GW - 55

MONITORING REPORTS

DATE: 1993

BIOTECH REMEDIATION INC.

Y MONITORING REPORT THRIFTWAY REFINERY **626 COUNTY ROAD 5500 BLOOMFIELD, NEW MEXICO 87410**

PREPARED FOR THE NEW MEXICO OIL CONSERVATION DIVISION MR. WILL OLSEN, PROJECT MANAGER

JAN 0 6 1995 Two

OIL CONSERVATION DIV. SANTA FE

DECEMBER 6, 1993

Suite 400

QUARTERLY MONITORING REPORT THRIFTWAY REFINERY 626 COUNTY ROAD 5500 BLOOMFIELD, NEW MEXICO, 87410

PREPARED FOR THE
NEW MEXICO OIL CONSERVATION DIVISION
MR. WILL OLSEN, PROJECT MANAGER

December 6, 1993

BY
BIOTECH REMEDIATION INC.
710 EAST 20TH ST., SUITE 400
FARMINGTON, NEW MEXICO, 87401

PREPARED BY

AL CHAHARLANG

PROJECT SCIENTIST

REVIEWED BY

KEN SINKS, CHEM E. P.E.

SENIOR SCIENTIST/ENGINEER

810\QMR12063

TABLE OF CONTENTS

SECTION

- 1.0 INTRODUCTION
- 2.0 QUARTERLY SUMMARY OF SITE ACTIVITIES
- 3.0 SUMMARY OF GROUND WATER ELEVATION DATA
- 4.0 SUMMARY OF PHASE SEPARATED PRODUCT CONDITIONS
- 5.0 SUMMARY OF GROUND WATER CHEMISTRY
- 6.0 DISCUSSION / RECOMMENDATIONS

FIGURES

- 1 WATER LEVEL CONTOUR MAP
- 2 FREE-PRODUCT PLUME MAP
- 3 BENZENE PLUME MAP

TABLES

- 1 GROUND WATER MONITORING DATA
- 2 SUMMARY OF PHASE SEPARATED PRODUCT MEASUREMENTS
- 3 SUMMARY OF LABORATORY ANALYSIS DATA

APPENDIX

ANALYTICAL LABORATORY REPORT FORMS

1.0 INTRODUCTION

The purpose of this report is to update the database for the Thriftway Refinery, through December 6, 1993. BioTech Remediation, Inc., submits this monitoring and well update on behalf of the Thriftway Refinery, pursuant to the requirements of the New Mexico Oil Conservation Division. This report will define the ground water condition, size of the plume, and the current activity for the site. It also describes the extent of water contamination based on the NMWQCC specification of .01 mg/L Benzene in water. This work is compiled in compliance with the terms of the Thriftway Refinery Ground Water Discharge Plan GW-55.

2.0 QUARTERLY SUMMARY OF SITE ACTIVITIES

Site monitoring was performed on November 29th and 30th, 1993. During this quarterly site visit the following activities were performed:

- Water level gauging
- Sample of monitoring wells
- Free product measurements

The de-scaling of the air stripper system, instituted by Thriftway, has been on-going. The system was acidized on a monthly basis and after each acidation, the operation of the system was restored to an acceptable level. The injection pump has continued to operate with minimal interruption. The inflow and outflow from the air stripper were also sampled and submitted to the laboratory for BTEX analysis, per EPA method 8020.

3.0 SUMMARY OF GROUND WATER ELEVATION DATA

Table 1 summarizes all ground water elevation data to date, for the refinery. The most recent comprehensive ground water elevation data, collected November 29th and 30th, 1993, is presented in the Ground Water Elevation Map on the attached Figure 1. The field data was gathered using an ORS air/water interface probe with a 100' tape.

4.0 SUMMARY OF PHASE SEPARATED PRODUCT CONDITIONS

Free-product was found in monitoring wells MW-12 and 14. depth to which free-product level existed in these monitor wells was measured with a steel tape. This was then subtracted from the water level which was already measured with a ORS probe, to determine the thickness of the product currently standing in the well. The phase-separated product was also measured in a disposable transparent bailer. The amount of free-product is recorded in feet and presented in Table 2. The amounts of freeproduct collected from the bailing of these monitor wells are shown in Table 2. The material recovered during bailing was properly disposed of in a collection tank provided on the site. collection tank contents are handled as follows: 1) free product is pumped off and stored for later processing, and 2) the contaminated water is stripped of dissolved hydrocarbon in the waste water air stripper tank and then evaporated in the refinery waste water system.

From the earlier hydrogeological investigation and subsequent Quarterly Monitoring Reports, it appears that the plume in monitor wells MW-12 and 14 is affected by the water mound being created from the water injection system. The current phase-separated product plume is presented in Figure 2.

5.0 SUMMARY OF GROUND WATER CHEMISTRY DATA

Table 3 summarizes all ground water quality data collected to date for the refinery. The Appendix contains the laboratory reports and the quality control studies for the current survey. Ground water samples for analysis were collected November 29th and 30th, 1993, from all monitor wells not containing free hydrocarbon.

Ground water from each of the above wells was analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX). The extent of the dissolved phase ground water plume at this site (based upon the regulated benzene standard of 0.01 mg/l), is shown in Figure 3.

The samples were gathered using disposable bailers. New cord was used on each bailer to further insure no cross-contamination of wells occurred. At least five (5) well volumes were removed whenever possible. If the well recharged slowly, then the water from the last bail was used for analysis. The samples were placed in 40 ml vials previously prepared at the lab with two (2) or three (3) drops of HgCl₂ solution. The samples were all marked with their respective location, date, time of sampling and by whom sampled. The samples were then transported, on ice, to the BioTech Water Quality Laboratories. A chain of custody record accompanied the samples and is included with the laboratory analysis reports.

6.0 DISCUSSION / RECOMMENDATIONS

The ground water contour map, provided in **Figure 1**, is calculated from the most recent data collected on November 29th and 30th, 1993. The magnitude of the dissolved phase has changed slightly, over the period of the last quarter. The contamination has migrated slightly downgradient, as noted in Monitor Well MW-20.

A review of the benzene contour map (See figure 3), shows no appreciable increase in the plume size. Monitor well MW-17 still appears to be highly contaminated, and from the data provided in Table 3, it indicates no appreciable change in benzene since the well was sampled on August 28th, 1991. What appears from this recent survey, is that MW-17 had a separate source and has its own plume which is not migrating appreciably. Part of this may be due to the intercept/recovery system that is operating. The contamination from this plume seems to extend to MW-7.

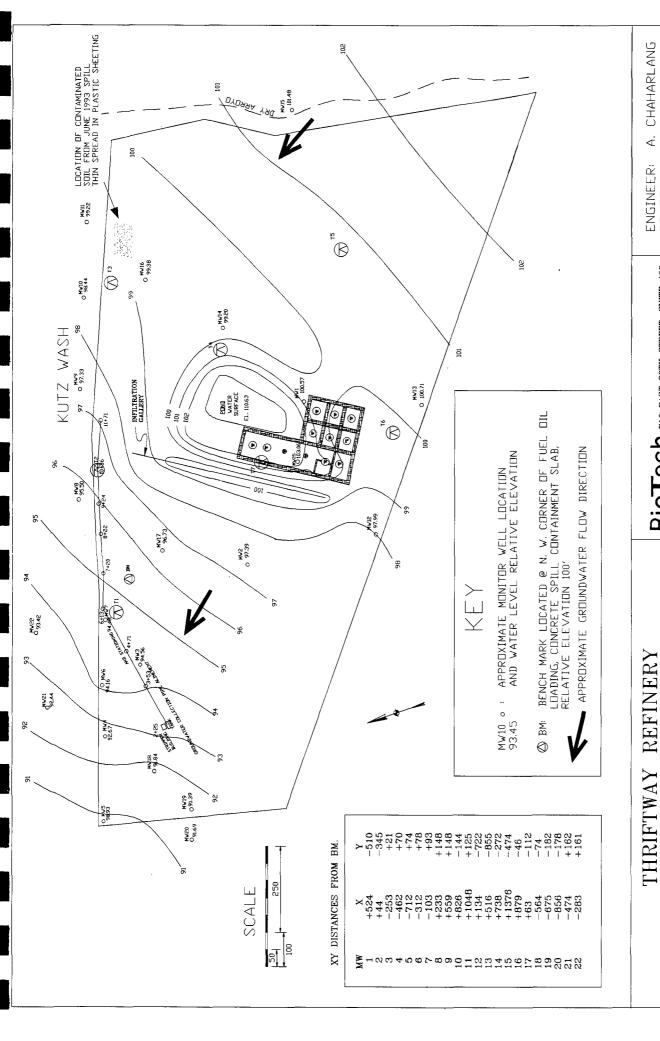
The free product level in MW-12 has had no significant gain or loss, since the level recorded on September 14, 1993. Two (2) feet of free-product remain in this monitor well. BioTech will continue to monitor the activity in this well. Biotech will also investigate the source and extent of this contamination, if so directed by Thriftway Refining.

Approximately 75 gallons of free-product has been recovered from the recovery wells in the vicinity of the Monitor Well MW-12 and 14. BioTech is keeping a record of the product being recovered from the wells and will continue to report on the recovery progress.

A recent free-product plume investigation has lead BioTech to believe that product in Monitor Well MW-12 is associated with a spill that may have happened many years ago. A separate product plume is represented in the area around MW-14, also many years old (see Figure 2). Investigation into the plume size and the method of remediation for this site will continue and be reported. Note: The plume associated with MW -12 is much more accurately defined as a result of recent investigation.

Thriftway Company will continue quarterly sampling and monitoring of the site as well as routine maintenance of the pump and recovery systems. This report of the operation and maintenance of the site remediation systems at the Thriftway Refinery is provided to comply with the Oil Conservation Division requirements and the Site Ground Water Discharge Plan GW-55.

FIGURES



A. CHAHARLANG DRAFTED BY: J. DEWEY ENGINEER

ech 710 east 20th street, suite 400

FARMINGTON, NEW MEXICO 87401

OFFICE: (505) 632-3365 FAX: (505) 632-0030

REMEDIATION

710 E 20TH ST, FARMINGTON, NM, 87401 THRIFTWAY MARKETING CORP

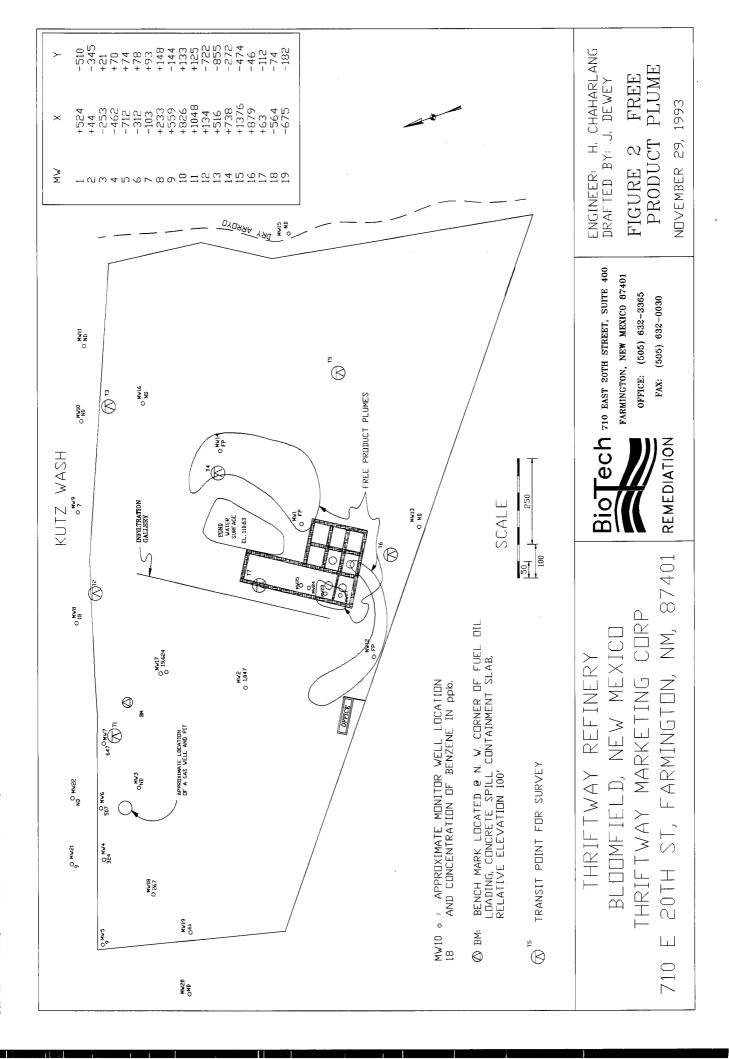
810\93WL

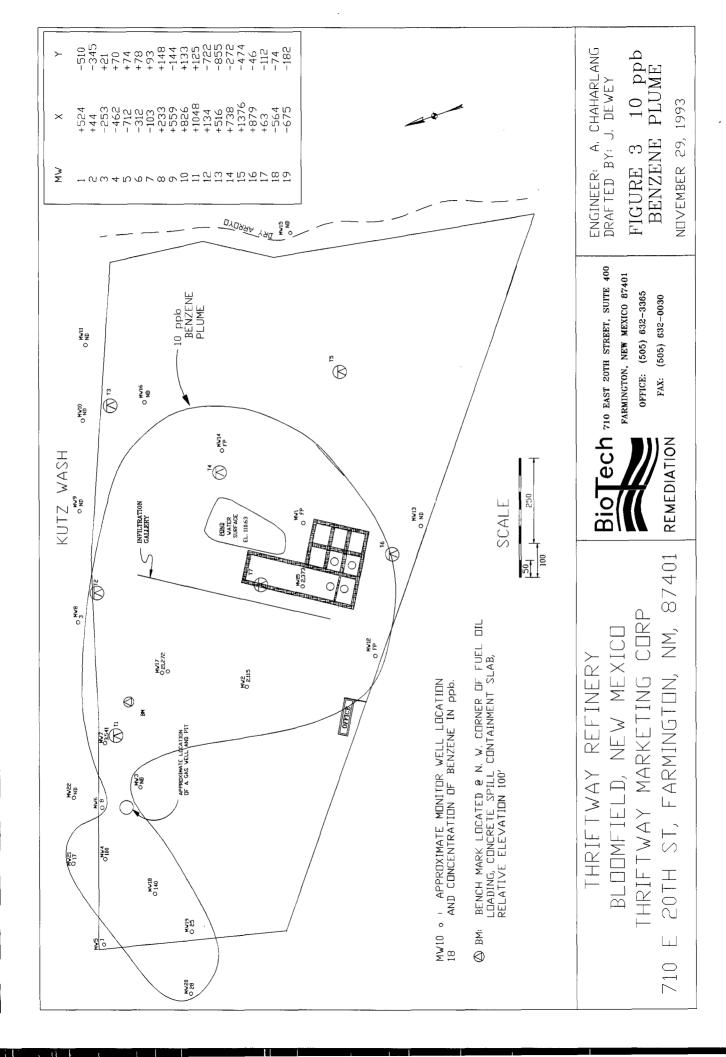
NEW MEXICO

BLOOMFIELD,

LEVEL CONTOUR MAP WATER FIGURE 1

NOVĘMBER 29, 1993





TABLES

TABLE 1
THRIFTWAY REFINERY, BLOOMFIELD, NM
GROUNDWATER MONITORING DATA

	WELL#	TOP OF PIPE ELEVATION	DATE	TIME	LEVEL	WATER LEVE ELEVATION
_					(feet)	(feet)
	1	114.08	08/28/91		12.67	101.41
			09/02/92	13:15	14.00	100.08
			04/28/93	10:45	12.77	101.31
			09/14/93	10.40	13.52	100.56
				00-00		
			11/29/93	09:30	13.51	100.57
	2	107.62	08/28/91		10.31	97.31
	_		08/31/92	13:07	10.25	97.37
			04/28/93	10:25	9.24	98.18
				10.25		
			09/14/93		10.27	97.35
			11/29/93	03:33	10.23	97.39
	3	96.28	08/28/91		3.67	92.61
	·	00.20	09/01/92	12:45	2.24	94.04
			04/28/93	10:10	2.01	94.27
				10.10		
			09/14/93		1.95	94.33
			11/30/93	10:10	1.72	94.56
	4	95.82	08/28/91		4.31	91.51
	•		09/01/92	12:15	3.78	92.04
			04/28/93	9:50	3.30	92.52
				9.50		
			09/13/93		3.65	92.17
			11/30/93	09:55	3.15	92.67
	5	94.66	08/28/91		4.43	90.23
			09/01/92	12:00	4.20	90.46
			04/28/93	9:45	3.64	91.02
			09/13/93	9.40	4.26	90.40
				00.00		
			11/30/93	09:38	3.73	90.93
	6	96.31	08/28/91		3.68	92.63
			09/01/92	12:30	2.63	93.68
			04/28/93	10:00	2.44	93.87
			09/13/93	10.00		94.16
				04.05	2.15	
			11/29/93	04:25	2.03	94.28
	7	96.79	08/28/91		3.35	93.44
			09/01/92		WELL NOT	FOUND
			04/28/93		WELL NOT	
			09/14/93	04.40	5.15	91.64
			11/29/93	04:10	4.70	92.09
	8	97.04	08/28/91		2.83	94.21
			09/02/92	14:50	2.75	94.29
			04/28/93	11:15	1.95	95.09
			09/14/93	11.10	1.97	95.07
				02.00		
			11/29/93	03:00	1.54	95.50

TABLE 1
THRIFTWAY REFINERY, BLOOMFIELD, NM
GROUNDWATER MONITORING DATA

9 100.16 08/28/91 3.42 96.74 09/02/92 14:45 3.50 96.66 04/28/93 11:25 2.87 97.29 09/14/93 2.90 97.26 11/29/93 03:15 2.83 97.33 11/29/93 03:15 2.83 97.33 10 10 101.55 08/28/91 3.50 98.05 09/02/92 15:05 3.50 98.05 09/14/93 3.23 98.32 11/29/93 02:40 3.11 98.44 11 103.63 08/28/91 4.60 99.03 09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/14/93 11:45 4.22 99.41 09/14/93 11:45 4.22 99.41 09/14/93 11:45 4.22 99.41 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 11.29/93 08:30 14.12 96.99 11/29/93 08:30 14.12 96.99 11/29/93 08:30 14.12 96.99 11/29/93 09:15 16.41 100.71 11.94 08/28/91 11.94 09/02/92 13:50 16.25 100.87 04/28/93 10:55 11.34 100.60 09/14/93 11/29/93 09:15 16.41 100.71 11.94 08/28/93 10:55 11.34 100.60 09/14/93 11.25 12.74 99.20 15.77 101.35 09/14/93 11.25 12.74 99.20 15.77 101.96 09/14/93 11.55 12.57 101.96 09/14/93 11.5		WELL#	TOP OF PIPE ELEVATION	DATE	TIME	WATER LEVEL (feet)	WATER LEVE ELEVATION (feet)
04/28/93 11:25 2.87 97.29 09/14/93 2.90 97.26 11/29/93 03:15 2.83 97.33 11/29/93 03:15 2.83 97.33 10 10 101.55 08/28/91 3.50 98.05 09/02/92 15:05 3.50 98.05 09/14/93 3.23 98.32 11/29/93 02:40 3.11 98.44 11 103.63 08/28/91 4.60 99.03 09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/02/92 15:15 4.63 99.00 11/29/93 02:30 4.41 99.22 12 111.11 08/28/91 12.51 98.62 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 11/29/93 08:30 14.12 96.99 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 10:55 10.87 09/14/93 10:55 10.87 09/14/93 10:55 11.34 100.60 09/14/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 11.45 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 11.45 09/03/92 8:00 13.05 101.48 09/03/92 8:00 13.05 101.48 09/03/92 8:00 13.05 101.48 09/14/93 11:55 12.57 101.96 09/14/93 11:55 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/1	_	9	100.16	08/28/91			
04/28/93 11:25 2.87 97.29 09/14/93 2.90 97.26 11/29/93 03:15 2.83 97.33 11/29/93 03:15 2.83 97.33 10 10 101.55 08/28/91 3.50 98.05 09/02/92 15:05 3.50 98.05 09/14/93 3.23 98.32 11/29/93 02:40 3.11 98.44 11 103.63 08/28/91 4.60 99.03 09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/02/92 15:15 4.63 99.00 11/29/93 02:30 4.41 99.22 12 111.11 08/28/91 12.51 98.62 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 11/29/93 08:30 14.12 96.99 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 10:55 10.87 09/14/93 10:55 10.87 09/14/93 10:55 11.34 100.60 09/14/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 11.45 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 11.45 09/03/92 8:00 13.05 101.48 09/03/92 8:00 13.05 101.48 09/03/92 8:00 13.05 101.48 09/14/93 11:55 12.57 101.96 09/14/93 11:55 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/14/93 11:05 09/1				09/02/92	14:45	3.50	96.66
10 101.55 08/28/91 3.50 98.05 04/28/93 11:35 3.02 98.53 09/14/93 3.23 98.32 11/29/93 02:40 3.11 98.44 11 103.63 08/28/91 4.60 99.03 09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/14/93 4.63 99.00 11/29/93 02:30 4.41 99.22 12 111.11 08/28/91 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 13:50 16.25 100.87 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 11/29/93 10:15 12.74 99.20 15 11/29/93 10:15 12.74 99.20 15 11/29/93 10:15 12.74 99.20 15 11/29/93 10:15 12.74 99.20 15 16.41 100.74 11/29/93 10:15 12.74 99.20 15 16.41 101.43 11/29/93 10:15 12.74 99.20 15 16.41 101.43 11/29/93 10:15 12.75 101.95 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 11							
11/29/93 03:15 2.83 97.33 10 101.55 08/28/91 3.50 98.05 09/02/92 15:05 3.50 98.05 04/28/93 11:35 3.02 98.53 09/14/93 3.23 98.32 11/29/93 02:40 3.11 98.44 11 103.63 08/28/91 4.60 99.03 09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/14/93 4.63 99.00 11/29/93 02:30 4.41 99.22 12 111.11 08/28/91 12.51 98.62 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 10.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 09/02/89 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 02:20 13.05 101.49 11/29/93 11/29/93 11/29/93 11/29/93 11/29/93 11/29/93 11/29/93 11/29/93 11/29/93 11/29/93 11/29/93							
09/02/92 15:05 3.50 98.05 04/28/93 11:35 3.02 98.53 09/14/93 3.23 98.32 11/29/93 02:40 3.11 98.44 11 103.63 08/28/91 4.60 99.03 09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/14/93 4.63 99.00 11/29/93 02:30 4.41 99.22 12 111.11 08/28/91 12.51 98.62 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 04/28/93 11:05 7.90 99.74					03:15		
04/28/93 11:35 3.02 98.53 09/14/93 3.23 98.32 11/29/93 02:40 3.11 98.44 11 103.63 08/28/91 4.60 99.03 09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/14/93 4.63 99.00 11/29/93 02:30 4.41 99.22 12 111.11 08/28/91 12.51 98.62 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 10.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/04/28/93 11:55 12.57 101.96 09/04/28/93 11:55 12.57 101.96 09/04/28/93 11:55 12.57 101.96 09/04/28/93 11:55 12.57 101.96 09/04/28/93 11:55 12.57 101.96 09/04/28/93 11:55 12.57 101.96 09/04/28/93 11:55 12.57 101.96 09/04/28/93 11:55 12.57 101.96 09/04/28/93 11:05 7.90 99.74		10	101.55				
11 103.63 08/28/91							
11/29/93 02:40 3.11 98.44 11 103.63 08/28/91 4.60 99.03 09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/14/93 4.63 99.00 11/29/93 02:30 4.41 99.22 12 111.11 08/28/91 12.51 98.62 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN					11:35		
11 103.63 08/28/91 4.60 99.03 09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/14/93 4.63 99.00 11/29/93 02:30 4.41 99.22 12 111.11 08/28/91 12.51 98.62 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48 11/29/93 02:20 13.05 101.48							
09/02/92 15:15 4.65 98.98 04/28/93 11:45 4.22 99.41 09/14/93 4.63 99.00 11/29/93 02:30 4.41 99.22 12 111.11 08/28/91 12.51 98.62 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 10:55 11.34 100.60 09/14/93 10:55 11.34 100.60 09/14/93 10:55 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74				11/29/93	02:40	3.11	98.44
12 111.11 08/28/91 12.51 98.62 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 109/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN		11	103.63	08/28/91		4.60	99.03
12				09/02/92	15:15	4.65	98.98
11/29/93 02:30 4.41 99.22 12 111.11 08/28/91 12.51 98.62 08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 11:05 7.90 99.74				04/28/93	11:45	4.22	99.41
12				09/14/93		4.63	99.00
08/31/92 13:30 13.67 97.44 04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 11:05 7.90 99.74				11/29/93	02:30	4.41	99.22
04/28/93 9:10 11.50 99.61 09/14/93 15.39 95.72 11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN		12	111.11	08/28/91		12.51	98.62
13				08/31/92	13:30	13.67	97.44
11/29/93 08:30 14.12 96.99 13 117.12 08/28/91 16.24 100.88 09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 EEVEL NOT TAKEN				04/28/93	9:10	11.50	99.61
13				09/14/93		15.39	95.72
09/02/92 13:50 16.25 100.87 04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN				11/29/93	08:30	14.12	96.99
04/28/93 9:00 15.77 101.35 09/14/93 16.38 100.74 11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN		13	117.12	08/28/91		16.24	100.88
14				09/02/92	13:50	16.25	100.87
11/29/93 09:15 16.41 100.71 14 111.94 08/28/91 11.33 100.61 09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN				04/28/93	9:00	15.77	101.35
14				09/14/93		16.38	100.74
09/02/92 14:00 13.00 98.94 04/28/93 10:55 11.34 100.60 09/14/93 12.83 99.11 11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN				11/29/93	09:15	16.41	100.71
15		14	111.94				
15							
11/29/93 10:15 12.74 99.20 15 114.53 08/28/91 12.58 101.95 09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN					10:55	11.34	
15						12.83	
09/03/92 8:00 13.05 101.48 04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN				11/29/93	10:15	12.74	99.20
04/28/93 11:55 12.57 101.96 09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN		15	114.53				
09/14/93 13.10 101.43 11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN							
11/29/93 02:20 13.05 101.48 16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN					11:55		
16 107.64 08/28/91 8.28 99.36 09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN							
09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN				11/29/93	02:20	13.05	101.48
09/02/92 14:25 8.45 99.19 04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN		16	107.64	08/28/91		8.28	99.36
04/28/93 11:05 7.90 99.74 09/14/93 LEVEL NOT TAKEN					14:25		99.19
09/14/93 LEVEL NOT TAKEN				04/28/93			
				09/14/93			
					02:00		

TABLE 1
THRIFTWAY REFINERY, BLOOMFIELD, NM
GROUNDWATER MONITORING DATA

	WELL#	TOP OF PIPE ELEVATION	DATE	TIME	WATER LEVEL (feet)	WATER LEVE ELEVATION (feet)
-	17	100.84	08/28/91		5.10	95.74
			08/31/93	12:44	4.65	96.19
			04/28/93	10:35	3.35	97.49
			09/14/93		4.40	96.44
			11/29/93	03:50	4.11	96.73
	18	94.04	08/28/91		3.21	90.83
			09/01/92	11:51	2.39	91.65
			04/28/93	9:35	2.14	91.90
			09/13/93		2.11	91.93
			11/30/93	10:25	2.20	91.84
	19	93.64	08/28/91		2.90	90.23
			09/02/92	11:30	2.41	91.23
			04/28/93	9:25	2.05	91.59
			09/13/93		1.92	
			11/30/93	09:20	2.25	91.39
	20	96.01	09/01/92	13:05	3.85	
			04/28/93	8:30	4.18	
			09/13/93		4.56	
		96.11	11/30/93	08:25	4.42	91.69
	21	94.34	09/01/92	13:20	3.97	
			04/28/93	8:40	2.27	
			09/13/93		2.19	
			11/30/93	08:45	1.90	92.44
	22	97.51	09/01/92	13:30	3.34	
			04/28/93	8:50	4.44	
			09/13/93		4.50	
			11/30/93	08:35	4.09	93.42
	25	112.62	11/29/93	10:45	9.56	103.06

810\QMRTABL1

TABLE 2 SUMMARY OF PHASE SEPARATED PRODUCT MEASUREMENTS THRIFTWAY REFINERY BLOOMFIELD, NEW MEXICO

WELL	DATE	THICKNESS (in feet)	LITERS OF HYDROCARBON RECLAIMED
1	10/14/92 04/28/93 09/14/93 11/29/93	TRACE 0.02 0.01 ND	
2	10/14/92 04/28/93 09/14/93 11/29/93	TRACE ND ND ND	
6	10/14/92 04/28/93 09/13/93 11/29/93	TRACE TRACE ND ND	
12	10/14/92 04/28/93 09/14/93 11/29/93	TRACE TRACE 2.00 1.97	*6.5
14	10/14/92 04/28/93 09/14/93 11/29/93	1.58 0.12 0.50 1.49	*4.8
17	10/14/92 04/28/93 09/14/93 11/29/93	TRACE TRACE ND ND	

ND - NON-DETECT (no visible product detected in the bailer)

810\QMRTABL2

^{* -} Total volume of product bailed after 15 times bailing of well volume to reach a non-detect status.

