

3R - 77

REPORTS

DATE:

1997

**1997 ANNUAL GROUNDWATER MONITORING REPORT
FORMER MAVERIK REFINERY TANK FARM
KIRTLAND, NEW MEXICO
MAVERIK COUNTRY STORES, INC.**

January 12, 1998

RECEIVED

JAN 14 1998

Environmental Bureau
Oil Conservation Division

Prepared by:

TriTechnics Corporation
1726 Cole Boulevard
Building 22, Suite 150
Golden, Colorado 80401

Job No. 3-3050-301 (MAVKL02797)



TABLE OF CONTENTS

<u>Title</u>	<u>Page No.</u>
1.0 INTRODUCTION.....	1
2.0 SCOPE OF WORK	2
3.0 GROUNDWATER MONITORING	3
4.0 RESULTS.....	4
4.1 <u>Fluid Level Measurements</u>	4
4.2 <u>Water Quality Analyses</u>	4
5.0 CONCLUSIONS AND RECOMMENDATIONS.....	6

APPENDIX A ANALYTICAL LABORATORY DATA REPORTS

LIST OF TABLES

<u>Table No.</u>	<u>Title</u>
1	Summary of Corrected Groundwater Elevations
2	Summary of Groundwater Quality Monitoring Results (Since Installation of Slurry Wall)

LIST OF FIGURES

<u>Figure No.</u>	<u>Title</u>
1	Groundwater Elevation Map - October 1997
2	Organics in Groundwater - June 1997
3	Organics in Groundwater - October 1997
4	Concentrations of Benzene and BTEX in MW-17
5	Concentrations of Benzene and BTEX in MW-22

1.0 INTRODUCTION

This report presents the results of the 1997 semi-annual groundwater sampling and monitoring program that was completed at the Maverik former refinery located in Kirtland, New Mexico. Field work was completed during June and October, 1997. Work was completed in accordance with the scope of work (Section 2.0) proposed in the April 26, 1993 monitoring report and agreed upon in a letter from the New Mexico Oil Conservation Commission (NMOCD) dated May 17, 1993, with the exception of the nutrient addition activity. After discussions between Maverik, Maverik's environmental consultant, and the NMOCD, the nutrient addition activity was terminated after 1996 (NMOCD letter dated February 19, 1997).

2.0 SCOPE OF WORK

The semi-annual sampling and monitoring program consists of the following:

1. Groundwater monitoring, which includes sampling and fluid level measuring, is performed twice per year, once in May or June, and once in October or November.
2. Both monitoring events include the following wells:
 - MW-10, MW-19, MW-20 (on site, down-gradient of the slurry wall impoundment)
 - MW-18 (up-gradient of the slurry wall impoundment)
 - MW-21 (outside of slurry wall impoundment, down-gradient of MW-18)
 - MW-17, MW-22 (within the confines of the slurry wall impoundment)
3. During one of the two semi-annual sampling events (in addition to the measurements and samples required under item 2 above) groundwater monitoring will include off-site monitoring wells MW-9, MW-13, MW-14, MW-15, and MW-16.

3.0 GROUNDWATER MONITORING

Groundwater monitoring was conducted on June 24, 1997 and October 18-20, 1997. TriTechnics personnel conducted both sampling events.

Groundwater monitoring activities were conducted in accordance with standard United States Environmental Protection Agency (EPA) sampling protocol. For all wells, fluid levels and total depth measurements were taken using an electronic interface probe. Measurements were utilized to calculate well evacuation requirements. Wells were purged using a disposable bailer until a minimum of three casing volumes of water were removed and pH and specific conductance measurements stabilized. Field parameter measurements and water quality observations were recorded on monitoring well field data forms. After well evacuation, samples were taken from wells (which did not exhibit free-phase hydrocarbons) using a disposable bailer.

4.0 RESULTS

4.1 Fluid Level Measurements

Historic groundwater elevation data are presented in Table 1. Corrected groundwater elevations were calculated using an assumed product density of 0.8 when necessary. A groundwater elevation map was completed and presented as Figure 1. Groundwater flow direction is generally to the south, which is typical of past observations. The groundwater gradient is approximately 1.5 feet/100 feet.

Fluid level measuring in October 1997 detected a thin layer of product in MW-22. This well is located within the confines of the slurry wall and has not historically exhibited free product, although several of the piezometers within the slurry wall have sporadically exhibited free product. Historic water level measurements demonstrate that water levels have dropped significantly since monitoring was initiated in 1992. This fall in water levels has probably caused the sporadic detections of free product in the wells/piezometers within the confines of the slurry wall; therefore, the presence of free product in MW-22 is not considered significant.

4.2 Water Quality Analyses

Water quality monitoring results for the May and October, 1997 sampling events are summarized in Table 2 along with historical analytical results. Laboratory analytical reports for the two 1997 events are included in Appendix A. Figures 2 and 3 present the concentrations of DCA (1,2-dichloroethane), benzene, and total BTEX (benzene, toluene, ethylbenzene, and xylenes) detected in each well sampled during the June and October, 1997 sampling events, respectively.

During 1997, MW-18, which is upgradient from the slurry wall, was the only well outside of the slurry wall with analyzed parameter detections above New Mexico Water Quality Standards. Analyzed parameters in all the other wells outside the slurry wall were either non-detect, or detected at a concentration below the New Mexico Water Quality Standards. These results are consistent with past results.

Monitoring wells MW-17 and MW-22 are located within the confines of the slurry wall where high concentrations of hydrocarbons are known to exist. Historic analytical results from these wells may suggest whether or not biodegradation is occurring within the area. Figures 4 and 5 illustrate an overall decreasing BTEX concentration trend in MW-17 and MW-22, which is likely the result of bioremediation.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Data indicate that the slurry wall has maintained its integrity and is performing its planned function of containing the contaminated groundwater. Groundwater samples from all monitor wells downgradient from the slurry wall were either non-detect for BTEX and DCA or below New Mexico drinking water standards. Historical analytical results suggest that biodegradation of organic contaminants in the groundwater at the site is taking place.

Maverik recommends that semi-annual monitoring continue. An annual report will be submitted in accordance with past agreements.

TABLES

TABLE 1
SUMMARY OF CORRECTED GROUNDWATER ELEVATIONS
Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
Outside Slurry Wall						
MW-1	Jan-92	5,205.75	5,207.24	10.90	0	5,196.34
	Jun-92	5,205.75	5,207.24	8.40	0	5,198.84
	Aug-92	5,205.75	5,207.24	6.00	0	5,201.24
	Dec-92	5,205.75	5,207.24	8.00	0	5,199.24
	Mar-93	5,205.75	5,207.24	12.30	0	5,194.94
	May-93	5,205.75	5,207.24	NM	0	NM
	Nov-93	5,205.75	5,207.24	NM	0	NM
	May-94	5,205.75	5,207.24	NM	0	NM
	Oct-94	5,205.75	5,207.24	NM	0	NM
	May-95	5,205.75	5,207.24	NM	0	NM
	Oct-95	5,205.75	5,207.24	NM	0	NM
	May-96	5,205.75	5,207.24	NM	0	NM
	Oct-96	5,205.75	5,207.24	10.97	0	5,196.27
	Jun-97	5,205.75	5,207.24	13.58	0	5,193.66
	Oct-97	5,205.75	5,207.24	11.87		5,195.37
MW-2	Jan-92	5,195.25	5,196.93	3.80	0	5,193.13
	Jun-92	5,195.25	5,196.93	4.40	0	5,192.53
	Aug-92	5,195.25	5,196.93	3.80	0	5,193.13
	Dec-92	5,195.25	5,196.93	2.50	0	5,194.43
	Mar-93	5,195.25	5,196.93	4.50	0	5,192.43
	May-93	5,195.25	5,196.93	NM	0	NM
	Nov-93	5,195.25	5,196.93	NM	0	NM
	May-94	5,195.25	5,196.93	NM	0	NM
	Oct-94	5,195.25	5,196.93	NM	0	NM
	May-95	5,195.25	5,196.93	NM	0	NM
	Oct-95	5,195.25	5,196.93	NM	0	NM
	May-96	5,195.25	5,196.93	NM	0	NM
	Oct-96	5,195.25	5,196.93	5.99	0	5,190.94
	Jun-97	5,195.25	5,196.93	7.51	0	5,189.42
	Oct-97	5,195.25	5,196.93	6.66	0	5,190.27
MW-9	Jan-92	5,189.33	5,191.22	1.50	0	5,189.72
	Jun-92	5,189.33	5,191.22	2.30	0	5,188.92
	Aug-92	5,189.33	5,191.22	1.80	0	5,189.42
	Dec-92	5,189.33	5,191.22	0.60	0	5,190.62
	Mar-93	5,189.33	5,191.22	1.80	0	5,189.42
	May-93	5,189.33	5,191.22	NM	0	NM
	Nov-93	5,189.33	5,191.22	1.30	0	5,189.92
	May-94	5,189.33	5,191.22	NM	0	NM
	Oct-94	5,189.33	5,191.22	2.03	0	5,189.19
	May-95	5,189.33	5,191.22	NM	0	NM
	Oct-95	5,189.33	5,191.22	4.22	0	5,187.00
	May-96	5,189.33	5,191.22	NM	0	NM
	Oct-96	5,189.33	5,191.22	3.88	0	5,187.34
	Jun-97	5,189.33	5,191.22	5.59	0	5,185.63
	Oct-97	5,189.33	5,191.22	5.06	0	5,186.16

TABLE 1
SUMMARY OF CORRECTED GROUNDWATER ELEVATIONS
Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
MW-10	Jan-92	5,187.47	5,189.30	1.60	0	5,187.70
	Jun-92	5,187.47	5,189.30	2.70	0	5,186.60
	Aug-92	5,187.47	5,189.30	2.90	0	5,186.40
	Dec-92	5,187.47	5,189.30	0.90	0	5,188.40
	Mar-93	5,187.47	5,189.30	1.60	0	5,187.70
	May-93	5,187.47	5,189.30	2.80	0	5,186.50
	Nov-93	5,187.47	5,189.30	1.80	0	5,187.50
	May-94	5,187.47	5,189.30	4.47	0	5,184.83
	Oct-94	5,187.47	5,189.30	2.97	0	5,186.33
	May-95	5,187.47	5,189.30	4.42	0	5,184.88
	Oct-95	5,187.47	5,189.30	4.60	0	5,184.70
	May-96	5,187.47	5,189.30	4.28	0	5,185.02
	Oct-96	5,187.47	5,189.30	4.23	0	5,185.07
	Jun-97	5,187.47	5,189.30	5.37	0	5,183.93
	Oct-97	5,187.47	5,189.30	4.90	0	5,184.40
MW-13	Jan-92	5,187.56	5,187.76	NM	0	NM
	Jun-92	5,187.56	5,187.76	2.80	0	5,184.96
	Aug-92	5,187.56	5,187.76	2.70	0	5,185.06
	Dec-92	5,187.56	5,187.76	1.10	0	5,186.66
	Mar-93	5,187.56	5,187.76	1.70	0	5,186.06
	May-93	5,187.56	5,187.76	NM	0	NM
	Nov-93	5,187.56	5,187.76	1.40	0	5,186.36
	May-94	5,187.56	5,187.76	NM	0	NM
	Oct-94	5,187.56	5,187.76	2.91	0	5,184.85
	May-95	5,187.56	5,187.76	NM	0	NM
	Oct-95	5,187.56	5,187.76	3.23	0	5,184.53
	May-96	5,187.56	5,187.76	NM	0	NM
	Oct-96	5,187.56	5,187.76	2.52	0	5,185.24
	Jun-97	5,187.56	5,187.76	4.08	0	5,183.68
	Oct-97	5,187.56	5,187.76	4.12	0	5,183.64
MW-14	Jan-92	5,190.70	5,194.47	2.10	0	5,192.37
	Jun-92	5,190.70	5,194.47	4.10	0	5,190.37
	Aug-92	5,190.70	5,194.47	4.20	0	5,190.27
	Dec-92	5,190.70	5,194.47	0.70	0	5,193.77
	Mar-93	5,190.70	5,194.47	2.20	0	5,192.27
	May-93	5,190.70	5,194.47	NM	0	NM
	Nov-93	5,190.70	5,194.47	1.70	0	5,192.77
	May-94	5,190.70	5,194.47	NM	0	NM
	Oct-94	5,190.70	5,194.47	4.27	0	5,190.20
	May-95	5,190.70	5,194.47	NM	0	NM
	Oct-95	5,190.70	5,194.47	8.09	0	5,186.38
	May-96	5,190.70	5,194.47	NM	0	NM
	Oct-96	5,190.70	5,194.47	7.52	0	5,186.95
	Jun-97	5,190.70	5,194.47	8.95	0	5,185.52
	Oct-97	5,190.70	5,194.47	8.87	0	5,185.60

