<	120	120	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Toluene		13000	120	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Xylene, o		2500	120	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Xylenes, m + p		5700	250	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
a,a,a-Trifluorotoluene		98	---	1	%Recov		10/03/03	SW846 5030B	WI MOD GRO

BTEX BLANK

Prep Date: 10/03/03

Analyte	Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
BTEX Blank ID	1321-30		1					

GASOLINE RANGE ORGANICS

Prep Date: 10/03/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Gasoline Range Organics		58000	6200	125	ug/l		10/03/03	WI MOD GRO	WI MOD GRO
GRO Blank	<	50	50	1	ug/l		10/03/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike		101	---	1	%Recov		10/03/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		103	---	1	%Recov		10/03/03	WI MOD GRO	WI MOD GRO

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Fax: 920-469-8827

Analytical Report Number: 839434

Client : ENVIRO-RISK CONSULTING GROUP
Project Name : YOCUM OIL-JORDAN HOLIDAY
Project Number : #20-02014
Field ID : MW-3

Matrix Type : WATER
Collection Date : 09/30/03
Report Date : 10/07/03
Lab Sample Number : 839434-002

BTEX + MTBE

Prep Date: 10/03/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Benzene		8800	120	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Ethylbenzene		1000	120	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Methyl-tert-butyl-ether	<	120	120	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Toluene		14000	120	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Xylene, o		1900	120	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Xylenes, m + p		4400	250	125	ug/l		10/03/03	SW846 5030B	WI MOD GRO
a,a,a-Trifluorotoluene		100	---	1	%Recov		10/03/03	SW846 5030B	WI MOD GRO

BTEX BLANK

Prep Date: 10/03/03

Analyte	Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
BTEX Blank ID	1321-30		1					

GASOLINE RANGE ORGANICS

Prep Date: 10/03/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Gasoline Range Organics		44000	6200	125	ug/l		10/03/03	WI MOD GRO	WI MOD GRO
GRO Blank	<	50	50	1	ug/l		10/03/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike		101	---	1	%Recov		10/03/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		103	---	1	%Recov		10/03/03	WI MOD GRO	WI MOD GRO

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Analytical Report Number: 839434

Client : ENVIRO-RISK CONSULTING GROUP
Project Name : YOCUM OIL-JORDAN HOLIDAY
Project Number : #20-02014
Field ID : TRIP BLANK

Matrix Type : WATER
Collection Date : 09/30/03
Report Date : 10/07/03
Lab Sample Number : 839434-003

BTEX + MTBE

Prep Date: 10/03/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Benzene	<	1.0	1.0	1	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Ethylbenzene	<	1.0	1.0	1	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Methyl-tert-butyl-ether	<	1.0	1.0	1	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Toluene	<	1.0	1.0	1	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Xylene, o	<	1.0	1.0	1	ug/l		10/03/03	SW846 5030B	WI MOD GRO
Xylenes, m + p	<	2.0	2.0	1	ug/l		10/03/03	SW846 5030B	WI MOD GRO
a,a,a-Trifluorotoluene		102	---	1	%Recov		10/03/03	SW846 5030B	WI MOD GRO

BTEX BLANK

Prep Date: 10/03/03

Analyte	Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
BTEX Blank ID	1321-30		1					

GASOLINE RANGE ORGANICS

Prep Date: 10/03/03

Analyte		Result	EQL	Dilution	Units	Code	Analysis Date	Prep Method	Analysis Method
Gasoline Range Organics	<	50	50	1	ug/l		10/03/03	WI MOD GRO	WI MOD GRO
GRO Blank	<	50	50	1	ug/l		10/03/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike		101	---	1	%Recov		10/03/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		103	---	1	%Recov		10/03/03	WI MOD GRO	WI MOD GRO

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Lab Number	TestGroupID	Field ID	Comment
839434-001	GRO-W	MW-2	Early eluting peaks were present outside the window of analysis.
839434-002	GRO-W	MW-3	Early eluting peaks were present outside the window of analysis.

Qualifier Codes

Flag	Applies To	Explanation
A	Inorganic	Analyte is detected in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
B	Inorganic	The analyte has been detected between the method detection limit and the reporting limit.
B	Organic	Analyte is present in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
C	All	Elevated detection limit.
D	All	Analyte value from diluted analysis or surrogate result not applicable due to sample dilution.
E	Inorganic	Estimated concentration due to matrix interferences. During the metals analysis using the inductively coupled plasma (ICP), the serial dilution failed to meet the established control limits of 0-10% and the sample concentration is greater than 50 times the IDL (100 times the IDL for analysis done on the ICP-MS). The result was flagged with the E qualifier to indicate that a physical interference was observed.
E	Organic	Analyte concentration exceeds calibration range.
F	Inorganic	Due to potential interferences for this analysis by Inductively Coupled Plasma techniques (SW-846 Method 6010), this analyte has been confirmed by and reported from an alternate method.
F	Organic	Surrogate results outside control criteria.
H	All	Preservation, extraction or analysis performed past holding time.
J	Inorganic	The analyte has been detected between the method detection limit and the reporting limit.
J	Organic	Concentration detected is greater than the method detection limit but less than the reporting limit.
K	Inorganic	Sample received unpreserved. Sample was either preserved at the time of receipt or at the time of sample preparation.
K	Organic	Detection limit may be elevated due to the presence of an unrequested analyte.
L	All	Elevated detection limit due to low sample volume.
N	All	Spiked sample recovery not within control limits.
P	Organic	The relative percent difference between the two columns for detected concentrations was greater than 40%.
Q	All	The analyte has been detected between the limit of detection (LOD) and limit of quantitation (LOQ). The results are qualified due to the uncertainty of analyte concentrations within this range.
S	Organic	The relative percent difference between quantitation and confirmation columns exceeds internal quality control criteria. Because the result is unconfirmed, it has been reported as a non-detect with an elevated detection limit.
U	All	The analyte was not detected at or above the reporting limit.
V	All	Sample received with headspace.
W	All	A second aliquot of sample was analyzed from a container with headspace.
X	All	See Sample Narrative.
&	All	Laboratory Control Spike recovery not within control limits.
*	All	Precision not within control limits.
<	All	The analyte was not detected at or above the reporting limit.
1	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses passed QC based on precision criteria.
2	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses failed QC based on precision criteria.
3	Inorganic	BOD result is estimated due to the BOD blank exceeding the allowable oxygen depletion.
4	Inorganic	BOD duplicate precision not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
5	Inorganic	BOD result is estimated due to insufficient oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
6	Inorganic	BOD laboratory control sample not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
7	Inorganic	BOD result is estimated due to complete oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.

En Chem Inc.

Analysis Summary by Laboratory

1241 Bellevue Street
Green Bay, WI 54302

1090 Kennedy Avenue
Kimberly, WI 54136

Test Group Name	839434-001	839434-002	839434-003
BTEX + MTBE	G	G	G
BTEX BLANK	G	G	G
GASOLINE RANGE ORGANICS	G	G	G

Minnesota Certification	
G = En Chem Green Bay	055-999-334
K = En Chem Kimberly	055-999-107
S = Subcontracted Analysis	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKP 1321-30

Lab Name: ENCHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO7-100303

Matrix: (soil/water) WATER Lab Sample ID: BLKP 1321-30

Sample wt/vol: _____ (g/mL) ML Lab File ID: 010F0101

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 10/03/03

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	Methyl tert-butyl ether	1.00	U
71-43-2	Benzene	1.00	U
108-88-3	Toluene	1.00	U
100-41-4	Ethylbenzene	1.00	U
108-38-3	m/p-Xylene	2.00	U
95-47-6	o-Xylene	1.00	U
108-67-8	1,3,5-Trimethylbenzene	1.00	U
95-63-6	1,2,4-Trimethylbenzene	1.00	U
91-20-3	Naphthalene	1.00	U
----------	Total Xylenes	3.00	U

FORM 3
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ENCHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO7-100303

Matrix Spike - Sample No.: BLKP 1321-30

COMPOUND	SPIKE ADDED (ug/L)	BLANK CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Methyl tert-butyl ether	20.00	0.00	20.55	103	80-120
Benzene	20.00	0.00	21.22	106	80-120
Toluene	20.00	0.00	20.86	104	80-120
Ethylbenzene	20.00	0.00	20.68	103	80-120
m/p-Xylene	40.00	0.00	41.50	104	80-120
o-Xylene	20.00	0.00	20.61	103	80-120
1,3,5-Trimethylbenzene	20.00	0.00	19.78	99	80-120
1,2,4-Trimethylbenzene	20.00	0.00	19.83	99	80-120
Naphthalene	20.00	0.00	18.74	94	80-120
Total Xylenes	60.00	0.00	62.11	104	80-120

COMPOUND	SPIKE ADDED (ug/L)	BSD CONCENTRATION (ug/L)	BSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Methyl tert-butyl ether	20.00	20.70	104	1	20	80-120
Benzene	20.00	21.16	106	0	20	80-120
Toluene	20.00	20.82	104	0	20	80-120
Ethylbenzene	20.00	20.69	103	0	20	80-120
m/p-Xylene	40.00	41.54	104	0	20	80-120
o-Xylene	20.00	20.62	103	0	20	80-120
1,3,5-Trimethylbenzene	20.00	19.86	99	0	20	80-120
1,2,4-Trimethylbenzene	20.00	19.94	100	0	20	80-120
Naphthalene	20.00	19.48	97	4	20	80-120
Total Xylenes	60.00	62.16	104	0	20	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 10 outside limits
Spike Recovery: 0 out of 20 outside limits

COMMENTS: _____

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENCHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO7-100303

Matrix Spike - Sample No.: 839082-023

BATCH QC

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Methyl tert-butyl ether	20.00	0.00	20.77	104	77-118
Benzene	20.00	0.00	21.01	105	62-135
Toluene	20.00	0.00	20.30	102	69-132
Ethylbenzene	20.00	0.00	19.71	98	61-137
m/p-Xylene	40.00	0.00	39.04	98	65-134
o-Xylene	20.00	0.00	19.73	99	68-132
1,3,5-Trimethylbenzene	20.00	0.00	18.47	92	57-136
1,2,4-Trimethylbenzene	20.00	0.00	18.24	91	59-134
Naphthalene	20.00	0.68	18.56	89	42-145
Total Xylenes	60.00	0.00	58.77	98	69-132

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Methyl tert-butyl ether	20.00	20.58	103	1	21	77-118
Benzene	20.00	21.10	106	0	30	62-135
Toluene	20.00	20.34	102	0	21	69-132
Ethylbenzene	20.00	19.75	99	0	22	61-137
m/p-Xylene	40.00	39.10	98	0	27	65-134
o-Xylene	20.00	19.85	99	1	21	68-132
1,3,5-Trimethylbenzene	20.00	18.43	92	0	33	57-136
1,2,4-Trimethylbenzene	20.00	17.94	90	2	31	59-134
Naphthalene	20.00	18.58	90	0	34	42-145
Total Xylenes	60.00	58.96	98	0	30	69-132

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 10 outside limits
Spike Recovery: 0 out of 20 outside limits