THRIFTWAY REFINERY TABLE 3

SUMMARY OF LABORATORY ANALYSIS DATA

THRIFTWAY REFINERY

BLOOMFIELD , NEW MEXICO Concentrations in mg/L

WELL#	DATE	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
1	08/28/91	4.321	2.352	0.635	5.137
	09/02/92			T FOUND IN WELL	
	04/28/93			T FOUND IN WELL	
	09/14/93			T FOUND IN WELL	
	11/29/93		NO FREE PROD	UCT BUT A TRACE	
2	08/28/91	3.332	ND	0.536	0.972
	08/31/92			T FOUND IN WELL	
	04/28/93	0.974	0.189	0.273	0.843
	09/14/93	1.047	0.245	0.487	0.794
	11/29/93	2.115	0.136	0.395	0.583
3	08/28/91	0.013	0.004	0.002	0.001
_	09/01/92	0.018	0.004	0.010	0.108
	04/28/93	ND	ND	ND	ND
	09/14/93	ND	ND	ND	0.004
	11/30/93	ND	ND	0.001	0.001
			,,,,	3.331	
4	08/28/91	0.006	ND	ND	ND
	09/01/92	0.005	0.007	0.017	0.056
•	04/28/93	0.588	0.004	0.039	0.329
	09/13/93	0.324	0.021	0.051	0.287
	11/30/93	0.100	0.005	0.001	0.004
5	08/28/91	ND	0.002	ND	0.001
	09/01/92	ND	ND	ND	ND
	04/28/93	0.014	0.033	0.004	0.026
	09/13/93	0.009	0.021	0.006	0.037
	11/30/93	0.001	ND	ND	ND
6	08/28/91	0.315	0.006	0.082	0.235
	09/01/92		PRODUCT FOUND		
	04/28/93	0.427	0.036	0.094	0.230
	09/13/93	0.507	0.078	0.135	0.319
	11/29/93	0.008	0.002	0.002	0.002
7	08/28/91	35.037	6.013	0.375	3.343
	09/01/92		WELL NOT FOUN		
	04/28/93		WELL NOT FOUN		
	09/14/93	0.647	0.197	0.168	0.691
	11/29/93	3.541	0.971	0.419	1.918
8	08/28/91	0.010	0.017	0.002	0.017
0	09/02/92	0.014	0.009	0.002	0.068
	04/28/93	ND	ND	ND	ND
	04/26/93	0.018	0.021	0.034	0.051
	11/29/93	0.018	ND	0.0004	0.001
	11123133	0.003	IND	0.0004	0.001

THRIFTWAY REFINERY TABLE 3

SUMMARY OF LABORATORY ANALYSIS DATA

THRIFTWAY REFINERY

BLOOMFIELD, NEW MEXICO

Concentrations in mg/L

WELL#	DATE	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
9	08/28/91	0.005	0.016	0.002	0.020
	09/02/92	0.010	0.021	0.030	0.018
	04/28/93	ND	ND	ND	ND
	09/14/93	0.007	0.015	0.024	0.006
	11/29/93	ND	ND	ND	ND
			,		
10	08/28/91	0.003	0.009	0.001	0.013
	09/02/92	0.001	0.005	0.001	0.009
	04/28/93	ND	ND	ND	ND
	09/14/93	ND	ND	ND	ND
	11/29/93	ND	ND	ND	ND
	11/29/90	ND	140	ND	ND
11	08/28/91	ND	ND	<1.0	0.002
	09/02/92	ND	ND	ND	ND
	04/28/93	ND	ND	ND	ND
	09/14/93	ND	ND	ND	ND
	11/29/93	ND	ND	ND	ND
12	08/28/91	ND	ND	ND	ND
	08/31/92		RODUCT FOUND		
	04/28/93	0.482	0.089	0.180	0.517
	09/14/93		RODUCT FOUND		0.011
	11/29/93		RODUCT FOUND		
	11/20/00	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	NODOOT TOOKE)	
13	08/28/91	0.001	0.004	<1.0	0.006
	09/02/92	0.002	0.002	ND	0.003
	04/28/93	ND	ND	ND	ND
	09/14/93	ND	ND	ND	ND
	11/30/93	ND	ND	ND	ND
14	08/28/91	ND	ND	<1.0	0.001
	09/02/92			FOUND IN WELL	
	04/28/93			FOUND IN WELL	
	09/14/93			FOUND IN WELL	
	11/29/93			FOUND IN WELL	
	,		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
15	08/28/91	0.005	0.009	0.001	0.013
	09/03/92	0.002	0.002	ND	0.003
	04/28/93	ND	0.028	ND	ND
	09/14/93	ND	ND	ND	ND
	11/29/93	ND	ND	ND	ND
	11/23/33	140	140	140	110
16	08/28/91	0.006	<1.0	0.043	0.003
	09/02/92	0.012	0.006	0.060	0.013
	04/28/93	ND	ND	0.003	0.005
	09/14/93	ND	ND	0.009	0.006
	11/29/93	ND	ND	0.002	0.0006
					

THRIFTWAY REFINERY TABLE 3 SUMMARY OF LABORATORY ANALYSIS DATA THRIFTWAY REFINERY BLOOMFIELD, NEW MEXICO Concentrations in mg/L

WELL#	DATE	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
17	08/28/91	25.660	21.453	1.074	10.372
	08/31/93	28.453	23.682	2.145	13.461
	04/28/93	23.424	22.173	1.967	13.161
	09/14/93	19.624	19.347	2.687	12.481
	11/29/93	21.272	5.285	1.063	8.357
18	08/28/91	0.036	0.003	0.005	0.129
	09/01/92	0.047	0.010	0.014	0.171
	04/28/93	0.223	0.019	0.013	0.503
	09/13/93	0.267	0.135	0.067	0.345
	11/30/93	0.140	0.009	0.015	0.133
19	08/28/91	0.014	0.006	0.578	1.193
	09/02/92	0.022	0.015	0.319	0.894
	04/28/93	0.045	0.005	0.118	0.623
	09/13/93	0.061	0.024	0.165	0.719
	11/30/93	0.025	0.012	0.258	0.658
20	09/01/92	ND	ND	ND	ND
	04/28/93	0.003	0.003	0.032	0.325
	09/13/93	ND	ND	ND	0.034
	11/30/93	0.028	0.017	0.130	0.555
21	09/01/92	ND	ND	ND	. ND
	04/28/93	0.033	ND	ND	ND
	09/13/93	0.009	ND	ND	ND
	11/30/93	0.017	0.005	0.005	0.002
22	09/01/92	ND	ND	ND	ND
	04/28/93	ND	ND	ND	ND
	09/13/93	ND	ND	ND	ND
	11/30/93	ND	ND	ND	ND
25	11/29/93	2.373	0.011	0.133	0.345
EFFLUENT	04/28/93	ND	ND	ND	ND
LI LOLINI	12/13/93	0.002	0.002	0.001	0.004
	12/13/33	0.002	0.002	0.001	0.004
INFLUENT	04/28/93	ND	ND	ND	ND
	12/13/93	0.002	0.001	0.002	0.002
NMWQCC	12/24/87	0.010	0.750	0.750	0.620
NMWQCC		0.010	0.750	0.750	0.620

APPENDIX

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

Preservative:

HgCl2

PHASE/TASK:

Date Sampled: Date Received:

11-29-93 11-29-93

PROJECT LOCATION: SAMPLE ID:

Thriftway Refinery MW # 2

Date Analyzed:

12-02-93

SAMPLE NUMBER:

0002

Date Reported:

12-07-93

		I am town when the second seco
ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	2115	2.0
TOLUENE	136	5.0
ETHLYBENZENE	395	2.0
M,P-XYLENE	551	4.0
O-XYLENE	32.5	3.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION: SAMPLE ID:

Thriftway Refinery

SAMPLE NUMBER:

MW # 2 0002

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

11-29-93

Date Received:

11-29-93

Date Analyzed:

12-02-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

BROMOFLUOROBENZENE

90 % 98 % 80-120%

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 2, Thriftway Refinery, #810.

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

Preservative:

HgCl2

PHASE/TASK:

NΑ

Date Sampled:

11-29-93

PROJECT LOCATION: SAMPLE ID:

Thriftway Refinery MW # 6

Date Received: Date Analyzed: 11-29-93 12-02-93

SAMPLE NUMBER:

0003

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	8.2	0.2
TOLUENE	2.0	0.5
ETHLYBENZENE	2.2	0.2
M,P-XYLENE	1.9	0.4
O-XYLENE	ND	0.3

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

Thriftway Refinery

SAMPLE ID:

MW # 6 0003

SAMPLE NUMBER:

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

11-29-93

Date Received:

11-29-93

Date Analyzed:

12-02-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

93 %

80-120%

BROMOFLUOROBENZENE

103 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 6, Thriftway Refinery, #810.

analyst

REVIEW

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PHASE/TASK:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

Thriftway

810

NA

Thriftway Refinery

MW # 7 0004

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-29-93 11-29-93

Date Analyzed:

12-02-93

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	3541	1.0
TOLUENE	971	2.5
ETHLYBENZENE	419	1.0
M,P-XYLENE	1523	2.0
O-XYLENE	395	1.5

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway Refinery

CLIENT NUMBER:

810

PHASE/TASK:

PROJECT LOCATION:

SAMPLE ID:

MW # 7 0004

SAMPLE NUMBER:

Thriftway

Sample Matrix:

Preservative:

WATER

HgCl2

Date Sampled:

11-29-93

Date Received: Date Analyzed: 11-29-93 12-02-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

116 %

80-120%

BROMOFLUOROBENZENE

100 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 7, Thriftway Refinery, #810.

Chaharla

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

SAMPLE ID:

SAMPLE NUMBER:

PROJECT LOCATION:

Thriftway Refinery

MW #8

0005

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-29-93 11-29-93

Date Analyzed:

12-02-93

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	3.4	0.2
TOLUENE	ND	0.5
ETHLYBENZENE	0.4	0.2
M,P-XYLENE	1.0	0.4
O-XYLENE	ND	0.3

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

PROJECT LOCATION:

SAMPLE ID:

0005

SAMPLE NUMBER:

Thriftway Refinery

MW #8

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

11-29-93

Date Received: Date Analyzed: 11-29-93 12-02-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

94 %

80-120%

BROMOFLUOROBENZENE

98 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 8, Thriftway Refinery, #810.

ANALYST Chaharles

REVIEW

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

810

Sample Matrix:

WATER

CLIENT NUMBER:

Preservative:

HgCl2

PHASE/TASK:

NA

Date Sampled:

11-29-93

PROJECT LOCATION:

Date Received:

11-29-93

SAMPLE ID:

MW # 9

Thriftway Refinery

Date Analyzed:

12-02-93

SAMPLE NUMBER:

0006

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.2
TOLUENE	ND	0.5
ETHLYBENZENE	ND	0.2
M,P-XYLENE	ND	0.4
O-XYLENE	ND	0.3

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

Thriftway Refinery

SAMPLE ID:

MW # 9 0006

SAMPLE NUMBER:

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

11-29-93

Date Received: Date Analyzed: 11-29-93 12-02-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

91 %

80-120%

BROMOFLUOROBENZENE

99 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 9, Thriftway Refinery, #810.

- Cu Chalanlang

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PHASE/TASK:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

Thriftway

810

NA

Thriftway Refinery

MW # 10 0007

Preservative:

HgCl2 11-29-93 Date Sampled:

Date Received:

Date Analyzed:

Sample Matrix:

12-02-93

WATER

11-29-93

Date Reported: 12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.2
TOLUENE	ND	0.5
ETHLYBENZENE	ND	0.2
M,P-XYLENE	ND	0.4
O-XYLENE	ND	0.3

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway Refinery

Thriftway

CLIENT NUMBER: PHASE/TASK:

810

PROJECT LOCATION:

SAMPLE ID:

MW # 10 0007

SAMPLE NUMBER:

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

11-29-93

Date Received: Date Analyzed: 11-29-93

Date Reported:

12-02-93 12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

98 %

80-120%

BROMOFLUOROBENZENE

99 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 10, Thriftway Refinery, #810.

THRIFTWAY PROFESSIONAL BUILDING

Chaharla

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

NA

NA NA

CLIENT NUMBER: PHASE/TASK:

NA NA

PROJECT LOCATION: SAMPLE ID: Labor

Laboratory Blank

SAMPLE NUMBER:

1202am.00

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

NA NA

Date Received:

12-02-93

Date Analayzed: Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.2
TOLUENE	ND	0.5
ETHLYBENZENE	ND "	0.2
M,P-XYLENE	ND	0.4
O-XYLENE	ND	0.3

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

SUITE 400

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

NA

CLIENT NUMBER: PHASE/TASK:

NA

PROJECT LOCATION:

NA NA

SAMPLE ID:

Laboratory Blank

SAMPLE NUMBER:

1202am.00

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

NA NA

Date Received: Date Analayzed:

12-02-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

91 %

80-120%

BROMOFLUOROBENZENE

99 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

in Chaharlang

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

PROJECT LOCATION:

CLIENT NUMBER:

SAMPLE ID:

PHASE/TASK:

SAMPLE NUMBER:

NA

MW # 11

810

Thriftway Refinery

8000

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-29-93 11-29-93

Date Analyzed:

12-03-93

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.3
TOLUENE	ND	0.6
ETHLYBENZENE	ND	0.3
M,P-XYLENE	ND	0.6
O-XYLENE	ND	0.3

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway Refinery

810

PHASE/TASK:

NA

0008

PROJECT LOCATION:

CLIENT NUMBER:

SAMPLE ID: MW # 11

SAMPLE NUMBER:

Thriftway

WATER

Sample Matrix: Preservative:

HgCl2

Date Sampled: Date Received: 11-29-93 11-29-93

Date Analyzed:

12-03-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

BROMOFLUOROBENZENE

99 %

80-120%

98 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 11, Thriftway Refinery, #810.

Ch Chaharlang

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

HgCl2

PHASE/TASK:

Preservative:

11-29-93

PROJECT LOCATION:

NA

Date Sampled: Date Received:

11-29-93

SAMPLE ID:

MW # 13

Thriftway Refinery

Date Analyzed:

12-03-93

SAMPLE NUMBER:

0009

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.3
TOLUENE	ND	0.6
ETHLYBENZENE	ND	0.3
M,P-XYLENE	-ND	0.6
O-XYLENE	ND	0.3

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

Thriftway Refinery

SAMPLE ID: SAMPLE NUMBER:

0009

MW # 13

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-29-93

Date Analyzed:

11-29-93 12-03-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

95 %

80-120%

BROMOFLUOROBENZENE

103 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 13, Thriftway Refinery, #810.

analyst

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

PHASE/TASK:

Preservative:

HgCl2

PROJECT LOCATION:

NA

Date Sampled: Date Received: 11-29-93 11-29-93

SAMPLE ID:

MW # 15

Thriftway Refinery

Date Analyzed:

12-03-93

SAMPLE NUMBER:

0010

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.3
TOLUENE	ND	0.6
ETHLYBENZENE	ND	0.3
M,P-XYLENE	ND .	0.6
O-XYLENE	ND	0.3

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION: SAMPLE ID:

Thriftway Refinery MW # 15

SAMPLE NUMBER:

0010

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-29-93 11-29-93

Date Analyzed:

12-03-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

94 %

80-120%

BROMOFLUOROBENZENE

101 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 15, Thriftway Refinery, #810.

Cu Chaharley ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

HgCl2

PHASE/TASK:

NA

Preservative:

PROJECT LOCATION:

Thriftway Refinery

Date Sampled: Date Received: 11-29-93 11-29-93

SAMPLE ID:

MW # 16

Date Analyzed:

12-03-93

SAMPLE NUMBER:

0011

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.3
TOLUENE	ND	0.6
ETHLYBENZENE	2.4	0.3
M,P-XYLENE	0.6	0.6
O-XYLENE	ND	0.3

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

HgCl2

PHASE/TASK:

Preservative:

11-29-93

NA

Date Sampled: Date Received:

11-29-93

SAMPLE ID:

MW # 16

Thriftway Refinery

Date Analyzed:

12-03-93

SAMPLE NUMBER:

PROJECT LOCATION:

0011

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

94 %

80-120%

BROMOFLUOROBENZENE

103 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 16, Thriftway Refinery, #810.

Car Chaharlang

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

Thriftway

Thriftway Refinery

MW # 17

0012

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-29-93 11-29-93

Date Analyzed:

12-03-93

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	21272	15.0
TOLUENE	5285	30.0
ETHLYBENZENE	1063	15.0
M,P-XYLENE	6548	30.0
O-XYLENE	1809	15.0

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

HgCl2

PHASE/TASK:

NA

Preservative:

11-29-93

PROJECT LOCATION:

Date Sampled: Date Received:

11-29-93

SAMPLE ID:

MW # 17

Thriftway Refinery

Date Analyzed:

12-03-93

SAMPLE NUMBER:

0012

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

100 %

80-120%

BROMOFLUOROBENZENE

102 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 17, Thriftway Refinery, #810.

analyst Chaharley

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

CLIENT NUMBER:

810

NΑ

PHASE/TASK: PROJECT LOCATION:

SAMPLE ID:

MW # 25

SAMPLE NUMBER:

Thriftway

Thriftway Refinery

0013

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-29-93 11-29-93

Date Analyzed:

12-03-93

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	2373	1.5
TOLUENE	11.2	3.0
ETHLYBENZENE	133	1.5
M,P-XYLENE	329	3.0
O-XYLENE	16.4	1.5

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

Preservative:

HgCl2

PHASE/TASK:

Date Sampled:

11-29-93

NΑ

Date Received:

11-29-93

SAMPLE ID:

MW # 25

Thriftway Refinery

Date Analyzed:

12-03-93

SAMPLE NUMBER:

PROJECT LOCATION:

0013

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

97 %

80-120%

BROMOFLUOROBENZENE

100 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 25, Thriftway Refinery, #810.

Car Chaharlang

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

NA

NA

CLIENT NUMBER: PHASE/TASK:

NA

PROJECT LOCATION:

NA

SAMPLE ID:

Laboratory Blank

SAMPLE NUMBER:

1203am.00

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

NA NA

Date Received: Date Analayzed:

12-03-93

Date Reported:

12-07-93

	48 NOT STORY OF THE STORY OF TH	
ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.3
TOLUENE	ND	0.6
ETHLYBENZENE	ND	0.3
M,P-XYLENE	ND	0.6
O-XYLENE	ND	0.3

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

NA

CLIENT NUMBER: PHASE/TASK:

NΑ NA

PROJECT LOCATION: NA

SAMPLE ID: SAMPLE NUMBER:

Laboratory Blank 1203am.00 Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

NA NA

Date Received: Date Analayzed:

12-03-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

85 %

80-120%

BROMOFLUOROBENZENE

93 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

Chahalan

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

QULITY CONTROL MATRIX SPIKE RECOVERY EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

CLIENT NUMBER:	810	Preservative:	HgCl2
PHASE/TASK:	NA	Date Sampled:	11-30-93
PROJECT LOCATION:	Thriftway Refinery	Date Received:	11-30-93
SAMPLE ID:	MW # 3	Date Analyzed:	12-03-93
SAMPLE NUMBER:	0014	Date Reported:	12-07-93

Concentration of Spike Added (ug/L) =

20.0

	Sample Result	Spiked Result	Detection Limit	Percent Recovery
Analyte	(ug/L)	(ug/L)	<u>(ug/L)</u>	(%)
Benzene	ND:	19.0	0.3	94
Toluene	ND	19.5	0.6	96
Ethylbenzene	1.1	19.2	0.3	91
p,m-Xylene	0.7	20.3	0.6	98
o-Xylene	ND	19.7	0.3	98

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

Comments:

Ch Chaharley

REVIEW

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

SUITE 400

11028



CHAIN OF CUSTODY RECORD

11028

HO PCH WATER QUALITY LABORATORIES
710 E. 20th Street, Suite 400
Farmington, New Mexico 87401
REMEDIATION Office: (505) 632-3365
Fax: (505) 632-0030

CHAIN OF CUSTODY RECORD

THRIFT DAY \$10 Reference	Client/Project Name		i	Project Location	ion									
Tape No. Matrix Cont. 87£K O 0002 WATER 2 C S 0003 " 2 C O 0005 " 2 C O 0007 " 2 C		018		REFINGI	ez z				ANALYSI	3/PARAMETERS	w			
Cont. BTEX Lab No. Matrix 0 0002- WATER 2- V 5 0003				Tape No.		2	. ,				 	Bom	N/r	
Time Lab No. Matrix 1540	O.	MEN HA	TCH			Cont.	BTEX							
1540 0002 WATER 2 V		Date	Time	Lab No.	Matrix									
		11/29/93	0451	2000	WATER	7	7							
1615 0004		//	5291	€000	//	7	/							
1510 0005 1		11	1615	4000	//	7	/							
1520 0006 2			1510	0005	11	7	7		_					
1440 0007 " 2		1	1520	2000	18	7	/							
1130 0008 1 2 1 1130 0009 1 2 1 1410 0011 1 2 1 Date Time Received by: (Signature) 11-25-73 1630 (L. M. Man. L. A.		//	0441	4000	1	2	\							
1/30 0003 x		N	5841	8000	1	7	/							
1425 0010		"	1130	6000	W	7	1							
Date Time Received by: (Signature) -29-73 630		1	1425	0100	d	7	\					.,		
Time Received by: (Signature) 1630 (L. (Aufan L.) Received by: (Signature) Received by: (Signature)		"	1410	1100	À	7	/					··'/		
1630 (L. M. Mar. L. 1-27-93 Received by: (Signature)				Date	Time	Received	by: (Signati	ure)					Time	
Received by: (Signature) Received by: (Signature)	01	Ý		11-29-93	1630	<u> </u>	J. J.	Jan Jan	}			1-27-93	(630	
Received by: (Signature)		1				Received	by: (Signat	ure)	ا ما				,	
	1				The second secon	Received	by: (Signat	ure)	/					
						,					_			_

11027

WATER QUALITY LABORATORIES

710 E. 20th Street, Suite 400
Farmington, New Mexico 87401
Office: (505) 632-3365
Fax: (505) 632-0030

REMEDIATION

CHAIN OF CUSTODY RECORD

Client/Project Name			Project Location	ion							
THRIFTWAY	018		REFINARY	IRY			ANALYSI	ANALYSIS/PARAMETERS	ËŖS		
Sampler: (Signature)	\		Tape No.		ON.					Remarks	rks
AL CHAHARLANG/RULGN HATCH	RULEN	4 TEH			Cont.	BTEX					
Sample No./ID	Date	Time	Lab No.	Matrix		,					
F1#MW	11/29/93 1555	1555	-2/00	WATEL	7	7					
MW#25	7	1345	5/00	/	7	7					
!											
			. !			_					
Relinquished by: (Signature)	_		Date	Time	Received	Received by: (Signature)	"			Date	Time
le Chahalla	\forall		11-29-93	1630	7	- Cher	mlang		/	11-29-93	(620
Relinquished by: (Signature)					Received	Received by: (Signature)	o				
Relinquished by: (Signature)					Received	Received by: (Signature)					

BIO ECh WATER QUALITY LABORATORIES

710 E. 20th Street, Suite 400

Farmington, New Mexico 87401

REMEDIATION Office: (505) 632-3365

Fax: (505) 632-0030

11027

CHAIN OF CUSTODY RECORD

Client/Project Name			Project Location	tion								
THRIFTWAY	018		REFLUNKY	12 T				ANALYS	ANALYSIS/PARAMETERS	ETERS	.,	
Sampler: (Signature) AL (HAHARLANG)	7000	Hatell	Tape No.		No. Cont.	BTEX					Rem	Remarks
Sample No./ID	Date	Time	Lab No.	Matrix								
七年五万	11/29/93 1555	1555	2/00	WATER	7	7						
MW#25	1	1345	00/3	,	2	7						
								-				
Relinquished by: (Signature)			Date	Time	Received	Receiyed by: (Signature)	ure)	-			Date	Time
- a Guhale	}		11-29-93	1630	3	3	huha	J.			11-29-93	1630
Relinquished by: (Signature)	1	,			Received	Received by: (Signature)	ure)	0				
Relinquished by: (Signature)					Received	Received by: (Signature)	ure)					

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

SAMPLE ID: SAMPLE NUMBER: Thriftway

MW # 3

Thriftway Refinery

0014

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-30-93 11-30-93

Date Analyzed:

12-03-93

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.3
TOLUENE	ND	0.6
ETHLYBENZENE	1.1	0.3
M,P-XYLENE	0.7	0.6
O-XYLENE	ND	0.3

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION: SAMPLE ID:

MW # 3

SAMPLE NUMBER:

Thriftway Refinery

0014

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-30-93 11-30-93

Date Analyzed:

12-03-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

80-120%

BROMOFLUOROBENZENE

94 % 95 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 3, Thriftway Refinery, #810.

Cu Chaharlang

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

Preservative:

HgCl2

PHASE/TASK:

NA

reservative:

11-30-93

PROJECT LOCATION:

NA

Date Sampled: Date Received:

11-30-93

SAMPLE ID:

MW # 4

Thriftway Refinery

Date Analyzed:

12-03-93

SAMPLE NUMBER:

0015

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L) DETECTION LIMIT (ug/L)
BENZENE	- 100	0.3
TOLUENE	_ 5.3	0.6
ETHLYBENZENE	1.3	0.3
M,P-XYLENE	0.6	0.6
O-XYLENE	2.9	0.3

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION: SAMPLE ID:

Thriftway Refinery

SAMPLE NUMBER:

MW # 4

0015

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-30-93 11-30-93

Date Analyzed:

12-03-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

BROMOFLUOROBENZENE

TRIFLUOROTOLUENE

PERCENT RECOVERY

98 %

ACCEPTANCE LIMIT 80-120%

105 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 4, Thriftway Refinery, #810.

Chaharla

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

CLIENT NUMBER:

810

PHASE/TASK:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

Thriftway

NA

Thriftway Refinery

MW # 5

0016

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-30-93 11-30-93

Date Analyzed:

12-03-93

Date Reported:

12-07-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIBRIT (1.6/L)
BENZENE	1.1	DETECTION LIMIT (ug/L) 0.3
TOLUENE	ND	0.6
ETHLYBENZENE	ND	0.3
M,P-XYLENE	ND	0.6
O-XYLENE	ND	0.3

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

Thriftway

Thriftway Refinery

MW # 5 0016

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-30-93 11-30-93

Date Analyzed:

12-03-93

Date Reported:

12-07-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE BROMOFLUOROBENZENE 91 % 99 %

80-120% 80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 5, Thriftway Refinery, #810.

- Chaharley

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

CLIENT NUMBER:

810

PHASE/TASK:

PROJECT LOCATION:

SAMPLE ID:

Thriftway Refinery MW # 18 0017

SAMPLE NUMBER:

Thriftway

Sample Matrix:

WATER

Preservative:

HgC12

Date Sampled:

11-30-93

Date Received: Date Analyzed: 11-30-93 12-06-93

Date Reported:

12-08-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	140	1.5
TOLUENE	8.8	8.0
ETHLYBENZENE	15.3	2.5
M,P-XYLENE	133	8.0
O-XYLENE	ND	3.5

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

PROJECT LOCATION:

Thriftway Refinery

SAMPLE ID:

MW # 18

SAMPLE NUMBER:

NA

0017

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-30-93

Date Analyzed:

11-30-93 12-06-93

Date Reported:

12-08-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

BROMOFLUOROBENZENE

94 %

80-120%

99 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 18, Thriftway Refinary, #810.

THRIFTWAY PROFESSIONAL BUILDING

Chaharle

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK: PROJECT LOCATION:

SAMPLE ID:

Thriftway Refinery MW # 19

SAMPLE NUMBER:

0018

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

11-30-93

Date Received: Date Analyzed: 11-30-93 12-06-93

Date Reported:

12-08-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	24.5	1.5
TOLUENE	11.8	8.0
ETHLYBENZENE	258	2.5
M,P-XYLENE	644	8.0
O-XYLENE	14.2	3.5

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

SAMPLE ID:

Thriftway Refinery

SAMPLE NUMBER:

MW # 19

0018

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-30-93 11-30-93

Date Analyzed:

12-06-93

Date Reported:

12-08-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

97 %

80-120%

BROMOFLUOROBENZENE

102 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 19, Thriftway Refinary, #810.

analyst Chaharlang

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

HgCl2

PHASE/TASK:

NA

Preservative: Date Sampled:

11-30-93

PROJECT LOCATION:

Thriftway Refinery

Date Received:

11-30-93

SAMPLE ID:

MW # 20

Date Analyzed:

12-06-93

SAMPLE NUMBER:

0019

Date Reported:

12-08-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	27.7	1.5
TOLUENE	16.5	8.0
ETHLYBENZENE	130	2.5
M,P-XYLENE	551	8.0
O-XYLENE	5.1	3.5

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION: SAMPLE ID:

Thriftway Refinery

MW # 20 0019

SAMPLE NUMBER:

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-30-93 11-30-93

Date Analyzed:

12-06-93

Date Reported:

12-08-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

103 %

80-120%

BROMOFLUOROBENZENE

105 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 20, Thriftway Refinary, #810.

a Chaharla

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

Sample Matrix:

WATER

CLIENT NUMBER:

810

HgCl2

PHASE/TASK:

NA

Preservative: Date Sampled:

11-30-93

PROJECT LOCATION:

Thriftway Refinery

Date Received:

11-30-93

SAMPLE ID:

MW # 21

Date Analyzed:

12-06-93

SAMPLE NUMBER:

0020

Date Reported:

12-08-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	17.1	0.3
TOLUENE	4.6	1.6
ETHLYBENZENE	5.0	0.5
M,P-XYLENE	2.3	1.6
O-XYLENE	ND	0.7

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

Thriftway Refinery

SAMPLE ID: SAMPLE NUMBER: MW # 21 0020

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-30-93 11-30-93

Date Analyzed:

12-06-93

Date Reported:

12-08-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

96 %

80-120%

BROMOFLUOROBENZENE

96 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 21, Thriftway Refinary, #810.

Cu Chaharla

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

CLIENT NUMBER:

810

PHASE/TASK:

PROJECT LOCATION:

SAMPLE ID: SAMPLE NUMBER: Thriftway

NA

Thriftway Refinery

MW # 22 0021

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 11-30-93 11-30-93

Date Analyzed:

12-06-93

Date Reported:

12-08-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.3
TOLUENE	ND -	1.6
ETHLYBENZENE	ND	0.5
M,P-XYLENE	ND	1.6
O-XYLENE	ND	0.7

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

Thriftway Refinery

SAMPLE NUMBER:

SAMPLE ID:

MW # 22

0021

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

11-30-93

Date Received: Date Analyzed: 11-30-93 12-06-93

Date Reported:

12-08-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

91 %

80-120%

BROMOFLUOROBENZENE

91 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Monitor Well No. 22, Thriftway Refinary, #810.

in Chaharle

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

NA

Sample Matrix:

WATER

CLIENT NUMBER:

NA

PHASE/TASK:

NA

Preservative:

HgCl2

PROJECT LOCATION:

Date Sampled:

NA NA

SAMPLE ID:

NA Laboratory Blank Date Received: Date Analayzed:

12-06-93

SAMPLE NUMBER:

1206am.00

Date Reported:

12-08-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.3
TOLUENE	ND	1.4
ETHLYBENZENE	ND	0.4
M,P-XYLENE	ND	1.3
O-XYLENE	ND	0.6

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

NA

CLIENT NUMBER:

NA

PHASE/TASK: PROJECT LOCATION: NA

SAMPLE ID:

Laboratory Blank

SAMPLE NUMBER:

NA

1206am.00

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

NA NA

Date Received: Date Analayzed:

12-06-93

Date Reported:

12-08-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

100 %

80-120%

BROMOFLUOROBENZENE

104 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

THRIFTWAY PROFESSIONAL BUILDING

Chaharla

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

QULITY CONTROL MATRIX SPIKE RECOVERY EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

CLIENT NUMBER:	810	Preservative:	HgCl2
PHASE/TASK:	NA	Date Sampled:	11-30-93
PROJECT LOCATION:	Thriftway Refinery	Date Received:	11-30-93
SAMPLE ID:	MW # 3	Date Analyzed:	12-03-93
SAMPLE NUMBER:	0014	Date Reported:	12-07-93

Concentration of Spike Added (ug/L) =

20.0

	Sample Result	Spiked Result	Detection Limit	Percent Recovery
Analyte	(ug/L)	<u>(ug/L)</u>	<u>(ug/L)</u>	(%)
Benzene	ND	19.0	0.3	94
Toluene	ND	19.5	0.6	96
Ethylbenzene	1.1	19.2	0.3	91
p,m-Xylene	0.7	20.3	0.6	98
o-Xylene	ND .	19.7	0.3	98

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

Comments:

ANALYST

REVIEW

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

LABORATORY OFFICE (505) 632-3365

SUITE 400 FAR

FARMINGTON, NEW MEXICO 87401

FAX (505) 632-3365

11029

BioTech water quality laboratories

710 E. 20th Street, Suite 400
Farmington, New Mexico 87401
Office: (505) 632-3365
Fax: (505) 632-0030

REMEDIATION

CHAIN OF CUSTODY RECORD

Client/Project Name			Project Location	on								_
THRIFTWAY 810	0		REFINARY	4			A	VALYSIS/P.	ANALYSIS/PARAMETERS			
Sampler: (Signature)			Tape No.		No.	-				<u> </u>	Remarks	
AL CHAHARLANG/E	EUGENE THAMOS	HAMOS			Cont.	втех						
	Date	Time	Lab No.	Matrix			-					
MW #3	11/30/93 1015		4100	WATCA	7	7						
MW #4	1	1000	0015	7	7	7						
AW #5	,	0460	9)00	7	7	7						
MW #18	1	1028	4100	À	7	7						
MW #19	1	8760	8/00	/	4	7						
MW #20	7	0830	900	7	٦	1						
MU # 2	*	0855	0200	1	٦	7						
MW #22	7	0480	0021	1	7	/						
Relinquished by: (Signature)			Date	Time	Received	Received by: (Signature)	(e			Date	Time	
- Or Charlanda	۶,		11-30-93 1110	0111	E	Char	lah	1-		11-30-93	0111	
Rellnauished by: (Signature)					Received	Received by: (Signature)	(e					
Relinquished by: (Signature)					Received	Received by: (Signature)	(e					
												1

san juan repro Form 578-97

11029



CHAIN OF CUSTODY RECORD

Project Name			Project Location	ion							
810			REFINARY	27				ANALYSIS/PARAMETERS	ARAMETERS		, to
			Tape No.		o N			,			Remarks
36NE	1	EUGENE THAMOS				BTEX				, *	7.
Date	ø)	Time	Lab No.	Matrix							
11/30/93	193	5/0/	4100	WATCH	Ч	>					
*		1000	0015	7	7	7					
Ņ		0460	2100	ν'	7	/					
7		8201	4100	*	7	1					
1		8260	8/00	V	7	/					
7		0830	0019	7	2	7					
1		0855	0200	1	7	/					
3		0280	1200	1	4	/					
						-					
										?	
			Date	Time	Received	Received by: (Signature)	(e)			Date	Time
} c-\			11-30-93	1110	3	- Ray	hah	F		11-30-93	3 1110
					Received	Received-by(<u>Sig</u> nature)	(e.		į.		
					Received	Received by: (Signature)	(ә.				
											san juan repro Form 578-97

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

SAMPLE ID: SAMPLE NUMBER: Thriftway Refinery

Effluent 0031

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled: Date Received: 12-13-93 12-13-93

Date Analyzed:

12-13-93

Date Reported:

12-20-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	2.1	0.2
TOLUENE	1.6	0.4
ETHLYBENZENE	1.3	0.2
M,P-XYLENE	2.9	0.3
O-XYLENE	0.9	0.2

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

SAMPLE ID:

NA

PROJECT LOCATION:

SAMPLE NUMBER:

Thriftway Refinery Effluent

0031

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

12-13-93

Date Received:

12-13-93

Date Analyzed:

12-13-93

Date Reported:

12-20-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

99 %

80-120%

BROMOFLUOROBENZENE

98 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Efflunet from stripper system, Thriftway Refinary, #810.

analyst Chaharlong

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

Thriftway

Thriftway Refinery

Influent 0032

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

12-13-93

Date Received: Date Analyzed: 12-13-93 12-13-93

Date Reported:

12-20-93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	1.5	0.2
TOLUENE	0.9	0.4
ETHLYBENZENE	1.7	0.2
M,P-XYLENE	1.9	0.3
O-XYLENE	0.4	0.2

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

Thriftway

CLIENT NUMBER:

810

PHASE/TASK:

NA

PROJECT LOCATION:

Thriftway Refinery

SAMPLE ID:

Influent 0032

SAMPLE NUMBER:

Sample Matrix:

WATER

Preservative:

HgC12

Date Sampled:

Date Received:

12-13-93 12-13-93

Date Analyzed:

12-13-93

Date Reported:

12-20-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

96 %

80-120%

BROMOFLUOROBENZENE

102 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS: Influnet from stripper system, Thriftway Refinary, #810.