TABLE 1
SUMMARY OF CORRECTED GROUNDWATER ELEVATIONS
Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
MW-15	Jan-92	5,185.40	5,188.80	0.80	0	5,188.00
	Jun-92	5,185.40	5,188.80	2.20	0	5,186.60
	Aug-92	5,185.40	5,188.80	2.40	0	5,186.40
	Dec-92	5,185.40	5,188.80	0.10	0	5,188.70
	Mar-93	5,185.40	5,188.80	0.60	0	5,188.20
	May-93	5,185.40	5,188.80	NM	0	NM
	Nov-93	5,185.40	5,188.80	0.60	0	5,188.20
	May-94	5,185.40	5,188.80	NM	0	NM
	Oct-94	5,185.40	5,188.80	1.86	0	5,186.94
	May-95	5,185.40	5,188.80	NM	0	NM
	Oct-95	5,185.40	5,188.80	5.79	0	5,183.01
	May-96	5,185.40	5,188.80	NM	0	NM
	Oct-96	5,185.40	5,188.80	5.32	0	5,183.48
	Jun-97	5,185.40	5,188.80	6.07	0	5,182.73
	Oct-97	5,185.40	5,188.80	5.57	0	5,183.23
MW-16	Jan-92	5,193.74	5,194.98	3.40	0	5,191.58
	Jun-92	5,193.74	5,194.98	4.50	0	5,190.48
	Aug-92	5,193.74	5,194.98	3.30	0	5,191.68
	Dec-92	5,193.74	5,194.98	1.90	0	5,193.08
	Mar-93	5,193.74	5,194.98	4.00	0	5,190.98
	May-93	5,193.74	5,194.98	NM	0	NM
	Nov-93	5,193.74	5,194.98	3.00	0	5,191.98
	May-94	5,193.74	5,194.98	NM	0	NM
	Oct-94	5,193.74	5,194.98	4.53	0	5,190.45
	May-95	5,193.74	5,194.98	NM	0	NM
	Oct-95	5,193.74	5,194.98	6.03	0	5,188.95
	May-96	5,193.74	5,194.98	NM	0	NM
	Oct-96	5,193.74	5,194.98	7.61	0	5,187.37
	Jun-97	5,193.74	5,194.98	7.72	0	5,187.26
	Oct-97	5,193.74	5,194.98	7.20	0	5,187.78
MW-18	Jan-92	5,199.14	5,201.75	NM	0	NM
	Jun-92	5,199.14	5,201.75	7.10	0	5,194.65
	Aug-92	5,199.14	5,201.75	5.00	0	5,196.75
	Dec-92	5,199.14	5,201.75	4.50	0	5,197.25
	Mar-93	5,199.14	5,201.75	6.70	0	5,195.05
	May-93	5,199.14	5,201.75	7.10	0	5,194.65
	Nov-93	5,199.14	5,201.75	5.20	0	5,196.55
	May-94	5,199.14	5,201.75	9.58	0	5,192.17
	Oct-94	5,199.14	5,201.75	8.60	0	5,193.15
	May-95	5,199.14	5,201.75	11.82	0	5,189.93
	Oct-95	5,199.14	5,201.75	10.69	0	5,191.06
	May-96	5,199.14	5,201.75	11.81	0	5,189.94
	Oct-96	5,199.14	5,201.75	10.35	0	5,191.40
	Jun-97	5,199.14	5,201.75	12.46	0	5,189.29
	Oct-97	5,199.14	5,201.75	11.96	0	5,189.79

TABLE 1
SUMMARY OF CORRECTED GROUNDWATER ELEVATIONS
Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
MW-19	Jan-92	5188.58	5189.54	1.00	0	5,188.54
	Jun-92	5188.58	5189.54	2.00	0	5,187.54
	Aug-92	5188.58	5189.54	1.90	0	5,187.64
	Dec-92	5188.58	5189.54	0.30	0	5,189.24
	Mar-93	5188.58	5189.54	1.20	0	5,188.34
	May-93	5188.58	5189.54	2.20	0	5,187.34
	Nov-93	5188.58	5189.54	1.00	0	5,188.54
	May-94	5188.58	5189.54	3.43	0	5,186.11
	Oct-94	5188.58	5189.54	2.48	0	5,187.06
	May-95	5188.58	5189.54	3.50	0	5,186.04
	Oct-95	5188.58	5189.54	3.44	0	5,186.10
	May-96	5188.58	5189.54	3.42	0	5,186.12
	Oct-96	5188.58	5189.54	2.97	0	5,186.57
	Jun-97	5188.58	5189.54	4.51	0	5,185.03
	Oct-97	5188.58	5189.54	3.99	0	5,185.55
MW-20	Jan-92	5,190.10	5,191.05	2.60	0	5,188.45
	Jun-92	5,190.10	5,191.05	3.50	0	5,187.55
	Aug-92	5,190.10	5,191.05	3.50	0	5,187.55
	Dec-92	5,190.10	5,191.05	1.80	0	5,189.25
	Mar-93	5,190.10	5,191.05	2.70	0	5,188.35
	May-93	5,190.10	5,191.05	3.70	0	5,187.35
	Nov-93	5,190.10	5,191.05	2.60	0	5,188.45
	May-94	5,190.10	5,191.05	5.76	0	5,185.29
	Oct-94	5,190.10	5,191.05	3.83	0	5,187.22
	May-95	5,190.10	5,191.05	4.78	0	5,186.27
	Oct-95	5,190.10	5,191.05	4.71	0	5,186.34
	May-96	5,190.10	5,191.05	4.57	0	5,186.48
	Oct-96	5,190.10	5,191.05	4.35	0	5,186.70
	Jun-97	5,190.10	5,191.05	5.65	0	5,185.40
	Oct-97	5,190.10	5,191.05	5.15	0	5,185.90
MW-21	Jan-92	5,193.62	5,194.81	2.80	0	5,192.01
	Jun-92	5,193.62	5,194.81	4.30	0	5,190.51
	Aug-92	5,193.62	5,194.81	4.60	0	5,190.21
	Dec-92	5,193.62	5,194.81	2.20	0	5,192.61
	Mar-93	5,193.62	5,194.81	3.20	0	5,191.61
	May-93	5,193.62	5,194.81	4.70	0	5,190.11
	Nov-93	5,193.62	5,194.81	3.30	0	5,191.51
	May-94	5,193.62	5,194.81	6.00	0	5,188.81
	Oct-94	5,193.62	5,194.81	5.04	0	5,189.77
	May-95	5,193.62	5,194.81	6.29	0	5,188.52
	Oct-95	5,193.62	5,194.81	6.22	0	5,188.59
	May-96	5,193.62	5,194.81	6.22	0	5,188.59
	Oct-96	5,193.62	5,194.81	5.71	0	5,189.10
	Jun-97	5,193.62	5,194.81	6.73	0	5,188.08
	Oct-97	5,193.62	5,194.81	6.92	0	5,187.89

TABLE 1
SUMMARY OF CORRECTED GROUNDWATER ELEVATIONS
Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
Inside Slurry Wall						
MW-17	Jan-92	5,193.43	5,195.91	NM	0	NM
	Jun-92	5,193.43	5,195.91	3.70	0	5,192.21
	Aug-92	5,193.43	5,195.91	3.40	0	5,192.51
	Dec-92	5,193.43	5,195.91	2.10	0	5,193.81
	Mar-93	5,193.43	5,195.91	3.10	0	5,192.81
	May-93	5,193.43	5,195.91	3.90	0	5,192.01
	Nov-93	5,193.43	5,195.91	2.90	0	5,193.01
	May-94	5,193.43	5,195.91	5.71	0	5,190.20
	Oct-94	5,193.43	5,195.91	5.47	0	5,190.44
	May-95	5,193.43	5,195.91	8.30	0	5,187.61
	Oct-95	5,193.43	5,195.91	8.29	0	5,187.62
	May-96	5,193.43	5,195.91	8.11	0	5,187.80
	Oct-96	5,193.43	5,195.91	8.02	0	5,187.89
	Jun-97	5,193.43	5,195.91	9.32	0	5,186.59
	Oct-97	5,193.43	5,195.91	9.48	0	5,186.43
MW-22	Jan-92	5,194.58	5,195.86	4.50	0	5,191.36
	Jun-92	5,194.58	5,195.86	5.30	0	5,190.56
	Aug-92	5,194.58	5,195.86	4.70	0	5,191.16
	Dec-92	5,194.58	5,195.86	3.50	0	5,192.36
	Mar-93	5,194.58	5,195.86	5.00	0	5,190.86
	May-93	5,194.58	5,195.86	5.70	0	5,190.16
	Nov-93	5,194.58	5,195.86	4.40	0	5,191.46
	May-94	5,194.58	5,195.86	7.62	0	5,188.24
	Oct-94	5,194.58	5,195.86	7.18	0	5,188.68
	May-95	5,194.58	5,195.86	7.64	0	5,188.22
	Oct-95	5,194.58	5,195.86	7.16	0	5,188.70
	May-96	5,194.58	5,195.86	7.51	0	5,188.35
	Oct-96	5,194.58	5,195.86	6.89	0	5,188.97
	Jun-97	5,194.58	5,195.86	8.16	0	5,187.70
	Oct-97	5,194.58	5,195.86	8.06	0.03	5,187.80
P-1	Jan-92	5,195.74	5,197.66	NM	0	NM
	Jun-92	5,195.74	5,197.66	5.40	0	5,192.26
	Aug-92	5,195.74	5,197.66	4.20	0	5,193.46
	Dec-92	5,195.74	5,197.66	3.30	0	5,194.36
	Mar-93	5,195.74	5,197.66	5.50	0	5,192.16
	May-93	5,195.74	5,197.66	6.10	0	5,191.56
	Nov-93	5,195.74	5,197.66	4.40	0	5,193.26
	May-94	5,195.74	5,197.66	7.21	0	5,190.45
	Oct-94	5,195.74	5,197.66	7.57	0	5,190.09
	May-95	5,195.74	5,197.66	8.62	0	5,189.04
	Oct-95	5,195.74	5,197.66	7.82	0	5,189.84
	May-96	5,195.74	5,197.66	8.54	0.01	5,189.12
	Oct-96	5,195.74	5,197.66	7.43	0	5,190.23
	Jun-97	5,195.74	5,197.66	9.29	0.01	5,188.37
	Oct-97	5,195.74	5,197.66	8.91	0.01	5,188.75