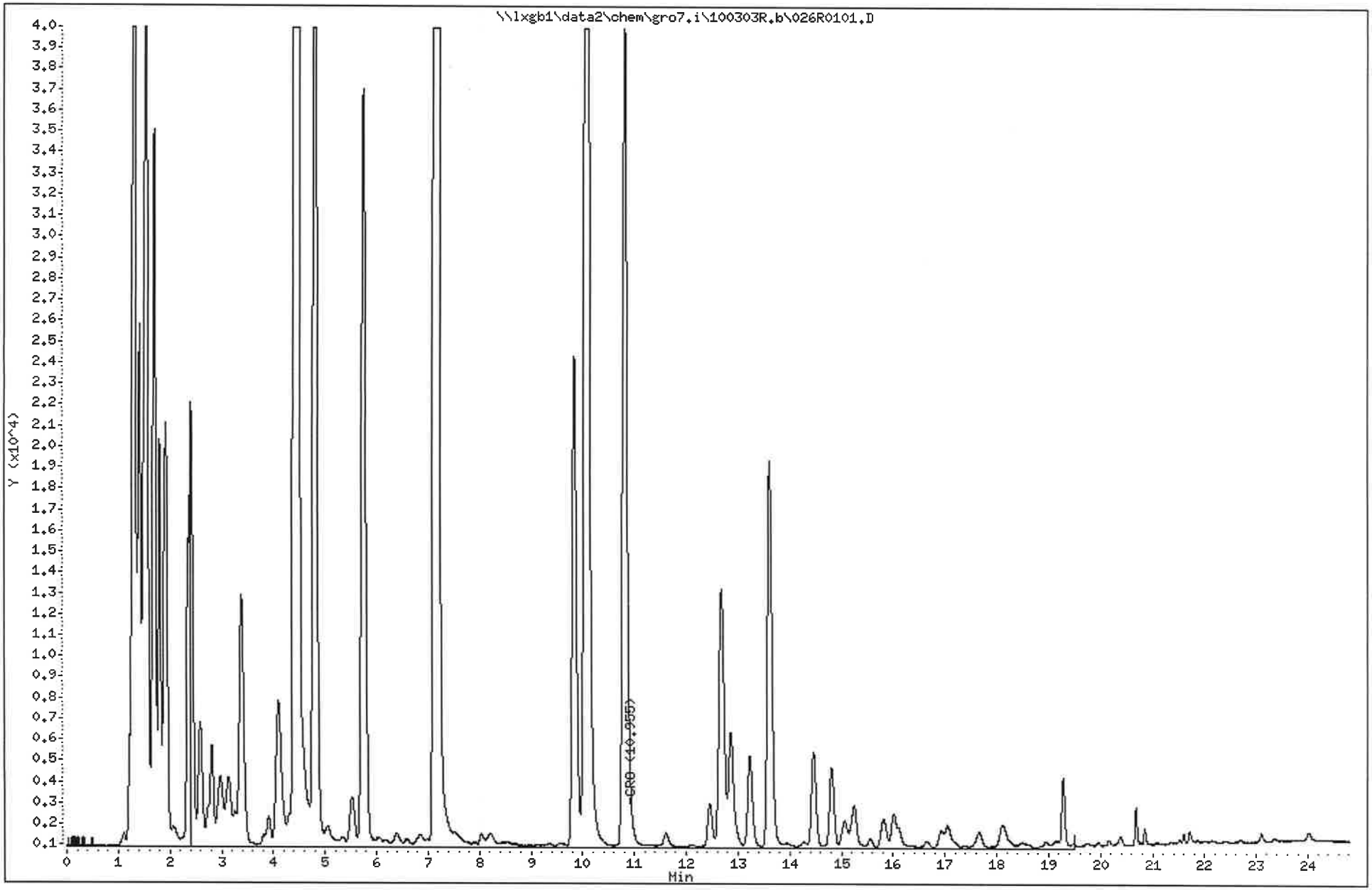
COMMENTS: _____

_____

Data File: \\lxgb1\data2\chem\gro7.i\100303R.b\026R0101.D
Date : 03-OCT-2003 21:34
Client ID: 839434-001
Sample Info: 39434B001WCP125
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro7.i

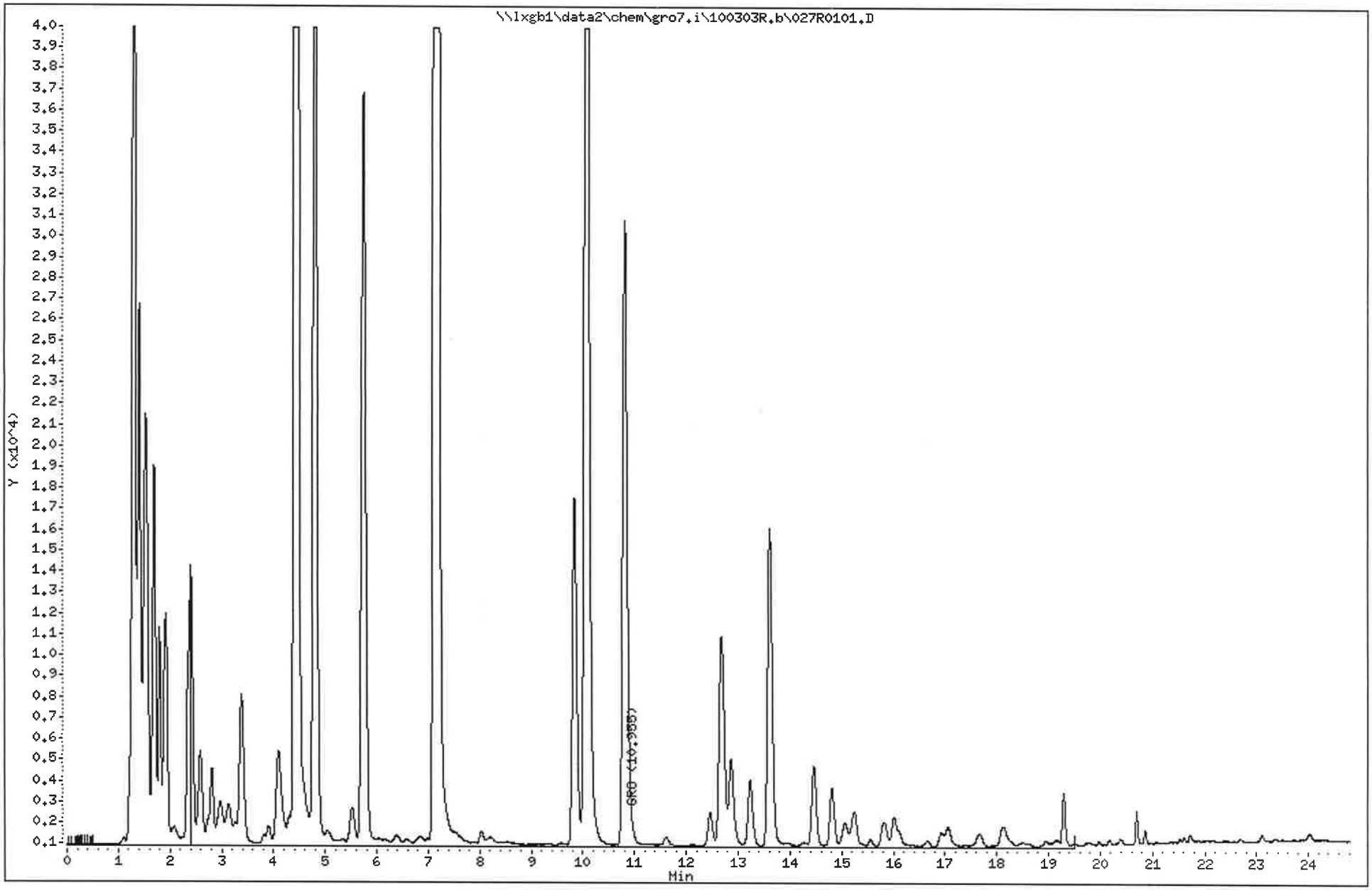
Operator: SMT
Column diameter: 0.53



Data File: \\lxgb1\data2\chem\gro7.i\100303R.b\027R0101.D
Date : 03-OCT-2003 22:07
Client ID: 839434-002
Sample Info: 39434B002WCP125
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro7.i

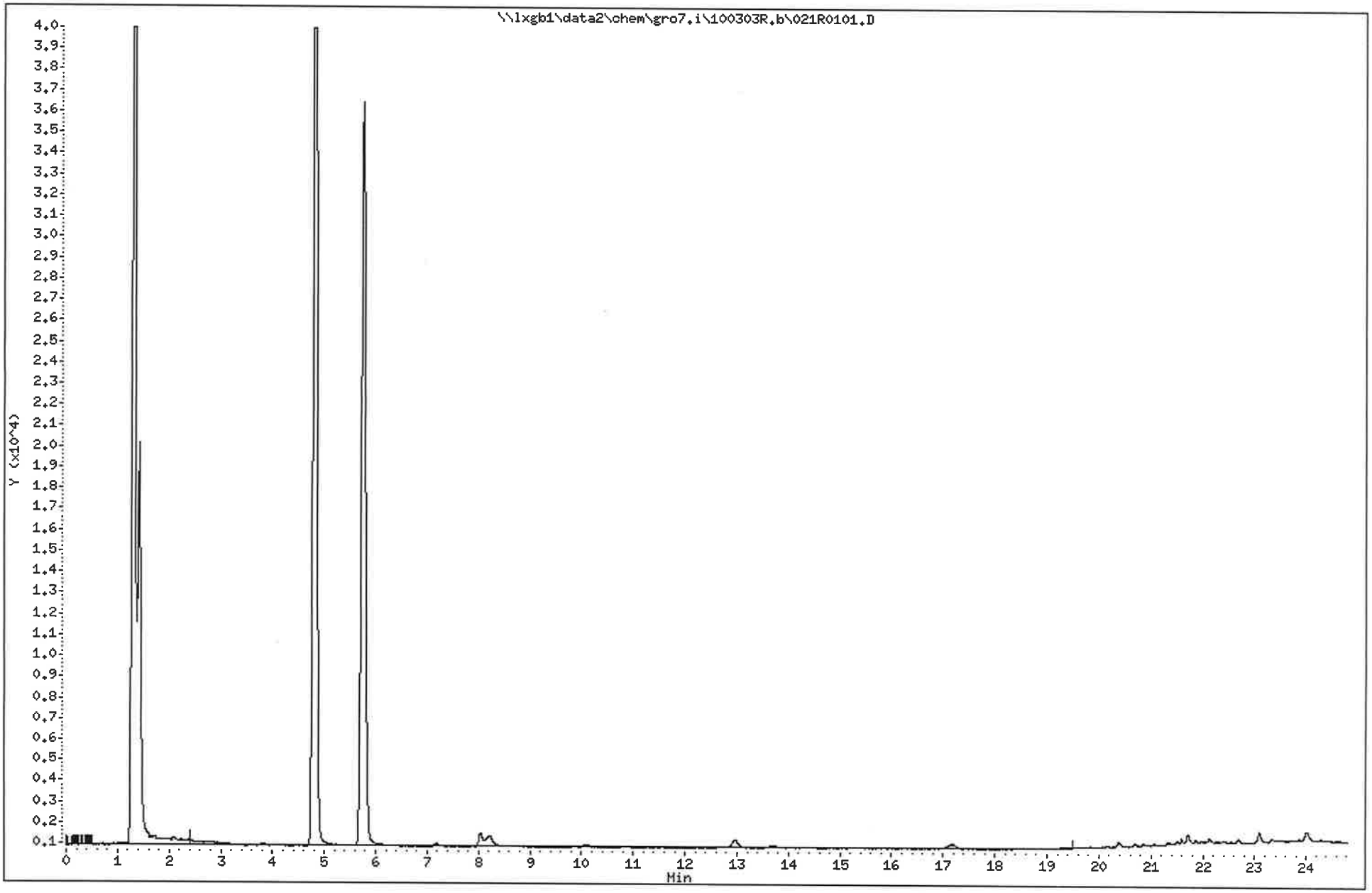
Operator: SMT
Column diameter: 0.53



Data File: \\lxgb1\data2\chem\gro7.i\100303R.b\021R0101.D
Date : 03-OCT-2003 18:48
Client ID: 839434-003
Sample Info: 39434B003WCP1
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro7.i