Ca Chaharlang

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

EPA METHOD 8020 PURGEABLE AROMATICS

CLIENT:

CLIENT NUMBER: PHASE/TASK:

NA NA

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

NA

NA

Laboratory Blank

1213am.00

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

NA NA

Date Received: Date Analayzed:

12-13-93

Date Reported:

12-20-93

ANALYTE CONC	ENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	0.2
TOLUENE	ND	0.4
ETHLYBENZENE	ND	0.2
M,P-XYLENE	ND	0.3
O-XYLENE	ND	0.2

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGEABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

NA

CLIENT NUMBER:

NA

PHASE/TASK: **PROJECT LOCATION:** NA

SAMPLE ID:

Laboratory Blank

SAMPLE NUMBER:

NA

1213am.00

Sample Matrix:

WATER

Preservative:

HgCl2

Date Sampled:

NA

Date Received:

NA

Date Analayzed:

12-13-93

Date Reported:

12-20-93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

TRIFLUOROTOLUENE

106 %

80-120%

BROMOFLUOROBENZENE

96 %

80-120%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURGEABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

a Chalanting

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

BIO ECh WATER QUALITY LABORATORIES
710 E. 20th Street, Suite 400
Farmington, New Mexico 87401
REMEDIATION Office: (505) 632-3365
Fax: (505) 632-0030

11033

CHAIN OF CUSTODY RECORD

Client/Project Name			Project Location	ion	ļ						
Thinky 810			Rying	Refine, Stonfeld	AN		AN	\LYSIS/PA	ANALYSIS/PARAMETERS		
Sampler: (Signature) #L CHAHARLANG			Tape No.		No. Cont.	876×				Rem	Remarks
Sample No./ID	Date	Time	Lab No.	Matrix							
EFFLUEN T	12-13-33	(310	15 00	WATER	2	7					
INFLUENT	7	1320	0032	1	7	7					
Relinquished by: (Signature)	-		Date	Time	Received	Received by: (Signature)	`			Date	Time
Ch Chahan	lag		12-13-93	1330	7	w Th	apal	1		12-18-93 1330	1330
Relinquished by: (Signature)	•				Received	Received by: (Signature)		0			
Relinquished by: (Signature)		:			Received	Received by: (Signature)					

san juan repro Form 578-97

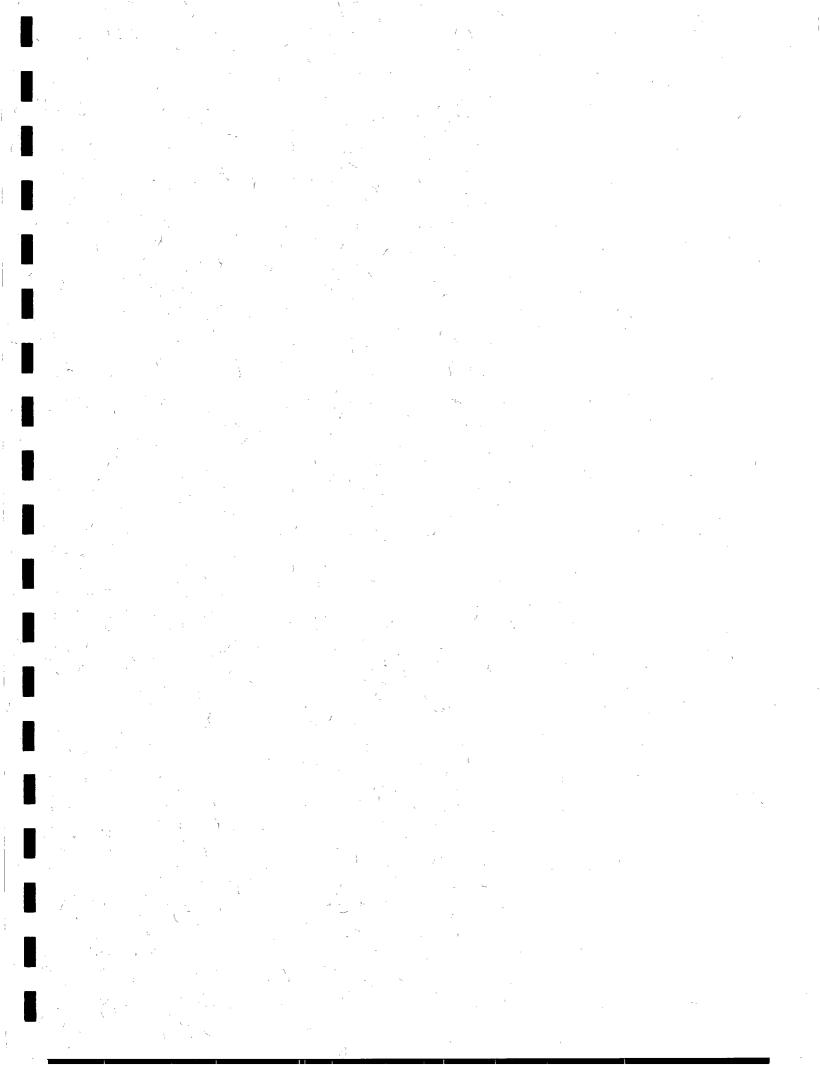
11033

BIOTECH WATER QUALITY LABORATORIES
710 E. 20th Street, Suite 400
Farmington, New Mexico 87401
REMEDIATION Office: (505) 632-3365
Fax: (505) 632-0030

CHAIN OF CUSTODY RECORD

Client/Project Name			Project Location	ion								
Thuffy 810	1		Kymen	Show feeled	¥ ?		:	ANALYSI	ANALYSIS/PARAMETERS	TERS		
Sampler: (Signature)			Tape No.	Tape No. No. Cont.		×918					Remarks	ırks
Sample No./ID	Date	Time	Lab No.	Matrix								
EFFLUED T	12-13-13 1310	1310	15 00	WATER	7	7						
INFLUENT	<i>'</i>	1320	0032	*	7	1						
		i I										
						_						
						_						
Relinquished by: (Signature)	V		Date	Time	Received	Received by: (Signature)	ure)	3			Date	Time
I have	the same of		12-13-93	1330		a Than	haha	Len	. \		12-13-73 1330	330
Relinquished by: (Signature)	ø				Received	Received by: (Signature)	ure)	0				
Relinquished by: (Signature)					Received	Received by: (Signature)	ure)					

san juan repro Form 578-97



BIOTECH REMEDIATION INC.

QUARTERLY MONITORING REPORT THRIFTWAY REFINERY 626 COUNTY ROAD 5500 BLOOMFIELD, NEW MEXICO, 87410

PREPARED FOR THE
NEW MEXICO OIL CONSERVATION DIVISION
MR. WILL OLSEN, PROJECT MANAGER

SEPTEMBER 20, 1993

QUARTERLY MONITORING REPORT THRIFTWAY REFINERY 626 COUNTY ROAD 5500 BLOOMFIELD, NEW MEXICO, 87410

PREPARED FOR THE NEW MEXICO OIL CONSERVATION DIVISION MR. WILL OLSEN PROJECT MANAGER

SEPTEMBER 20, 1993

BY

BIOTECH REMEDIATION INC. 710 EAST 20TH ST., SUITE 400 FARMINGTON, NEW MEXICO, 87401

PREPARED BY

CHRIS HOLLANDSWORTH

ENVIRONMENTAL SCIENTIST

REVIEWED BY

KEN SINKS, Chem E. P.E. SENIOR SCIENTIST/ENGINEER

810\QMR009203

TABLE OF CONTENTS

- 1.0 INTRODUCTION
- 2.0 QUARTERLY SUMMARY OF SITE ACTIVITIES
- 3.0 SUMMARY OF GROUND WATER ELEVATION DATA
- 4.0 SUMMARY OF PHASE SEPARATED PRODUCT CONDITIONS
- 5.0 SUMMARY OF GROUND WATER CHEMISTRY
- 6.0 DISCUSSION / RECOMMENDATIONS

FIGURES

- 1 GROUND WATER ELEVATION MAP
- 2 PHASE SEPARATED PLUME MAP
- 3 BENZENE PLUME MAP

TABLES

- 1 GROUND WATER MONITORING DATA
- 2 SUMMARY OF PHASE SEPARATED PRODUCT MEASUREMENTS
- 3 SUMMARY OF LABORATORY ANALYSIS DATA

APPENDICES

A ANALYTICAL LABORATORY REPORT FORMS

1.0 INTRODUCTION

The purpose of this report is to update the data base for Thriftway Refinery, through September 1993. BioTech Remediation, Inc., submits this monitoring and well update on behalf of Thriftway Marketing Corp., pursuant to the requirements of the New Mexico Oil Conservation Division. This report discusses the work performed at the site during May, June, July and August 1993, and is compiled in compliance with the terms of the Thriftway Refinery Ground Water Discharge Plan GW-55.

2.0 QUARTERLY SUMMARY OF SITE ACTIVITIES

Site monitoring was performed on September 13th and 14th, 1993. During this quarterly site visit the following activities were performed:

- Water level gauging
- Sample of monitoring wells
- Free product measurements

The descaling and defouling program for the air stripper system, instituted by Thriftway, has been on-going. The system was acidized four (4) times in the past four (4) months. After each acidation the operation of the system was restored to an acceptable level. The injection pump has continued to operate with minimal interruption during the past four (4) months.

3.0 SUMMARY OF GROUND WATER ELEVATION DATA

Table 1 (attached) summarizes all ground water elevation data, to date, for the refinery. The most recent comprehensive ground water elevation data, collected September 13th and 14th, 1993, is presented in the Ground Water Elevation Map on the attached Figure 1. The field data was gathered using an ORS air/water interface probe with a 100' tape.

4.0 SUMMARY OF PHASE SEPARATED PRODUCT CONDITIONS

Free product was found in monitoring wells MW-1, 12 and 14. The amounts of free product taken from the monitoring wells are shown in **Table 2**. The current phase separated product plume is indicated in **Figure 2**.

The phase separated product was measured in a transparent bailer and the amount of free product recorded in feet (see **Table 2**). The product and water was disposed of in the refinery oily sewer system. The free phase hydrocarbon is separated from the contaminated water in the waste water holding tank. The free hydrocarbon is pumped off and stored, for later processing, and the contaminated water is stripped of dissolved hydrocarbon in the waste water air stripper tank and then evaporated in the refinery waste water system.

5.0 SUMMARY OF GROUND WATER CHEMISTRY DATA

Table 3 summarizes all ground water quality data collected to date for the refinery. Appendix A contains the laboratory reports for the current survey. Ground water samples for analysis were collected September 13th and 14th, 1993, from all monitoring wells not containing free hydrocarbon.

Ground water from each of the above wells was analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX). The extent of the dissolved phase ground water plume at this site (based upon the regulated benzene standard of 0.01 mg/l) is shown in Figure 3.

The samples were gathered using disposable bailers. New cord was used on each bailer to further insure no cross contamination of wells occurred. Three (3) well volumes were removed whenever possible. If the well recharged slowly, then the water from the last bail was used for analysis. The samples were placed in 40 ml vials previously prepared at the lab with two (2) or three (3) drops of HgCl_2 solution. The samples were all marked with their respective location, date, time of sampling and by whom sampled. The samples were then transported on ice to the BioTech Water Quality Laboratory. A chain of custody record accompanied the samples and is included with the laboratory analysis reports.

6.0 DISCUSSION / RECOMMENDATIONS

The ground water recovery system does not appear to be maintaining hydraulic capture of the dissolved phase and phase separated product plumes. This conclusion is based on the calculated ground water contour map (no depression of the ground water table), Figure 1. However, the plume does not appear to be growing. This may be due to the intercept/recovery system that is operating. Thriftway Marketing will continue quarterly sampling and monitoring of the site as well as routine maintenance of the system.

During the past quarter there was a gasoline spill at the refinery. A report was filed with the OCD on the spill, however, because of the level of contamination, the project was given to Mr. Ed Horst's group at the Hazardous Waste Management section. Since that initial reporting Mr. John M. Tymkowych, Hazardous Waste Inspector, has visited the site and taken pictures. During the visit, Mr. Tymkowych, stated that we would be receiving a packet of material to fill out and file. To date we have not received this information.

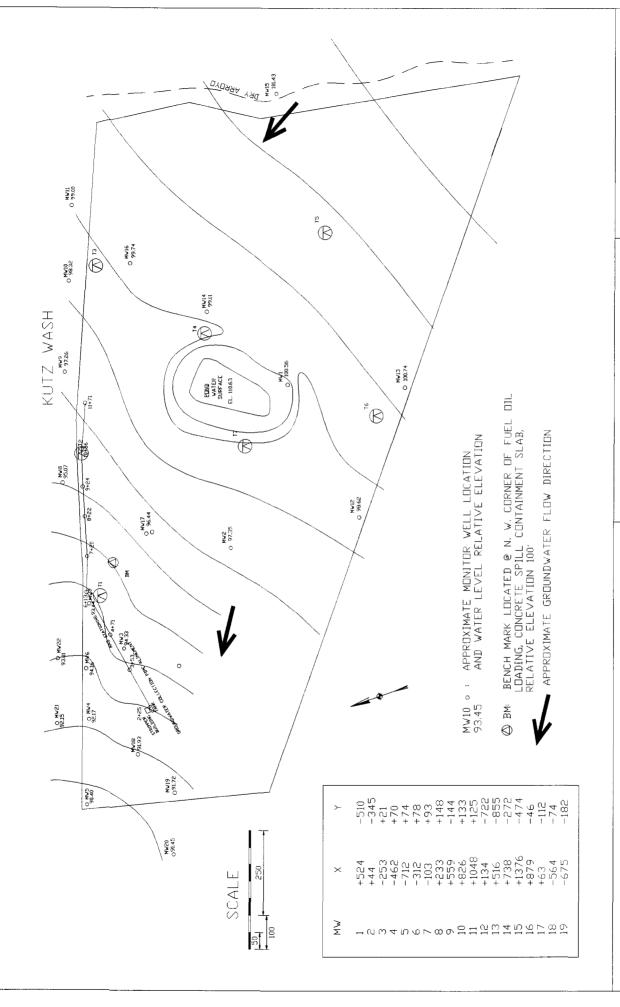
A review of the benzene contour map (See figure 3) shows no appreciable increase in the plume size, however, there does seem to be a increase in the benzene content in MW-4, MW-6 and MW-18 over the past 18 months. This increase is believed to be a side affect from the collection trench. The water contour map (See figure 1) seems to indicate water movement on site in the area of the collection trench. This could explain the increase in hydrocarbon

in the monitor wells.

The free product level in MW-12 was a surprise. Two (2) feet of free product was found after almost a year where only a trace had been found. BioTech will continue to monitor the activity in this well while it tracks information on the June 1993 gasoline spill from tank 23.

This report of the operation and maintenance of the site remediation system at the Thriftway Refinery is provided to comply with the Oil Conservation Division requirements and the Site Ground Water Discharge Plan GW-55.

FIGURES

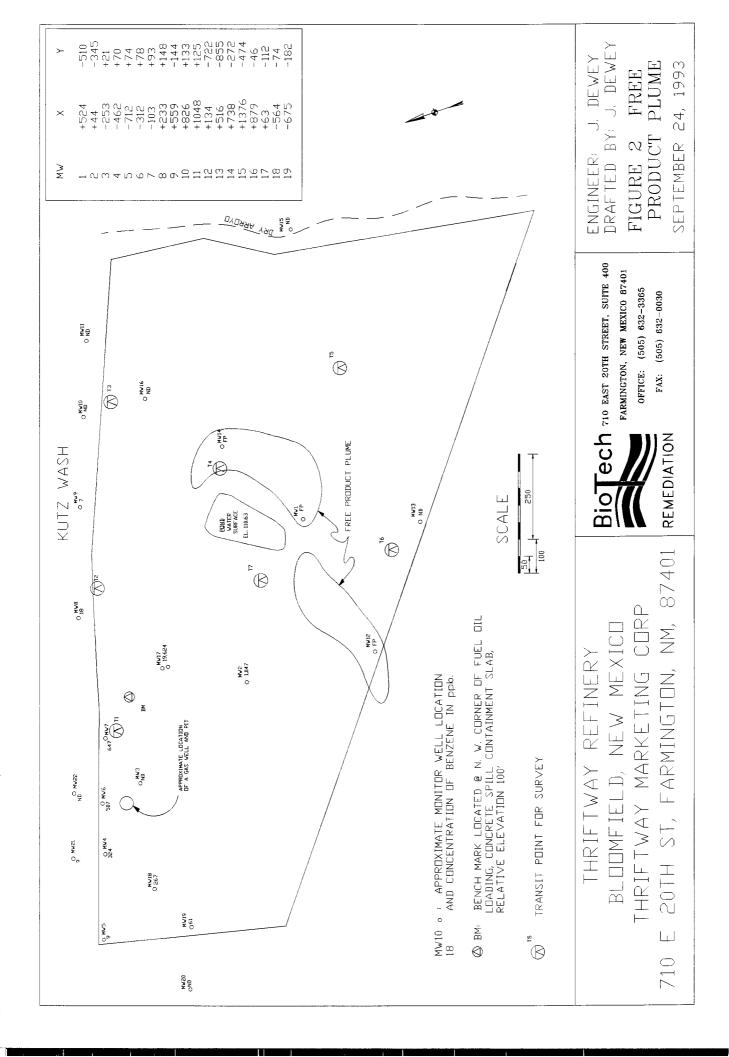


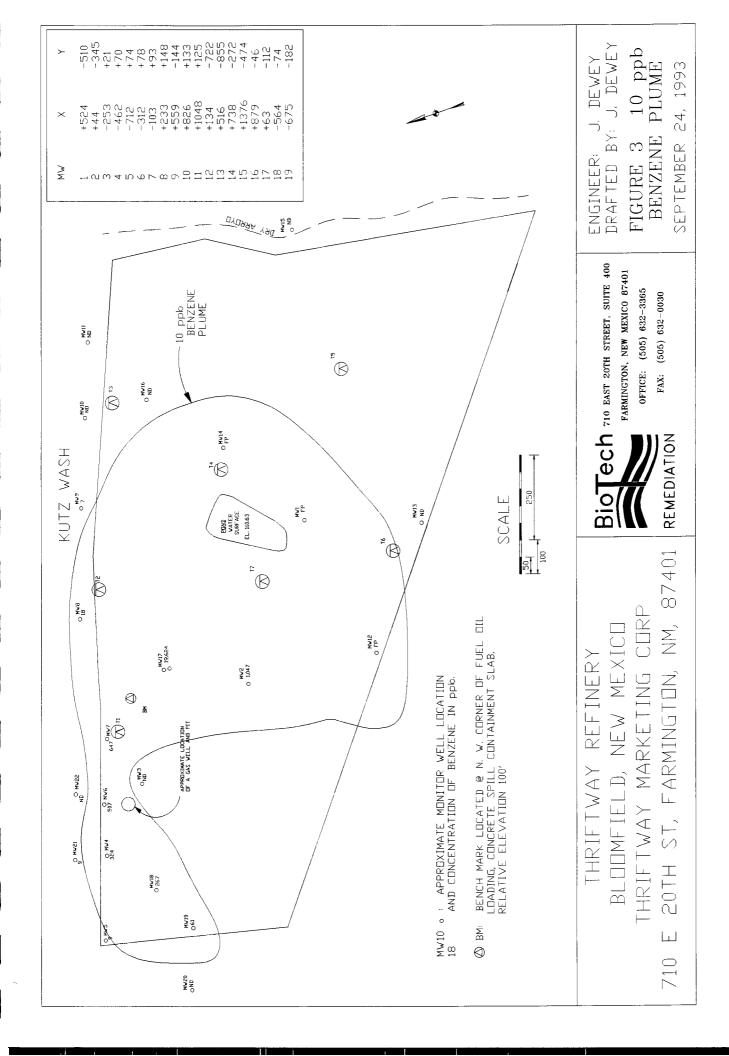
87401 CORP Σ Ζ NEW MEXICO REFINERY 20TH ST, FARMINGTON, THRIFTWAY MARKETING THRIFTWAY BLOOMFIELD, ليا

ech 710 EAST 20TH STREET, SUITE 400 FARMINGTON, NEW MEXICO 87401 OFFICE: (505) 632-3365 FAX: (505) 632-0030 REMEDIATION

DRAFTED BY: J. DEWEY LEVEL CONTOUR MAP DEWEY WATER FIGURE 1 ENGINEER

SEPTEMBER 24, 1993





TABLES

TABLE 1
THRIFTWAY REFINERY, BLOOMFIELD, NM
GROUNDWATER MONITORING DATA

WELL#	TOP OF PIPE ELEVATION	DATE	TIME		ATER LEVEL ELEVATION (feet)
1	114.08	08/28/91		12.67	101.41
•	111.00	09/02/92	13:15	14.00	100.08
		04/28/93	10:45	12.77	101.31
			10:45		
		09/14/93		13.52	100.56
2	107.62	08/28/91		10.31	97.31
		08/31/92	13:07	10.25	97.37
		04/28/93	10:25	9.24	98.18
		09/14/93	, , , ,	10.27	97.35
3	96.28	08/28/91		3.67	92.61
		09/01/92	12:45	2.24	94.04
		04/28/93	10:10	2.01	94.27
		09/14/93		1.95	94.33
4	95.82	08/28/91		4.31	91.51
		09/01/92	12:15	3.78	92.04
		04/28/93	9:50	3.30	92.52
		09/13/93		3.65	92.17
5	94.66	08/28/91		4.43	90.23
		09/01/92	12:00	4.20	90.46
		04/28/93	9:45	3.64	91.02
		09/13/93		4.26	90.40
6	96.31	08/28/91		3.68	92.63
_		09/01/92	12:30	2.63	93.68
		04/28/93	10:00	2.44	93.87
		09/13/93	10.00	2.15	94.16
7	96.79	08/28/91		3.35	93.44
		09/01/92		WELL NOT FO	
		04/28/93		WELL NOT FO	DUND
		09/14/93		5.15	
8	97.04	08/28/91		2.83	94.21
		09/02/92	14:50	2.75	94.29
		04/28/93	11:15	1.95	95.09
		09/14/93		1.97	95.07
9	100.16	08/28/91		3.42	96.74
		09/02/92	14:45	3.50	96.66
		04/28/93	11:25	2.87	97.29
		09/14/93		2.90	97.26
10	101.55	08/28/91		3.50	98.05
		09/02/92	15:05	3.50	98.05
		04/28/93	11:35	3.02	98.53
		09/14/93		3.23	98.32

TABLE 1
THRIFTWAY REFINERY, BLOOMFIELD, NM
GROUNDWATER MONITORING DATA

WELL#	TOP OF PIPE ELEVATION	DATE	TIME	WATER LEVEL	WATER LEVEL ELEVATION
44	400.00	00/00/04		(feet)	(feet)
11	103.63	08/28/91		4.60	99.03
		09/02/92	15:15	4.65	98.98
		04/28/93	11:45	4.22	99.41
		09/14/93		4.63	99.00
12	111.11	08/28/91		12.51	98.62
		08/31/92	13:30	13.67	97.44
		04/28/93	9:10	11.50	99.61
		09/14/93		15.39	95.72
13	117.12	08/28/91		16.24	100.88
		09/02/92	13:50	16.25	100.87
		04/28/93	9:00	15.77	101.35
		09/14/93		16.38	100.74
14	111.94	08/28/91		11.33	100.61
		09/02/92	14:00	13.00	98.94
		04/28/93	10:55	11.34	100.60
		09/14/93	10.00	12.83	99.11
15	114.53	08/28/91		12.58	101.95
		09/03/92	8:00	13.05	101.48
		04/28/93	11:55	12.57	101.96
		09/14/93		13.10	101.43
16	107.64	08/28/91		8.28	99.36
		09/02/92	14:25	8.45	99.19
		04/28/93	11:05	7.90	99.74
		09/14/93		LEVEL NOT	
4	100.01		·		
17	100.84	08/28/91		5.10	95.74
		08/31/93	12:44	4.65	96.19
		04/28/93	10:35	3.35	97.49
		09/14/93		4.40	96.44
18	94.04	08/28/91		3.21	90.83
		09/01/92	11:51	2.39	91.65
		04/28/93	9:35	2.14	91.90
		09/13/93		2.11	91.93
19	93.64	08/28/91		2.90	90.23
,-		09/02/92	11:30	2.41	91.23
		04/28/93	9:25	2.05	91.59
		09/13/93	0.20	1.92	91.72
20	96.01	09/01/92	13:05	3.85	92.16
20	00.01	04/28/93	8:30	4.18	91.83
		09/13/93	0.50	4.16	91.45
		09/13/93		4.00	91.40

TABLE 1
THRIFTWAY REFINERY, BLOOMFIELD, NM
GROUNDWATER MONITORING DATA

	WELL#	TOP OF PIPE ELEVATION	DATE	TIME	WATER LEVEL (feet)	WATER LEVEL ELEVATION (feet)
_	21	94.34	09/01/92 04/28/93 09/13/93	13:20 8:40	3.97 2.27 2.19	90.37 92.07 92.15
	22	97.51	09/01/92 04/28/93 09/13/93	13:30 8:50	3.34 4.44 4.50	94.17 93.07 93.01

810\QMRTABL1

TABLE 2
SUMMARY OF PHASE SEPERATED PRODUCT MEASUREMENTS
THRIFTWAY REFINERY
BLOOMFIELD, NEW MEXICO

WELL	DATE	THICKNESS (in feet)	LITERS OF HYDROCARBON RECLAIMED
1	10/14/92 04/28/93 09/14/93	TRACE 0.02 0.01	
2	10/14/92 04/28/93 09/14/93	TRACE ND ND	
6	10/14/92 04/28/93 09/13/93	TRACE TRACE ND	
12	10/14/92 04/28/93 09/14/93	TRACE TRACE 2.00	
14	10/14/92 04/28/93 09/14/93	1.58 0.12 0.50	
17	10/14/92 04/28/93 09/14/93	TRACE TRACE ND	

ND - NON-DETECT

810\QMRTABL2

TABLE 3
SUMMARY OF LABORATORY ANALYSIS DATA
THRIFTWAY REFINERY
BLOOMFIELD , NEW MEXICO
Concentrations in mg/L

	CALCIUM 92.40	CALC			06.66							ID 14.00			D 86.70			D 105.40) 161.00	
	LEAD 0.02	Ž	2		QN			Q				QN			Q			QN			QN	
	MANGANESE 9.10 34.20				17.50			10.90			3.40		12.90		26.40		33.10					
	IRON 24.40	0.40	2		5.90			5.43				0.063			1.21			0.25			4.00	
Concentrations in mg/L	XYLENES 5.137	0 972	7 600	0.794	0.001	0.108 ON	0.004	QN	0.056	0.329	0.20	0.001	0.026	0.037	0.235	0.230	0.319	3.343		0.691	0.017	S
Concentrate	OLUENE ETHYLBENZENE 2.352 0.635 PRODUCT FOUND IN WELL PRODUCT FOUND IN WELL	FOUND IN WELL	FOUND IN WELL	0.487	0.002	0.010 ON	Q	Q	0.017	0.039	5	O C	0.004	900.0	0.082 0.082	0.094 0.094	0.135	0.375		0.168	0.002	QN .
	TOLUENE E 2.352 FREE PRODUCT FG FREE PRODUCT FG		FREE PRODUCT FO	0.245	0.004	0.004 ON	Q	Q	0.007	0.004	0.02	0.002	0.033	0.021	0.006	0.036	0.078	6.013 MOT FOUND	WELL NOT FOUND	0.197	0.017	QN .
	BENZENE 4.321 F	3 332		1.047	0.013	0.018 ND	Q	900.0	0.005	0.588	130.0		0.014 0.014	0.00	0.315	0.427	0.507	35.037		0.647	0.010	ON O
	DATE 08/28/91 09/02/92 04/28/93	09/14/93	08/31/92	09/14/93	08/28/91	09/01/92 04/28/93	09/14/93	08/28/91	09/01/92	04/28/93		08/28/91	04/28/93	09/13/93	08/28/91	04/28/93	09/13/93	08/28/91	04/28/93	09/14/93	08/28/91	04/28/93
	WELL#	~	I		က			4				5			9			7			∞	

TABLE 3
SUMMARY OF LABORATORY ANALYSIS DATA
THRIFTWAY REFINERY
BLOOMFIELD , NEW MEXICO
Concentrations in mg/L

MANGANESE LEAD CALCIUM	50.60 ND 196.20	41.60 ND 195.30	!	37.40 ND 207.40				
	0.89	2.01	Q.		170.80	170.80	170.80 2.41	2.41 OND ND
ENZENE XYLENES	0.020 0.018 ND 0.006	0.013 0.009 ND	0.002 ON	20	ON ON 0.517	ON O.006 O.003 O.003 ON ON ON	ON O.006 0.003 0.003 0.003 0.000	0.00 0.003 0.003 0.003 0.0013 0.003 0.003 0.003
ETHYLBENZENE	0.002 0.030 ND 0.024	0.00 0.001 ND ON	0. N O. ON	Q N	ND ND ND FOUND IN WELL 9 0.180	ND	FOUND IN WELL O.180 FOUND IN WELL O.10 FOUND IN WELL FOUND IN WELL	ND -OUND IN WELL 0.180 -OUND IN WELL ND
TOLUEN	0.016 0.021 ND 0.015	0.009 0.005 ON ON		QN N	NE FREE PRODUCT 0.086			
BENZENE	0.005 0.010 ND 0.007	0.003 0.003 0.007 0.00	999	Q				
DATE	08/28/91 09/02/92 04/28/93 09/14/93	08/28/91 09/02/92 04/28/93 09/14/93	08/28/91 09/02/92 04/28/93	09/14/93	09/14/93 08/28/91 08/31/92 04/28/93 09/14/93	09/14/93 08/28/91 08/31/92 04/28/93 09/14/93 08/28/91 09/02/92 04/28/93	09/14/93 08/28/91 09/14/93 09/02/92 04/28/93 09/02/92 04/28/93 09/02/92 04/28/93	09/14/93 08/28/91 08/28/93 09/14/93 09/02/92 04/28/93 09/14/93 09/02/92 04/28/93 09/14/93 09/14/93 09/14/93
WELL #	တ	10	=		12	2 2	5 5 4	5 E 4 5