TABLE 1
SUMMARY OF CORRECTED GROUNDWATER ELEVATIONS
Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
P-2	Jan-92	5,190.50	5,192.32	NM	0	NM
	Jun-92	5,190.50	5,192.32	3.10	0	5,189.22
	Aug-92	5,190.50	5,192.32	2.30	0	5,190.02
	Dec-92	5,190.50	5,192.32	1.00	0	5,191.32
	Mar-93	5,190.50	5,192.32	2.20	0	5,190.12
	May-93	5,190.50	5,192.32	3.10	0	5,189.22
	Nov-93	5,190.50	5,192.32	1.90	0	5,190.42
	May-94	5,190.50	5,192.32	4.20	0	5,188.12
	Oct-94	5,190.50	5,192.32	4.81	0	5,187.51
	May-95	5,190.50	5,192.32	5.30	0	5,187.02
	Oct-95	5,190.50	5,192.32	4.86	0	5,187.46
	May-96	5,190.50	5,192.32	5.04	0	5,187.28
	Oct-96	5,190.50	5,192.32	4.53	0	5,187.79
	Jun-97	5,190.50	5,192.32	6.04	0	5,186.28
	Oct-97	5,190.50	5,192.32	5.69	0	5,186.63
P-3	Jan-92	5,191.44	5,193.21	NM	0	NM
	Jun-92	5,191.44	5,193.21	3.40	0	5,189.81
	Aug-92	5,191.44	5,193.21	3.60	0	5,189.61
	Dec-92	5,191.44	5,193.21	1.60	0	5,191.61
	Mar-93	5,191.44	5,193.21	2.60	0	5,190.61
	May-93	5,191.44	5,193.21	3.60	0	5,189.61
	Nov-93	5,191.44	5,193.21	2.60	0	5,190.61
	May-94	5,191.44	5,193.21	4.86	0	5,188.35
	Oct-94	5,191.44	5,193.21	5.77	0	5,187.44
	May-95	5,191.44	5,193.21	5.94	0	5,187.27
	Oct-95	5,191.44	5,193.21	5.88	0	5,187.33
	May-96	5,191.44	5,193.21	5.66	0	5,187.55
	Oct-96	5,191.44	5,193.21	5.62	0	5,187.59
	Jun-97	5,191.44	5,193.21	7.17	0	5,186.04
	Oct-97	5,191.44	5,193.21	6.67	0	5,186.54
P-4	Jan-92	5,197.06	5,198.82	NM	0	NM
	Jun-92	5,197.06	5,198.82	7.00	0	5,191.82
	Aug-92	5,197.06	5,198.82	6.20	0	5,192.62
	Dec-92	5,197.06	5,198.82	5.10	0	5,193.72
	Mar-93	5,197.06	5,198.82	7.10	0	5,191.72
	May-93	5,197.06	5,198.82	7.60	0	5,191.22
	Nov-93	5,197.06	5,198.82	6.10	0	5,192.72
	May-94	5,197.06	5,198.82	8.09	0	5,190.73
	Oct-94	5,197.06	5,198.82	8.93	0.28	5,189.89
	May-95	5,197.06	5,198.82	9.85	0	5,188.97
	Oct-95	5,197.06	5,198.82	9.13	0	5,189.69
	May-96	5,197.06	5,198.82	9.73	0	5,189.09
	Oct-96	5,197.06	5,198.82	8.79	0	5,190.03
	Jun-97	5,197.06	5,198.82	9.88	0	5,188.94
	Oct-97	5,197.06	5,198.82	9.90	0	5,188.92

NOTES: (1) NM + Not Measured

TABLE 2
SUMMARY OF GROUNDWATER QUALITY MONITORING RESULTS
(SINCE INSTALLATION OF SLURRY WALL)
Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
Within Slurry Wall									
MW-17	Sep 13-14, 1990	360	11,000	15,000	1,160	13,000	40,160	7.01	2,500
	Mar 18-19, 1991	400	11,000	10,000	1,900	15,000	37,900	7.04	2,700
	Jun 13, 1991	420	9,800	6,300	1,800	16,000	33,900	7.04	2,650
	Jan 20-21, 1992	MSG	MSG	MSG	MSG	MSG	MSG	MSG	MSG
	Jun 9 & 12, 1992	45	9,240	7,580	1,150	7,190	25,160	7.26	2,730
	Aug 19-20-1992	27	7,710	1,920	669	5,130	15,429	7.23	2,810
	Dec 16, 1992	17.3	7,990	4,740	638	4,600	17,968	7.54	2,970
	Mar 30, 1993	16.8	13,800	6,830	1,110	6,930	28,670	7.37	2,610
	May 23, 1993	12.5	13,700	6,360	993	10,530	31,583	7.33	2,470
	Nov 29-30, 1993	30.9	8,590	2,820	636	4,880	16,926	7.39	2,360
	May 25, 1994	8.3	10,900	4,340	823	5,660	21,723	7.30	2,830
	Oct 2-3, 1994	4.9	5,130	1,160	409	2,818	9,517	7.04	2,470
	dup Oct 2-3, 1994	< 1	2,070	807	350	2,013	5,240	7.04	2,470
	May 17, 1995	< 10	9,320	2,510	694	3,782	16,306	7.49	2,480
	dup May 17, 1995	< 10	12,800	4,460	944	5,710	23,914	7.49	2,480
	** Oct 18-19, 1995	2.3	3,000	464	244	1,079	4,787	7.09	2,430
	May 1-2, 1996	2.2	7,700	1,200	530	1,800	11,230	7.20	2,280
	dup May 1-2, 1996	< 5	7,300	1,200	490	1,800	10,790	7.20	2,280
	Oct 20, 1996	< 5	3,600	880	290	1,500	6,270	7.50	2,290
	June 24, 1997	<0.5	5,500	51	23	180	5,754	7.52	2,550
Oct. 28, 1997	<5	590	920	140	1,300	2,950	7.42	2,310	
dup Oct. 28, 1997	<5	490	680	95	930	2,195	7.42	2,310	
MW-22	Sep 13-14, 1990	7,200	21,000	20,000	1,100	8,300	50,400	7.00	1,500
	Mar 18-19, 1991	2,200	17,000	9,500	910	6,600	34,010	6.87	1,900
	Jun 13, 1991	3,600	15,000	3,200	760	3,000	21,960	7.06	1,700
	Jan 20-21, 1992	5,400	36,000	27,000	1,900	13,500	78,400	6.86	1,600
	Jun 9 & 12, 1992	3,170	21,200	7,540	1,040	5,730	35,510	7.13	1,690
	Aug 19-20-1992	568	20,500	4,610	588	3,280	28,978	7.28	1,545
	Dec 16, 1992	908	12,100	4,220	514	3,254	20,688	7.43	1,508
	Mar 30, 1993	1,930	29,800	14,100	1,170	7,030	52,100	7.26	1,408
	May 23, 1993	28	17,000	6,520	1,100	6,150	30,770	7.61	6,550
	Nov 29-30, 1993	2,780	18,400	8,480	1,150	7,300	35,330	8.01	1,610
	May 25, 1994	379	9,340	2,250	845	3,725	16,160	7.15	1,505
	Oct 2-3, 1994	566	10,500	5,890	1,390	8,350	26,130	7.24	1,710
	May 17, 1995	62	7,510	1,750	1,000	6,520	16,780	7.15	1,517
	dup May 17, 1995	67	9,020	2,620	1,230	7,310	20,180	7.15	1,517
	dup ** Oct 18-19, 1995	42	5,700	2,430	1,580	9,000	18,710	7.25	1,820
	** Oct 18-19, 1995	< 1	5,120	2,130	1,540	8,320	17,110	7.25	1,820
	May 1-2, 1996	37	4,600	410	1,300	10,000	16,310	7.30	1,325
	Oct 20, 1996	38	880	250	710	4,100	5,940	7.49	1,505
	June 24, 1997	24	4,300	580	510	5,500	10,890	7.31	1,280
	dup June 24, 1997	21	5,800	930	750	7,300	14,780	7.31	1,280
October 18, 1997	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE 2
SUMMARY OF GROUNDWATER QUALITY MONITORING RESULTS
(SINCE INSTALLATION OF SLURRY WALL)
Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
P-1	May 23, 1993	< 1	4,110	18.8	361	2,522	7,012	7.04	2,290
	Nov 29-30, 1993	< 1	3,580	10.2	506	3,215	7,311	7.22	1,460
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	< 1	8.9	< 1	1.9	11.8	22.6	7.04	2,210
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 18, 1997	NS	NS	NS	NS	NS	NS	NS	NS
P-2	May 23, 1993	3.2	5.2	< 1	< 1	< 1	5.2	7.36	3,910
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.92	3,540
	May 25, 1994	1.3	< 1	< 1	< 1	< 1	< 1	7.41	3,980
	Oct 2-3, 1994	3.6	< 1	< 1	< 1	< 1	< 1	7.12	3,480
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	May 1-2, 1996	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.40	2,980
	Oct 20, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 18, 1997	NS	NS	NS	NS	NS	NS	NS	NS
P-3	May 23, 1993	10.6	< 1	< 1	< 1	< 1	< 1	7.24	11,160
	Nov 29-30, 1993	11.5	< 1	< 1	< 1	< 1	< 1	7.31	9,140
	May 25, 1994	12.1	< 1	< 1	< 1	< 1	< 1	7.28	8,070
	Oct 2-3, 1994	12.6	< 1	< 1	< 1	< 1	< 1	7.06	5,550
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	May 1-2, 1996	3.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.40	4,280
	Oct 20, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 18, 1997	NS	NS	NS	NS	NS	NS	NS	NS
P-4	May 23, 1993	8.3	6,690	4,090	559	6,260	17,599	NA	NA
	Nov 29-30, 1993	2.1	6,400	4,420	900	7,700	19,420	NA	NA
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	May 1-2, 1996	NA	NA	NA	NA	NA	NA	6.60	1,621
	Oct 20, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 18, 1997	NS	NS	NS	NS	NS	NS	NS	NS
On Site									
MW-10	Sep 13-14, 1990	1.4	< 0.5	< 0.5	< 0.5	< 1	< 1	6.95	1,550
	Mar 18-19, 1991	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.29	1,700
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.31	1,840
	Jun 9 & 12, 1992	1.6	< 1	< 1	< 1	< 1	1.6	7.65	1,400
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	7.85	1,160

TABLE 2
SUMMARY OF GROUNDWATER QUALITY MONITORING RESULTS
(SINCE INSTALLATION OF SLURRY WALL)
Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
MW-10 (cont.)	Dec 16, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.64	6,110
	Mar 30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.22	9,060
	May 23, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.93	2,320
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.73	1,320
	May 25, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.75	1,335
	Oct 2-3, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.56	1,159
	May 17, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.64	1,695
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.41	1,453
	May 1-2, 1996	1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.70	1,288
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.69	1,310
	June 24, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.63	2,520
	October 20, 1997	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.61	1,585
MW-18 dup	Sep 13-14, 1990	< 1	17	< 12	84.0	880	981	7.00	1,500
	Mar 18-19, 1991	< 1	26	< 12	85.0	770	881	7.24	1,200
	Jun 13, 1991	< 1	< 25	< 25	78.0	930	1,008	6.77	1,200
	Jan 20-21, 1992	MSG	MSG	MSG	MSG	MSG	MSG	MSG	MSG
	Jun 9 & 12, 1992	< 1	313	1.1	200	1,710	2,224	7.07	1,480
	Aug 19-20-1992	< 1	527	10.8	258	2,075	2,871	7.26	2,100
	Dec 16, 1992	< 25	294	< 25	224	1,460	1,978	7.31	1,930
	Mar 30, 1993	< 1	117	8.0	96.0	226	447	7.07	2,780
	May 23, 1993	< 1	73	< 1	31.2	259	363	7.15	2,220
	Nov 29-30, 1993	< 1	337	4.9	261	1,352	1,955	7.00	1,870
	May 25, 1994	< 1	51	10.0	7.0	99	167	7.00	1,510
	Oct 2-3, 1994	< 1	210	10.9	46.0	483	750	7.10	1,530
	May 17, 1995	< 1	128	< 1	10.4	274	412	6.84	1,370
	Oct 18-19, 1995	< 1	118	12.2	20.0	296	447	7.03	1,299
	May 1-2, 1996	< 0.5	48	0.5	3.4	150	202	7.00	1,270
	Oct 20, 1996	< 0.5	37	11.0	14.0	110	172	7.50	1,314
	Oct 20, 1996	< 0.5	33	0.8	12.0	120	166	7.50	1,314
	June 24, 1997	< 0.5	130	< 0.5	15.0	200	345	6.98	1,399
	October 20, 1997	< 0.5	55	0.5	19.0	150	225	6.99	1,280
MW-19	Sep 13-14, 1990	45	< 0.5	< 0.5	1.1	1.9	3.0	6.95	3,000
	Mar 18-19, 1991	35	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.22	2,500
	Jun 13, 1991	44	< 0.5	< 0.5	5.9	< 0.5	5.9	7.10	2,400
	Jan 20-21, 1992	14	< 5	< 5	< 5	< 5	< 5	7.66	460
	Jun 9 & 12, 1992	11.4	< 1	< 1	< 1	< 1	< 1	7.76	1,970
	Aug 19-20-1992	9.0	< 1	< 1	< 1	< 1	< 1	7.72	1,320
	Dec 16, 1992	6.6	< 1	< 1	< 1	< 1	< 1	7.70	1,620
	Mar 30, 1993	2.4	< 1	< 1	< 1	< 1	< 1	7.74	1,750
	May 23, 1993	7.9	< 1	< 1	< 1	< 1	< 1	7.73	1,630
	Nov 29-30, 1993	6.6	< 1	< 1	< 1	< 1	< 1	7.78	1,380
	May 25, 1994	8.0	< 1	< 1	< 1	< 1	< 1	7.65	1,762
	Oct 2-3, 1994	7.9	< 1	< 1	< 1	< 1	< 1	7.44	1,258
	May 17, 1995	8.6	< 1	< 1	< 1	< 1	< 1	7.52	1,624
	Oct 18-19, 1995	8.8	< 1	< 1	< 1	< 1	< 1	7.31	1,411
	May 1-2, 1996	8.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.50	1,361
	Oct 20, 1996	4.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.62	1,340
	June 24, 1997	3.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.52	1,573
	October 20, 1997	2.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.53	1,346