Operator: SMT
Column diameter: 0.53



Effective Date: 07/14/2002

Surrogates - 2002
En Chem - Green Bay

	Aqueous		Low Level Solids		Methanol Solids	
Surrogate - GC VOA	LCL	UCL	LCL	UCL	LCL	UCL
α,α,α–Trifluorotoluene	61	149	54	144	62	154

	Aqueous		Low Level Solids		Methanol Solids	
Surrogate - GCMS VOA	LCL	UCL	LCL	UCL	LCL	UCL
Dibromofluoromethane	61	136	51	127	57	118
Toluene-d_8	63	140	62	126	72	115
4-Bromoflurobenzene	55	136	60	109	67	112

	Aqueous		Solids	
Surrogate - GCMS PAH	LCL	UCL	LCL	UCL
Nitrobenzene-$_{d5}$	30	170	35	126
2-Fluorobiphenyl	30	126	44	110
Terphenyl-d_{14}	56	148	38	145

	Aqueous		Solids	
Surrogate - GCMS BNA	LCL	UCL	LCL	UCL
2-Fluorophenol	13	70	35	114
Phenol-$_{d5}$	8	44	29	114
2-Chlorophenol-$_{d4}$	29	104	34	107
1,2-Dichlorobenzene-$_{d4}$	34	112	27	116
Nitrobenezene-$_{d5}$	34	126	26	126
2-Fluorobiphenyl	36	126	26	126
2,4,6-Tribromophenol	39	133	17	129
Terphenyl-$_{d14}$	56	139	23	141

	Aqueous		Solids	
Surrogate - GC PCB	LCL	UCL	LCL	UCL
Decachlorobiphenyl	22	133	11	142

	Aqueous		Solids	
Surrogate - TPH Diesel	LCL	UCL	LCL	UCL
o - Terphenyl	33	133	34	106

	Aqueous		Solids	
Surrogate - TPH Gas	LCL	UCL	LCL	UCL
α,α,α–Trifluorotoluene	61	149	62	154

En Chem, Inc. Cooler Receipt Log

Batch No. 839434

Project Name or ID 20-02014 No. of Coolers: 1 Temps: 3.0°C

A. Receipt Phase: Date cooler was opened: 10-2-03 **By:** AM

1: Were samples received on ice? (Must be ≤ 6 C)	(YES)	NO[2]	
2. Was there a Temperature Blank?	(YES)	NO	
3: Were custody seals present and intact? (Record on COC)	YES	(NO)	
4: Are COC documents present?	(YES)	NO[2]	
5: Does this Project require quick turn around analysis?	YES	(NO)	
6: Is there any sub-work?	YES	(NO)	
7: Are there any short hold time tests?	(YES)	NO	
8: Are any samples nearing expiration of hold-time? (Within 2 days)	YES[1]	(NO)	Contacted by/Who_____
9: Do any samples need to be Filtered or Preserved in the lab?	YES[1]	(NO)	Contacted by/Who_____

B. Check-in Phase: Date samples were Checked-in: 10-2-03 **By:** AM

1: Were all sample containers listed on the COC received and intact?	(YES)	NO[2]	NA
2: Sign the COC as received by En Chem. Completed	(YES)	NO	
3: Do sample labels match the COC?	(YES)	NO[2]	
4: Completed pH check on preserved samples.. *(This statement does not apply to water: VOC, O&G, TOC, DRO, Total Rec. Phenolics)*	YES	NO	(NA)
5: Do samples have correct chemical preservation? *(This statement does not apply to water: VOC, O&G, TOC, DRO, Total Rec. Phenolics)*	YES	NO[2]	(NA)
6: Are dissolved parameters field filtered?	YES	NO[2]	(NA)
7: Are sample volumes adequate for tests requested?	(YES)	NO[2]	
8: Are VOC samples free of bubbles >6mm	(YES)	NO[2]	NA
9: Enter samples into logbook. Completed	(YES)	NO	
10: Place laboratory sample number on all containers and COC. Completed	(YES)	NO	
11: Complete Laboratory Tracking Sheet (LTS). Completed	YES	NO	(NA)
12: Start Nonconformance form.	YES	NO	(NA)
13: Initiate Subcontracting procedure. Completed	YES	NO	(NA)
14: Check laboratory sample number on all containers and COC.	(YES)	NO	NA

Short Hold-time tests:

48 Hours or less	7 days	Footnotes
Coliform (6 hrs)	Flashpoint	1 Notify proper lab group immediately.
Hexavalent Chromium (24 Hrs)	TSS	2 Complete nonconformance memo.
BOD	Total Solids	
Nitrite or Nitrate	TDS	
Low Level Mercury	Sulfide	
Ortho Phosphorus	Free Liquids	
Turbidity	Total Volatile Solids	
Surfactants	(Aqueous Extractable Organics- ALL)	
Sulfite	Unpreserved VOC's	
En Core Preservation	Ash	
Color		

Rev. 4/11/03, Attachment to 1-REC-5.
Subject to QA Audit.

Reviewed by/date TJT 10/6/03

(Please Print Legibly)

Company Name: ENVIRO-RISK CONSULTING GROUP

Branch or Location: ST. PAUL, MN

Project Contact: BRAD BURKE

Telephone: 651-735-7001

Project Number: #20-02014

Project Name: YOUNG OIL - JORDAN HOLIDAY

Project State: MN

Sampled By (Print): B. BURKE

PO #: #20-02014

EN CHEM INC.
...chemistry for the environment.

1241 Bellevue St., Suite 9
Green Bay, WI 54302
920-469-2436
Fax 920-469-8827

CHAIN OF CUSTODY

№ 110293

Page 1 of 1

Quote #:

Mail Report To: BRAD BURKE

Company: ENVIRO-RISK CONSULTING

Address: 1176 SILVERWOOD BAY
~~WEST~~ ST. PAUL, MN 55125

Invoice To:

Company: SAME AS ABOVE

Address:

Mail Invoice To:

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=EnCore F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Data Package Options - (please circle if requested)
Sample Results Only (no QC)
EPA Level II (Subject to Surcharge)
EPA Level III (Subject to Surcharge)
EPA Level IV (Subject to Surcharge)

Regulatory Program: UST, RCRA, SDWA, NPDES, CERCLA

Matrix Codes: W=Water, S=Soil, A=Air, C=Charcoal, B=Biota, Sl=Sludge

LABORATORY ID (Lab Use Only)	FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	ANALYSES REQUESTED: BTEX, MTBE, 6 RO	TOTAL # OF BOTTLES SENT	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
001	MW-2	9/30/03	1055	W	N	B	X	3		3) 40 ml vials B
002	MW-3	9/30/03	1025	W	N	B	X	3		↓
003	TRIP BLANK	—	—	W	N	B	X	2		2) 40 ml vials + - blk

1310

Rush Turnaround Time Requested (TAT) - Prelim
(Rush TAT subject to approval/surcharge)

Date Needed:

Transmit Prelim Rush Results by (circle):
Phone Fax E-Mail

Phone #:

Fax #:

E-Mail Address:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
[signature]	10/01/03	[signature]	10-1
Dunham	10-2-03 8:20	Annette Yanke	10-2-03 8:20

En Chem Project No. 839434

Sample Receipt Temp. 3.0°C

Sample Receipt pH (Wet/Metals) NA

Cooler Custody Seal
Present / Not Present

Intact / Not Intact

Version 4.0: 07/03

EN CHEM INC.

Corporate Office & Laboratory
1241 Bellevue Street, Suite 9, Green Bay, WI 54302
920-469-2436, Fax: 920-469-8827
www.enchem.com

Analytical Report Number: 848062

Client: ENVIRO-RISK CONSULTING GROUP

Lab Contact: Tom Trainor

Project Name: YOCUM OIL, JORDAN HOLIDAY

Project Number: 20-02014

Lab Sample Number	Field ID	Matrix	Collection Date
848062-001	MW-2	WATER	06/22/04
848062-002	MW-3	WATER	06/22/04
848062-003	TRIP BLANK	WATER	06/22/04

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. Reported results shall not be reproduced, except in full, without the written approval of the lab. The sample results relate only to the analytes of interest tested.

Tom Trainor

Approval Signature

6/29/04

Date

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 848062

Client : ENVIRO-RISK CONSULTING GROUP
Project Name : YOCUM OIL, JORDAN HOLIDAY
Project Number : 20-02014
Field ID : MW-2

Matrix Type : WATER
Collection Date : 06/22/04
Report Date : 06/28/04
Lab Sample Number : 848062-001

BTEX + MTBE

Prep Date: 06/25/04

Analyte		Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
Benzene		25000	100	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Ethylbenzene		2200	100	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Methyl-tert-butyl-ether	<	100	100	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Toluene		31000	100	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Xylene, o		5400	100	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Xylenes, m + p		13000	200	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
a,a,a-Trifluorotoluene		98	---	1	%Recov		06/25/04	SW846 5030B	WI MOD GRO

BTEX BLANK

Prep Date: 06/25/04

Analyte	Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1435-85		1					

GASOLINE RANGE ORGANICS

Prep Date: 06/25/04

Analyte		Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
Gasoline Range Organics		120000	5000	100	ug/L		06/25/04	WI MOD GRO	WI MOD GRO
GRO Blank	<	50	50	1	ug/L		06/25/04	WI MOD GRO	WI MOD GRO
GRO Blank Spike		89	---	1	%Recov		06/25/04	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		93	---	1	%Recov		06/25/04	WI MOD GRO	WI MOD GRO

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 848062

Client : ENVIRO-RISK CONSULTING GROUP
Project Name : YOCUM OIL, JORDAN HOLIDAY
Project Number : 20-02014
Field ID : MW-3

Matrix Type : WATER
Collection Date : 06/22/04
Report Date : 06/28/04
Lab Sample Number : 848062-002

BTEX + MTBE

Prep Date: 06/25/04

Analyte		Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
Benzene		18000	100	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Ethylbenzene		2200	100	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Methyl-tert-butyl-ether	<	100	100	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Toluene		32000	100	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Xylene, o		4600	100	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Xylenes, m + p		11000	200	100	ug/L		06/25/04	SW846 5030B	WI MOD GRO
a,a,a-Trifluorotoluene		98	---	1	%Recov		06/25/04	SW846 5030B	WI MOD GRO

BTEX BLANK

Prep Date: 06/25/04

Analyte	Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1435-85		1					

GASOLINE RANGE ORGANICS

Prep Date: 06/25/04

Analyte		Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
Gasoline Range Organics		100000	5000	100	ug/L		06/25/04	WI MOD GRO	WI MOD GRO
GRO Blank	<	50	50	1	ug/L		06/25/04	WI MOD GRO	WI MOD GRO
GRO Blank Spike		89	---	1	%Recov		06/25/04	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		93	---	1	%Recov		06/25/04	WI MOD GRO	WI MOD GRO

En Chem Inc.