TABLE 3
SUMMARY OF LABORATORY ANALYSIS DATA
THRIFTWAY REFINERY
BLOOMFIELD , NEW MEXICO
Concentrations in mg/L

WELL #	DATE	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	RON	MANGANESE	LEAD	CALCIUM
17	08/28/91	25.660	21.453	1.074	•	3.59	38.30	00.0	144.60
	08/31/93	28.453	23.682						
	04/28/93	23.424	22.17						
	09/14/93	19.624	19.347		12.481				
18	08/28/91	0.036	0.003			7.13	8.60	Q	38.80
	09/01/92	0.047	0.01	0 0.014	0.171				
	04/28/93	0.223	0.019						
	09/13/93	0.267	0.135						
19	08/28/91	0.014	0.006			6.62	21.00	Q	67.80
	09/02/92	0.022	0.015	5 0.319	0.894		l ! !	1	
	04/28/93	0.045	0.005						
	09/13/93	0.061	0.024						
20	09/01/92	2	QN	QN	Q	50.70	49.80	0.147	323.00
	04/28/93	0 003	0.003						
	09/13/93	QN	QN	QN	0.034				
21	09/01/92	QN	QN			49.80	43.70	0.078	199.00
	04/28/93	0.033	Ī		Q				
	09/13/93	600.0	Q						
22	09/01/92	Q	Q		Q	47.10	62.00	0.058	407.00
	04/28/93	Q	Z	QN QN					
	09/13/93	Q N	Z						
EFFLUENT	04/28/93	Q	QN	QN Q	QN				
INFLUENT	04/28/93	Q	QN	QN a	QZ				
NMWQCCR	12/24/87	0.010	0.750	0.750	0.620	_	0.2	0.2	
ND - NON-DETECT	ETECT								

APPENDIX A

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION: SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

810

THRIFTWAY REFINERY BLOOMFIELD, NEW MEXICO

MONITOR WELL #2

W0209143

SAMPLE MATRIX:

PRESERVATIVE:

HgCl2

WATER

REPORT DATE: DATE SAMPLED: 09/22/93 09/14/93

DATE RECIEVED: DATE ANALYZED: 09/14/93 09/17/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	1047.0	100.0
TOLUENE	245.0	100.0
ETHLYBENZENE	487.0	100.0
M,P-XYLENE	478.0	100.0
O-XYLENE	316.0	100.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

01810

PROJECT NAME:

THRIFTWAY REFINERY **BLOOMFIELD, NEW MEXICO**

SAMPLE ID:

MONITOR WELL #2

SAMPLE NUMBER:

PROJECT LOCATION:

W0209143

SAMPLE MATRIX:

WATER

PRESERVATIVE:

HgCl2 09/22/93

REPORT DATE: DATE SAMPLED:

09/14/93

DATE RECIEVED:

09/14/93

DATE ANALYZED:

09/17/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

101.1 %

85-115%

2-BROMO-1-CHLOROPROPANE

104.2 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

REVIEW

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

CLIENT NUMBER:

810

WATER

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

HgCl2 09/22/93

SAMPLE ID:

BLOOMFIELD, NEW MEXICO

REPORT DATE: 09/14/93

MONITOR WELL #3

DATE SAMPLED: DATE RECIEVED: 09/14/93

SAMPLE NUMBER:

W0309143

DATE ANALYZED:

SAMPLE MATRIX:

PRESERVATIVE:

09/16/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	4.0	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

SUITE 400

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

01810

WATER

THRIFTWAY REFINERY

HgCl2

PROJECT NAME: PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

09/22/93 09/14/93

SAMPLE ID:

MONITOR WELL #3

DATE SAMPLED: DATE RECIEVED:

SAMPLE MATRIX:

PRESERVATIVE:

REPORT DATE:

09/14/93

SAMPLE NUMBER:

W0309143

DATE ANALYZED:

09/16/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

104.8 %

85-115%

2-BROMO-1-CHLOROPROPANE

110.7 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

SUITE 400

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

WATER

CLIENT NUMBER:

810

PROJECT NAME:

PROJECT LOCATION:

THRIFTWAY REFINERY

HgCl2

BLOOMFIELD, NEW MEXICO

REPORT DATE: 09/22/93 09/13/93 DATE SAMPLED:

SAMPLE ID:

MONITOR WELL #4

DATE RECIEVED:

SAMPLE MATRIX:

PRESERVATIVE:

09/13/93

SAMPLE NUMBER:

W0409133

09/17/93 DATE ANALYZED:

garinasa musa pad Magamatan		
ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	324.0	10.0
TOLUENE	21.0	10.0
ETHLYBENZENE	51.0	10.0
M,P-XYLENE	201.0	10.0
O-XYLENE	86.0	10.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

01810

WATER

HgCl2

PROJECT NAME: PROJECT LOCATION: THRIFTWAY REFINERY

09/22/93

SAMPLE ID:

BLOOMFIELD, NEW MEXICO

DATE SAMPLED:

09/13/93

MONITOR WELL #4

DATE RECIEVED:

SAMPLE MATRIX:

PRESERVATIVE:

REPORT DATE:

09/13/93

SAMPLE NUMBER:

W0409133

DATE ANALYZED:

09/17/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

109.7 %

85-115%

2-BROMO-1-CHLOROPROPANE

102.3 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

Un that

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

810

PRESERVATIVE:

HgCl2

PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE:

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

DATE SAMPLED:

09/22/93 09/13/93

SAMPLE ID:

MONITOR WELL #5

DATE RECIEVED: DATE ANALYZED: 09/13/93 09/16/93

SAMPLE NUMBER:

W0509133

ANALYTE BENZENE	9.0 CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L) 1.0
TOLUENE	21.0	1.0
ETHLYBENZENE	6.0	1.0
M,P-XYLENE	25.0	1.0
O-XYLENE	12.0	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

PROJECT LOCATION:

01810

PROJECT NAME:

THRIFTWAY REFINERY

SAMPLE ID:

BLOOMFIELD, NEW MEXICO

SAMPLE NUMBER:

MONITOR WELL #5 W0509133

SAMPLE MATRIX:

WATER

PRESERVATIVE:

HgCl2

REPORT DATE:

09/22/93 09/13/93

DATE SAMPLED: DATE RECIEVED:

09/13/93

DATE ANALYZED:

09/16/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

103.9 %

85-115%

2-BROMO-1-CHLOROPROPANE

104.4 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

REVIEW

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME: PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

810

THRIFTWAY REFINERY

BLOOMFIELD, NEW MEXICO

MONITOR WELL #6

W0609133

SAMPLE MATRIX:

PRESERVATIVE:

HgCl2

REPORT DATE: DATE SAMPLED:

09/13/93

DATE RECIEVED:

09/13/93

WATER

09/22/93

DATE ANALYZED:

09/17/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	507.0	50.0
TOLUENE	78.0	50.0
ETHLYBENZENE	135.0	50.0
M,P-XYLENE	197.0	50.0
O-XYLENE	122.0	50.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

01810

WATER

PROJECT NAME:

THRIFTWAY REFINERY

HgCl2

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

09/22/93 09/13/93

SAMPLE ID:

MONITOR WELL #6

DATE SAMPLED: DATE RECIEVED:

SAMPLE MATRIX:

PRESERVATIVE:

REPORT DATE:

09/13/93

SAMPLE NUMBER:

W0609133

DATE ANALYZED:

09/17/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

103.4 %

85-115%

2-BROMO-1-CHLOROPROPANE

106.1 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB. NOVEMBER 1990

COMMENTS:

REVIEW

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

810

PRESERVATIVE:

PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE:

HgCl2 09/22/93

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

DATE SAMPLED:

09/14/93

SAMPLE ID:

MONITOR WELL #7

DATE RECIEVED: DATE ANALYZED: 09/14/93 09/17/93

SAMPLE NUMBER:

W0709143

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	647.0	50.0
TOLUENE	197.0	50.0
ETHLYBENZENE	168.0	50.0
M,P-XYLENE	418.0	50.0
O-XYLENE	273.0	50.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

01810

PROJECT NAME:

THRIFTWAY REFINERY

SAMPLE ID:

MONITOR WELL #7

BLOOMFIELD, NEW MEXICO

SAMPLE NUMBER:

PROJECT LOCATION:

W0709143

SAMPLE MATRIX:

WATER

PRESERVATIVE:

REPORT DATE:

HgCl2 09/22/93

DATE SAMPLED:

09/14/93

DATE RECIEVED: DATE ANALYZED: 09/14/93 09/17/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

2-BROMO-1-CHLOROPROPANE

97.1 % 97.4 % 85-115%

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB. NOVEMBER 1990

COMMENTS:

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

810

PRESERVATIVE:

PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE:

HgCl2 09/22/93

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

DATE SAMPLED:

09/14/93

SAMPLE ID:

MONITOR WELL #8

DATE RECIEVED:

09/14/93

SAMPLE NUMBER:

W0809143

DATE ANALYZED:

09/16/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	18.0	1.0
TOLUENE	21.0	1.0
ETHLYBENZENE	34.0	1.0
M,P-XYLENE	35.0	1.0
O-XYLENE	16.0	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

01810

WATER

PROJECT NAME:

THRIFTWAY REFINERY

HgCl2

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

09/22/93 09/14/93

SAMPLE ID:

MONITOR WELL #8

DATE SAMPLED: DATE RECIEVED:

09/14/93

SAMPLE NUMBER:

W0809143

DATE ANALYZED:

SAMPLE MATRIX:

PRESERVATIVE:

REPORT DATE:

09/16/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

96.7 %

85-115%

2-BROMO-1-CHLOROPROPANE

99.5 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

WATER

CLIENT NUMBER:

810

SAMPLE MATRIX:

PROJECT NAME:

THRIFTWAY REFINERY

PRESERVATIVE:

HgCl2

REPORT DATE:

09/22/93

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

DATE SAMPLED:

09/14/93

SAMPLE ID:

MONITOR WELL #9

DATE RECIEVED:

09/14/93

SAMPLE NUMBER:

W0909143

DATE ANALYZED:

09/16/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	7.0	1.0
TOLUENE	15.0	1.0
ETHLYBENZENE	24.0	1.0
M,P-XYLENE	4.0	1.0
O-XYLENE	2.0	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

01810

PRESERVATIVE:

HgCl2 09/22/93

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

SAMPLE ID:

MONITOR WELL #9

DATE SAMPLED: DATE RECIEVED:

REPORT DATE:

09/14/93 09/14/93

SAMPLE NUMBER:

W0909143

DATE ANALYZED:

09/16/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

97.5 %

85-115%

2-BROMO-1-CHLOROPROPANE

100.1 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

810

PRESERVATIVE:

PROJECT NAME:

THRIFTWAY REFINERY

HgCl2

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

REPORT DATE: DATE SAMPLED: 09/22/93 09/14/93

SAMPLE ID:

MONITOR WELL #10

DATE RECIEVED:

09/14/93

SAMPLE NUMBER:

W1009143

DATE ANALYZED:

09/16/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

01810

PRESERVATIVE:

PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE:

HgCl2 09/22/93

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

DATE SAMPLED:

09/14/93

SAMPLE ID:

MONITOR WELL #10

DATE RECIEVED:

09/14/93

SAMPLE NUMBER:

W1009143

DATE ANALYZED:

09/16/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

105.7 %

85-115%

2-BROMO-1-CHLOROPROPANE

107.1 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB. NOVEMBER 1990

COMMENTS:

ANALYST

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

810

PRESERVATIVE:

HgCl2

PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE:

09/22/93

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

DATE SAMPLED:

09/14/93

SAMPLE ID:

MONITOR WELL #11

M,P-XYLENE

O-XYLENE

DATE RECIEVED:

1.0

1.0

09/14/93

SAMPLE NUMBER:

W1109143

DATE ANALYZED:

 ANALYTE
 CONCENTRATION (ug/L)
 DETECTION LIMIT (ug/L)

 BENZENE
 ND
 1.0

 TOLUENE
 ND
 1.0

 ETHLYBENZENE
 ND
 1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

ND

ND

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

01810

PRESERVATIVE:

HgCl2

PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE:

09/22/93

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

DATE SAMPLED:

09/14/93

SAMPLE ID:

MONITOR WELL #11

DATE RECIEVED:

09/14/93

SAMPLE NUMBER:

W1109143

DATE ANALYZED:

09/16/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

96.5 %

85-115%

2-BROMO-1-CHLOROPROPANE

103.6 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

SUITE 400

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME: PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

810

THRIFTWAY REFINERY

BLOOMFIELD, NEW MEXICO

MONITOR WELL #13

W1309143

SAMPLE MATRIX:

PRESERVATIVE:

REPORT DATE:

DATE SAMPLED:

DATE RECIEVED:

DATE ANALYZED:

09/14/93 09/16/93

WATER

09/22/93

09/14/93

HgCl2

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
		DETECTION CHAIT (UG/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

01810

WATER

PROJECT NAME:

THRIFTWAY REFINERY

HgCl2

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

09/22/93 09/14/93

SAMPLE ID:

MONITOR WELL #13

DATE SAMPLED: DATE RECIEVED:

09/14/93

SAMPLE NUMBER:

W1309143

DATE ANALYZED:

SAMPLE MATRIX:

PRESERVATIVE:

REPORT DATE:

09/16/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

109.4 %

85-115%

2-BROMO-1-CHLOROPROPANE

101.4 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB. NOVEMBER 1990

COMMENTS:

Un Atold

REVIEW

SUITE 400

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

SAMPLE ID:

SAMPLE NUMBER:

PROJECT LOCATION:

THRIFTWAY

810

THRIFTWAY REFINERY

BLOOMFIELD, NEW MEXICO MONITOR WELL #15

W1509143

SAMPLE MATRIX:

PRESERVATIVE:

WATER HgCl2

REPORT DATE:

EFORT DATE.

09/22/93 09/14/93

DATE SAMPLED: DATE RECIEVED:

DATE ANALYZED:

09/14/93 09/16/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

WATER

CLIENT NUMBER:

01810

SAMPLE MATRIX: PRESERVATIVE:

REPORT DATE:

HgCl2

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

09/22/93 09/14/93

SAMPLE ID:

MONITOR WELL #15

DATE SAMPLED: DATE RECIEVED:

09/14/93

SAMPLE NUMBER:

W1509143

DATE ANALYZED:

09/16/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

99.4 %

85-115%

2-BROMO-1-CHLOROPROPANE

106.8 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYS

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

WATER

CLIENT NUMBER:

810

SAMPLE MATRIX: W

VAIER

PROJECT NAME:

THRIFTWAY REFINERY

PRESERVATIVE:

HgCl2

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

REPORT DATE: DATE SAMPLED:

09/22/93 09/14/93

SAMPLE ID:

MONITOR WELL #16

DATE RECIEVED:

09/14/93

SAMPLE NUMBER:

W1609143

DATE ANALYZED:

09/16/93

AVA:: V	CONSENTRATION (**-//)	DETECTION I IMIT (1-4/1)
	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	9.0	1.0
M,P-XYLENE	5.0	1.0
O-XYLENE	1.0	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

SUITE 400

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

01810

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

SAMPLE ID:

MONITOR WELL #16

SAMPLE NUMBER:

W1609143

SAMPLE MATRIX:

WATER

PRESERVATIVE:

HgCl2

REPORT DATE:

09/22/93 09/14/93

DATE SAMPLED: DATE RECIEVED:

09/14/93

DATE ANALYZED:

09/16/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

103.4 %

85-115%

2-BROMO-1-CHLOROPROPANE

109.6 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

810

PRESERVATIVE:

HgCl2

PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE:

09/22/93

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

DATE SAMPLED:

09/14/93

SAMPLE ID: SAMPLE NUMBER: MONITOR WELL #17

DATE RECIEVED: DATE ANALYZED: 09/14/93 09/17/93

SAMPLE NUMBER:	W1709143

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	19624.0	500.0
TOLUENE	19347.0	500.0
ETHLYBENZENE	2867.0	500.0
M,P-XYLENE	7415.0	500.0
O-XYLENE	5066.0	500.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

WATER

CLIENT NUMBER:

01810

SAMPLE MATRIX: PRESERVATIVE:

PROJECT NAME:

THRIFTWAY REFINERY

HgCl2

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

09/22/93

SAMPLE ID:

MONITOR WELL #17

DATE SAMPLED: DATE RECIEVED: 09/14/93 09/14/93

SAMPLE NUMBER:

W1709143

DATE ANALYZED:

REPORT DATE:

09/17/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

108.7 %

85-115%

2-BROMO-1-CHLOROPROPANE

113.2 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

Un table ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

FAX (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

WATER

CLIENT NUMBER:

810

SAMPLE MATRIX: PRESERVATIVE:

PROJECT NAME:

THRIFTWAY REFINERY

HgCl2

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

REPORT DATE:

09/22/93 09/13/93

SAMPLE ID:

MONITOR WELL #18

DATE SAMPLED: DATE RECIEVED:

09/13/93

SAMPLE NUMBER:

W1809133

DATE ANALYZED:

09/17/93

	ONCENTRATION (ug/L) DETECTION LIMIT (ug/L)
BENZENE	267.0	10.0
TOLUENE	135.0	10.0
ETHLYBENZENE	67.0	10.0
M,P-XYLENE	226.0	10.0
O-XYLENE	119.0	10.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

01810

PRESERVATIVE: REPORT DATE:

HgCl2

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

09/22/93 09/13/93

SAMPLE ID:

MONITOR WELL #18

DATE SAMPLED: DATE RECIEVED:

09/13/93

SAMPLE NUMBER:

W1809133

DATE ANALYZED:

09/17/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

108.1 %

85-115%

2-BROMO-1-CHLOROPROPANE

101.7 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

REVIEW

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

810

THRIFTWAY REFINERY

BLOOMFIELD, NEW MEXICO

MONITOR WELL #19

W1909133

SAMPLE MATRIX:

PRESERVATIVE:

HgCl2

REPORT DATE:

DATE SAMPLED:

09/22/93 09/13/93

WATER

DATE RECIEVED:

09/13/93

DATE ANALYZED:

09/17/93

ANALYTE	CONCENTRATION	DETECTION LIMIT (1.4/1)
BENZENE	CONCENTRATION (ug/L) 61.0	DETECTION LIMIT (ug/L) 10.0
TOLUENE	24.0	10.0
ETHLYBENZENE	165.0	10.0
M,P-XYLENE	487.0	10.0
O-XYLENE	232.0	10.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

WATER

CLIENT NUMBER:

01810

PROJECT NAME:

THRIFTWAY REFINERY

HgCl2

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

09/22/93

SAMPLE ID:

MONITOR WELL #19

09/13/93 09/13/93

SAMPLE NUMBER:

W1909133

DATE ANALYZED:

SAMPLE MATRIX:

PRESERVATIVE:

REPORT DATE:

DATE SAMPLED:

DATE RECIEVED:

09/17/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

105.7 %

85-115%

2-BROMO-1-CHLOROPROPANE

103.4 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

W2009133

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

810

PRESERVATIVE:

HgCl2

PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE:

09/22/93

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

DATE SAMPLED:

09/13/93

SAMPLE ID: SAMPLE NUMBER: MONITOR WELL #20

DATE RECIEVED: DATE ANALYZED: 09/13/93 09/15/93

ANALYTE	CONCENTRATION (u	g/L) DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	27.0	1.0
O-XYLENE	7.0	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

01810

PRESERVATIVE:

HgCl2

PROJECT NAME:

THRIFTWAY REFINERY

09/22/93

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

REPORT DATE: DATE SAMPLED:

09/13/93

SAMPLE ID:

MONITOR WELL #20

DATE RECIEVED:

09/13/93

SAMPLE NUMBER:

W2009133

DATE ANALYZED:

09/15/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

111.4 %

85-115%

2-BROMO-1-CHLOROPROPANE

113.4 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB. NOVEMBER 1990

COMMENTS:

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

WATER

CLIENT NUMBER:

810

SAMPLE MATRIX:

PROJECT NAME:

THRIFTWAY REFINERY

PRESERVATIVE:

HgCl2

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

REPORT DATE: DATE SAMPLED: 09/22/93 09/13/93

SAMPLE ID:

MONITOR WELL #21

DATE RECIEVED:

09/13/93

SAMPLE NUMBER:

W2109133

DATE ANALYZED:

09/15/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	9.0	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

01810

PRESERVATIVE: REPORT DATE:

DATE SAMPLED:

HgCl2 09/22/93

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

SAMPLE ID:

MONITOR WELL #21

DATE RECIEVED:

09/13/93 09/13/93

SAMPLE NUMBER:

W2109133

DATE ANALYZED:

09/15/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

104.7 %

85-115%

2-BROMO-1-CHLOROPROPANE

110.5 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

810

HgCl2

PROJECT NAME:

THRIFTWAY REFINERY

PRESERVATIVE:

09/22/93

PROJECT LOCATION:

BLOOMFIELD, NEW MEXICO

REPORT DATE: DATE SAMPLED:

09/13/93

SAMPLE ID:

MONITOR WELL #22

DATE RECIEVED:

09/13/93

SAMPLE NUMBER:

W2209133

DATE ANALYZED:

09/15/93

ANALVA-	CONCENTRATION (* - //)	SETECTION LIMIT (1.2/L)
ANALYTE BENZENE	CONCENTRATION (ug/L) ND	DETECTION LIMIT (ug/L) 1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

01810

PROJECT NAME:

THRIFTWAY REFINERY

MONITOR WELL #22

PROJECT LOCATION: SAMPLE ID:

BLOOMFIELD, NEW MEXICO

SAMPLE NUMBER:

W2209133

SAMPLE MATRIX:

WATER HgCl2

PRESERVATIVE:

REPORT DATE: DATE SAMPLED: 09/22/93 09/13/93

DATE RECIEVED:

09/13/93

DATE ANALYZED:

09/15/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

106.7 %

85-115%

2-BROMO-1-CHLOROPROPANE

111.2 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

QUALITY CONTROL

EPA METHOD 8020 PURGABLE AROMATICS QUALITY CONTROL

CLIENT: THRIFTWAY SAMPLE MATRIX:
CLIENT NUMBER: 810 PRESERVATIVE:
PROJECT NAME: THRIFTWAY REFINERY REPORT DATE:
PROJECT LOCATION: BLOOMFIELD, NM DATE SAMPLED:

SAMPLE ID: SPIKE SAMPLE MONITOR WELL #11 DATE RECIEVED: 09/14/93
SAMPLE NUMBER: WSS09163 DATE ANALYZED: 09/16/93

	SPIKE	SAMPLE	SPIKED SAMP	LE
	ADDED	RESULTS	RESULTS	PERCENT
ANALYTE	(ug/L)	(ug/L)	(ug/L)	RECOVERY
BENZENE	10.0	ND	10.7	107
TOLUENE	10.0	ND	10.7	107
ETHLYBENZENE	10.0	ND	10.1	101

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

WATER

HGCL2

09/22/93

09/14/93

EPA METHOD 8020 PURGABLE AROMATICS QUALITY CONTROL

CLIENT: NA SAMPLE MATRIX: NA CLIENT NUMBER: NA PRESERVATIVE: NA PROJECT NAME: NA REPORT DATE: 09/15/93 PROJECT LOCATION: DATE SAMPLED: NA NA SAMPLE ID: LABORATORY BLANK DATE RECIEVED: NA SAMPLE NUMBER: B2009153 DATE ANALYZED: 09/15/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

EPA METHOD 8020 PURGABLE AROMATICS QUALITY CONTROL

CLIENT: NA SAMPLE MATRIX: NA **CLIENT NUMBER:** NA PRESERVATIVE: NA PROJECT NAME: NA REPORT DATE: 09/16/93 PROJECT LOCATION: NA DATE SAMPLED: NA SAMPLE ID: DATE RECIEVED: NA LABORATORY BLANK SAMPLE NUMBER: DATE ANALYZED: 09/16/93 B2009163

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

EPA METHOD 8020 PURGABLE AROMATICS QUALITY CONTROL

NA CLIENT: SAMPLE MATRIX: NA NA **CLIENT NUMBER:** NA PRESERVATIVE: PROJECT NAME: NA REPORT DATE: 09/17/93 PROJECT LOCATION: DATE SAMPLED: NA NA DATE RECIEVED: NA SAMPLE ID: LABORATORY BLANK 09/17/93 SAMPLE NUMBER: DATE ANALYZED: B2009173

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

BIO ECH WATER QUALITY LABORATORIES
710 E. 20th Street, Suite 400
Farmington, New Mexico 87401
REMEDIATION Office: (505) 632-3365
Fax: (505) 632-0030

11004

CHAIN OF CUSTODY RECORD

Client/Project Name			Project Location	on								
THRIETWAY REFINERY	275475	>	BLOSMFELD	FELO				ANALYSIS/	ANALYSIS/PARAMETERS			
Sampler: (Signature)	TO TO		Tape No.		No. Cont.	XZLA					Remarks	ks
Sample No./ID	Date	Time	Lab No.	Matrix								1
MW 20	8/13/23 4:16	4:45	W2009133	14.0	N	7						
m 63 21	85.3 6.30	i I	4,31,9133	,	B	7						
MW 23	8113/83 4:35		W2209133	11	S	\						
M 6 19	81138	15:30	7/17835:00 Wiggiss	11	B	7						
MW 18	9/13/83 5:0 P 11509133	5:07	4.1809133	,,,,	D	}						
MW 5	2/13/93 5:15	5:15	W266933	11	Q	7	ナ	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				
NS 6	21/2/82		5:38 WOGGB3	1.	7	7		<				
7 BE	54E118	つから	813/3 5:40 workings	1,	B	7						
			1				_					
Relinquished by: (Signature)	-		Date	Time	Received t	Received by: (Signature)	(e				Date	-Time
Kullen Hate	1-1-		9-14.93	8:00						$\frac{1}{1}$	}	-
Relinquished by: (Signature)	,				Received t	Received by: (Signature)	(6)					
Relinquished by: (Signature)	A COLUMN TO THE PARTY OF THE PA				Received by	Received by: (Signature)	7-(0	li.		46	211/83	2.5

san juan repro Form 578-97

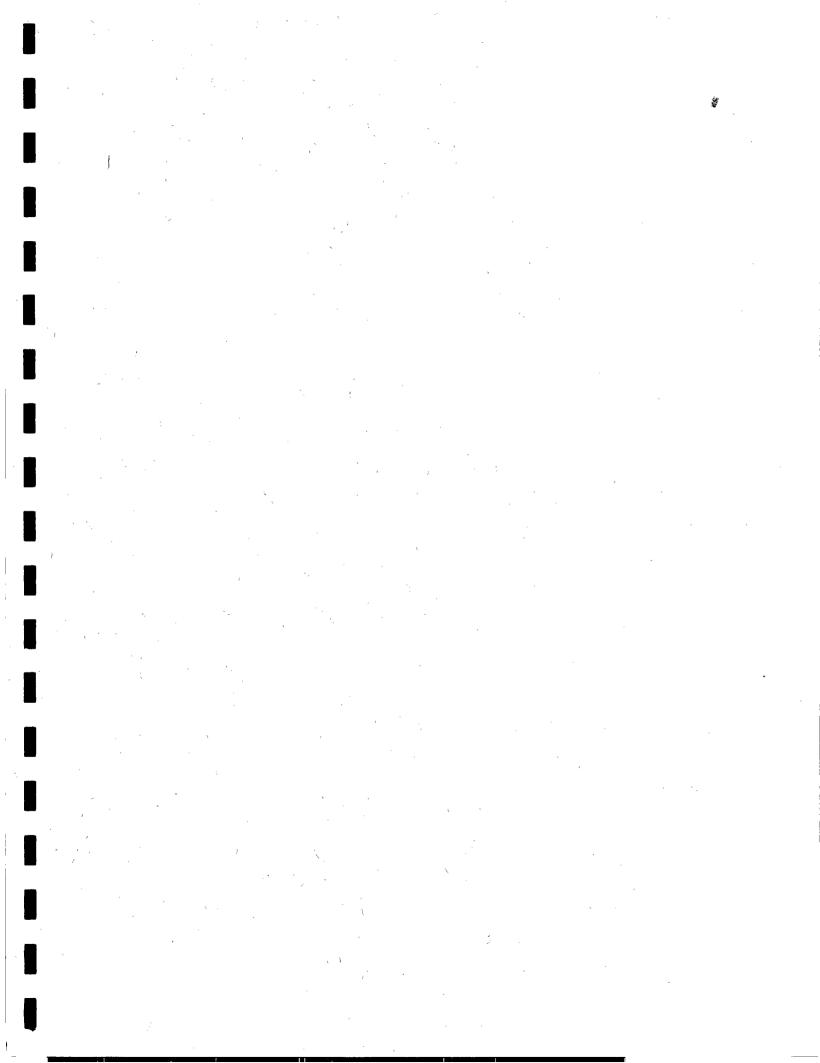
BIO ECh WATER QUALITY LABORATORIES
710 E. 20th Street, Suite 400
Farmington, New Mexico 87401
REMEDIATION Office: (505) 632-3365
Fax: (505) 632-0030

11005

CHAIN OF CUSTODY RECORD

Date Time Received by: (Signature) 9-14-23
Received by: (Signature) Received by: (Signature)
Tay.

san juan repro Form 578-97



BIOTECH REMEDIATION INC.

QUARTERLY MONITORING REPORT THRIFTWAY REFINERY 626 COUNTY ROAD 5500 BLOOMFIELD, NEW MEXICO 87410

RECEIVED

JUN 1 8 1993

OIL CONSERVATION DIV. SANTA FE

PREPARED FOR THE NEW MEXICO OIL CONSERVATION DIVISION

BY

BIOTECH REMEDIATION, INC. 710 EAST 20TH ST., SUITE 400 FARMINGTON, NEW MEXICO 87401

MAY 28, 1993



QUARTERLY MONITORING REPORT
THRIFTWAY REFINERY
626 COUNTY ROAD 5500
BLOOMFIELD, NEW MEXICO, 87410

710 East 20th Street, Suite 400 Farmington, New Mexico 87401 Field Office: (505) 632-3365 Fax: (505) 632-0030

PREPARED FOR THE NEW MEXICO OIL CONSERVATION DIVISION

MAY 28, 1993

BY

BIOTECH REMEDIATION INC. 710 EAST 20TH ST., SUITE 400 FARMINGTON, NEW MEXICO, 87401

PREPARED BY

CHRIS HOLLANDSWORTH ENVIRONMENTAL SCIENTIST REVIEWED BY

KEN SINKS

ENVIRONMENTAL ENGINEER

810\QMR05283.WIN

TABLE OF CONTENTS

1	. 0	INTRODUCTION	
1		INTRODUCTION	

- 2.0 QUARTERLY SUMMARY OF SITE ACTIVITIES
- 3.0 SUMMARY OF GROUND WATER ELEVATION DATA
- 4.0 SUMMARY OF PHASE SEPARATED PRODUCT CONDITIONS
- 5.0 SUMMARY OF GROUND WATER CHEMISTRY
- 6.0 DISCUSSION / RECOMMENDATIONS

FIGURES

- 1 GROUND WATER ELEVATION MAP
- 2 PHASE SEPARATED PLUME MAP
- 3 BENZENE PLUME MAP

TABLES

- 1 GROUND WATER MONITORING DATA
- 2 SUMMARY OF PHASE SEPARATED PRODUCT MEASUREMENTS
- 3 SUMMARY OF LABORATORY ANALYSIS DATA

APPENDICES

- A ANALYTICAL LABORATORY REPORT FORMS
- B "INVESTIGATION OF FREE PHASE PRODUCT" BY MARK WEIDLER

1.0 INTRODUCTION

The purpose of this report is to update the data base for Thriftway Refinery, through April 1993. BioTech Remediation, Inc., submits this monitoring and well update on behalf of Thriftway Marketing Corp., pursuant to the requirements of the New Mexico Oil Conservation Division. This report discusses the work performed at the site during October, November, December, January, February, March and April 1993, and is compiled in compliance with the terms of the Thriftway Refinery Ground Water Discharge Plan GW-55.

