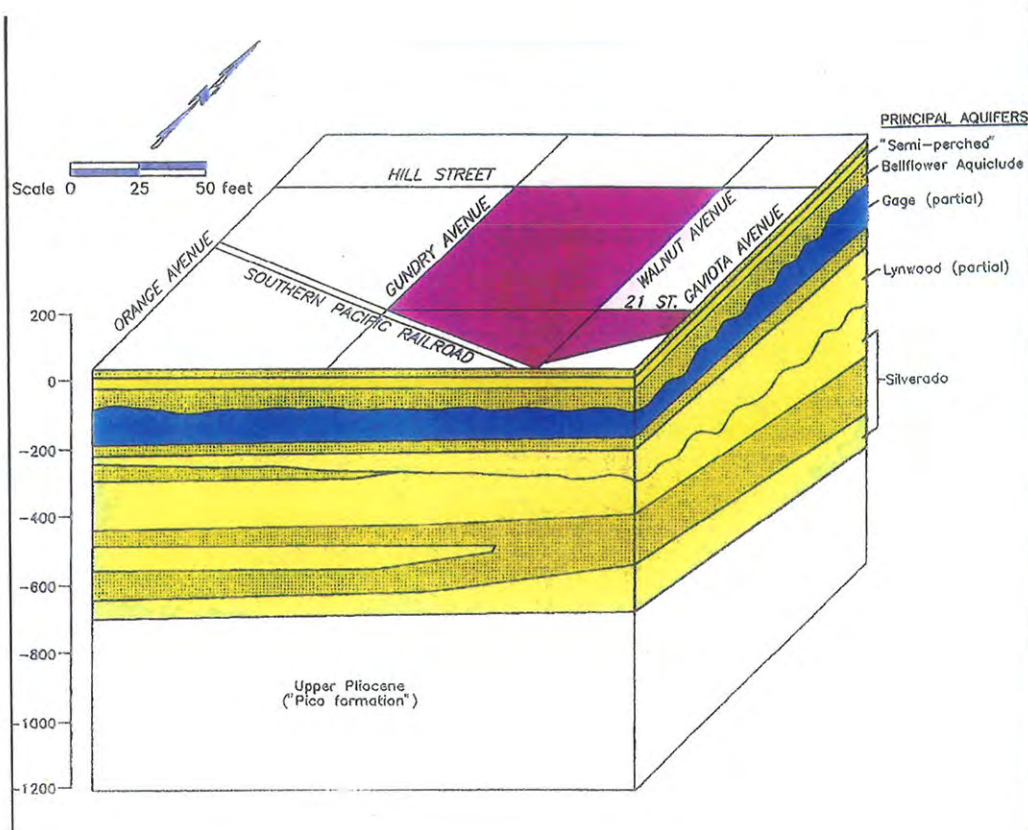


REPORT ON QUARTERLY GROUNDWATER QUALITY MONITORING PROGRAM, JANUARY, 2005

Former Chemoil Refinery
2020 Walnut Avenue
Signal Hill, California
SLIC No. 453A



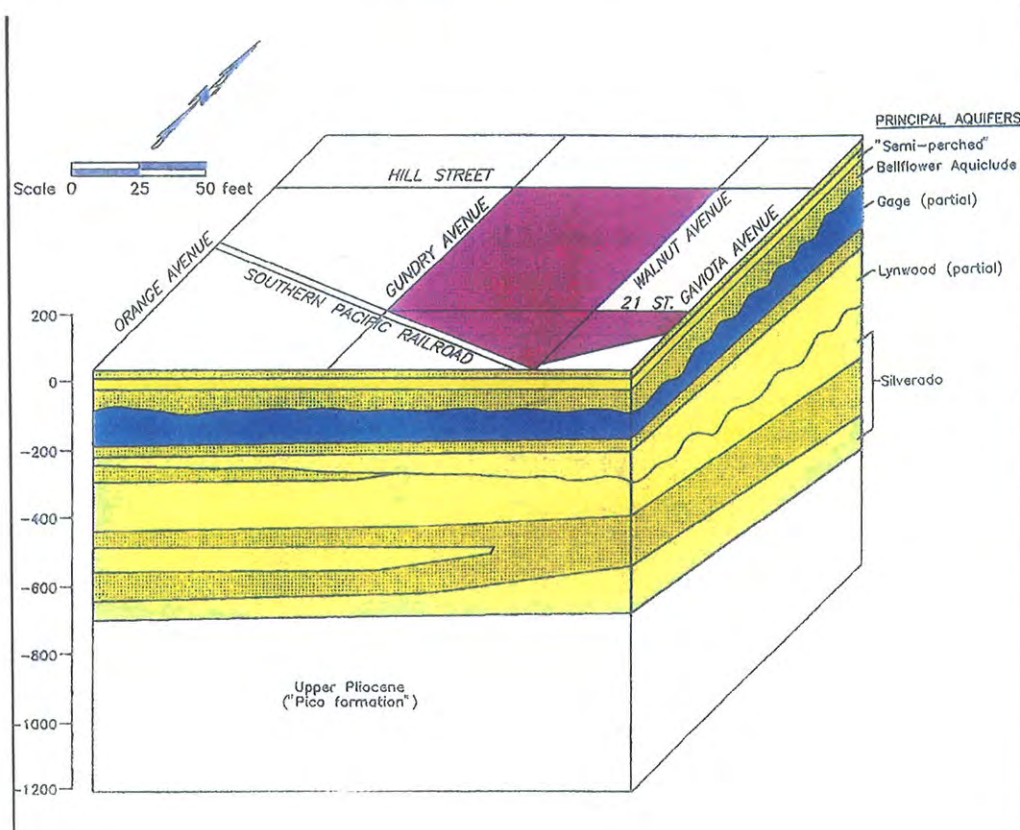
Prepared for:
Signal Hill Holding Corporation
2365 East Sepulveda Boulevard
Long Beach, California 90810-1944

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

REPORT ON QUARTERLY GROUNDWATER QUALITY MONITORING PROGRAM, JANUARY, 2005

Former Chemoil Refinery
2020 Walnut Avenue
Signal Hill, California
SLIC No. 453A



Prepared for:
Signal Hill Holding Corporation
2365 East Sepulveda Boulevard
Long Beach, California 90810-1944

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

Testa Environmental Corporation

19814 Jesus Maria Road • Mokelumne Hill, California 95245

Phone/Fax: (209) 754-1422

E-mail: stesta@goldrush.com

REPORT ON QUARTERLY GROUNDWATER QUALITY MONITORING PROGRAM, January 2005

Former Chemoil Refinery

Signal Hill, California

SLIC No. 453A

Project No. 94-11-1008.46



Prepared by:

Testa Environmental Corporation
19814 Jesus Maria Road
Mokelumne Hill, California 95245


Stephen M. Testa

President, CEG No. 1613

Date

Prepared for:

Signal Hill Holding Corporation
2365 East Sepulveda Boulevard
Long Beach, California 90810-1944

Testa Environmental Corporation

19814 Jesus Maria Road • Mokelumne Hill, California 95245
Phone/Fax: (209) 754-1422
E-mail: stesta@goldrush.com

January 15, 2005

California Regional Water Quality Control Board –
Los Angeles Region
420 West Fourth Street, Suite 200
Los Angeles, CA 90013

Attention: Mr. Mohammad Zaidi

Subject: Report on Quarterly Groundwater Quality
Monitoring Program
January 2005
Former Chemoil Refinery
Signal Hill, California
SLIC No. 453A
Project No. 94-11-1008.46

Dear Mr. Zaidi:

On behalf of Signal Hill Holding Corporation, presented herewith is Testa Environmental Corporation's (TEC) report on the quarterly gauging and groundwater quality monitoring program performed in December 2004, at the former Chemoil refinery site, Signal Hill, California. The work discussed herewith reflects the request of the California Regional Water Quality Control Board – Los Angeles Region (CRWQCB-LAR) for quarterly monitoring and sampling as set forth in their letter dated September 12, 2001. Included is discussion of site description and history, field and laboratory methodology, subsurface hydrogeologic conditions, soil and groundwater quality, and planned activities, as appropriate. Former agency correspondence, annotated hydrographs showing fluctuations of water levels with time, analytical reports for groundwater, and graphs showing fluctuations of dissolved hydrocarbon constituents with time are provided in appendices.

During the next quarterly reporting period, several activities are planned including groundwater gauging and sampling scheduled for March 2005. Remediation of hydrocarbon impacted soil beneath the Eastern Parcel has been postponed pending a purchaser for the Eastern Parcel, and receipt of an approved grading permit from the City of Signal Hill. Furthermore, conduct of additional off-site assessment-related activities pertaining to the Western Parcel is proposed to be scheduled following completion of the aforementioned soil remediation activities.

Should you have any questions, or require further clarification pertaining to the contents of this report, please do not hesitate to contact us.

Very truly yours,

TESTA ENVIRONMENTAL CORPORATION



Stephen M. Testa
President, CEG No. 1613

cc: Mr. Ken Ezoe, Signal Hill Holding Corporation

REPORT ON QUARTERLY GROUNDWATER QUALITY MONITORING PROGRAM
JANUARY, 2005
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA

TABLE OF CONTENTS

1.0	EXECUTIVE SUMMARY
2.0	INTRODUCTION
	2.1 Site Description
	2.2 Site History
	2.3 Regulatory Background
3.0	PURPOSE AND SCOPE
	3.1 Purpose
	3.2 Scope
4.0	SUBSURFACE HYDROGEOLOGIC CONDITIONS
	4.1 Geologic Conditions
	4.1.1 Western Parcel
	4.1.2 Eastern Parcel
	4.2 Hydrogeologic Conditions
	4.3 Hydrocarbon Vapor Detection During Gauging
5.0	SOIL QUALITY
	5.1 On-site Soil Quality Assessments
	5.2 Off-site Soil Quality Assessment
6.0	GROUNDWATER QUALITY
	6.1 Groundwater Monitoring Network
	6.2 Analytical Results
	6.2.1 Western Parcel
	6.2.2 Eastern Parcel
	6.3 Extent of Dissolved Hydrocarbon Plume
7.0	LNAPL OCCURRENCE
8.0	CONCLUSIONS AND PLANNED ACTIVITIES
	8.1 Abandonment of Certain Wells
	8.2 Groundwater Monitoring Program Modification
	8.3 Status of Hydrocarbon-Impacted Soil Remediation Efforts for the Eastern Parcel
	8.4 Status of Additional Subsurface Assessment
9.0	REFERENCES
10.0	LIMITATIONS

List of Tables

2-1	Summary of Previous Reports
4-1	Summary of Soil Boring Data
4-2	Summary of Monitoring and Recovery Well Data, December, 2004
5-1	Summary of Analytical Results for Soil for the Western Parcel - Engineering Enterprises, Inc. (1988)
5-2	Summary of Analytical Results for Soil for the Western Parcel - Testa Environmental Corporation (1999)
6-1	Summary of Analytical Results for Dissolved Organics in Groundwater, December, 2004
7-1	Summary of Former LNAPL Product Characteristics

**REPORT ON QUARTERLY GROUNDWATER QUALITY
JANUARY, 2005
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA**

**TABLE OF CONTENTS
(Continued)**

List of Figures

2-1	Site Location Map
2-2	Site Layout Map
3-1	Monitoring Well and Soil Boring Locations Map
4-1	Schematic Block Diagram of Subsurface Hydrogeologic Conditions
4-2	Hydrogeologic Cross-Section A-A'
4-3	Hydrogeologic Cross-Section B-B'
4-4	Unconfined Piezometric Contour Map
5-1	Location of Former Soil Borings
5-2	Lateral Extent of Hydrocarbon-Impacted Soil
5-3	Cross-Section A-A' Showing Vertical Extent of Hydrocarbon-Impacted Soil
5-4	Cross-Section B-B' Showing Vertical Extent of Hydrocarbon-Impacted Soil
6-1	Lateral Extent of Dissolved Benzene in Groundwater
6-2	Lateral Extent of Dissolved Volatile and Semi-volatile Organics in Groundwater
6-3	Lateral Extent of Dissolved Oxygenated Compounds in Groundwater
7-1	Lateral Extent of Former LNAPL Pools

Appendices

A	Agency Correspondence
B	Groundwater Gauging Data
	Part I – Summary of Gauging Data
	Part II – Annotated Hydrographs
C	Groundwater Quality
	Part I – Groundwater Sampling Protocol
	Part II – Laboratory Reports for Groundwater in Monitoring Wells
	Part III – Graphs Illustrating Dissolved Hydrocarbons Fluctuation with Time

1.0 EXECUTIVE SUMMARY

On behalf of Signal Hill Holding Corporation, Testa Environmental Corporation (TEC) re-initiated quarterly groundwater quality monitoring at the former Chemoil refinery site located in Signal Hill, California. This activity was performed in accordance with the California Regional Water Quality Control Board – Los Angeles Region's (CRWQCB-LAR) correspondence dated September 12, 2001. Activities performed during this quarterly reporting period (July, August and September, 2004) included periodic gauging of subsurface fluid levels, and chemical testing of representative groundwater samples retrieved from all operable monitoring and former recovery wells.

The site is underlain by deposits of unconsolidated, stratified, laterally discontinuous sequences of predominantly coarse-grained soil consisting of sand and silty sand, with subordinate fine-grained soils consisting predominantly of silt and to a lesser degree clay. Overall groundwater elevations have generally increased in comparison to elevations gauged in October 2004, ranging from an increase of -0.02 feet as measured in well MW-9, to 0.26 feet as measured in well MW-1. Groundwater beneath the Western Parcel occurred under unconfined piezometric conditions at depths ranging from 19.50 (hydraulically downgradient MW-1) to 45.45 (hydraulically upgradient MW-3) feet below ground surface (bgs; i.e., elevations of 4.50 and 5.20 feet relative to mean sea level, respectively). Groundwater flow beneath the Western Parcel was generally toward the southwest at an approximate gradient of 0.006 ft/ft, with a shallow east-west oriented groundwater trough inferred in the central portion of the Western Parcel.

Beneath the Eastern Parcel, groundwater was encountered at a depth of 26.89 and 28.72 feet bgs (elevation of 5.08 and 2.85 feet, respectively), at an approximate gradient of 0.013 ft/ft, as measured in wells MW-2 and MW-10, respectively. Groundwater flow beneath the Eastern Parcel was inferred to be essentially toward the southwest, although such direction has varied with time.

Hydrocarbon vapor was detected during gauging and sampling of wells in December 2004. Relatively slight to strong hydrocarbon odors were noted in wells MW-1, MW-1A and MW-9. Groundwater retrieved from wells MW-1A, MW-8, MW-9 and MW-10 were noted as being turbid and/or slightly yellow to dark gray in color.

Several dissolved organic constituents were reported in groundwater samples retrieved from all five wells beneath the Western Parcel in December 2004. Overall, dissolved hydrocarbon concentrations generally decreased in all five wells, in comparison with results reported in September 2004. TPHd (as diesel) was reported in all five wells at concentrations ranging from 0.27 to 15 mg/L, as reported in hydraulically upgradient well MW-3 and interior well MW-8. TPHg as gasoline was reported in four wells at concentrations ranging up to 4.9 mg/L in well MW-9.

The presence of dissolved VOCs and SVOCs were reported in four wells. Overall BTEX concentrations as reported herein are lower in comparison with results reported in October 2004. No dissolved benzene was reported during this reporting period. Total xylenes were reported in wells MW-1A and MW-9 at concentrations of 50 and 10 ug/L, respectively.

Eight other dissolved VOCs and/or SVOCs were reported. These constituents and the highest concentration reported, and associated well, are:

<u>Volatile Organic Compounds</u>	<u>Concentration (ug/L)</u>
sec-butylbenzene	8.0 (MW-1A)
isopropylbenzene	29 (MW-1)
naphthalene	55 (MW-1A)
n-propylbenzene	35 (MW-1A)
Tert-Butanol	620 (MW-8)
1,3,5-Trimethylbenzene	5.0 (MW-9)

Semi-Volatile Organic Compounds

2-methylnaphthalene
naphthalene
phenol

41 (MW-1A)
61 (MW-1A)
14 (MW-9)

These constituents are primarily evident (i.e., highest overall concentration) in well MW-9 which is situated immediately east of former LNAPL recovery well R-4. Their presence is inferred to be largely derived from the vicinity of well R-4 that historically contained residual LNAPL of limited lateral extent.

Two dissolved oxygenated compounds, MTBE and Tert-butanol, were reported during this reporting period. MTBE was reported in well MW-1A at a concentration of 23 ug/L. Tert-butanol was reported in well MW-8 at a concentration of 340 ug/L.

Beneath the Eastern Parcel TRPH as diesel was reported in well MW-10 at a concentration of 2.1 mg/L. No dissolved BTEX, VOCs or SVOCs were reported, with exception to the presence of Benzoic acid as reported for well MW-10 at a concentration of 120 ug/L. Benzoic acid is suspected as being an induced laboratory contaminant

The next quarterly groundwater gauging and sampling event is scheduled to be performed in March 2005, with the subsequent report submitted to the CRWQCB-LAR by April 15, 2005. Since dissolved metals in groundwater have been previously demonstrated to be of no subsurface environmental concern, this parameter has been eliminated from periodic monitoring.

Remediation of hydrocarbon impacted soil beneath the Eastern Parcel is postponed pending a purchaser for the Eastern Parcel, and receipt of an approval grading permit from the City of Signal Hill. Furthermore, conduct of additional off-site assessment related activities pertaining to the Western Parcel is proposed to be scheduled following completion of aforementioned soil remediation activities.

2.0 INTRODUCTION

2.1 Site Description

The former Chemoil refinery site is located in the city of Signal Hill, California (Figure 2-1). The former refinery site is divided into two main parcels: the Western Parcel and the Eastern Parcel. The Western Parcel is situated immediately west of Walnut Avenue, whereas the Eastern Parcel is situated immediately east of Walnut Avenue. The Western Parcel is further divided into three subparcels: two subparcels situated in the northern portion of the site, and a southern subparcel. A figure showing the various parcels and subparcels, and former layout of specific operational units, is presented in Figure 2-2.

The Western Parcel encompasses approximately 5.7 acres. The northern portion of the Western Parcel, or northern subparcel, is further subdivided into two parts. The western part faces Gundry Avenue and is rectangular in shape, and encompasses approximately 0.53 acres and is 150 x 154.5 feet. A scale house and a part of a truck scale previously occupied this area, in part. The eastern part is also rectangular in shape, faces Walnut Avenue, and encompasses approximately 0.75 acres and is 125 x 261 feet. This area was previously occupied by a scale house, several warehouses, a part of a truck scale and a crude oil unloading rack.

The southern portion of the Western Parcel, or southern subparcel, encompasses approximately 4.42 acres, and is further divided into two sections separated by 21st Street. The north section is rectangular in shape and formerly included a warehouse, inspection lab, truck loading racks, about 40 above ground storage tanks, and piping. The south section is triangular in shape and formerly included about 25 above ground storage tanks, boilers, heater units, loading racks, desalter and cooling tower.

The Eastern Parcel encompasses approximately 2.5 acres. Somewhat rectangular in shape with exception of its southern perimeter, the site was formerly occupied by six above ground storage tanks (Nos. 15, 14, 11, 3, 504 and 230). These tanks were reportedly used for the storage of heavy crude oil. An adjoining office, maintenance, and truck washing and repair structure, supervisor's office, and adjoining laboratory and warehouse facility, also formerly occupied the site.