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Green Bay, WI 54302
920-469-2436

Analytical Report Number: 848062

Client : ENVIRO-RISK CONSULTING GROUP
Project Name : YOCUM OIL, JORDAN HOLIDAY
Project Number : 20-02014
Field ID : TRIP BLANK

Matrix Type : WATER
Collection Date : 06/22/04
Report Date : 06/28/04
Lab Sample Number : 848062-003

BTEX + MTBE

Prep Date: 06/25/04

Analyte		Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	<	1.0	1.0	1	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Ethylbenzene	<	1.0	1.0	1	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Methyl-tert-butyl-ether	<	1.0	1.0	1	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Toluene	<	1.0	1.0	1	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Xylene, o	<	1.0	1.0	1	ug/L		06/25/04	SW846 5030B	WI MOD GRO
Xylenes, m + p	<	2.0	2.0	1	ug/L		06/25/04	SW846 5030B	WI MOD GRO
a,a,a-Trifluorotoluene		101	---	1	%Recov		06/25/04	SW846 5030B	WI MOD GRO

BTEX BLANK

Prep Date: 06/25/04

Analyte	Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1435-85		1					

GASOLINE RANGE ORGANICS

Prep Date: 06/25/04

Analyte		Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
Gasoline Range Organics	<	50	50	1	ug/L		06/25/04	WI MOD GRO	WI MOD GRO
GRO Blank	<	50	50	1	ug/L		06/25/04	WI MOD GRO	WI MOD GRO
GRO Blank Spike		89	---	1	%Recov		06/25/04	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		93	---	1	%Recov		06/25/04	WI MOD GRO	WI MOD GRO

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
Fax: 920-469-8827

Lab Number	TestGroupID	Field ID	Comment
848062-001	GRO-W	MW-2	Early and late eluting peaks were present outside the window of analysis.
848062-002	GRO-W	MW-3	Early and late eluting peaks were present outside the window of analysis.

En Chem Inc.

Analysis Summary by Laboratory

1241 Bellevue Street
Green Bay, WI 54302

1090 Kennedy Avenue
Kimberly, WI 54136

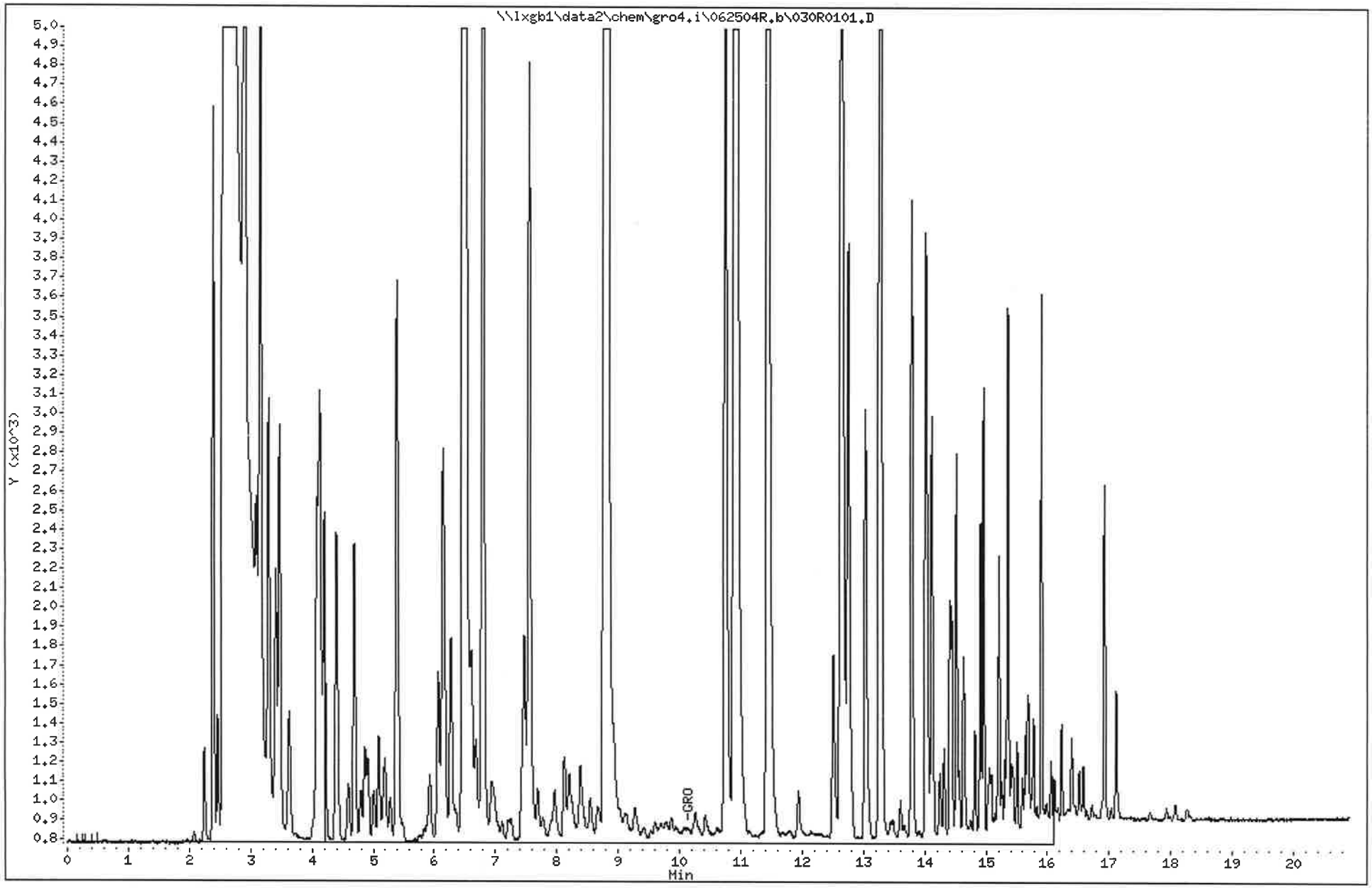
Test Group Name	848062-001	848062-002	848062-003
BTEX + MTBE	G	G	G
BTEX BLANK	G	G	G
GASOLINE RANGE ORGANICS	G	G	G

Minnesota Certification	
G = En Chem Green Bay	055-999-334
K = En Chem Kimberly	055-999-107
S = En Chem Superior	Not Applicable
C = Subcontracted Analysis	

Data File: \\lxgb1\data2\chem\gro4.i\062504R.b\030R0101.D
Date : 25-JUN-2004 20:15
Client ID: 848062-001
Sample Info: 48062B001WCW100
Purge Volume: 5.0
Column phase: DB-624