TABLE 2
SUMMARY OF GROUNDWATER QUALITY MONITORING RESULTS
(SINCE INSTALLATION OF SLURRY WALL)
Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
MW-20	Sep 13-14, 1990	< 1	< 0.5	< 0.5	< 0.5	< 1	< 1	7.01	1,350
	Mar 18-19, 1991	2.0	< 0.5	< 0.5	< 0.5	0.7	0.7	7.39	3,000
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.54	3,750
	Jun 9 & 12, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.62	1,600
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	6.97	1,310
	Dec 16, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.87	1,340
	Mar 30, 1993	2.1	< 1	< 1	< 1	< 1	< 1	7.10	6,740
	May 23, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.86	1,430
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.69	1,230
	May 25, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.38	1,292
	Oct 2-3, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.57	1,308
	May 17, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.65	1,434
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.35	1,525
	May 1-2, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.50	1,417
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.18	1,545
	June 24, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.48	1,540
	October 20, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.01	1,452
MW-21	Sep 13-14, 1990	67	< 0.5	1.5	1.1	5.0	7.6	7.01	1,500
	Mar 18-19, 1991	44	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.62	1,700
	Jun 13, 1991	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.44	1,700
	Jan 20-21, 1992	8.8	< 5	< 5	< 5	< 5	< 5	8.31	5,110
	Jun 9 & 12, 1992	21.9	< 1	< 1	< 1	< 1	< 1	7.37	2,400
	Aug 19-20-1992	8.3	< 1	< 1	< 1	< 1	< 1	6.96	1,730
	Dec 16, 1992	1.7	< 1	< 1	< 1	< 1	< 1	7.69	2,030
	Mar 30, 1993	5.9	< 1	< 1	< 1	< 1	< 1	7.58	1,590
	May 23, 1993	14.8	< 1	< 1	< 1	< 1	< 1	7.63	2,530
	Nov 29-30, 1993	3.7	< 1	< 1	< 1	< 1	< 1	7.58	1,580
	May 25, 1994	8.3	< 1	< 1	< 1	< 1	< 1	7.66	1,592
	Oct 2-3, 1994	5.5	< 1	< 1	< 1	< 1	< 1	7.55	1,760
	May 17, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.59	1,819
	May 17, 1995	5.4	< 1	< 1	< 1	< 1	< 1	7.59	1,819
	Oct 18-19, 1995	2.1	< 1	< 1	< 1	< 1	< 1	7.52	2,060
	May 1-2, 1996	1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.60	1,824
	Oct 20, 1996	3.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.68	2,100
	June 24, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.98	1,642
	October 20, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.97	1,653
Off Site									
MW-9	Sep 13-14, 1990	2.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.97	1,550
	Mar 18-19, 1991	1.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.57	2,000
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.31	4,360
	Jun 9 & 12, 1992	1.5	< 1	< 1	< 1	< 1	< 1	7.58	1,680
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	7.81	1,325
	Dec 16, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.33	1,827
	Mar 30, 1993	1.5	< 1	< 1	< 1	< 1	< 1	7.63	1,640
	May 23, 1993	NA	NA	NA	NA	NA	NA	NA	NA
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.62	1,460
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	1.2	< 1	< 1	< 1	< 1	< 1	7.80	1,610

TABLE 2
SUMMARY OF GROUNDWATER QUALITY MONITORING RESULTS
(SINCE INSTALLATION OF SLURRY WALL)
Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
MW-9 (cont.)	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.38	1,523
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.85	1,645
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 20, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NV	NV
MW-13	Sep 13-14, 1990	< 1	< 0.5	1.5	< 0.5	< 1	1.5	7.02	2,950
	Mar 18-19, 1991	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.84	3,250
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	NA	NA	NA	NA	NA	NA	NA	NA
	Jun 9 & 12, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.11	4,260
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	7.06	2,910
	Dec 16, 1992	NA	NA	NA	NA	NA	NA	NA	NA
	Mar 30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.72	3,410
	May 23, 1993	NA	NA	NA	NA	NA	NA	NA	NA
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.45	4,150
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.38	3,160
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.41	3,600
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.54	3,200
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 20, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NV	NV
MW-14	Sep 13-14, 1990	2.0	< 0.5	< 0.5	< 0.5	< 1	< 1	6.97	5,450
	Mar 18-19, 1991	< 1	< 0.5	< 0.5	< 0.5	1.7	1.7	7.51	8,400
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.20	19,380
	Jun 9 & 12, 1992	2.3	< 1	< 1	< 1	< 1	< 1	7.62	4,520
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	7.38	5,760
	Dec 16, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.40	9,090
	Mar 30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.02	15,280
	May 23, 1993	NA	NA	NA	NA	NA	NA	NA	NA
	Nov 29-30, 1993	1.2	< 1	< 1	< 1	< 1	< 1	7.61	6,030
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	1.9	< 1	< 1	< 1	< 1	< 1	7.34	4,560
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.15	6,760
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.15	6,120
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 20, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NV	NV
MW-15	Sep 13-14, 1990	< 1	< 0.5	< 0.5	< 0.5	< 1	< 1	7.00	3,250
	Mar 18-19, 1991	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.02	8,500
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.15	12,120
	Jun 9 & 12, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.27	3,430
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	7.39	2,450
	Dec 16, 1992	NA	NA	NA	NA	NA	NA	NA	NA
	Mar 30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.42	9,810

TABLE 2
SUMMARY OF GROUNDWATER QUALITY MONITORING RESULTS
(SINCE INSTALLATION OF SLURRY WALL)
Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
MW-15 (cont.)	May 23, 1993	NA	NA	NA	NA	NA	NA	NA	NA
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	8.01	1,630
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.54	2,500
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.48	2,260
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	8.21	1,939
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 20, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.97	3,250
MW-16	Sep 13-14, 1990	< 1	< 0.5	< 0.5	< 0.5	< 1	< 1	6.97	1,370
	Mar 18-19, 1991	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.57	1,200
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.30	2,050
	Jun 9 & 12, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.50	1,430
	Aug 19-20, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.76	1,230
	Dec 16, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.12	1,735
	Mar 30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.23	2,400
	May 23, 1993	NA	NA	NA	NA	NA	NA	NA	NA
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.31	1,760
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.44	1,253
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.26	1,421
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.78	1,665
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 20, 1997	< 0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5	NV	NV
Water Quality Standards									
New Mexico		10	10	750	750	620		6.90	—
EPA MCL		5	5	1,000	700	10,000		—	—

NOTES: 1,2-dichloroethane
Benzene
Toluene
Ethylbenzene
Total Xylenes

SC = Specific Conductivity
TDS = Total Dissolved Solids
MSG = Well Missing
NA = Not Analyzed
NS = Not Sampled

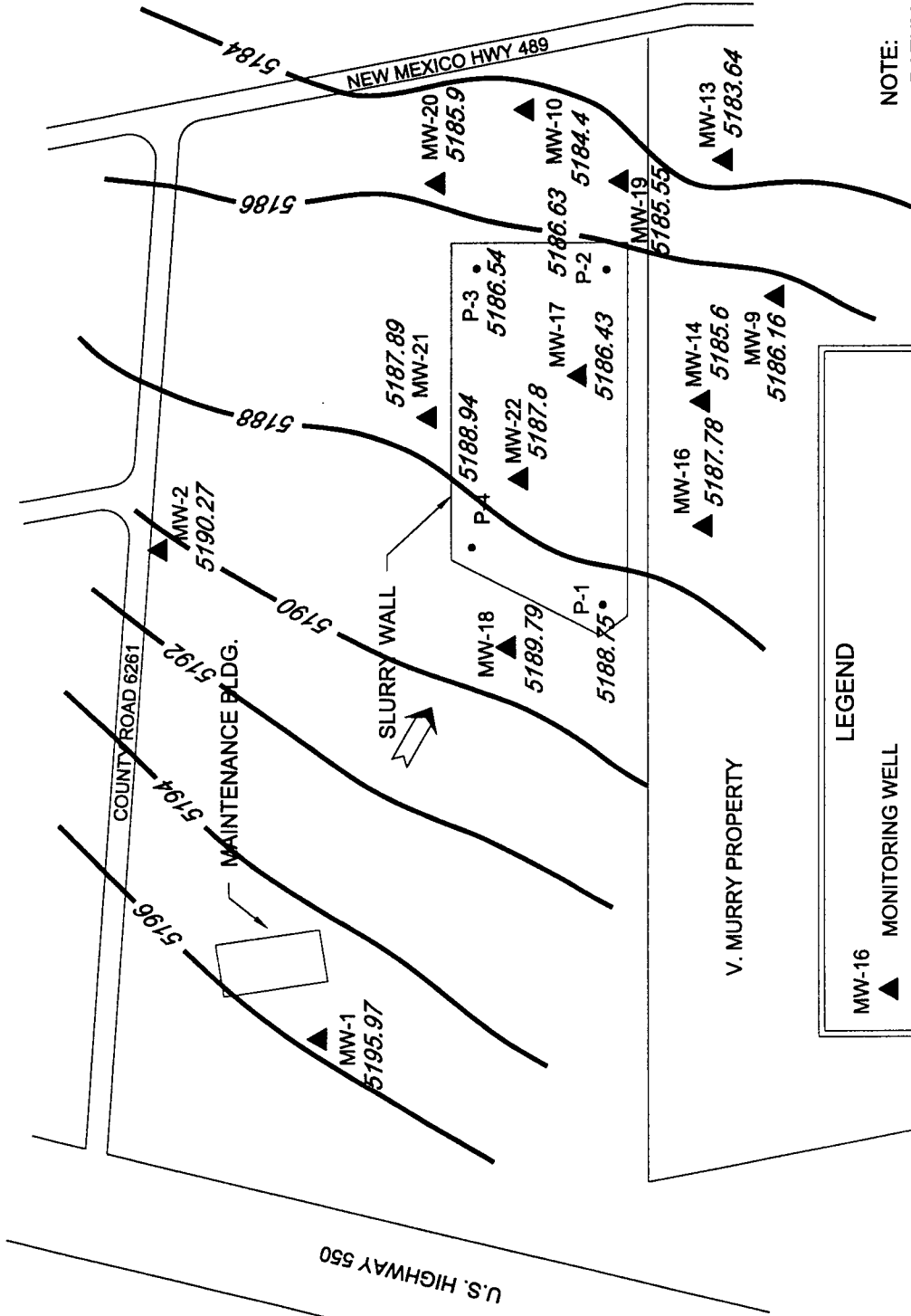
Organic values in ug/l
pH in standard units
SC in umhos/cm
NV=no value recorded

Values in bold exceed New Mexico MCL for drinking water

** = Laboratory exceeded holding time before completing sample analyses.

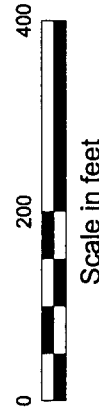
From sampling period 5 onward, samples were obtained from replacement wells at MW-17 and MW-18.