2.2 Site History

Prior to 1922, the property was used as a dairy farm. From 1922 to 1988, the facility was solely owned and operated by the MacMillan Ring-Free Oil Company. Chemoil purchased the former refinery in August 1988, and operated it until February 14, 1994, when the refinery was shut down with occasional operation of its waste water system. Since early 1997, operation of the waste water system was discontinued, and all of the above ground structures were dismantled. The oldest active area lies within the triangular (southwest) portion of the Western Parcel formed by the intersection of Walnut Avenue, 21st Street and the Southern Pacific Railroad right-of-way. The oldest operations occurred in the northeast corner of this area where crude oil processing related activities took place.

2.3 Regulatory Background

Subsurface environmental-related activities have been performed since 1985. A listing of prior reports submitted to the CRWQCB-LAR is tabulated in Table 2-1. Signal Hill Holding Corporation (SHHC) is in the process of selling the Eastern Parcel of the former Chemoil refinery site. Thus, SHHC wishes to proceed with site closure and plans to accomplish this goal sequentially, starting with the Eastern Parcel.

Meetings with the CRWQCB-LAR to discuss site closure related-issues were initiated in 1998, with agency correspondence provided in Appendix A. Discussions dealing strictly with the Eastern Parcel initiated in 1999 with the submittal to the CRWQCB-LAR of a "Workplan for Closure Sampling at the East Parcel" by The Source Group dated September 23, 1999 (TSG, 1999). The actual work

discussed in this workplan was performed, although to our knowledge no formal report was ever produced by TSG.

Further discussions were held between Chemoil, TEC and the CRWQCB-LAR on August 30, 2001. During this meeting, the CRWQCB-LAR indicated that they would consider site closure, or partial site closure, of the Eastern Parcel and possibly other portions of the former refinery site provided further assessment, among other activities, is performed. The quarterly groundwater quality gauging and monitoring program was resumed as noted in the CRWQCB-LAR's letter dated September 12, 2001 (Appendix A). In addition, a proposed workplan titled "Proposal for Subsurface Assessment, Eastern Parcel, Former Chemoil Refinery," dated September 4, 2001 was prepared and submitted to the CRWQCB-LAR for review and comment prior to implementation (TEC, 2001a). Following review and minor modifications as noted in the CRWQCB-LAR's correspondence dated September 19, 2001 (Appendix A), such work was performed (TEC, 2001c), and a revised Remedial Action Plan prepared and subsequently approved (TEC, 2002a).

A workplan dated November 18, 2001, was also prepared to address the need for additional subsurface assessment to be performed at the Western Parcel (TEC, 2001b). Following comments received from the CRWQCB-LAR in their letter dated January 8, 2002, a revised workplan dated July 24, 2002, was prepared which included responses to 14 comments set forth by the CRWQCB-LAR (TEC, 2002b). Since July 2002, quarterly groundwater gauging and sampling has been performed.

This report addresses overall groundwater conditions beneath both the Western and Eastern Parcels for the quarterly reporting period of October, November and December, 2004. The former groundwater monitoring network comprised 11 wells: eight groundwater monitoring wells (MW-1, MW-1A, MW-2, MW-3, MW-7, MW-8, MW-9 and MW-10) and three former LNAPL recovery wells (R-4, R-5 and R-6). Certain wells have since been damaged during past demolition and dismantling activities or vandalized (wells R-4, R-5, R-6, and MW-7). The overall monitoring network currently incorporates seven groundwater monitoring wells: MW-1, MW-1A, MW-2, MW-3, MW-8, MW-9 and MW-10. Included is discussion of background information, subsurface geologic and hydrogeologic conditions, past soil quality conditions, current groundwater quality conditions, and light non-aqueous phase liquid (LNAPL) hydrocarbon occurrence. Planned activities to be performed during the next quarterly reporting period (January, February and March, 2005) are also provided.

3.0 PURPOSE AND SCOPE

The purpose for the work described herein is to evaluate current hydrogeologic and groundwater quality conditions beneath the former Chemoil refinery as part of an overall groundwater quality monitoring program which is currently scheduled to be performed on a quarterly basis. To accomplish this objective, the scope of work was divided into tasks as outlined in Table 3-1 and further discussed below.

**Table 3-1
Task Summary**

Task No.	Description
1.0	Groundwater Gauging Program
2.0	Groundwater Quality Sampling Program
3.0	Analytical Program
4.0	Data Analysis
5.0	Report Preparation

Task No. 1.0 – Groundwater Gauging Program: Prior to groundwater sampling, all monitoring wells and former LNAPL recovery wells were gauged for depth to groundwater and potential presence of LNAPL, if present. Gauging data generated since 1994 were tabulated and is provided in Appendix B, Part I. Annotated hydrographs are provided in Appendix B, Part II.

Task No. 2.0 – Groundwater Quality Sampling Program: Representative groundwater samples were retrieved on December 9, 2004, from all operable monitoring wells and former recovery wells situated on the former Chemoil refinery site. Wells sampled included:

<u>Western Parcel</u>	<u>Eastern Parcel</u>
MW-1, MW-1A, MW-3, MW-8, MW-9	MW-2 MW-10

Three wells could not be sampled: former LNAPL recovery wells R-4, R-5 and R-6, and monitoring well MW-7. These wells were either damaged or filled with soil and no longer suitable for groundwater monitoring and sampling purposes. Prior to sampling, each well was purged a minimum of three times the volume of stagnant water in the well, or upon stabilization of pertinent groundwater parameters (i.e., pH, dissolved oxygen, specific conductance and temperature). Such activities were performed in accordance with the sampling protocol provided in Appendix C (Part I); field sampling forms are also contained in Appendix C (Part I).

Task No. 3.0 – Analytical Program: Seven representative groundwater samples obtained from existing monitoring and former recovery wells were submitted to Advanced Technology Laboratories, a California-certified laboratory located in Signal Hill, California, for chemical testing. The samples were analyzed for:

- Volatile organic compounds (VOCs) and oxygenated compounds using EPA Method 8260B;
- Semi-volatile organic compounds (SVOCs) using EPA Method 8270C; and
- Petroleum hydrocarbons using EPA Method 8015B (modified for diesel and gasoline);

Laboratory reports and associated chain-of-custody forms are provided in Appendix C (Part II). Graphs showing fluctuations of dissolved hydrocarbon constituents in groundwater with time were also generated and contained in Appendix C (Part III).

Task No. 4.0 – Data Analysis: Upon receipt of field and laboratory data, such information was compiled, tabulated and graphically illustrated.

Task No. 5.0 - Report Preparation: Upon completion of Task Nos. 1.0 through 4.0, the comprehensive report presented herein was prepared. This report addresses overall subsurface hydrogeologic and environmental conditions beneath the former Chemoil refinery site. Included is discussion of background information, subsurface geologic and hydrogeologic conditions, soil and groundwater quality, and LNAPL hydrocarbon occurrence. Conclusions and planned activities to be performed during the next quarterly reporting period are also provided, as appropriate.

4.0 HYDROGEOLOGIC CONDITIONS ENCOUNTERED

Evaluations of geologic and hydrogeologic conditions beneath the site have been performed since 1985 (Table 2-1).

4.1 Geologic Conditions

The site is underlain by a thin veneer of artificial fill overlying Holocene nonmarine terrace and marine terrace deposits of the Upper Pleistocene Formation (Poland, et al., 1956 and 1959; Zielbauer, et al., 1962; Testa, et al., 1998). Terrace deposits consist predominantly of an unconsolidated, stratified, lateral and vertically discontinuous sequence of sand, silty sand, silt and clay. Contacts between soil types are commonly gradational. The shallow Pleistocene strata are subhorizontal with a gentle dip toward the southwest produced by active uplift and deformation of the adjacent southwest flank of the Signal Hill anticline along the Newport-Inglewood Structural Zone (Cherry Hill Fault segment; Hauksson, 1987). A schematic block diagram showing regional hydrogeologic conditions beneath the site, based on compilation of data obtained from adjacent water well logs, is presented in Figure 4-1. Location of on-site soil borings, monitoring wells and former LNAPL recovery wells are shown in Figure 4-2.

Predominantly coarse-grained soils consisting of sand (SP) and silty sand (SM) were encountered during drilling of soil borings and wells, with subordinate fine-grained soils consisting predominantly of silt (ML and MH) and to a lesser degree clay (CL), were also encountered. Soil boring data is summarized in Table 4-1.

4.1.1 Western Parcel

Beneath the Western Parcel, relatively fine-grained sandy silt and clayey silt predominate from ground surface to approximately 10 to 20 feet below ground surface, with exception to an area in the southern portion of the Western Parcel, where relatively more permeable very fine to medium-grained sand and silty sand predominate (Figures 4-3 and 4-4). A very fine-grained, relatively low permeability clayey silt and silty clay is encountered at a depth of 40 to 50 feet bgs (Figures 4-3 and 4-4). This fine-grained soil strata extends to a minimum depth of about 35 to 45 feet bgs, and is inferred to extend lateral across beneath the Western Parcel.

4.1.2 Eastern Parcel

Geologic conditions beneath the Eastern Parcel are similar to those encountered beneath the Western Parcel. However, beneath the northern portion of the Eastern Parcel, relatively very fine to medium-grained sand and silty sand predominate, with a subordinate amount of very fine-grained sandy silt extending from the ground surface to about 12 feet below ground surface, in the northeastern portion of the Eastern Parcel (Figure 4-2). Very fine-grained, relatively impermeable clayey silt and silty clay is encountered beneath the southeast portion of the Eastern Parcel (Figure 4-3). These fine-grained soils are encountered at ground surface extending to a depth of about 18 feet bgs, and at a depth of about 28 to 30 feet bgs.

4.2 Hydrogeologic Conditions

Shallow groundwater beneath the site is encountered within the Semiperched Aquifer within the southern portion of the West Coast groundwater basin. Regionally, native groundwater in this area is deemed of poor quality as characterized by Piper, et al., (1953), Poland, et al., (1956), and Poland, et al., (1959). During sampling, pH, dissolved oxygen (DO), temperature and Total Dissolved Solids (TDS) were field determined. pH ranged from 6.7 to 7.4 as measured in wells MW-3 and MW-1, respectively. Temperature ranged from 71 to 74°F in wells MW-2 and MW-9, respectively. Total dissolved solids ranged from 2,200 to 6,000 mg/L as measured in wells MW-2 and MW-8, respectively. DO ranged from 0.25 to 0.85 ppm as measured in wells MW-3 and wells MW-9, respectively.

Regional groundwater flow beneath the majority of the site is generally toward the southwest, albeit localized variable flow components have occasionally been noted. A contour map of the unconfined piezometric level is presented in Figure 4-4. A summary of gauging data generated since 1994 and hydrographs are provided in Appendix B, Parts I and II, respectively.

September, 2004: As of September 2004, overall groundwater elevations generally decreased in comparison to elevations gauged in June 2004, ranging from a decrease of -0.24 feet as measured in wells MW-1, to an increase of 0.22 feet as measured in well MW-3. Groundwater beneath the Western Parcel occurred under unconfined piezometric conditions at depths ranging from 19.76 (hydraulically downgradient MW-1) to 45.48 (hydraulically upgradient MW-3) feet below ground surface (bgs; i.e., elevations of 4.24 and 5.17 feet relative to mean sea level, respectively). Groundwater flow beneath the Western Parcel was generally toward the southwest at an approximate gradient of 0.006 ft/ft, with a shallow east-west oriented groundwater trough inferred in the central portion of the Western Parcel.

Beneath the Eastern Parcel, groundwater was encountered at a depth of 26.94 and 28.78 feet bgs (elevation of 5.17 and 2.79 feet, respectively), at an approximate gradient of 0.013 ft/ft, as measured in wells MW-2 and MW-10, respectively. Groundwater flow beneath the Eastern Parcel was inferred to be essentially toward the southwest, although such direction has varied with time.

December, 2004: As of December 2004, overall groundwater elevations have generally increased in comparison to elevations gauged in October 2004, ranging from an increase of -0.02 feet as measured in well MW-9, to 0.26 feet as measured in well MW-1. Groundwater beneath the Western Parcel occurred under unconfined piezometric conditions at depths ranging from 19.50 (hydraulically downgradient MW-1) to 45.45 (hydraulically upgradient MW-3) feet below ground surface (bgs; i.e., elevations of 4.50 and 5.20 feet relative to mean sea level, respectively). Groundwater flow beneath the Western Parcel was generally toward the southwest at an approximate gradient of 0.006 ft/ft, with a shallow east-west oriented groundwater trough inferred in the central portion of the Western Parcel.

Beneath the Eastern Parcel, groundwater was encountered at a depth of 26.89 and 28.72 feet bgs (elevation of 5.08 and 2.85 feet, respectively), at an approximate gradient of 0.013 ft/ft, as measured in wells MW-2 and MW-10, respectively. Groundwater flow beneath the Eastern Parcel was inferred to be essentially toward the southwest, although such direction has varied with time.

4.3 Hydrocarbon Vapor Detection During Gauging

Hydrocarbon vapor was detected during gauging and sampling of wells in December 2004. Relatively slight to strong hydrocarbon odors were noted in wells MW-1, MW-1A and MW-9. Groundwater retrieved from wells MW-1A, MW-8, MW-9 and MW-10 were noted as being turbid and/or slightly yellow to dark gray in color.

5.0 SOIL QUALITY

Overall soil quality beneath the Western and Eastern Parcels was evaluated in 1987 by Engineering Enterprises, Inc. (1988). Additional assessment of soil quality conditions beneath the Western and Eastern Parcels were performed Eastern Parcels in 1998 and 2001, respectively. The results of the assessments related to the Western Parcel are reiterated below. Soil boring locations are shown in Figure 5-1. The lateral and vertical extent of hydrocarbon-impacted soil beneath the Western Parcel is shown in Figures 5-2, 5-3, and 5-4, respectively.

5.1 On-site Soil Quality Assessment

Engineering Enterprises, Inc. (1986-1988): Subsurface assessment of soil quality conditions beneath the former Chemoil refinery site was initially performed by Engineering Enterprises, Inc. (EEI) in 1986 (EEI, 1986). EEI initially retrieved soil samples for chemical testing during drilling and subsequent installation of certain monitoring and former recovery wells (1987). Eight soil samples were obtained from a depth of 6-7.5 and 20-21.5 feet below ground surface during the drilling of MW-1, MW-4, R-5, MW-7 and MW-8 (only one sample from a depth of 20-21.5 was retrieved from MW-1 and MW-7). The samples were analyzed for oil and grease, phenols, total organic carbon, total organic halogens, selected volatile organics, pH and certain metals. Analytical results are presented in Table 5-1.

In 1987, EEI (1988) retrieved thirty (30) representative soil samples from twenty-eight (28) locations at depths of 2 and 10 feet below ground surface. Within the confines of the Western Parcel, twelve (12) soil samples were retrieved from a depth of 2 feet bgs, and twenty-six (26) soil samples were retrieved from a depth of 10 feet bgs. The remaining three locations were situated on the Eastern Parcel. Analytical data for soil generated by EEI (1988) is also summarized in Table 5-1.

Diesel-and gasoline-affected soil was reported to occur beneath the majority of the central and southern portion of the Western Parcel. TPH as gasoline and diesel ranged up to 4,000 and 61,000 mg/Kg, respectively. Undifferentiated hydrocarbon concentrations ranged up to 12,000 mg/Kg. TRPH ranged up to 49,000 mg/Kg. The lateral extent of hydrocarbon impacted soil at the 2- and 10-foot depth is shown in Figures 5-2 and 5-3, respectively.

Testa Environmental Corporation (1999): In 1998, soil quality was further assessed by TEC (1998). This work included the drilling of three soil borings (B-1, B-2 and B-3 to depths of 35, 30 and 25 feet bgs, respectively). The boring locations selected reflected areas considered to be the most heavily impacted. Eighteen (18) soil samples were analyzed for TPH modified for gasoline and diesel using EPA Method 8015m, TRPH using EPA Method 418.1, BTEX using EPA Method 624, and MTBE using EPA Method 624. Three geoprobes were also drilled and representative soil samples retrieved off-site immediately south of the Western Parcel. The location of these soil borings is also shown in Figure 5-1.

TPHg ranged up to 1,130 mg/Kg, whereas, TPHd ranged up to 11,200 mg/Kg as reported for S-2-10 (depth of 10 feet bgs). TRPH ranged from 11 to 20,800 mg/Kg. BTEX ranged up to 1,560, 14,000, 60, 800 and 105,000 mg/Kg, respectively. MTBE was reported as non-detect in all samples analyzed.

In general, hydrocarbon concentration increased with depth with the highest concentrations occurring in close proximity to the water table. It was concluded that hydrocarbon-impacted soil extended from the ground surface downward to the water table beneath certain areas of the site, notably, within the central portion of the site. It was also concluded that the volume of hydrocarbon-impacted soil exceeding 100 mg/Kg, and occurring between ground surface and a depth of 10 feet bgs, was on the order of 56,000 cubic yards.

5.2 Off-site Soil Quality Assessment

In June 1999, three off-site geoprobes (GP-1, GP-2 and GP-3) were drilled to a depth of approximately 20 feet bgs immediately south of the site along Wesley Drive (Figure 5-1). Soil samples were retrieved at five-foot intervals, and hydrocarbon soil vapors monitored at depths of 5 and 10 feet bgs. The soil samples were analyzed for TPHg, TPHd and VOCs. TPHd was reported at concentrations of 950, 220 and 170 mg/Kg in samples retrieved at 20 feet bgs in GP1, GP-2 and GP-3, respectively. TPHg was reported at 96 and 270 mg/Kg at depths of 15 and 20 feet bgs in GP-1, 500 mg/Kg at 20 feet bgs in GP-2, and 1.6 and 21 mg/Kg at depths of 15 and 20 feet bgs, respectively, in GP-3 (Table 5-2).

One groundwater sample was also retrieved from each geoprobe location (Table 5-2). TRPH was reported at 19 and 33 mg/L in GP-2 and GP-3, respectively. TPHg was reported at 5.8, 16 and 2.4 mg/L in GP-1, GP-2 and GP-3, respectively.

6.0 GROUNDWATER QUALITY

6.1 Groundwater Monitoring Network

Monitoring of groundwater quality beneath the former refinery site has been periodically performed since 1985, with a hiatus from monitoring between July 1999 and October 2001. Eight groundwater monitoring wells and three former LNAPL recovery wells were originally installed at the site. Following dismantling of the refinery from 1997 to 1998, monitoring well MW-7 and former recovery well R-6, and over the past few months former recovery well R-5, are no longer operational. The wells appeared to have broken casings and to be filled with soil, and efforts to remedy this situation have not been successful.

Nine wells, six monitoring wells (MW-1, MW-1A, MW-3, MW-7, MW-8 and MW-9) and three former recovery wells (R-4, R-5 and R-6) are situated on the Western Parcel. The remaining two groundwater monitoring wells, MW-2 and MW-10, are situated on the Eastern Parcel. Of the total number of wells, only seven wells are currently usable for the purpose of groundwater gauging and sampling related activities (MW-1, MW-1A, MW-2, MW-3, MW-8, MW-9 and MW-10). The location of the groundwater monitoring and former recovery wells is presented in Figure 3-1. A summary of general well construction details is presented in Table 4-2. Dissolved hydrocarbons reported at concentrations at or above their respective analytical detection limit are summarized in Table 6-1.

6.2 Analytical Results

6.2.1 Western Parcel

Five operable wells are situated in the Western Parcel: wells MW-1, MW-1A, MW-3, MW-8 and MW-9.

September 2004: Several dissolved organic constituents were reported in groundwater samples retrieved from all five wells beneath the Western Parcel in September 2004. Overall, dissolved hydrocarbon concentrations decreased in all five wells, in comparison with results reported in July 2004. TPHd (as diesel) was reported in all five wells at concentrations ranging from 0.65 to 16 mg/L, as reported in hydraulically upgradient well MW-3 and interior well MW-8. TPHg as gasoline was reported in all four wells at concentrations ranging up to 6.1 mg/L in well MW-9.