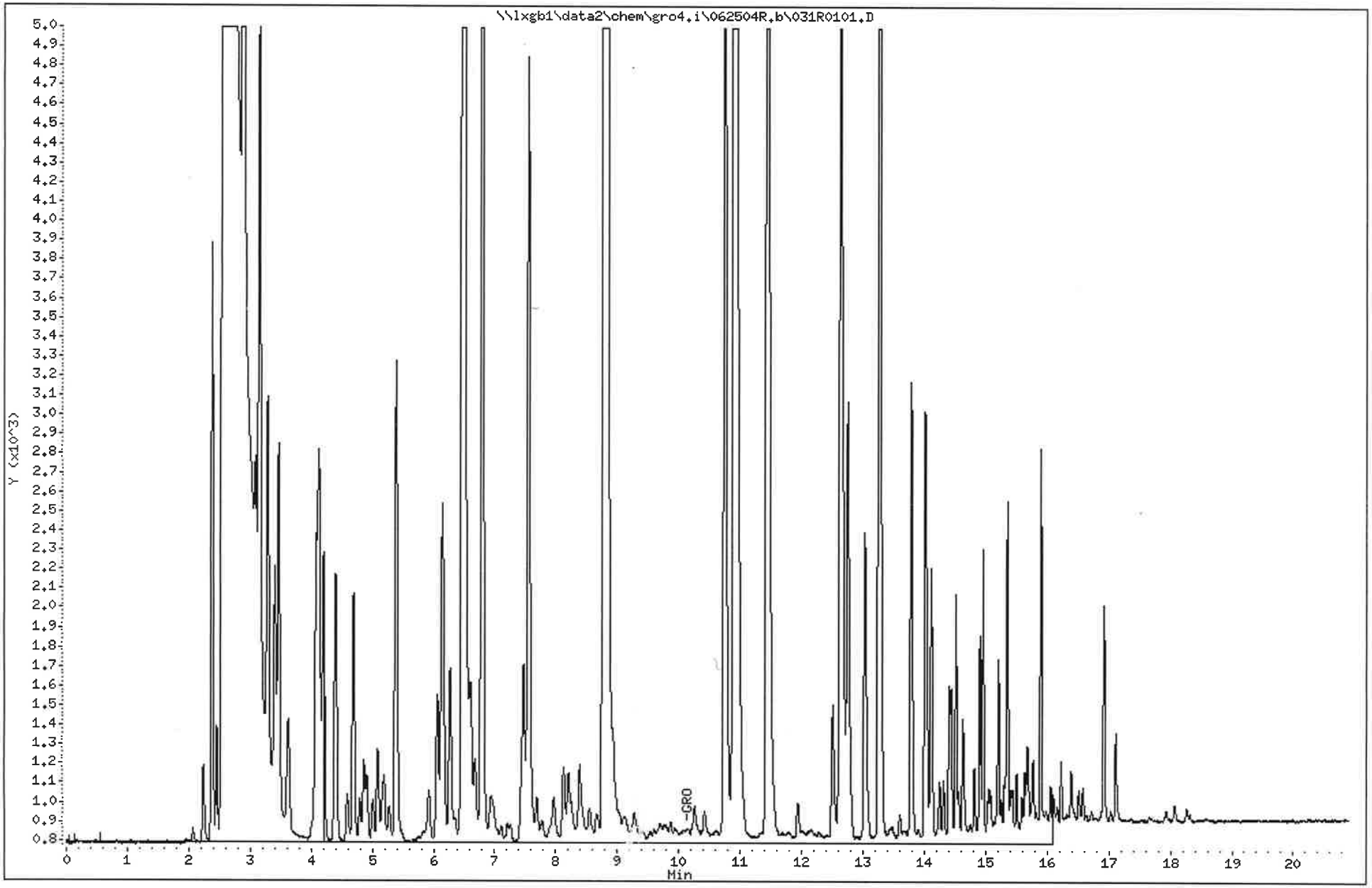
Instrument: gro4.i

Operator: SES
Column diameter: 0.32



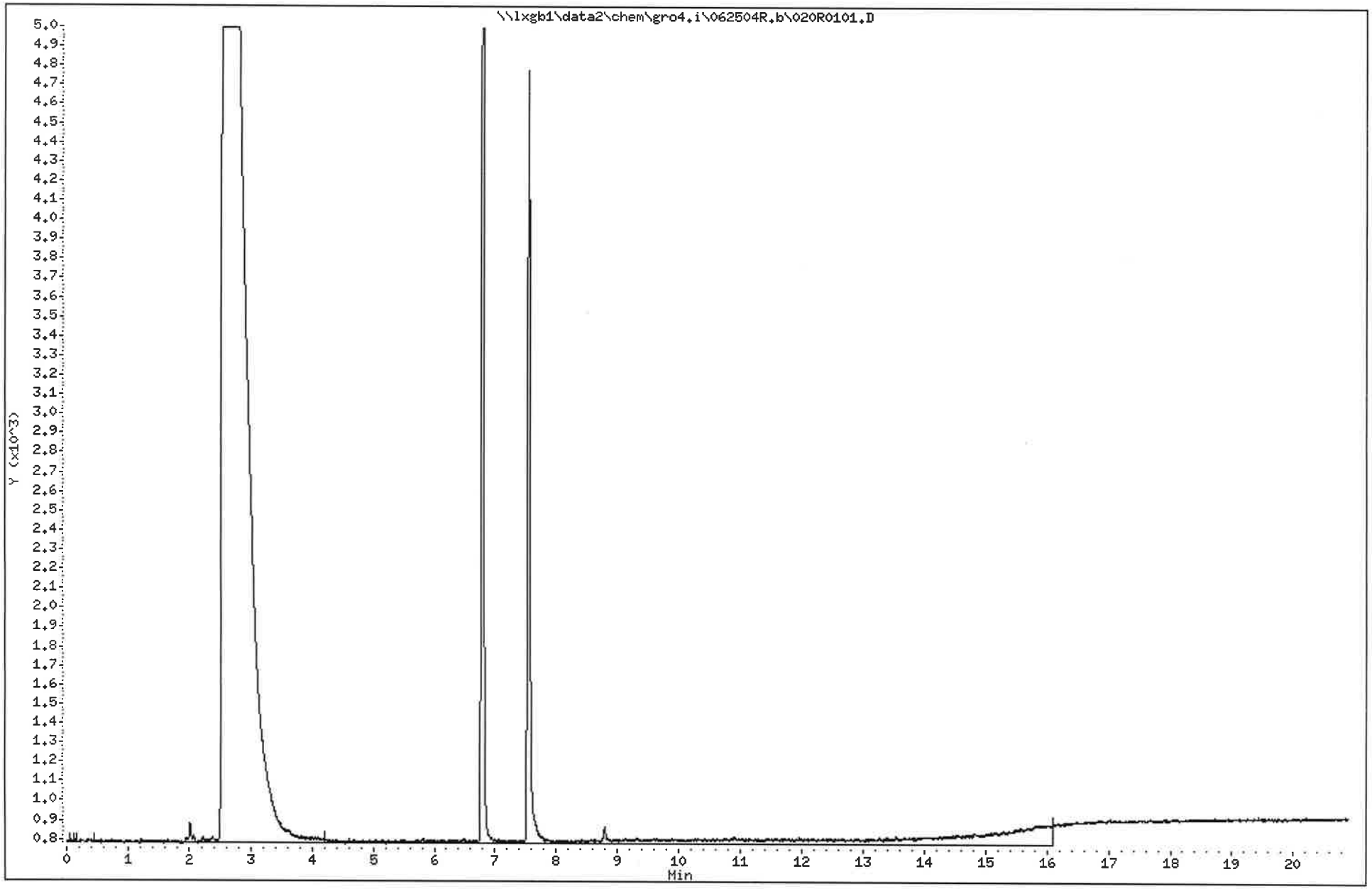
Data File: \\lxgb1\data2\chem\gro4.i\062504R.b\031R0101.D
Date : 25-JUN-2004 20:41
Client ID: 848062-002
Sample Info: 48062B002WCW100
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro4.i
Operator: SES
Column diameter: 0.32



Data File: \\lxgb1\data2\chem\gro4.i\062504R.b\020R0101.D
Date : 25-JUN-2004 16:00
Client ID: 848062-003
Sample Info: 48062B003WCW1
Purge Volume: 5.0
Column phase: DB-624

Instrument: gro4.i
Operator: SES
Column diameter: 0.32



FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKW 1435-85

Lab Name: ENCHEM INC.-GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO4-062504

Matrix: (soil/water) WATER Lab Sample ID: BLKW 1435-85

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 006F0101

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 06/25/04

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	Methyl tert-butyl ether	1.00	U
71-43-2	Benzene	1.00	U
108-88-3	Toluene	1.00	U
100-41-4	Ethylbenzene	1.00	U
108-38-3	m/p-Xylene	2.00	U
95-47-6	o-Xylene	1.00	U
108-67-8	1,3,5-Trimethylbenzene	1.00	U
95-63-6	1,2,4-Trimethylbenzene	1.00	U
91-20-3	Naphthalene	1.00	U
----------	Total Xylenes	3.00	U

FORM 3
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ENCHEM INC.-GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO4-062504

Matrix Spike - Sample No.: BLKW 1435-85

COMPOUND	SPIKE ADDED (ug/L)	BLANK CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Methyl tert-butyl ether	20.00	0.00	21.05	105	82-116
Benzene	20.00	0.00	20.54	103	85-115
Toluene	20.00	0.00	20.26	101	85-115
Ethylbenzene	20.00	0.00	19.64	98	85-115
m/p-Xylene	40.00	0.00	40.70	102	85-115
o-Xylene	20.00	0.00	19.70	98	85-115
1,3,5-Trimethylbenzene	20.00	0.00	18.93	95	83-115
1,2,4-Trimethylbenzene	20.00	0.00	17.92	90	82-115
Naphthalene	20.00	0.00	19.47	97	80-120
Total Xylenes	60.00	0.00	60.40	101	85-115

COMPOUND	SPIKE ADDED (ug/L)	BSD CONCENTRATION (ug/L)	BSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Methyl tert-butyl ether	20.00	19.84	99	6	20	82-116
Benzene	20.00	20.30	102	1	20	85-115
Toluene	20.00	20.05	100	1	20	85-115
Ethylbenzene	20.00	19.43	97	1	20	85-115
m/p-Xylene	40.00	40.26	101	1	20	85-115
o-Xylene	20.00	19.50	98	1	20	85-115
1,3,5-Trimethylbenzene	20.00	18.72	94	1	20	83-115
1,2,4-Trimethylbenzene	20.00	17.73	89	1	20	82-115
Naphthalene	20.00	16.08	80	19	20	80-120
Total Xylenes	60.00	59.76	100	1	20	85-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 10 outside limits
Spike Recovery: 0 out of 20 outside limits

COMMENTS: _____

_____

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENCHEM INC.-GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO4-062504

Matrix Spike - Sample No.: 847559-022

BATCH QC

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Methyl tert-butyl ether	20.00	0.00	20.55	103	79-120
Benzene	20.00	2.37	23.34	105	80-120
Toluene	20.00	0.00	21.04	105	80-120
Ethylbenzene	20.00	3.06	23.29	101	80-120
m/p-Xylene	40.00	3.51	44.89	103	78-124
o-Xylene	20.00	1.80	21.78	100	80-120
1,3,5-Trimethylbenzene	20.00	0.70	19.47	94	71-124
1,2,4-Trimethylbenzene	20.00	2.35	20.54	91	72-123
Naphthalene	20.00	2.85	20.49	88	72-123
Total Xylenes	60.00	5.32	66.67	102	78-124

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Methyl tert-butyl ether	20.00	20.29	101	1	20	79-120
Benzene	20.00	23.78	107	2	20	80-120
Toluene	20.00	21.44	107	2	20	80-120
Ethylbenzene	20.00	23.67	103	2	20	80-120
m/p-Xylene	40.00	45.87	106	2	20	78-124
o-Xylene	20.00	22.15	102	2	20	80-120
1,3,5-Trimethylbenzene	20.00	19.88	96	2	20	71-124
1,2,4-Trimethylbenzene	20.00	20.95	93	2	20	72-123
Naphthalene	20.00	20.00	86	2	20	72-123
Total Xylenes	60.00	68.02	104	2	20	78-124

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 10 outside limits
Spike Recovery: 0 out of 20 outside limits

COMMENTS: _____

Effective Date: July 14,2002

Surrogates
En Chem - Green Bay

Revised: 5/27/2004

	Aqueous		Low Level Solids		Methanol Solids	
GC VOA	LCL	UCL	LCL	UCL	LCL	UCL
α,α,α–Trifluorotoluene	80	124	65	139	80	119

	Aqueous		Low Level Solids		Methanol Solids	
GCMS VOA	LCL	UCL	LCL	UCL	LCL	UCL
Dibromofluoromethane	69	140	59	105	62	123
Toluene-d_8	72	137	63	118	73	123
4-Bromoflurobenzene	65	133	44	107	66	119

	Aqueous		Solids	
GCMS PAH	LCL	UCL	LCL	UCL
Nitrobenzene-$_{d5}$	30	170	35	126
2-Fluorobiphenyl	30	126	44	110
Terphenyl-d_{14}	56	148	38	145

	Aqueous		Solids	
GCMS BNA	LCL	UCL	LCL	UCL
2-Fluorophenol	13	70	35	113
Phenol-$_{d5}$	8	44	29	114
2-Chlorophenol-$_{d4}$	29	104	34	107
1,2-Dichlorobenzene-$_{d4}$	34	112	27	116
Nitrobenezene-$_{d5}$	34	126	32	118
2-Fluorobiphenyl	36	126	26	126
2,4,6-Tribromophenol	39	133	17	129
Terphenyl-$_{d14}$	56	139	23	141

	Aqueous		Solids	
GC PCB	LCL	UCL	LCL	UCL
Decachlorobiphenyl	22	133	11	142

	Aqueous		Solids	
TPH Diesel	LCL	UCL	LCL	UCL
o - Terphenyl	33	133	34	106

	Aqueous		Solids	
TPH Gas	LCL	UCL	LCL	UCL
α,α,α–Trifluorotoluene	80	124	69	146

En Chem, Inc. Cooler Receipt Log

Batch No. 848062

Project Name or ID 310-02014 No. of Coolers: 1 Temps: 3°C

A. Receipt Phase: Date cooler was opened: 6/24/04 **By:** A. Mulvey

1: Were samples received on ice? (Must be ≤ 6 C)	(YES)	NO[2]	NA
2. Was there a Temperature Blank?	(YES)	NO	
3: Were custody seals present and intact on cooler? (Record on COC)	YES	(NO)	
4: Are COC documents present?	(YES)	NO[2]	
5: Does this Project require quick turn around analysis?	YES	(NO)	
6: Is there any sub-work?	YES	(NO)	
7: Are there any short hold time tests?	YES	(NO)	
8: Are any samples nearing expiration of hold-time? (Within 2 days)	YES[1]	(NO)	Contacted by/Who
9: Do any samples need to be Filtered or Preserved in the lab?	YES[1]	(NO)	Contacted by/Who

B. Check-in Phase: Date samples were Checked-in: 6/24/04 **By:** A. Mulvey

1: Were all sample containers listed on the COC received and intact?	(YES)	NO[2]	NA
2: Sign the COC as received by En Chem. Completed	(YES)	NO	
3: Do sample labels match the COC?	(YES)	NO[2]	
4: Completed pH check on preserved samples. *(This statement does not apply to water: VOC, O&G, TOC, DRO, Total Rec. Phenolics)*	YES	NO	(NA)
5: Do samples have correct chemical preservation? *(This statement does not apply to water: VOC, O&G, TOC, DRO, Total Rec. Phenolics)*	YES	NO[2]	(NA)
6: Are dissolved parameters field filtered?	YES	NO[2]	(NA)
7: Are sample volumes adequate for tests requested?	(YES)	NO[2]	
8: Are VOC samples free of bubbles >6mm	(YES)	NO[2]	NA
9: Enter samples into logbook. Completed	(YES)	NO	
10: Place laboratory sample number on all containers and COC. Completed	(YES)	NO	
11: Complete Laboratory Tracking Sheet (LTS). Completed	YES	NO	(NA)
12: Start Nonconformance form.	YES	NO	(NA)
13: Initiate Subcontracting procedure. Completed	YES	NO	(NA)
14: Check laboratory sample number on all containers and COC.	(YES)	NO	NA

Short Hold-time tests:

24 Hours or less	48 Hours	7 days	Footnotes
Coliform	BOD	Ash	1 Notify proper lab group immediately.
Corrosivity = pH	Color	Aqueous Extractable Organics- ALL	2 Complete nonconformance memo.
Dissolved Oxygen	Nitrite or Nitrate	Flashpoint	
Hexavalent Chromium	Ortho Phosphorus	Free Liquids	
HPC	Surfactants	Sulfide	
Ferrous Iron	Turbidity	TDS	
Eh	En Core Preservation	TSS	
Odor	Power stop preservation	Total Solids	
Residual Chlorine		TVS	
Sulfite		TVSS	
		Unpreserved VOC's	

Rev. 2/05/04, Attachment to 1-REC-5.
Subject to QA Audit.