FIGURES



LEGEND

- MW-16
- ▲ MONITORING WELL
- P-1 PIEZOMETER
- ➡ APPROX. GROUNDWATER FLOW DIRECTION
- 5186.16 GROUNDWATER ELEVATION (ft.)
- 5188 — GROUNDWATER CONTOUR



1997 Annual Report

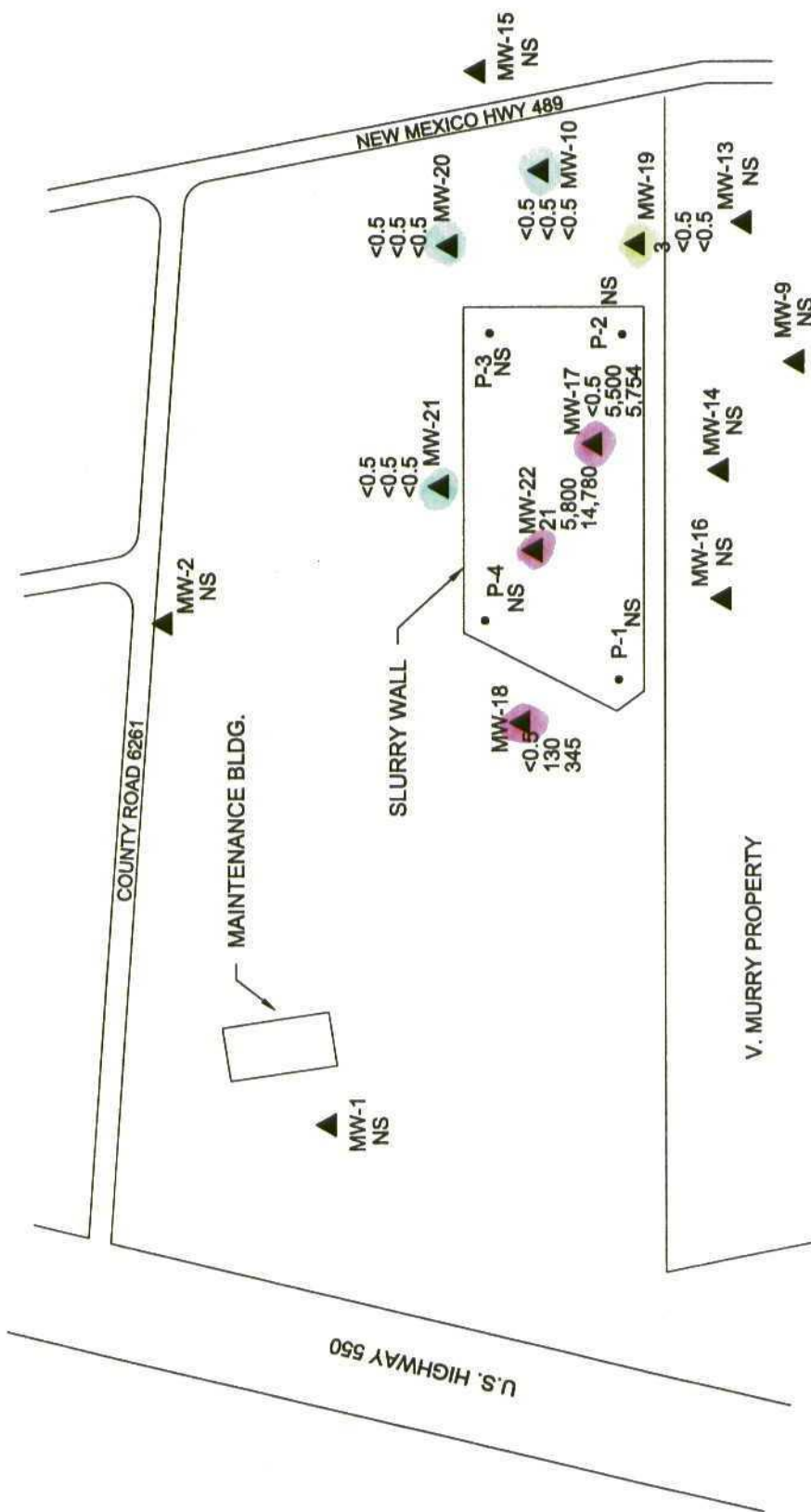
GROUNDWATER ELEVATION MAP OCTOBER 1997

Kirtland Refinery
Kirtland, NM

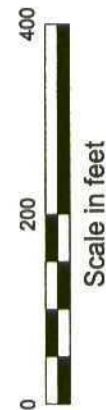
North

Scale in feet

FIGURE 1



LEGEND			
MW-17	▲	MONITORING WELL	
•	P-1	PIEZOMETER	
<5	DCA (ug/l)		
5,800	BENZENE (ug/l)		
14,780	BTEX (ug/l)		
NS	NOT SAMPLED		



