

95021

QUARTERLY STATUS AND MONITORING REPORT
JANUARY 1993

LPST ID No. 95021
FACILITY ID No. _____

RECEIVED
APR 6 1993
TWC/PST/RPR

TWC PHASES 3, 4, and 5

AIRPORT FUEL FARM
518 FLIGHTLINE
LAREDO (WEBB COUNTY), TEXAS

CITY OF LAREDO
1110 HOUSTON
LAREDO, TEXAS 78042

PREPARED BY:

RABA-KISTNER CONSULTANTS, INC.

Project No. ASB92-034-02
March 5, 1993

01029



Raba-Kistner
Consultants, Inc.

12821 W. Golden Lane
P.O. Box 690287, San Antonio, TX 78269-0287
(210) 699-9090 FAX (210) 699-6426

Project No. ASB92-034-02
March 5, 1993

Mr. Amador Escudero, P.E.
City Engineer
City of Laredo
1110 Houston
P.O. Box 579
Laredo, Texas 78042

Re: Quarterly Status and Monitoring Report - January 1993
Airport Fuel Farm
518 Flightline, Laredo (Webb County), Texas
LPST ID No. 95021

Dear Mr. Escudero:

Raba-Kistner Consultants, Inc. (R-KCI), has completed the Quarterly Status and Monitoring Report for January 1993 at the above-referenced site. The report was initiated as a result of the Texas Water Commission (TWC) directive dated April 24, 1992.

We appreciate the opportunity to work with you on this project. If you have any questions regarding this report, please call Eric Wolff or myself at (210) 699-9090.

Very truly yours,

RABA-KISTNER CONSULTANTS, INC.

A handwritten signature in black ink that reads "Kevin L. Wooster".

Kevin L. Wooster
Hydrogeologist

A handwritten signature in black ink that reads "Eric C. Wolff".

Eric C. Wolff, C.P.G.S.
Project Manager

KLW/ECW/mem
Copies Submitted:

Above (6)

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1.0 INTRODUCTION

Raba-Kistner Consultants, Inc. (R-KCI), has completed the January 1993 quarterly ground-water monitoring at the Airport Fuel Farm in Laredo, Texas. This report provides the results of the monitoring and aquifer properties testing at the Fuel Farm. In addition, the status of tank removal activities in progress at the site is included.

2.0 PURPOSE

These activities were performed in response to a Texas Water Commission (TWC) letter dated April 24, 1992. The location of the site is shown on Plate 1. A Site Plan showing the locations of the monitoring wells is presented on Plate 2.

3.0 CHRONOLOGY OF EVENTS

<u>DATE</u>	<u>R-KCI/CITY OF LAREDO ACTIVITIES</u>
Aug 11, 1992	Ground water in six existing monitoring wells was measured, purged, and sampled.
Aug 17-18, 1992	Additional monitoring wells (MW-7, MW-8, MW-9, and MW-10) were installed.
Aug 19, 1992	Ground-water levels were gauged in all ten wells before development of the four new wells. The new wells were then developed and sampled. A sample of Jet A fuel was obtained for fuel fingerprint analysis.
Aug 28, 1992	August Quarterly Status Report submitted to the TWC.
Oct 8, 1992	Non-beneficial use (NBU) PSTs currently under the jurisdiction of the U.S. Army Corps of Engineers (COE) were assigned a LPST identification number, 104866.
Oct 13, 1992	Ground-water levels were gauged in all ten wells. Seven wells not containing light non-aqueous phase liquid (LNAPL) were purged and sampled. A sample of C-2 Avgas was obtained for fuel fingerprint analysis.
Nov 18, 1992	Pre-construction meeting held by the COE regarding the removal of the NBU PSTs.
Nov 19, 1992	Meeting between the COE and the City of Laredo to discuss coordinating future activities at the Airport Fuel Farm site.
Jan 13, 1993	Ground-water levels were gauged in all ten wells. Seven wells not containing LNAPL were purged and sampled.

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Jan 1993 COE initiated NBU PST removal operations at site.

Feb 2, 1993 R-KCI performed slug tests on MW-4 and MW-7.

4.0 METHODS FOR SITE CONDITIONS MONITORING

Water levels were gauged in ten monitoring and recovery wells for this quarter on January 13, 1993. These wells were monitored with an interface probe and a disposable bailer to check for the presence of LNAPL.

Seven monitoring wells were sampled for this quarter on January 13, 1993, to determine current subsurface conditions at the site. Since the other three wells (MW-2, RW-5, and RW-6) contained a small amount of LNAPL, they were not sampled. The ground-water samples from the seven wells were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX); and total petroleum hydrocarbons (TPH). R-KCI standard Field and Laboratory Methods are discussed in Appendix A, Field and Laboratory Methods.

Recovery wells RW-5 and RW-6 and monitoring wells MW-1, MW-2, and MW-3 were checked daily during the week for detectable and/or recoverable amounts of LNAPL by Laredo Airport personnel.

Slug tests were conducted on two monitoring wells on February 2, 1993. The rising head method developed by Bouwer and Rice (1976) was used in MW-4 and MW-7. This method permits the measurement of saturated hydraulic conductivity in a single well in an unconfined aquifer.

5.0 RESULTS

LNAPL was detected in MW-2, RW-5, and RW-6 during the January 13, 1993, monitoring event. Approximately 0.125 in., 0.25 in., and 0.5 in. of LNAPL were measured in MW-2, RW-5, and RW-6, respectively. LNAPL was also detected in these three wells during the October 13, 1992, sampling event.

A water-table elevation contour map was constructed and is provided on Plate 3d. The previous three water table elevation contour maps are provided on plates 3a, 3b, and 3c. The ground-water measurements and elevations from this and previous investigations at the site are tabulated on Plate 4. The direction of ground-water flow is to the southwest at a gradient of about 0.0127 ft/ft.

A table summarizing the analytical chemistry results of the current sampling event as well as earlier sampling events is presented on Plate 5. Copies of the signed Reports of Analyses of the January 13, 1993, samples are provided in Appendix B. Hydrographs of the ten monitoring wells are provided on Plates 6a-6j.

Maximum concentrations of BTEX and TPH encountered in the ground-water samples were 9.7 and 31 mg/L, respectively.

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Daily logs of the recovery well gauging by airport personnel are in Appendix C. Although a thin layer of LNAPL was detected, a recoverable thickness, by bailing, was not found during this period.

Based on results of slug test data, the estimated range of hydraulic conductivity for the site is 1.39 to 2.58 ft/day. Transmissivity sentence back in slug test data sheets as output from SLUGIX are provided in Appendix D. Using a gradient of 0.0127 ft/ft, and assuming a porosity of 25% (0.25) for the sand aquifer, the average linear ground-water velocity for the site would range from 0.07 to 0.13 ft/day.

25.5 ft/ye 47.45 ft/ye avg 36.5 ft/ye

6.0 CONCLUSIONS

Conclusions regarding site conditions presented in the previous monitoring report remain unchanged. In summary from the information presented above, the results of the aquifer properties testing indicate the following estimates:

- hydraulic conductivity, $K = 1.4$ to 2.6 ft/day
- transmissivity, $T = 9.8$ to 18 ft^2/day
- average linear velocity, $v = 0.07$ to 0.13 ft/day.

7.0 RECOMMENDATIONS

Based on the above information and conclusions the following recommendations are made:

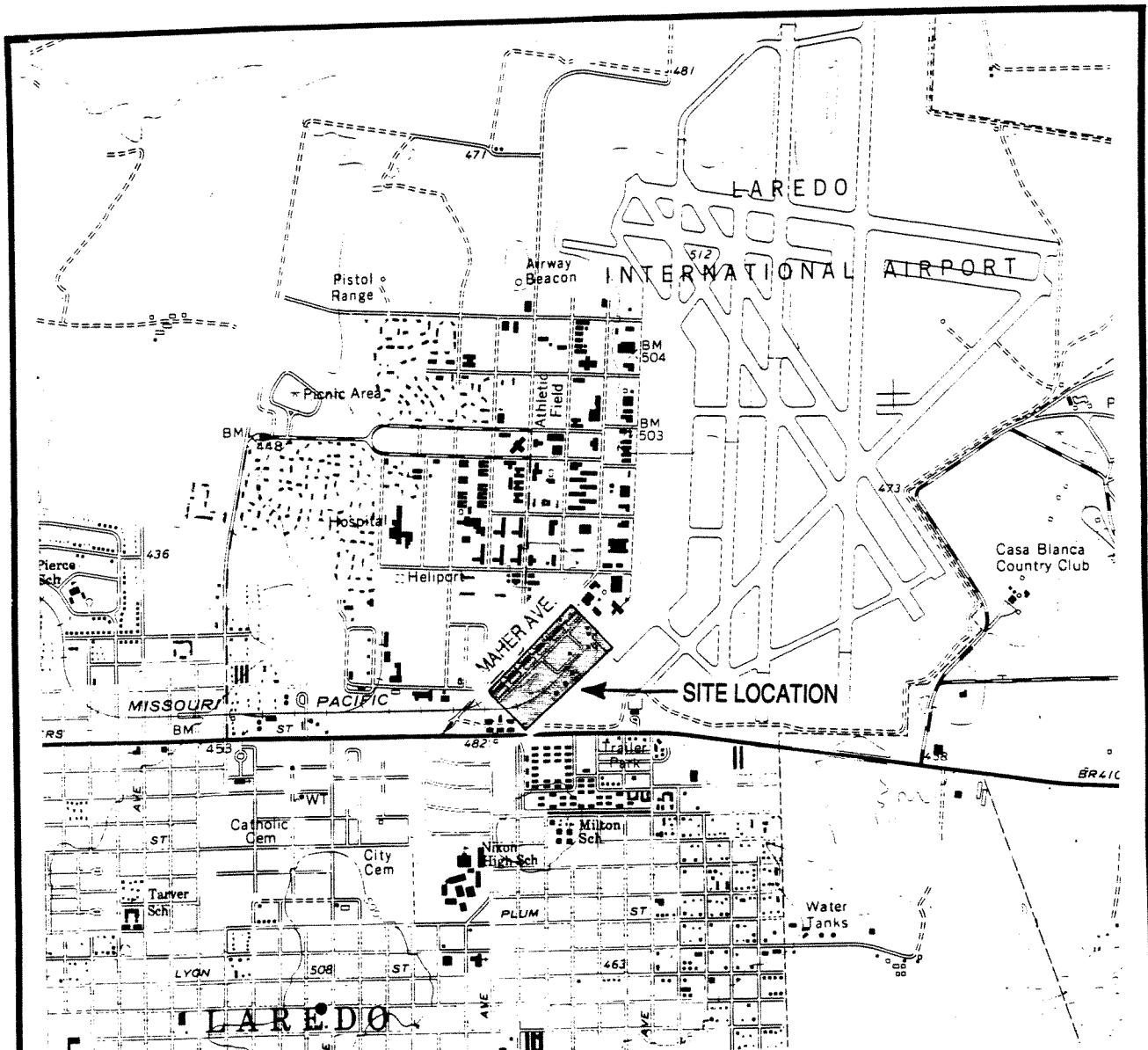
- A continued effort should be made to combine efforts of all responsible parties to delineate the contamination and determine the level of responsibility for each responsible party.
- A remedial action plan should be prepared that addresses all sources simultaneously following the Kansas City meeting with the COE.
- Until further delineation is completed, present monitoring wells should be gauged and sampled every three months to monitor the site conditions.
- Wells MW-2, RW-5, and RW-6 should be checked weekly for LNAPL and if a sufficient amount is present it should be removed. If sufficient quantities are measured (> 0.1 ft), a passive LNAPL recovery device (PetroTrap) should be installed immediately. The PetroTrap should be checked, and if necessary, emptied weekly.

As stated in the previous report, we may recommend that the number of wells to be gauged and sampled be reduced, pending results of the next (April 1993) monitoring event. Only those necessary for monitoring the migration and/or degradation of the hydrocarbon contamination will need to be sampled.

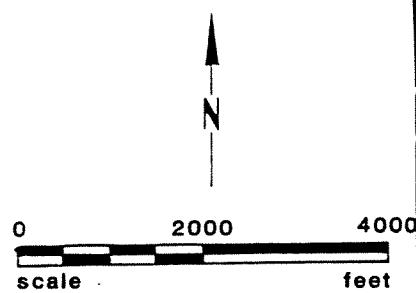
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ILLUSTRATIONS

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(BASE MAP FROM USGS, 1980; LAREDO EAST QUADRANGLE)

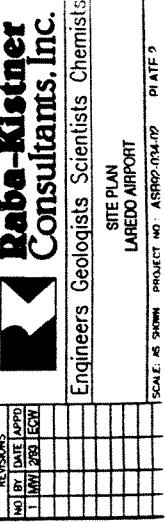


SITE LOCATION MAP LAREDO AIRPORT

Raba-Kistner Consultants, Inc

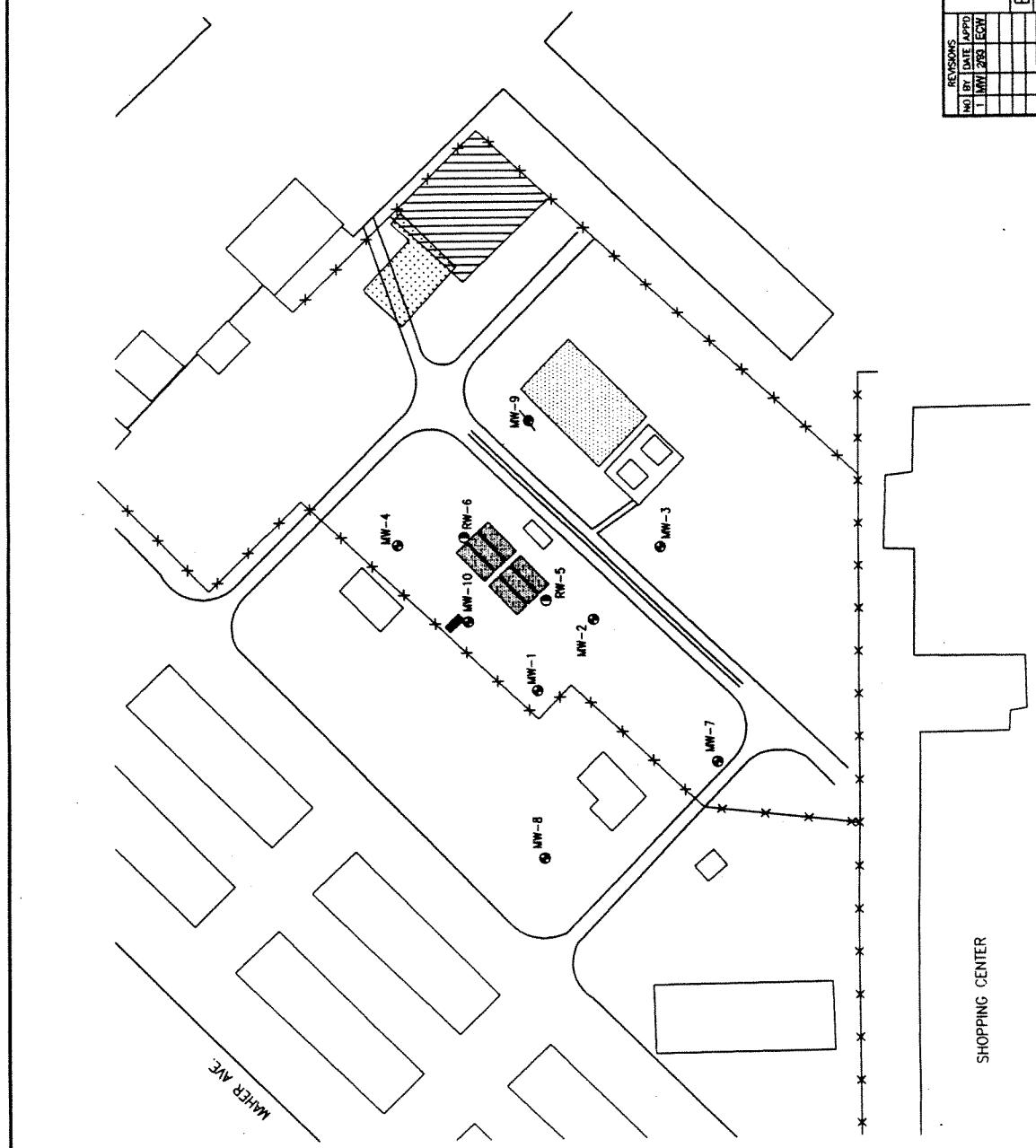
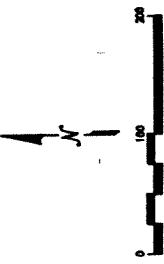
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PROJECT NO. ASB92-034-02