The presence of dissolved VOCs and SVOCs were reported in four wells. Dissolved benzene, was reported in wells MW-8 and MW-9 at concentrations of 44 and 760 ug/L, respectively. These concentrations as reported for well MW-9 were generally consistent, albeit slightly lower, in comparison with results reported in July 2004. Ten other dissolved VOCs and/or SVOCs were reported. These constituents and the highest concentration reported, and associated well, were:

<u>Volatile Organic Compounds</u>	<u>Concentration (ug/L)</u>
n-butylbenzene	5.4 (MW-9)
sec-butylbenzene	8.7 (MW-1A)
isopropylbenzene	66 (MW-1A)
n-propylbenzene	54 (MW-9)
1,2,4-trimethylbenzene	43 (MW-9)
1,3,5-Trimethylbenzene	9.9 (MW-9)
<u>Semi-Volatile Organic Compounds</u>	
bis(2-ethylhexyl)phthalate	11 (MW-8)
2-methylnaphthalene	38 (MW-9)
naphthalene	61 (MW-8)

These constituents were primarily evident (i.e., highest overall concentration) in well MW-9 which is situated immediately east of former LNAPL recovery well R-4. Their presence was inferred to be

largely derived from the vicinity of well R-4 that historically contained residual LNAPL of limited lateral extent.

Two dissolved oxygenated compounds, MTBE and Tert-butanol, were reported during this reporting period. MTBE was reported in well MW-1A at a concentration of 23 ug/L. Tert-butanol was reported in well MW-8 at a concentration of 340 ug/L.

December 2004: Several dissolved organic constituents were reported in groundwater samples retrieved from all five wells beneath the Western Parcel in December 2004. Overall, dissolved hydrocarbon concentrations generally decreased in all five wells, in comparison with results reported in October 2004.

TPHd (as diesel) was reported in all five wells at concentrations ranging from 0.27 to 15 mg/L, as reported in hydraulically upgradient well MW-3 and interior well MW-8. TPHg as gasoline was reported in four wells at concentrations ranging up to 4.9 mg/L in well MW-9.

The presence of dissolved VOCs and SVOCs were reported in four wells. Overall BTEX concentrations as reported herein are lower in comparison with results reported in October 2004. No dissolved benzene was reported during this reporting period. Total xylenes were reported in wells MW-1A and MW-9 at concentrations of 50 and 10 ug/L, respectively.

Eight other dissolved VOCs and/or SVOCs were reported. These constituents and the highest concentration reported, and associated well, are:

<u>Volatile Organic Compounds</u>	<u>Concentration (ug/L)</u>
sec-butylbenzene	8.0 (MW-1A)
isopropylbenzene	29 (MW-1)
naphthalene	55 (MW-1A)
n-propylbenzene	35 (MW-1A)
Tert-Butanol	620 (MW-8)
1,3,5-Trimethylbenzene	5.0 (MW-9)
<u>Semi-Volatile Organic Compounds</u>	
2-methylnaphthalene	41 (MW-1A)
naphthalene	61 (MW-1A)
phenol	14 (MW-9)

These constituents are primarily evident (i.e., highest overall concentration) in well MW-9 which is situated immediately east of former LNAPL recovery well R-4. Their presence is inferred to be largely derived from the vicinity of well R-4 that historically contained residual LNAPL of limited lateral extent.

Two dissolved oxygenated compounds, MTBE and Tert-butanol, were reported during this reporting period. MTBE was reported in well MW-1A at a concentration of 23 ug/L. Tert-butanol was reported in well MW-8 at a concentration of 340 ug/L.

6.2.2 Eastern Parcel

Two wells are situated in the Eastern Parcel: wells MW-2 and MW-10.

September, 2004: No dissolved TPH as gasoline and diesel, were reported during this monitoring period. The only dissolved VOC reported was Toluene. Toluene was reported in well MW-10 at a concentration of 5.4 ug/L.

No dissolved oxygenated compounds, such as MTBE and Tert-butanol, were evident during this reporting period.

December, 2004: TRPH as diesel, was reported in well MW-10 at a concentration of 2.1 mg/L. The only dissolved SVOC reported was Benzoic acid. Benzoic acid was reported in well MW-10 at a concentration of 120 ug/L, and is suspected as being a laboratory induced contaminant.

No dissolved oxygenated compounds, such as MTBE and Tert-butanol, were evident during this reporting period.

6.3 Extent of Dissolved Hydrocarbon Plume

The overall lateral extent of the dissolved benzene plume is inferred to have decreased during the current reporting period. The dissolved hydrocarbon plume largely originates from the vicinity of former recovery well R-4, albeit, other potential sources may contribute to a lesser extent. The dissolved benzene plume is inferred to be contained on-site, with marginal off-site migration toward the east. A dissolved benzene isoconcentration contour map is presented in Figure 6-1.

The dissolved hydrocarbon plume, based on relatively low concentrations of certain VOCs and semi-VOCs, generally decreased in areal extent, and is inferred to have migrated off-site along the southwest perimeter of the Western Parcel, and toward the east albeit to a limited extent (Figure 6-2).

7.0 LNAPL OCCURRENCE

Historically, LNAPL presence was previously reported as three separate and localized thin pools of limited lateral extent, overlying the shallow semi-perched saturated zone beneath the Western Parcel (Figure 7-1). Former Pool No. I encompassed former recovery well R-4 and monitoring well MW-9, and was characterized as a combination of naphtha, kerosene and gas-oil, with an API gravity ranging between 44.9 and 47.3, and lead content between 10.9 and 198.2 ppm, as measured in R-4 and MW-9, respectively. Pool No. II was situated in the vicinity of former recovery well R-6, and characterized as heavy crude oil or lubricating oil, with an API gravity of 19.0. Pool No. III was situated in the vicinity of former recovery well R-5, and characterized as a combination of naphtha, kerosene and gas-oil, with an API gravity of 40.9 and a lead content of 179.0 ppm. Physical characteristics of the former LNAPL pools are summarized in Table 7-1.

Operation of a LNAPL recovery program on the Western Parcel was initiated in former recovery wells R-4 and R-6 in March 1987, and R-5 in December 1988. The estimated volume of total fluids removed since July 1988 was approximately 253,902 barrels. Of this volume, an estimated volume of 27.9 barrels of LNAPL was recovered. The LNAPL recovery system was terminated in February 1994, with subsequent hand bailing of residual LNAPL in certain wells thereafter (notably, former recovery well R-4 and monitoring MW-9).

As of June 2002, no LNAPL was encountered beneath the Eastern Parcel. Residual LNAPL was encountered solely in former Recovery well R-4 at an apparent thickness of 2.25 feet, with a slight sheen observed in adjacent monitoring well MW-9.

As of September 2002, LNAPL was solely encountered in former LNAPL recovery well R-4. Apparent LNAPL thickness was measured at 2.45 feet, whereas, actual thickness was less than 0.51 feet. A light sheen was observed in monitoring well MW-9. These conditions are consistent with previous gauging events. This is not unusual reflecting a continued fluctuation in the unconfined piezometric level since the recovery wells were deemed no longer efficient for LNAPL recovery in 1994, and continued contact with hydrocarbon-saturated soil at this interval. Approximately nine gallons of LNAPL has been periodically bailed from R-4 during this reporting period.

In December 2002, LNAPL was solely encountered in former LNAPL recovery well R-4. Apparent LNAPL thickness was measured at 2.65 feet, whereas, actual thickness was less than 0.51 feet. A light sheen was observed in monitoring well MW-9. These conditions are consistent with previous gauging events. This is not unusual reflecting a continued fluctuation in the unconfined piezometric level since the recovery wells were deemed no longer efficient for LNAPL recovery in 1994, and continued contact with hydrocarbon-saturated soil at this interval. Approximately 3.5 gallons of LNAPL has been periodically bailed during the period between October, November and December, 2002.

Former LNAPL recovery well R-4 was vandalized between December 2002 and March 2003, and is no longer usable for monitoring purposes. No LNAPL was detected during gauging of existing wells during the past year of gauging, nor in September 2004.

8.0 DISCUSSION

In review of the proposed workplan for further subsurface assessment of the former Chemoil refinery, the CRWQCB-LAR authorized implementation of the workplan with fourteen conditions as noted in their letter dated January 8, 2002 (Appendix A). These conditions were addressed in the revised workplan for subsurface assessment contained in Appendix E of the July 2002 "Report on Quarterly Groundwater Quality" (TEC, 2002a). Outstanding issues are further discussed below.

8.1 Abandonment of Certain Wells

Certain wells are no longer useable for groundwater monitoring purposes. Those wells no longer useable include former LNAPL recovery wells R-4, R-5 and R-6, and groundwater monitoring well MW-7. Approval for the abandonment of these wells is thus requested

8.2 Groundwater Monitoring Program Modifications

Since dissolved metals in groundwater have been demonstrated to be of no subsurface environmental concern, this parameter has been eliminated from periodic monitoring.

8.3 Status of Hydrocarbon-Impacted Soil Remediation Efforts for the Eastern Parcel

Due to unresolved permitting issues with the City of Signal Hill pertaining to soil remediation at the Eastern Parcel, soil remediation related-activities at the Eastern Parcel have been delayed. A request for an additional extension for this work to be completed was made to the CRWQCB-LAR in TEC's letter dated September 10 and again on December 10, 2002 (Appendix A). Mr. Hu of the CRWQCB-LAR in subsequent phone discussions verbally approved the request. Since such time, Chemoil no longer has a viable purchaser of the Eastern Parcel. Remediation of hydrocarbon impacted soil beneath the Eastern Parcel is thus scheduled subsequent to obtaining a purchaser for the Eastern Parcel, and receipt of an approval grading permit from the City of Signal Hill.

8.4 Status of Additional Off-Site Subsurface Assessment Program for the Western Parcel

Monies generated from the sale of the Eastern Parcel, and following completion of soil remediation efforts at the Eastern Parcel, is planned to be utilized for the conduct of additional subsurface assessment related-activities at the Western Parcel. Since no permit has been issued from the City of Signal Hill, among other factors, soil remediation efforts at the Eastern Parcel have been delayed. Thus, conduct of additional subsurface assessment related activities at the Western Parcel have also been postponed.

9.0 CONCLUSIONS AND PLANNED ACTIVITIES

Based on the information and results presented herein, the following conclusions are offered:

- The site is underlain by deposits of unconsolidated, stratified, laterally discontinuous sequences of predominantly coarse-grained soil consisting of sand and silty sand, with subordinate fine-grained soils consisting predominantly of silt and to a lesser degree clay;
- Overall groundwater elevations have generally increased in comparison to elevations gauged in October 2004, ranging from an increase of -0.02 feet as measured in well MW-9, to 0.26 feet as measured in well MW-1. Groundwater beneath the Western Parcel occurred under unconfined piezometric conditions at depths ranging from 19.50 (hydraulically downgradient MW-1) to 45.45 (hydraulically upgradient MW-3) feet below ground surface (bgs; i.e., elevations of 4.50 and 5.20 feet relative to mean sea level, respectively). Groundwater flow beneath the Western Parcel was generally toward the southwest at an approximate gradient of 0.006 ft/ft, with a shallow east-west oriented groundwater trough inferred in the central portion of the Western Parcel.

Beneath the Eastern Parcel, groundwater was encountered at a depth of 26.89 and 28.72 feet bgs (elevation of 5.08 and 2.85 feet, respectively), at an approximate gradient of 0.013 ft/ft, as measured in wells MW-2 and MW-10, respectively. Groundwater flow beneath the Eastern Parcel was inferred to be essentially toward the southwest, although such direction has varied with time.

Hydrocarbon vapor was detected during gauging and sampling of wells in December 2004. Relatively slight to strong hydrocarbon odors were noted in wells MW-1, MW-1A and MW-9. Groundwater retrieved from wells MW-1A, MW-8, MW-9 and MW-10 were noted as being turbid and/or slightly yellow to dark gray in color;

- Several dissolved organic constituents were reported in groundwater samples retrieved from all five wells beneath the Western Parcel in December 2004. Overall, dissolved hydrocarbon concentrations generally decreased in all five wells, in comparison with results reported in September 2004. TPHd (as diesel) was reported in all five wells at concentrations ranging from 0.27 to 15 mg/L, as reported in hydraulically upgradient well MW-3 and interior well MW-8. TPHg as gasoline was reported in four wells at concentrations ranging up to 4.9 mg/L in well MW-9.

The presence of dissolved VOCs and SVOCs were reported in four wells. Overall BTEX concentrations as reported herein are lower in comparison with results reported in October 2004. No dissolved benzene was reported during this reporting period. Total xylenes were reported in wells MW-1A and MW-9 at concentrations of 50 and 10 ug/L, respectively.

Eight other dissolved VOCs and/or SVOCs were reported. These constituents and the highest concentration reported, and associated well, are:

<u>Volatile Organic Compounds</u>	<u>Concentration (ug/L)</u>
sec-butylbenzene	8.0 (MW-1A)
isopropylbenzene	29 (MW-1)
naphthalene	55 (MW-1A)
n-propylbenzene	35 (MW-1A)
Tert-Butanol	620 (MW-8)
1,3,5-Trimethylbenzene	5.0 (MW-9)
 <u>Semi-Volatile Organic Compounds</u>	
2-methylnaphthalene	41 (MW-1A)

naphthalene
phenol

61 (MW-1A)
14 (MW-9)

These constituents are primarily evident (i.e., highest overall concentration) in well MW-9 which is situated immediately east of former LNAPL recovery well R-4. Their presence is inferred to be largely derived from the vicinity of well R-4 that historically contained residual LNAPL of limited lateral extent.

Two dissolved oxygenated compounds, MTBE and Tert-butanol, were reported during this reporting period. MTBE was reported in well MW-1A at a concentration of 23 ug/L. Tert-butanol was reported in well MW-8 at a concentration of 340 ug/L.

Beneath the Eastern Parcel TRPH as diesel was reported in well MW-10 at a concentration of 2.1 mg/L. No dissolved BTEX, VOCs or SVOCs were reported, with exception to the presence of Benzoic acid as reported for well MW-10 at a concentration of 120 ug/L. Benzoic acid is suspected as being an induced laboratory contaminant. Furthermore, no dissolved oxygenated compounds, such as MTBE and Tert-butanol, were evident during this reporting period;

- The overall lateral extent of the dissolved benzene plume is inferred to have decreased during the current reporting period, and originate largely from the vicinity of former recovery well R-4. The dissolved benzene plume is inferred to be largely contained on-site, albeit to have migrated marginally off-site toward the east. The dissolved hydrocarbon plume, based on relatively low concentrations of certain VOCs and semi-VOCs is inferred to have migrated off-site along the southwest perimeter of the Western Parcel, and toward the east, albeit to a limited extent; and
- Former recovery well R-4 contained residual LNAPL and accounts primarily for the presence of dissolved hydrocarbon constituents in groundwater reported for well MW-9, and the dissolved constituents reported in hydraulically cross-gradient and downgradient wells.

Based on the conclusions summarized above, the following activities are planned:

- The next quarterly groundwater gauging and sampling event is scheduled to be performed in March 2005, with the subsequent report submitted to the CRWQCB-LAR by April 15, 2005. Since dissolved metals in groundwater have been previously demonstrated to be of no subsurface environmental concern, this parameter has been eliminated from periodic monitoring; and
- Remediation of hydrocarbon impacted soil beneath the Eastern Parcel is postponed pending a purchaser for the Eastern Parcel, and receipt of an approval grading permit from the City of Signal Hill. Furthermore, conduct of additional off-site assessment related activities pertaining to the Western Parcel is proposed to be scheduled following completion of aforementioned soil remediation activities.

10.0 REFERENCES

- California Regional Water Quality Control Board, 1996, Interim Site Assessment & Cleanup Guidebook - Preventing Groundwater Pollution: Assessing your Site for Chemical Contaminants: Los Angeles and Ventura Counties, Region 4, May 1996.
- Engineering Enterprises, Inc., 1986, Groundwater Assessment Phase II Report: unpublished report dated August 11, 1986, prepared for MacMillan Ring-Free Refinery, Signal Hill, California.
- Engineering Enterprises, Inc., 1988, Biannual Interim Report, July, 1988, MacMillan Ring-Free Refinery: unpublished report dated July 10, 1988, prepared for MacMillan Ring-Free Refinery, Signal Hill, California.
- Hauksson, E., 1987, Seismotectonics of the Newport-Inglewood Fault Zone in the Los Angeles Basin, Southern California: Bulletin of the Seismological Society of America, v. 77, no. 2, pp. 539-561.
- Piper, A. M., Garrett, A. A., et al., 1953, Native and Contaminated Groundwater in the Long Beach - Santa Ana Area, California: United States Geological Survey Water Supply Paper No. 1136, 320p.
- Poland, J. F., Piper, A. M., et al., 1956, Ground Water Geology of the Coastal Zone, Long Beach - Santa Ana Area, California: United States Geological Survey Water Supply Paper 1109, 162p.
- Poland, J. F., 1959. Hydrology of the Long Beach - Santa Ana Area, California: United States Geological Survey Water Supply Paper 1471, 257p.
- Testa Environmental Corporation, 1999, Report on Additional Subsurface Assessment, August 1999, Former Chemoil Refinery, Signal Hill, California: unpublished report dated November 12, 1999, prepared for the Signal Hill Holding Corporation.
- Testa Environmental Corporation, 2001a, Proposed Workplan for Subsurface Assessment, Eastern Parcel, Former Chemoil Refinery, Signal Hill, California: unpublished report prepared for the Signal Hill Holding Corporation.
- Testa Environmental Corporation, 2001b, Proposed Workplan for Additional Subsurface Assessment, Western Parcel, Former Chemoil Refinery, Signal Hill, California: unpublished report dated November 18, 2001, prepared for the Signal Hill Holding Corporation.
- Testa Environmental Corporation, 2001c, Report on Additional Subsurface Assessment, Former Chemoil Refinery - Eastern Parcel, Signal Hill, California: Former Chemoil Refinery, Signal Hill, California: unpublished report dated December 14, 2001, prepared for the Signal Hill Holding Corporation.
- Testa Environmental Corporation, 2002a, Report on Quarterly Groundwater Quality, July 2002, Former Chemoil Refinery, Signal Hill, California: unpublished report dated July 15, 2002, prepared for the Signal Hill Holding Corporation.
- Testa Environmental Corporation, 2002b, Revised Workplan for Subsurface Assessment, July 2002, Former Chemoil Refinery, Signal Hill, California: unpublished report dated July 24, 2002, prepared for the Signal Hill Holding Corporation.
- Testa Environmental Corporation, 2002c, Report on Quarterly Groundwater Monitoring, October 2002, Former Chemoil Refinery, Signal Hill, California: unpublished report dated October 15, 2002, prepared for the Signal Hill Holding Corporation.

Testa Environmental Corporation, 2003a, Report on Quarterly Groundwater Monitoring, January 2003, Former Chemoil Refinery, Signal Hill, California: unpublished report dated January 15, 2003, prepared for the Signal Hill Holding Corporation.

Testa Environmental Corporation, 2003b, Report on Quarterly Groundwater Monitoring, March 2003, Former Chemoil Refinery, Signal Hill, California: unpublished report dated March 15, 2003, prepared for the Signal Hill Holding Corporation.

Testa Environmental Corporation, 2003c, Report on Quarterly Groundwater Monitoring, July 2003, Former Chemoil Refinery, Signal Hill, California: unpublished report dated July 15, 2003, prepared for the Signal Hill Holding Corporation.