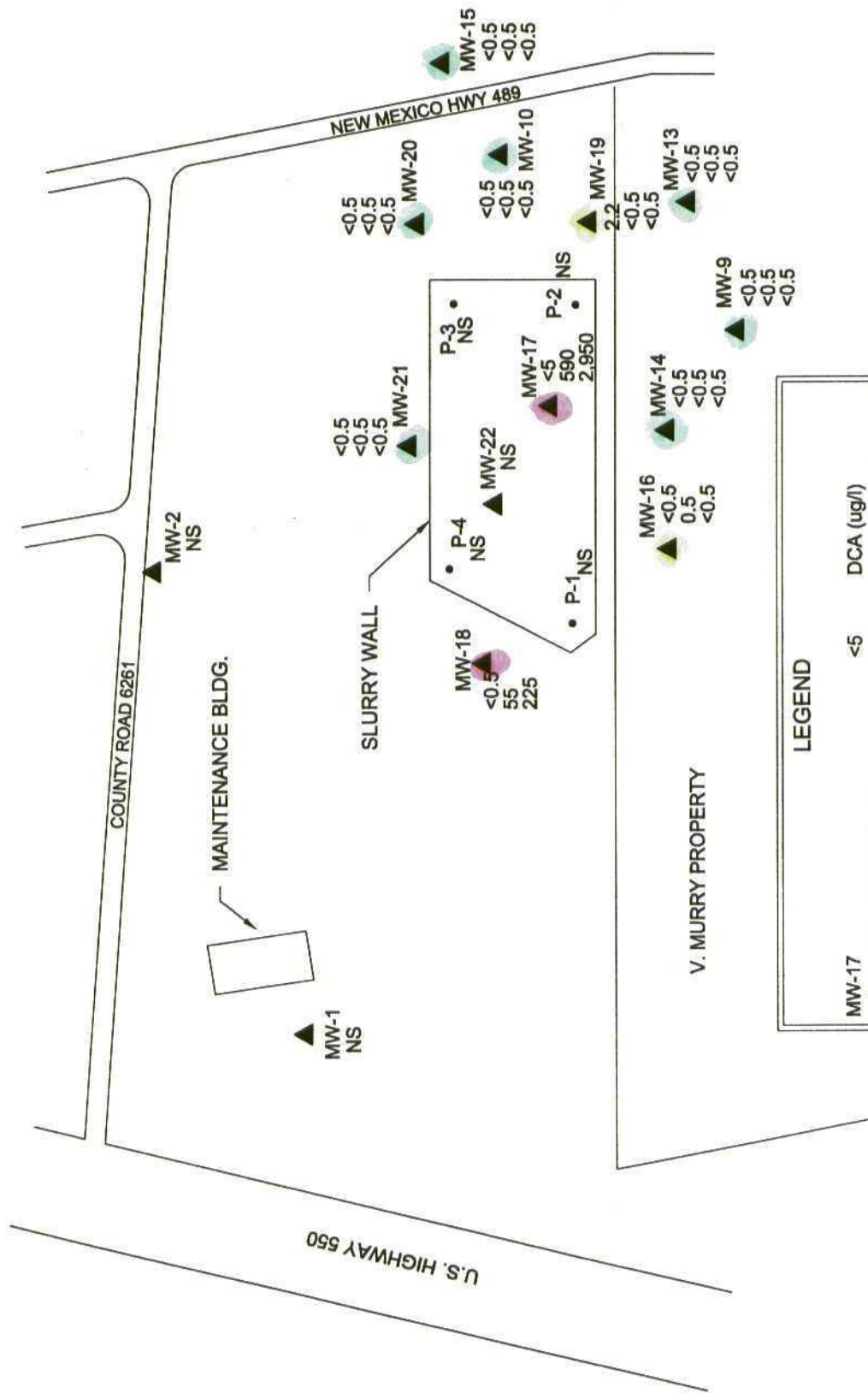
North

1997 Annual Report

ORGANICS IN GROUNDWATER JUNE 1997

Kirtland Refinery
Kirtland, NM

FIGURE 2



1997 Annual Report

ORGANICS IN GROUNDWATER OCTOBER 1997

Kirtland Refinery
Kirtland, NM

FIGURE 3



North

Concentrations of Benzene and BTEX in MW-17

Former Maverik Refinery - Kirtland, New Mexico

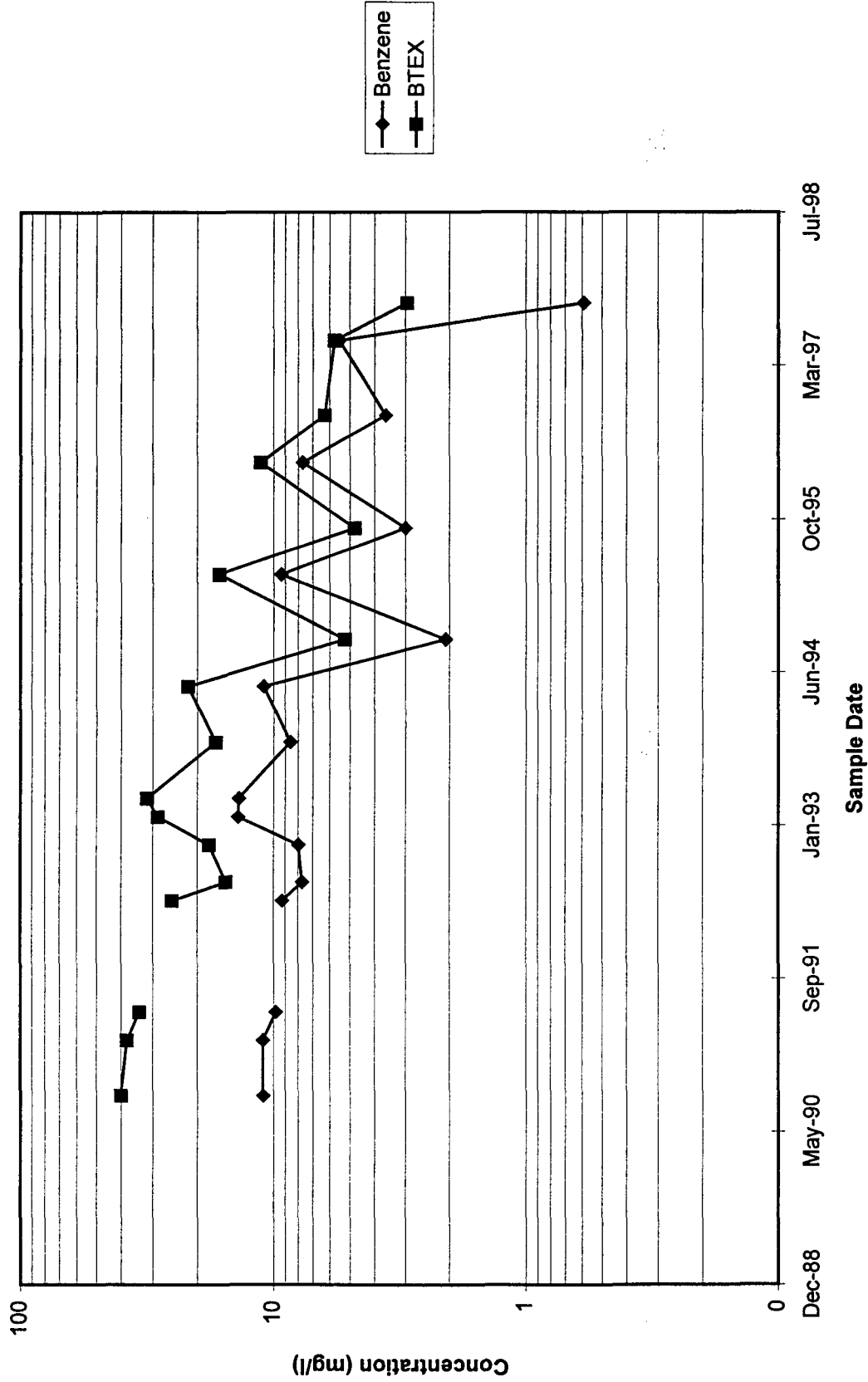


FIGURE 4

January 12, 1998

Concentrations of Benzene and BTEX in MW-22

Former Maverik Refinery - Kirtland, New Mexico

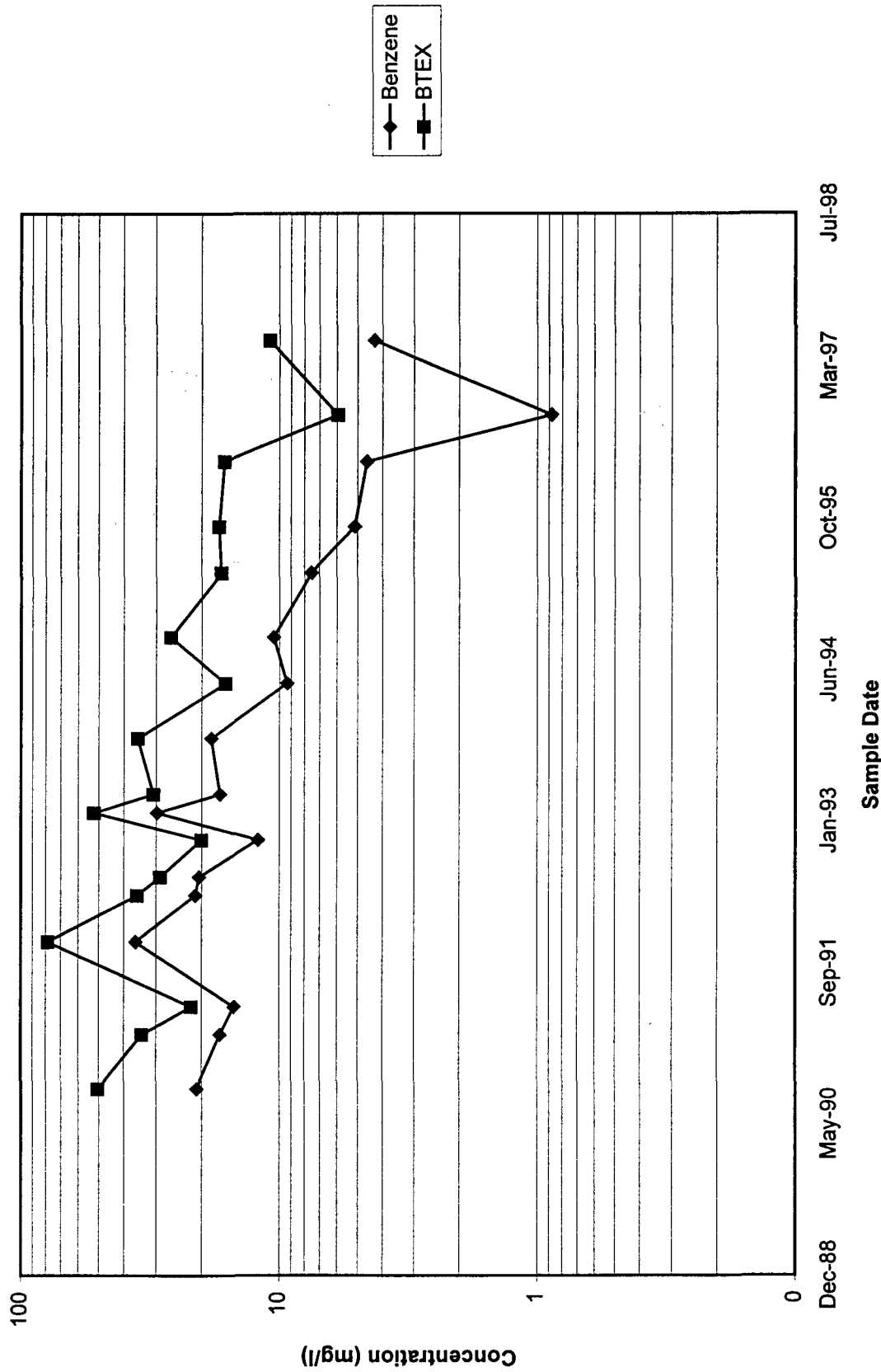


FIGURE 5

APPENDIX A

ANALYTICAL LABORATORY DATA REPORTS

(Pages A-1 through A-24)

American Environmental Network, Inc.

KIRTLAND REFINERY

AEN I.D.

706383

July 21, 1997

TRITECHNICS/MAVERICK
175W 200 SOUTH SUITE 2000
SALT LAKE CITY, UT 84701

Project Name REFINERY
Project Number MAVKLO2897

Attention: BILL HENDRIX

On 6/25/97 American Environmental Network (NM), Inc. (ADHS License No. AZ0015),
received a request to analyze aqueous samples. The samples were analyzed
with EPA methodology or equivalent methods. The results of these analyses and the quality
control data, which follow each set of analyses, are enclosed.

This report is being reissued to correct a typographical error on the header. We apologize
for any inconvenience this may have caused.

If you have any questions or comments, please do not hesitate to contact us
at (505)344-3777.



Kimberly D. McNeill
Project Manager



H. Mitchell Rubenstein, Ph.D.
General Manager

MR: mt

Enclosure

A-1

American Environmental Network, Inc.

CLIENT	: TRITECHNICS/MAVERICK	AEN I.D.	: 706383
PROJECT #	: MAVKLO2897	DATE RECEIVED	: 6/25/97
PROJECT NAME	: REFINERY	REPORT DATE	: 7/7/97

AEN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	MW-10	AQ	6/24/97
02	MW-17	AQ	6/24/97
03	MW-18	AQ	6/24/97
04	MW-19	AQ	6/24/97
05	MW-20	AQ	6/24/97
06	MW-21	AQ	6/24/97
07	MW-22	AQ	6/24/97
08	MW-122	AQ	6/24/97
09	TRIP BLANK	AQ	6/23/97

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX, MTBE (EPA 602) / EDC (EPA 601)
CLIENT : TRITECHNICS/MAVERICK
PROJECT # : MAVKLO2897
PROJECT NAME : REFINERY

AEN I.D.: 706383

SAMPLE		DATE		DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	MW-10	AQUEOUS	6/24/97	NA	7/1/97	1
02	MW-17	AQUEOUS	6/24/97	NA	7/2/97	1
03	MW-18	AQUEOUS	6/24/97	NA	7/1/97	1

PARAMETER	DET. LIMIT	UNITS	01	02	03
BENZENE	0.5	UG/L	< 0.5	5500 (D50)	130
1,2-DICHLOROETHANE (EDC)	0.5	UG/L	< 0.5	< 0.5	< 0.5
TOLUENE	0.5	UG/L	< 0.5	51	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5	23	15
TOTAL XYLENES	0.5	UG/L	< 0.5	180 (D50)	200
METHYL-t-BUTYL ETHER	2.5	UG/L	< 2.5	< 2.5	< 2.5

SURROGATE:

BROMOCHLOROMETHANE (%)		103	99	106
SURROGATE LIMITS	(73 - 117)			
TRIFLUOROTOLUENE (%)		99	106	103
SURROGATE LIMITS	(69 - 117)			

CHEMIST NOTES:

(D50) 50X DILUTION ANALYZED ON 7-2-97

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX, MTBE (EPA 602) / EDC (EPA 601)
 CLIENT : TRITECHNICS/MAVERICK
 PROJECT # : MAVKLO2897
 PROJECT NAME : REFINERY

AEN I.D.: 706383

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	MW-19	AQUEOUS	6/24/97	NA	7/1/97	1
05	MW-20	AQUEOUS	6/24/97	NA	7/1/97	1
06	MW-21	AQUEOUS	6/24/97	NA	7/1/97	1

PARAMETER	DET. LIMIT	UNITS	04	05	06
BENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
1,2-DICHLOROETHANE (EDC)	0.5	UG/L	3.0	< 0.5	< 0.5
TOLUENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
TOTAL XYLENES	0.5	UG/L	< 0.5	< 0.5	< 0.5
METHYL-t-BUTYL ETHER	2.5	UG/L	< 2.5	< 2.5	< 2.5

SURROGATE:					
BROMOCHLOROMETHANE (%)			116	103	98
SURROGATE LIMITS	(73 - 117)				
TRIFLUOROTOLUENE (%)			107	106	110
SURROGATE LIMITS	(89 - 117)				

CHEMIST NOTES:
 N/A

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX, MTBE (EPA 602) / EDC (EPA 601)
 CLIENT : TRITECHNICS/MAVERICK
 PROJECT # : MAVKLO2897
 PROJECT NAME : REFINERY

AEN I.D.: 706383

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
07	MW-22	AQUEOUS	6/24/97	NA	7/1/97	1
08	MW-122	AQUEOUS	6/24/97	NA	7/2/97	1
09	TRIP BLANK	AQUEOUS	6/23/97	NA	7/1/97	1

PARAMETER	DET. LIMIT	UNITS	07	08	09
BENZENE	0.5	UG/L	4300 (D50)	5800 (D50)	< 0.5
1,2-DICHLOROETHANE (EDC)	0.5	UG/L	24	21	< 0.5
TOLUENE	0.5	UG/L	580 (D5)	930 (D50)	< 0.5
ETHYLBENZENE	0.5	UG/L	510 (D5)	750 (D50)	< 0.5
TOTAL XYLENES	0.5	UG/L	5500 (D50)	7300 (D50)	< 0.5
METHYL-t-BUTYL ETHER	2.5	UG/L	< 12.5 (D5)	< 2.5	< 2.5

SURROGATE:					
BROMOCHLOROMETHANE (%)			99	98	100
SURROGATE LIMITS	(73 - 117)				
TRIFLUOROTOLUENE (%)			71 (D5)	69	97
SURROGATE LIMITS	(69 - 117)				

CHEMIST NOTES:
 (D5) 5X ANALYZED ON 7-1-97
 (D50) 50X ANALYZED ON 7-1-97

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK
PURGEABLE HALOCARBONS / AROMATICS

TEST	: BTEX, MTBE (EPA 602) / EDC (EPA 601)		
BLANK I.D.	: 063097	AEN I.D.	: 706383
CLIENT	: TRITECHNICS/MAVERICK	DATE EXTRACTED	: N/A
PROJECT #	: MAVKLO2897	DATE ANALYZED	: 6/30/97
PROJECT NAME	: REFINERY	MATRIX	: AQUEOUS

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
1,2-DICHLOROETHANE (EDC)	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5

SURROGATE:		
BROMOCHLOROMETHANE (%)		102
SURROGATE LIMITS	(73 - 117)	
TRIFLUOROTOLUENE (%)		110
SURROGATE LIMITS	(69 - 117)	

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK
PURGEABLE HALOCARBONS / AROMATICS

TEST	: BTEX, MTBE (EPA 602) / EDC (EPA 601)	AEN I.D.	: 706383
BLANK I.D.	: 63097B	DATE EXTRACTED	: N/A
CLIENT	: TRITECHNICS/MAVERICK	DATE ANALYZED	: 6/30/97
PROJECT #	: MAVKLO2897	MATRIX	: AQUEOUS
PROJECT NAME	: REFINERY		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
1,2-DICHLOROETHANE (EDC)	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5