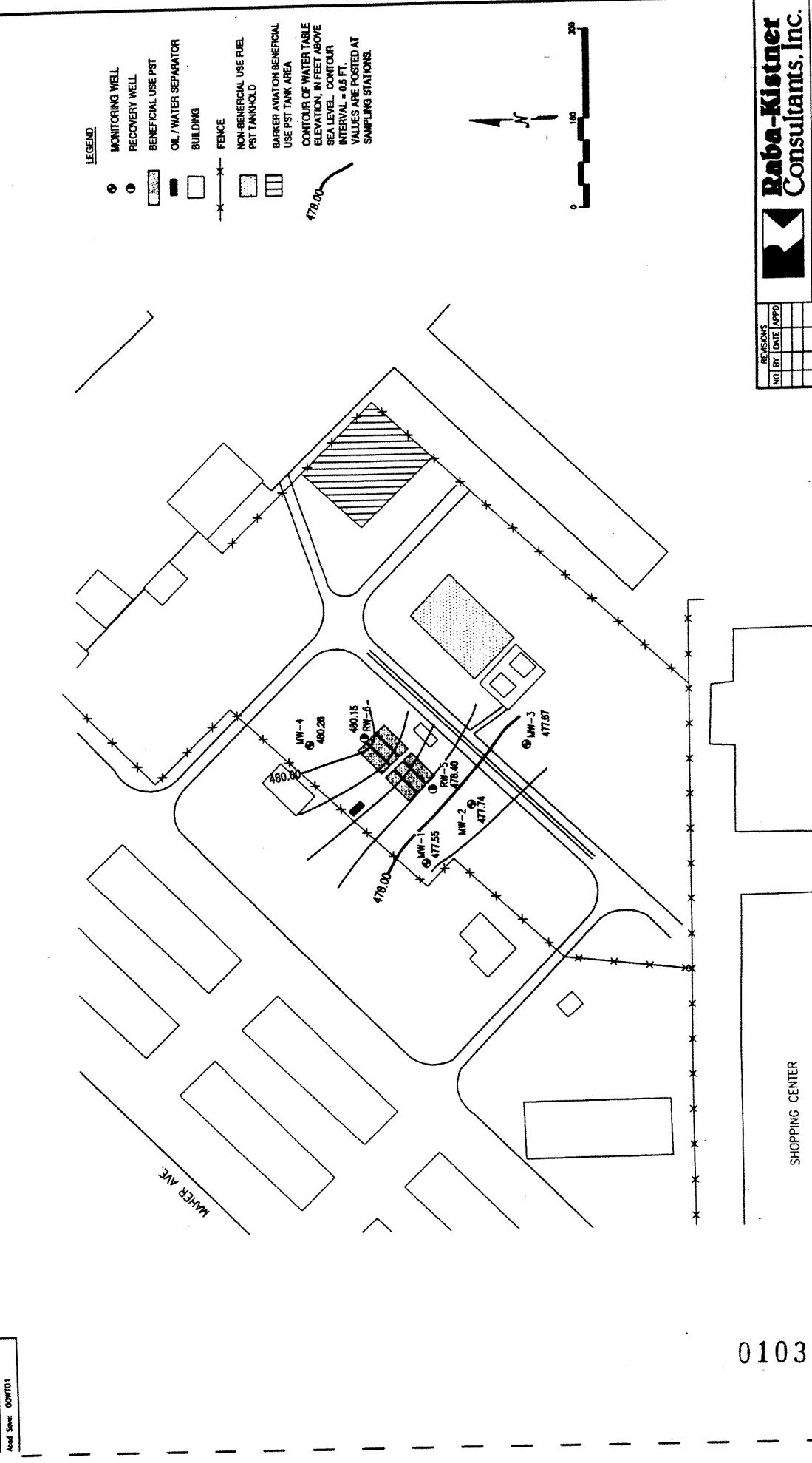
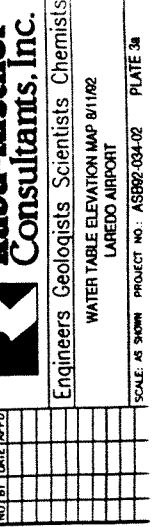
PLATE

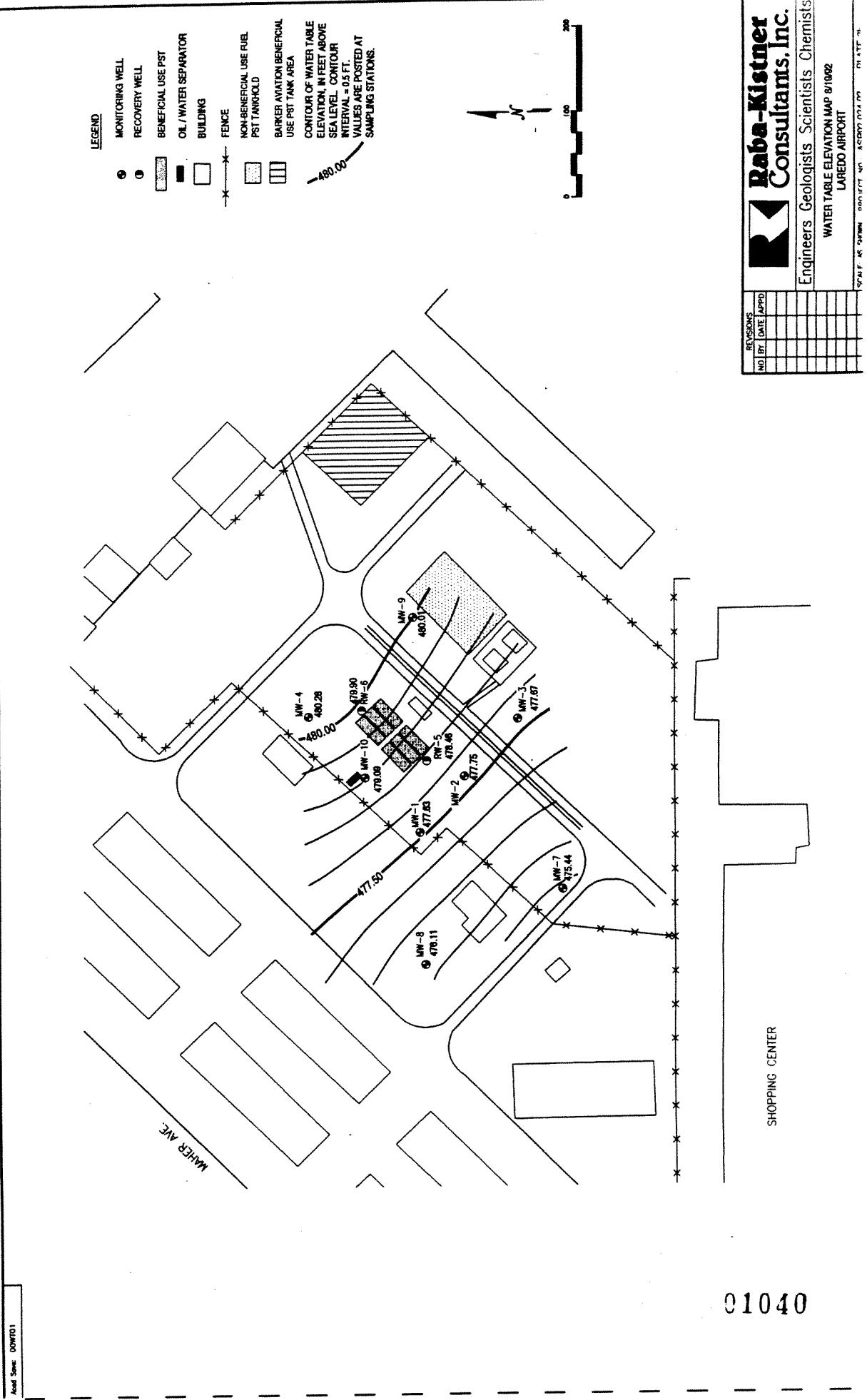


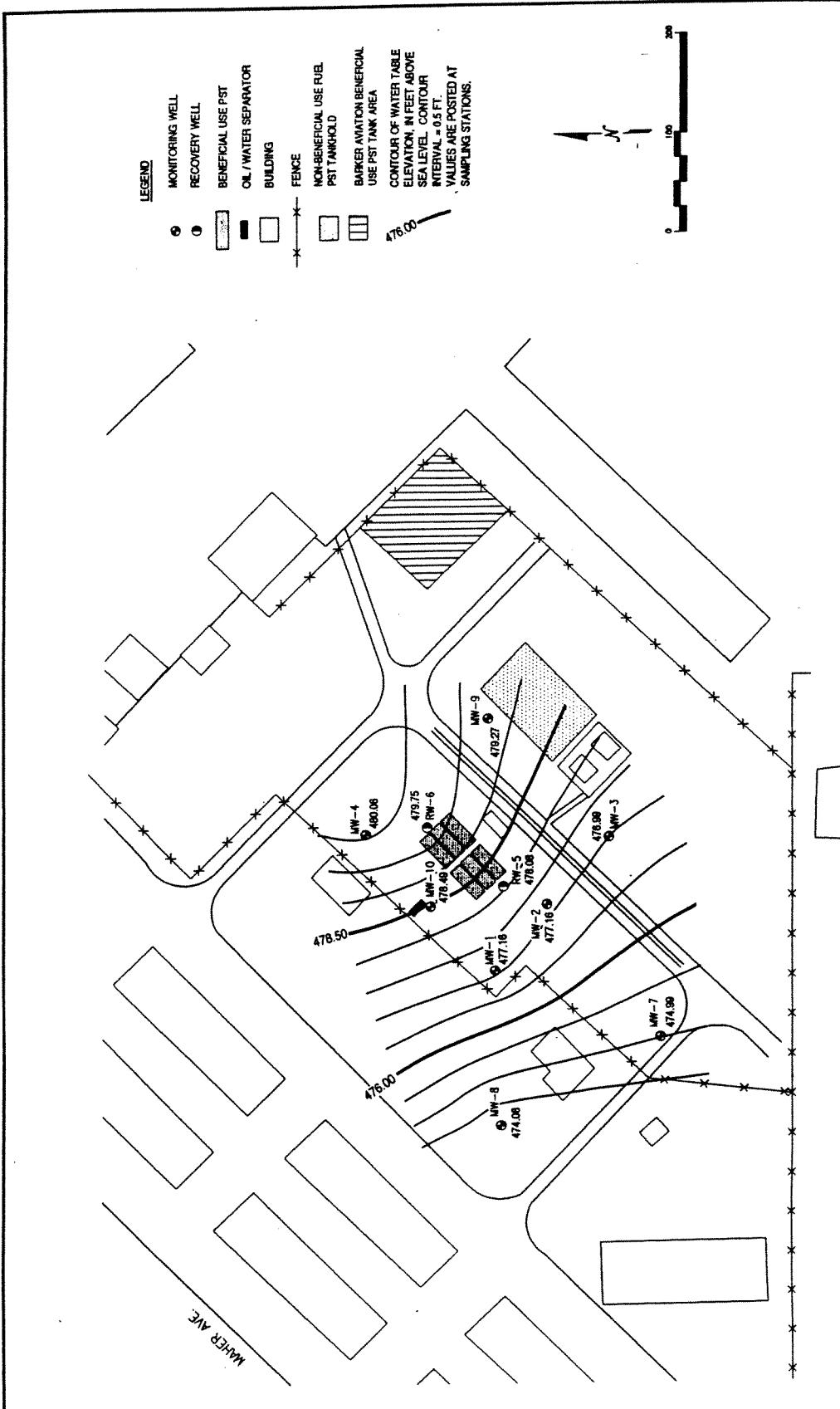
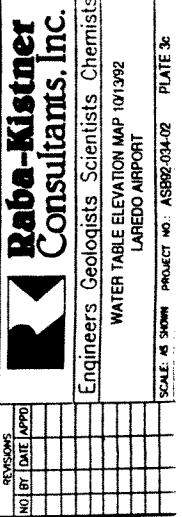
LEGEND

- MONITORING WELL, ABANDONED
- MONITORING WELL
- RECOVERY WELL
- BENEFICIAL USE PST
- OIL/WATER SEPARATOR
- BUILDING
- FENCE
- NON-BENEFICIAL USE RUE
- PST TANKHOLD
- BARKER AVIATION BENEFICIAL USE PST TANK AREA
- NON-BENEFICIAL USE WASTE OIL PST TANKHOLD





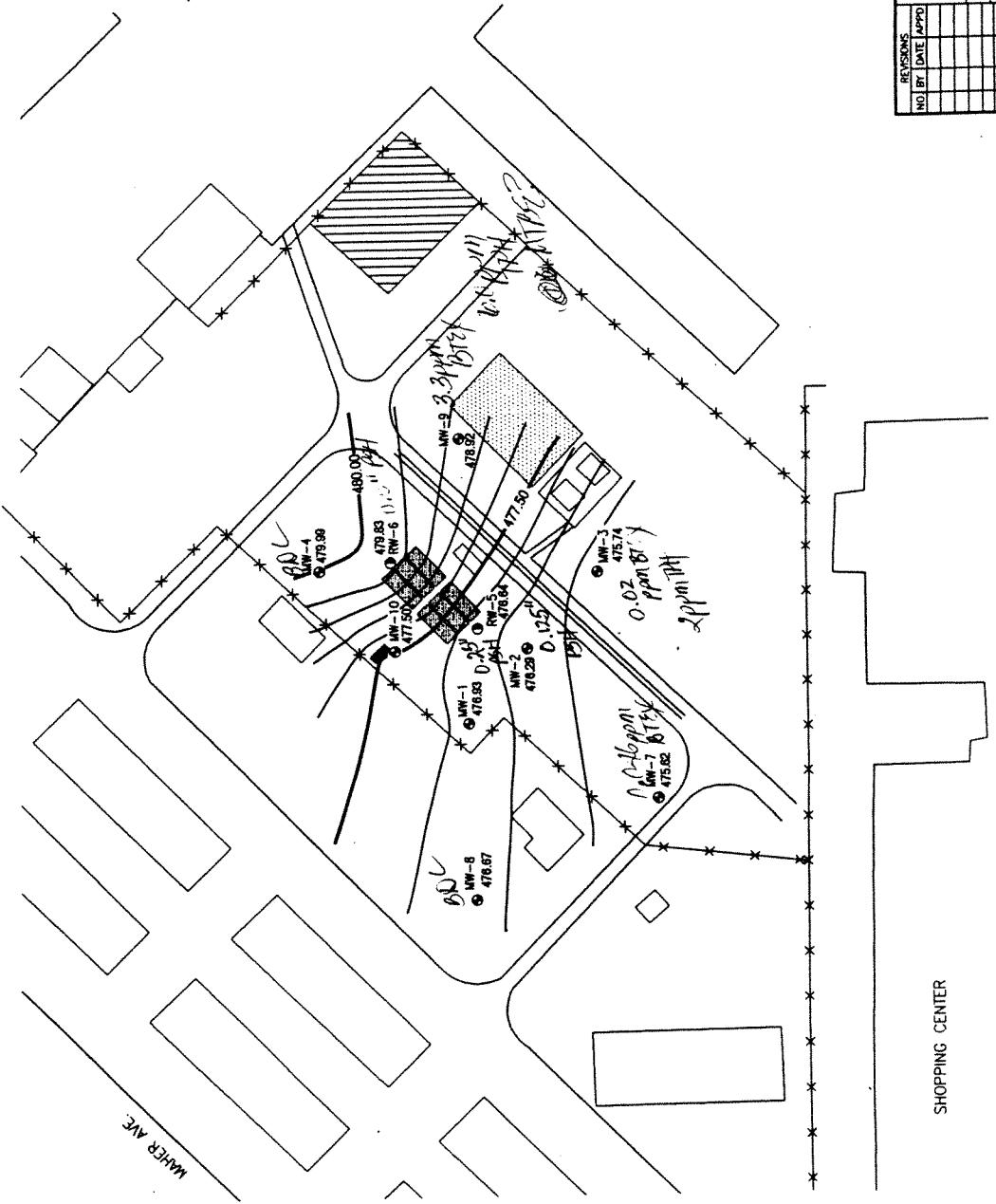




CDL Sheet: 010401

LEGEND

- MONITORING WELL
- RECOVERY WELL
- BENEFICIAL USE PST
- NON BENEFICIAL USE FUEL
PST TANK/HOLD
- BARKER AVIATION BENEFICIAL
USE PST TANK AREA
- CONTOUR OF WATER TABLE
ELEVATION, IN FEET ABOVE
SEA LEVEL. CONTOUR
INTERVAL = 0.5 FT.
VALUES ARE POSTED AT
SAMPLING STATIONS.
- 480.00
- 100 200
- FENCE
- BUILDING
- **



Rabe-Kistner Consultants, Inc.
Engineers Geologists Scientists Chemists
WATER TABLE ELEVATION MAP 1/1/393
LAREDO AIRPORT
PROJECT NO. ASR92-104-02 PLATE 34
SCALE AS SHOWN

REVISIONS	
NO BY DATE APPROVED	

WATER LEVEL MEASUREMENTS

PROJECT NAME:

LAREDO AIRPORT

FILE NAME:

WLVL.WQ1

Well Designation	Date	TOC Elevation (ft)	Depth to Water (ft)	Water Table Elevation (ft)
MW-1	12/07/91	485.43	8.32	477.11
	06/13/92		7.27	478.16
	08/11/92		7.88	477.55
	08/19/92		7.80	477.63
	10/13/92		8.27	477.16
	01/13/93		8.50	476.93
MW-2	12/07/91	487.26	10.11	477.15
	06/13/92		8.91	478.35
	08/11/92		9.52	477.74
	08/19/92		9.51	477.75
	10/13/92		10.10	477.16
	01/13/93		10.97	476.29
MW-3	12/07/91	487.19	10.18	477.01
	06/13/92		8.93	478.26
	08/11/92		9.52	477.57
	08/19/92		9.52	477.57
	10/13/92		10.20	476.99
	01/13/93		11.45	475.74
MW-4	12/07/91	487.84	7.66	480.18
	06/13/92		7.77	480.07
	08/11/92		7.58	480.26
	08/19/92		7.56	480.28
	10/13/92		7.78	480.06
	01/13/93		7.85	479.99
RW-5	12/07/91	488.60	11.60	477.00
	06/13/92		8.39	480.21
	08/11/92		10.20	478.40
	08/19/92		10.14	478.46
	10/13/92		10.52	478.08
	01/13/93		11.96	476.64
RW-6	12/07/91	488.78	9.96	478.82
	06/13/92		8.70	480.08
	08/11/92		8.63	480.15
	08/19/92		8.88	479.90
	10/13/92		9.03	479.75
	01/13/93		8.95	479.83

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(CONT.)