Testa Environmental Corporation, 2003d, Report on Quarterly Groundwater Monitoring, October 2003, Former Chemoil Refinery, Signal Hill, California: unpublished report dated October 15, 2003, prepared for the Signal Hill Holding Corporation.

Testa Environmental Corporation, 2004a, Report on Quarterly Groundwater Monitoring, January 2004, Former Chemoil Refinery, Signal Hill, California: unpublished report dated January 15, 2004, prepared for the Signal Hill Holding Corporation.

Testa Environmental Corporation, 2004b, Report on Quarterly Groundwater Monitoring, April 2004, Former Chemoil Refinery, Signal Hill, California: unpublished report dated April 15, 2004, prepared for the Signal Hill Holding Corporation.

Testa Environmental Corporation, 2004c, Report on Quarterly Groundwater Monitoring, July 2004, Former Chemoil Refinery, Signal Hill, California: unpublished report dated July 15, 2004, prepared for the Signal Hill Holding Corporation.

Testa Environmental Corporation, 2004d, Report on Quarterly Groundwater Monitoring, October 2004, Former Chemoil Refinery, Signal Hill, California: unpublished report dated October 15, 2004, prepared for the Signal Hill Holding Corporation.

The Source Group, 1999, Workplan for Closure Sampling at the East Parcel, Former Chemoil Refinery, Signal Hill, California: Unpublished analytical report for Environmental Investments, LLC.

Zielbauer, E. J. and others, 1962, Dominguez Gap Barrier Project, Geologic Investigation: Los Angeles Flood Control District, 30p.

11.0 LIMITATIONS

The observations, conclusions and recommendations presented in this report are based upon:

- Review of data and referenced material noted in this report;
- Observations of TEC personnel and representatives during gauging of monitoring and former LNAPL recovery wells, groundwater sampling and other field-related activities; and
- Review of results of laboratory analyses performed on select groundwater samples as reported by a California State-certified analytical laboratory.

It is possible that variations in soil and groundwater conditions may exist beyond the limits of or between the data points and locations explored during this assessment. Also, changes may occur in surface and groundwater conditions encountered in the site area at some time in the future due to variations in rainfall, temperature, regional water level fluctuations and usage, or other factors, which may ultimately impact the conditions discussed herein.

The services performed by TEC have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty, expressed or implied, is made.

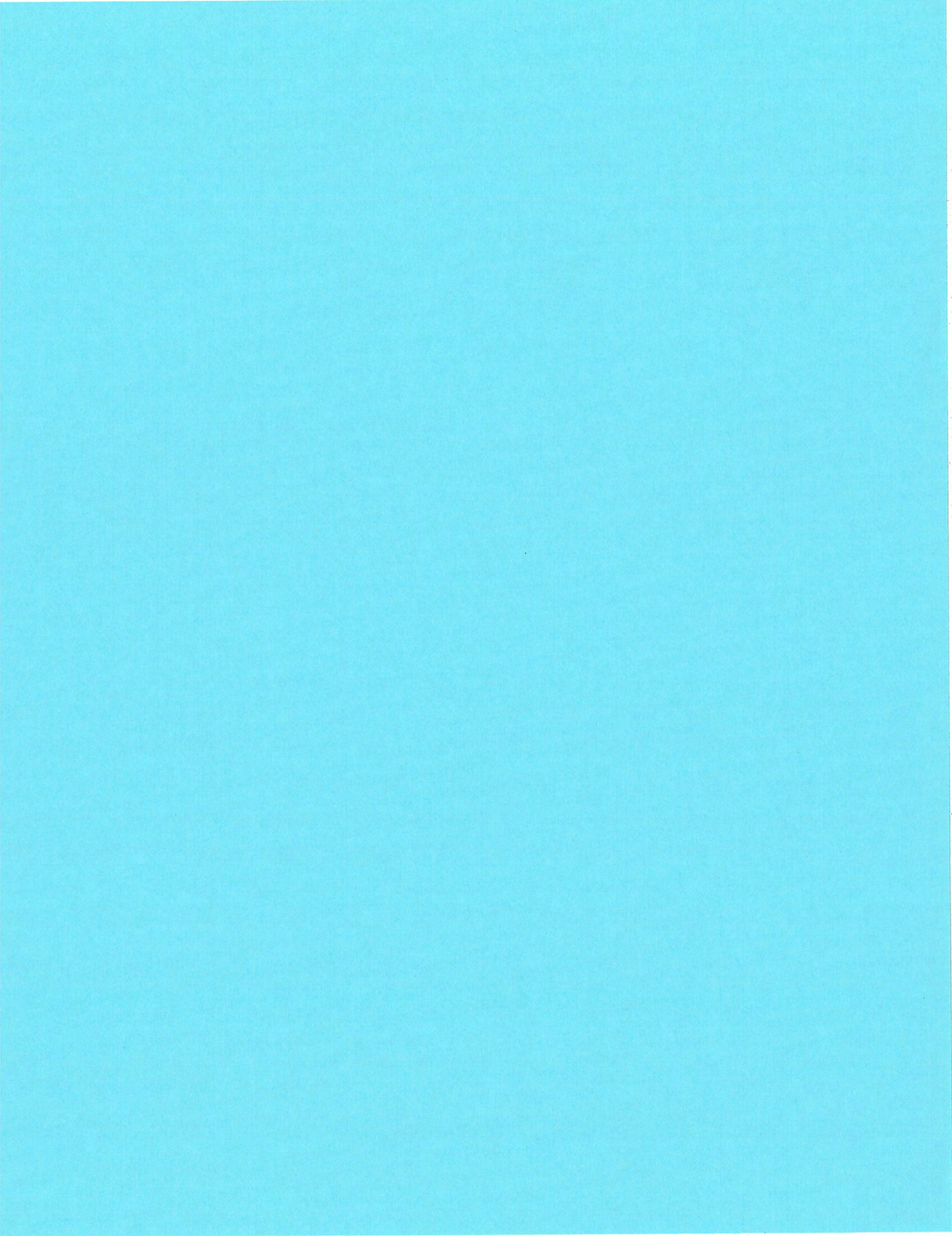


**TABLE 2-1
SUMMARY OF PREVIOUS REPORTS**

Date	Report Title
<u>Engineering Enterprises, Inc. (EEI)</u>	
December 1985	Groundwater Assessment Phase I Report MacMillan Ring-Free Oil Company
August 1986	Groundwater Assessment Phase II Report MacMillan Ring-Free Oil Company
October 1986	Groundwater Assessment Phase II Report Clarifications
March 1987	First Quarterly Groundwater Monitoring Report, MacMillan Ring-Free Refinery, Signal Hill, California
April 1987	Second Quarterly Groundwater Monitoring Report, MacMillan Ring-Free Refinery, Signal Hill, California
September 1987	Third Quarterly Groundwater Monitoring Report, MacMillan Ring-Free Refinery, Signal Hill, California
January 1988	Fourth Quarterly Groundwater Monitoring Report, MacMillan Ring-Free Refinery, Signal Hill, California
January 1988	Revised Workplan to Address Outstanding Issues, California Regional Water Quality Control Board File No. 85-15, MacMillan Ring-Free Refinery
July 1988	Biannual Interim Monitoring Report, MacMillan Ring-Free Refinery, Signal Hill, California
January 1989	Biannual Interim Monitoring Report, January 1989, Chemoil Refinery, Signal Hill, California
July 1989	Biannual Interim Monitoring Report, July 1989, Chemoil Refinery, Signal Hill, California
January 1990	Biannual Interim Monitoring Report, January 1990, Chemoil Refinery, Signal Hill, California
<u>Applied Environmental Services, Inc. (AES)</u>	
July 1990	Biannual Interim Monitoring Report, July 1990, Chemoil Refinery, Signal Hill, California
January 1991	Biannual Interim Monitoring Report, January 1991, Chemoil Refinery, Signal Hill, California
July 1991	Biannual Interim Monitoring Report, July 1991, Chemoil Refinery, Signal Hill, California
January 1992	Biannual Interim Monitoring Report, January 1992, Chemoil Refinery, Signal Hill, California
July 1992	Biannual Interim Monitoring Report, July 1992, Chemoil Refinery, Signal Hill, California
January 1993	Biannual Interim Monitoring Report, January 1993, Chemoil Refinery, Signal Hill, California

**TABLE 2-1
SUMMARY OF PREVIOUS REPORTS**

Date	Report Title
July 1993	Biannual Interim Monitoring Report, July 1993, Chemoil Refinery, Signal Hill, California
January 1994	Biannual Interim Monitoring Report, January 1994, Chemoil Refinery, Signal Hill, California
July 1994	Biannual Interim Monitoring Report, July 1994, Chemoil Refinery, Signal Hill, California
<u>Testa Environmental Corporation (TEC)</u>	
January 1995	Biannual Interim Monitoring Report, January 1995, Chemoil Refinery, Signal Hill, California
July 1995	Biannual Interim Monitoring Report, July 1995, Chemoil Refinery, Signal Hill, California
January 1996	Biannual Interim Monitoring Report, January 1996, Chemoil Refinery, Signal Hill, California
July 1996	Biannual Interim Monitoring Report, July 1996, Chemoil Refinery, Signal Hill, California
January 1997	Biannual Interim Monitoring Report, January 1997, Chemoil Refinery, Signal Hill, California
July 1997	Biannual Interim Monitoring Report, July 1997, Chemoil Refinery, Signal Hill, California
December 1997	Proposal for Subsurface Soil Quality Assessment, December 1997, Former Chemoil Refinery, Signal Hill, California
May 1998	Report of Additional Subsurface Assessment and Groundwater Monitoring, May 1998, Former Chemoil Refinery, Signal Hill, California
November 1998	Proposed Workplan for Off-site Subsurface Soil and Groundwater Quality Conditions, November 6, 1998, Former Chemoil Refinery, Signal Hill, California
August 1999	Report on Additional Subsurface Assessment, August 1999, Former Chemoil Refinery, Signal Hill, California
September 2001	Proposed Workplan for Subsurface Assessment, Eastern Parcel, Former Chemoil Refinery, Signal Hill, California
November 2001	Report on Additional Subsurface Assessment, Former Chemoil Refinery – Eastern Parcel, Signal Hill, California
March 2002	Proposed Remedial Action Plan, Former Chemoil Refinery – Eastern Parcel, Signal Hill, California

**TABLE 2-1
SUMMARY OF PREVIOUS REPORTS**

Date	Report Title
June 2002	Revised Remedial Action Plan, Former Chemoil Refinery – Eastern Parcel, Signal Hill, California
July 2002	Report on Quarterly Groundwater Quality, July, 2002, Former Chemoil Refinery, Signal Hill, California
July 2002	Revised Workplan for Subsurface Assessment, Former Chemoil Refinery Site. Western Parcel, Signal Hill, California
October 2002	Report on Quarterly Groundwater Quality, October 2002, Former Chemoil Refinery, Signal Hill, California
January 2003	Report on Quarterly Groundwater Quality, January, 2003, Former Chemoil Refinery, Signal Hill, California
April 2003	Report on Quarterly Groundwater Quality, April, 2003, Former Chemoil Refinery, Signal Hill, California
July 2003	Report on Quarterly Groundwater Quality, July, 2003, Former Chemoil Refinery, Signal Hill, California
October 2003	Report on Quarterly Groundwater Quality, October, 2003, Former Chemoil Refinery, Signal Hill, California
January 2004	Report on Quarterly Groundwater Quality, January, 2004, Former Chemoil Refinery, Signal Hill, California
April 2004	Report on Quarterly Groundwater Quality, April, 2004, Former Chemoil Refinery, Signal Hill, California
July 2004	Report on Quarterly Groundwater Quality, July, 2004, Former Chemoil Refinery, Signal Hill, California
October 2004	Report on Quarterly Groundwater Quality, October, 2004, Former Chemoil Refinery, Signal Hill, California

Table 4-1
Summary of Soil Boring Data for the Western Parcel

Soil Boring No.	Boring Depth (feet)	Depth interval (feet)	Soil Type	Soil Symbol (USCS) ^(a)	Remarks
<u>Engineering Enterprises, Inc. (1988)</u>					
B-1	10	0-7.5 7.5-10	Sandy silt Sand	ML SP	
B-2	10	0-10	Silty sand	SM	Moderate Hydrocarbon odor
B-3	10	0-7.5 7.5-9 9-10	Silty sand Sandy silt Sand	SM ML SP	
B-4	10	0-10	Sandy silt	ML	Slight hydrocarbon odor at 0-2' bgs
B-5	10	0-4 4-10	Sandy clay Sandy silt	CL ML	Strong hydrocarbon odor Slight hydrocarbon odor
B-6	10	0-10	Silty sand	SM	Hydrocarbon saturation at 0.5' bgs
B-7	10	0-6 6-10	Sandy silt Sand	ML SP	Moderate sweet odor
B-8	10	0-9 9-10	Sandy silt Silty sand	ML SM	
B-9	10	0-3 3-10	Silty sand Sandy silt	SM ML	
B-10	10	0-7 7-10	Silty sand Sandy silt	SM ML	Slight hydrocarbon odor Slight hydrocarbon odor
B-11	10	0-2 2-10	Clay Silty sand	CL SM	Slight hydrocarbon odor Moderate hydrocarbon odor
B-12	10	0-2 2-6 6-10	Silty sand Sandy silt Silty sand	SM ML SM	Moderate hydrocarbon odor Moderate hydrocarbon odor Moderate hydrocarbon odor
B-13	10	0-3 3-10	Sandy silt Silty sand	ML SM	Slight hydrocarbon odor Moderate-strong hydrocarbon odor
B-14	10	0-3 3-10	Silty sand Sandy silt	SM ML	
B-15	10	0-10	Silty sand	SM	Slight hydrocarbon odor
B-16	10	0-1 1-5 5-10	Silty sand Sandy silt Silty sand	SM ML SM	Moderate hydrocarbon odor Slight hydrocarbon odor Slight hydrocarbon odor

Table 4-1
Summary of Soil Boring Data for the Western Parcel

Soil Boring No.	Boring Depth (feet)	Depth interval (feet)	Soil Type	Soil Symbol (USCS) ^(a)	Remarks
B-17	10	0-10	Silty sand	SM	
B-18	10	0-8 8-10	Silty sand Sand	SM SP	
B-19	10	0-3 3-4 4-10	Silty sand Clay Silty sand	SM CL SM	Hydrocarbon saturation Strong hydrocarbon odor
B-20	10	0-1.5 1.5-5 5-10	Sand Sandy silt Silty sand	SP ML SM	Strong hydrocarbon odor Hydrocarbon saturation 3-4' bgs Slight hydrocarbon odor
B-21	10	0-2 2-3 3-8 8-10	Sandy silt Clay Silty sand Sand	ML CL SM SP	Hydrocarbon saturation Moderate hydrocarbon odor
B-22	10	0-2.5 2.5-10	Sandy silt Silty sand	ML SM	Strong hydrocarbon odor
B-23	10	0-2 2-10	Sandy silt Silty sand	ML SM	Strong hydrocarbon odor
B-24	10	0-1.5 1.5-10	Sand Silty sand	SP SM	Hydrocarbon saturation Slight hydrocarbon odor to 5' bgs
B-25	10	0-1 1-10	Gravelly sand Sandy silt	SD ML	Hydrocarbon saturation Moderate hydrocarbon odor
B-26	10	0-3 3-10	Silty sand Sandy silt	SM ML	Strong hydrocarbon odor Slight hydrocarbon odor
B-27	5	0-5	Clayey silt	ML	
B-28	10	0-3 3-10	Silty sand Clayey silt	SM ML	Strong hydrocarbon odor

On-site Western Parcel Monitoring Wells and Former Recovery Wells (EEI, 1987)

MW-1	45	0-7.0 7.0-15.0 15.0-20.0 20.0-40.0 40.0-45.0	Sandy silt Clayey silt Sandy silt Sand Clayey silt	ML MH ML SP MH
MW-1A	35	0-15.0 15.0-25.0	Sandy silt Sand	ML SP

Table 4-1
Summary of Soil Boring Data for the Western Parcel

Soil Boring No.	Boring Depth (feet)	Depth interval (feet)	Soil Type	Soil Symbol (USCS) ^(a)	Remarks
MW-2	45	0-7.0	Sandy silt	ML	
		7.0-12.5	Clayey silt	MH	
		12.5-20.0	Sandy silt	ML	
		20.0-37.5	Sand	SP	
		37.5-45.0	Clayey silt	MH	
MW-3	45	0-7.5	Sandy silt	ML	
		7.5-15.0	Silt	ML	
		15.0-25.0	Sandy silt	ML	
		25.0-37.5	Sand	SP	
		37.5-45.0	Clayey silt	ML	
R-4	45	0-7.5	Silty sand	SM	Hydrocarbon odor noted at 30' bgs
		7.5-12.5	Silt	ML	
		12.5-20.0	Clayey silt	MH	
		20.0-25.0	Silty sand	SM	
		25.0-40.0	Sand	SP	
		40.0-45.0	Clayey silt	MH	
R-5	45	0-7.5	Silt	ML	Hydrocarbon odor noted at 35' bgs
		7.5-17.5	Silty sand	SM	
		17.5-37.5	Sand	SP	
		37.5-45.0	Clayey silt	MH	
R-6	45	0-7.5	Sandy silt	ML	Hydrocarbon odor noted at 15-25' bgs
		7.5-12.5	Clayey silt	MH	
		12.5-22.5	Silty sand	SM	
		22.5-37.5	Sand	SP	
		37.5-45.0	Clayey silt	MH	
MW-7	45	0-7.5	Silt	ML	Hydrocarbon odor noted at 35' bgs
		7.5-15.0	Clayey silt	MH	
		15.0-25.0	Silty sand	SM	
		25.0-40.0	Sand	SP	
		40.0-45.0	Clayey silt	MH	
MW-8	45	0-10.0	Silt	ML	
		10.0-17.5	Sandy silt	ML	
		17.5-40.0	Sand	SP	
		40.0-45.0	Sandy silt	ML	
MW-9	35	0-15.0	Sandy silt	ML	Shell fragments at 15' bgs; well installed to depth of 49.0 feet bgs
		15.0-35.0	Sand	SP	
MW-10	40	0-15.0	Sandy silt	ML	Shell fragments from 20-25' bgs Some organics Some shell fragments
		15.0-35.0	Sand	SP	
		35.0-40.0	Silty sand	SM	
		40.0-41.0	Sand	SP	

Table 4-1
Summary of Soil Boring Data for the Western Parcel

Soil Boring No.	Boring Depth (feet)	Depth interval (feet)	Soil Type	Soil Symbol (USCS) ^(a)	Remarks
<u>On-site Western Parcel (southern subparcel) Soil Borings</u>					
B-1	35	0-2.5	Silty sand	SM	Slight hydrocarbon odor from ground surface to 35' bgs
		2.5-7.5	Silty clay	CL	
		7.5-35.0	Sand	SP	
B-2	30	0-2.5	Silty sand	SM	Slight hydrocarbon odor from ground surface to 30' bgs; strong at 5' and 25' bgs
		2.5-7.5	Clayey silt	CL	
		7.5-12.5	Silty sand	SM	
		12.5-30.0	Sand	SP	
B-3	25	0-2.5	Silty sand	SM	Strong hydrocarbon odor from ground surface to 25' bgs
		2.5-7.5	Sandy silt	ML	
		7.5-12.5	Silty sand	SM	
		12.5-22.5	Sand	SP	
		22.5-25.0	Silty sand	SM	
<u>Off-site Geoprobes (TEC, 1999)</u>					
GP-1	20	0-12.5	Clayey silt	CL	
		12.5-17.5	Silty sand	SM	
		17.5-20.0	Sand	SP	
GP-2	20	0-12.5	Clayey silt	CL	
		12.5-17.5	Silty sand	SM	
		17.5-20.0	Sand	SP	
GP-3	20	0-20	Clayey silt	CL	

(a) USCS = Unified Soil Classification System

Table 4-2
Summary of Monitoring and Recovery Well Data -December 2004

Well Number	Well Casing Diameter (in)	Top of Casing Elevation (ft)(a,b)	Well Depth (ft)	Elevation of Screened Interval		Depth to Groundwater (ft)(c)	Apparent LNAPL Thickness (ft)(c)	Corrected Elevation of Groundwater (a,b)	Piezometric Elevation Rise or Decline (-) (ft)	Comments
				Upper	Lower					
MW-1	4	24.00	62.0	-7.87	-37.87	19.50	NA (d)	4.50	-0.26	Strong hydrocarbon odor
MW-1A	4	22.98	64.0	8.86	-11.14	20.38	NA	2.60	0.04	Moderate hydrocarbon odor; yellowish color
MW-2	4	31.97	60.0	1.81	-28.19	26.86	NA	5.11	0.08	
MW-3	4	50.65	72.0	6.48	-23.52	45.45	NA	5.20	0.03	Temporary strong hydrocarbon odor
R-4 (e)	4	36.12	45.0	6.53	-23.47	ND	NA	ND	ND	Residual LNAPL formerly noted (Refer to Table 7-1)
R-5 (e)	4	28.14	60.0	0.78	-29.22	ND	NA	ND	ND	No fluid in well
R-6 (e)	4	24.15	50.0	4.26	-25.74	ND	NA	ND	ND	Well no longer useable.
MW-7 (e)	4	21.41	50.0	4.14	-25.86	ND	NA	ND	ND	Well no longer useable.
MW-8	4	27.66	52.0	5.70	-24.30	23.37	NA	4.29	0.03	Yellowish; slight emulsion; slight hydrocarbon odor; metallic flakes evident
MW-9	4	36.85	49.0	7.73	-12.27	33.98	NA	2.87	0.02	Turbid; strong hydrocarbon odor
MW-10	4	31.57	46.0	5.39	-14.61	28.72	NA	2.85	0.06	

(a) All elevations referenced relative to City of Long Beach Benchmark No. 100 located on northeast corner of Walnut Avenue at Hill Street L&T in catch basin; 20 feet east of curb at west end of catch basin. Benchmark elevation established in 1985 is 63.216 NGVD29 relative to mean sea level.