Reviewed by/date TMT 6/29/04

(Please Print Legibly)

Company Name: Enviro-Risk Consulting Group
Branch or Location: St. Paul, MN
Project Contact: Brad Burke
Telephone: 651.735.7001
Project Number: # 20-02014
Project Name: Yocum Oil, Gordon Holiday
Project State: MN
Sampled By (Print): John McDermott
PO #:

EN CHEM INC.
...chemistry for the environment.
1241 Bellevue St., Suite 9
Green Bay, WI 54302
920-469-2436
Fax 920-469-8827

1SD

CHAIN OF CUSTODY № 119267

Page 1 of 1

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=EnCore F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Quote #:
Mail Report To: Brad Burke
Company: Enviro-Risk Consulting
Address: 1176 Silverwood Pkwy
St. Paul, MN 55125

Invoice To:
Company: Same as above
Address:
Mail Invoice To:

Data Package Options - (please circle if requested)
Sample Results Only (no QC)
EPA Level II (Subject to Surcharge)
EPA Level III (Subject to Surcharge)
EPA Level IV (Subject to Surcharge)

Regulatory Program: UST, RCRA, SDWA, NPDES, CERCLA

Matrix Codes: W=Water, S=Soil, A=Air, C=Charcoal, B=Biota, Sl=Sludge

LABORATORY ID (Lab Use Only)	FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	ANALYSES REQUESTED: BETX, MTBE, GRO	TOTAL # OF BOTTLES SENT	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
001	MW-2	6/22/04	8:25	W	N	B	X	3	3-40ml vials	
002	MW-3	6/22/04	9:20	W	N	B	X	3	3-40ml vials	
003	Trip blank	—	—	W	N	B	X	2	3-40ml vials lab provided	H2O bloom
	Temp. blank	—	—	W				1	lab provided	

Rush Turnaround Time Requested (TAT) - Prelim
(Rush TAT subject to approval/surcharge)
Date Needed: STANDARD
Transmit Prelim Rush Results by (circle):
Phone Fax E-Mail
Phone #:
Fax #:
E-Mail Address:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
	6/22/04 12:00		6/22/04 12:00
	6/23/04 6-23	1100	
	6-23 1400		
	6/24/04 8:20		6/24/04 8:40

En Chem Project No. 848062
Sample Receipt Temp. 3°C
Sample Receipt pH (Wet/Metals) NA
Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Version 4.0: 07/03

FLINT HILLS RESOURCES
Pine Bend Refinery

To: Brad Burke

Fax: 651-738-3039

Date: 9/12/03

From: ☐ Todd Craig
☐ Don Howe
☒ Tom Garncarz
☐ Jerry Lindwall
☐ Lynette Meister

Total Pages: 2 (*including cover page*)

Notes:

Thanks for your business!

This fax was sent from 651.480.3875.
If you have received this fax in error, or are unable to read, please call 888.999.6308.

– P.O. Box 64596 – Saint Paul, Minnesota 55164 – 651.480.3888

FLINT HILLS RESOURCES
Pine Bend Refinery

ANALYTICAL REQUEST REPORT FORM

LABORATORY PROJECT NUMBER:	**PINE BEND LIMS ID NUMBER:**		
IMIS NUMBER:	**PINE BEND LAB**	x	
UNIT NUMBER: 1	**WICHITA**		
	OTHER		

CUSTOMER SERVICE OR PRODUCT QUALITY INVESTIGATION (internal use only)?

(If product quality investigation please notify Jeff Johnson x0995)

SAMPLE IDENTIFICATION/DESCRIPTION:

sample from ?

REQUESTED BY: Tom Gamcarz	**PERSON DELIVERING SAMPLE: Tom**
PHONE # REQUESTER	**DATE REQUESTED: 9/9/03**
REPORT RESULTS TO:	
DATE WANTED:	**DATE SAMPLED :** 8/5/03
COPIES OF REPORT SHOULD BE SENT TO:	
	DATE DELIVERED TO REFINERY: 9/9/03
SAMPLE ACCEPTED BY:	**DATE REPORTED: 9/10/03**
TESTS REQUESTED:	(Samples will be automatically discarded after this date unless requestor specifies a change.)

Test to see if sample is Blue Planet

ANY SAMPLE HISTORY, SPECIAL HANDLING, REASON FOR ANALYSIS:

Sample was drawn from clean up site and need to determine if leak is new or fuel is from old leak.

Station was branded Texaco at time of leak so if sample is Blue Plant there is an additional problems.

REPORT:

Sulfur content of the sample is 0.0358% which is greater than max. specification of Blue Planet which is 0.0080%.

COMMENTS:

ANALYST SIGNATURE: KWN

APPENDIX 2

SAMPLE COLLECTION PROCEDURES

Groundwater Sampling & Analysis

All groundwater sampling and analysis was conducted in general accordance with MPCA Fact Sheet #3.23. The depth to groundwater was recorded using a Solinst oil-water interface probe capable of detecting free product and water to 0.01 foot. The Solinst probe was decontaminated with a soap/water mixture and then triple rinsed between each well.

Following collection of water level data, a minimum of 3 well volumes of water was purged from each monitoring well with a disposable bailer. Following well purging, a new disposable bailer (Aqua Bailer - polyethylene) was then utilized to collect a sample from the well. Water from the bailer was discharged from the bottom of the bailer into sampling glassware by unseating the bailer's ball check valve. This was done to minimize disturbance of the water sample and volatilization during transfer.

All water samples were collected in laboratory-provided containers, stored on ice in a cooler, and maintained under proper chain-of-custody until they were delivered to the analytical laboratory. Water samples were analyzed for benzene, toluene, ethyl benzene, xylenes (BTEX), methyl tertiary butyl ether (MTBE), and gasoline range organics (GROs).

APPENDIX 3

FIELD SAMPLING DATA SHEETS

ENVIRO-RISK
CONSULTING GROUP, INC.

Sheet 1 of ~~13~~ 12

Site Name/Number: Yocum-Jordan

Date: 03-26-03

Well I.D.: MW01 Unique No. 616539

Static Water Level: 8.26 ft. (Top of casing)

Well Depth: 19.80 ft. (Top of casing)

Wetted Column (L): 11.54 ft.

Well volume (V) : 1.8 gal.

Note: Water = 7.48 gal/ft.^{3}
2" dia.: V(gal.) = 0.163 * L
4" dia.: V(gal.) = 0.652 * L
6" dia.: V(gal.) = 1.468 * L
8" dia.: V(gal.) = 2.610 * L

Sampling procedure: Remove/purge 3 well volumes or virtually dry. Note any peculiar characteristics. Collect required aliquots as specified by laboratory. Preserve as required. Keep samples cool.

GALS. REMOVED	NOTES
	Solvent signal difficult to interpret, beeping signal and
	solid tone inconsistent. Definite odor of gasoline (Smells fresh)
	Sample ID: JOR-MW01-100

Sample ID: JOR-MW01-100

TRIP BLANK ACCOMPANYING SAMPLES IDENTIFIED AS JOR-MW01-300

Note: 100 series = regular sample
200 series = duplicate
300 series = trip blank
400 series = field blank

Sampled by: C. Rogers

ENVIRO-RISK
CONSULTING GROUP, INC.

Site Name/Number: Yocum-Jordan / 20-02014

Date: 03-26-03

Well I.D.: MW02 (Near Car wash exit) Unique No. 616538

Static Water Level: 7.50 ft. (Top of casing)

Well Depth: 17.25 ft. (Top of casing)

Wetted Column (L): 9.75 ft.

Well volume (V) : 1.6 gal.

Note: Water = 7.48 gal/ft.^{3}
2" dia.: V(gal.) = 0.163 * L
4" dia.: V(gal.) = 0.652 * L
6" dia.: V(gal.) = 1.468 * L
8" dia.: V(gal.) = 2.610 * L

Sampling procedure: Remove/purge 3 well volumes or virtually dry. Note any peculiar characteristics. Collect required aliquots as specified by laboratory. Preserve as required. Keep samples cool.

GALS. REMOVED	NOTES
5 gals.	Slight sheen observed on initial bail. Odor not easily detectable if any at all
	BTEX, MTBE & GRO / (3) 40 ml vials w/ HCl

Sample ID: JOR-MW02-100

Note: 100 series = regular sample
200 series = duplicate
300 series = trip blank
400 series = field blank

Sampled by: C. Rogers

ENVIRO-RISK
CONSULTING GROUP, INC.

Site Name/Number: Yocum-Jordan/20 MW14

Date: 03-26-03

Well I.D.: MW03 (In Parking lot) Unique No. 616540

Static Water Level: 7.97 ← Product signal 8.13 = water level ft. (Top of casing)

Well Depth: 17.40 ft. (Top of casing)

Wetted Column (L): 9.43 ft.

Well volume (V) : 1.5 gal.

Note: Water = 7.48 gal/ft.^{3}
(2" dia.): V(gal.) = 0.163 * L
4" dia.: V(gal.) = 0.652 * L
6" dia.: V(gal.) = 1.468 * L
8" dia.: V(gal.) = 2.610 * L

Sampling procedure: Remove/purge 3 well volumes or virtually dry. Note any peculiar characteristics. Collect required aliquots as specified by laboratory. Preserve as required. Keep samples cool.

GALS. REMOVED	NOTES
5 gals.	Definite sheen and strong odor observed. Odor resembles fresh gasoline.