2.0 QUARTERLY SUMMARY OF SITE ACTIVITIES

Site monitoring was performed on April 28, 1993. During this quarterly site visit the following activities were performed:

- Water level gauging
- Sample of monitoring wells

Thriftway instituted a descaling and biofouling removal program during the past quarter. This program was needed due to the extensive scaling and biofouling experienced in the stripper and injection gallery. The system was acidized four (4) times in the past four (4) months. After each acidation the operation of the repaired system was restored to an acceptable level. The injection pump was taken off line and repaired two (2) times during this period due to heavy scaling.

In the previous Quarterly Monitoring Report (QMR) it was reported that free product was found in monitoring well MW-12 where none had been found before. Mark Weidler, Certified Professional Geologist, began an investigation into this anomaly. It was determined that only a trace of free product was detected in the area of MW-12. However, a new area of free product was discovered. Please refer to Mark Weidler's report in Appendix B entitled "Investigation of Free Phase Product Thriftway Refinery - Site 810, Bloomfield, New Mexico."

3.0 SUMMARY OF GROUND WATER ELEVATION DATA

Table 1 (attached) summarizes all ground water elevation data, to date, for the refinery. The most recent comprehensive ground water elevation data, collected April 28, 1993, is presented in the Ground Water Elevation Map on the attached Figure 1. The field data was gathered using an ORS air/water interface probe with a 100' tape.

4.0 SUMMARY OF PHASE SEPARATED PRODUCT CONDITIONS

Free product was found in monitoring wells MW-1, 2, 6, 12, 14 and 17. The amounts of free product taken from the monitoring wells are shown in **Table 2**. The current phase separated product plume is indicated in **Figure 2**. (For additional free product areas refer to **Appendix B**).

Total phase separated product was measured in a transparent bailer and the feet of free product recorded (see **Table 2**). The product and water was disposed of in the refinery oily sewer system. The free phase hydrocarbon is separated from the contaminated water in the waste water holding tank. The free hydrocarbon is pumped off and stored, for later processing, and the contaminated water is stripped of dissolved hydrocarbon in the waste water air stripper tank and then evaporated in the refinery waste water system.

5.0 SUMMARY OF GROUND WATER CHEMISTRY DATA

Table 3 summarizes all ground water quality data collected to date for the refinery. Appendix A contains the laboratory reports for the current survey. Ground water samples for analysis were collected April 28, 1993, from all monitoring wells not containing free hydrocarbon. Stripper influent and effluent were also sampled.

Ground water from each of the above wells was analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX). The extent of the dissolved phase ground water plume at this site (based upon the regulated benzene standard of 0.01 mg/l) is shown in Figure 3.

The samples were gathered using disposable bailers. New cord was used on each bailer to further insure no cross contamination of wells occurred. Three (3) well volumes were removed whenever possible. If the well recharged slowly, then the water from the

last bail was used for analysis. The samples were placed in 40 ml vials previously prepared at the lab with two (2) or three (3) drops of HgCl₂ solution. The samples were all marked with their respective location, date, time of sampling and by whom sampled. The samples were then transported on ice to the BioTech Water Quality Laboratory. A chain of custody accompanied the samples and is included with the laboratory analysis reports.

6.0 DISCUSSION / RECOMMENDATIONS

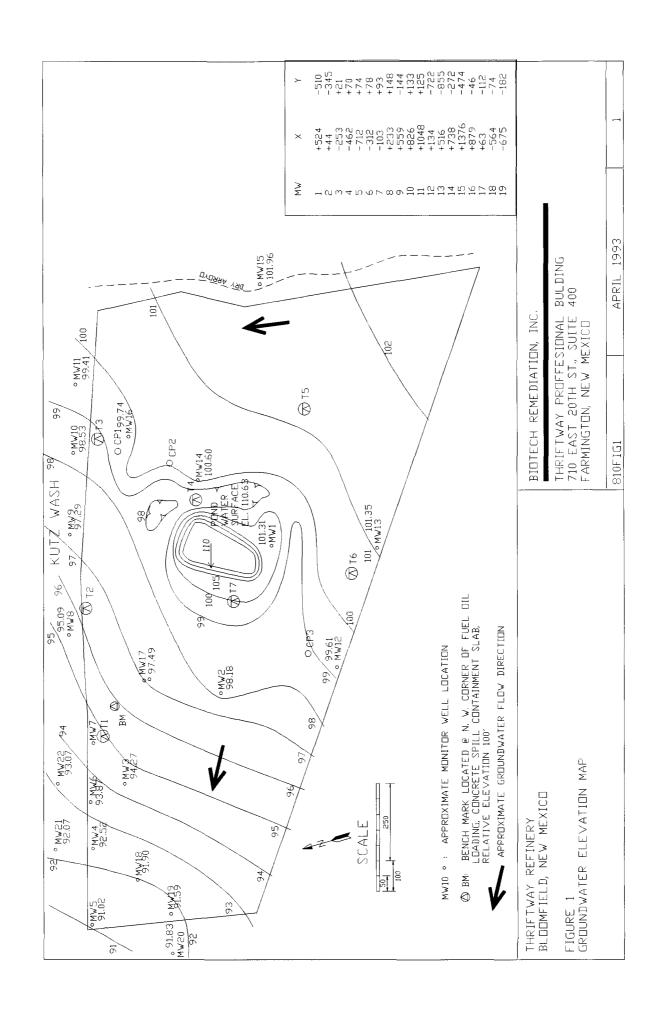
The ground water recovery system does not appear to be maintaining hydraulic capture of the dissolved phase and phase separated product plumes. This conclusion is based on the calculated ground water contour map (no depression of the ground water table), Figure 1. However, the plume does not appear to be growing. This may be due to the intercept/recovery system that is operating. Thriftway Marketing will continue quarterly sampling and monitoring of the site as well as routine maintenance of the system.

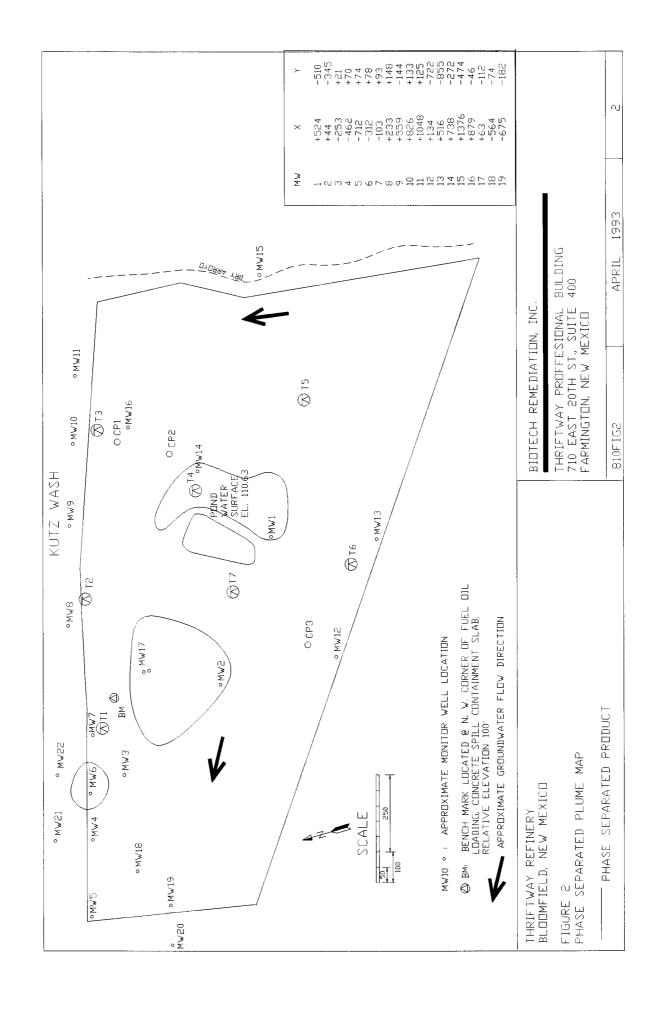
The free product reported in the last QMR revealed over 1.5 feet of free product in monitoring well MW-14. Thriftway Marketing retained the services of Mr. Mark Weidler, Certified Professional Geologist, to investigate the area around MW-14. His report is included in Appendix B as part of this report.

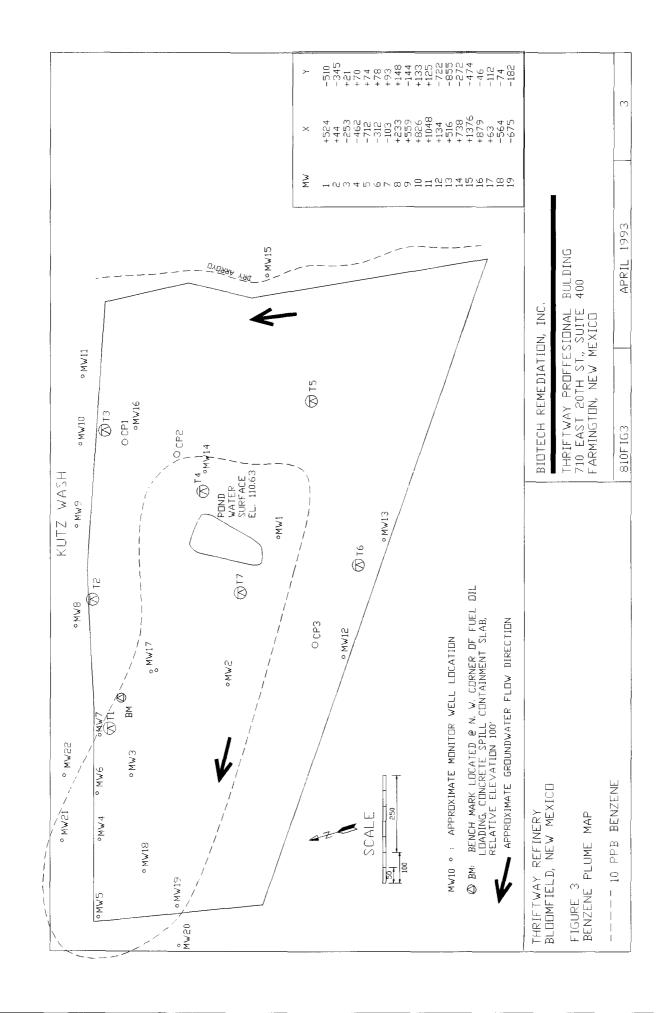
During the winter of 1992 and the spring of 1993, several monitoring wells, test borings and recovery wells were installed. The purpose of this exercise was to evaluate the extent of the free product plume near MW-14. The recovery wells have been pumped on a regular basis and the water and product processed through the refinery waste water system. There has been a marked improvement in the level of free product in this area. Thriftway Marketing will continue to pump the product from this area.

This report of the operation and maintenance of the site remediation system at the Thriftway Refinery is provided to comply with the Oil Conservation Division requirements and the Site Ground Water Discharge Plan GW-55.

FIGURES







TABLES

TABLE 1
THRIFTWAY REFINERY, BLOOMFIELD, NM
GROUNDWATER MONITORING DATA

	WELL#	TOP OF PIPE ELEVATION (feet)	DATE	TIME	WATER LEVEL (feet)	WATER LEVEL ELEVATION (feet)
1		114.08	08/28/91 09/02/92 04/28/93	13:15 10:45	12.67 14.00 12.77	101.41 100.08 101.31
2		107.62	08/28/91 08/31/92 04/28/93	13:07 10:25	10.31 10.25 9.24	97.31 97.37 98.18
3		96.28	08/28/91 09/01/92 04/28/93	12:45 10:10	3.67 2.24 2.01	92.61 94.04 94.27
4		95.82	08/28/91 09/01/92 04/28/93	12:15 9:50	4.31 3.78 3.30	91.51 92.04 92.52
5		94.66	08/28/91 09/01/92 04/28/93	12:00 9:45	4.43 4.20 3.64	90.23 90.46 91.02
6		96.31	08/28/91 09/01/92 04/28/93	12:30 10:00	3.68 2.63 2.44	92.63 93.68 93.87
7		96.79	08/28/91 09/01/92 04/28/93		3.35 VELL NOT FO VELL NOT FO	
8		97.04	08/28/91 09/02/92 04/28/93	14:50 11:15	2.83 2.75 1.95	94.21 94.29 95.09
9		100.16	08/28/91 09/02/92 04/28/93	14:45 11:25	3.42 3.50 2.87	96.74 96.66 97.29
10		101.55	08/28/91 09/02/92 04/28/93	15:05 11:35	3.50 3.50 3.02	98.05 98.05 98.53
11		103.63	08/28/91 09/02/92 04/28/93	15:15 11:45	4.60 4.65 4.22	99.03 98.98 99.41

TABLE 1
THRIFTWAY REFINERY, BLOOMFIELD, NM
GROUNDWATER MONITORING DATA

	WELL #	TOP OF PIPE ELEVATION (feet)	DATE	ПМЕ	WATER LEVEL (feet)	WATER LEVEL ELEVATION (feet)
12		111.11	08/28/91 08/31/92 04/28/93	13:30 9:10	12.51 13.67 11.50	98.62 97.44 99.61
13		117.12	08/28/91 09/02/92 04/28/93	13:50 9:00	16.24 16.25 15.77	100.88 100.87 101.35
14		111.94	08/28/91 09/02/92 04/28/93	14:00 10:55	11.33 13.00 11.34	100.61 98.94 100.60
15		114.53	08/28/91 09/03/92 04/28/93	8:00 11:55	12.58 13.05 12.57	101.95 101.48 101.96
16		107.64	08/28/91 09/02/92	14:25 11:05	8.28 8.45	99.36 99.19 99.74
17		100.84	04/28/93 08/28/91 08/31/92	12:44	7.90 5.10 4.65	95.74 96.19
18		94.04	04/28/93 08/28/91 09/01/92	10:35 11:51	3.35 3.21 2.39	97.49 90.83 91.65
19		93.64	04/28/93 08/28/91 09/01/92	9:35	2.14 2.90 2.41	91.90 90.23 91.23
20			04/28/93 09/01/92	9:25 13:05	2.05 3.85	91.59
21			04/28/93 09/01/92 04/28/93	8:30 13:20 8:40	4.18 3.97 2.27	
22 810	/QMRTBL1		09/01/92 04/28/93	13:30 8:50	3.34 4.44	

TABLE 2 SUMMARY OF PHASE SEPERATED PRODUCT MEASUREMENTS THRIFTWAY REFINERY BLOOMFIELD, NEW MEXICO

WELL	DATE	THICKNESS (IN FEET)	LITERS OF HYDROCARBON RECLAIMED
1	10-14-92 04-28-93	TRACE 0.02	
2	10-14-92 04-28-93	TRACE	
6	10-14-92 04-28-93	TRACE TRACE	
12	10-14-92 04-28-93	TRACE TRACE	
14	10-14-92 04-28-93	1.58 0.12	
17	10-14-92 04-28-93	TRACE TRACE	

SUMMARY OF LABORATORY ANALYSIS DATA THRIFTWAY REFINERY Concentrations in mg/1

alcium	92.4	108.6	6.99	75.4	4	86.7	105.4	161	196.2
Lead Calcium	0.02	Q	<u>Q</u>	<u>Q</u>	N	N	Q	N Q	Q
Manganese	<u>0</u>	34.2	17.5	10.9	9.8	12.9	26.4	33.1	50.6
Iron	24.4	0.4	က် တ	5.43	0.063	1.21	0.25	4	0.89
Xylenes	5.137	0.972	0.001 0.108 CIN	0.056 0.329	0.001 ND 0.026	0.235	3.343	0.017 0.068 ND	0.02 0.018 ND
Ethylbenzene	0.635 OUND IN WELL OUND IN WELL	0.536 OUND IN WELL 0.273	0.002 0.01 ON	ND 0.017 0.039	ND ND 0.004	0.082 OUND IN WELL 0.094	0.375	0.002 0.019 ND	0.002 0.03 ND
Toulene Ett	2.352 0.635 FREE PRODUCT FOUND IN WELL FREE PRODUCT FOUND IN WELL	ND 0.536 FREE PRODUCT FOUND IN WELL 0.189 0.273	0.004 0.004 ND	0.007 0.004	0.002 ND 0.033	0.006 0.082 FREE PRODUCT FOUND IN WELL 0.036 0.094	6.013 WELL NOT FOUND WELL NOT FOUND	0.017 0.009 ND	0.016 0.021 ND
Benzene	4.321 F	3.332 FI 0.974	0.013 0.018 ON	0.006 0.005 0.588	ON 0.014	0.315 Fl 0.427	35.037 W	0.01 0.014 0.01	0.005 0.01 ND
Date	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93
Location	-	a	თ	4	ιΩ	ø	7	ω	σ

SUMMARY OF LABORATORY ANALYSIS DATA THRIFTWAY REFINERY Concentrations in mg/1

Calcium	195.3	207.4	240.4	212.9	195.4	186.4	191.5	144.6	38.8
Lead	S	S	9	S	Q Q	Ω Ω	Š	0.02	2
Manganese	41.6	37.4	123.4	60.7	64.2	42.8	50.4	38.3	89 80
Iron	2.01	<u>Q</u>	170.8	2.41	2	0.7	0.25	3.59	7.13
Xylenes	0.013 0.009 ND	0.002 ON ON	ND 0.517	0.006 0.003 ND	0.001	0.013 0.003 ND	0.003 0.013 0.005	10.372 13.461 13.161	0.129 0.171 0.503
Ethylbenzene	0.001 0.001 0.001	6. O O	ND DUND IN WELL 0.18	0,1,0 O	<1.0 DUND IN WELL DUND IN WELL	0.00 ON ON	0.043 0.06 0.003	1.074 2.145 1.967	0.005 0.014 0.013
Toulene Ethy	0.009 0.005 ND	222	ND ND FREE PRODUCT FOUND IN WELL 0.089 0.18	0.004 0.002 ND	ND <1.0 FREE PRODUCT FOUND IN WELL FREE PRODUCT FOUND IN WELL	0.009 0.002 0.028	<1.0 0.006 ND	21.453 23.682 22.173	0.003 0.01 0.019
Benzene	0.003 0.001 ND	2 2 2	ND FF 0.482	0.001 0.002 ND	S FF FF	0.005 0.002 ND	0.006 0.012 ND	25.66 28.453 23.424	0.036 0.047 0.223
Date	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93	08/28/91 09/03/92 04/28/93
Location	10	=	12	6	4	 6	91	17	8

TABLE 3

SUMMARY OF LABORATORY ANALYSIS DATA THRIFTWAY REFINERY Concentrations in mg/1

Location	Date	Benzene	Toulene	Ethylbenzene	Xylenes	Iron	Manganese	Lead	Calcium
19	08/28/91	0.014	0.006	0.578	1.193	6.62	2	N Q	8.79
20	09/03/92 09/28/93	0.003 O.003	0.003 0.003		0.925 0.325	50.7	49.8	0.147	323
21	09/03/92 04/28/93	O.033	O O	N N	2 2	49.8	43.7	0.078	199
22	09/03/92 04/28/93	N N N	O N	N N	2 2	47.1	62	0.058	407
EFFLUENT	04/28/93	Q	S	Q	<u>Q</u>				
INFLUENT	04/28/93	0.232	0.174	0.089	0.246				
NMWQCCR	12/24/87	0.01	0.75	0.75	0.62	-	0.2	0.2	

Notes:

Inorganic analysis by various EPA Methods Metal analysis by EPA Method 200.7 Organic analysis by EPS Method 8020

Influent indicated untreated pumped groundwater entering tower Effluent indicated treated water exiting tower and being discharged

(INC) indicates that the results of this analysis was not complete at the time of the report