(b) Measured relative to the top of PVC casing at well head (refer to Appendix B).

(c) Fluid level depths gauged on December 9, 2004.

(d) NA = Not applicable.

(e) ND = Not determined; former LNAPL recovery wells R-4, R-5 and R-6, and monitoring well MW-7 are no longer is useable (structural integrity compromised during past facility dismantling related activities (MW-7) and vandalism (R-4, R-5 and R-6)).

Table 5-1
Summary of Analytical Results for Soil for the Western Parcel
Engineering Enterprises, Inc. (1987-1988)

Well/ Boring No.	Depth (feet)	Sample No.	TRPH ^(a) (mg/Kg)	Fuel Hydrocarbons (mg/Kg) ^(b)				
				Gasoline	Kerosene	Diesel	Mineral Spirits	Undifferentiated Hydrocarbons (mg/Kg)
Former Monitoring and Recovery Wells (EEI, Nov. 1987)								
MW-1	20	S-1-20	NA ^(d)	NA	NA	NA	NA	NA
R-4	6	S-4-6	NA	NA	NA	NA	NA	NA
	20	S-4-20	NA	NA	NA	NA	NA	NA
R-5	6	S-5-6	NA	NA	NA	NA	NA	NA
	20	S-5-20	NA	NA	NA	NA	NA	NA
MW-7	20	S-7-20	NA	NA	NA	NA	NA	NA
MW-8	1.5	S-8-1.5	861	NA	NA	NA	NA	NA
	30	S-8-30	87	NA	NA	NA	NA	NA
Soil Borings (EEI, 1988)								
B-4	10	S-10-10	ND ^(c)	ND	ND	ND	ND	ND
B-5	2	S-5-2	38,000	NA	NA	NA	NA	NA
	10	S-5-10	NA	ND	ND	ND	ND	12,000
B-6	2	S-6-2	21,000	NA	NA	NA	NA	NA
	10	S-6-10	NA	690	ND	1900	ND	ND
B-7	10	S-7-10	NA	68	ND	ND	ND	ND
B-8	10	S-8-10	NA	ND	ND	ND	ND	ND
B-9	10	S-9-10	NA	ND	ND	6100	ND	TR<100
B-10	10	S-10-10	NA	ND	ND	2100	ND	ND
B-11	2	S-11-2	12,000	NA	NA	NA	NA	NA
	10	S-11-10	NA	4000	ND	ND	ND	ND
B-12	10	S-12-10	NA	780	ND	300	ND	ND
B-13	10	S-13-10	NA	ND	ND	ND	ND	12000
B-14	2	S-14-2	49,000	NA	NA	NA	NA	NA
	10	S-14-10	NA	ND	ND	ND	ND	4300
B-15	10	S-15-10	NA	ND	ND	ND	ND	320
B-16	10	S-16-10	NA	ND	ND	100	ND	ND
B-17	10	S-17-10	NA	ND	ND	ND	ND	290
B-18	10	S-18-10	NA	ND	ND	ND	ND	ND
B-19	2	S-19-2	16,000	NA	NA	NA	NA	NA
	10	S-19-10	NA	ND	ND	1000	ND	220
B-20	2	S-20-2	45,000	NA	NA	NA	NA	NA
	10	S-20-10	NA	ND	ND	1200	ND	420
B-21	2	S-21-2	NA	ND	ND	ND	ND	TR<100
	10	S-21-10	NA	500	ND	460	ND	TR<100
B-22	2	S-22-2	28,000	NA	NA	NA	NA	NA
	10	S-22-10	NA	ND	ND	ND	ND	2600
B-23	2	S-23-2	15,000	NA	NA	NA	NA	NA
	10	S-24-10	NA	ND	ND	320	ND	ND
B-24	2	S-24-2	48,000	NA	NA	NA	NA	NA
	10	S-24-10	NA	ND	ND	29	ND	ND
B-25	2	S-25-2	19,000	NA	NA	NA	NA	NA
	10	S-25-10	NA	ND	ND	ND	ND	520
B-26	2	S-26-2	48,000	NA	NA	NA	NA	NA
	10	S-26-10	NA	ND	ND	1900	ND	ND
B-27	10	S-27-10	NA	ND	ND	ND	ND	ND
B-28	2	S-28-2	40,000	NA	NA	NA	NA	NA
	10	S-28-10	NA	ND	ND	ND	ND	3400

(a) TRPH = Total petroleum hydrocarbons using EPA Method 418.1.

(b) mg/Kg = milligrams per kilogram or equivalent to parts per million.

(c) ND = Not detected at levels equal to or greater than the respective analytical detection limit.

(d) NA = Not analyzed.

Table 5-2
Summary of Analytical Data for Soil for the Western Parcel
Testa Environmental Corporation (1999)

Boring No.	Sample Depth	Sample No.	Parameter							
			TPHg ^(a) (mg/Kg) ^(e)	TPHd ^(b) (mg/Kg)	TRPH ^(c) (mg/Kg)	Benzene (ug/Kg) ^(f) (ug/Kg)	Toluene (ug/Kg)	Ethylbenzene Xylenes	Total (ug/Kg) (ug/Kg)	MTBE ^(g)
<u>Western Parcel (southern subparcel)</u>										
B-1	5	B-1-5	65	1170	1590	ND	349	852	2780	ND
	10	B-1-10	23	652	705	ND	296	377	1630	ND
	15	B-1-15	ND	229	270	ND	189	2550	71	ND
	20	B-1-20	498	5750	8580	ND	4690	11000	18700	ND
	25	B-1-25	735	10700	11900	1560	7350	25400	48000	ND
	30	B-1-30	289	11200	20800	7140	14000	52200	105000	ND
	35	B-1-35	735	9250	15100	3110	8430	30700	15700	ND
B-2	5	B-2-5	334	8300	14100	3120	3120	981	4190	ND
	10	B-2-10	24	ND	ND	ND	ND	ND	ND	ND
	15	B-2-15	ND	ND	11	ND	ND	ND	ND	ND
	20	B-2-20	ND	ND	12	ND	ND	ND	ND	ND
	25	B-2-15	1510	5924	13900	3010	13900	60800	69400	ND
	30	B-2-30	1130	4400	7140	3580	12400	18900	63200	ND
B-3	5	B-3-5	175	4700	4940	931	1760	941	9160	ND
	10	B-3-10	209	5290	7740	901	1260	1150	9040	ND
	15	B-3-15	ND	94	99	ND	ND	ND	ND	ND
	20	B-3-20	306	9150	9480	941	1660	4280	18900	ND
	25	B-3-25	445	10400	11300	1370	2280	2050	34000	ND
<u>Off-site Geoprobes</u>										
GP-1	5		ND	ND	NA	ND	ND	ND	ND	NA
	10		ND	ND	NA	ND	ND	ND	ND	NA
	15		96	170	NA	ND	ND	ND	ND	NA
	20		270	950	NA	ND	ND	ND	ND	NA

Table 5-2
Summary of Analytical Data for Soil for the Western Parcel
Testa Environmental Corporation (1999)

Boring No.	Sample Depth	Sample No.	Parameter							
			TPH _g ^(a) (mg/Kg) ^(e)	TPH _d ^(b) (mg/Kg)	TRPH ^(c) (mg/Kg)	Benzene (ug/Kg) ^(f)	Toluene (ug/Kg)	Ethylbenzene (ug/Kg)	Total Xylenes (ug/Kg)	MTBE ^(d) (ug/Kg)
GP-2	5		270	950	NA	ND	ND	ND	ND	NA
	10		ND	ND	NA	ND	ND	ND	ND	NA
	15		ND	ND	NA	ND	ND	ND	ND	NA
	20		500	220	NA	ND	ND	ND	ND	NA
GP-3	5		ND	ND	NA	ND	ND	ND	ND	NA
	10		ND	ND	NA	ND	ND	ND	ND	NA
	15		1.6	ND	NA	ND	ND	ND	ND	NA
	20		21	170	ND	ND	ND	ND	ND	NA

- (a) TPH_g = Total petroleum hydrocarbons as gasoline using EPA Method 8015m modified for gasoline.
(b) TPH_d = Total petroleum hydrocarbons as diesel using EPA Method 8015m modified for diesel.
(c) TRPH = Total recoverable petroleum hydrocarbons using EPA Method 418.1.
(d) MTBE = Methyl tertiary butyl ether.
(e) mg/Kg = Milligrams per kilogram or equivalent to parts per million.
(f) ug/Kg = Micrograms per kilogram or equivalent to parts per billion.

Table 6-1
Summary of Analytical Results for Organics in Groundwater
December, 2004^(a)

Parameter	Monitoring/Recovery Well Designation							
	MW-1	MW-1A	MW-2	MW-3	R-4 ^(b)	MW-8	MW-9	MW-10
TRPH(diesel) ^(c,d)	1.3 ^(e)	8.2	ND	0.27	NA ^(f)	15	5.8	2.1
TPH (gasoline) ^(d)	0.47	1.6	ND	ND	NA	2.1	4.9	ND
<u>Volatile Organic Compounds (VOCs) using EPA Method 8260B in ug/L^(g)</u>								
Benzene	ND	ND	ND	ND	1800	ND	ND	ND
sec-Butylbenzene	7.3	8.0	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	53	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	220(250)	ND	ND	ND
Isopropylbenzene	29	ND	ND	ND	56	ND	ND	ND
MTBE	ND	22	ND	ND	ND	ND	ND	ND
Naphthalene	ND	55	ND	ND	320	6.8	ND	ND
n-Propylbenzene	24	35	ND	ND	58	ND	ND	ND
Tert-Butanol	ND	ND	ND	ND	ND	620	ND	ND
Toluene	ND	ND	ND	ND	23	ND	ND	ND
1,2,4-Trimethylbenzene	ND	ND	ND	ND	260	ND	ND	ND
1,3,5-Trimethylbenzene	ND	ND	ND	ND	74	ND	5.0	ND
m,p,o-Xylenes	ND	ND	ND	ND	454(529)	ND	10	ND
<u>Semi-Volatile Organic Compounds (VOCs) using EPA Method 8270C in ug/L</u>								
Benzoic acid	ND	ND	ND	ND	ND	ND	ND	120
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	41	ND	ND	ND	ND	24	ND
Naphthalene	ND	61	ND	ND	ND	ND	38	ND
Phenol	ND	ND	ND	ND	ND	ND	14	ND

(a) Groundwater sampling was performed on December 9, 2004.

(b) Dissolved hydrocarbons in former recovery well R-4 reflect the presence of 2.65 feet of LNAPL in apparent thickness or 0.53 feet in actual thickness as measured in December 2002 (Refer to Table 7-1).

(c) TRPHd = Total recoverable petroleum hydrocarbons.

(d) mg/L = milligrams per liter or equivalent to parts per million.

(e) ND = Not detected at or above the analytical detection limit; refer to laboratory reports (Appendix C) for detection limit where appropriate.

(f) NA = Not analyzed.

(g) ug/L = micrograms per liter or equivalent to parts per billion.

Table 7-1
Summary of LNAPL Characteristics

Pool No.	Well No.	Estimated Extent		Estimated Original Volume (barrels) ^(a)	Lead Content (ppm)	LNAPL Type	Specific Gravity	API Gravity	Apparent LNAPL Thickness ^(b) (feet)	Actual LNAPL Thickness ^(c) (feet)
		(acres)	(feet ²)							
I	R-4	15,880	0.13	463	10.9	naphtha, kerosene and light gas-oil	0.8022	44.9 ^(d)	2.65	0.53
	MW-9 ^(e)				198.2	naphtha, kerosene, light gas-oil, and trace gasoline	0.7914	47.3	Sheen (turbid)	<0.01 (not detected)
II	R-6	NA ^(f)	2.7	na	ND	crude oil	0.9402	19.0	0.25 ^(g)	<0.01
III	R-5	1700	0.04	21	179.0	naphtha, kerosene and light to heavy gas-oil	0.8208	40.9	ND ^(h)	<0.01

(a) Reflects total in-place LNAPL volume, rather than recoverable volume, prior to LNAPL recovery system operation. One barrel = 42 gallons.

(b) Data generated on June 29, 1999, with exception to that generated for R-4 and MW-9, which was generated on December 4, 2002.

(c) Actual volume is conservative and reflects actual LNAPL thickness in addition to the height of the capillary fringe based upon baildown testing conducted in February 1995 (Testa and Winegardner, 2000).

(d) Apparent LNAPL thickness prior to LNAPL recovery operations was 4.49 feet.

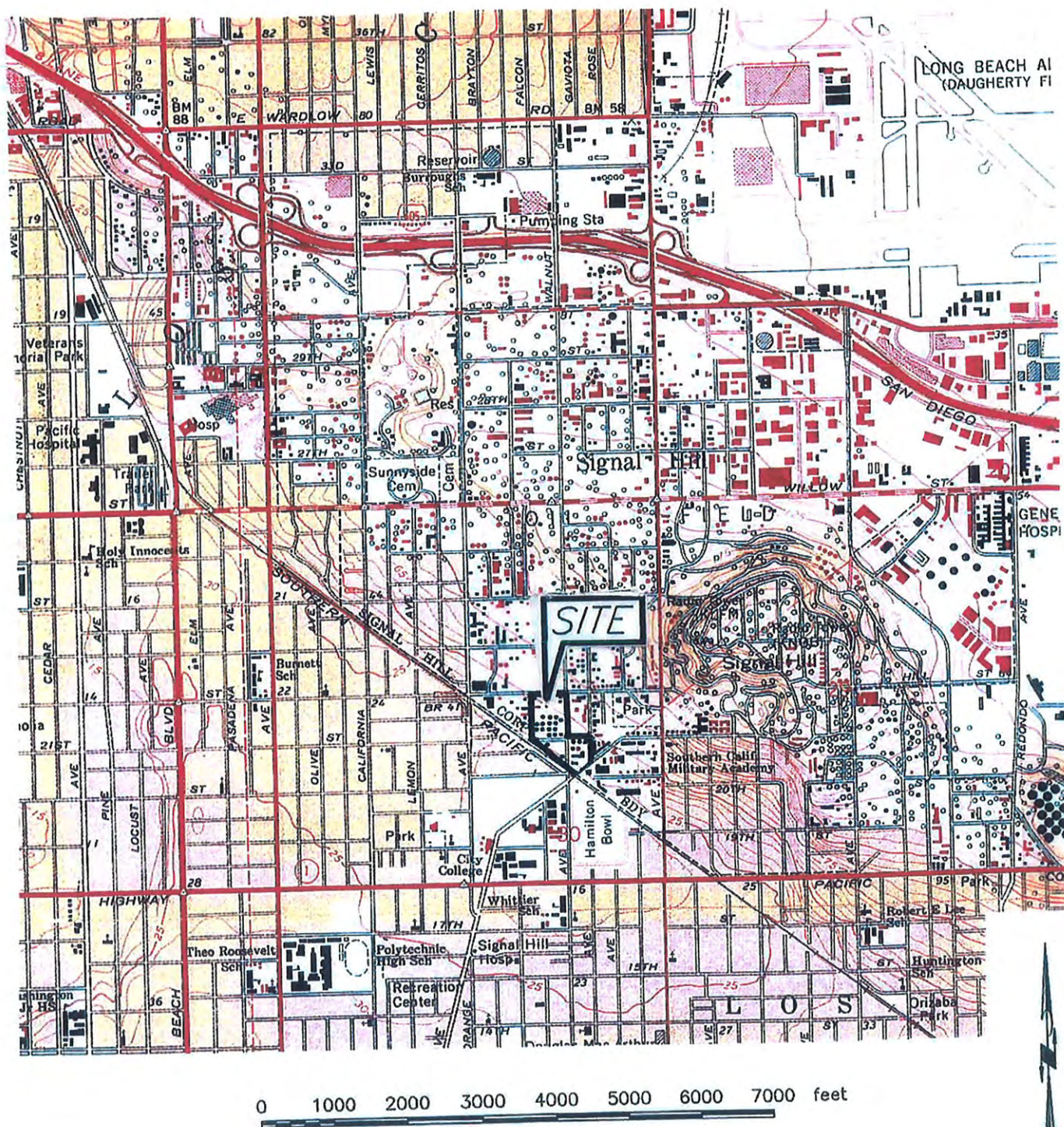
(e) Apparent LNAPL thickness prior to LNAPL recovery operations was 0.80 feet; current gauging results as of December 9, 2004, in parens.

(f) NA = Not applicable

(g) Apparent LNAPL thickness prior to LNAPL recovery operations was 0.28 feet.

(h) ND = Not detected.

(i) R-5 is currently inoperable.



SOURCE: USGS 7.5-minute quadrangle, Long Beach, California (photorevised 1981).