Sample ID: JOR-MW03-100

Note: (100 series) = regular sample
200 series = duplicate
300 series = trip blank
400 series = field blank

Sampled by: C.H. Rogers

GROUND WATER SAMPLING INFORMATION FORM*

Sheet ___ of ___
Side 1 of 2*

General Information

Location (Site/Facility Name)	HOLIDAY - JORDAN	Sampling Point (common name)	MW-3
Project Name/#	YOCUM / #20-02014	Type (mon. well, spring, etc.)	MON. WELL
Field Personnel	B. BURKE	Field Sample (Event) ID#*	
Sampling Organization	ERCG	[redacted]	
Weather	SUNNY / 55°F / WS		

Sampling Station (Well) Details

Read from left to right

Well Depth (ft. below MP)	17.35	Casing Diameter (inches)	2	[redacted]	top -- bottom
Static Depth to Water (below MP)	6.84	Static DTW (ft. below GS)	~7.0	Date 6/26/03	Time 8:05
Water Column Length (L) (ft.)	10.51	One WC Volume (cu. ft.)	~~2.12~~	One WC Volume (gals)	1.71 ~~2.12~~
Condition: Securely Locked?	(Y) or N	Station (Well) Damaged?	Y or (N)	Surface Contamination (visible)?	Y or (N)

0.1
9

Purging

Read from left to right

[redacted]

Free Product (circle: LNAPL or DNAPL)*		Detected/Sampled?	Y or (N) / Y or (N)	[redacted]	
Well Purging Equipment		Pump, bailer?	BAILER	Appearance	CLOUDY → CLEAR
Purging Date/Time		Start	6/26/03 / 7:30	Type*	AQUA BAILER (PE)
[redacted]				Finish	6/26/03 / 7:55
Amt. Purged before Sampling		Gals./WC Volumes	7 gal / 3+	Purge Protocol of 3 WCV's met?	(Y) or N

Field Water-Quality Measurements and Observations

Date/Time Measurements Began ___ / ___

[redacted]

Submersible Pump with direct line to Flow Cell used for all Field Water Quality Measurements? ___

All Field Measurement Instruments Calibrated according to Protocol? Y or (N)

All Field Water Quality Parameters Stabilized according to Protocol Criteria just before filling sample containers? (Y) or N

The Measurements below Represent: (1) stabilization, (2) sample water collected (circled), (3) both 1 and 2, (4) other*: (Y) or N 2

Sample Appearance: ___ Odor: ___

Field Measurement	Value	Time (24 hour)	Comments*
Temperature			

AT PURGE START - BLACK WATER
AT END OF PURGE WATER CLOUDY TO CLEAR
STRONG PETROLEUM ODOR

Sample Collection

Sampling Device (type of pump/bailer)*	AQUA BAILER (PE)	Sample Medium (well water, LNAPL, etc.)*	WATER
Permanently Installed Pump?	Y or (N)	Dedicated Equipment? Y or (N)	Used Same Equip for Purge? (Y) or N
[redacted]			
Date/Time Sampling Began	6/26/03 / 8:00	Date/Time Sampling Finished	SAME / 8:05
Depth to Water (ft. below MP)		Depth to Water (ft. below MP)	
QC Samples Collected?	Y or N (see reverse*)	Sample Withdrawal Rate	gpm

[redacted]

Remarks (1)* (include protocol exceptions)

[redacted]

* Side 2 of this form contains definitions of abbreviations, protocol codes, additional room for equipment specification, QC sample description and other comments.

Form GWS #4
Revised 1-12-95

GROUND WATER SAMPLING INFORMATION FORM*

Sheet ___ of ___
Side 1 of 2

General Information

Location (Site/Facility Name): Holiday - Jordan
Project Name/#: Yorum / #20-02014
Field Personnel: B. Burke
Sampling Organization: ERCG
Weather ☼ ?: Sunny / 55°F / WS

Sampling Point (common name): MW-2
Type (mon. well, spring, etc.): Mon. Well
Field Sample (Event) ID#*:

Sampling Station (Well) Details

Read from left to right ☞

Well Depth (ft. below MP): 17.30
Static Depth to Water (below MP): 6.31 (0.01 ft.)
Water Column Length (L) (ft.): 10.99
Condition: Securely Locked? (Y) or N

Casing Diameter (inches): 2
Static DTW (ft. below GS): ___ (0.1 ft.)
One WC Volume (cu. ft.): ___

Date 6/26/03 Time 8:45 (0.1 ft.)
One WC Volume (gals): 1.79
Station (Well) Damaged? Y or (N)
Surface Contamination (visible)? Y or (N)

0.1 9

Purging

Read from left to right ☞

Free Product (circle: LNAPL or DNAPL)*: Detected/Sampled? Y or (N) Y or (N)
Well Purging Equipment: Pump, bailer? BAILER
Purging Date/Time: Start ⏻ 6/26/03 18:20
Pump/Bailer Intake Set at: ___ Feet below MP
Amt. Purged before Sampling: Gals./WC Volumes 6.92 / 3+

Background Conc. ___ ppm
Appearance ☁: Cloudy - Clear
Type*: AquaBailer (PE)
Finish ⏻ 6/26/03 18:40
Avg. Purge Rate ___ ppm
Purge Protocol of 3 WCV's met? (Y) or N

Field Water-Quality Measurements and Observations

Date/Time Measurements Began: ___ / ___
Submersible Pump with direct line to Flow Cell used for all Field Water Quality Measurements? Y or (N)
All Field Measurement Instruments Calibrated according to Protocol? (Y) or N
All Field Water Quality Parameters Stabilized according to Protocol Criteria just before filling sample containers? (Y) or N
The Measurements below Represent: (1) stabilization, (2) sample water collected, (3) both 1 and 2, (4) other*: 2
Sample Appearance ☁: ___ Odor: ___

Field Measurement	Value	Time (24 hour)	Comments*
Temperature			

START OF PURGE - CLEAR WATER
END OF PURGE CLOUDY
STRONG PETROLEUM ODOR

Sample Collection

Sampling Device (type of pump/bailer)*: AquaBailer (PE)
Sample Medium (well water, LNAPL, etc.)*: Water
Permanently Installed Pump? Y or (N)
Dedicated Equipment? Y or (N)
Used Same Equip. for Purge? (Y) or N

Date/Time Sampling Began: 6/26/03 / 8:40
Depth to Water (ft. below MP):
QC Samples Collected? Y or N (see reverse*)

Date/Time Sampling Finished: 6/26/03 / 8:45
Depth to Water (ft. below MP):
Sample Withdrawal Rate: ___ gpm

Remarks (1)* (include protocol exceptions):

60 → * Side 2 of this form contains definitions of abbreviations, protocol codes, additional room for equipment specification, QC, sample description and other comments

Form GWS #4
Revised 1-12-95

9:10

GROUND WATER SAMPLING INFORMATION FORM*

Sheet ___ of ___
Side 1 of 2*

General Information

Location (Site/Facility Name) Holiday-Jordan
Project Name/# Yocum / #20-0204
Field Personnel B. Burke
Sampling Organization ERCG
Weather Sunny / 55°F / WS10

Sampling Point (common name) MW-1
Type (mon. well, spring, etc.) Mon. Well
Field Sample (Event) ID#* ___
[redacted]

Sampling Station (Well) Details

Read from left to right

Well Depth (ft. below MP) 19.85
Depth to Product 7.14
Static Depth to Water (below MP) 7.45 (0.01 ft.)
Water Column Length (L) (ft.) ___
Condition: Securely Locked? (Y) or N

Casing Diameter (inches) 2"
Static DTW (ft. below GS) —
One WC Volume (cu. ft.) ___
Station (Well) Damaged? Y or (N)

[redacted]
Date 6/26/03 Time 9:10
One WC Volume (gals) —
Surface Contamination (visible)? Y or (N)

0.1
9

Purging

Read from left to right

[redacted]

Free Product (circle: LNAPL or DNAPL)* Detected/Sampled? (Y) or N / Y or (N) Appearance ___
Well Purging Equipment Pump, bailer? Bailer Type* AquaBailer (PE)
Purging Date/Time Start / Finish /
[redacted]
Amt. Purged before Sampling Gals./WC Volumes /
Purge Protocol of 3 WCV's met? Y or N

Field Water-Quality Measurements and Observations

Date/Time Measurements Began /
[redacted]
Submersible Pump with direct line to Flow Cell used for all Field Water Quality Measurements? ___
All Field Measurement Instruments Calibrated according to Protocol? Y or (N)
All Field Water Quality Parameters Stabilized according to Protocol Criteria just before filling sample containers? (Y) or N
The Measurements below Represent: (1) stabilization, (2) sample water collected (3) both 1 and 2, (4) other*. (Y) or N 2
Sample Appearance: ___ Odor: ___

Field Measurement	Value	Time (24 hour)	Comments*
Temperature			
	NO SAMPLE COLLECTED DUE TO FREE PRODUCT		

Sample Collection

Sampling Device (type of pump/bailer)* AquaBailer (PE) Sample Medium (well water, LNAPL, etc.)* Water
Permanently Installed Pump? Y or (N) Dedicated Equipment? Y or (N) Used Same Equip for Purge? (Y) or N
[redacted]
Date/Time Sampling Began ___ Date/Time Sampling Finished ___
Depth to Water (ft. below MP) ___ Depth to Water (ft. below MP) ___
QC Samples Collected? Y or N (see reverse*) Sample Withdrawal Rate ___ gpm
[redacted]
Remarks (1)* (include protocol exceptions) ___
[redacted]

* Side 2 of this form contains definitions of abbreviations, protocol codes, additional room for equipment specification, QC sample description and other comments

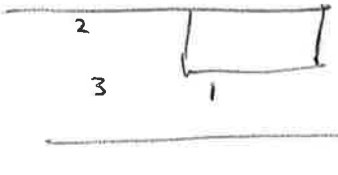
GWS #4
Revised 1-12-95

ENVIRO-RISK
CONSULTING GROUP, INC.

PROJECT NAME: Yocum Oil - Jordan
PROJECT NO.: #20-02014
LOCATION: Jordan, MN
DATE: 9/30/03
PAGE: 1 OF 1
BY: B. Burke

42°F / Sunny
W 10-15

9:45 on-site



Time Purge Began	Time	DTP	DTW	TD	NC	* 0.163	* 3	Notes / Odor	Time Sampled
1035	MW-1	9.15	9.80	19.85	10.7			Bubbles / Did not Sample	
1040	MW-2	~~8.11~~	8.41	17.30	8.89	1.45	4.4	Clear / Odor	1055
1010	MW-3	8.93	8.99	17.35	8.36	1.36	4.1	Clear/Odor/No Product Found (Sheen)	1025

⇒ Recovered 16 oz Product in MW-1

Surveying Notes

Point	FS	HI	BS	Elev	Notes
TBM	3.50	103.50		100.00	Fire Hydrant SE Corner of Site
MW-1 Grade			3.96		
TOC			4.67		
MW-2 Grade			4.79		
TOC			5.55		
MW-3 Grade			4.38		
TOC			5.01		

11:50 - Left Site

ENVIRO-RISK
CONSULTING GROUP, INC.

PROJECT NAME: Vacuum O,I
PROJECT NO.: 20-02014
LOCATION: Jordan, MN
DATE: 6/22/04

GROUNDWATER SAMPLING DATA FORM

no sample collected

PERSONELL:	John McDermott
WEATHER:	70° clear, calm
WELL TYPE:	observation well

NOTES/COMMENTS:

19.7
− 7.9
11.8

Pulled bailer. ≈ 0.02 product on surface.

WELL DEPTH & PURGING DETAILS

WELL NO	MW-1	WC LENGTH	19.7	PURGE EQUIP	
WELL DEPTH		CASING DIAM	2"	START TIME	
STATIC DTW	~~7.89~~ ~~7.88~~	Gal/Ft:	1"=0.041;2"=0.163;4"= 0.653	END TIME	
FREE PROD?	yes; 7.85	WC VOLUME	—	PURGE RATE	
ODOR?	yes; gasoline	GAL PURGED		APPEARANCE	floaty product

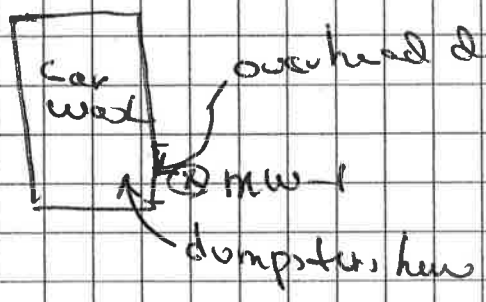
FIELD MEASUREMENTS

	VOL/TIME	VOL/TIME	VOL/TIME	VOL/TIME
TEMP				
ELEC COND				
SPEC COND				
PH				
DISS OXYGEN				
Eh				
TURBIDITY				

SAMPLE COLLECTION

SAMPLING EQUIP	
START TIME	
END TIME	
NOTES/COMMENTS	Inside overhead door is are dumpsters. Lots Considerable staining near wall; unknown materials; likely food waste from Holiday/BK

DIAGRAM



ENVIRO-RISK
CONSULTING GROUP, INC.