PROJECT NO. ASB92-034-02

PLATE 4

WATER LEVEL MEASUREMENTS (CONTINUED)

PROJECT NAME:

LAREDO AIRPORT

FILE NAME:

WLVL_WQ1

Well Designation	Date	TOC Elevation (ft)	Depth to Water (ft)	Water Table Elevation (ft)
MW-7	12/07/91	485.24		
	06/13/92		9.80	475.44
	08/11/92		10.25	474.99
	08/19/92		9.62	475.62
	10/13/92			
	01/13/93			
MW-8	12/07/91	484.27		
	06/13/92		8.16	476.11
	08/11/92		10.19	474.08
	08/19/92		7.60	476.67
	10/13/92			
	01/13/93			
MW-9	12/07/91	487.17		
	06/13/92		7.16	480.01
	08/11/92		7.90	479.27
	08/19/92		8.25	478.92
	10/13/92			
	01/13/93			
MW-10	12/07/91	487.34		
	06/13/92		8.25	479.09
	08/11/92		8.85	478.49
	08/19/92		9.84	477.50
	10/13/92			
	01/13/93			

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PROJECT NO. ASB92-034-02

- - * PLATE 4 (CONT.)

SUMMARY OF ANALYTICAL RESULTS

PROJECT NAME: LAREDO AIRPORT
 SAMPLE LOCATION: MONITORING WELLS
 SAMPLE TYPE: GROUND WATER

FILE NAME: WATER.WQ1

Sample Designation	Sample Date	Sample Analyzed by	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Total Xylenes (mg/L)	Total Detectable BTEX (mg/L)	MTBE (mg/L)	TPH (mg/L)	TDS (mg/L)
MW-1	07/25/90	PAL	4.0	0.730	0.200	0.530	5.46	<0.01	13	3.510
	12/11/91	PAL	3.056	0.531	0.143	0.446	4.176	<0.01	13.8	
	05/27/92	PAL	4.853	0.687	0.277	0.703	6.52	1.494	1.98	
	08/11/92	R-KCl	12	1.5	0.38	0.89	14.77		44	
	10/13/92	R-KCl	11	1.3	<0.5***	<0.5***	12.3		6	
	01/13/93	R-KCl	2.7	0.33	<0.12**	<0.12**	3.03		4	
MW-2	12/11/91	PAL	0.329	0.271	0.205	0.516	1.321	<0.01	214	3.510
	05/27/92	PAL	0.698	0.361	0.281	0.662	2.002	0.890	29.6	
	08/11/92	R-KCl	0.33	0.26	0.16	0.39	1.14		53	
	10/13/92	---	---	---	---	---	---	---	---	
MW-3	07/25/90	PAL	0.860	0.082	0.190	0.280	1.412	<0.01	<10	3.510
	12/11/91	PAL	0.010	0.018	<0.01	0.013	0.041	0.049	3.3	
	05/27/92	PAL	0.480	<0.01	0.028	<0.01	0.508	0.026	1.38	
	08/11/92	R-KCl	0.38	0.31	0.20	0.51	1.4		6	
	10/13/92	R-KCl	0.085	<0.005	0.048	<0.005	0.133		6	
	01/13/93	R-KCl	0.020	<0.005	<0.005	<0.005	0.020		2	
MW-4	07/25/90	PAL	<0.01	<0.01	<0.01	<0.01	—	<0.01	<10	3.510
	12/11/91	PAL	—	—	—	—	—	0.803	<10	
	05/27/92	PAL	<0.01	<0.01	<0.01	<0.01	—	—	<1	
	08/11/92	R-KCl	<0.005	<0.005	<0.005	<0.005	—	—	<1	
	10/13/92	R-KCl	0.006	0.015	0.008	0.020	0.047	—	<1	
	01/13/93	R-KCl	<0.005	<0.005	<0.005	<0.005	—	—	<1	
MW-7	08/19/92	R-KCl	<0.005	<0.005	<0.005	<0.005	—	<0.005	<1	3.510
	10/13/92	R-KCl	0.12	0.054	0.011	0.036	0.221		<1	
	01/13/93	R-KCl	0.032	0.006	0.008	<0.005	0.046		<1	
MW-8	08/19/92	R-KCl	<0.005	<0.005	<0.005	<0.005	—	<0.005	<1	3.510
	10/13/92	R-KCl	<0.005	<0.005	<0.005	<0.005	—	—	<1	
	01/13/93	R-KCl	<0.005	<0.005	<0.005	<0.005	—	—	<1	
MW-9	08/19/92	R-KCl	5.4	2.5	0.73	1.8	10.43	<0.13**	12	3.510
	10/13/92	R-KCl	4.8	1.8	0.36	0.9	7.86		6	
	01/13/93	R-KCl	3.0	<0.25***	0.30	<0.25***	3.30		6	
MW-10	08/19/92	R-KCl	3.4	0.78	0.24	0.26	4.68	<0.05**	4	3.510
	10/13/92	R-KCl	6.2	1.7	0.31	0.98	9.19		14	
	01/13/93	R-KCl	6.6	2.0	<0.5***	1.1	9.70		31	

* R-KCl = RABA-KISTNER CONSULTANTS, INC.

PAL = PAN AMERICAN LABORATORIES, INC.

** THE PRACTICAL QUANTITATION LIMIT WAS ELEVATED DUE TO DILUTION / MATRIX INTERFERENCES. MTBE WAS NOT DETECTED VIA GC/MS CONFIRMATION ANALYSIS.

*** THE PRACTICAL QUANTITATION LIMIT WAS ELEVATED DUE TO DILUTION / MATRIX INTERFERENCES.

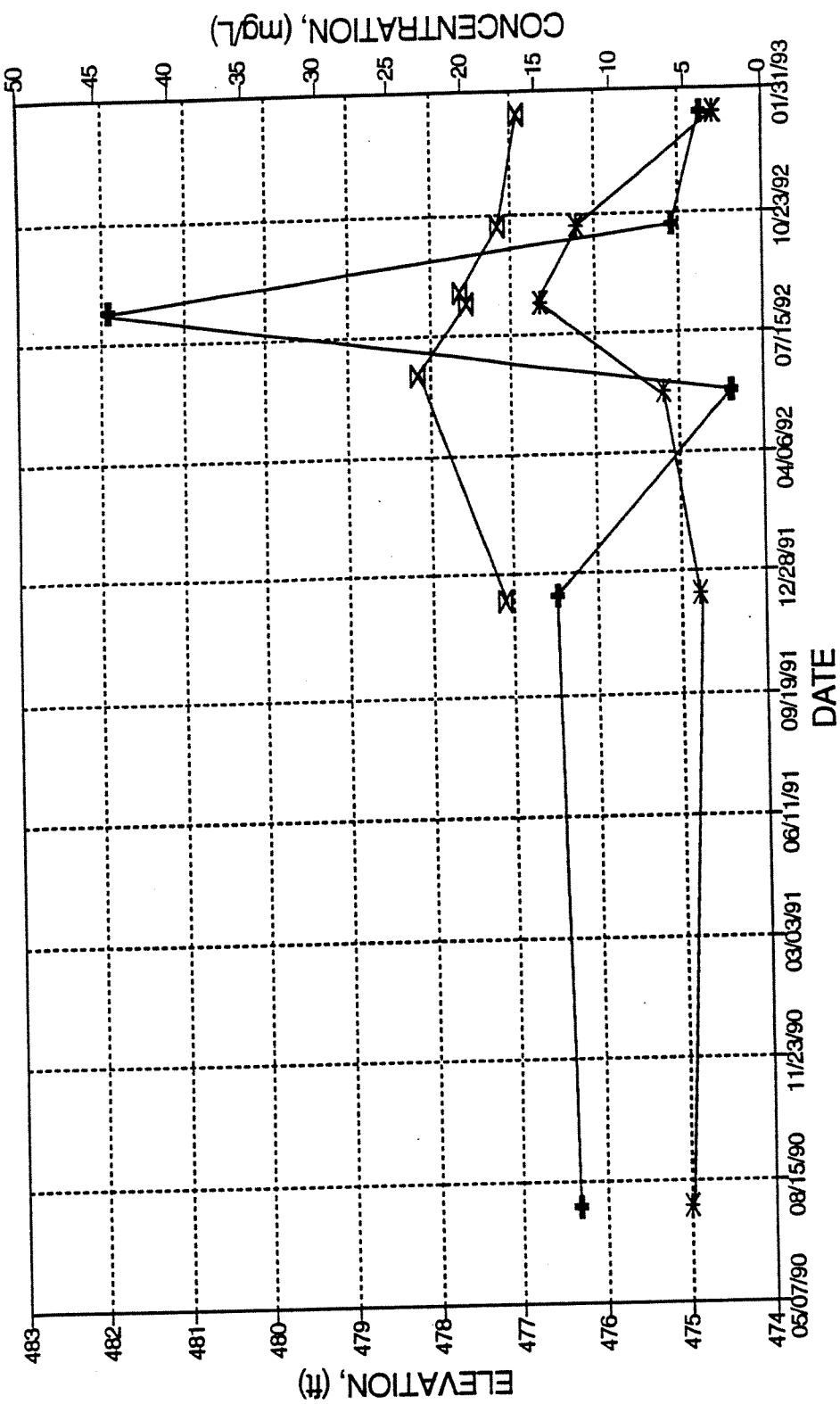
**** NOT SAMPLED - CONTAINED FREE PRODUCT