SURROGATE:		
BROMOCHLOROMETHANE (%)		105
SURROGATE LIMITS	(73 - 117)	
TRIFLUOROTOLUENE (%)		112
SURROGATE LIMITS	(69 - 117)	

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK
PURGEABLE HALOCARBONS / AROMATICS

TEST	: BTEX, MTBE (EPA 602) / EDC (EPA 601)		
BLANK I.D.	: 070197	AEN I.D.	: 706383
CLIENT	: TRITECHNICS/MAVERICK	DATE EXTRACTED	: N/A
PROJECT #	: MAVKLO2897	DATE ANALYZED	: 7/1/97
PROJECT NAME	: REFINERY	MATRIX	: AQUEOUS

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
1,2-DICHLOROETHANE (EDC)	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5

SURROGATE:		
BROMOCHLOROMETHANE (%)		106
SURROGATE LIMITS	(73 - 117)	
TRIFLUOROTOLUENE (%)		113
SURROGATE LIMITS	(69 - 117)	

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK
PURGEABLE HALOCARBONS / AROMATICS

TEST	: BTEX, MTBE (EPA 602) / EDC (EPA 601)		
BLANK I.D.	: 070297	AEN I.D.	: 706383
CLIENT	: TRITECHNICS/MAVERICK	DATE EXTRACTED	: N/A
PROJECT #	: MAVKLO2897	DATE ANALYZED	: 7/2/97
PROJECT NAME	: REFINERY	MATRIX	: AQUEOUS

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
1,2-DICHLOROETHANE (EDC)	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5

SURROGATE:		
BROMOCHLOROMETHANE (%)		102
SURROGATE LIMITS	(73 - 117)	
TRIFLUOROTOLUENE (%)		105
SURROGATE LIMITS	(69 - 117)	

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK
PURGEABLE HALOCARBONS / AROMATICS

TEST	: BTEX, MTBE (EPA 602) / EDC (EPA 601)	AEN I.D.	: 706383
BLANK I.D.	: 070797	DATE EXTRACTED	: N/A
CLIENT	: TRITECHNICS/MAVERICK	DATE ANALYZED	: 7/7/97
PROJECT #	: MAVKLO2897	MATRIX	: AQUEOUS
PROJECT NAME	: REFINERY		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
1,2-DICHLOROETHANE (EDC)	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5

SURROGATE:		
BROMOCHLOROMETHANE (%)		105
SURROGATE LIMITS	(73 - 117)	
TRIFLUOROTOLUENE (%)		107
SURROGATE LIMITS	(69 - 117)	

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: BTEX, MTBE (EPA 602) / EDC (EPA 601)	AEN I.D.	: 706383
MSMSD #	: 070797	DATE EXTRACTED	: NA
CLIENT	: TRITECHNICS/MAVERICK	DATE ANALYZED	: 7/7/97
PROJECT #	: MAVKLO2897	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: REFINERY	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	% RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	10.0	11.1	111	10.7	107	4	(82 - 128)	20
1,2-DICHLOROETHANE (EDC)	<0.5	10.0	10.4	104	9.6	96	8	(73 - 147)	20
TOLUENE	<0.5	10.0	10.1	101	9.6	96	5	(87 - 128)	20
ETHYLBENZENE	<0.5	10.0	10.0	100	9.5	95	5	(73 - 148)	20
TOTAL XYLENES	<0.5	30.0	34.1	114	32.5	108	5	(70 - 143)	20
METHYL-t-BUTYL ETHER	<2.5	10.0	9.8	107	9.2	105	1	(71 - 165)	20

CHEMIST NOTES:
(D1) ANALYZED 7-3-97

% Recovery = $\frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$

RPD (Relative Percent Difference) = $\frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$

PROJECT MANAGER: Bill Hendrix		COMPANY: Tritonics/Maverik		ADDRESS: 175W 200 South Salt Lake		PHONE: (801) 359 3059		FAX: (801) 359 3307		BILL TO: Maverik Country Stores		COMPANY: 380 North 200 West Suite 260		ADDRESS: Bountiful UT 84010													
SAMPLED	DATE	TIME	MATRIX	LAB ID	PETROLEUM HYDROCARBONS (418.1) TRPH	(MOD.8015) Diesel/Direct/Inject	1-2 Dichloroethane 602	(M8015) Gas/Purge & Trap	Gasoline/BTEX & MTBE (M8015/8020)	BTEX/MTBE (6029) 601	BTEX & Chlorinated Aromatics (602/8020)	BTEX/MTBE/EDC & EDB (8020/8010/Short)	Chlorinated Hydrocarbons (601/8010)	504 EDB □ / DBCP □	Polynuclear Aromatics (610/8310)	Volatile Organics (624/8240) GC/MS	Volatile Organics (8260) GC/MS	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	General Chemistry:	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:	NUMBER OF COPIES
MW-10	6-24-97	1100	H ₂ O	-01	X	X	X	X	X	X	X	X	X													3	
MW-12		1320		-03	X	X	X	X	X	X	X	X	X													4	
MW-18		1110		-03	X	X	X	X	X	X	X	X	X													3	
MW-19		1500		-04	X	X	X	X	X	X	X	X	X													3	
MW-20		1720		-05	X	X	X	X	X	X	X	X	X													3	
MW-21		1150		-06	X	X	X	X	X	X	X	X	X													3	
MW-22		1230		-07	X	X	X	X	X	X	X	X	X													3	
MW-122		1310		-08	X	X	X	X	X	X	X	X	X													3	
Trip Blank 2-23		1430		-09	X	X	X	X	X	X	X	X	X													1	

SHADED AREAS ARE FOR LAB USE ONLY

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY:	
PROJ NO: MAV KLG 2897	(RUSH) ☐ 124hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒	Signature: <i>Harold Anderson</i>	Signature: <i>Harold Anderson</i>	Time: 1545	Time: 1545
PROJ NAME: Refinery	CERTIFICATION REQUIRED: ☐ NM ☐ ISWA ☐ OTHER	Printed Name: <i>Harold Anderson</i>	Printed Name: <i>Harold Anderson</i>	Date: 6-25-97	Date: 6-25-97
P.O. NO:	METHANOL PRESERVATION ☐	Company: <i>Tritonics/Maverik</i>	Company: <i>Tritonics/Maverik</i>		
SHIPPED VIA: Handdelivered		RECEIVED BY: <i>Harold Anderson</i>			
SAMPLE RECEIPT		RECEIVED BY: <i>Harold Anderson</i>			
NO. OF SAMPLES: 25		RECEIVED BY: <i>Harold Anderson</i>			
DATE: 6-25-97		RECEIVED BY: <i>Harold Anderson</i>			
TIME: 1545		RECEIVED BY: <i>Harold Anderson</i>			
SIGNATURE: <i>Harold Anderson</i>		SIGNATURE: <i>Harold Anderson</i>			
PRINTED NAME: <i>Harold Anderson</i>		PRINTED NAME: <i>Harold Anderson</i>			
COMPANY: <i>Tritonics/Maverik</i>		COMPANY: <i>Tritonics/Maverik</i>			

COMMENTS: FIXED FEE ☐
 -07, and -08
 are possibly Hot Samples
 (AEN client Darrel Anderson)
 BP 6-25-97

AEN I.D. 710391

October 31, 1997

RETEC (MAVERIK)
1726 Cole BLVD. BLDG 22 STE 150
GOLDEN, CO 80401

Project Name REFINERY
Project Number 3-3050-301

2ND SA.

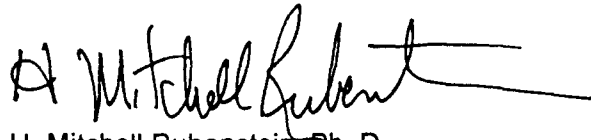
Attention: BILL HENDRIX

On 10/21/97 American Environmental Network (NM), Inc. (ADHS License No. AZ0015), received a request to analyze aqueous samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

The vial indicated that 1,1-Dichloroethane be analyzed. Since the COC was checked for 8010 (short), or 1,2-Dichloroethane, both analytes are reported.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.


Kimberly D. McNeill
Project Manager


H. Mitchell Rubenstein, Ph. D.
General Manager

MR: mt

Enclosure

A-13

American Environmental Network, Inc.

CLIENT : RETEC (MAVERIK) AEN I.D. : 710391
PROJECT # : 3-3050-301 DATE RECEIVED : 10/21/97
PROJECT NAME : REFINERY REPORT DATE : 10/31/97

AEN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	MW-9	AQUEOUS	10/20/97
02	MW-10	AQUEOUS	10/20/97
03	MW-13	AQUEOUS	10/20/97
04	MW-14	AQUEOUS	10/20/97
05	MW-15	AQUEOUS	10/20/97
06	MW-16	AQUEOUS	10/20/97
07	MW-17	AQUEOUS	10/20/97
08	MW-18	AQUEOUS	10/20/97
09	MW-19	AQUEOUS	10/20/97
10	MW-20	AQUEOUS	10/20/97
11	MW-21	AQUEOUS	10/20/97
12	MW-117	AQUEOUS	10/20/97
13	TRIP BLANK #2	AQUEOUS	10/15/97

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX, MTBE (EPA 8020) / EDB, EDC; 1,1-DCA (EPA 8010)
 CLIENT : RETEC (MAVERIK)
 PROJECT # : 3-3050-301
 PROJECT NAME : REFINERY

AEN I.D.: 710391

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MW-9	AQUEOUS	10/20/97	NA	10/28/97	1
02	MW-10	AQUEOUS	10/20/97	NA	10/28/97	1
03	MW-13	AQUEOUS	10/20/97	NA	10/28/97	1
	DET. LIMIT	UNITS	01	02	03	
BENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5	
1,2-DIBROMOETHANE (EDB)	0.2	UG/L	< 0.2	< 0.2	< 0.2	
1,2-DICHLOROETHANE (EDC)	0.5	UG/L	< 0.5	0.5	< 0.5	
TOLUENE	0.5	UG/L	< 0.5	< 0.5	< 0.5	
ETHYLBENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5	
TOTAL XYLENES	0.5	UG/L	< 0.5	< 0.5	< 0.5	
METHYL-t-BUTYL ETHER	2.5	UG/L	< 2.5	< 2.5	< 2.5	
1,1-DICHLOROETHANE	0.5	UG/L	< 0.5	< 0.5	< 0.5	
SURROGATE:						
BROMOCHLOROMETHANE (%)			110	104	98	
SURROGATE LIMITS	(73 - 117)					
TRIFLUOROTOLUENE (%)			107	105	104	
SURROGATE LIMITS	(69 - 117)					

CHEMIST NOTES:
 N/A

A-15

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX, MTBE (EPA 8020) / EDB, EDC; 1,1-DCA (EPA 8010)
CLIENT : RETEC (MAVERIK)
PROJECT # : 3-3050-301
PROJECT NAME : REFINERY

AEN I.D.: 710391

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	MW-14	AQUEOUS	10/20/97	NA	10/28/97	1
05	MW-15	AQUEOUS	10/20/97	NA	10/28/97	1
06	MW-16	AQUEOUS	10/20/97	NA	10/28/97	1
PARAMETER	DET. LIMIT	UNITS	04	05	06	
BENZENE	0.5	UG/L	< 0.5	< 0.5	0.5	
1,2-DIBROMOETHANE (EDB)	0.2	UG/L	< 0.2	< 0.2	< 0.2	
1,2-DICHLOROETHANE (EDC)	0.5	UG/L	< 0.5	< 0.5	< 0.5	
TOLUENE	0.5	UG/L	< 0.5	< 0.5	< 0.5	
ETHYLBENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5	
TOTAL XYLENES	0.5	UG/L	< 0.5	< 0.5	< 0.5	
METHYL-t-BUTYL ETHER	2.5	UG/L	< 2.5	< 2.5	< 2.5	
1,1-DICHLOROETHANE	0.5	UG/L	< 0.5	< 0.5	< 0.5	
SURROGATE:						
BROMOCHLOROMETHANE (%)			108	108	98	
SURROGATE LIMITS	(73 - 117)					
TRIFLUOROTOLUENE (%)			106	108	107	
SURROGATE LIMITS	(69 - 117)					