OCMRTBL3

APPENDIX A

CHAIN OF CUSTODY RECORD

Management of the state of the	William of the state of the sta	Marin Mark	application in the second of t
700.161.801.			
	>		
	20. K, 60.	00 10.001	20 1 00.1
	100-L1 61.80.L	no LI EL SOLL	no. LI EL SOLL homes Ills
0. 11 100 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OCHI ELSCH	OF HI KASH MANING	OF HI EXECT
1 / Wall () () () () () () () () () (1.38 M. 1486U	06.41 68.84 (UN) WALLU	06:41 69:86.4 (UNIMARIAN)
(Mall 1)	00 H 1886 (Malle)	06.41 68.84 (MMM)	06.11 68.84 (MMM)
(Mally)	Jan 14389 14.30	06.14 68.84 (MMM)	J. 1884 (MMM)
	M	the	the
The Math	i (Intertal	" (In Mate	i Chriffeth
	apply of the state	Cappelland in the contract of	apply of the state
Received by: (Signature)	Received by: (Signature)	Received by: (Signature)	Received by: (Signature)
Received by: (Signature)	Received by: (Signature)	Received by: (Signature)	Received by: (Signature)
Received by: (Signature)	Received by: (Signature)	Received by: (Signature)	Heceived by: (Signature)
Received by: (Signature)	Received by: (Signature)	Received by: (Signature)	Received by: (Signature)
Received by: (Signature)	Received by: (Signature)	Received by: (Signature)	Received by: (Signature)
Received by: (Signature)	Received by: (Signature)	Received by: (Signature)	Received by: (Signature)
Received by: (Signature)	Received by: (Signature)	Received by: (Signature)	Received by: (Signature)
Received by: (Signature)	Received by: (Signature)	Received by: (Signature)	Received by: (Signature)
Received by: (Signature)	Received by: (Signature)	Received by: (Signature)	Received by: (Signature)
Received by: (Signature)	Received by: (Signature)	Received by: (Signature)	Received by: (Signature)
Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)
Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature)	Received by: (Signature) Received by: (Signature) Received by: (Signature) Received by: (Signature)
A Second by: (Signature) W. 28.9 14.20 Received by: (Signature) Received by: (Signature)	A Second by: (Signature) W. 28.3 14.30 Received by: (Signature) Received by: (Signature)	A Second by: (Signature) (4.38.3 14.30 Received by: (Signature) Received by: (Signature)	A Second by: (Signature) (4.38.3 14.30) Received by: (Signature) Received by: (Signature)
Beceived by: (Signature) (4.37.3 / 14.30) Received by: (Signature) Received by: (Signature)	Beceived by: (Signature) (4.37.3 / 14.30) Received by: (Signature) Received by: (Signature)	Date Time Received by: (Signature) W38-13 III. 30 Received by: (Signature) Received by: (Signature)	Beceived by: (Signature) (4.38.3 14.30 Received by: (Signature) Received by: (Signature)
Solution of the State of the Signature o	Solution of the State of the Signature o	Date Time Received by: (Signature) W. 28.2 H. 20 Received by: (Signature) Received by: (Signature)	Date Time Received by: (Signature) W. 28.2 14, 20 Received by: (Signature) Received by: (Signature)
Comparing the Time Received by: (Signature) (1.38) 14.30 Received by: (Signature) Received by: (Signature)	Comparing the Time Received by: (Signature) Received by: (Signature) Received by: (Signature)	Comparing the Time Received by: (Signature) Received by: (Signature) Received by: (Signature)	Solution of the Time Received by: (Signature) Received by: (Signature) Received by: (Signature)
Solution (Signature) Which is a state of the solution of the	Solution (Signature) (4.38.2) (4.30) (4.30) (4.30) (5.30) (5.3	16:30 Wiley Time Received by: (Signature) 4.38.3 W.30 Received by: (Signature) Received by: (Signature)	16:30 Wile Time Received by: (Signature) 4.38.3 W.30 Received by: (Signature) Received by: (Signature)
Solution of the state of the st	Solution of the state of the st	Solution 10:30 Williams Date Time Received by: (Signature) Received by: (Signature) Received by: (Signature)	10:30 Wilo4383 III Received by: (Signature) 3 A A Colone Time Received by: (Signature) Received by: (Signature) Received by: (Signature)
11 16:30 WIIO4383 II Filme Received by: (Signature) C. S.	11 16:30 WIIO4383 III Shature) 3 C S S S S S S S S S S S S S S S S S S	11 16:30 WILDY 38-3 II 3 L Signature) C. S.	11 16:30 Wiley33 II Beceived by: (Signature) Compared to the signature of
11 Solution 11 Sol	3 L Inigo Wilo4383 III Becelved by: (Signature) 3 A L Signature) 4.38.3 W.30 Received by: (Signature)	11 Bocelved by: (Signature) 3 Line Received by: (Signature) 4.38.3 W.30 Received by: (Signature) Received by: (Signature)	11 Bide Wiley83 11 Beceived by: (Signature) 3 L Hime Received by: (Signature) 14.383 14.30 Received by: (Signature) 19.30 Heceived by: (Signature) 19.30 Heceived by: (Signature) 19.30 Market Market By Signature)
Solution State Time Received by: (Signature) (1.78.2) (1.30) (2.30) (3.10) (4.78.2) (4.30) (4.30) (5.30) (6.30) (6.30) (7.30) (7.30) (8.30) (9.4	11 Bigo Willoy383 III Becelved by: (Signature) 3 A A A A A A A A A A A A A A A A A A	1. 16:30 Wiley383 11 Beceived by: (Signature) 3. 4.30 Received by: (Signature) 1. 3. 4.30 Received by: (Signature) 1. 3. 4.30 Received by: (Signature) 1. 3. 4.30 Received by: (Signature)	11 Bide Willoud 23 Line Received by: (Signature) Will Hoostved by: (Signature) Received by: (Signature) Received by: (Signature)
11 S Line Beceived by: (Signature) 3 Line Beceived by: (Signature) 4.38.3 W.30 Received by: (Signature)	11 16:30 W1104383 11 Beceived by: (Signature) 3 L 4.38.3 W.:30 Received by: (Signature)	11 16:30 W1104383 11 3 L Obte Time Received by: (Signature) A.38.3 W.30 Received by: (Signature) Received by: (Signature)	11 16:30 W1104383 11 3 L Obte Time Received by: (Signature) Hoceived by: (Signature) Received by: (Signature)
by: (Signature) 1. 16:30 W.1104383 11 Date Time Received by: (Signature) 1.38:3 W.20 Received by: (Signature) 1.38:3 W.20 Received by: (Signature)	by: (Signature) 1. 10:30 W.1104383 11 Date Time Received by: (Signature) 4.38:3 W.30 Py: (Signature) Py: (Signature) Py: (Signature) Py: (Signature)	by: (Signature) 1.	by: (Signature) 1. 16:30 W.1104383 11 2. Signature) 1. 3 L 4.38:3 14:30 Received by: (Signature) Py: (Signature) Py: (Signature) M. M
by: (Signature) 1.	by: (Signature) by: (Signature) by: (Signature) by: (Signature) by: (Signature) by: (Signature) continued by: (Signature) continued by: (Signature) continued by: (Signature) continued by: (Signature)	by: (Signature) 1.	by: (Signature) 1.
by: (Signature) 10:30 W.1104383 11 Doble Time Received by: (Signature) 11:30 W.1104383 11 12:38 W.130 W.	by (Signature) control of the signature) control of the signature) control of the signature) control of the signature)	by: (Signature) 1.	by: (Signature) 1.
by: (Signature) 1.	by: (Signature) 1. 16:30 W.1104383 11 3 L 4.38:3 W.30 Received by: (Signature) 1. (Signature) 1. (Signature) 1. (Signature) 1. (Signature) 1. (Signature)	by: (Signature) 1. 16:30 W.1104383 11 3 L 1. 1	by: (Signature) 1.
by: (Signature) 1.	by: (Signature) 1. 10:30 W.1104383 11 3 L 4.38.3 W.30 1. Signature)	by: (Signature) 1. 10:30 W.1104383 11 3 L 4.38.3 W.20 1. Signature) 2. Control of Co	by. (Signature) 1. 16:30 W.1104383 11 3 L 1. 18:30 W.1104383 11 3 L 1. 3 L 1. 18:30 W.1104383 11 3 L 1. 4 L 1. 5
1. 16:30 W1104383 11 3 L Date Time Received by: (Signature) V. 38:3 14:30 Py: (Signature) Dy: (Signature) Py: (Signature) A. 38:3 14:30 Received by: (Signature) A. 38:3 14:30 Py: (Signature)	by: (Signature) 1.	1. 10.10 W104383 11 3 L Dr. [Signature] Dr. [Signature] Dr. (Signature) Dr. (Signature) Dr. (Signature) A. 18.20 B. 11	1. 10:30 W104383 11 3 L Dy. (Signature)
by: (Signature) 1. 16:30 W.1104383 11 3. 1. 3. 1. 4.38:3 W.1.30 By: (Signature) 4.38:3 W.1.30 By: (Signature) 4.38:3 W.1.30 By: (Signature) 6. (Signature) 7. (Signature) 8. (Signature)	by: (Signature) 1. 10:30 W.1104383 11 3 L 1. 1	1. 10:30 W1104383 11 3 V Nr. (Signature) Dr. (Signature) Dr. (Signature) Dr. (Signature) Dr. (Signature) A. 78.3 B. (A. 78.3 B.	1. 10:30 W104383 11 3 V Dr. [Signature]
by. (Signature) 1. 10:30 W.1104383 1. 3 L 3 L 4-38:9 4-38:9 14:30 15:30 ature) 16:30 W.1104383 17:30 18:50 ature) 17:30 W.1104383 18:50 Ature) 18:50 ature) 19:10 W.1004383 11:30 W.1104383 11:30	by: (Signature) 1. 10:30 W.104383 11 3 L 2. V 4.38:3 W.30 1. Signature) 2. Signature) 3. V 4.38:3 W.30 4.38:3 W.30 4.38:3 W.30 7. Signature) 4.38:3 W.30 7. Signature) 6. Signature)	by: (Signature) 1.	by: (Signature) 1. 10:30 W.1004383 11 3 L 10:30 W.104383 11 3 L 10:30 W.104383 11 3 L 10:30 W.104383 11
1. 18:10 W1004383 11 3 L Drie Time Received by (Signature) V. Signature) Dr. (Signature) Pr. (Signature) Received by (Signature) Received by (Signature)	Dr. (Signature) 11 3 L Dr. (Signature) 12 Received by: (Signature) Received by: (Signature)	by: (Signature) 1.	by: [Signature] 1. 10:30 W.1004883 11 3 L Date Time Received by: (Signature) 4.38.9 W.30 Received by: (Signature) Pr. (Signature) Pr. (Signature) Pr. (Signature) Pr. (Signature)
1. 10.004383 11 3 L Dy. [Signature) A. 78.3	by: (Signature) 1. 10:30 W.1004383 11 3 L 2. C 3. C 4.38.3 W.30 4.38.3 W.30 Breceived by: (Signature) 1. Signature) 1. Signature) 1. Signature) 1. Signature) 1. Signature) 1. Signature)	by: (Signature) 1.	1. 16:30 W10483 11 3 L Dote Time Received by: (Signature) by: (Signature) by: (Signature) 1. 16:30 W1104383 11 Dote Time Received by: (Signature) 1. 28:20 at week of the signature) 1. 16:30 W1104383 11 1. 16:30 W
by: (Signature) 1. 10:30 W.104383 11 3 L 2. C 4.373 W.30 1. Signature) 2. Signature) 4.373 W.30 4.374 W.30 4.375 M.30	by: (Signature) 1. (16:30 W.1104383 11 3 L 2. (Signature) 4.38 3 W.30 4.38 3 W.30 1. (Signature) 4.38 3 W.30 4.38 3 W.3	by: [Signature] 1. 10:30 W.1104383 11 3 L 2. 1. 2. 3 L 3. 1. 3 L 4.28.3 W.20 4.28.3 W.20 Received by: [Signature] 4.28.3 W.20 Received by: [Signature]	by: (Signature) 1. 10:30 W.1104383 11 3 L 2 L 3 L 4.38.3 W.30 Py: (Signature) 1. 10:30 W.1104383 11
1. 16:30 W.1004383 11 3 L Date Time Received by: (Signature) 1. 16:30 W.1104383 11 3 L Date Time Received by: (Signature) Dr. (Signature) Dr. (Signature) Pr. (Signature) Dr. (Signature) Pr. (Signature)	1. 18:10 W0904883 1.1 3 L Dr. (Signature)	1. 10:30 W.104383 11 3 L Date Time Received by: (Signature) Dr. (Signature)	by: (Signature) 1. 10:35 W.0904383 11 3 L 1. 16:30 W.1104383 11 L
1, 9:55 w0904383 1, 3 L 1, 16:30 w1104383 1, 3 L Nr. (Signature) Pr. (Signature)	1. 16:30 W.1004383 1. 3 L DY: [Signature] DY: [Signatur	1. 16:30 W.1004383 1. 3 L Nr. (Signature)	1. 16:30 W.1004383 11 3 L Doto W.1004383 11 3 L W.383 W.30 Pr. (Signature)
11 9:55 w.c904383 11 3 L by: (Signature) by: (Signature) by: (Signature) by: (Signature) by: (Signature) control of the state of	1. 16:30 W.1004383 11 3 L Dy: [Signature] Dy: [Signatur	1. 16:30 W.104383 11 3 L Dy. (Signature) Dy. (Signature	11 9:55 W0904383 11 3 V W. (Signature) V. (Signature) DY. (Signature) DY. (Signature) DY. (Signature) DY. (Signature) W. (Signature) DY. (Signature) A. (Signature)
1, 18:10 wood323 1, 3 L 1, 18:10 wood323 1, 3 L 1, 18:20 wile will be seen will b	1. 16:30 W.1004383 1.1 3 L Doto W.1004383 1.1 3 L W.30 W.1004383 1.1 3 L W.30 W.1004383 1.1 Signature) W. W	1. 10:30 W.0904383 11 3 L Dr. (Signature) V. (Signature) Dr. (Signature) Dr. (Signature) Dr. (Signature) Dr. (Signature) Heceived by: (Signature) Received by: (Signature) Heceived by: (Signature)	1. 10:30 W.0904383 1.1 3 L Drie Time Received by: (Signature) Py: (Signature)
11	1. 18.10 W1004383 11 3 L Dele Time Received by: (Signature) V. (Signature) Dy: (Signatur	1. 18:30 W.1004383 11 3 L DE: [Signature] DE: [Signatur	1. 18:30 W1094383 11 3 L Dr. (Signature) V. (Signature) Dr. (Signature) Dr. (Signature) Dr. (Signature) Dr. (Signature) Dr. (Signature) Dr. (Signature) A. 30 A. 44-38
1. 16:30 W.104383 11 3 L V. Signature) Dr. (Signature)	11 9:55 woqoy383 11 3 L 10:30 wilo4383 11 3	1. 18:10 W.0904383 1.1 3 L 1. 18:30 W.1004383 1.1 3 L 1. 16:30 W.1104383 1.1	11 6:55 200904383 11 3 L 10.10 201383 11 3 L 11 16:30 20104383 11 3 L 11 16:30 2 L 11 16:30 20104383 11 3 L 11 16:30 20104383 11 2 L 11 16:30
1. 16:30 W.1004383 1. 3 L Dr. (Signature)	1, 10:30 W1004383 1, 3 L N; [Signature]	1, 19.10 W1004383 11 3 L 1, 16.30 W1104383 11 3 L 2, 11 3 L 3, 1, 16.30 W1104383 11 3 L 4,383 W1.30 Received by: (Signature) 4,383 W1.30 Received by: (Signature) 4,383 W1.30 Received by: (Signature)	7 (Signature) 1. 10:55 w.0904383 11 3 L 1. 10:50 w.1104383 11 Beceived by: (Signature) 1. 10:50 w.1104383 11 Beceived by: (Signature) 1. 10:50 w.1104383 11
11 9:55 we9o4383 11 3 L 10 10 w1004383 11 3 L 11 9.55 we9o4383 11 3 L 11 9 10 w1004383 11 3 L 11 9 10 w1004383 11	1. 16:30 W.1004383 11 3 L Dy. [Signature] Dy. [Signatur	11	11 9:56 W0904383 11 3 L N. 10:30 W1104383 11 3 L N. Signature) DY. (Signature) PY. (Signature) PY. (Signature) PY. (Signature) PY. (Signature) PY. (Signature) PY. (Signature)
1. 10:30 W.104383 1.1 3 L Dy: (Signature) V: (Signature)	by: (Signature) 1.	1. 16:30 W.1104383 1. 3 V 1. 16:30 W.1104383 1.	1, 10:30 W1004383 1, 3 L 1, 10:30 W1104383 1, 3 L 1, 10:30 W1104383 1, 3 L 1, 10:30 W1104383 1, 1
1. 18:30 W.0904383 1.1 3 L 1. 18:30 W.1004383 1.1 A 1. 1	11 9:55 were 1833 11 3 L 11 10:30 wiley 383 11 3 L 12 Signature) 12 Signature) 13 L 14 38 J 14 38 J 15 Signature) 15 Signature) 16 Signature) 17 Signature) 18 Signature) 18 Signature) 19 Signature) 19 Signature) 10 Signature) 10 Signature) 11 Signature) 12 Signature) 13 Signature) 14 Signature) 15 Signature) 16 Signature) 17 Signature)	1. 16:30 W1004383 11 3 L N. 16:30 W1104383 11 3 L N. (Signature)	1. 10:30 W.004383 11 3 L N. 10:30 W.1104383 11 3 L N. (Signature) DY. (Signature) DY. (Signature) N. (Signature) DY. (Signature) N. (Signature)
1. 4:45 wc8c4483 11 3 L 1. 10:35 wc9c4383 11 3 L 1. 16:30 w1104383 11 3 L 1. 16:30 w1104383 11 3 L 1. 16:30 w1104383 11 Becaived by: (Signature)	11 9:55 W0804883 11 3 V 1	11 9:55 w.0904383 11 3 L 11 10:30 w.1104383 11 3 L 12 11	1. 4:45 w.c804383 1. 3 L 1. 16:30 w.1004383 1.
1, 9:55 woods3 1, 3 1, 3 1, 6:55 woods33 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 2 1, 3 1, 3	1, 9:45 we804883 11 3 L 1, 10:30 w104983 11 3 L 1, 10:30 w1104983 11	1, 9:45 we804883 11 3 L 1, 10:30 w109883 11 3 L 1, 10:30 w109883 11 3 L 1, 10:30 w1109883 11 L 1,	1, 9:45 we80483 11 3 L 1, 10:30 w109483 11 3 L 1, 10:30 w109483 11 3 L 1, 10:30 w109483 11 Standard by (Signature) 1, 10:30 w1109483 11 Standard by (Signature)
11. 9:45 weqey283 11. 2 L. 11. 0:56 weqey283 11. 2 L. 11. 0:50 will of 383 11. 3 L. 11. 0:50 will of 383 11. 3 L. 11. 0:50 will of 383 11. 3 L. 12. (Signature) 12. (Signature) 13. (Signature) 14. 38. 3 L. 15. (Signature) 16. (Signature) 17. (Signature) 18. (Signature) 19. (Signature)	1. 4:45 wc804683 11 3 6 1. 10:30 w1004383 11 3 6 1. 10:30 w1104383 11 3 6 1. 10:30 w1104383 11 3 6 1. 10:30 w1104383 11 3 16	11. 9:45 wc804883 11. 3 L 11. 10:30 w1004883 11. 3 L 12. 10:30 w1104883 11. 3 L 13. 10:30 w1104883 11. 3 L 14.88 wide by: (Signature) 15. Signature) 16. Signature) 17. Signature) 18. Signature) 18. Signature) 19. Signature) 19. Signature) 19. Signature)	1. 9:45 wc804883 11 2 L 1. 10:30 w1004883 11 3 L 1. 10:30 w1104883 11 3 L 1. 10:30 w1104883 11 3 L 1. 10:30 w1104883 11 Signature) 2. (Signature) 3. (Signature) 4. 883 4. 883 1. (Signature) 4. 883 4. 884 4. 885 4. 884 4. 885 4. 884 4. 885 4. 884 4. 885
1, 9:45 wc9c4883 11 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	1. 9:45 WC804883 11 3 L 1. 10:30 W109883 11 3 L Date Time Received by: (Signature) W. (Signature)	1. 9:45 WC804883 1. 2 L 1. 9:55 WC904883 1. 2 L 1. 10:30 W1104383 1. L 1.	1. 18:30 W.104383 11 3 L 1. 18:30 W.104383 11 3 L 1. 18:30 W.1104383 11 Signature)
1. 18:35 WCRC4883 11 3 L 1. 16:30 W1104883 11 L 1. 16:30 W1104883 11 L 1. 16:30 W1104883 11 L	1, 9:55 wegod383 11 3 L 1, 10:30 w109383 11 Beceived by: (Signature) 1, 10:30 w109383 11 Beceived by: (Signature) 1, 10:30 w109383 11 Beceived by: (Signature) 1, 10:30 w109383 11 A 1, 10:30 w1093	1. 9:55 wo904383 11 3 L 1. 10:30 w1104383 11 3 L 2. 10 w1004383 11 3 L 3. 11 3 L 3. 11 3 L 3. 12 L 3. 12 L 3. 12 L 3. 13 L 4.38 J 4.	1. 18:30 W.10 4383 11 3 L 1. 18:30 W.10 4383 11 Signature) 1. 18:30 W.10 W.10 4383 11 Signature) 1. 18:30 W.10 W.10 W.10 W.10 W.10 W.10 W.10 W.1
1. 9:55 w.0904323 1. 3 L 1. 10:30 w.1004383 1. 3 L N; (Signature) N; (Signature) N; (Signature) N; (Signature) H; (Signature)	1. 18:30 W.0904383 11 3 L 1. 18:10 W.004383 11 3 L 1. 18:30 W.1104383 11	1. 18:10 W.0904383 1. 3 L 1. 18:10 W.004383 1. 3 L 1. 18:30 W.1104383 1. L 1. 18:30 W.1104383 1. L 1. 18:30 W.1104383 1. L 1	1. 10:30 W104983 11 3 V 1. 10:30 W1104983 1
1, 9:45 WC80483 11 3 L 1, 10:30 W104383 11 Secolved by: (Signature)	1, 9:45 WCRC4683 11 3 L 1, 10:25 WCRC4683 11 3 L N; [Signature] N; (Signature)	1. 10:30 W.10483 11 3 L 1. 10:30 W.10483 11 1	1. 18:10 W.0904883 1.1 3 L 1. 18:10 W.004883 1.1 3 L 1. 18:10 W.1004883 1.1 3 L 1. 18:30 W.1104883 1.1 3 L 1. 18:30 W.1104883 1.1 3 L 1. 18:30 W.1104883 1.1 Signature) W. (Signature) W. (Signature) W. (Signature)
1, 9:55 wegods 1, 1 3 L 1, 10:30 wileys 1, 1 3 L 1, 10:30 wileys 3, 11 3 L 1, 10:30 wileys 4, 11 3	1. 9:45 WCRCHER3 11 3 L 1. 10:30 WIO4383 11 3 L 2. Signature) 1. 10:30 WIIO4383 11 3 L 4.38 Heceived by: (Signature)	1, 9:45 W.090483 1, 3 L 1, 18:10 W.004883 1, 3 L 1, 18:20 W.1104883 1, 3 L 1, 16:30 W.1104983 1, 3 L 1, 16:30 W.1104983 1, 30 1, 16:30 W.110498	1, 9:45 W.0804083 1, 3 L 1, 10:20 W.1004883 1, 3 L 1, 10:30 W.1104983 1, 3 L 1, 10:30 W.1104983 1, 30 L 1, 10:
1.	1. 9:55 woods 3 11 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	1. 9:55 woody23 1. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1.	1. 9:55 wegod33 11 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2
11. 9:45 WCROHOR3 11. 3 1. 3 1. 3 1. 3 1. 3 1. 3 1. 3 1	1. 9:55 wegelf883 11 3 1 2 1 1	1. 9:55 WC804883 11 3 L 1. 9:55 WC804883 11 3 L 1. 16:30 W1104883 11 3 L 2. C 2. C 3. C 4.383 Hi 32 4.	1, 9:55 wc9c4383 1, 3 1/2
1. 8.50 W.0904383 1. 3 L 1. 9.55 W.0904383 1. 3 L 1. 16.30 W.1104383 1. L 1. 16.30 W.1104383 1. L 1. 16.30 W.1104383 1. L 1.	1, 8150 W0804883 1, 3 L 1, 9:45 W0804883 1, 3 L 1, 9:55 W0804883 1, 3 L 1, 10:30 W104383 1, 3	1, 8750 W04983 1, 3 1/2 2 1/2 W0904883 1, 3 1/2 2 1/2	1, 8150 WCRCH83 1, 3 L 1, 9145 WCRCH83 1, 3 L 1, 16.30 W10483 1, 3 L 1, 18.30 W10483 1, 3 L 1, 18.
1. 8:50 words3 3 L 1. 9:55 words3 3 L 1. 10:30 wilo4383 3 L	1, 8:50 wolvey83 ", 2 L 1, 9:45 wc8c4883 ", 2 L 1, 9:55 wc9c4383 ", 2 L 1, 10:30 wilcy383 ", 3 L 1, 10:30 wilcy383 ", 2 L 1, 10:30 wilcy383 ", 3 L 1, 10:30 wilcy383 ", 3 L 1, 10:30 wilcy383 ", 1 Meceived by; (Signature)	1. 8:50 w0604383 3 V 1. 9:55 w0904383 3 V 1. 10:30 w1004383 3	1, 8:50 wobeyes 3, 1, 2, 1, 1, 1, 1, 1, 1, 2, 2, 1, 2, 1, 2, 1, 2, 1, 1, 2, 1, 1, 2, 2, 1, 1, 2, 2, 1, 1, 2, 2, 1, 1, 2, 2, 1, 1, 2, 2, 1, 1, 2, 2, 1, 1, 2, 2, 1, 1, 2, 2, 1, 1, 2, 2, 2, 1, 1, 2, 2, 2, 1, 1, 2, 2, 2, 1, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,
1. 8:50 w0604383 3 L 1. 9:55 w0904383 3 L 1. 10:30 w1104383 3	1. 8:50 words3 3 1 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	1. 8:50 woled 383 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	1. 8:50 woled 383 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1
	1. 8150 W0604883 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	1, 8,50 w0604383 ", 3 V 1, 9,45 w0804383 ", 3 V 1, 9,55 w0904383 ", 3 V 1, 10,30 w1104383 ", 3 V 1, 10,30 w1104383 ", 3 V 1,38 wide by (Signature) 1, 10,30 w1104383 ", 3 V 1,38 wide wide wide wide wide wide wide wide	1. 8:50 wolveyag3 2 1 1. 9:55 wolveyag3 2 1 2. 1 2 1 3. 1 3 1 3. 1 3 1 3. 1 3 1 3. 1 3 1 3. 1 3 1 3. 1 3 1 5. 1 10:30 willoward in Signature) 4.38 3 14:30 4.38 3 14:30 4.38 3 14:30 4.38 3 14:30 4.38 3 14:30 4.38 3 14:30 4.38 3 14:30 4.38 3 14:30 6.50 atture)
1, 9:50 w040483 ", 2 L 1, 9:54 w040483 ", 2 L 1, 9:55 w0904883 ", 2 L 1, 16:30 w1104883 ", 2 L 1, 16:30 w1104883 ", 2 L 1, 16:30 w1104883 ", 3	11 8150 408e4383 11 3 1 2 1 1	11	1. 8:50 worder 1383 2 L 1. 9:55 worder 1383 2 L 1. 10:30 will 04383 2 L 1. 10:30 will 04383 2 L 2. 1. 2 L 3. L 4.38 11 2 L 4.
1. 8:50 woke4883 2 1 1. 9:45 woke4883 2 1 1. 9:55 woke4883 2 1 2. 1. 2 1 3. 1. 2 1 3. 1. 2 1 3. 1. 2 1 3. 1. 2 1 3. 1. 2 1 4.383 iii 2 2 1. 2 1 3. 1. 2 1 3. 1. 2 1 3. 1. 3 1 4.383 iii 2 2 4.383 iii 3 1 5. (Signature) 97. (Signature) 19. (Signature) 10. (Signature) 10. (Signature) 11. (Signature)	11. 8150 W040483 11. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1.	11. 8150 W040483 11. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1.	1. 8:50 wokey383 2 1 1. 9:55 wokey383 2 1 2. 1 2 1 2. 1 2 1 2. 1 2 1 3. 1 2 1 3. 1 2 1 3. 1 2 1 4.38 11 2 2 1 5. 10 wokey383 2 1 5. 10 wokey383 2 1 5. 10 wokey383 2 1 6. 10 wokey383 2 1
1, 8:50 wobey383 3 L 1, 9:55 wo904383 3 L 1, 9:55 wo904383 3 L 1, 10:30 w1004383 3	11. 8150 words83 "1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	11. 8150 wovey883 11. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1.	11. 8150 W0804383 11. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1.
1. 8:50 woed383 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	1. 8150 W0604383 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	1, 8150 W0804883	1
11. 8:50 wob of 383 ". 3 L 11. 9:55 wob of 383 ". 3 L 12. 0 wob of 383 ". 3 L 13. 0 wob of 383 ". 3 L 14. 9:55 wob of 383 ". 3 L 15. 30 will of 383 ". 1	11 8:50 wobey83 "1 3 1 3 1 1	1. 8:50 wobo4883 2 1. 2 1. 3 1. 3 1. 3 1. 3 1. 3 1.	11 8:50 406 04883 11 2 1 2 1
1. 8:50 WOE 04883 3 L 1. 9:50 WOR 04383 3 L 1. 9:54 WOR 04383 3 L 1. 10:30 WILLOUSS	1.1 8:35 WORD4883 3 L 1.1 8:50 WORD4883 3 L 1.1 9:50 WORD4883 3 L 1.1 16:30 WILLO4383	11 8:35 WOLOGORS 11 2 1 2 1 1	11 8:35 WORD4883 "1 2 1 2 1 1
11 8:35 WORDHR3 "1 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	1, 8:50 woled 83 ", 3 1/2 " 1, 9:50 woled 483 ", 3 1/2 " 1, 9:50 woled 483 ", 3 1/2 " 1, 9:50 woled 483 ", 3 1/2 " 1, 10:30 will 04883 ", 3 1/2 " 1, 10:3	1, 8:50 woled 83 ", 3 1/2 " 1, 9:50 woled 483 ", 3 1/2 " 1, 9:50 woled 483 ", 3 1/2 " 1, 9:50 woled 483 ", 3 1/2 " 1, 10:30 will 04383 ", 3 1/2 " 1, 10:30 will 04383 ", 3 1/2 " 1, 10:30 will 04383 ", 11 3 1/2 " 1, 10:30 will 04383 ", 11 3 1/2 " 1, 10:30 will 04383 ", 11 3 1/2 " 1, 10:30 will 14:38 will 14:30 " 1, 10:30 will 14:38 will 14:30 " 1, 10:30 will 14:30 will 14:30 " 1, 10:30 will 14:30 will 14:	1, 8;50 woled 83 ", 3 L 1, 8;50 woled 983 ", 3 L 1, 9;50 woled 983 ", 3 L 1, 9;50 woled 983 ", 3 L 1, 10;30 wiled 983 ", 3 L 1, 10;30 wiled 983 ", 3 L 1, 10;30 wiled 983 ", 11 S L 1, 10;30 wiled 983 wiled 99; (Signature) 1, 10;30 wiled 983 wiled 99; (Signature) 1, 10;30 wiled 983 wiled 99; (Signature)
11 8:35 WOE OURS 3 " 2 V 11 8:50 WOE OURS 3 " 2 V 11 9:55 WOE OURS 3 " 2 V 11 9:55 WOE OURS 3 " 2 V 11 9:50 WOE OURS 3 " 2 V 11 10:30 WILLOUGH 32 3 " 2 V 12 Signature) 12 Signature) 13 V 14:37	1, 8:50 woedes 3 " 2 1	11 8:30 WOECHER 3 " 2 L 11 8:50 WOECHER 3 " 2 L 11 8:50 WOECHER 3 " 2 L 11 9:50 WOOCHER 3 " 2 L 11 9:50 WITCHER 3 " 2 L 11 10:30 WITCHER 3 " 2 L 11 10:30 WITCHER 3 " 2 L 11 10:30 WITCHER 3 " 1 A 11 10:30 WITCHER 3 WITCHE	11 8:30 WOECHER 3 11 2 1 1
11 8:35 WOSCH483 "1 3 1 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1, 8:35 WOSCH383 ", 3 1/2 1/2 WOSCH383 ", 1/2 1/2 WOSCH383 ", 1/2 1/2 WOSCH383 ", 1/2 1/2 WOSCH384 by: (Signature) Pr. (Signature) Pr. (Signature) Pr. (Signature) Pr. (Signature) Pr. (Signature)	1, 8:50 WOSCH83 ", 3 L 1, 9:50 WOSCH83 ", 3 L 1, 9:55 WOSCH83 ", 3 L 1, 9:55 WOSCH83 ", 3 L 1, 10:30 WILCH383 ", 1 Mine Received by: (Signature)	1, 8:50 WOSCH83 ", 3 L 1, 9:50 WOSCH83 ", 3 L 1, 9:55 WOSCH83 ", 3 L 1, 9:55 WOSCH83 ", 3 L 1, 10:30 WILCH383 ", 3 L
1, 8:35 WOSOY883 ", 2 V 1, 9:35 WOSOY883 ", 2 V 1, 9:35 WOSOY883 ", 2 V 1, 0:30 WILLOY883 ", 3 V 1, 0:30 WILLOW883 ",	1, 8:50 wolecy883 ", 2 L 1, 9:55 wolecy883 ", 2 L 1, 9:55 wolecy883 ", 2 L 1, 9:55 wolecy883 ", 2 L 2, L 2, L 3, L 4, R 5, L 6, 10 wolecy883 ", 2 L 7, L	1, 8:50 woled 883 ", 2 V 1, 9:55 woled 883 ", 2 V 1, 9:55 woled 883 ", 2 V 1, 10:30 will 04383 ", 3 V 1, 10:30	1, 8:50 woled 4883 ", 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2
1, 8:35 WCCO4883 ", 2 V 1, 8:50 WCCO4883 ", 2 V 1, 9:55 WCCO4883 ", 2 V 1, 10:30 WILLO4383 ", 3 V 1, 10:30 WILC4383 ",	1.1 8:35 WOS 04983 3 1 2 1 3 1	1. 8:50 woso4883 3 1 1. 9:50 woso4883 3 1 1. 9:55 woso4883 3 1 1. 9:55 woso4883 3 1 1. 10:30 willoff 3 3 1 1. 10:30 w	1, 8:50 woso483 ", 3 V 1, 9:55 woso483 ", 3 V 1, 9:55 woso483 ", 3 V 1, 10:30 willo4383 ", 3 V 1,
11 8:35 WOLOGORS 11 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1. 8:50 W0504883 3 L 1. 8:50 W0504883 3 L 1. 9:55 W0904883 3 L 1. 10:30 W1004883 3	1. 8:50 W060483 3 L 1. 8:50 W060483 3 L 1. 9:55 W060483 3 L 1. 9:55 W060483 3 L 2. L 3. L 4:80 M104383 3 L 4:80 M104383 3 L 4:80 M104383 3 L 4:80 M104383 3 L 8:50 M104383 3 L	1, 8:50 W060483 ", 3 L 1, 8:50 W0604883 ", 3 L 1, 9:55 W0604383 ", 3 L 1, 10:30 W104383 ", 3 L 1, 10:30 W1104383 ", 3 L 1,
11 8:50 WOSCH883 "1 2 1 2 1	1, 8:50 W0604883 ", 3 V 1, 8:50 W0604883 ", 3 V 1, 8:50 W0604883 ", 3 V 1, 6:30 W104883 ", 3 V 1, 16:30 W104883 ", 3	1, 8:50 W0604883 ", 3 V 1, 8:50 W0604883 ", 3 V 1, 9:55 W0904883 ", 3 V 1, 9:55 W0904883 ", 3 V 1, 10:30 W1104883 ", 3	1, 8:50 W604883 ", 3 V 1, 8:50 W604883 ", 3 V 1, 9:55 W604883 ", 3 V 1, 10:30 W1104883 ", 3 V N; Signature)
1, 8:30 40004983 ", 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	1. 8:50 W0604883 3 V 1. 8:50 W0604883 3 V 1. 9:55 W0904883 3 V 1. 10:30 W1104883 3	1.1 8:50 W0604383 3 L 1.1 6:30 W1004383 3 L 1.1 8:50 W1004383 3 L 1.1 6:30 W1004383 3 L 1.1 6:30 W1004383 3 L 1.1 6:30 W1004383 3 L 1.1 March 10 W100	11 8:50 W0604383 "1 3 V 11 8:50 W0604383 "1 3 V 11 8:50 W0604383 "1 3 V 12 W0604383 "1 3 V 13 W0604383 "1 3 V 14 M 10 W0004383 "1 3 V 10 W0
1. 8:50 WOSCH883 ". 3 L 1. 8:50 WOSCH883 ". 3 L 1. 8:50 WOSCH883 ". 3 L 2. L 3. L 4:38 II	1, 8:35 WOSCH883 ", 2 V 1, 8:50 WOSCH883 ", 2 V 1, 9:55 WOSCH883 ", 2 V 1, 9:55 WOSCH883 ", 2 V 1, 10:30 WILCH383 ", 3	1. 8:35 WOSCH883 "1 2 V 1. 8:50 WOSCH883 "1 2 V 1. 9:55 WOSCH883 "1 2 V 1. 10:30 WILDHORS III 2 V 1. 10:30 WILDHORS IIII 2 V 1. 10:30 WILDHORS IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	1, 8:35 worderfees ", 3 1 1 2 1 1
1, 8:40 WOLDERS 1, 2 V V V STOCK WOLDERS 1, 2 V V V V V V V V V V V V V V V V V V	1, 8:40 WO404883 ", 3 V 1, 8:50 WO804883 ", 3 V 1, 9:55 WO804883 ", 3 V 1, 9:55 WO804883 ", 3 V 1, 10:30 W104883 ", 3 V 1, 10:30 W1104883 ", 3	1. 8:40 W040483 2 L 1. 8:50 W060483 2 L 1. 8:50 W060483 2 L 1. 6:30 W10483 2 L 1. 6:30 W110483 2 L 1. 6:30 W110483 2 L 1. 6:30 W1104883 2 L 1. 7 W1104883 2 L 1. 8:40 W1104883 2 L 1. 8:40 W1104883 2 L 1. 10 W1	1. 8:40 W040483 2 1 1. 8:50 W060483 2 1 1. 9:50 W060483 2 1 1. 9:55 W090483 2 1 1. 9:55 W090483 2 1 1. 16:30 W110483 3
1, 8:40 WOHOH83 1, 2 V 1, 8:50 WOHOH83 1, 3 V 1, 9:55 WOHOH83 1, 3 V 1, 9:55 WOHOH83 1, 3 V 1, 10:30 WILCHSS 1, 3 V	1. 8:40 WOLOH883 3 V 1. 8:50 WOLOH883 3 V 1. 9:50 WOLOH883 3 V 1. 9:55 WOLOH883 3 V 1. 10:30 WILOH883 3 V	1. 8:40 WOLOH883 2 V. 1. 8:50 WOLOH883 2 V. 1. 8:50 WOLOH883 2 V. 1. 9:50 WOLOH883 2 V. 1. 6:30 WILOH883 2 V. 1. 7 F.	1. 8:40 WOLOH883 2 V 1. 8:50 WOLOH883 2 V 1. 8:50 WOLOH883 2 V 1. 6:50 WILOH883 2 V 1. 7
1, 8;40 wodod83 ,, 1 1, 8;50 wobod883 ,, 2 1, 9;52 wogod883 ,, 2 1, 9;55 wogod883 ,, 3 1, 10;30 willod983 ,, 3 1, 10;30 willod	1. 8:40 WOLO4883 3 V. 1. 8:50 WOLO4883 3 V. 1. 8:50 WOLO4883 3 V. 1. 9:55 WOLO4883 3 V. 1. 10:30 WILO4883 3 V. 1. 10:	1. 8:40 WOLO4883 3 L 1. 8:50 WOLO4883 3 L 1. 8:50 WOLO4883 3 L 1. 9:55 WOLO4883 3 L 1. 10:30 WILO4883 3 L	1. 8:40 WOLDERS 1. 2 V 1. 8:50 WOLDERS 3 " 2 V 1. 8:50 WOLDERS 3 " 2 V 1. 9:45 WOLDERS 3 " 2 V 1. 9:45 WOLDERS 3 " 2 V 1. 10:30 WILDERS 3
1, 8;40 wo404883 1, 2 V 1, 8;50 wo804883 1, 2 V 1, 9;55 wo804883 1, 2 V 1, 9;55 wo904883 1, 2 V 1, 10;30 w1104983 1, 2	1. 8:40 WOYOY83 3 V 1. 8:50 WOYOY83 3 V 1. 8:50 WOYOY83 3 V 1. 9:52 WOYOY83 3 V 1. 9:52 WOYOY83 3 V 1. 10:30 WIOY83 WIOY83 3 V 1. 10:30 WIOY83 WIOY83 3 V 1. 10:30 WIOY83 WI	1. 8:40 WOYOY83 3 V 1. 8:50 WOYOY83 3 V 1. 10:30 WIOY83 3	1, 8:40 woldes 3 ,, 3 \ \(\text{7} \) \(\text{1.1} \) \(\text{8:40 woldes 4883} \) \(\text{1.1} \) \(\text{9.150 woldes 4883} \) \(\text{1.1} \) \(\text{9.150 woldes 4883} \) \(\text{1.1} \) \(\text{9.150 woldes 4883} \) \(\text{1.1} \) \(\text{9.10 woldes 4883} \) \(\text{1.10 woldes 4883}
1. 8:40 WOXOURS 1.1 2 V 1. 8:50 WOXOURS 1.1 2 V 1. 9:45 WOXOURS 1.1 2 V 1. 9:55 WOXOURS 1.1 2 V 1. 10:30 W110478 3 V 1. 10:	1, 8:40 WOLO4883 1, 2 V 1, 8:50 WOLO4883 1, 2 V 1, 9:55 WOO4883 1, 2 V 1, 9:55 WOO4883 1, 2 V 1, 10:30 WIO4883 1, 2 V	11 8:40 WOLO4883 11 3 1	11. 8:40 WOLO4883 11. 2 V. 11. 8:50 WOLO4883 11. 2 V. 12. 10:30 WOLO4883 11. 2 V. 13. 10:30 WOLO4883 11. 2 V. 14. 8:50 WOLO4883 11. 2 V. 15. 10:30 WOLO4883 11. 2 V. 16. 10:30 WOLO4883 11. 2 V. 17. 10:30 WOLO4883 11. 2 V. 18. 10:30 WOLO4883 11. 2 V.
1, 8:40 WO40483 1, 2 V 1, 8:50 WO604883 1, 2 V 1, 9:50 WO604883 1, 2 V 1, 9:50 WO604883 1, 2 V 1, 10:30 W1104883 1, 3	11 8:30 WOLOGORS 11 2 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1 2 1 1 1 1 2 1	11 8:35 WOOLOGES 11 3 1 2 1 1 2 1 1	1. 8:40 WO40483 2 V 1. 8:50 W040483 2 V 1. 9:50 W040483 2 V 1. 9:55 W040483 2 V 1. 10:30 W10483 2
1, 8:40 WO40483 1, 2 C WO604883 1, 2 C C C WO60483 1, 2 C C WO60	1. 8:40 WOLOGES 3 V 1. 8:50 WOLOGES 11 3 V 1. 18:50 WOLOGES 11 M 1. 18:50 WOLOGES	1. 8:40 WOLO4883 2 V. 1. 8:50 WOLO4883 2 V. 1. 9:50 WOLO4883 2 V. 1. 9:50 WOLO4883 2 V. 1. 10:30 WILO4883 3 V. 1. 10 WILO4888 3 V. 1. 10 WILO4888 3 V.	1. 8:40 W040483 2 V 1. 8:50 W040483 2 V 1. 9:50 W040483 2 V 1. 9:50 W040483 2 V 1. 9:50 W10483 2 V 1. 10:30 W10483 2
1, 8:40 WOY0483 1, 3 1 1, 8:50 WOY0483 1, 3 1 1, 8:50 WOY04883 1, 3 1 1, 8:50 WOY04883 1, 3 1 1, 10:30 WI104883 1, 3 1	1. 8:30 WOLOGORS 3 L 1. 8:30 WOLOGORS 3 L 1. 9:45 WOLOGORS 3 L 1. 9:45 WOLOGORS 3 L 1. 9:55 WOLOGORS 3 L 1. 10:30 WILLOGORS 1. 3 L 1. 10:	1, 8:35 wolvey83 ", 3 L 1, 8:35 wolvey883 ", 3 L 1, 8:35 wolvey883 ", 3 L 1, 8:35 wolvey883 ", 3 L 1, 6:30 wilcy883 ", 3 L 1, 7, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8,	1, 8:40 W0404883 1, 2 V 1, 8:50 W0404883 1, 2 V 1, 9:50 W0404883 1, 2 V 1, 9:55 W0904883 1, 2 V 1, 10:30 W104883 1, 2
1, 8:40 wolded83 ,1 3 1 1 2 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1 2 1 1 1 1 2 1 1 1 1 2 1 1 1 1 2 1 1 1 1 2 1 1 1 1 2 1 1 1 1 1 2 1 1 1 1 1 2 1	1, 8:40 WONONESS 1, 3 L 1, 8:50 WONONESS 1, 3 L 1, 8:50 WONONESS 1, 3 L 1, 9:55 WONONESS 1, 3 L 1, 9:55 WONONESS 1, 3 L 1, 6:50 WILLOWSS 1, 1 BROWN DF. (Signature) 1, 6:50 WILLOWSS 1, 1 BROWN DF. (Signature) 1, 6:50 WILLOWSS 1, 1 BROWN DF. (Signature)	1, 8:40 WOYOY83 ,, 3 L 1, 8:50 WOYOY83 ,, 3 L 1, 9:45 WOYOY83 ,, 3 L 1, 9:55 WOYOY83 ,, 3 L 1, 6:30 WIOY83 ,, 3 L 1, 16:30 WIOY83 ,, 3 L 1, 16:30 WIOY83 ,, 3 L 1, 16:30 WIOY83 ,, 3 L 1, 16:30 WIO	11. 8:50 wodo483 11. 2 1. 11. 8:50 wodo483 11. 2 1. 11. 8:50 wodo483 11. 2 1. 11. 9:50 wodo483 11. 2 1. 11. 10:30 wilo483 11. 2 1. 11. 10:30 wilo483 11. 2 1. 11. 10:30 wilo483 11. 3 1. 11. 10:30 wilo483 11. 3 1. 11. 10:30 wilo483 11. 3 1. 12. 10 wilo483 11. 3 1. 13. 10 wilo483 11. 3 1. 14. 10. 10 wilo483 11. 3 1. 15. 10 wilo483 11. 3 1. 16. 10 wilo483 11. 3 1. 17. 10:30 wilo483 11. 3 1. 18. 10 wilo483 11. 3 1. 18. 10 wilo483 11. 3 1. 19. 10 wilo483 11. 3 1. 10 wilo483 11. 3 1. 11 wilo483 11. 3 1. 12 wilo4 wilo5 wilo4 wilo5 wilo5 wilo4 wilo5 wilo5 wilo4 wilo5 wilo5 wilo4 wilo5 wilo4 wilo5 wilo5 wilo4 wilo5 wilo5 wilo4 wilo5 wilo5 wilo5 wilo4 wilo5 wil
1, 8:40 woldy83 ", 2 1 1, 8:50 woldy83 ", 2 1 1, 9:55 woldy83 ", 2 1 1, 9:55 woldy83 ", 2 1 1, 6:30 wildy83 ", 3 1 1, 7, 7, 8 wildy83 ", 3 1 1, 7, 8 wildy83 ", 3 1 1, 8 wildy84 ", 3	1. 8:40 WONOHGR3 3 L 1. 8:50 WONOHGR3 3 L 1. 10:30 WILCHER 3 L 1. 10:30 WILCHER 3 L 1. 10:30 WILCHER 3 L 1. 10:30 WILCH	11 8:35 WCCO4883 "1 2 V V V V V V V V V V V V V V V V V V	11 8:35 WCCC4883 "1 2 V V V Signature) 11 8:35 WCCC4883 "1 2 V V V Signature) 11 8:35 WCCC4883 "1 2 V V V Signature) 11 10:30 WICCC4883 "1 2 V V V Signature) 11 10:30 WICCC4883 "1 2 V V V Signature) 11 10:30 WICCC4883 "1 2 V V V Signature) 12 Signature) 13 WCCC4883 "1 2 V V V Signature) 14 Signature) 15 Signature)
11 8:40 WOLDHAR3 11 3 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1	1. 8:40 WOLDH83 2 V 1. 8:50 WOLDH83 2 V 1. 8:50 WOLDH83 2 V 1. 6:30 WILCH83 2 V 1. 16:30 WILCH83 2	11 8:40 WO40483 11 3 V 11 8:50 WO604983 11 3 V 11 8:50 WO904383 11 3 V 11 10:30 W104883 11 W 11 10:30 W104883 W 11 W1048 W104883 W 11 W1048 W 11 W	11 8:40 WO40483 11 3 V 11 8:50 WO804883 11 3 V 11 8:50 WO804883 11 3 V 11 8:50 WO804883 11 3 V 11 16:30 W104883 11 3 V 11 16:30 W1104883 11 3 V
1. 8:40 WOLOH883 3 L 1. 8:50 WOLOH883 3 L 1. 8:50 WOLOH883 3 L 1. 8:50 WOLOH883 3 L 1. 6:30 WILOH883 3 L 1. 7 FEMANOR MANOR (Signature)	1. 8:40 WOLOGAR3 3 V 1. 8:40 WOLOGAR3 3 V 1. 8:50 WOLOGAR3 3 V 1. 9:55 WOLOGAR3 3 V 1. 10:30 WILOGAR3 3 V 1	1, 8:40 WO40483 1, 3 V 1, 8:50 W0604883 1, 3 V 1, 8:50 W0604883 1, 3 V 1, 9:55 W0604883 1, 3 V 1, 10:30 W104883 1, 3	11 8:40 WOLOGES 11 3 V 11 8:40 WOLOGES 11 3 V 11 8:50 WOLOGES 11 3 V 11 10:30 WILLOGES 11 3 V 11 8:50 MILLOGES 11 3 V 12 MILLOGES 11 3 V 13 MILLOGES 11 MILL
1. 8:40 W040483 11 3 1	1. 8:40 WOODER 3 1. 2 1. 3 1. 3 1. 3 1. 3 1. 3 1. 3 1.	1. 8:40 W.040483 11 3 1	1. 8:40 W.0404883 1. 2 1. 1. 8:40 W.0404883 1. 2 1. 1. 8:50 W.0604383 1. 2 1. 1. 8:50 W.0604383 1. 2 1. 1. 9:45 W.0804383 1. 2 1. 1. 9:45 W.0804383 1. 2 1. 1. 9:45 W.0804383 1. 2 1. 1. 9:55 W.0904383 1. 2 2 1. 1. 10:30 W.1104383 1. 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
1, 8:40 WOLOH883 1, 3 1 1, 8:40 WOLOH883 1, 3 1 1, 8:40 WOLOH883 1, 3 1 1, 8:50 WOLOH883 1, 3 1 1, 8:50 WOLOH883 1, 3 1 1, 8:50 WOLOH883 1, 3 1 1, 8:40 WOLOH883 1, 3	11. 8:30 WC34983 11. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1.	11. 8:40 WC204883 11. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1.	11. 8:40 WC304383 11 3 1 7 1
11 8:40 WC40483 11 2 1 2 1 1	11. 8:40 W.040483 11. 3 V 11. 8:40 W.040483 11. 3 V 11. 8:50 W.0504883 11. 3 V 12. 10 W.004983 11. 3 V 13. 10 W.004883 11. 3 V 14. 16:30 W.104883 11. 3 V 15. 10 W.104883 11. 3 V 16. 10 W.104883 11. 3 V 17. 16:30 W.104883 11. 3 V 18. 10 W.104883 11. 3 W 18. 10 W.104883 11. W 18. 10 W W 18.	11 8:50 4040483 11 2 1 2 1 1	11 8:30 WOSOURS 3 "1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1
1. 8:40 W0304383 3 L 1. 8:40 W0404383 3 L 1. 8:50 W0604383 3 L 1. 8:50 W0604383 3 L 1. 8:50 W0604383 3 L 1. 10:30 W1104383 3 L	11. 9:30 w.0304983 11. 3 V 11. 8:40 w.0404883 11. 3 V 11. 8:50 w.0404883 11. 3 V 11. 9:45 w.0404883 11. 3 V 11. 9:55 w.0404883 11. 3 V 11. 16:30 w.104883 11. 3 W 12. 16:30 w.104883 11. 3 W 13. 16:30 w.104883 11. 3 W 14. 16:30 w.104883 11. 3 W 15. 16:30 w.104883 11. 3 W 16. 16. 16. 16. 16. 16. 16. 16. 16. 16.	11. 9:30 w.0304983 11. 3 V 11. 8:40 w.0404883 11. 3 V 11. 8:50 w.0604983 11. 3 V 11. 8:50 w.0904383 11. 3 V 11. 16:30 w.104383 11. 3 V 12. 16:30 w.104383 11. 3 V 13. 16:30 w.104383 11. 3 V 14. 16:30 w.104383 11. 3 V 15. 16:30 w.104383 11. 3 V 16. 16:30 w.104383 11. 3 V 17. 16:30 w.104383 11. 3 V 18. 16:30 w.104833 11. 3 V 18	11. 8:30 w.0304983 11. 3 L 11. 8:35 w.0504983 11. 3 L 11. 8:50 w.0904983 11. 3 L 11. 8:50 w.0904983 11. 3 L 11. 9:50 w.104983 11. 3 L 11. 10:30 w.1104983 11
11. 8:40 W0304983 11. 3 1/2 11. 8:50 W0204983 11. 3 1/2 11. 8:50 W0204983 11. 3 1/2 11. 8:50 W0204983 11. 3 1/2 11. 3 1/2 11. 8:50 W0204983 11. 3 1/2 11. 3	1. 8:40 W.0304983 2 1/ 1. 8:40 W.0404883 2 1/ 1. 8:50 W.0404883 2 1/ 1. 9:55 W.0904383 2 1/ 1. 9:55 W.0904383 2 1/ 1. 16:30 W.104883 2 1/ 1. 16:30 W.1064883 2 1/ 1. 16:30	1. 8:40 W.0304983 2 1/ 1. 8:40 W.0404883 2 1/ 1. 8:50 W.0404883 2 1/ 1. 8:50 W.0404883 2 1/ 1. 9:55 W.0904883 2 1/ 1. 16:30 W.1104883 2 1/ 1. 16:3	1.1 8:40 W.0304983 2 1/ 1.1 8:50 W.0404883 2 1/ 1.1 16:30 W.104883 2 1/ 1.1 16:30 W.1048
11 8:40 WC40483 11 2 1	11. 8:40 WC304383 11. 3 1/2 11. 8:40 WC404883 11. 3 1/2 11. 8:50 WC404883 11. 3 1/2 11. 8:50 WC44883 11. 3 1/2 11. 8:50 WC44883 11. 3 1/2 11. 8:50 WC44883 11. 3 1/2 11. 8 1/2 1	11 8:40 WORD483 11 3 11 3 11 11 8:40 WORD483 11 3 11 3 11 11 8:50 WORD483 11 3 11 3 11 11 11 11 11 11 11 11 11 1	11 8:40 WORD483 11 3 1
11 8:40 WO40483 11 3 1	11 8:40 WC40483 11 2 1	11. 8:40 W0304383 "1 3 1 7 1	11. 8:40 W0304383 11. 2 1/2 11. 8:40 W0404883 11. 2 1/2 11. 8:50 W0404883 11. 2 1/2 11. 16:30 W1104383 11. 2 1/2 11. 16:30 W1
11 8:40 W040483 11 2 1 2 1	11. 8:40 W.0304383 11. 3 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11. 8:40 W.0304383 11. 3 1/2 2 1/2 11. 8:40 W.0404383 11. 3 1/2 2 1/2 11. 8:50 W.0404383 11. 3 1/2 2 1/2 11. 3 1/2 2 1/2 11. 3 1/2 2 1/2 11. 3 1/2 2 1	11. 8:30 WOSO4383 11. 3 V V 11. 8:35 WOSO4383 11. 3 V V 11. 16:30 WOSO4383 11. 3 V V 12. 16:30 WOSO4383 11. 3 V V 13. 16:30 WOSO4383 11. 3 V V 14. 38 M WOSO4383 11. 3 V V 15. 16:30 WOSO4383 11. 3 V V 16. 16:30 WOSO4383 11. 3 V V 17. 16:30 WOSO4383 11. 3 V V 18. 18. 18. 18. 18. 18. 18. 18. 18. 18.
1. 8:40 WC304383 2 1 2 1	11. 8:40 W0304383 ". 2 L 11. 8:50 W0804383 ". 2 L 12. M. 20 L 13. M. 20 L 14. 38 L 15. M. 20 L 16. M. 20 L 16. M. 20 L 17. M. 30 L 18. M. 20 L 18. M. 2	11. 8:40 WC304383 11. 2 1/2 11. 8:40 WC404883 11. 2 1/2 11. 8:50 WC404883 11. 2 1/2 11. 18:50 WC4048	11. 8:40 WC304383 11. 3 V V 11. 8:40 WC404883 11. 3 V V 11. 8:50 WC404883 11. 3 V 11. 8:50 WC404883 11. 3 V 11. 10:30 W104383
1. 8:40 WC304383 2 L 1. 8:50 WC204383 2 L 1. 8:50 WC044883 2 L 1. 10:30 WI04383 2 L 1. 10:30 WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	11. 8150 WOSCH883 "1 2 1 2 1 1	11. 8150 WO304983 "1 2 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	11. 8:40 WO304983 "1 2 1 2 1 1 2 1 1
11 8:30 WC324383 11 3 1 7 1 1 8:35 WC224383 11 3 1 1 3 1 1 1 8:35 WC224383 11 3 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1	11. 8:30 WO304383 "1 2 1 7 1 1 1 8:30 WO304383 "1 2 2 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1	11. 8:30 W0304383 "1 2 1 7 1 1 1 8:30 W0304383 "1 2 1 7 1 7 1 1 1 8:30 W0304383 "1 2 1 7 1 7 1 7 1 1 1 1 1 1 1 1 1 1 1 1	11. 8:30 WC3C4983 "1 2 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1
11 8:30 W0304983 11 3 1 2 1	11. 8:40 W0304383 "1 2 1 2 1	11. 8:40 WC3C4983 "1 2 1 2 1 1 1 1 8:40 WC4C4883 "1 2 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	11. 9:30 W0304383 "1 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
11 8:40 WONDONS 11 3 1 2 1 1 3 1 1 1 1 8:40 WONDONS 11 1 3 1 1 2 1 1 1 1 1 8:50 WONDONS 11 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11. 9:30 WOSO4983 11 2 1 2 1 1	11. 8:40 WORD4383 "1 2 1 2 1 1	11. 8:40 W0304383 11 3 1 2 1 1
11. 8:40 WOLOGRS 11. 2 L. 11. 8:40 WOLOGRS 11. 2 L. 11. 8:50 WOLOGRS 11. 2 L. 12. 10. 20 WILOGRS 11. 2 L. 13. 10. 20 WILOGRS 11. 2 L. 14. 30 L. 15. 30 WILOGRS 11. 2 L. 16. 30 WILOGRS 11. 2 L. 17. 16. 30 WILOGRS 11. 2 L. 18. 16. 20 Miles WOLOGRS 11. 2 L. 19. 16. 20 WILOGRS 11. 2 L. 10. 16. 20 WILOGRS 11. 2 L. 10. 16. 20 WILOGRS 11. 2 L. 10. 16. 20 WILOGRS 11. 2 L. 11. 16. 30 WILOGRS 11. 2 L. 12. 16. 20 WILOGRS 11. 2 L. 13. 16. 20 WILOGRS 11. 2 L. 14. 16. 20 WILOGRS 11. 2 L. 15. 20 WILOGRS 11. 2 L. 16. 20 WILOGRS 11. 2 L. 16. 20 WILOGRS 11. 2 L. 17. 16. 20 WILOGRS 11. 2 L. 18. 20 WILOGRS 11. 2 L. 18. 20 WILOGRS 11. 2 L. 19. 20 WILOGRS 11. 2 L. 19. 20 WILOGRS 11. 2 L. 19. 20 WILOGRS 11. 2 L. 10. 20 WILOGRS 11. 2 L. 11. 20 WILOGRS 11. 2 L. 12. 20 WILOGRS 11. 2 L. 13. 20 WILOGRS 11. 2 L. 14. 20 WILOGRS 11. 2 L. 15. 20 WILOGRS 11. 2 L. 16. 20 WILOGRS 11. 2 L. 16. 20 WILOGRS 11. 2 L. 17. 20 WILOGRS 11. 2 L. 18. 20 WILO	11. 8:40 WCHCH883 11. 3 V 11. 8:40 WCH4883 11. 3 V 11. 8:40 WCH4883 11. 3 V 11. 8:50 WCH4883 11. 3 V 11. 16:30 WH104883 11. 3 V 12. MCH4883 11. 3 V 13. WCH4883 11. 3 V 14. Signature) 15. WCH4883 11. 3 V 16. WCH4883 11. 3 V 17. WCH4883 11. 3 V 18. WCH4883 11. V 18. W	11. 9:30 WONDURS 11. 3 V 1. 1. 8:35 WONDURS 3 11. 3 V 1. 1. 8:35 WONDURS 3 11. 3 V 1. 1. 16:30 WINDURS 3 11. 3 V 1. 16:30 WINDURS 3	1.1 9:30 WOSO4383 2 V. 1.1 8:40 WOSO4383 2 V. 1.1 8:30 WOSO4383 2 V. 1.1 8:40 WOSO4383 2 V. 1.1 8:50 WOSO4383 2 V. 1.1 8:50 WOSO4383 2 V. 1.1 8:50 WOSO4383 2 V. 1.1 8:40 WOSO4383 2 V. 1.1 10:30 WOSO4383 2 V.
11. 9:40 WOSCH83 11. 3 1. 3 1. 1	11. 8:40 WC304983 " 2 V 11. 8:40 WC304983 " 2 V 11. 8:50 WC804983 " 2 V 12. 8:50 WC804983 " 2 V 13. 8:50 WC804983 " 2 V 14.38 WC804983 " 2 V 15. 90 WC804983 " 2 V 16. 10 WC804983 " 2 V 17. 10:30 WC804983 " 2 V 18. 8:50 WC80490 WC804983 " 2 V 18. 8:50 WC804983 "	11. 8:40 WC3C4483 "1 2 1 2 1	11. 8:40 WCHOURS 11. 2 V 11. 8:40 WCHOURS 11. 2 V 11. 8:40 WCHOURS 11. 2 V 11. 8:50 WCHOURS 11. 2 V 11. 10:30 WIIO438 11. 3 V 12. WCHOURS 11. 11. 3 V 13. WCHOURS 11. 11. 11. 3 V 14. WCHOURS 11. 11. 11. 3 V 15. WCHOURS 11. 11. 11. 3 V 16. WCHOURS 11. 11. 11. 3 V 17. WCHOURS 11. 11. 11. 11. 3 V 18. WCHOURS 11. 11. 11. 11. 11. 3 V 18. WCHOURS 11. 11. 11. 11. 11. 11. 11. 11. 11. 11
11. 9:30 WOSCH883 "1 2 1 2 1	11. 8:40 WOSO4883 "1 2 1 2 1	11. 9:40 W0304983 "1 2 1 2 1 1 2 1 1	11. 9:30 WC3C4983 11 2 1 2 1 1
11. 9:30 WC3C4383 11. 2 1. 2 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	11. 9:30 w.c3c4383 "1 2 1 7 2 1 1	1.1 9:30 wc304983 2 1. 1.1 9:30 wc304983 2 1. 1.1 8:40 wc404883 2 1. 1.1 8:50 wc604883 2 1. 1.1 6:30 wc604883 2 1. 1.	1.1 9:30 WC304983 2 1. 1.1 9:30 WC304983 2 1. 1.1 8:40 WC404883 2 1. 1.1 8:50 WC404883 2 1. 1.1 8:50 WC404883 2 1. 1.1 8:50 WC404883 2 1. 1.1 16:30 WI104983 2 1. 1.1 16:30 WI104983 2 1. 1.1 16:30 WI104983 2 1. 1.1 16:30 WC4883 2 1. 1.1 16:30
11. 8:40 W0304383 11. 2 1. 2 1. 1. 1. 8:40 W0304383 11. 2 1. 2 1. 2 1. 1. 1. 8:40 W0404833 11. 2 1. 2 1. 2 1. 1. 1. 8:150 W0204383 11. 2 1. 2 1. 2 1. 1. 1. 8:150 W0204383 11. 2 1. 2 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	11. 8:40 W0304383 11. 3 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2	1.1 8:40 W0304983 2 V 1.1 8:40 W0404883 2 V 1.1 8:50 W0804983 2 V 1.1 16:30 W1004883 3 V 1.1 16:30 W	1.1 9:30 wo304983 2 V 1.1 8:40 w0404883 2 V 1.1 8:50 w0204983 2 V 1.1 8:50 w0604883 2 V 1.1 6:30 w104983 3 V 1.1 6:30
11. 8:40 WC3C4983 2 L 11. 8:40 WC4C4883 2 L 11. 8:50 WC4C4883 2 L 12. 10:30 WIOC4883 2 L 13. 10:30 WIOC4883 2 L 14.30 Miles Received by: (Signature) 15. 10:30 WIOC4883 2 L 16. 20 WIOC4883 2 L 17. 10:30 WIOC4883 2 L 18.	1. 8:30 WORDHRS 1. 2 L 1. 8:40 WORDHRS 3. 1. 2 L 1. 8:50 WORDHRS 3. 1. 2 L 1. 18:50 WORDHRS 3. 1. 1. 1. 2 L 1. 18:50 WORDHRS 3. 1. 1. 1. 2 L 1. 18:50 WORDHRS 3. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	1. 8:40 WORDHRS 1. 2 V 1. 8:40 WORDHRS 1. 2 V 1. 8:50 WORDHRS 3. 1. 2 V 1. 10:30 WIDHRS 3. 1. 3 V 1. 10:30 WIDHRS 3. 1 V 1. 10:30 WIDHRS 3. 1 V 1. 10:30 WIDHRS 3. V 1. 10:30 WI	1. 8:40 WOLDGESS 2 L. 1. 8:40 WOLDGESS 2 L. 1. 8:40 WOLDGESS 2 L. 1. 8:50 WOLDGESS 2 L. 1. 16:30 WILDGESS 2 L. 1. 16:30 WILDGESS 3 L. 1. 16:30 WI
11. 8:40 WOSCH883 "1 2 V 11. 8:40 WOSCH883 "1 2 V 11. 8:50 WOSCH883 "1 2 V 11. 16:30 WIICH883 "1 2 V 1	1.1 8:40 WC304983 2 L 1.1 8:40 WC304983 2 L 1.1 8:40 WC304983 2 L 1.1 8:50 WC304983	1. 8:40 WOBCHES 1. 2 V V V Signature) 1. 8:40 WOBCHES 3 " 2 V V V V V V V V V V V V V V V V V V	1. 8:30 WOBCHES 1. 2 V V V Signature) 1. 8:50 WOBCHES 3 " 2 V V V V V V V V V V V V V V V V V V
4.38.3 91.30 WC3C4983 "1 2 V 1. 81.50 WC8C4883 "1 2 V 1. 10.30 WC8C4883 "1 2 V 1. 10.30 WC9C4883 "1 2 V 1. 10.30 WC9C4	11. 9:30 WC304383 11 2 1 2 1 1	1.1 8:30 WC304383 2 V 1.1 8:40 WC304383 2 V 1.1 8:50 WC304383 2 V 1.1 8:50 WC4983 2 V 1.1 8:50 WC4983 2 V 1.1 8:50 WC64983 2 V 1.1 WC64983 2 V	1.1 8:40 WC304383 2 V 1.1 8:40 WC304383 2 V 1.1 8:50 WC304383 2 V 1.1 8:50 WC494883 2 V 1.1 10 WC64883 2 V 1.1 10 WC648
1. 8:40 WC3C4383 "1 2 1 7 1 1 8:40 WC3C4383 "1 2 1 2 1 1 2 1 1 1 8:50 WC3C4883 "1 2 1 2 1 1 2 1 1 1 1 8:50 WC3C4883 "1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1.1 8:40 WC304383 2 1 1.1 8:40 WC404883 2 1 1.1 8:40 WC404883 2 1 1.1 8:50 WC404383 2 1 1.1 10:30 WL104383 3 1 1.1 WL10 WL104383 3 1 1.1 WL104483 3 1 1.1 WL	1.1 9:30 wc304383 11 2 1 7 1	1.1 9:30 WC304383 11 2 1 7 1
11. 9:30 WC3C4983 "1 2 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	1. 9:30 w.c3c4383 ". 2 V 1. 9:30 w.c3c4383 ". 2 V 1. 8:40 w.c4c4883 ". 2 V 1. 8:50 w.c4c4883 ". 2 V 2. C w.c4c4883 ". 2 V 2. C w.c4c4883 ". 2 V 2. C w.c4c4883 ". 2 V 3. C w.c4c4883 ". 2 V 3. C w.c4c4883 ". 2 V 3. C w.c4c4883 ". 2 V 4. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8.	1. 9:30 w.0304383 ". 2 V 1. 9:30 w.0304383 ". 2 V 1. 8:40 w.0404383 ". 2 V 1. 8:50 w.0404383 ". 2 V 1. 10:30 w.104383 ". 2 V 1. 10	1.1 9:30 wesser1383 "1 2 V 1.1 8:40 wester1383 "1 2 V 1.1 8:50 wester1383 "1 2 V 1.
11. 8:40 W0304383 "1 2 L 11. 8:40 W0404383 "1 2 L 11. 8:50 W0204383 "1 2 L 11. 8:50 W0604383 "1 2 L 12.30 W104383 "1 2 L 13. 10:30 W1104383 "1 2 L 14. 9:50 W1104383 "1 2 L 15.30 W1104383 "1 2 L 16.30 W1104383 "1 2 L 17. 10:30 W1104383 "1 2 L 18. 10:30 W110438	11 9:30 WOSCHER3 11 2 V V 11 8:40 WOODERS3 11 2 V V 11 8:40 WOODERS3 11 2 V V 11 8:45 WOODERS3 11 2 V V 11 8:50 WOODERS3 11 2 V V 11 10:30 WILCHER3 11 2 V V 11 10 WILCHER3 11 2	11 9:30 WUSCHER3 11 2 V V 11 8:40 WUSCHER3 11 2 V V 11 8:40 WUSCHER3 11 2 V V 11 8:45 WUSCHER3 11 2 V V 11 10:30 WUSCHER3 11 2 V V 11 10 WUSCHER3 11 2 V	11 9:30 wo204283 "1 2 V V 11 8:40 wo404883 "1 2 V 11 8:40 wo404883 "1 2 V 11 8:45 wo804383 "1 2 V 11 8:50 wo804383 "1 2 V 12 Wo804383 "1 2 V 13 Wo804383 "1 2 V 14 8:50 wo804383 "1 2 V 15 Wo804383 "1 2 V 16 Wo804383 "1 2 V 17 Wo804383 "1 2 V 18 W
11. 8:40 WO304983 11. 3 L. 2 L. 3 L. 1. 8:40 WO304983 11. 3 L. 3 L. 3 L. 1. 1. 8:50 WO304983 11. 3 L. 3 L. 1. 1. 8:50 WO304983 11. 3 L. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	11. 8:40 WOSCH883 11. 2 1. 2 1. 1. 8:40 WOSCH883 11. 2 1. 2 1. 2 1. 1. 8:40 WOSCH883 11. 2 1. 2 1. 1. 8:50 WOSCH883 11. 2 1. 2 1. 1. 8:50 WOSCH883 11. 2 1. 2 1. 1. 8:50 WOSCH883 11. 2 1. 2 1. 1. 16:30 WILCHARS 11. 2 1. 1. 1. 16:30 WILCHARS 11. 2 1. 1. 1. 16:30 WILCHARS 11. 1. 1. 16:30 WILCHARS 11. 1. 16:30 WILCHARS 11. 1. 16:30 WILCHARS 11. 16:40 WILCHARS 11. 16:	1. 9:30 WUSCHP83 2 L 1. 9:30 WUSCHP83 2 L 1. 8:40 WCCH883 2 L 1. 8:40 WCCH883 2 L 1. 8:50 WCCH883 2 L 1. WCCH883	1. 9:30 wo204983 2 L 1. 9:30 wo204983 2 L 1. 8:40 wo204983 2 L 1. 8:40 wo204983 2 L 1. 8:50 wo204983 2 L 2. 52 wo204983 2 L 2. 52 wo204983 2 L 3. C 4.38
1. 9:30 wc3c4883 2 L 1. 9:30 wc3c4883 2 L 1. 8:40 wc4c4883 2 L 1. 8:50 wc4c4883 .	1.1 9.30 wosc4883 2 L 1.1 9.30 wosc4883 2 L 1.1 8.35 wosc4883 2 L 1.1 8.35 wosc4883 2 L 1.1 8.55 wosc4883 2 L 1.1 8.55 wosc4883 2 L 1.1 16.30 wosc4883 2 L 1.1 16.3	1. 9:30 wo304983 2 L 1. 9:30 wo304983 2 L 1. 8:40 wo404883 2 L 1. 8:50 wo604983 2 L 1. 8:50 wo604383 2 L 2. C Wo60438	1. 8:40 W0304983 2 L 1. 8:40 W0404883 2 L 1. 8:40 W0404883 2 L 1. 8:50 W0504983 2 L 1. 8:50 W0604383 2 L 1. 8:50 W0604383 2 L 1. 8:50 W0604383 2 L 1. 10:30 W104383 3 L 1. 10:30 W104483 .
1. 9:30 we304883 2 L 1. 9:30 we304883 2 L 1. 8:40 we304883 2 L 1. 8:50 we004883 .	1.1 9:30 WC3C4983 2 L 1.1 9:30 WC3C4983 2 L 1.1 8:50 WC3C4983 2 L 1.1 WC3C4983	1.1 9:30 wesseles3 2 L 1.1 9:30 wesseles3 2 L 1.1 8:40 wesseles3 2 L 1.1 8:50 wesseles3 2 L 1.	1.1 9:30 wesseles3 2 1 1.1 9:30 wesseles3 2 1 1.1 8:50 wesseles3 2 1 2.1 8:50 wesseles3 2 1 3.1 8:50 wesseles3 2 1 4.783 wesseles4 by (Signature)
1.1 9:30 WC304383 2 1 1.1 9:30 WC304383 2 1 1.1 8:40 WC404883 2 1 1.1 8:50 WC404883 2 1 1.1 10:30 WC4048	11. 9:30 WC3C41983 11. 2 1. 2 1. 2 1. 1. 9:30 WC3C41983 11. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1. 2 1.	1. 9:30 wessels83 2 L 1. 9:30 wessels83 2 L 1. 8:40 wessels83 2 L 1. 8:50 wessels83 2 L 2. L 2. L 3. L 4.383 w.30 2 5. Signature) 5. Signature) 5. Signature) 5. Signature) 6. Signature) 6. Signature) 6. Signature) 6. Signature)	1. 9:30 We3c4983 2 L 1. 9:30 We3c4983 2 L 1. 8:50 We3c4983 .
11 9:30 wc3c4383 11 2 1 2 1 1	11. 9:30 WC3C4383 11. 2 1. 2 1. 1. 9:30 WC3C4383 11. 2 1. 2 1. 2 1. 2 1. 1. 2 1	1.1 9:30 WC3C4983 2 1 1.1 9:30 WC3C4983 2 1 1.1 8:40 WC4C4883 2 1 1.1 8:50 WC4C4883 2 1 1.1 10:30 WIC4C4883 3 1 1.1 WWARTHAM Received by: (Signature)	1. 9:30 wcsc4383 2 1 1. 9:30 wcsc4383 2 1 1. 8:50 wcsc4383 2 1 1. 8:50 wcsc4383 2 1 1. 8:50 wcsc4383 2 1 2. 1
11 8:40 WOZO4883 "1 2 1 2 1 1	1.1 9:30 wo304883 H20 2 V 1.1 9:30 wo304883 2 V 1.1 8:40 wo404883 2 V 1.1 8:50 wo404883 2 V 1.1 18:50 wo404	1. 9:30 WC3C4983 2 V 1. 9:30 WC3C4983 2 V 1. 8:40 WC3C4983 2 V 1. 8:50 WC4C4983 2 V 1. 10:30 WIIO4383 2 V 1. 10:30 WIIO4483 2 V 1. 10	1. 9:30 W0304383 2 L 1. 9:30 W0304383 2 L 1. 8:40 W0304383 2 L 1. 8:50 W0304383 2 L 1. 16:30 W1104383 2 L 1. 16:3
1. 8:30 WOSCH883 2 L 1. 8:30 WOSCH883 2 L 1. 8:35 WOSCH883 2 L 1. 8:50 WOSCH883 2 L 1. 16:30 WILDOWS 3 3 L 1. 16:30 WILDOWS 3	11 8:40 WO 204383 "1 2 1 2 1 1	1. 9:30 w.csc4383 2 L 1. 9:30 w.csc4383 2 L 1. 8:40 w.csc4383 2 L 1. 8:40 w.csc4383 2 L 1. 8:50 w.csc4383 2 L 1. 6:30 w.lo4383 2 L 1. 7 6:30 w.lo4383 2 L 1. 7 6:30 w.lo4383 2 L 1. 8 6:30 w.lo4383 2 L	1 9:30 wesserts 1 2 1 2 1 1 1 1 1 1