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PROJECT NO. ASB92-034-02

PLATE 5

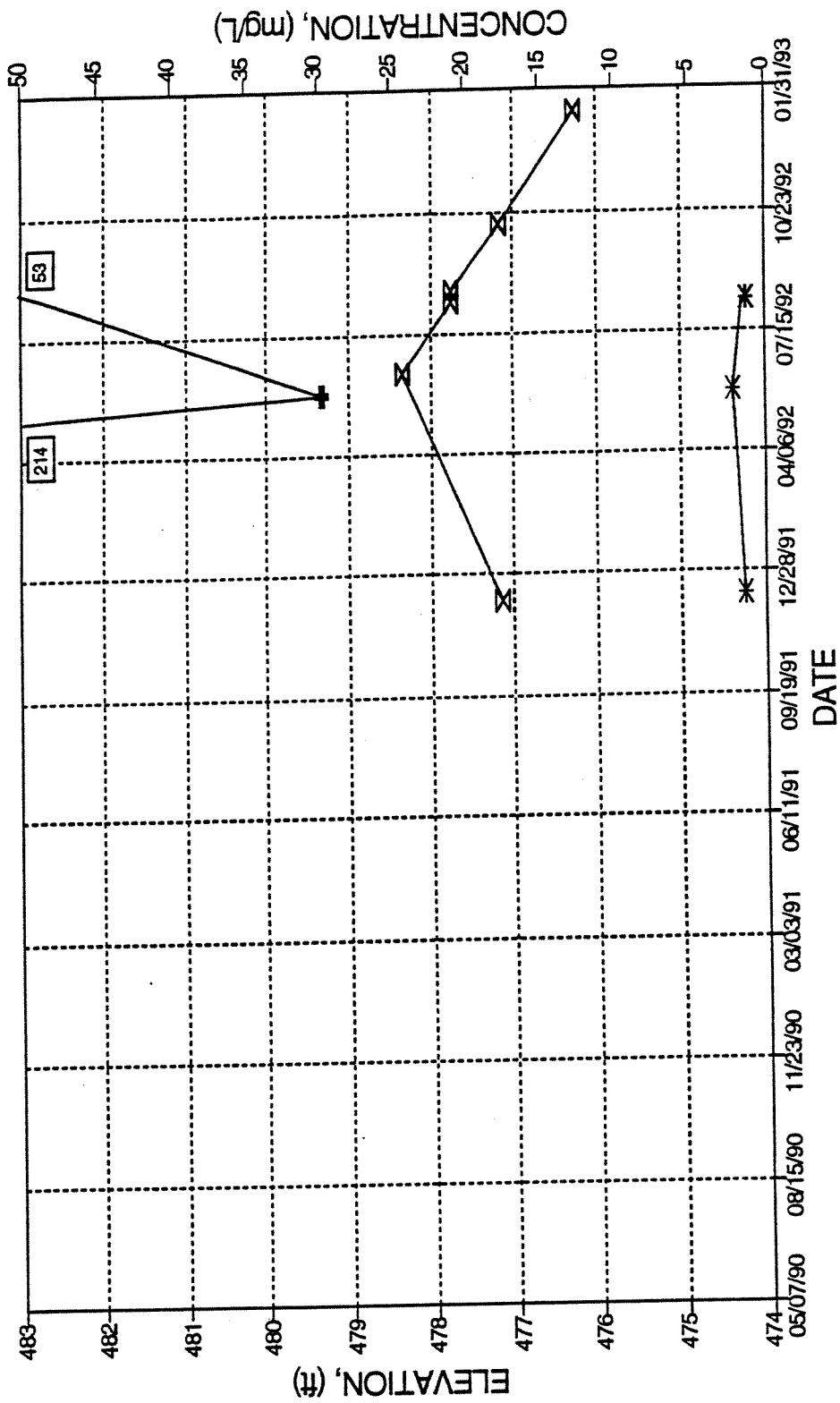
**HYDROGRAPH OF MW-1
LAREDO AIRPORT**



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PROJECT NO. ASB92-034-02

PLATE 6a

**HYDROGRAPH OF MW-2
LAREDO AIRPORT**

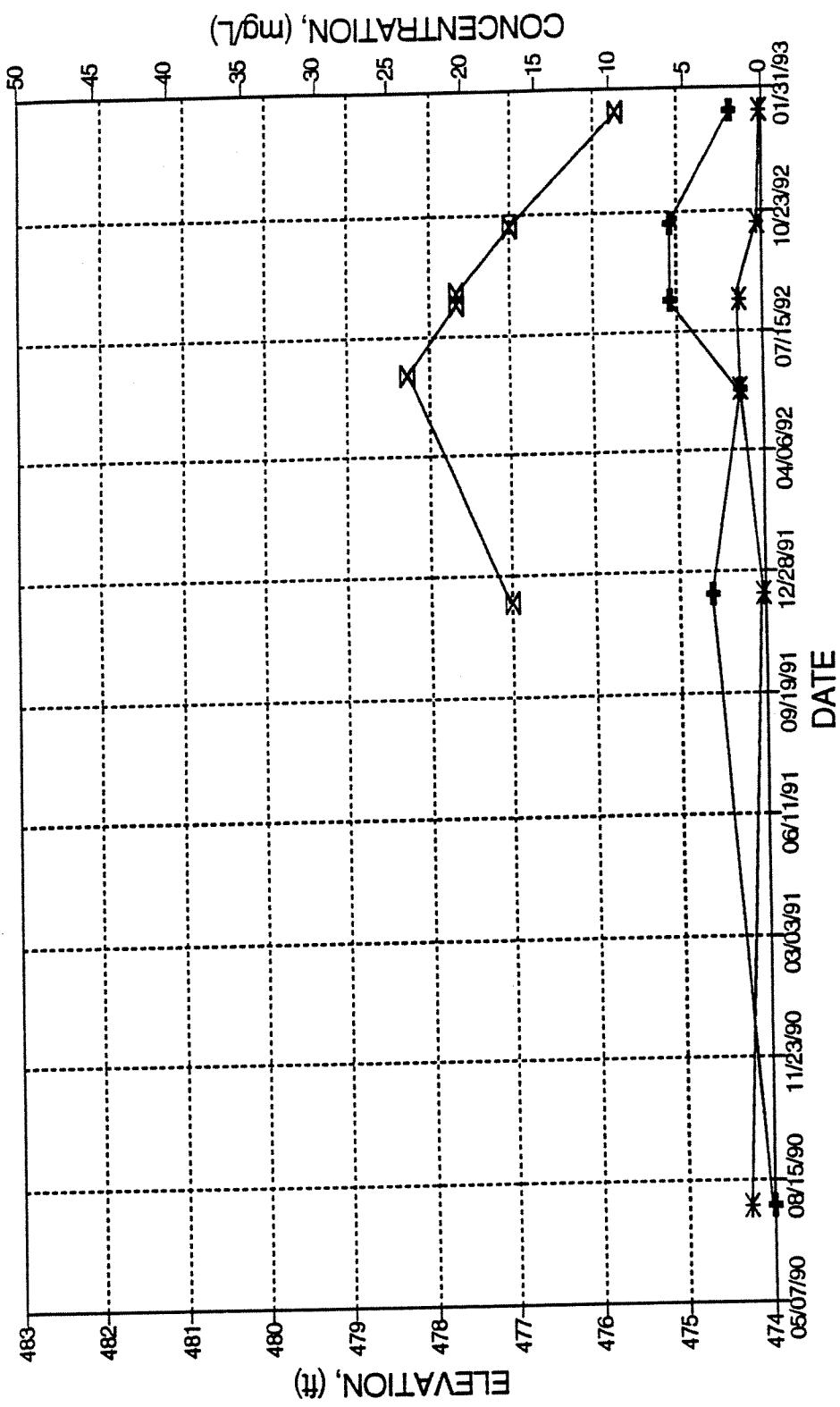


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PROJECT NO. ASB92-034-02

- PLATE 6b

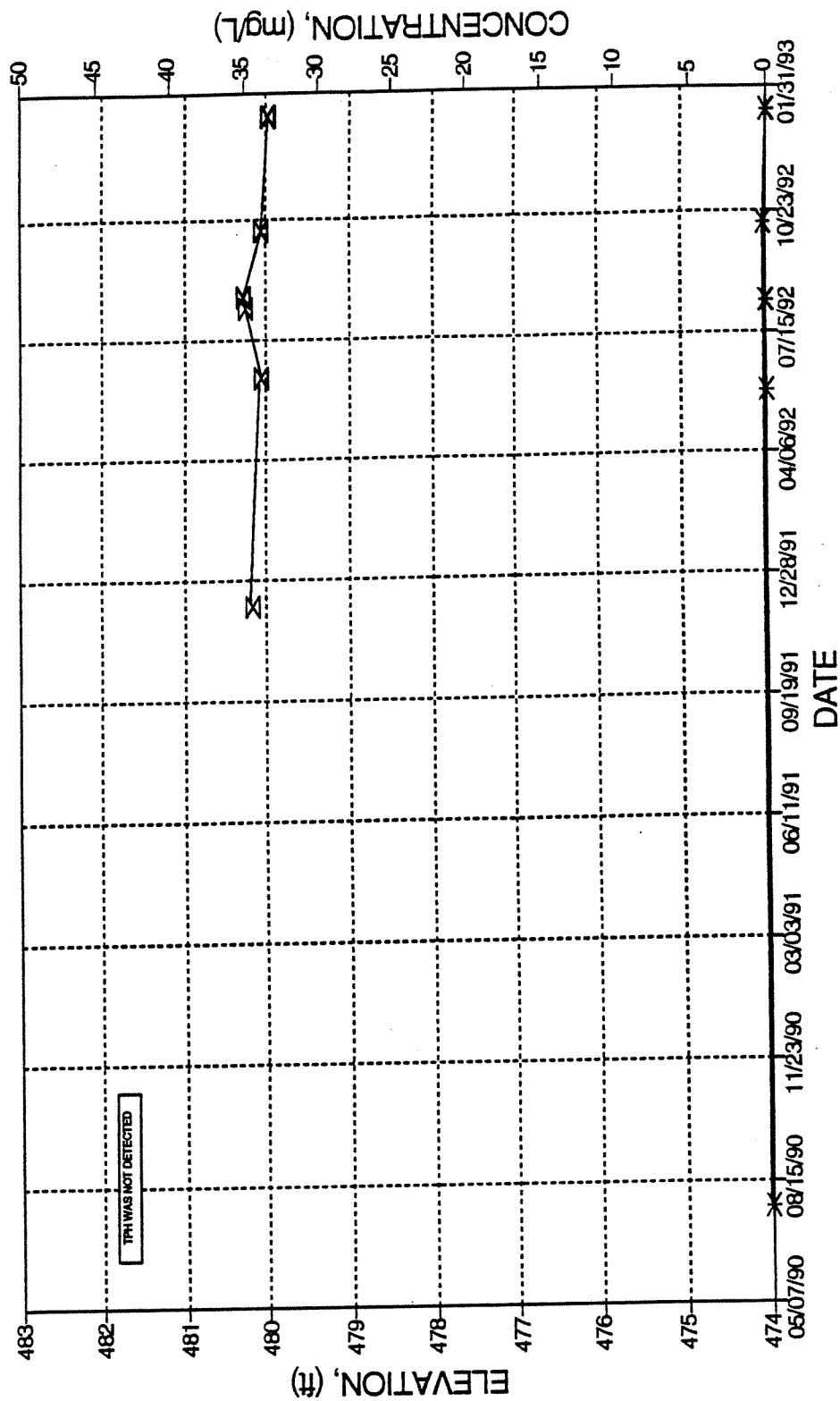
**HYDROGRAPH OF MW-3
LAREDO AIRPORT**



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PROJECT NO. ASB92-034-02

PLATE 6C

**HYDROGRAPH OF MW-4
LAREDO AIRPORT**

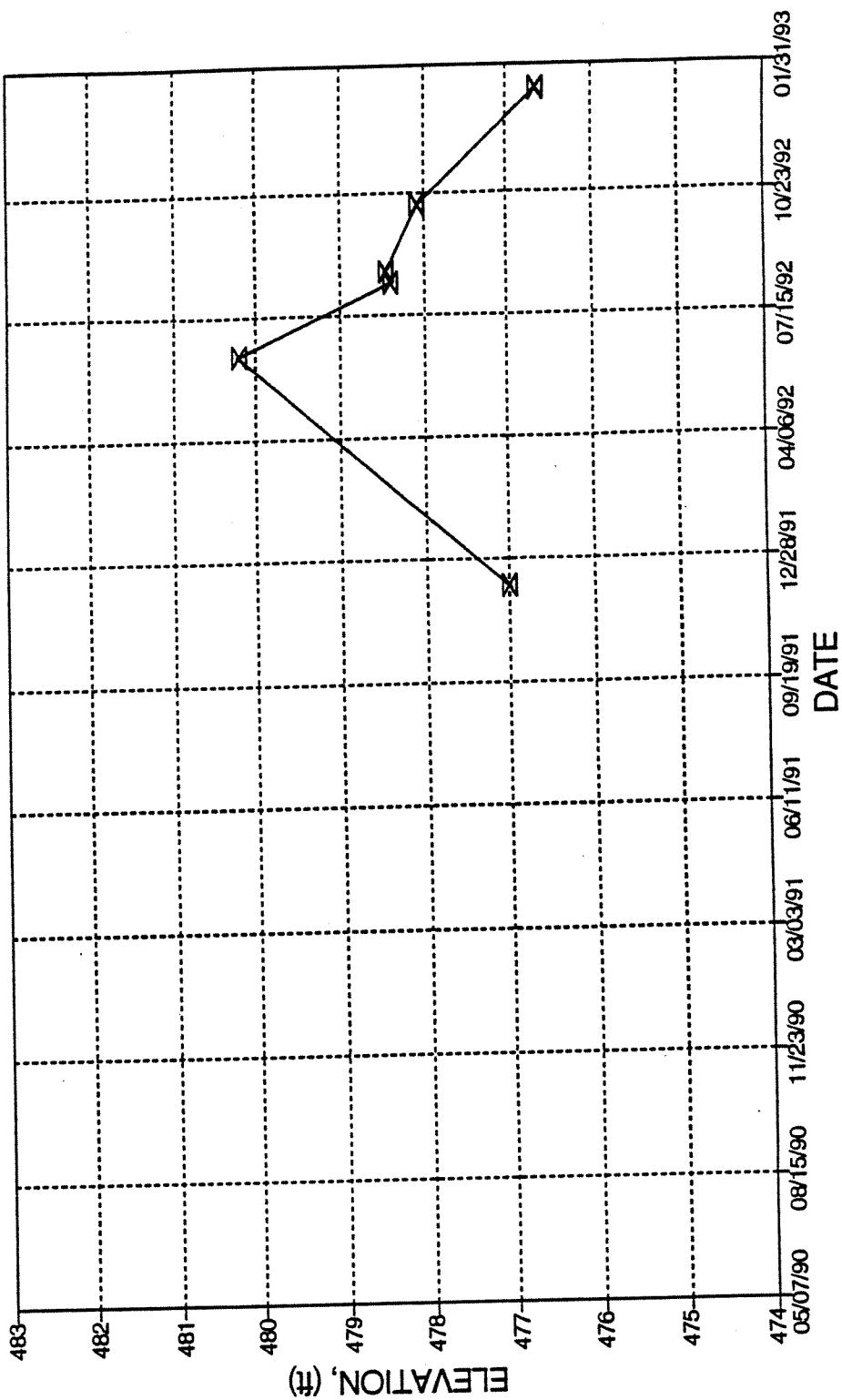


—X— WATER TABLE —*— TOTAL BTEX

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PROJECT NO. ASB92-034-02

PLATE 6d

**HYDROGRAPH OF RW-5
LAREDO AIRPORT**



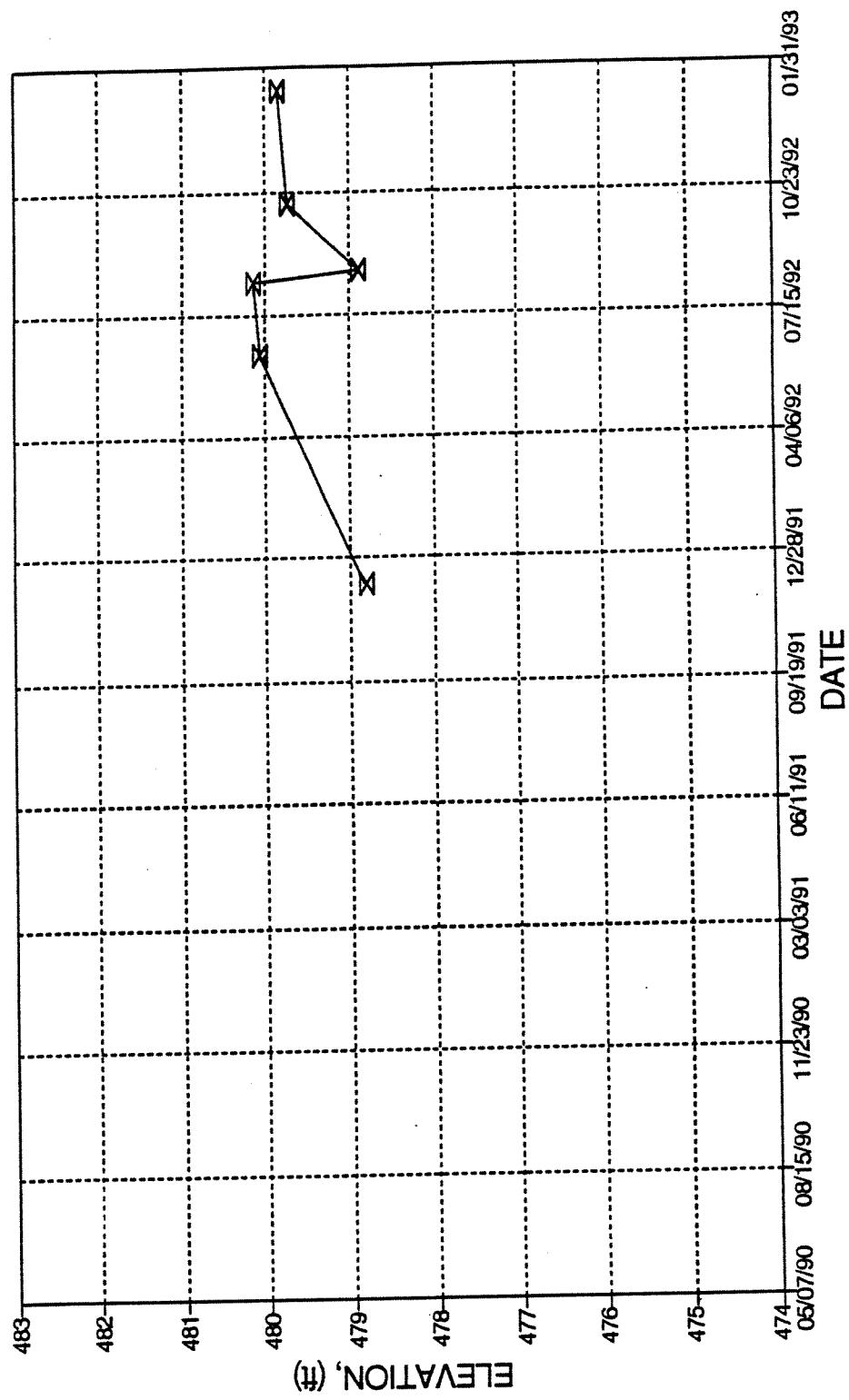
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PROJECT NO. ASB92-034-02