CHEMIST NOTES:
N/A

A-16

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX, MTBE (EPA 8020) / EDB, EDC; 1,1-DCA (EPA 8010)
CLIENT : RETEC (MAVERIK)
PROJECT # : 3-3050-301
PROJECT NAME : REFINERY

AEN I.D.: 710391

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
07	MW-17	AQUEOUS	10/20/97	NA	10/28/97	10
08	MW-18	AQUEOUS	10/20/97	NA	10/28/97	1
09	MW-19	AQUEOUS	10/20/97	NA	10/28/97	1
PARAMETER	DET. LIMIT	UNITS	07	08	09	
BENZENE	0.5	UG/L	590	55	< 0.5	
1,2-DIBROMOETHANE (EDB)	0.2	UG/L	< 2.0	< 0.2	< 0.2	
1,2-DICHLOROETHANE (EDC)	0.5	UG/L	< 5.0	< 0.5	2.2	
TOLUENE	0.5	UG/L	920	0.5	< 0.5	
ETHYLBENZENE	0.5	UG/L	140	19	< 0.5	
TOTAL XYLENES	0.5	UG/L	1300	150	< 0.5	
METHYL-t-BUTYL ETHER	2.5	UG/L	< 25.0	< 2.5	< 2.5	
1,1-DICHLOROETHANE	0.5	UG/L	< 0.5	< 0.5	< 0.5	
SURROGATE:						
BROMOCHLOROMETHANE (%)			106	100	107	
SURROGATE LIMITS	(73 - 117)					
TRIFLUOROTOLUENE (%)			103	90	107	
SURROGATE LIMITS	(69 - 117)					

CHEMIST NOTES:
N/A

A-17

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX, MTBE (EPA 8020) / EDB, EDC; 1,1-DCA (EPA 8010)
CLIENT : RETEC (MAVERIK)
PROJECT # : 3-3050-301
PROJECT NAME : REFINERY

AEN I.D.: 710391

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
10	MW-20	AQUEOUS	10/20/97	NA	10/28/97	1
11	MW-21	AQUEOUS	10/20/97	NA	10/29/97	1
12	MW-117	AQUEOUS	10/20/97	NA	10/29/97	10
PARAMETER	DET. LIMIT	UNITS	10	11	12	
BENZENE	0.5	UG/L	< 0.5	< 0.5	490	
1,2-DIBROMOETHANE (EDB)	0.2	UG/L	< 0.2	< 0.2	< 2.0	
1,2-DICHLOROETHANE (EDC)	0.5	UG/L	< 0.5	< 0.5	< 5.0	
TOLUENE	0.5	UG/L	< 0.5	< 0.5	680	
ETHYLBENZENE	0.5	UG/L	< 0.5	< 0.5	95	
TOTAL XYLENES	0.5	UG/L	< 0.5	< 0.5	930	
METHYL-t-BUTYL ETHER	2.5	UG/L	< 2.5	< 2.5	< 25.0	
1,1-DICHLOROETHANE	0.5	UG/L	< 0.5	< 0.5	< 0.5	
SURROGATE:						
BROMOCHLOROMETHANE (%)			100	103	100	
SURROGATE LIMITS	(73 - 117)					
TRIFLUOROTOLUENE (%)			107	106	103	
SURROGATE LIMITS	(69 - 117)					

CHEMIST NOTES:
N/A

A-18

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX, MTBE (EPA 8020) / EDB, EDC; 1,1-DCA (EPA 8010)
CLIENT : RETEC (MAVERIK)
PROJECT # : 3-3050-301
PROJECT NAME : REFINERY

AEN I.D.: 710391

SAMPLE		DATE		DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
13	TRIP BLANK #2	AQUEOUS	10/15/97	NA	10/28/97	1
PARAMETER		DET. LIMIT	UNITS	13		
BENZENE		0.5	UG/L	< 0.5		
1,2-DIBROMOETHANE (EDB)		0.2	UG/L	< 0.2		
1,2-DICHLOROETHANE (EDC)		0.5	UG/L	< 0.5		
TOLUENE		0.5	UG/L	< 0.5		
ETHYLBENZENE		0.5	UG/L	< 0.5		
TOTAL XYLENES		0.5	UG/L	< 0.5		
METHYL-t-BUTYL ETHER		2.5	UG/L	< 2.5		
1,1-DICHLOROETHANE		0.5	UG/L	< 0.5		
SURROGATE:						
BROMOCHLOROMETHANE (%)				104		
SURROGATE LIMITS		(73 - 117)				
TRIFLUOROTOLUENE (%)				105		
SURROGATE LIMITS		(69 - 117)				

CHEMIST NOTES:
N/A

A-19

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK
PURGEABLE HALOCARBONS / AROMATICS

TEST	: BTEX, MTBE (EPA 8020) / EDB, EDC; 1,1-DCA (EPA 8010)		
BLANK I.D.	: 102897	AEN I.D.	: 710391
CLIENT	: RETEC (MAVERIK)	DATE EXTRACTED	: N/A
PROJECT #	: 3-3050-301	DATE ANALYZED	: 10/28/97
PROJECT NAME	: REFINERY	MATRIX	: AQUEOUS

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
1,2-DIBROMOETHANE (EDB)	UG/L	<0.2
1,2-DICHLOROETHANE (EDC)	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5
1,1-DICHLOROETHANE	UG/L	<0.5
SURROGATE:		
BROMOCHLOROMETHANE (%)		107
SURROGATE LIMITS	(73 - 117)	
TRIFLUOROTOLUENE (%)		106
SURROGATE LIMITS	(69 - 117)	

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK
PURGEABLE HALOCARBONS / AROMATICS

TEST	: BTEX, MTBE (EPA 8020) / EDB, EDC; 1,1-DCA (EPA 8010)		
BLANK I.D.	: 102897B	AEN I.D.	: 710391
CLIENT	: RETEC (MAVERIK)	DATE EXTRACTED	: N/A
PROJECT #	: 3-3050-301	DATE ANALYZED	: 10/28/97
PROJECT NAME	: REFINERY	MATRIX	: AQUEOUS

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
1,2-DIBROMOETHANE (EDB)	UG/L	<0.2
1,2-DICHLOROETHANE (EDC)	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5
1,1-DICHLOROETHANE	UG/L	<0.5
SURROGATE:		
BROMOCHLOROMETHANE (%)		107
SURROGATE LIMITS	(73 - 117)	
TRIFLUOROTOLUENE (%)		105
SURROGATE LIMITS	(69 - 117)	

CHEMIST NOTES:
N/A

A-21

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: BTEX, MTBE (EPA 8020) / EDB, EDC; 1,1-DCA (EPA 8010)	AEN I.D.	: 710391
MSMSD #	: 710391-01	DATE EXTRACTED	: NA
CLIENT	: RETEC (MAVERIK)	DATE ANALYZED	: 10/29/97
PROJECT #	: 3-3050-301	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: REFINERY	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	% RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	10.0	9.9	99	9.8	98	1	(82 - 128)	20
1,2-DIBROMOETHANE (EDB)	<0.2	10.0	11.2	112	11.5	115	3	(64 - 144)	20
1,2-DICHLOROETHANE (EDC)	<0.5	10.0	11.4	114	11.6	116	2	(73 - 147)	20
TOLUENE	<0.5	10.0	10.0	100	10.0	100	0	(87 - 128)	20
ETHYLBENZENE	<0.5	10.0	9.8	98	9.9	99	1	(73 - 148)	20
TOTAL XYLENES	<0.5	30.0	32.9	110	33.7	112	2	(70 - 143)	20
METHYL-t-BUTYL ETHER	<2.5	10.0	12.5	125	11.6	116	7	(71 - 165)	20
1,1-DICHLOROETHANE	<0.5	10.0	10.6	106	10.6	106	0	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

A-22

SHADED AREAS ARE FOR LAB USE ONLY

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: Bill Hendrix						ANALYSIS REQUEST																				
COMPANY: RETEC Moving																										
ADDRESS: 1726 COLE BLVD																										
PHONE: 303 271 2100																										
FAX: 303 277 0110																										
BILL TO: Paul Wuerenbon																										
COMPANY: Marenick																										
ADDRESS:																										
SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.	Petroleum Hydrocarbons (418.1) TRPH	(MOD 8015) Diesel/DirectInject	(M8015) Gas/Purge & Trap	Gasoline/BTEX & MTBE (M8015/8020)	BTX/MTBE (8020)	BTEX & Chlorinated Aromatics (602/8020)	BTEX/MTBE/EDC & EDB (8020/8010/Short)	Chlorinated Hydrocarbons (601/8010)	EDB ☐ / DBCP ☐	Polyuclear Aromatics (610/8310)	Volatile Organics (624/8240) GC/MS	Volatile Organics (8260) GC/MS	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neural/Acid Compounds GC/MS (625/8270)	General Chemistry:	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:	NUMBER OF CONTAINERS
MW-9	10-20-97	1710	H ₂ O	-01					X																	3
MW-10		1500		-02																						3
MW-13		1630		-03																						3
MW-14		1750		-04																						3
MW-15		1540		-05																						3
MW-16		1825		-06																						3
MW-17		0935		-07																						3
MW-18		0840		-08																						3
MW-19		1340		-09																						3
MW-20		1130		-10																						3
PROJECT INFORMATION					PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS										RELINQUISHED BY:		RELINQUISHED BY:									
PROJ. NO.: 3-3050-301					(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☐										Signature: [Signature]		Signature: [Signature]									
PROJ. NAME: Refinery					CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER										Printed Name: Darrell Anderson		Printed Name: [Blank]									
P.O. NO.:					METHANOL PRESERVATION ☐										Company: [Blank]		Company: [Blank]									
SHIPPED VIA:					COMMENTS: FIXED FEE ☐										[Blank]		[Blank]									
[Blank]					[Blank]										RECEIVED BY: [Signature]		RECEIVED BY: [Signature]									
[Blank]					[Blank]										Time: [Blank]		Time: [Blank]									
[Blank]					[Blank]										Date: 10-21-97		Date: 10-21-97									
[Blank]					[Blank]										Company: [Blank]		Company: [Blank]									

PROJECT MANAGER: Bill Hendrik
COMPANY: RETEC (MAVORIK)
ADDRESS: 1726 Cole Blvd
13406 22 South 150
PHONE: 303 271 2100
FAX: 303 277 0110
BILL TO: Paul Wanscher
COMPANY: Mavorik
ADDRESS:

SAMPLE NO.	DATE	TIME	MATRIX	LAB ID
MW-2.1	10-23-97	10:15	H ₂ O	111
MW 1.17	1	11:00	PR	112
Trip Blank #2	10/25/97	8:10	AD	

SHADED AREAS ARE FOR LAB USE ONLY

PLEASE FILL THIS FORM IN COMPLETELY.

A-24

[illegible]

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS				RELINQUISHED BY:		RELINQUISHED BY:	
PROJ. NO.: 3-3058-301		(RUSH) ☐ 124hr ☐ 48hr ☐ 72hr ☐ 1 WEEK	(NORMAL) ☒	Signature: David Rude	Time: 11:55	Signature: [Signature]	Time: [Time]		
PROJ. NAME: Refinery		CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER		Printed Name: Darrill Anderson	Date: 10-21-97	Printed Name: [Name]	Date: [Date]		
P.O. NO.:		METHANOL PRESERVATION ☐		Company: [Company]		Company: [Company]			
SHIPPED VIA:		COMMENTS: FIXED FEE ☐		RECEIVED BY: (LAB)					
				Signature: [Signature]	Time: [Time]	Signature: [Signature]	Time: [Time]		
				Printed Name: [Name]	Date: [Date]	Printed Name: [Name]	Date: [Date]		
				Company: [Company]		Company: [Company]			