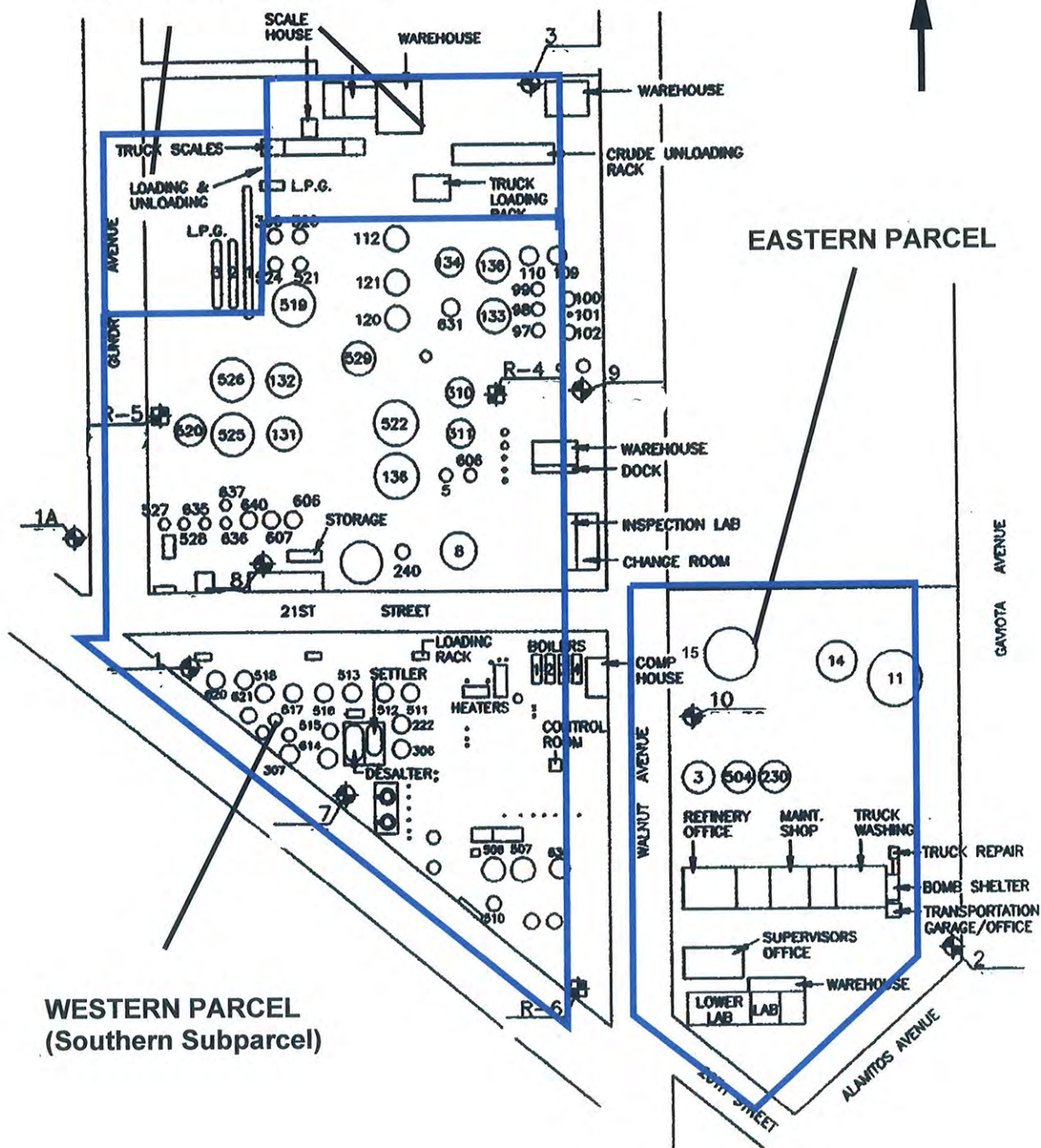
**SITE LOCATION MAP
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA**

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO:	94-11-1008	FILE:	.46	FIGURE NO:
DATE:	January, 2005	DRAWN BY:	SMT	2-1

**WESTERN PARCEL
(Northern Subparcels)**



**WESTERN PARCEL
(Southern Subparcel)**

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

FILE: .46

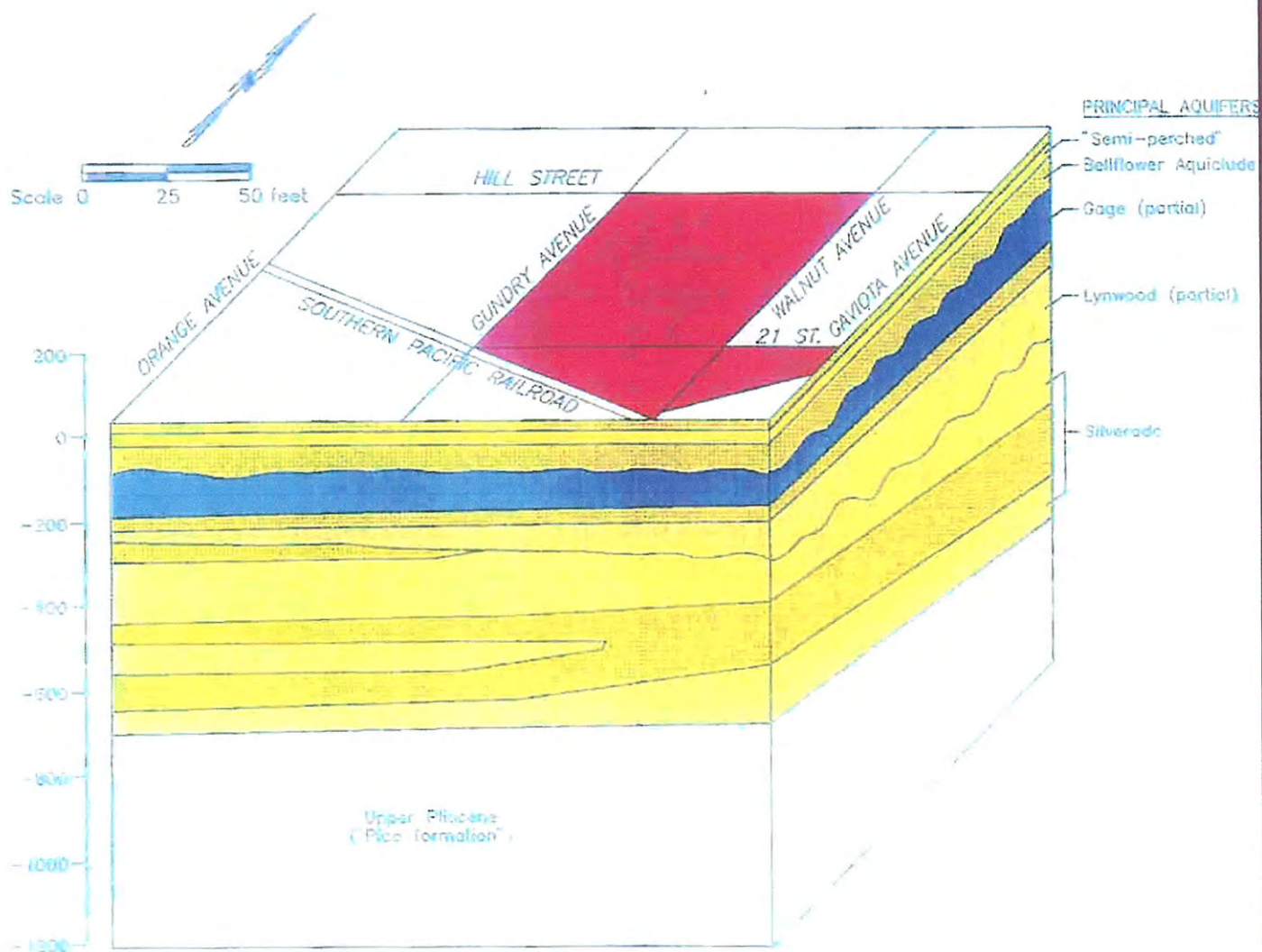
FIGURE NO:

DATE: January, 2005

DRAWN BY: SMT

2-2

**SITE LAYOUT MAP
FORMER CHEMOIL REFINERY SITE
SIGNAL HILL, CALIFORNIA**



NOTES

1. Subsurface data from State of California Department of Water Resources Bulletin No. 104, L.A. County Flood Control District Dominguez Gap Geologic Investigation; and USGS Water Supply paper 1471
2. Subsurface data projected 0.25 miles northwest into block diagram section.

EXPLANATION

- Erosional unconformity (inferred)
- Aquicludes and deeper undifferentiated formations
- Aquifers in recent alluvium ("Semi-Perched" aquifer)
- Aquifers in Lakewood formation (Upper Pleistocene) (includes Gage "200-foot sand" Aquifer)
- Aquifers in San Pedro formation (Lower Pleistocene) (includes Lynwood "400-foot gravel" and Silverado Aquifer)

SCHEMATIC SHOWING BLOCK DIAGRAM OF SUBSURFACE HYDROGEOLOGIC CONDITIONS FORMER CHEMOIL REFINERY SIGNAL HILL, CALIFORNIA

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

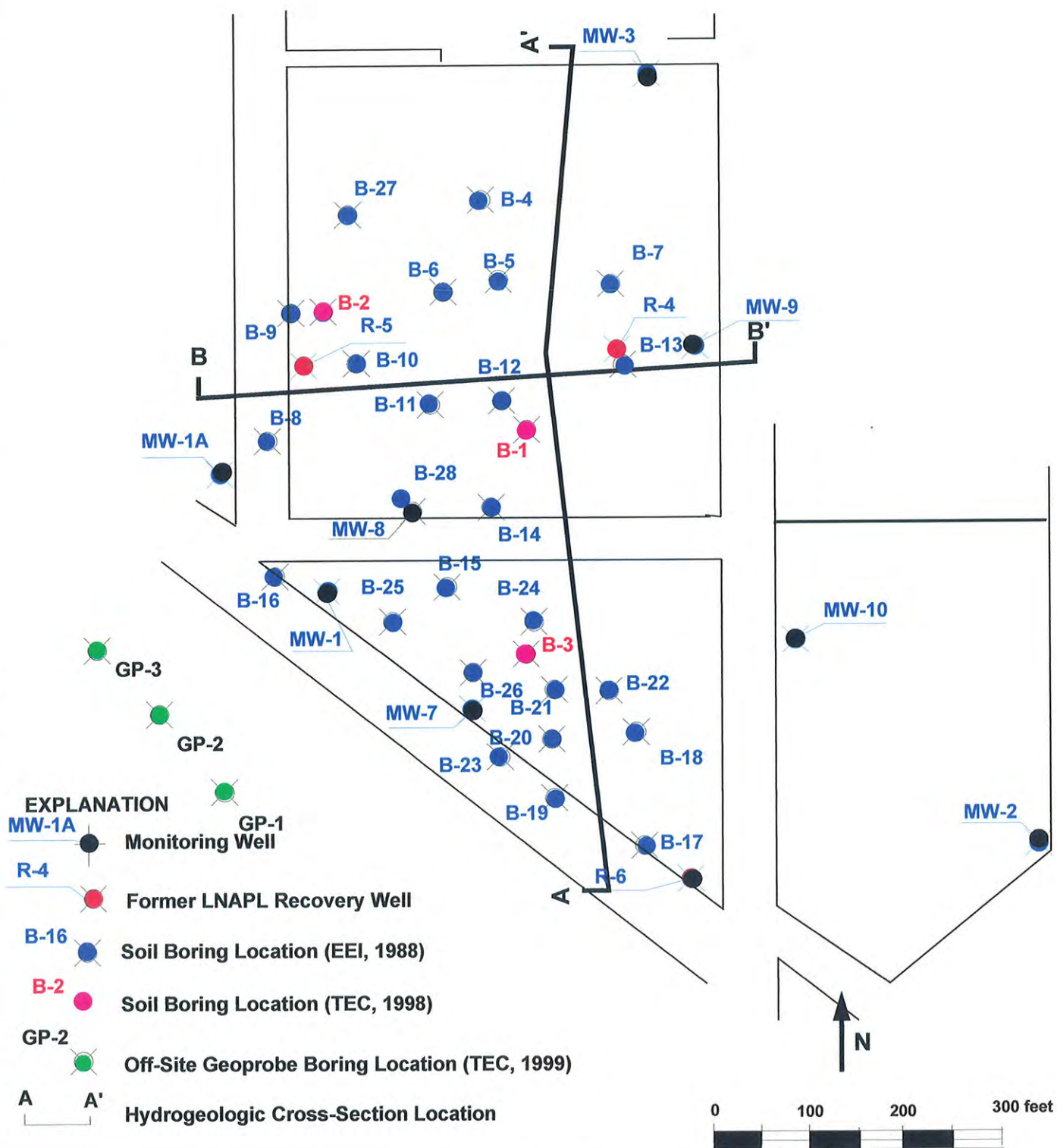
FILE: .46

FIGURE NO:

DATE: January, 2005

DRAWN BY: SMT

4-1



**LOCATION OF SOIL BORINGS, MONITORING
WELLS AND FORMER RECOVERY WELLS
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA**

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

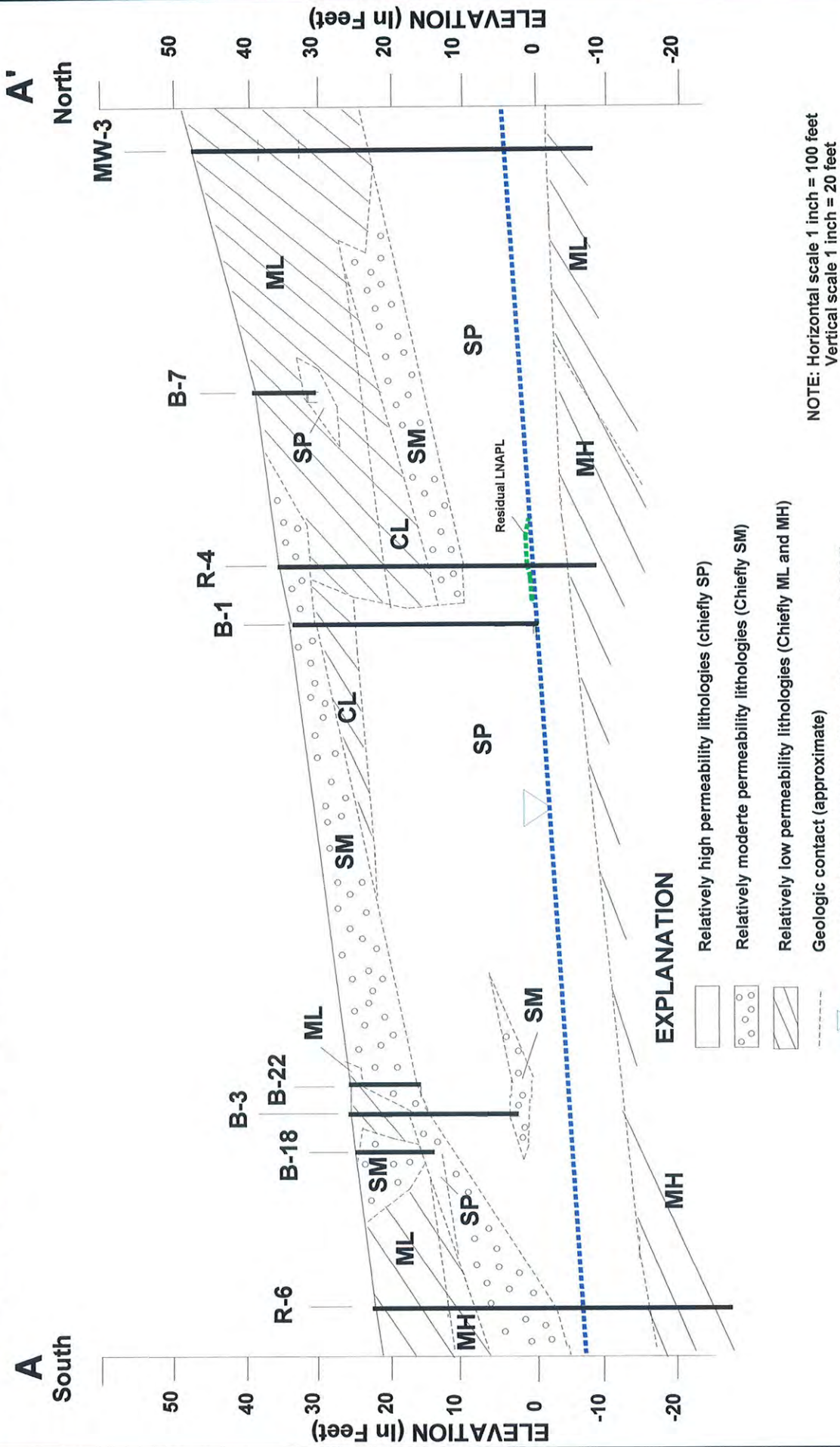
FILE: .46

FIGURE NO:

DATE: January, 2005

DRAWN BY: SMT

4-2



Testa Environmental Corporation

HYDROGEOLOGIC CROSS-SECTION A - A'
WESTERN PARCEL
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA

Earth Sciences & Environmental Specialists

PROJECT NO:

94-11-1008

FILE:

.46

FIGURE NO:

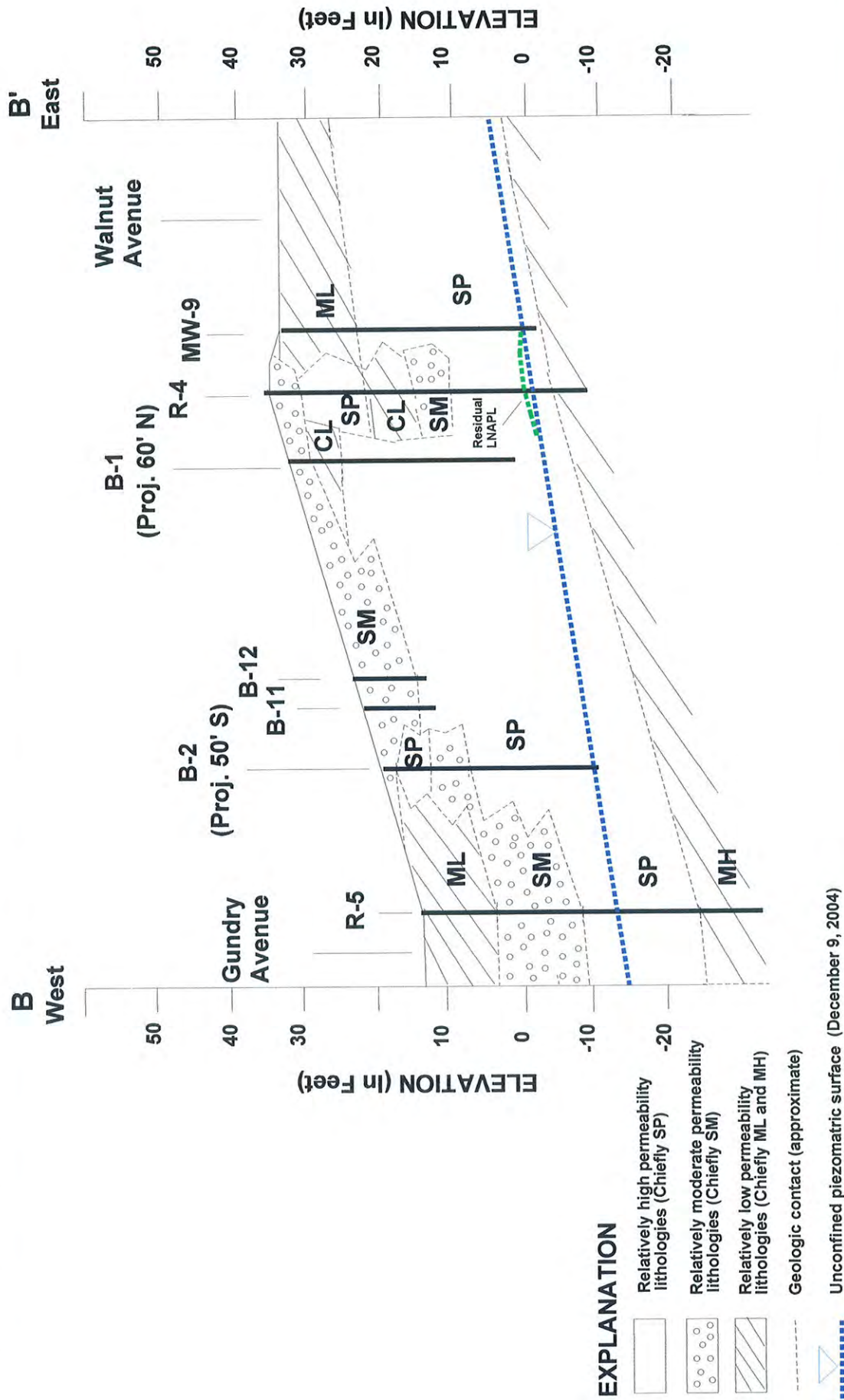
DATE:

January, 2005

DRAWN BY:

SMT

4-3



HYDROGEOLOGIC CROSS-SECTION B-B' WESTERN PARCEL FORMER CHEMOIL REFINERY SIGNAL HILL, CALIFORNIA

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

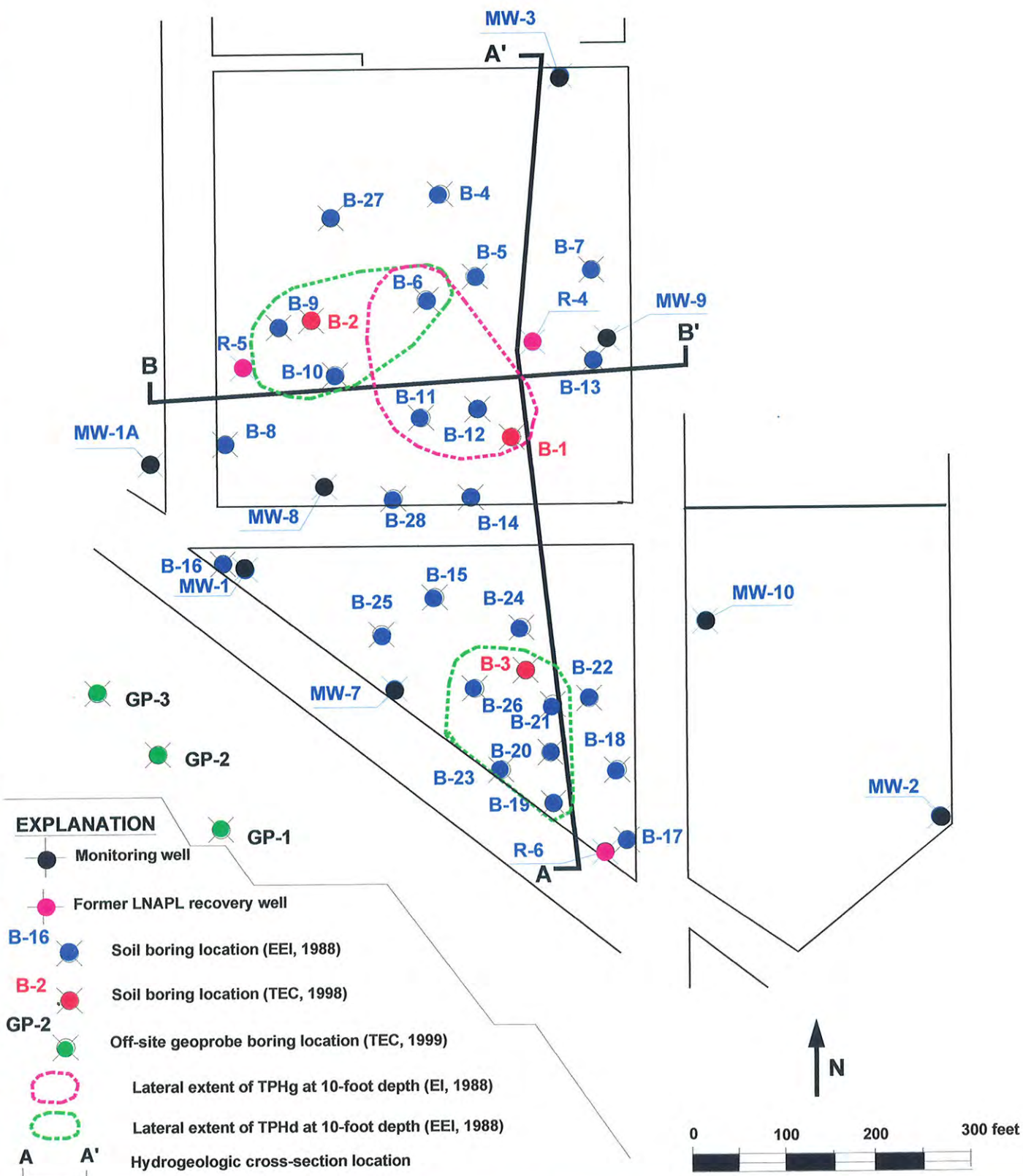
FILE: .46

FIGURE NO: 4-4

DATE: January, 2005

DRAWN BY: SMT

NOTE: Horizontal scale 1 inch = 100 feet
Vertical scale 1 inch = 20 feet



**LATERAL EXTENT OF TPHg AND TPHd
IMPACTED SOIL AT 10-FOOT DEPTH
WESTERN PARCEL
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA**

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

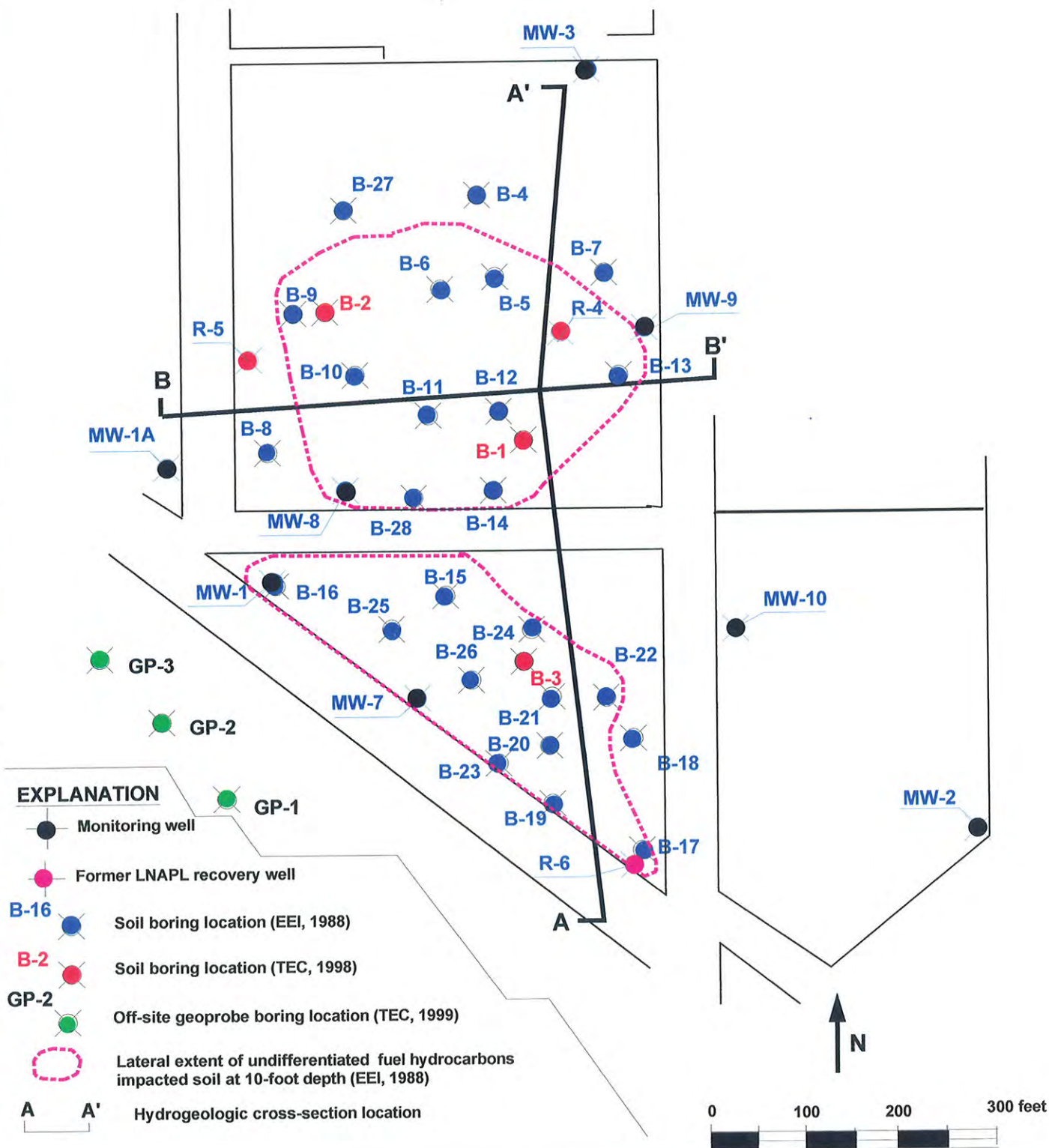
FILE: .46

FIGURE NO:

DATE: January, 2005

DRAWN BY: SMT

5-1



**LATERAL EXTENT OF FUEL HYDROCARBONS
IMPACTED SOIL AT 10-FOOT DEPTH
WESTERN PARCEL
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA**

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

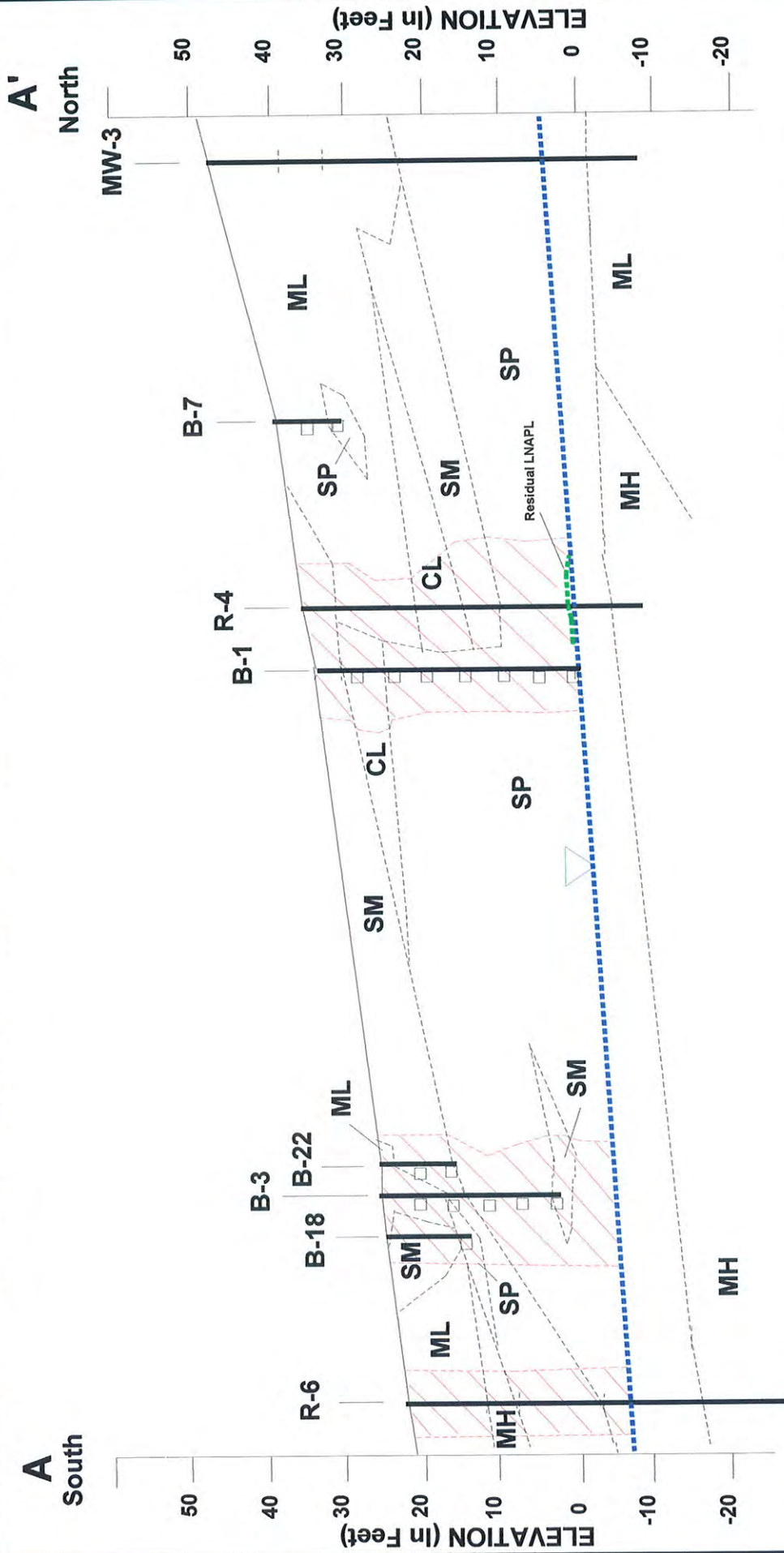
FILE: .46

FIGURE NO:

DATE: January, 2005

DRAWN BY: SMT

5-2



EXPLANATION

- SP Relatively high permeability lithologies
- SM Relatively moderate permeability lithologies
- MH/ML Relatively low permeability lithologies
- Vertical extent of hydrocarbon-impacted soil
- Geologic contact (approximate)
- Unconfined piezometric surface
- Denotes soil sample analysis available

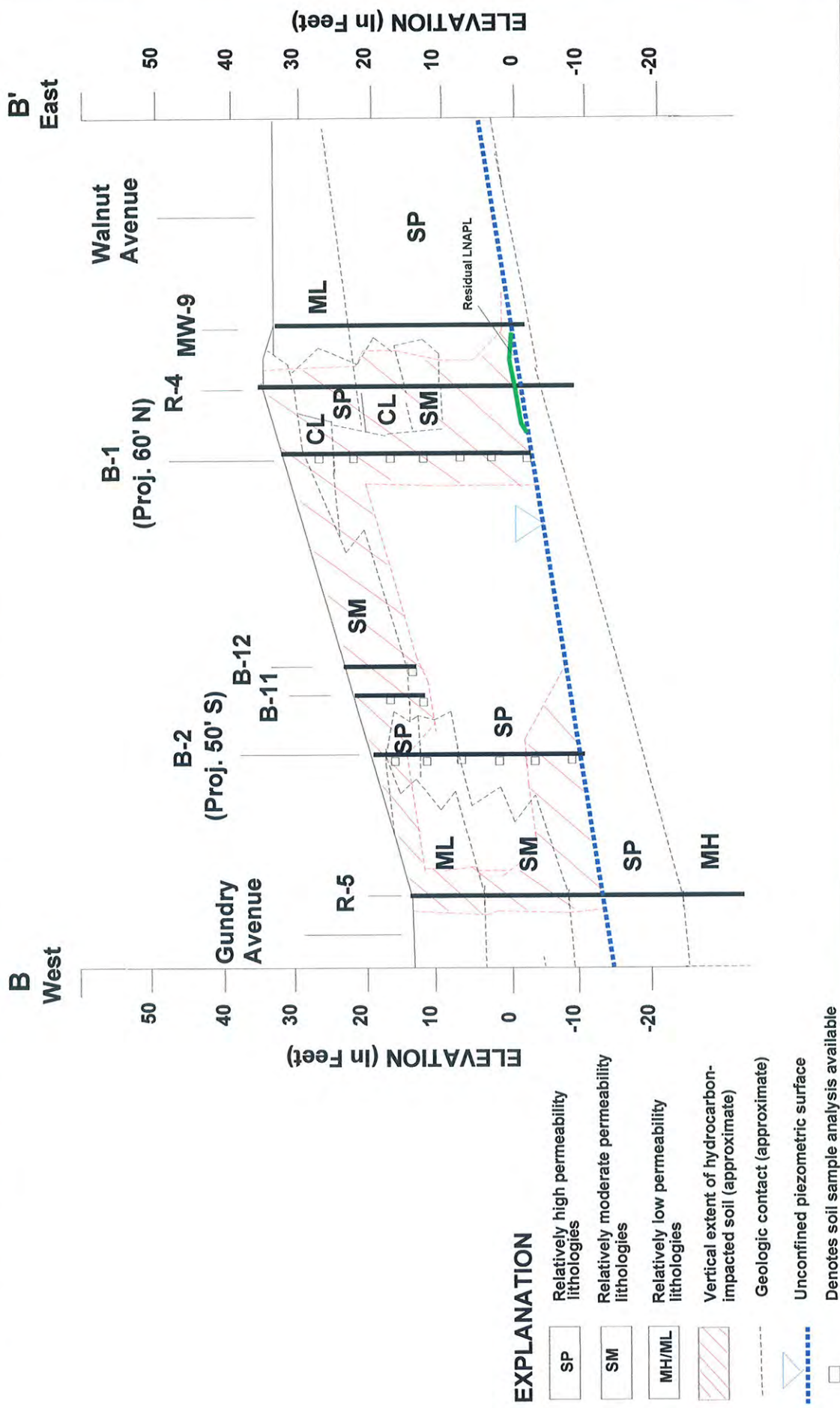
NOTE: Horizontal scale 1 inch = 100 feet
Vertical scale 1 inch = 20 feet

VERTICAL EXTENT OF HYDROCARBON-IMPACTED SOIL ALONG HYDROGEOLOGIC CROSS-SECTION A - A' WESTERN PARCEL FORMER CHEMOIL REFINERY SIGNAL HILL, CALIFORNIA

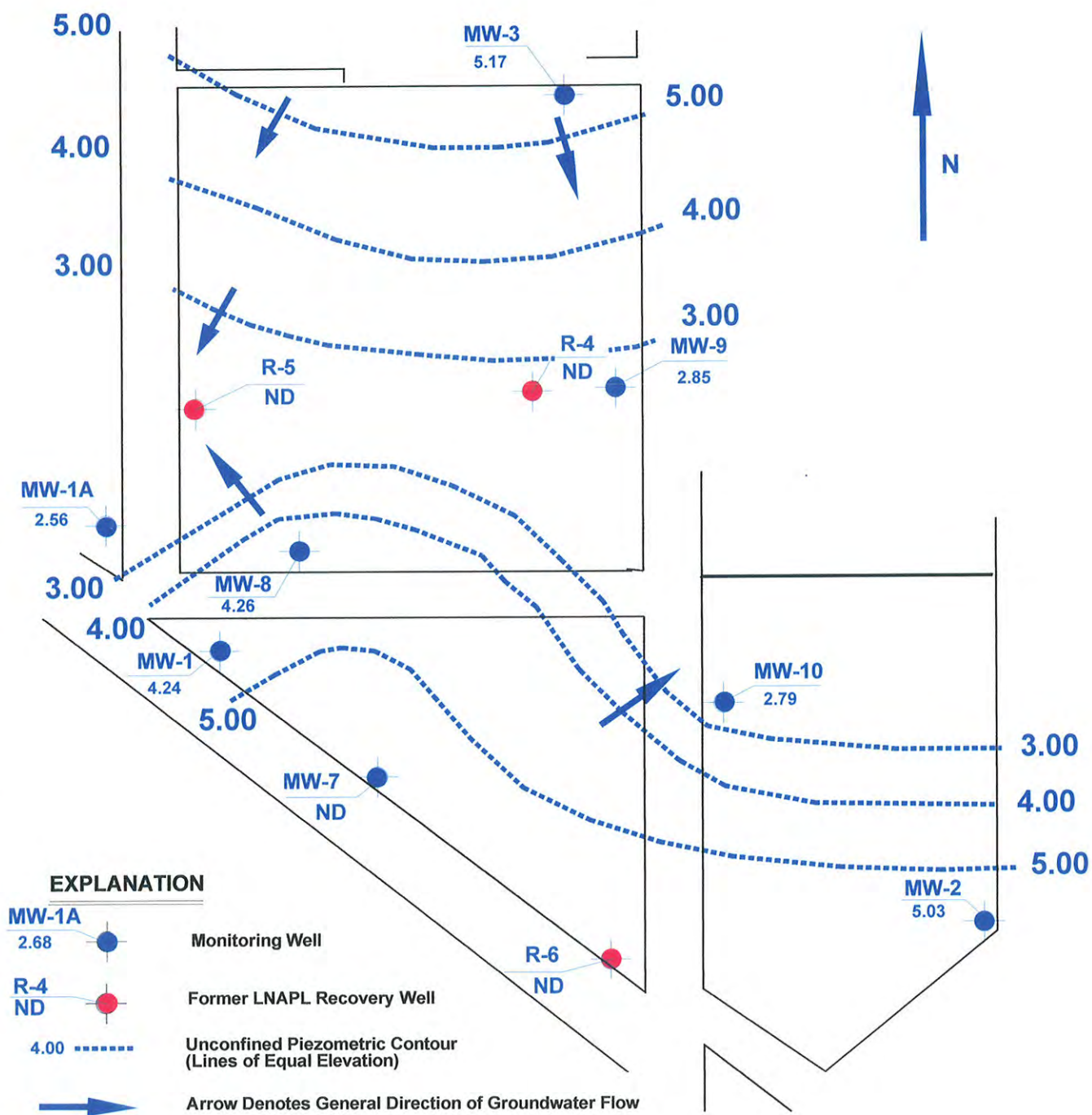
Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO:	94-11-1008	FILE:	.46	FIGURE NO:	5-3
DATE:	January, 2005	DRAWN BY:	SMT		