PLATE 6e

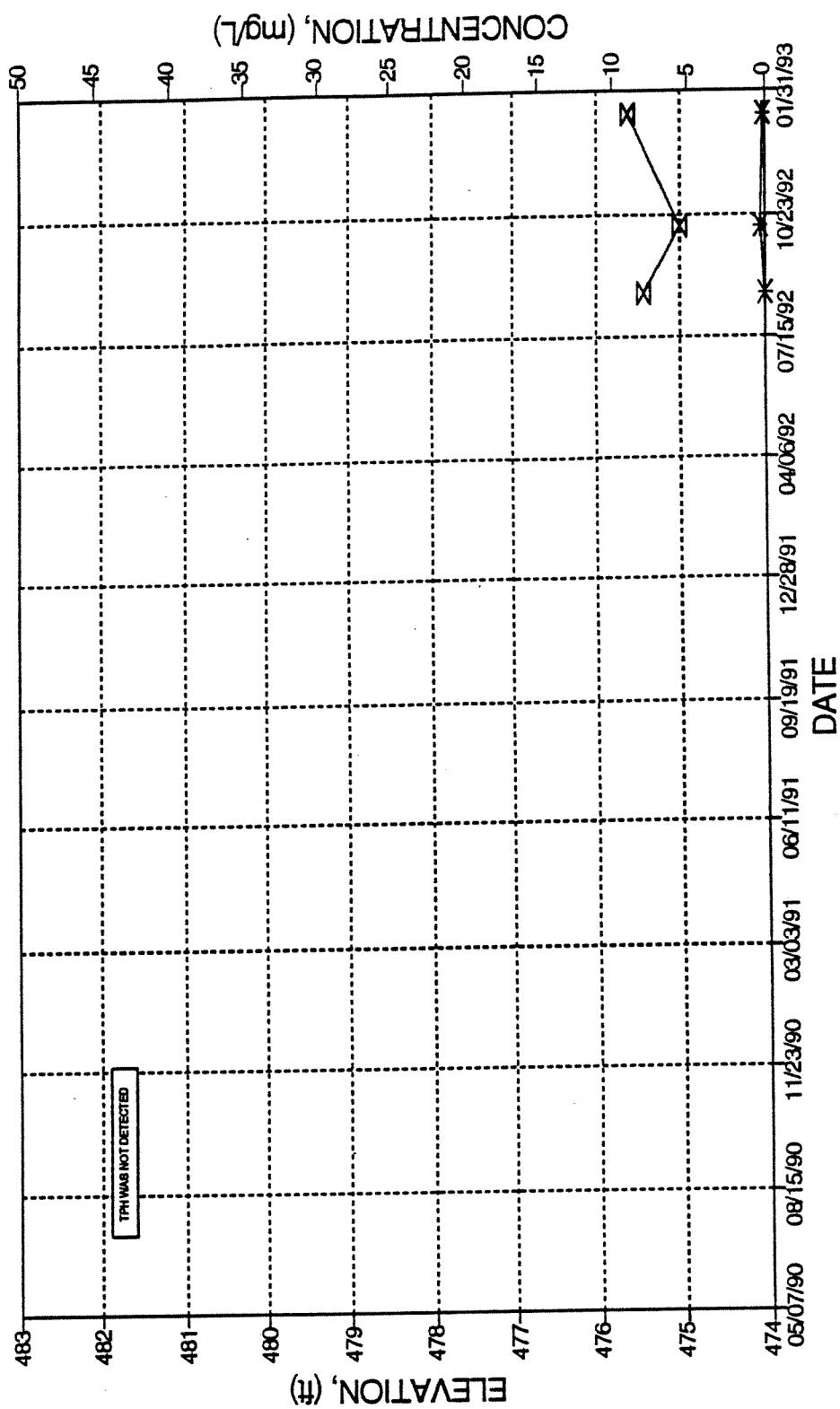
**HYDROGRAPH OF RW-6
LAREDO AIRPORT**



PROJECT NO. ASB92-034-02

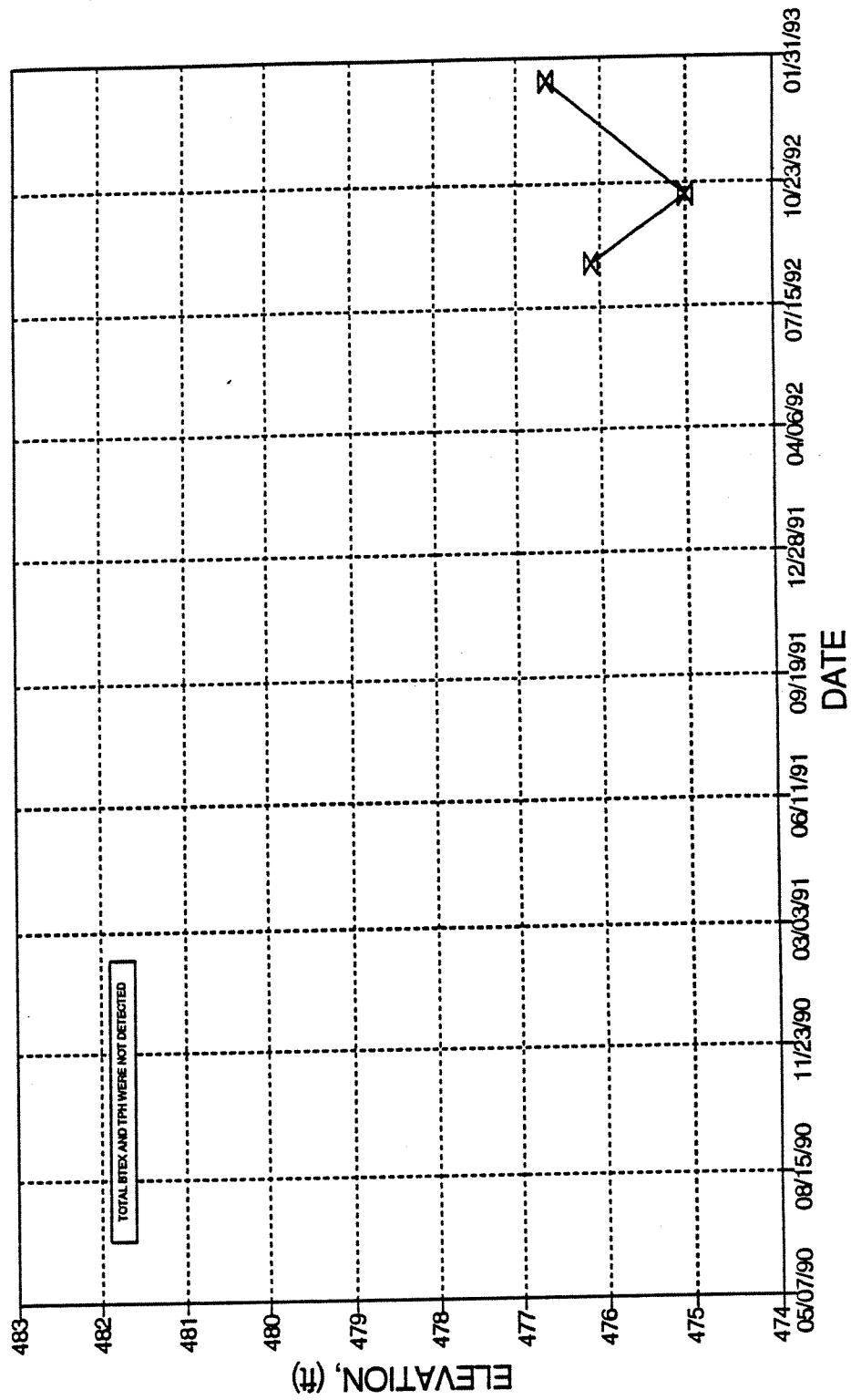
01054 PLATE 6f

**HYDROGRAPH OF MW-7
LAREDO AIRPORT**



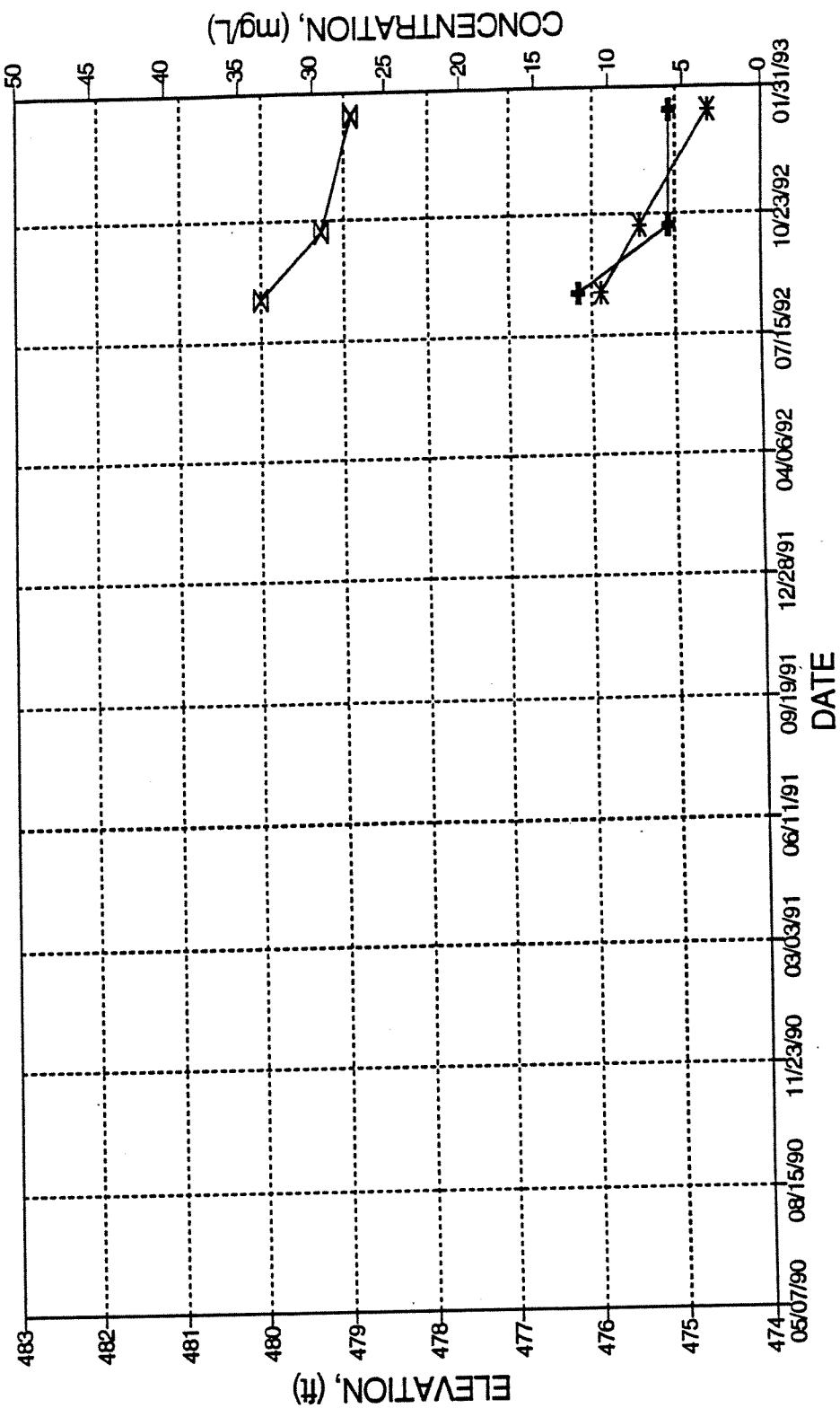
X - WATER TABLE * - TOTAL BTEX

**HYDROGRAPH OF MW-8
LAREDO AIRPORT**



WATER TABLE

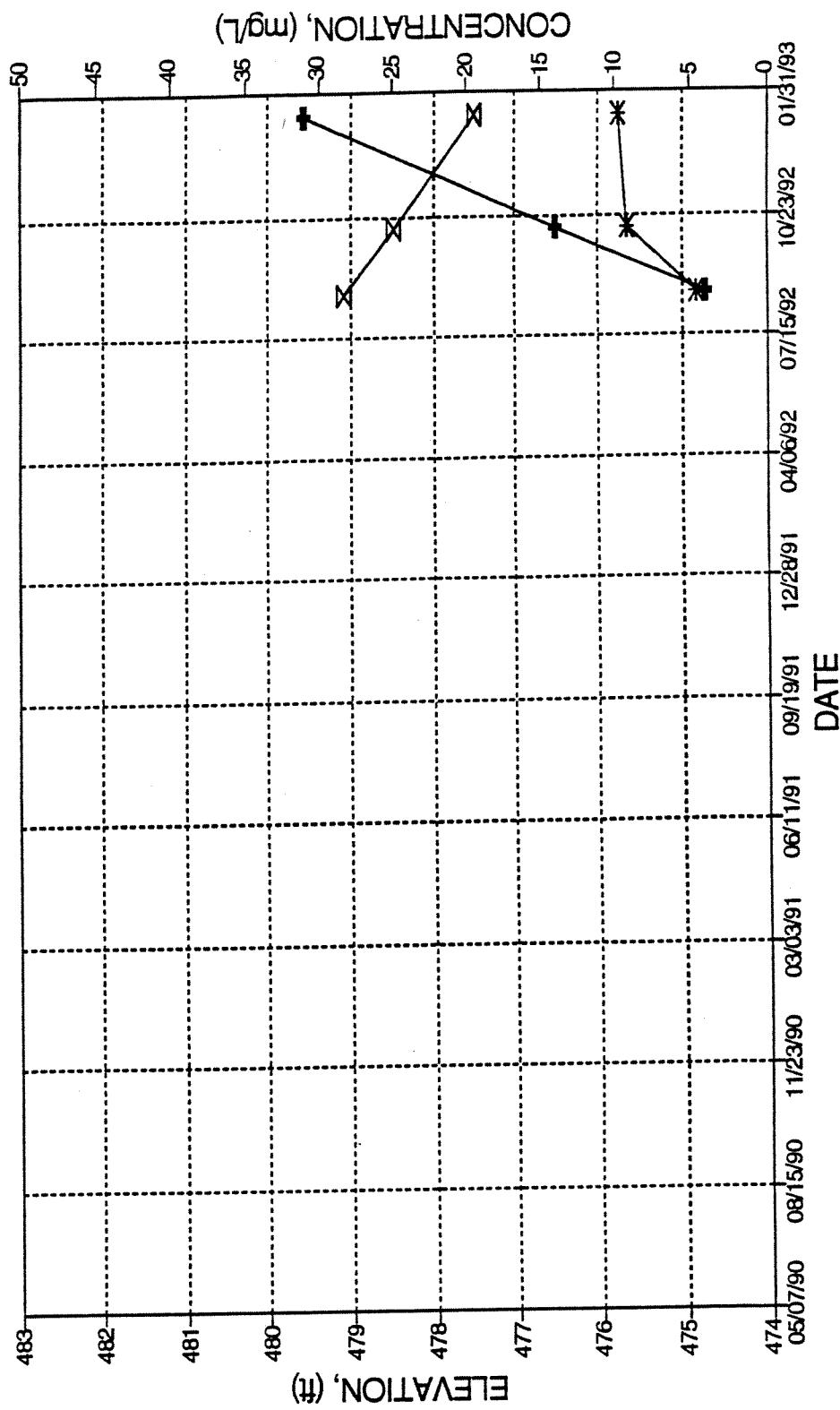
**HYDROGRAPH OF MW-9
LAREDO AIRPORT**



PROJECT NO. ASB92-034-02

01054 DATE 61

**HYDROGRAPH OF MW-10
LAREDO AIRPORT**



PROJECT NO. ASB92-034-02

01055 PLATE 6j

APPENDIX A
FIELD AND LABORATORY METHODS

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Raba-Kistner Consultants, Inc.

FIELD AND LABORATORY METHODS

The field and laboratory procedures employed during this study are those considered to be good standard practice in the Geoscience and Environmental Engineering professions. This appendix describes standard field and laboratory methods used by Raba-Kistner Consultants, Inc. (R-KCI).

FIELD METHODS

EXCAVATION SAMPLING

Purpose

The purpose of excavation sampling is to collect samples for laboratory analysis. Samples are analyzed to determine the levels of contamination in soils and rock. This information is used to assess the extent of contamination within or at the perimeters of the excavation.

Sample Selection

Samples are selected to determine worst-case levels of contamination. Sample selection is based on a combination of the following:

1. Visual observations including staining, soil discoloration, and presence of free product
2. Olfactory observations
3. Organic vapors detected with an organic vapor analyzer (Porta-FID)

R-KCI uses a Porta-FID II flame ionization detector (FID) manufactured by Heath Consultants, Inc., or a HNU Model P1 101 manufactured by HNU Systems, Inc.

The Porta-FID II is designed to detect combustible hydrocarbons in parts per million (ppm) as methane. The instrument is calibrated using a 100 ppm standard of methane. The meter on the Porta-FID is set to zero on site, prior to use, in order to adjust readings for background levels.

The HNU is designed to detect a variety of gases in ppm. The analyzer employs the principle of photoionization. The HNU can be calibrated for each species to be measured or for a combination of species such as found in association with fuel contamination. R-KCI uses a 55 ppm standard mix supplied by HNU Systems, Inc.

Sampling Procedures

Excavation sampling consists of obtaining samples of representative natural material from select portions of the excavation. The sampling is normally conducted following excavation of obviously contaminated soils. The upper 6 to 12 inches of soils are removed to expose fresh soil. A bulk sample of the soil is obtained normally using a backhoe or other heavy equipment on site. A subsample that has not been in contact with the sampling device is selected from the bulk sample.

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Sample Handling and Preservation

Samples selected for chemical analysis are immediately placed in appropriate containers, stored in a cooler with ice, and transported to R-KCl's analytical laboratory. Chain-of-custody forms are completed at the time of sample collection and transported with the samples to a laboratory for analyses. If R-KCl's mobile lab is used then samples are analyzed on-site.

SOIL BORINGSPurpose

The purposes of soil borings are to:

- Determine the soil stratigraphy
- Obtain subsurface soil samples for laboratory testing
- Determine the vertical and horizontal extent of fuel contamination in soils
- Enable installation of monitoring wells

Auger Drilling Methods

Borings are drilled using dry, hollow-stem auger methods. R-KCl uses a Mobile B-53 drilling rig. The augers are 8-in. OD and 3-in. ID.

Sampling Procedures and Intervals

Samples are obtained with split-barrel, split-spoon, or Shelby-tube samplers. The sampler is fixed near the bottom of the lead auger and advanced with the auger over an interval of 2 ft. The sampler is then retrieved and the sample removed.

Initial borings are generally sampled continuously from the ground surface. If it is determined that the site's stratigraphy is continuous across the site, subsequent borings may be sampled semi-continuously or at intervals selected to evaluate specific horizons or zones of contamination. Sampler type and sampled intervals are indicated on the boring logs.

Logging Procedures

Samples and auger cuttings are logged by a geologist. Soils are logged for soil composition, structure, consistency, color, moisture content, occurrence of ground water, and hydrocarbons. Samples are also screened for evidence of contamination using the FID or HNU. Soil descriptions and FID/HNU measurements are recorded on a field log form. This information is input into a computer boring log program for generation of a final boring log.

Decontamination

To prevent cross contamination, the drilling rig and augers are steam cleaned prior to drilling **01058** each boring. Sampling devices are steam cleaned between each use.

MONITOR WELL INSTALLATION

Purpose

If shallow ground water occurs within the depth of the soil borings, the borings are generally converted to monitoring wells. The purposes of monitoring wells are to:

- Determine ground-water elevation
- Determine presence of free product on the ground water
- Collect ground-water samples for laboratory analysis
- Perform tests to evaluate aquifer properties

Well Construction

Monitor wells are constructed of PVC casing and screen. Screen slot openings are pre-manufactured at a size of 0.01 in. at an interval of 0.25 in. Casing and screen are threaded and have flush joints.

Sections of casing are assembled at the site to allow for pre-installation inspection. The screened interval extends above the water table by a few feet to ensure product migration into the well during water-table fluctuations. Monitoring well construction information is presented on the corresponding boring log.

A sand pack of Espey silica sand or equivalent is installed in the annulus between the borehole and the well screen. The sand pack extends from the bottom of the borehole to about 1 ft above the top of the screen. Commercial granular or powdered bentonite is used to form a 1-ft thick seal above the sand pack. A cement-bentonite grout backfill is then placed from the top of the bentonite seal to about 1 ft below grade. The remaining space allows for placement of protective surface casing.

Surveying

Upon completion of the monitoring wells, the relative elevation of the top of casing is determined for each well. The point surveyed on each well is marked by a "V" notch for further measurement reference.

GROUND-WATER MONITORING AND SAMPLING

Water Level Measurements

Water levels are measured in three or more monitoring wells to determine the direction of ground-water flow. Water levels are measured to within 0.01 ft. Measurements are made with an Olympus Well Probe (E-line), a Marine Moisture Control interface probe, or a tape and plopper. Water levels are measured as the depth from the top of the PVC casing. These depths are converted to elevations above sea level. The ground-water elevations are contoured to determine the direction of ground-water flow.

Well Purgina

Just prior to sampling, monitoring wells are purged of approximately three casing volumes. Ground water is bailed from the well using a disposable bailer suspended from a new nylon rope or string. In wells where the rate of recovery is very slow, a minimum of one casing volume is removed.

Ground-water Sampling

Ground-water samples are generally taken from the monitoring wells no sooner than 24 hours after well installation. Sampling of wells is performed with disposable bailers using new nylon rope or string. Water samples are immediately placed in amber bottles with Teflon lids. The bottles are completely filled so as not to leave a head space. Filled sample bottles are placed in a cooler with ice and transported to R-KCI's analytical laboratory within 24 hours of sample collection. Chain-of-custody forms are completed at the time of sample collection and transported with the samples.