CHAIN OF CUSTODY RECORD

			כֿ	CHAIN OF CUSIODY RECORD	JY KE	COHD				
Client/Project Name			Project Location	, i.e.,	,					
THEIFTHAY			Theirragy	Y ROFINGRY			ANALYS	ANALYSIS/PARAMETERS		
Sampler: (Signature)	TAN	2	Chain of Custody Tape No.		sien				Remarks	
Samp	Sample Date /m	Sample E	Lab Number	Sample Matrix	No. c	XIL				
mu: 12	00111	68.1	E864061M	450	50	9 5	-			
mw13	05:01		E864081m		0	7				
mw. 15	75:01	1.	W1504383		2 0	Z				
J/MW	51111	li l	401001083	, u	5 00	7				
mwi 1	5016	4	E8640C1W	11	a	2				
mw 18	6'.10	=	E86408121	11	a	7				
MW 19	8:00	=	in1904/283		30	1				
mwdo	7,30	=	W3004283	11	0	Z				
18mus	2:40	,	Walotasa	. 1/	8 C	7				
Relinquished by: (Signature)	K	tage	<i>,</i>	Date Time Recei	Received by: (Signature)	jnature)			Date	Time
Relinquished by: (Signature)					Received by: (Signature)	gnature)				
Relinquished by: (Signature)				Rece	Received by: (Signature	() () () () () () () () () () () () () (4.8.93 H.2	14:30
		<u> </u>		:. :. : :	1					,