PROJECT NAME: Yocom Oil
PROJECT NO.: 20-02014
LOCATION: Jordan, MN
DATE: 6/22/04

GROUNDWATER SAMPLING DATA FORM

PERSONELL: John McDermott
WEATHER: 70° clear, calm
WELL TYPE: recovery well

NOTES/COMMENTS:
purge water has blackish coloration, suspended particles, iron?

WELL DEPTH & PURGING DETAILS

WELL NO	MW-2	WC LENGTH	11.1	PURGE EQUIP	bailer
WELL DEPTH	~~17.15~~	CASING DIAM	2"	START TIME	7:50
STATIC DTW	6.0	Gal/Ft:	1"=0.041;2"=0.163;4"= 0.653	END TIME	8:17
FREE PROD?	no	WC VOLUME	1.8	PURGE RATE	
ODOR?	no gasoline odor	GAL PURGED	5.4	APPEARANCE	sheen on surface of purge water

FIELD MEASUREMENTS

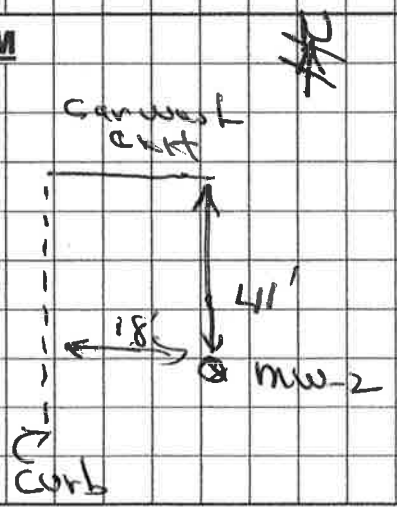
	VOL/TIME	VOL/TIME	VOL/TIME	VOL/TIME
TEMP	1.8/8:06	1.8 8:14	1.8 8:17	
ELEC COND	~~8:12~~			
SPEC COND				
PH				
DISS OXYGEN				
Eh				
TURBIDITY				

SAMPLE COLLECTION

SAMPLING EQUIP	disposable bailer
START TIME	8:25
END TIME	8:25

NOTES/COMMENTS
black appearance persists in the purged water as it stands

DIAGRAM



ENVIRO-RISK
CONSULTING GROUP, INC.

PROJECT NAME: Yocum O,I
PROJECT NO.: 20-02014
LOCATION: Jordan MN
DATE: 6/22 lo4

GROUNDWATER SAMPLING DATA FORM

PERSONELL:	John McDermott
WEATHER:	70° clear, calm
WELL TYPE:	recovery

NOTES/COMMENTS:

WELL DEPTH & PURGING DETAILS

WELL NO	mw-3	WC LENGTH	10.7	PURGE EQUIP	bailer
WELL DEPTH	17.25	CASING DIAM	2"	START TIME	8:58
STATIC DTW	6.55	Gal/Ft:	1"=0.041;2"=0.163;4"= 0.653	END TIME	9:16
FREE PROD?	slight sheen	WC VOLUME	≈ 1.8	PURGE RATE	
ODOR?	yes; gasoline	GAL PURGED		APPEARANCE	gasoline odor; slight sheen on purge water; bladder w/ sediment

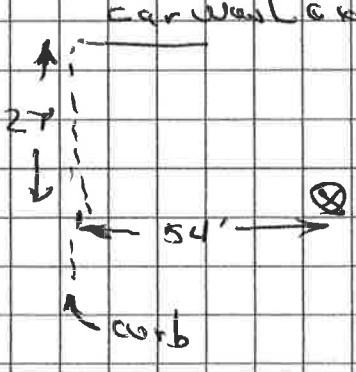
FIELD MEASUREMENTS

	VOL/TIME	VOL/TIME	VOL/TIME	VOL/TIME
TEMP	1.8/ 9:00	1.8/ 9:06	1.8/ 9:11	
ELEC COND				
SPEC COND				
PH				
DISS OXYGEN				
Eh				
TURBIDITY				

SAMPLE COLLECTION

SAMPLING EQUIP	disposable bailer
START TIME	9:17
END TIME	9:20
NOTES/COMMENTS	purged water is bleach; w/ very fine suspended material; iron? slight sheen

DIAGRAM



MPAC FACT SHEET #3.31

Corrective Action Design
System Monitoring Worksheet

Leaking Petroleum Storage Tanks
Minnesota Pollution Control Agency
http://www.pca.state.mn.us/programs/lust_p.html

Corrective Action Design System Monitoring Worksheet

Fact Sheet #3.31

This worksheet documents ongoing system emissions and efficiency, in part to fulfill U.S. Environmental Protection Agency (EPA) requirements. Complete and submit this monitoring worksheet quarterly for the first year and annually thereafter. Submit an annual monitoring report as described in fact sheet 3.26, *Annual Monitoring Report.* [Note: Minnesota Pollution Control Agency (MPCA) staff may vary the frequency of progress reporting on a site specific basis.]

For several remedial technologies, you are asked to provide contaminant mass removal rates in terms of gallons/day. To aid you in calculating these values, we provide a standard equation and have calculated the gallon/kilogram (gal/kg) values for various petroleum products. Please use these values in your calculations:

Product	gal/kg
gasoline	0.37
kerosene, JP4	0.33
fuel oil #1, diesel	0.31
fuel oil #2	0.30
fuel oil #4	0.29

MPCA Site ID #: Leak000***11991*** Date Form Completed: ***9/23/04***
Site Name: ***Jordan Texaco***
Facility address***: 255 Triangle Lane, Jordan, MN***

Responsible party: ***Yocum Oil Company*** RP phone: ***651-739-9141***
Consultant: ***Enviro-Risk Consulting Group, Inc.*** Consultant phone: ***651-735-7001***

For all sites, attach a table showing uptime and downtime for each treatment system at the site. Include explanations for any downtime that occurred during the reporting period, and a discussion of actions taken to remedy operational problems.

FREE PRODUCT RECOVERY SYSTEMS

Attach a table of free product thickness in all monitoring and recovery wells (to 0.1 feet).

Free product recovery rate: ***0.0 gallons/day (no recoverable free product observed recently)***
Total product recovered to date: ***greater than 2,430 gallons***

GROUND WATER PUMP-OUT SYSTEMS

Influent/Effluent concentrations

☐ Attach a table of cumulative ground water influent and effluent discharge concentrations (in ug/L).

Operating parameters

Pumping rate: gallons per minute
Amount of water table drawdown: feet

Contaminant mass removal

Estimated contaminant mass removal rate: gallons/day
Estimated contaminant mass removal to date: gallons
Cumulative mass removal vs. time (plot)

SOIL VENTING SYSTEMS

Emission concentrations

☐ Attach a table containing field screening results for each vapor extraction point.
☐ Attach a table of soil vent system emissions concentrations. Include all analytical samples collected since system startup. Collect the samples from a sampling port located upstream of the blower. Analyze the samples for benzene, ethyl benzene, toluene and xylene using EPA Method 18. Include the Screening Emission Rates (SERs) for each compound on the table.

Operating parameters

Extraction airflow rate: standard cubic feet/minute (scfm)

☐ Attach a table of cumulative vacuum data from vent points and monitoring points.

Bioactivity measurements

☐ Attach a table of cumulative extraction system CO_2 and O_2 concentrations.

Contaminant mass removal:

Estimated contaminant mass removal rate: kg/day x gal/kg = gal/day
Estimated contaminant mass removal to date: gallons
Cumulative mass removal vs time (plot)

SOIL VENTING/AIR SPARGING SYSTEMS

(Complete the soil venting systems section above for all air sparge/soil venting combination systems)

☐ Attach a table of air injection rates for each sparge point in the system.
Total air injection rate: scfm
Total air removal rate scfm

TOTAL SITE CONTAMINANT MASS REMOVAL

Fill out this section if ground water pump-out is used in combination with a soil venting system or a soil venting/air sparging system.

Total estimated contaminant mass removal rate for the site: gallons/day
Total estimated contaminant mass removal to date for the site: gallons
Cumulative mass removal vs time (plot).

SYSTEM CHANGES

Describe in detail any changes in system operation or configuration made during this reporting period (attach additional pages if needed). Also explain any periods during which the system was not operating.

The free product collection system consists of two pneumatic submersible pumps installed in MW-2 and MW-3, which is designed to automatically remove free product from the wells and discharge into an aboveground storage tank located on site. A site map is attached for your reference. During our initial site visit on June 13, 2002, it was discovered that the air compressor, which operates the product recovery pumps, was inoperable. It appears that a new compressor would be needed, at a minimum, to resume operation of the free product collection system. It is unknown how long the free product system had not been running and currently the system is not operating. Because only limited free product has been measured recently in MW-2 and MW-3, the submersible pumps have been removed.

RECOMMENDATIONS

List recommendations for modifying the monitoring schedule, system operation, system configuration or site closure (attach additional pages if needed):

Based on measured free product levels, resuming operation of the system (and replacement of the air compressor) may not be needed since free product levels in the two recovery wells (MW-2 and MW-3) are relatively minor, and recently non-existent. Enviro-Risk recommends leaving the free product recovery system off and manually recovering free product on a monthly basis through at least June 2005.

OBSERVATIONS

Please provide observations made at the site and describe unusual circumstance that may have influenced the sampling results:

The total quantity of gasoline actually released has never been clearly determined. Based on MPCA records, stated quantities ranged between 0.2 gal per hour (5 gal /day) to as much as 100 gal /day. The release apparently occurred over a 30 to 40 day period in September / October 1998 and the total quantity released was in excess of 1,000 gallons.

Based on past reports submitted by Arden Environmental, at least 2,230 gallons of free product was removed from the wells during the period of November 1998 through January 1999. Additional product was likely removed during 1999, however Enviro-Risk could not locate any additional 1999 data during our MPCA file search. IT Corporation took over free product monitoring / removal activities in 2000 through 2001. During this period, only product level measurements were obtained from the free product aboveground storage tank (AST) on site and no known removal of free product occurred from the site.

In 2002, Enviro-Risk was assigned to monitor / recover free product at the site. No additional free product has been recovered since the air compressor is inoperable. However, based on level measurements taken in the free product AST, Enviro-Risk estimates that approximately 200 gallons of free product is contained in the tank.

Summary: ***Potential Release Quantity:*** ***greater than 1,000 gallons***
Documented Quantity Recovered: ***2,430 gallons***

Given that additional free product recovery probably occurred in 1999, for which data is not readily available, it is likely that the actual quantity of free product removed is closer to 3,000 gallons. Therefore, it is feasible that the free product recovery system has removed the majority of product associated with the 1998 release. Given this possibility, and the lack of measured free product in MW-2 and MW-3, resuming operation of the free product recovery system may not be justified.

TABLES & GRAPHS

Tables and graphs as requested above. ***See September 2004 Annual Report.***

Web pages and phone numbers

MPCA staff	http://data.pca.state.mn.us/pca/emplsearch.html
MPCA toll free	**1-800-657-3864**
LUST web page	http://www.pca.state.mn.us/programs/lust_p.html
MPCA Infor. Request	http://www.pca.state.mn.us/about/inforequest.html
PetroFund Web Page	http://www.commerce.state.mn.us/mainpf.htm
PetroFund Phone	**651-297-1119**, or **1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**