AQUIFER PROPERTIES TESTING

Slug Tests

A rising head slug test measures the rate of recovery of the ground-water table in a well following displacement of the water table from its equilibrium elevation. The equilibrium water table elevation and any incremental changes in the water table are measured by inserting a pressure transducer in the well below the water table. The pressure transducer is linked to a field data logger and measures the overlying hydraulic and atmospheric pressure. The data logger then converts the measurements into feet of overlying hydraulic head. The data logger records these incremental changes in head during the test. A solid slug is then immersed below the water table. Head readings are monitored until the water table approaches the predetermined equilibrium elevation. The slug is then rapidly removed from immersion, followed by an immediate drop in water table elevation (maximum hydraulic head differential).

At this maximum hydraulic head differential, the water table begins to rise and the incremental increases in water table elevation (head) are recorded versus time. The recovery rate is measured over a period of time sufficient for the construction of an appropriate recovery curve. This recovery curve shows the total hydraulic head value at equilibrium, the maximum hydraulic head differential value at slug withdrawal, and the incremental increases in head values as they approach the equilibrium elevation.

Slug Test Data Reduction

The data collected from the slug tests were reduced and interpreted using SLUGIX, a PC-based inverse modeling program by INTERPEX, LTD. (1988). SLUGIX is a data reduction tool which allows the rate of ground-water flow into the well to be calculated using the Theim equation. The

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flow is a function of aquifer properties and well dimensions, along with the observed incremental changes in head per unit time. The user can interactively fit a slug test response curve derived from field data to a curve catalog of empirically derived coefficients. The effective radius in the Bouwer and Rice formulation is then computed from the matched coefficient. The estimates of the hydraulic conductivity and transmissivity of the screened interval of the aquifer in the vicinity of the monitoring well are thus determined.

ANALYTICAL CHEMISTRY METHODS

The purposes of the laboratory analyses are to determine the levels of contamination in the various media being sampled.

CONTAMINANT CHARACTERIZATION

Benzene, Toluene, Ethylbenzene, and Xylenes; Methyl-Tertiary-Butyl Ether

Gasoline contamination is evaluated by analyzing for four indicator constituents: benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX and when appropriate, methyl-tertiary-butyl ether (MTBE). Samples for BTEX and MTBE analysis are prepared following EPA Method 5030 (purge-and-trap method). BTEX and MTBE in both soil and water are analyzed following GC / PID photoionization detector method 8020. The methods are described in detail in US EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Volumes IA, IB, IC, and II.

The specific methods of analysis used for each study are described on the Report of Analysis. For all three methods, the normal detection limit for each constituent of BTEX and MTBE is 0.005 ppm for water and 0.4 ppm for soil. The results of analyses on soils are presented on the appropriate boring logs and in table form presented in appropriate reports.

Total Petroleum Hydrocarbons

Levels of petroleum hydrocarbon contamination are determined by measuring for total petroleum hydrocarbons (TPH). Soil samples for TPH analysis are prepared following EPA Method 3550 (sonication/Freon- extraction method). TPH in soil and water samples are analyzed following EPA 600/4-79-20, Method 418.1 (Freon-extraction method). The method is described in detail in US EPA Publication 600, Methods for Chemical Analysis of Water and Wastes. The normal detection limit for soil is 10 ppm and the detection limit for water is 1 ppm in method 418.1. The results of analyses on soils are presented on the appropriate boring logs and in table form presented in appropriate reports.

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APPENDIX B
REPORT OF ANALYSIS

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Raba-Kistner Consultants, Inc.

Report of Analysis



**Raba-Kistner
Consultants, Inc.**

P.O. Box 690287, San Antonio, TX 78269-0287
12821 W. Golden Lane, San Antonio, TX 78249
(512) 699-9090

To: Laredo Airport
c/o R-KCI

Attn: Eric Wolf

Project No.: ASB92-034-02
Task No.: 4000
Assignment No.: 4633
Contract/P.O. No.:
Date Received: 1-14-93
Page 1 of 2 Date: 1-28-93

Sample Type/Sample Loc: Water
Date Collected: 1-13-92
Date Completed: 1-26-93
Collected By: R-KCI

TEST METHODS:

TEST	PREPARATION/DATE	ANALYSIS/DATE
BTEX TPH	5030 / 1-22-93	8020 / 1-22-93 418.1 / 1-15-93

By Earl S. Moore
Earl S. Moore
Organic Section Manager

R-Kistner Consultants, Inc. (R-KCI) warrants that work will be performed in accordance with sound laboratory practice and professional standards. R-KCI makes no other warranty, expressed or implied. In the event of any error, omission or other professional negligence, the sole and exclusive responsibility of R-KCI shall be to reperform the deficient work at its own expense, and R-KCI shall have no other liability whatsoever. In no event shall R-KCI be liable, whether in contract or tort, including negligence, for any incidental or consequential damages. If this provision is in conflict with other contractual terms, it is understood that this provision will, in all cases, prevail.

By Edward J. Brown
Edward J. Brown
Director, Analytical Chemistry

Test Results:

Analyte	Detection Limit (mg/L)	4633-1 (MW-1) (mg/L)	4633-2 (MW-3) (mg/L)	4633-3 (MW-4) (mg/L)	4633-7 (MW-10) (mg/L)
Benzene	0.005	2.7	0.020	<0.005	
Toluene	0.005	0.33	<0.005	<0.005	
Ethylbenzene	0.005	<0.12*	<0.005	<0.005	
Total Xylenes	0.005	<0.12*	<0.005	<0.005	
TPH	1	4	2	<1	
Analyte	Detection Limit (mg/L)	4633-4 (MW-7) (mg/L)	4633-5 (MW-8) (mg/L)	4633-6 (MW-9) (mg/L)	4633-7 (MW-10) (mg/L)
Benzene	0.005	0.032	<0.005	3.0	6.6
Toluene	0.005	0.006	<0.005	<0.25*	2.0
Ethylbenzene	0.005	0.008	<0.005	0.30	<0.5*
Total Xylenes	0.005	<0.005	<0.005	<0.25*	1.1
TPH	1	<1	<1	6	31

* The practical quantitation limit was elevated
due to dilution/matrix interferences.

R&D "Silver ConnSULANS, Inc. - CHEMISIRY LAB

12821 W. Golden Lane • San Antonio, Texas 78249

Fax (210) 699-6426

Phone (210) 699-9090

Sample Custodian - Ext 168 Report Results - Ext 170

Address

Chain of Custody Record and Analysis Request

4633

NOTE: Project Approval and Project Setup must be complete prior to initiation of analysis

Company Name		Ph #	Ph #	ANALYSIS REQUESTED										CUSTODY RECORD			
		tax #	tax #											Date:	Time:	Received by:	
Site Location		Project Number	Report Results to: H 2 3 9	Date Sampled	1-13-93												
LAREDO AIRPORT		A 5B 9203402	C.R.L. Wolf	Date Rec'd.	1-11-93												
RKCI #	SAMPLE ID	SAMPLING	MATRIX	AMOUNT SAMPLED	DATE	TIME	SLUDGE	OTHER	SAMPLE LOC.	PRESERV	PH/TEMP		NONE	ICE	AOD	PRESERV	PH/TEMP
		EMF	WATER	SOIL	WATER	SLUDGE	OTHER	SAMPLE LOC.	PRESERV	PH/TEMP							
1111-1	1/13	AM	1/13	1/13	1/13	1/13	1/13	1/13	1/13	1/13	1/13	1/13	1/13	1/13	1/13	1/13	
1111-3	11	AM	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
1111-4	11	PM	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
1111-9	11	PM	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
1111-8	11	PM	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
1111-9	11	PM	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
1111-10	11	PM	11	11	11	11	11	11	11	11	11	11	11	11	11	11	

SAMPLE RECEIPT REPORT

Samples OK
Temp 4 C Min
Custody Seals, Intact
Head Space in VOAs
ph adjusted Describ

Special detection limits:
Special reporting requirements:

Emerg 24 hr	Specify
Emerg 72 hr	Special detection limits:
Rush 7 days	Special reporting requirements:
Normal 21 days	
OTHER (#) bus days	
Fax	
POD	Comments:
	TASK # L C (in)

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APPENDIX C
LAREDO AIRPORT DAILY MONITORING

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

RECOVERY WELL NO. 6

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
11-5-92	3:00	115	115	-0-		
11-5-92	3:15	115	115	-0-		
11-5-92	8:15	115	115	-0-		
11-5-92	8:30	115	115	-0-		
11-5-92	8:45	115	115	-0-		
11-6-92	3:30	115	115	-0-		
11-6-92	8:15	115	115	-0-		
11-6-92	8:30	115	115	-0-		
11-6-92	8:45	115	115	-0-		
11-7-92	8:15	115	115	-0-		
11-7-92	8:30	115	115	-0-		
11-7-92	8:45	115	115	-0-		
11-8-92	8:15	115	115	-0-		
11-8-92	8:30	115	115	-0-		
11-8-92	8:45	115	115	-0-		
11-9-92	8:15	115	115	-0-		
11-9-92	8:30	115	115	-0-		
11-9-92	8:45	115	115	-0-		
11-10-92	8:15	115	115	-0-		
11-10-92	8:30	115	115	-0-		
11-10-92	8:45	115	115	-0-		
11-11-92	8:15	115	115	-0-		
11-11-92	8:30	115	115	-0-		
11-11-92	8:45	115	115	-0-		
11-12-92	8:15	115	115	-0-		
11-12-92	8:30	115	115	-0-		
11-12-92	8:45	115	115	-0-		
11-13-92	8:15	115	115	-0-		
11-13-92	8:30	115	115	-0-		
11-13-92	8:45	115	115	-0-		
11-14-92	8:15	115	115	-0-		
11-14-92	8:30	115	115	-0-		
11-14-92	8:45	115	115	-0-		
11-15-92	8:15	115	115	-0-		
11-15-92	8:30	115	115	-0-		
11-15-92	8:45	115	115	-0-		
11-16-92	8:15	115	115	-0-		
11-16-92	8:30	115	115	-0-		
11-16-92	8:45	115	115	-0-		
11-17-92	8:15	115	115	-0-		
11-17-92	8:30	115	115	-0-		
11-17-92	8:45	115	115	-0-		
11-18-92	8:15	115	115	-0-		
11-18-92	8:30	115	115	-0-		
11-18-92	8:45	115	115	-0-		
11-19-92	8:15	115	115	-0-		
11-19-92	8:30	115	115	-0-		
11-19-92	8:45	115	115	-0-		
11-20-92	8:15	115	115	-0-		
11-20-92	8:30	115	115	-0-		
11-20-92	8:45	115	115	-0-		
11-21-92	8:15	115	115	-0-		
11-21-92	8:30	115	115	-0-		
11-21-92	8:45	115	115	-0-		
11-22-92	8:15	115	115	-0-		
11-22-92	8:30	115	115	-0-		
11-22-92	8:45	115	115	-0-		
11-23-92	8:15	115	115	-0-		
11-23-92	8:30	115	115	-0-		
11-23-92	8:45	115	115	-0-		
11-24-92	8:15	115	115	-0-		
11-24-92	8:30	115	115	-0-		
11-24-92	8:45	115	115	-0-		
11-25-92	8:15	115	115	-0-		
11-25-92	8:30	115	115	-0-		
11-25-92	8:45	115	115	-0-		
11-26-92	8:15	115	115	-0-		
11-26-92	8:30	115	115	-0-		
11-26-92	8:45	115	115	-0-		
11-27-92	8:15	115	115	-0-		
11-27-92	8:30	115	115	-0-		
11-27-92	8:45	115	115	-0-		
11-28-92	8:15	115	115	-0-		
11-28-92	8:30	115	115	-0-		
11-28-92	8:45	115	115	-0-		
11-29-92	8:15	115	115	-0-		
11-29-92	8:30	115	115	-0-		
11-29-92	8:45	115	115	-0-		
11-30-92	8:15	115	115	-0-		
11-30-92	8:30	115	115	-0-		
11-30-92	8:45	115	115	-0-		

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DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

RECOVERY WELL NO. 5

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
11-3-72	8:30	131	127	- -		
11-3-72	8:32	130	127	- 0 -		
11-4-72	8:35	127	121	- 0 -		
11-6-72	8:40	127	127	- 0 -		
11-7-72	8:30	129	127	- 0 -		
11-9-72	8:40	137	137	- - -		
11-10-72	8:32	137	137	- - -		
11-11-72	8:30	137	137	- 0 -		
11-13-72	8:35	137	137	- 0 -		
11-15-72	8:35	137	137	- 0 -		
11-17-72	8:40	137	137	- 0 -		
11-18-72	8:30	137	137	- - -	CHAVEZ	
11-19-72	8:35	137	137	- 0 -	CHAVEZ	
11-20-72	8:25	137	137	- 0 -	CHAVEZ	
11-23-72	8:35	137	137	- 0 -	CHAVEZ	
11-24-72	8:30	137	137	- 0 -	MANDO	
11-25-72	8:40	137	137	- 0 -	MANDO	
11-30-72	8:30	137	137	- 0 -	SANTOS	

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DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 2

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
11-2-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-3-92	8:35	114	114	-0-		CHAVEZ SANTOS
11-4-92	8:45	114	114	-0-		CHAVEZ SANTOS
11-5-92	8:50	114	114	-0-		CHAVEZ SANTOS
11-6-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-7-92	8:50	114	114	-0-		CHAVEZ SANTOS
11-8-92	8:45	114	114	-0-		CHAVEZ SANTOS
11-9-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-10-92	8:35	114	114	-0-		CHAVEZ SANTOS
11-11-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-12-92	8:35	114	114	-0-		CHAVEZ SANTOS
11-13-92	8:45	114	114	-0-		CHAVEZ SANTOS
11-14-92	8:30	114	114	-0-		CHAVEZ SANTOS
11-15-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-16-92	8:45	114	114	-0-		CHAVEZ SANTOS
11-17-92	8:30	114	114	-0-		CHAVEZ SANTOS
11-18-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-19-92	8:45	114	114	-0-		CHAVEZ SANTOS
11-20-92	8:35	114	114	-0-		CHAVEZ SANTOS
11-21-92	8:45	114	114	-0-		CHAVEZ SANTOS
11-22-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-23-92	8:50	114	114	-0-		CHAVEZ SANTOS
11-24-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-25-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-26-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-27-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-28-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-29-92	8:40	114	114	-0-		CHAVEZ SANTOS
11-30-92	8:40	114	114	-0-		CHAVEZ SANTOS

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DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 3

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
11-2-92	8:45	116	116	-0-		CHAVEZ SANTOS
11-3-92	8:40	116	116	-0-		CHAVEZ SANTOS
11-4-92	8:50	116	116	-0-		CHAVEZ SANTOS
11-5-92	8:55	116	116	-0-		CHAVEZ SANTOS
11-6-92	8:45	116	116	-0-		CHAVEZ SANTOS
11-7-92	8:55	116	116	-0-		CHAVEZ SANTOS
11-8-92	8:50	116	116	-0-		CHAVEZ SANTOS
11-9-92	8:45	116	116	-0-		CHAVEZ SANTOS
11-10-92	8:40	116	116	-0-		CHAVEZ SANTOS
11-11-92	8:45	116	116	-0-		CHAVEZ SANTOS
11-12-92	8:40	116	116	-0-		CHAVEZ SANTOS
11-13-92	8:50	116	116	-0-		CHAVEZ SANTOS
11-14-92	8:55	116	116	-0-		CHAVEZ SANTOS
11-15-92	8:45	116	116	-0-		CHAVEZ MANDOY
11-16-92	8:50	116	116	-0-		CHAVEZ SANTOS
11-17-92	8:40	116	116	-0-		CHAVEZ SANTOS
11-18-92	8:45	116	116	-0-		CHAVEZ MANDOY
11-19-92	8:50	116	116	-0-		CHAVEZ SANTOS
11-20-92	8:40	116	116	-0-		CHAVEZ SANTOS
11-21-92	8:50	116	116	-0-		CHAVEZ SANTOS
11-22-92	8:45	116	116	-0-		CHAVEZ SANTOS
11-23-92	8:55	116	116	-0-		MANDOY SANTOS
11-24-92	8:45	116	116	-0-		MANDOY SANTOS
11-25-92	8:55	116	116	-0-		MANDOY SANTOS
11-30-92	8:45	116	116	-0-		CHAVEZ SANTOS

01070

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 1

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
11-2-92	8:50	99	99	-0-		CHAVEZ SANTOS
11-3-92	8:45	99	99	-0-		CHAVEZ SANTOS
11-4-92	8:55	99	99	-0-		CHAVEZ SANTOS
11-5-92	9:00	99	99	-0-		CHAVEZ SANTOS
11-6-92	8:50	99	99	-0-		CHAVEZ SANTOS
11-7-92	9:00	99	99	-0-		CHAVEZ SANTOS
11-10-92	8:55	99	99	-0-		CHAVEZ SANTOS
11-12-92	8:50	99	99	-0-		CHAVEZ SANTOS
11-13-92	8:45	99	99	-0-		CHAVEZ SANTOS
11-16-92	8:55	99	99	-0-		CHAVEZ SANTOS
11-17-92	9:00	99	99	-0-		CHAVEZ SANTOS
11-18-92	8:50	99	99	-0-		CHAVEZ MANDO
11-19-92	8:55	99	99	-0-		CHAVEZ SANTOS
11-20-92	8:45	99	99	-0-		CHAVEZ SANTOS
11-23-92	8:55	99	99	-0-		CHAVEZ SANTOS
11-24-92	8:50	99	99	-0-		MANDO SANTOS
11-25-92	9:00	99	99	-0-		MANDO SANTOS
11-30-92	8:50	99	99	-0-		CHAVEZ SANTOS