Client Project Name Sample (Signatura) Sample
Relinquished by: (Signature)

\
6 10 1
4283
Date Time Received by (Signature)
11:35 1, 28toutul 1, 26:11
1.35 1. WERDARY
130 1 Waar 100 1 H3U
255 Locci. 1925 L 0217
Van Date Contine Lao Number Marrix
Sample Sample I ab Mimber
JI B
2010
ANALYSIS/PARAMETERS
Project Location
AS CH
CHAIN OF CIRTODY DECODE

Ç

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT: **CLIENT NUMBER:**

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

BLOOMFIELD

99810

THRIFTWAY REFINERY

MW#2 W0204283 SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED: DATE RECIEVED: 04/28/93 04/28/93

DATE ANALYZED:

05/04/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	974.0	1.0
TOLUENE	189.0	1.0
ETHLYBENZENE	273.0	1.0
M,P-XYLENE	655.0	1.0
O-XYLENE	118.0	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

SAMPLE MATRIX:

WATER

PROJECT NAME:

THRIFTWAY REFINERY

PRESERVATIVE: REPORT DATE:

HGCL2 05/19/93

PROJECT LOCATION:

BLOOMFIELD

DATE SAMPLED:

04/28/93

SAMPLE ID:

MW#2

DATE RECIEVED:

04/28/93

SAMPLE NUMBER:

W0204283

DATE ANALYZED:

05/04/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

109.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

106.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER: PROJECT NAME:

PROJECT LOCATION: SAMPLE ID: SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY BLOOMFIELD

O-XYLENE

MW#3 W0304283

DATE ANALYZED:

SAMPLE MATRIX: PRESERVATIVE:

WATER HGCL2

REPORT DATE: 05/19/93

DATE SAMPLED: DATE RECIEVED:

1.0

04/28/93 04/28/93 05/04/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0

ND

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD

SAMPLE ID: SAMPLE NUMBER: MW#3 W0304283 SAMPLE MATRIX:

WATER

PRESERVATIVE:

HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED: DATE RECIEVED: 04/28/93

DATE ANALYZED:

04/28/93 05/04/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

111.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

108.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER: PROJECT NAME:

99810 THRIFTWAY REFINERY PRESERVATIVE: REPORT DATE: HGCL2 05/19/93

PROJECT LOCATION:

BLOOMFIELD

DATE SAMPLED: DATE RECIEVED: 04/28/93

SAMPLE ID:

SAMPLE NUMBER:

MW#4 W0404283

DATE ANALYZED:

04/28/93 05/04/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)	
BENZENE	588.0	1.0	
TOLUENE	4.0	1.0	
ETHLYBENZENE	39.0	1.0	
M,P-XYLENE	323.0	1.0	
O-XYLENE	6.0	1.0	

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

SAMPLE MATRIX:

WATER

PROJECT NAME:

THRIFTWAY REFINERY

PRESERVATIVE: REPORT DATE:

HGCL2 05/19/93

PROJECT LOCATION:

SAMPLE NUMBER:

BLOOMFIELD

DATE SAMPLED:

04/28/93

SAMPLE ID:

MW#4 W0404283 DATE RECIEVED: DATE ANALYZED: 04/28/93 05/04/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

107.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

106.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION: SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD MW#5

W0504283

SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED: DATE RECIEVED: 04/28/93 04/28/93

DATE ANALYZED:

05/04/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	14.0	1.0
TOLUENE	33.0	1.0
ETHLYBENZENE	4.0	1.0
M,P-XYLENE	10.0	1.0
O-XYLENE	16.0	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

BLOOMFIELD

CLIENT NUMBER:

99810

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION: SAMPLE ID:

SAMPLE NUMBER:

MW#5 W0504283

SAMPLE MATRIX:

WATER

PRESERVATIVE:

HGCL2

REPORT DATE: DATE SAMPLED: 05/19/93

DATE RECIEVED:

04/28/93 04/28/93

DATE ANALYZED:

05/04/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

100.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

96.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD

MW#6 W0604283 SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED:

04/28/93

DATE RECIEVED: DATE ANALYZED: 04/28/93 05/05/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	427.0	50.0
TOLUENE	36.0	50.0
ETHLYBENZENE	94.0	50.0
M,P-XYLENE	176.0	50.0
O-XYLENE	54.0	50.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION: SAMPLE ID:

MW#6 SAMPLE NUMBER:

BLOOMFIELD

W0604283

SAMPLE MATRIX:

WATER

PRESERVATIVE:

HGCL2

REPORT DATE: DATE SAMPLED: 05/19/93 04/28/93

DATE RECIEVED:

04/28/93

DATE ANALYZED:

05/05/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

98.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

94.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD

MW#8 W0804283 SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED: DATE RECIEVED: 04/28/93 04/28/93

DATE ANALYZED:

05/04/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD

SAMPLE ID: SAMPLE NUMBER: MW#8 W0804283 SAMPLE MATRIX:

WATER

PRESERVATIVE:

HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED:

04/28/93

DATE RECIEVED:

04/28/93

DATE ANALYZED:

05/04/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

87.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

87.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

MW#9

THRIFTWAY REFINERY

BLOOMFIELD

W0904283

SAMPLE MATRIX:

WATER

PRESERVATIVE: REPORT DATE:

HGCL2 05/19/93

DATE SAMPLED:

04/28/93

DATE RECIEVED:

04/28/93

DATE ANALYZED: 05/01/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

* * /

THRIFTWAY REFINERY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

99810

PRESERVATIVE: REPORT DATE:

HGCL2 05/19/93

PROJECT NAME: PROJECT LOCATION:

BLOOMFIELD

DATE SAMPLED:

DATE ANALYZED:

04/28/93

SAMPLE ID:

MW#9

DATE RECIEVED:

04/28/93 05/01/93

SAMPLE NUMBER:

W0904283

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

92.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

103.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

DEVIEW.

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER: PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD MW#10

W1004283

SAMPLE MATRIX:

WATER PRESERVATIVE: HGCL2

REPORT DATE:

05/19/93 DATE SAMPLED: 04/28/93

DATE RECIEVED:

04/28/93

DATE ANALYZED: 05/01/93

the second secon		
ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

99810

SAMPLE MATRIX: PRESERVATIVE:

WATER

CLIENT NUMBER: PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE:

HGCL2 05/19/93

PROJECT LOCATION:

BLOOMFIELD

DATE SAMPLED:

04/28/93

SAMPLE ID:

SAMPLE NUMBER:

MW#10 W1004283 DATE RECIEVED: DATE ANALYZED: 04/28/93 05/01/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

98.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

107.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

DEVIEW

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD

MW#11 W1104283 SAMPLE MATRIX:

MPLE MATRIX:

WATER HGCL2

PRESERVATIVE: REPORT DATE:

05/19/93

DATE SAMPLED:

04/28/93

DATE RECIEVED: DATE ANALYZED: 04/28/93 05/01/93

ANALYTE	CONCENTRATION (1-4)	DETECTION LIMIT (/L)
ANALTIE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

99810

PRESERVATIVE:

HGCL2

PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE: DATE SAMPLED: 05/19/93

PROJECT LOCATION:

BLOOMFIELD

DATE RECIEVED:

04/28/93

SAMPLE ID:

MW#11

04/28/93

SAMPLE NUMBER:

W1104283

DATE ANALYZED:

05/01/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

106.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

114.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

Instruction ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD MW#12

BER: W1204283

SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED:

04/28/93 04/28/93

DATE RECIEVED: DATE ANALYZED:

05/05/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	482.0	1.0
TOLUENE	89.0	1.0
ETHLYBENZENE	180.0	1.0
M,P-XYLENE	229.0	1.0
O-XYLENE	288.0	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD SAMPLE ID: MW#12

SAMPLE NUMBER:

W1204283

SAMPLE MATRIX:

WATER

PRESERVATIVE:

HGCL2

REPORT DATE: DATE SAMPLED: 05/19/93 04/28/93

DATE RECIEVED:

04/28/93

DATE ANALYZED:

05/05/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

93.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

97.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD

MW#13 W1304283 SAMPLE MATRIX:

WATER HGCL2

PRESERVATIVE: REPORT DATE:

05/19/93

DATE SAMPLED:

04/28/93

DATE RECIEVED: DATE ANALYZED:

04/28/93 05/05/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 ~ QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

SAMPLE MATRIX: PRESERVATIVE:

WATER HGCL2

PROJECT NAME:

THRIFTWAY REFINERY

05/19/93

PROJECT LOCATION:

BLOOMFIELD

REPORT DATE: DATE SAMPLED:

04/28/93

SAMPLE ID:

MW#13

DATE RECIEVED:

04/28/93

SAMPLE NUMBER:

W1304283

DATE ANALYZED:

05/05/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

103.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

106.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

Um the Alex

REVIEW

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD

MW#15

W1504283

SAMPLE MATRIX:

WATER

PRESERVATIVE: REPORT DATE:

HGCL2 05/19/93

DATE SAMPLED:

04/28/93

DATE RECIEVED:

04/28/93

DATE ANALYZED:

04/30/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	28.0	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

99810

PRESERVATIVE: REPORT DATE:

HGCL2

PROJECT NAME:

THRIFTWAY REFINERY BLOOMFIELD

DATE SAMPLED:

05/19/93 04/28/93

PROJECT LOCATION: SAMPLE ID:

MW#15

DATE RECIEVED:

04/28/93

SAMPLE NUMBER:

W1504283

DATE ANALYZED:

04/30/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

111.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

108.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION: SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD MW#16

W1604283

SAMPLE MATRIX:

WATER HGCL2

PRESERVATIVE: REPORT DATE:

05/19/93

DATE SAMPLED:

04/28/93

DATE RECIEVED:

04/28/93

DATE ANALYZED:

05/03/93

	CONCENTRATION (DETECTION LIMIT (118/1)
ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	3.0	1.0
M,P-XYLENE	2.0	1.0
O-XYLENE	3.0	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

SAMPLE MATRIX:

WATER

PROJECT NAME:

THRIFTWAY REFINERY

PRESERVATIVE: REPORT DATE:

HGCL2 05/19/93

PROJECT LOCATION:

BLOOMFIELD

DATE SAMPLED:

04/28/93

SAMPLE ID:

MW#16

DATE RECIEVED:

04/28/93

SAMPLE NUMBER:

W1604283

DATE ANALYZED:

05/03/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

90.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

101.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

PROJECT NAME:

CLIENT NUMBER:

PROJECT LOCATION: SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810 THRIFTWAY REFINERY

BLOOMFIELD MW#17

W1704283

SAMPLE MATRIX: PRESERVATIVE:

WATER HGCL2

REPORT DATE: DATE SAMPLED:

05/19/93 04/28/93

DATE RECIEVED: DATE ANALYZED: 04/28/93 05/03/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	23424.0	50.0
TOLUENE	22173.0	50.0
ETHLYBENZENE	1967.0	50.0
M,P-XYLENE	8427.0	50.0
O~XYLENE	4734.0	50.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD

SAMPLE ID: SAMPLE NUMBER: MW#17 W1704283 SAMPLE MATRIX:

WATER

PRESERVATIVE:

HGCL2

REPORT DATE: DATE SAMPLED: 05/19/93

DATE RECIEVED:

04/28/93

DATE ANALYZED:

04/28/93 05/03/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

96.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

94.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION: SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

MW#18

THRIFTWAY REFINERY

BLOOMFIELD

W1804283

SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED:

04/28/93

DATE RECIEVED: DATE ANALYZED: 04/28/93 04/30/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	223.0	1.0
TOLUENE	19.0	1.0
ETHLYBENZENE	13.0	1.0
M,P-XYLENE	499.0	1.0
O-XYLENE	4.0	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER: PROJECT NAME:

99810

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD

SAMPLE ID: SAMPLE NUMBER: MW#18 W1804283 SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED: DATE RECIEVED: 04/28/93 04/28/93

DATE ANALYZED:

04/30/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

98.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

99.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION: SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD MW#19

W1904283

SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED: DATE RECIEVED: 04/28/93 04/28/93

DATE ANALYZED:

04/30/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	45.0	1.0
TOLUENE	5.0	1.0
ETHLYBENZENE	118.0	1.0
M,P-XYLENE	612.0	1.0
O-XYLENE	11.0	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

SAMPLE MATRIX:

WATER HGCL2

PROJECT NAME:

THRIFTWAY REFINERY

PRESERVATIVE: REPORT DATE:

05/19/93

PROJECT LOCATION:

SAMPLE NUMBER:

BLOOMFIELD

DATE SAMPLED:

04/28/93

SAMPLE ID:

MW#19 W1904283 DATE RECIEVED: DATE ANALYZED: 04/28/93 04/30/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

92.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

86.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD

MW#20 W2004283 SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED: DATE RECIEVED: 04/28/93

DATE ANALYZED:

04/28/93 04/30/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	3.0	1.0
TOLUENE	3.0	1.0
ETHLYBENZENE	32.0	1.0
M,P-XYLENE	315.0	1.0
O-XYLENE	10.0	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

SAMPLE MATRIX: PRESERVATIVE:

WATER HGCL2

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD

REPORT DATE: DATE SAMPLED: 05/19/93 04/28/93

SAMPLE ID:

MW#20

DATE RECIEVED:

04/28/93

SAMPLE NUMBER:

W2004283

DATE ANALYZED:

04/30/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

103.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

108.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER: PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

BLOOMFIELD

99810

THRIFTWAY REFINERY

MW#21

W2104283

SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED: DATE RECIEVED: 04/28/93 04/28/93

DATE ANALYZED:

04/30/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	33.0	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

CLIENT NUMBER:

99810

SAMPLE MATRIX:

WATER

PROJECT NAME:

THRIFTWAY REFINERY

PRESERVATIVE: REPORT DATE:

HGCL2 05/19/93

PROJECT LOCATION:

BLOOMFIELD

DATE SAMPLED:

04/28/93

SAMPLE ID:

MW#21

DATE RECIEVED:

04/28/93

SAMPLE NUMBER:

W2104283

DATE ANALYZED:

04/30/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

99.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

100.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD

MW#22 W2204283 SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

05/19/93

DATE SAMPLED: DATE RECIEVED: 04/28/93 04/28/93

DATE ANALYZED:

04/29/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

99810

PRESERVATIVE: REPORT DATE:

HGCL2 05/19/93

PROJECT NAME:

THRIFTWAY REFINERY

PROJECT LOCATION:

BLOOMFIELD

DATE SAMPLED: DATE RECIEVED:

04/28/93 04/28/93

SAMPLE ID: SAMPLE NUMBER: MW#22 W2204283

DATE ANALYZED:

04/29/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

85.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

92.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION: SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD STRIPPER EFFLUENT

WEF04283

SAMPLE MATRIX:

PRESERVATIVE:

WATER HGCL2

REPORT DATE:

DATE SAMPLED:

05/19/93 04/28/93

DATE RECIEVED: DATE ANALYZED: 04/28/93 05/05/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

SAMPLE MATRIX:

WATER

CLIENT NUMBER:

99810

PRESERVATIVE:

HGCL2

PROJECT NAME:

THRIFTWAY REFINERY

REPORT DATE:

05/19/93

PROJECT LOCATION:

BLOOMFIELD

DATE SAMPLED:

04/28/93

SAMPLE ID:

STRIPPER EFFLUENT

DATE RECIEVED:

04/28/93

SAMPLE NUMBER:

WEF04283

DATE ANALYZED:

05/05/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

113.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

106.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

ANALYST

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS

CLIENT:

CLIENT NUMBER:

PROJECT NAME:

PROJECT LOCATION:

SAMPLE ID:

SAMPLE NUMBER:

THRIFTWAY

99810

THRIFTWAY REFINERY

BLOOMFIELD

O-XYLENE

STRIPPER INFLUENT

WIN04283

SAMPLE MATRIX:

PRESERVATIVE: REPORT DATE:

HGCL2 05/19/93

WATER

DATE SAMPLED:

ED: 04/28/93

DATE RECIEVED: DATE ANALYZED:

1.0

04/28/93 04/30/93

 ANALYTE
 CONCENTRATION (ug/L)
 DETECTION LIMIT (ug/L)

 BENZENE
 232.0
 1.0

 TOLUENE
 174.0
 1.0

 ETHLYBENZENE
 89.0
 1.0

 M,P-XYLENE
 212.0
 1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

34.0

EPA METHOD 8020 PURGABLE AROMATICS

PAGE 2 - QUALITY CONTROL

CLIENT:

THRIFTWAY

WATER

CLIENT NUMBER:

99810

SAMPLE MATRIX: PRESERVATIVE:

HGCL2

PROJECT NAME:

THRIFTWAY REFINERY

STRIPPER INFLUENT

PROJECT LOCATION:

BLOOMFIELD

REPORT DATE:

SAMPLE ID:

DATE SAMPLED: DATE RECIEVED: 04/28/93

05/19/93

SAMPLE NUMBER:

WIN04283

DATE ANALYZED:

04/28/93 04/30/93

QUALITY CONTROL: SURROGATE

PERCENT RECOVERY

ACCEPTANCE LIMIT

BROMOCHLOROMETHANE

104.0 %

85-115%

2-BROMO-1-CHLOROPROPANE

109.0 %

85-115%

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

COMMENTS:

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS QUALITY CONTROL

WATER CLIENT: THRIFTWAY SAMPLE MATRIX: HGCL2 **CLIENT NUMBER:** PRESERVATIVE: 99810 REPORT DATE: 05/19/93 PROJECT NAME: THRIFTWAY REFINERY 04/28/93 PROJECT LOCATION: BLOOMFIELD, NM DATE SAMPLED: SAMPLE ID: WSS05013 DATE RECIEVED: 04/28/93 SAMPLE NUMBER: SPIKE SAMPLE DATE ANALYZED: 05/01/93

	SPIKE	SAMPLE S	SPIKED SAMP	LE
	ADDED	RESULTS	RESULTS	PERCENT
ANALYTE	(ug/L)	(ug/L)	(ug/L)	RECOVERY
BENZENE	10.0	ND	10.4	104
TOLUENE	10.0	ND	10.6	106
ETHLYBENZENE	10.0	ND	9.4	94

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 8740

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS QUALITY CONTROL

CLIENT:

NA

SAMPLE MATRIX:

NA

CLIENT NUMBER:

NA NA PRESERVATIVE:

NA

PROJECT NAME: PROJECT LOCATION:

NA

REPORT DATE:

04/29/93 NA

SAMPLE ID:

NA LABORATORY BLANK DATE SAMPLED: DATE RECIEVED:

NA

SAMPLE NUMBER:

B2004293

DATE ANALYZED:

04/29/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS QUALITY CONTROL

CLIENT:
CLIENT NUMBER:

NA

SAMPLE MATRIX:

NA

CLIENT NUMBER: PROJECT NAME:

NA NA PRESERVATIVE: REPORT DATE:

NA 04/30/93

PROJECT LOCATION:

NA

DATE SAMPLED:

NA

SAMPLE ID: SAMPLE NUMBER: LABORATORY BLANK

DATE RECIEVED: DATE ANALYZED: NA 04/30/93

B2004303

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

EPA METHOD 8020 PURGABLE AROMATICS QUALITY CONTROL

CLIENT: NA SAMPLE MATRIX: NA CLIENT NUMBER: NA NA PRESERVATIVE: PROJECT NAME: REPORT DATE: 05/01/93 NA PROJECT LOCATION: DATE SAMPLED: NA NA SAMPLE ID: DATE RECIEVED: NA LABORATORY BLANK SAMPLE NUMBER: 05/01/93 B2001043 DATE ANALYZED:

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

EPA METHOD 8020 PURGABLE AROMATICS QUALITY CONTROL

CLIENT: NA SAMPLE MATRIX: NA CLIENT NUMBER: NA PRESERVATIVE: NA PROJECT NAME: NA REPORT DATE: 05/04/93 DATE SAMPLED: PROJECT LOCATION: NA NA SAMPLE ID: DATE RECIEVED: NA LABORATORY BLANK SAMPLE NUMBER: B2004043 DATE ANALYZED: 05/04/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

EPA METHOD 8020 PURGABLE AROMATICS QUALITY CONTROL

CLIENT: NA SAMPLE MATRIX: NA **CLIENT NUMBER:** PRESERVATIVE: NA NA 05/05/93 PROJECT NAME: REPORT DATE: NΑ PROJECT LOCATION: NA DATE SAMPLED: NA SAMPLE ID: DATE RECIEVED: NA LABORATORY BLANK SAMPLE NUMBER: B2005053 DATE ANALYZED: 05/05/93

ANALYTE	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
BENZENE	ND	1.0
TOLUENE	ND	1.0
ETHLYBENZENE	ND	1.0
M,P-XYLENE	ND	1.0
O-XYLENE	ND	1.0

ND - ANALYTE NOT DETECTED AT STATED DETECTION LIMIT

REFERENCE:

METHOD 5030, PURGE AND TRAP

METHOD 8020, PURAGABLE AROMATICS

TEST METHOD FOR EVALUATION SOLID WASTE,

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, SW-846,

VOLUME IB, NOVEMBER 1990

THRIFTWAY PROFESSIONAL BUILDING

710 EAST 20TH STREET

SUITE 400

FARMINGTON, NEW MEXICO 87401

LABORATORY OFFICE (505) 632-3365

APPENDIX B

MARK E. WEIDLER

Certified Professional Geologist

Office: (505) 325-9359 Residence: (505) 325-3641 AIPG NO. 2488 3001 Nothridge Drive
P.O. Box 3028
Farmington, New Mexico 87499

Hydrolgeologic Studies Site Investigations Remediation Plans

INVESTIGATION OF FREE PHASE PRODUCT THRIFTWAY REFINERY-SITE 810 BLOOMFIELD, NEW MEXICO

PREPARED FOR:
KEN SINKS, SENIOR PROJECT MANAGER
BIOTECH REMEDIATION, INC.

PREPARED BY:

MARK E. WEIDLER
CERTIFIED PROFESSIONAL GEOLOGIST
CPG-2488

MAY 25, 1993

\810\060193.WIN

TABLE OF CONTENTS

- 1.0 BACKGROUND
- 2.0 MONITOR WELL NO. 12 INVESTIGATION
- 3.0 OTHER FREE PRODUCT CONTAMINATION
- 3.1 METHOD OF INVESTIGATION
- 3.2 RECOVERY WELLS
- 3.3 METHOD OF RECOVERY
- 4.0 MAPPING OF CONTAMINATION
- 5.0 FUTURE WORK

LIST OF FIGURES

- FIGURE 1. MAP OF FREE PRODUCT, OCTOBER, 1992.
- FIGURE 2. MAP OF FREE PRODUCT, MAY 15, 1993.
- FIGURE 3. GROUND WATER ELEVATION MAP, DATA OCTOBER, 1992.
- FIGURE 4. SCHEMATIC DRAWING OF TYPICAL RECOVERY WELL

1.0 BACKGROUND

During the fall of 1992, several inches of free product was discovered in MW-12 adjacent to the south boundary of the refinery, east of the office building. The product was light straw colored and appeared to be fresh diesel. The well was bailed several times and the product reduced to a trace after recovering several gallons. Mr. Ken Sinks asked me to investigate the possible source of the contamination. In the course of this investigation, the author found an additional, sizeable area of free-product not previously recognized.

2.0 MONITOR WELL NO. 12

The fresh, straw color of the product recovered from MW-12 is unlike free-product found elsewhere underlying the refinery. Free-product is normally dark in color and has a strong odor of gasoline vapors. The product from MW-12 has a distinct diesel odor and color. The nearest tanks that contained diesel during the time the refinery was operating was No. 20 and No. 25. Both are located across gradient and over 300 feet from MW-12, and it seems unreasonable for a well previously uncontaminated, to suddenly evidence several inches of product when no precursers were found during previous monitoring. It appears that the well was purposely 'salted' by someone who hoped to embarrass Thriftway or cause problems. The fact that the product is nearly gone, with no recharging, supports this view.

3.0 OTHER PRODUCT CONTAMINATION

In the course of the investigation regarding MW-12, we measured fluid levels and checked for free-product in all monitor wells at the refinery, except MW-7, which was destroyed during construction of the collection trench along the north property boundary. During this survey, MW-14 showed nearly 20 inches of product. The well was bailed several times and remeasured, but continued to show about 20 inches of product. This was reported to Thriftway management, who directed that further investigation be conducted to define the area of contamination, and that product recovery be immediately initiated. It was apparent that the contamination was old, and not the result of a recent release.

3.1 METHOD OF INVESTIGATION

In order to obtain accurate data on fluid levels and product thickness, it was decided to utilize well points to obtain the desired data. A boring would be advanced with an auger to approximately 6 inches above the top of subsurface fluid. A 30-inch well point would be driven on blank 2-inch pipe until fluid level was near the top of the well screen. The well was allowed to equilibrate for 24 hours before measurements were made for depth to fluid and thickness of product. These test wells provided data on the thickness of product and fluid levels for the design of recovery wells. In addition the data was utilized to map the water-table (Figure 3), and product thickness (Figure 1) in the study area.

3.2 RECOVERY WELLS

The design of recovery wells (Figure 4) was intended to maximize the rate of product recovery. Eight-inch or 6-inch, schedule 40 PVC, was utilized for casing. Based upon fluid measurements from the test boring (observation well), the well casing was designed to place perforations opposite free product. We believed that by allowing product to gravity drain into a sump provided by several feet of casing rat-hole below the perforations, we could increase the rate of recovery.

The recovery wells were drilled with a rotary auger, 13-inches in diameter. The well was drilled approximately 3-feet deeper than the casing design length, so it could be 'pressed' into the zone of saturation and be positioned at the proper depth so perforations were opposite product. The bottom of the perforations were placed several inches above the product-water interface, because we expected the interface would rise as product was recovered. Sand (10/20 mesh) grout was placed around the casing to the level of the top of perforations.

3.3 METHOD OF RECOVERY

Product and water accumulated in the reservoir by gravity drainage. It was pumped from the casing 'sump' by utilizing a pneumatic diaphragm pump through 3/4-inch PVC and 1-inch I.D. suction hose. Recovered fluid was pumped via 3/4" PVC line to a buried tank utilized for waste oil and water at the refinery.

Eight recovery wells were installed during October, 1992, in the area north of Tank No. 19 and east and northeast of Tank No. 21 (Figures 1,2,3). Twenty one (21) test borings were made to further define the area of contamination in this area. We later made five test borings north of Tank No. 17, and one within the berm at the southeast corner of Tank No. 18, which revealed product.

It appears that this area of contamination is continuous with the area adjacent to Tank No. 19 and 21 (Figure 1 and 2).

4.0 MAPPING CONTAMINATION

The data collected from observation wells were compiled into work maps that were utilized to guide work on the recovery project, and served as the basis for this report. Casing elevations were surveyed utilizing the bench mark used for earlier hydrogeologic work at the refinery. Figure 3 shows contours on top of the water table. Figure 1 shows thickness of free product prior to initiation of regular pumping and recovery. Figure 2 shows free product thicknesses measured May 12, 1993. These data indicate a significant reduction in product thickness has been achieved by withdrawals through the winter and spring months.

It is apparent that the free product is a long time accumulation of releases, overfills, spills, etc. that occurred at the refinery. The configuration of the water table is obviously dramatically affected by the hydraulic head of the fire water pond, and this has provided a hydraulic barrier that has led to the 'entrapment' of a large amount of product to the east of the fire pond barrier. This is probably fortunate in that we can more easily recover the product because of its containment.

5.0 FUTURE WORK

Based upon this study, additional recovery wells should be installed to accelerate product recovery. We are testing an 'Oil Mop' recovery system at another site. If it proves beneficial for accelerating product recovery, we should consider utilizing a similar system at this site.