1071

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

RECOVERY WELL NO. 6

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
12-1-92	8:15	115	115	-0-		CHAVEZ
12-2-92	8:25	115	115	-0-		SANTOS
12-3-92	8:30	115	115	-0-		CHAVEZ
12-4-92	8:20	115	115	-0-		SANTOS
12-7-92	8:30	115	115	-0-		CHAVEZ
12-8-92	8:25	115	115	-0-		MANDO
12-9-92	8:20	115	115	-0-		CHAVEZ
12-10-92	8:15	115	115	-0-		SANTOS
12-11-92	8:25	115	115	-0-		CHAVEZ
12-14-92	8:30	115	115	-0-		SANTOS
12-15-92	8:20	115	115	-0-		CHAVEZ
12-16-92	8:25	115	115	-0-		SANTOS
12-17-92	8:15	115	115	-0-		CHAVEZ
12-18-92	8:25	115	115	-0-		SANTOS
12-21-92	8:20	115	115	-0-		CHAVEZ
12-22-92	8:30	115	115	-0-		SANTOS
12-23-92	8:20	115	115	-0-		MANDO
12-24-92	8:15	115	115	-0-		SANTOS
12-28-92	8:25	115	115	-0-		CHAVEZ
						MANDO

01072

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

RECOVERY WELL NO. 5

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
12-1-92	8:25	137	137	-0-		CHAVEZ SANTOS
12-2-92	5:30	137	137	-0-		CHAVEZ SANTOS
12-3-92	9:40	137	137	-0-		CHAVEZ SANTOS
12-4-92	5:30	137	137	-0-		CHAVEZ SANTOS
12-7-92	8:40	137	137	-0-		CHAVEZ MENDOZA
12-8-92	8:35	137	137	-0-		CHAVEZ MENDOZA
12-9-92	8:30	137	137	-0-		CHAVEZ SANTOS
12-10-92	8:25	137	137	-0-		CHAVEZ SANTOS
12-11-92	8:35	137	137	-0-		CHAVEZ SANTOS
12-14-92	8:40	137	137	-0-		CHAVEZ SANTOS
12-15-92	8:30	137	137	-0-		CHAVEZ SANTOS
12-16-92	8:35	137	137	-0-		CHAVEZ SANTOS
12-17-92	8:25	137	137	-0-		CHAVEZ SANTOS
12-18-92	8:35	137	137	-0-		CHAVEZ SANTOS
12-21-92	8:30	137	137	-0-		CHAVEZ SANTOS
12-22-92	8:40	137	137	-0-		CHAVEZ SANTOS
12-23-92	8:30	137	137	-0-		MENDOZA SANTOS
12-24-92	8:25	137	137	-0-		MENDOZA SANTOS
12-25-92	8:35	137	137	-0-		CHAVEZ MENDOZA

01073

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 2

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
12-1-92	3:35	114	114	-0-		CHAVEZ SANTOS
12-2-92	8:45	114	114	-0-		CHAVEZ SANTOS
12-3-92	8:50	114	114	-0-		CHAVEZ SANTOS
12-4-92	8:40	114	114	-0-		CHAVEZ SANTOS
12-7-92	8:50	114	114	-0-		CHAVEZ MANDO
12-8-92	8:45	114	114	-0-		CHAVEZ MANDO
12-9-92	8:40	114	114	-0-		CHAVEZ SANTOS
12-10-92	8:35	114	114	-0-		CHAVEZ SANTOS
12-11-92	8:45	114	114	-0-		CHAVEZ SANTOS
12-14-92	8:50	114	114	-0-		CHAVEZ SANTOS
12-15-92	8:40	114	114	-0-		CHAVEZ SANTOS
12-16-92	8:45	114	114	-0-		CHAVEZ SANTOS
12-17-92	8:35	114	114	-0-		CHAVEZ SANTOS
12-18-92	8:45	114	114	-0-		CHAVEZ SANTOS
12-21-92	8:40	114	114	-0-		CHAVEZ SANTOS
12-22-92	8:50	114	114	-0-		CHAVEZ SANTOS
12-23-92	8:40	114	114	-0-		CHAVEZ SANTOS
12-24-92	8:35	114	114	-0-		CHAVEZ SANTOS
12-28-92	8:45	114	114	-0-		CHAVEZ MANDO

01074

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 3

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
12-1-92	8:40	116	116	-0-		CHAVEZ + SANTOS
12-2-92	8:50	116	116	-0-		CHAVEZ + SANTOS
12-3-92	8:55	116	116	-0-		CHAVEZ + SANTOS
12-4-92	8:45	116	116	-0-		CHAVEZ + SANTOS
12-7-92	8:55	116	116	-0-		CHAVEZ + MANDO
12-8-92	8:50	116	116	-0-		CHAVEZ + MANDO
12-9-92	8:45	116	116	-0-		CHAVEZ + SANTOS
12-10-92	8:40	116	116	-0-		CHAVEZ + SANTOS
12-11-92	8:50	116	116	-0-		CHAVEZ + SANTOS
12-12-92	8:55	116	116	-0-		CHAVEZ + SANTOS
12-15-92	8:45	116	116	-0-		CHAVEZ + SANTOS
12-16-92	8:50	116	116	-0-		CHAVEZ + SANTOS
12-17-92	8:40	116	116	-0-		CHAVEZ + SANTOS
12-18-92	8:50	116	116	-0-		CHAVEZ + SANTOS
12-21-92	8:45	116	116	-0-		CHAVEZ + SANTOS
12-22-92	8:55	116	116	-0-		CHAVEZ + SANTOS
12-23-92	8:45	116	116	-0-		MANDO + SANTOS
12-24-92	8:40	116	116	-0-		MANDO + SANTOS
12-28-92	8:50	116	116	-0-		CHAVEZ + MANDO

01075

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 1

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
1/2-1-92	8:45	99	99	-0-		CHAVEZ + SANTOS
1/2-2-92	8:55	99	99	-0-		CHAVEZ + SANTOS
1/2-3-92	9:00	99	99	-0-		CHAVEZ + SANTOS
1/2-4-92	8:50	99	99	-0-		CHAVEZ + SANTOS
1/2-7-92	9:00	99	99	-0-		CHAVEZ + MANTO
1/2-8-92	8:55	99	99	-0-		CHAVEZ + MANTO
1/2-9-92	8:50	99	99	-0-		CHAVEZ + SANTOS
1/2-10-92	8:45	99	99	-0-		CHAVEZ + SANTOS
1/2-11-92	8:55	99	99	-0-		CHAVEZ + SANTOS
1/2-14-92	9:00	99	99	-0-		CHAVEZ + SANTOS
1/2-15-92	8:50	99	99	-0-		CHAVEZ + SANTOS
1/2-16-92	8:55	99	99	-0-		CHAVEZ + SANTOS
1/2-17-92	8:45	99	99	-0-		CHAVEZ + SANTOS
1/2-18-92	8:55	99	99	-0-		CHAVEZ + SANTOS
1/2-21-92	8:50	99	99	-0-		CHAVEZ + SANTOS
1/2-22-92	9:00	99	99	-0-		CHAVEZ + SANTOS
1/2-23-92	8:50	99	99	-0-		MANDO + SANTOS
1/2-24-92	8:45	99	99	-0-		MANDO + SANTOS
1/2-28-92	8:55	99	99	-0-		CHAVEZ + MANDO

01076

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

RECOVERY WELL NO. 6

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
12-30-4	8:30	115	113	-2-		SPAWER
12-30-4	8:30	115	115	-2-		SPAWER
12-30-4	8:30	115	115	-2-		SPAWER

01077

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

RECOVERY WELL NO. 5

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
12-31-82	8:40	137	137	- 0 -		SANTAE
12-31-82	8:30	137	137	- 0 -		CHAVEZ
12-31-82	8:20	137	137	- 0 -		J-AYE

01078

DAILY LOG
 FUEL RECOVERY WELLS
 LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 3

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
12-29-72	8:55	116	116	- 0 -		CHAVEZ - SANTAC
12-29-72	8:45	116	116	- 0 -		CHAVEZ - SANTAC
12-29-72	8:55	116	116	- 0 -		CHAVEZ - SANTAC

01080

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 1

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
12-28-92	9:00	99	99	-0-		CHAVEZ SANTOS
12-29-92	8:50	99	99	-0-		CHAVEZ SANTOS
12-31-92	9:00	99	99	-0-		CHAVEZ SANTOS

01081

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

RECOVERY WELL NO. 6

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
1-4-93	8:30	115	115	-0-		CHAVEZ SANTOS
1-5-93	8:20	115	115	-0-		CHAVEZ SANTOS
1-6-93	8:30	115	115	-0-		CHAVEZ SANTOS
1-7-93	8:25	115	115	-0-		CHAVEZ MANDO
1-8-93	8:20	115	115	-0-		CHAVEZ SANTOS
1-11-93	8:15	115	115	-0-		CHAVEZ SANTOS
1-12-93	8:25	115	115	-0-		CHAVEZ SANTOS
1-13-93	8:30	115	115	-0-		CHAVEZ SANTOS
1-14-93	8:20	115	115	-0-		CHAVEZ SANTOS
1-15-93	8:25	115	115	-0-		CHAVEZ SANTOS
1-18-93	8:15	115	115	-0-		MANDO SANTOS
1-19-93	8:25	115	115	-0-		CHAVEZ SANTOS
1-20-93	8:20	115	115	-0-		CHAVEZ SANTOS
1-21-93	8:30	115	115	-0-		CHAVEZ MANDO
1-22-93	8:30	115	115	-0-		CHAVEZ SANTOS
1-25-93	8:15	115	115	-0-		CHAVEZ SANTOS
1-26-93	8:25	115	115	-0-		CHAVEZ MANDO
1-27-93	8:15	115	115	-0-		CHAVEZ MANDO
1-28-93	8:25	115	115	-0-		CHAVEZ SANTOS
1-29-93	8:30	115	115	-0-		CHAVEZ SANTOS

01082

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

RECOVERY WELL NO. 5

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
1-4-93	8:40	137	137	-0-		CHAVEZ SANTOS
1-5-93	8:30	137	137	-0-		CHAVEZ SANTOS
1-6-93	8:40	137	137	-0-		CHAVEZ SANTOS
1-7-93	8:35	137	137	-0-		CHAVEZ MENDOZA
1-8-93	8:30	137	137	-0-		CHAVEZ SANTOS
1-11-93	8:25	137	137	-0-		CHAVEZ SANTOS
1-12-93	8:35	137	137	-0-		CHAVEZ SANTOS
1-13-93	8:40	137	137	-0-		CHAVEZ SANTOS
1-14-93	8:30	137	137	-0-		CHAVEZ SANTOS
1-15-93	8:35	137	137	-0-		CHAVEZ SANTOS
1-18-93	8:25	137	137	-0-		MENDOZA SANTOS
1-19-93	8:35	137	137	-0-		CHAVEZ SANTOS
1-20-93	8:30	137	137	-0-		CHAVEZ SANTOS
1-21-93	8:40	137	137	-0-		CHAVEZ MENDOZA
1-22-93	8:30	137	137	-0-		CHAVEZ SANTOS
1-25-93	8:25	137	137	-0-		CHAVEZ SANTOS
1-26-93	8:35	137	137	-0-		CHAVEZ MENDOZA
1-27-93	8:35	137	137	-0-		CHAVEZ MENDOZA
1-28-93	8:35	137	137	-0-		CHAVEZ SANTOS
1-29-93	8:40	137	137	-0-		CHAVEZ SANTOS

01083

LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 2

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E)- OPERATOR
1-4-93	8:50	114	114	-0-		CHAVEZ SANTOS
1-5-93	8:40	114	114	-0-		CHAVEZ SANTOS
1-6-93	8:50	114	114	-0-		CHAVEZ SANTOS
1-7-93	8:45	114	114	-0-		CHAVEZ MANDO
1-8-93	8:40	114	114	-0-		CHAVEZ SANTOS
1-11-93	8:35	114	114	-0-		CHAVEZ SANTOS
1-12-93	8:45	114	114	-0-		CHAVEZ SANTOS
1-13-93	8:50	114	114	-0-		CHAVEZ SANTOS
1-14-93	8:40	114	114	-0-		CHAVEZ SANTOS
1-15-93	8:45	114	114	-0-		CHAVEZ MANDO
1-18-93	8:35	114	114	-0-		CHAVEZ SANTOS
1-19-93	8:45	114	114	-0-		CHAVEZ SANTOS
1-20-93	8:40	114	114	-0-		CHAVEZ SANTOS
1-21-93	8:50	114	114	-0-		CHAVEZ MANDO
1-22-93	8:40	114	114	-0-		CHAVEZ SANTOS
1-23-93	8:35	114	114	-0-		CHAVEZ SANTOS
1-24-93	8:45	114	114	-0-		CHAVEZ MANDO
1-25-93	8:35	114	114	-0-		CHAVEZ MANDO
1-26-93	8:45	114	114	-0-		CHAVEZ SANTOS
1-27-93	8:50	114	114	-0-		CHAVEZ SANTOS

01084

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 3

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
1-4-93	8:55	116	116	- 0 -		CHAVEZ SANTOS
1-5-93	8:45	116	116	- 0 -		CHAVEZ SANTOS
1-6-93	8:55	116	116	- 0 -		CHAVEZ SANTOS
1-7-93	8:50	116	116	- 0 -		CHAVEZ MANDO
1-8-93	8:45	116	116	- 0 -		CHAVEZ SANTOS
1-11-93	8:40	116	116	- 0 -		CHAVEZ SANTOS
1-12-93	8:50	116	116	- 0 -		CHAVEZ SANTOS
1-13-93	8:55	116	116	- 0 -		CHAVEZ SANTOS
1-14-93	8:45	116	116	- 0 -		CHAVEZ SANTOS
1-15-93	8:50	116	116	- 0 -		CHAVEZ SANTOS
1-16-93	8:40	116	116	- 0 -		MANDO SANTOS
1-17-93	8:50	116	116	- 0 -		CHAVEZ SANTOS
1-18-93	8:45	116	116	- 0 -		CHAVEZ SANTOS
1-19-93	8:45	116	116	- 0 -		CHAVEZ SANTOS
1-20-93	8:55	116	116	- 0 -		CHAVEZ MANDO
1-21-93	8:45	116	116	- 0 -		CHAVEZ SANTOS
1-22-93	8:50	116	116	- 0 -		CHAVEZ SANTOS
1-23-93	8:50	116	116	- 0 -		CHAVEZ SANTOS
1-24-93	8:50	116	116	- 0 -		CHAVEZ SANTOS
1-25-93	8:45	116	116	- 0 -		CHAVEZ SANTOS
1-26-93	8:50	116	116	- 0 -		CHAVEZ SANTOS
1-27-93	8:45	116	116	- 0 -		CHAVEZ SANTOS
1-28-93	8:50	116	116	- 0 -		CHAVEZ SANTOS
1-29-93	8:45	116	116	- 0 -		CHAVEZ SANTOS
1-30-93	8:50	116	116	- 0 -		CHAVEZ SANTOS
1-31-93	8:50	116	116	- 0 -		CHAVEZ SANTOS
1-31-93	8:55	116	116	- 0 -		CHAVEZ SANTOS

01085

DAILY LOG
FUEL RECOVERY WELLS
LAREDO INTERNATIONAL AIRPORT

MONITOR WELL NO. 1

DATE	TIME	(A) TOP OF LIQUID INCHES	(B) TOP OF WATER INCHES	(C) LAYER OF PETROLEUM (B) - (A) INCHES	(D) GALLONS RECOVERED	(E) OPERATOR
1-4-73	9:00	99	99	-0-		CHAVEZ SANTOS
1-5-73	8:50	99	99	-0-		CHAVEZ SANTOS
1-6-73	9:00	99	99	-0-		CHAVEZ SANTOS
1-7-73	8:55	99	99	-0-		CHAVEZ MANDO
1-8-73	8:50	99	99	-0-		CHAVEZ SANTOS
1-9-73	8:45	99	99	-0-		CHAVEZ SANTOS
1-10-73	8:55	99	99	-0-		CHAVEZ SANTOS
1-11-73	9:00	99	99	-0-		CHAVEZ SANTOS
1-12-73	8:50	99	99	-0-		CHAVEZ SANTOS
1-13-73	8:45	99	99	-0-		CHAVEZ SANTOS
1-14-73	8:55	99	99	-0-		CHAVEZ SANTOS
1-15-73	8:50	99	99	-0-		CHAVEZ SANTOS
1-16-73	8:45	99	99	-0-		CHAVEZ SANTOS
1-17-73	8:55	99	99	-0-		CHAVEZ SANTOS
1-18-73	8:50	99	99	-0-		CHAVEZ SANTOS
1-19-73	8:55	99	99	-0-		CHAVEZ SANTOS
1-20-73	8:50	99	99	-0-		CHAVEZ MANDO
1-21-73	8:50	99	99	-0-		CHAVEZ MANDO
1-22-73	8:50	99	99	-0-		CHAVEZ SANTOS
1-23-73	8:45	99	99	-0-		CHAVEZ SANTOS
1-24-73	8:55	99	99	-0-		CHAVEZ MANDO
1-25-73	8:45	99	99	-0-		CHAVEZ SANTOS
1-26-73	8:55	99	99	-0-		CHAVEZ SANTOS
1-27-73	8:50	99	99	-0-		CHAVEZ SANTOS
1-28-73	8:55	99	99	-0-		CHAVEZ SANTOS
1-29-73	8:50	99	99	-0-		CHAVEZ SANTOS
1-30-73	8:55	99	99	-0-		CHAVEZ SANTOS
1-31-73	8:50	99	99	-0-		CHAVEZ SANTOS

01086

APPENDIX D
SLUG TEST DATA SHEETS

DATA SET: LARMW4

CLIENT: CITY OF LAREDO
 LOCATION: LAREDO AIRPORT FUEL FARM
 COUNTY: LAREDO, TEXAS
 PROJECT: Well Slug Test Data
 AQUIFER: ALLUVIAL (ENDLESS)
 INTAKE RADIUS: 0.500 ft
 SCREEN TOP: 5.000 ft
 INITIAL HEAD: 6.800 ft

DATE: 2-FEB-93
 WELL NO.: MW-4
 WELL DEPTH: 14.70 ft
 WATER TABLE: 7.450 ft
 THICKNESS: 7.00 ft
 CASING RADIUS: 0.166 ft
 SCREEN BASE: 14.70 ft
 TRANS. RATIO: 1.0000

MODEL PARAMETERS:

TRANSMISSIVITY: 9.75 square ft/day

CONDUCTIVITY: 1.39 ft/day

MODEL TYPE: UNCONFINED PARTIALLY PENETRATED AQUIFER (Bouwer & Rice)

No.	TIME (days)	Head, H (ft) DATA	Head, H (ft) SYNTHETIC	DIFFERENCE (percent)
1	2.100E-05	0.192		
2	4.200E-05	0.481		
3	6.300E-05	0.446		
4	8.400E-05	0.418		
5	1.050E-04	0.394		
6	1.260E-04	0.381		
7	1.470E-04	0.376		
8	1.890E-04	0.365		
9	2.780E-04	0.354		
10	2.990E-04	0.347		
11	3.830E-04	0.339		
12	6.140E-04	0.327		
13	8.030E-04	0.319	0.311	2.40
14	0.00169	0.301	0.300	0.106
15	0.00175	0.297	0.300	-1.02
16	0.00282	0.284	0.287	-1.11
17	0.00366	0.275	0.278	-1.00
18	0.00442	0.268	0.269	-0.570
19	0.00529	0.258	0.260	-0.671
20	0.00684	0.249	0.244	1.81
21	0.00881	0.239		
22	0.0107	0.229		
23	0.0140	0.215		

* Raba-Kistner Consultants, Inc. *

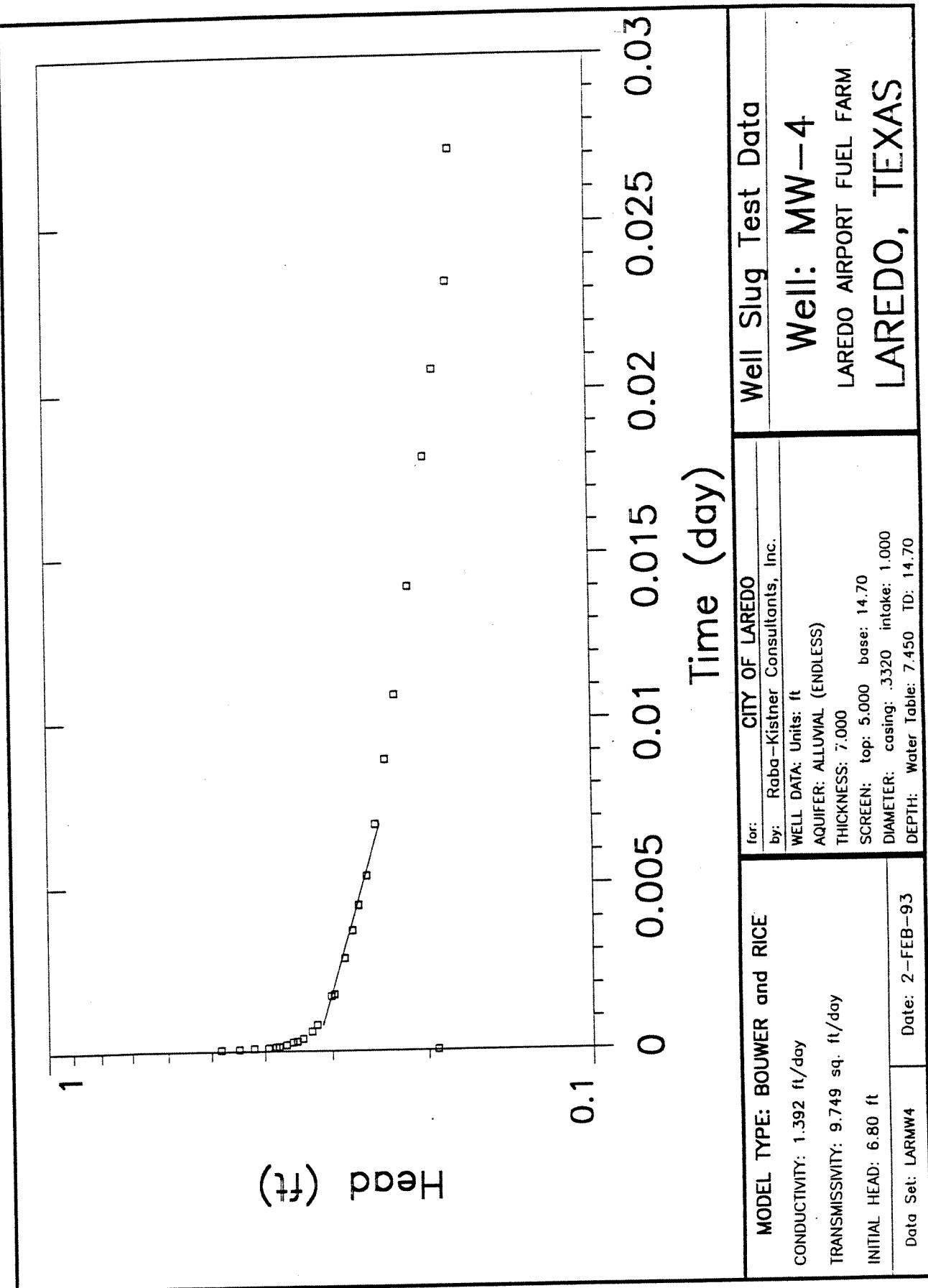
01088

No.	TIME (days)	Head, H (ft)		DIFFERENCE (percent)
		DATA	SYNTHETIC	
24	0.0179	0.200		
25	0.0206	0.192		
26	0.0232	0.180		
27	0.0271	0.178		

CURRENT RESOLUTION MATRIX NOT AVAILABLE

* Raba-Kistner Consultants, Inc. *

01089



100

DATA SET: LARMW7

CLIENT: CITY OF LAREDO	DATE: 2-FEB-93
LOCATION: LAREDO AIRPORT FUEL FARM	WELL NO.: MW-7
COUNTY: LAREDO, TEXAS	WELL DEPTH: 24.60 ft
PROJECT: Well Slug Test Data	WATER TABLE: 8.650 ft
AQUIFER: ALLUVIAL (ENDLESS)	THICKNESS: 7.00 ft
INTAKE RADIUS: 0.500 ft	CASING RADIUS: 0.166 ft
SCREEN TOP: 5.000 ft	SCREEN BASE: 24.60 ft
INITIAL HEAD: 12.800 ft	TRANS. RATIO: 1.0000

MODEL PARAMETERS:

TRANSMISSIVITY: 18.1 square ft/day

CONDUCTIVITY: 2.58 ft/day

MODEL TYPE: UNCONFINED PARTIALLY PENETRATED AQUIFER (Bouwer & Rice)

No.	TIME (days)	Head, H (ft)		DIFFERENCE (percent)
		DATA	SYNTHETIC	
1	2.100E-05	0.441		
2	4.200E-05	0.430		
3	6.300E-05	0.406		
4	8.400E-05	0.384		
5	1.050E-04	0.366		
6	1.260E-04	0.351		
7	1.470E-04	0.337		
8	1.680E-04	0.322		
9	1.890E-04	0.309		
10	2.100E-04	0.298		
11	2.310E-04	0.288		
12	2.730E-04	0.271		
13	2.940E-04	0.263		
14	3.150E-04	0.256		
15	3.570E-04	0.245		
16	3.780E-04	0.239		
17	4.620E-04	0.222		
18	5.460E-04	0.210		
19	6.350E-04	0.203		
20	6.560E-04	0.199		
21	7.610E-04	0.189	0.183	2.70
22	9.080E-04	0.178	0.176	0.936
23	0.00103	0.167	0.170	-1.85

* Raba-Kistner Consultants, Inc. *

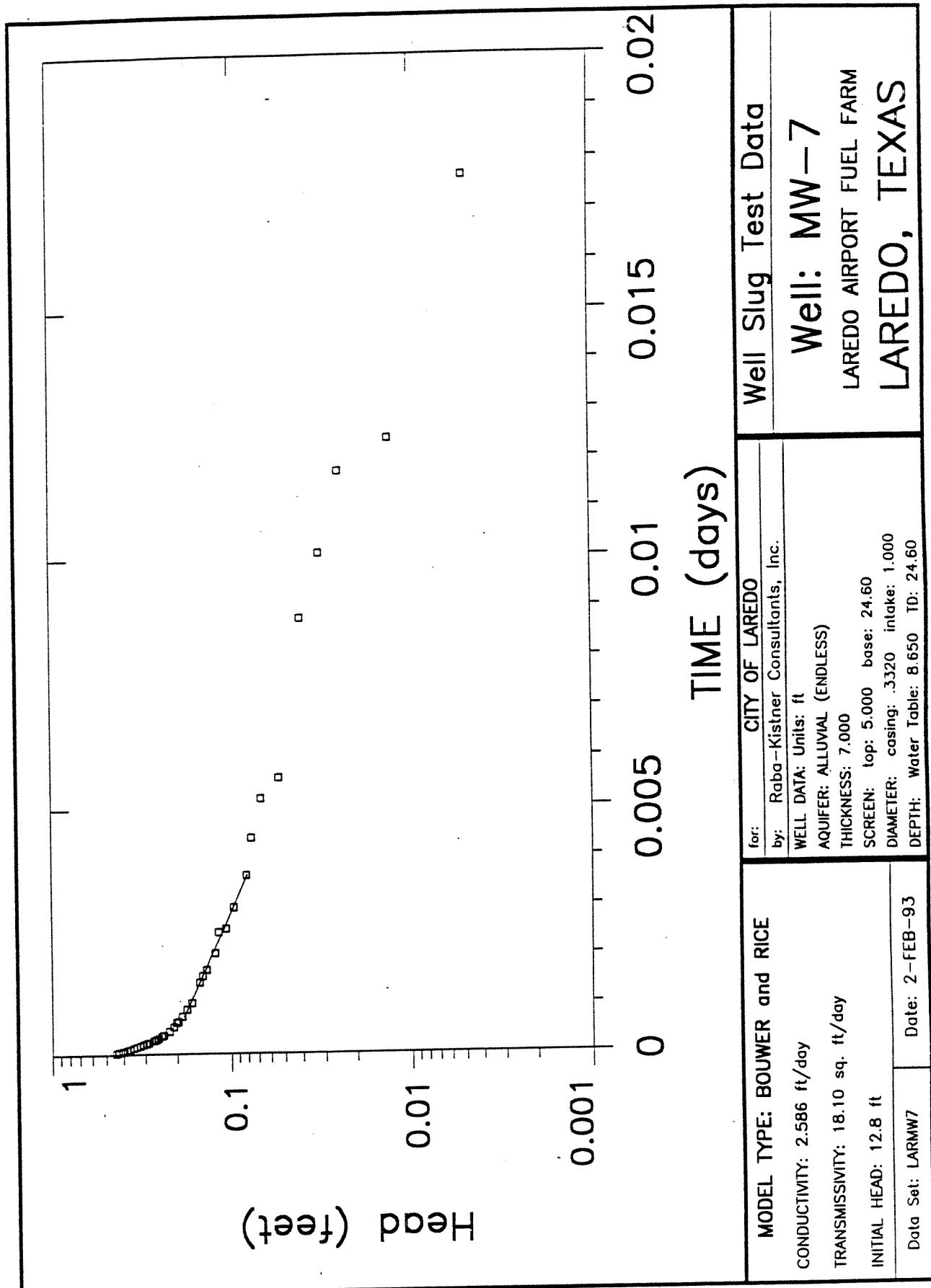
01091

No.	TIME (days)	Head, H (ft)		DIFFERENCE (percent)
		DATA	SYNTHETIC	
24	0.00146	0.151	0.150	0.221
25	0.00158	0.145	0.145	-0.235
26	0.00171	0.138	0.140	-1.59
27	0.00206	0.123	0.126	-3.09
28	0.00248	0.118	0.112	4.68
29	0.00256	0.107	0.110	-2.79
30	0.00298	0.0970	0.0975	-0.583
31	0.00364	0.0820	0.0809	1.33
32	0.00440	0.0770		
33	0.00519	0.0680		
34	0.00561	0.0540		
35	0.00878	0.0410		
36	0.0100	0.0320		
37	0.0117	0.0250		
38	0.0124	0.0130		
39	0.0176	0.00500		

CURRENT RESOLUTION MATRIX NOT AVAILABLE

* Raba-Kistner Consultants, Inc. *

010921



7/19/93

**TEXAS WATER COMMISSION
PETROLEUM STORAGE TANK DIVISION
MONITORING EVENT SUMMARY AND STATUS REPORT**

Document
48

C. Complete All Applicable Blanks.

GENERAL INFORMATION

LPST ID NO: 95324 Assigned TWC Coordinator: Ms. Anne S. Miller

Responsible Party: City of Laredo

Facility Name: Laredo Airport Fuel Farm

RECEIVED

Facility Address: 518 Flightline

Facility City: Laredo, Texas

TWC - Laredo

Reporting Period: 2/3/93 to 4/15/93

Reporting Frequency: Quarterly or SemiAnnually (please check one)

PHASE-SEPARATED HYDROCARBON (PSH) RECOVERY AND FLUID DISPOSITION

Number of monitoring wells impacted with PSH: 3 (MW-2, RW-5, and RW-6)

Product recovery method: removal by bailing free product once a day per well

Amount of product recovered during previous quarter: 0 gallons. Total gallons to date: <200

Amount of total fluids recovered during previous quarter: 0 gallons.

Disposition of all fluids recovered during previous quarter, including purged ground water: disposal at Movac on April 15, 1993 (approximately 150 gals)

SAMPLING EVENT

Date samples were collected: 4/15/93

List monitoring wells sampled: MW-1, MW-3, MW-4, MW-7, MW-8, and MW-10.

Date analyses performed: BTEX: 4/27/93; TPH: 4/28/93

Were any holding times exceeded? YES or NO (circle one)

GAUGING EVENT

Date all monitoring wells were gauged: 4/15/93

Ground-water flow direction: variable, generally to southwest

the static ground-water level above the top of the well screen in any wells? YES or NO (circle one) If indicate which wells:

MONITORING EVENT SUMMARY AND STATUS REPORT

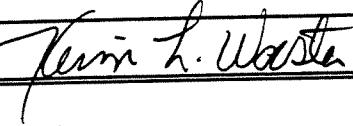
Complete All Applicable Blanks.

STATUS
Number of existing monitoring wells: 9
Was any damage noted on any existing monitoring wells?: <input checked="" type="checkbox"/> YES or <input type="checkbox"/> NO (circle one). If yes, explain: MW-9 was removed during PST removal activities conducted at the adjacent US COE tank farm in January, 1993.
Has the ground-water contaminant plume been defined?: <input checked="" type="checkbox"/> YES or <input type="checkbox"/> NO (circle one)
Any ongoing assessment activities? <input checked="" type="checkbox"/> YES or <input type="checkbox"/> NO (circle one). If yes, indicate type of assessment.
Any ongoing remediation activities? <input checked="" type="checkbox"/> YES or <input type="checkbox"/> NO (circle one). If yes, indicate type of remediation: Daily check and purge of LNAPL hydrocarbons, if present.
Also, discuss the effectiveness of this remedial technology in addressing site remediation: only a sheen of hydrocarbons is present in the monitoring wells.
Any significant changes in the subsurface conditions? <input checked="" type="checkbox"/> YES or <input type="checkbox"/> NO (circle one). If yes, please indicate: Chemistry results indicate a slight decrease in dissolved-phase hydrocarbon concentrations in wells MW-1, MW-3, and MW-7. No significant change was noted in well MW-10. A slight increase was observed in MW-4 and MW-8.

REPORT PREPARATION

Prepared by: Kevin L. Wooster, Hydrogeologist

Company: Raba-Kistner Consultants, Inc.

Date prepared: 07/09/93 Signature 

ATTACHMENTS: Cumulative list of analytical results

Copy of most recently drafted ground-water gradient map

Cumulative list of ground-water level and PSH thickness measurements only if PSH is present