Testa Environmental Corporation <i>Earth Sciences & Environmental Specialists</i>		
PROJECT NO:	94-11-1008	FIGURE NO:
FILE:	.46	5-4
DATE:	January, 2005	DRAWN BY:
		SMT



UNCONFINED PIEZOMETRIC CONTOUR MAP FORMER CHEMOIL REFINERY SIGNAL HILL, CALIFORNIA

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

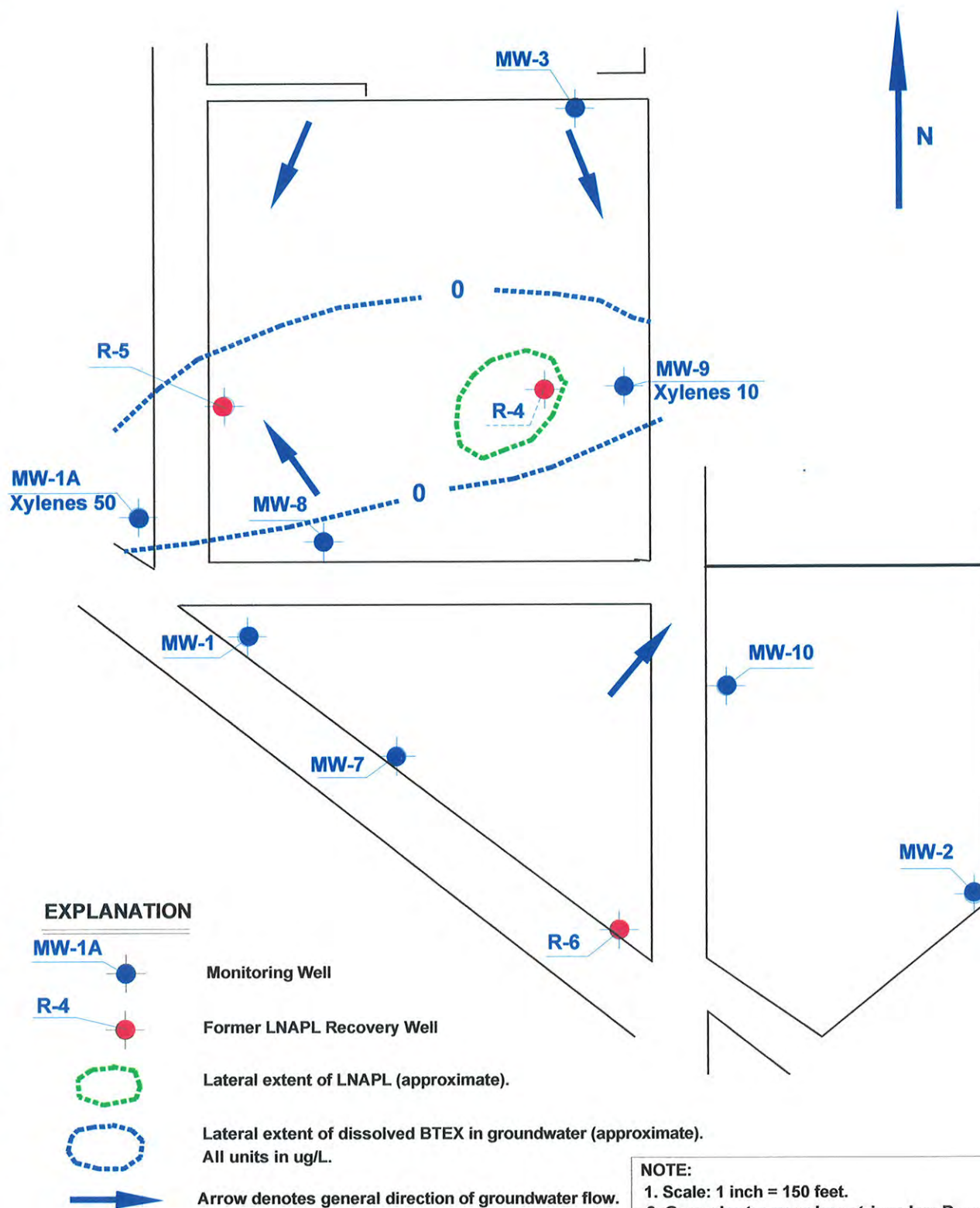
FILE: .46

FIGURE NO:

DATE: January, 2005

DRAWN BY: SMT

4-5



**LATERAL EXTENT OF DISSOLVED BTEX
IN GROUNDWATER
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA**

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

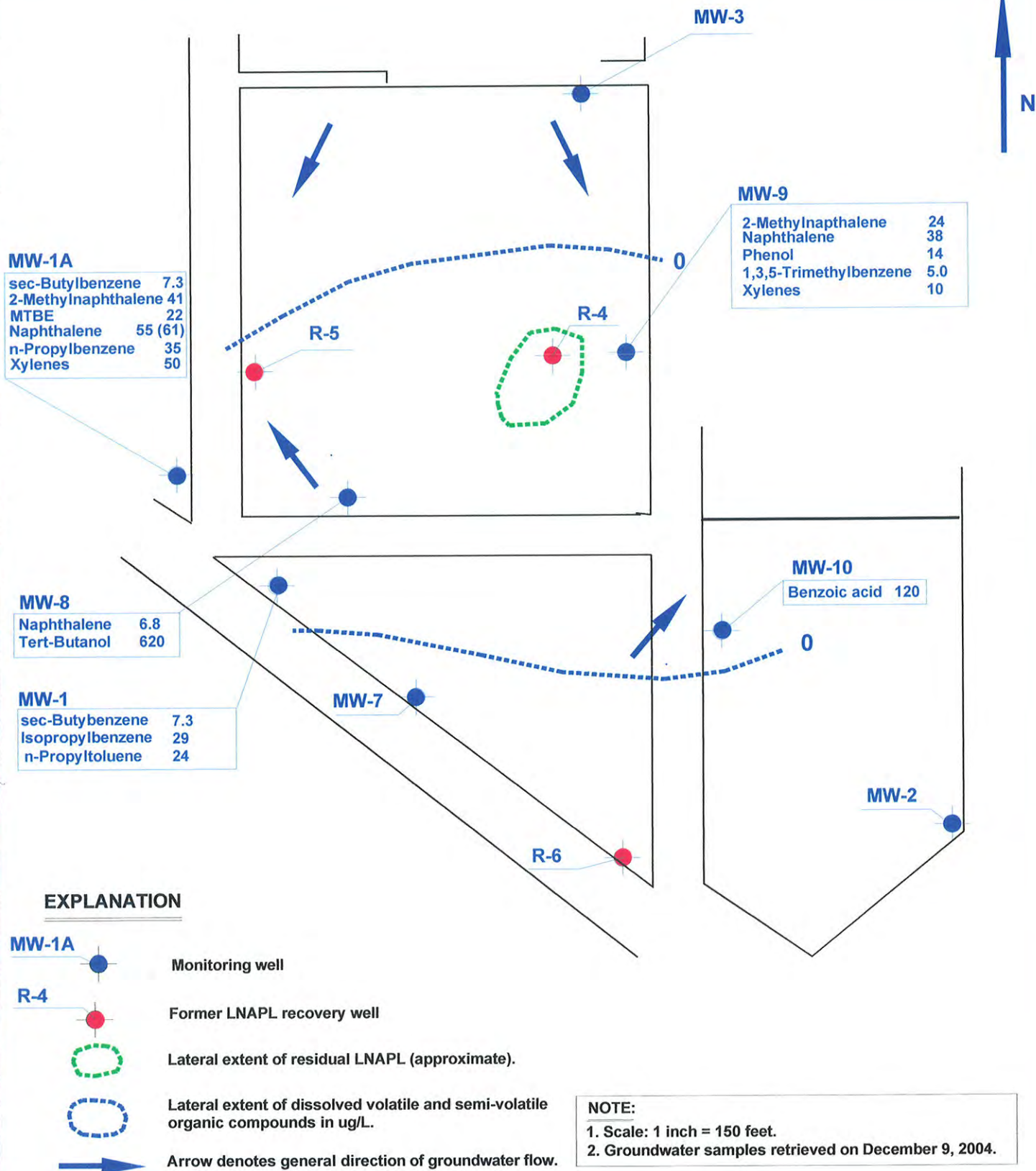
FILE: .46

FIGURE NO:

DATE: January, 2005

DRAWN BY: SMT

6-1



**LATERAL EXTENT OF DISSOLVED VOLATILE
AND SEMI-VOLATILE ORGANIC COMPOUNDS
IN GROUNDWATER
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA**

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

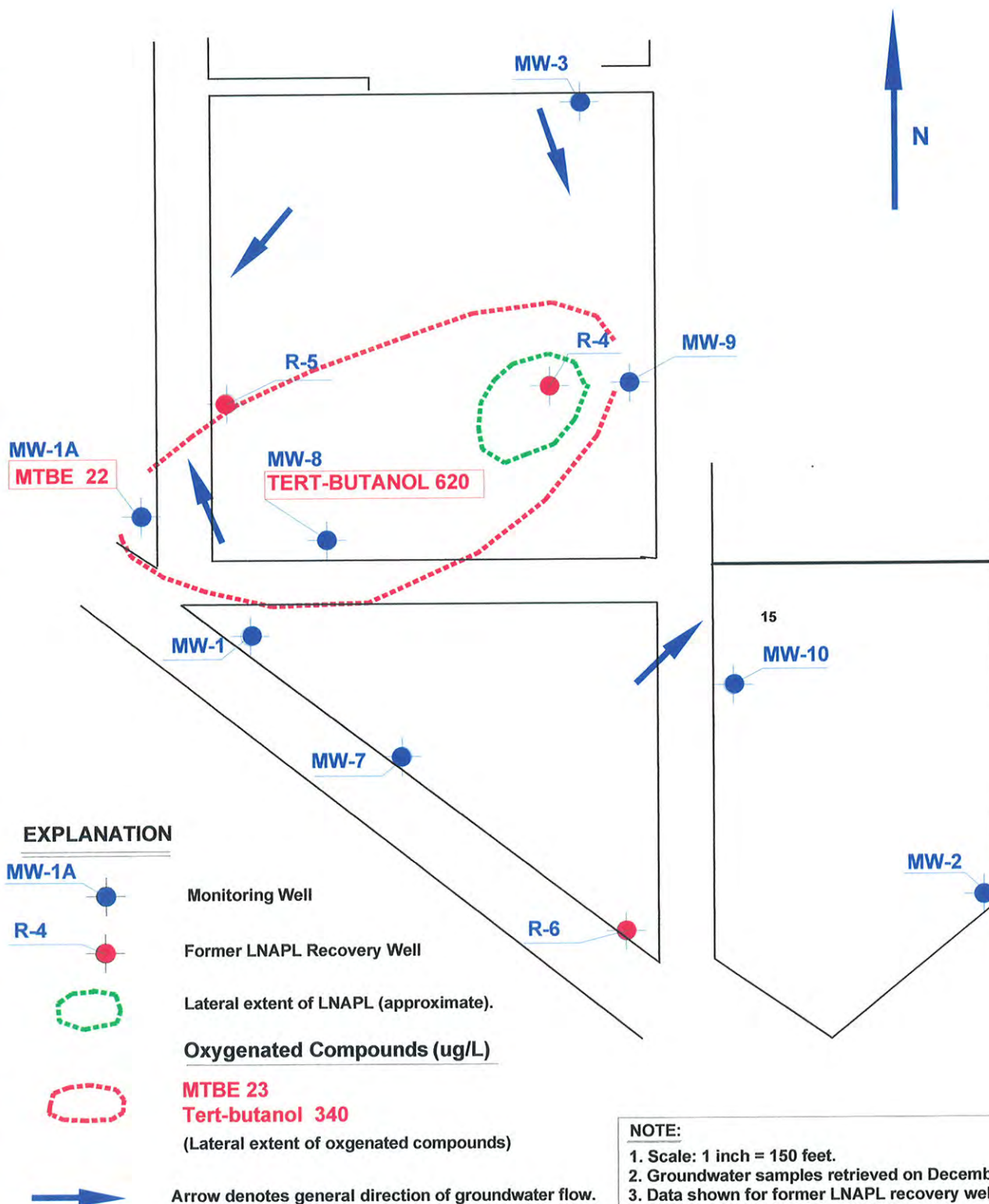
FILE: .46

FIGURE NO:

DATE: January, 2005

DRAWN BY: SMT

6-2



**LATERAL EXTENT OF DISSOLVED
OXYGENATES IN GROUNDWATER
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA**

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

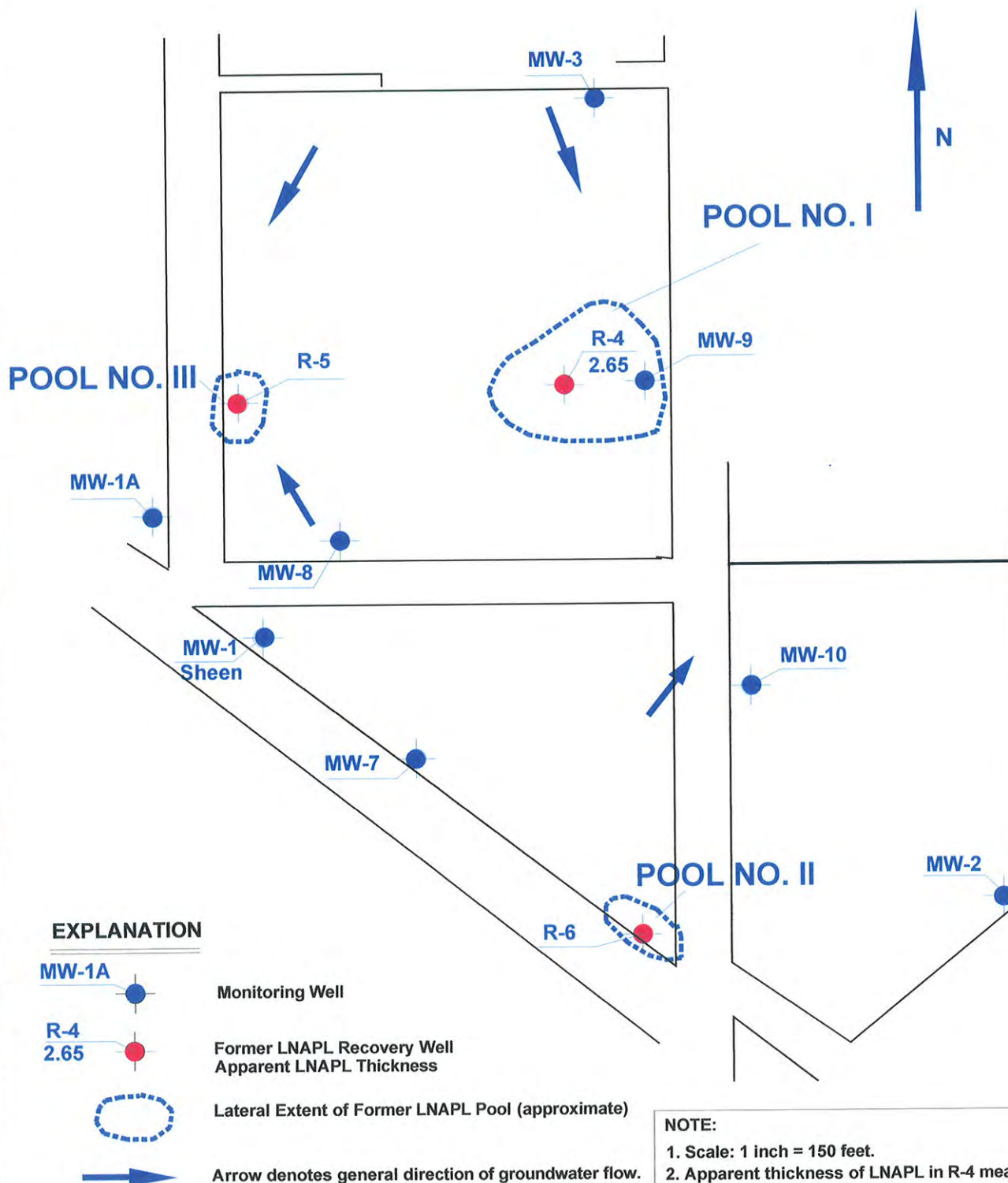
FILE: .46

FIGURE NO:

DATE: January, 2005

DRAWN BY: SMT

6-3



**LATERAL EXTENT OF FORMER LNAPL POOLS
FORMER CHEMOIL REFINERY
SIGNAL HILL, CALIFORNIA**

Testa Environmental Corporation

Earth Sciences & Environmental Specialists

PROJECT NO: 94-11-1008

FILE: .46

FIGURE NO:

DATE: January, 2005

DRAWN BY: SMT

7-1



Anton H. Hickox
Secretary for
Environmental
Protection

Los Angeles Region

Over 50 Years Serving Coastal Los Angeles and Ventura Counties
Recipient of the 2001 Environmental Leadership Award from Keep California Beautiful



Gray Davis
Governor

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640
Internet Address: <http://www.swrcb.ca.gov/rwqcb4>

May 8, 2002

Mr. Ken Ezoe
Signal Hill Holding Corporation
2365 East Sepulveda Boulevard
Long Beach, CA 90810-1944

PROPOSED REMEDIAL ACTION PLAN FORMER CHEMOIL REFINERY - EASTERN PARCEL, SIGNAL HILL, CALIFORNIA, DECEMBER 14, 2001 (SLIC NO. 453A)

Dear Mr. Ezoe:

The Los Angeles Regional Water Quality Control Board (Regional Board) staff has received and reviewed the March 26, 2002 "Proposed Remedial Action Plan (RAP)", prepared by your consultant, Testa Environmental Corporation, for the referenced site. Based on our review of the document, you are authorized to implement the RAP, provided the following conditions are met:

1. When our Regional Board adopted a "Sources of Drinking Water" policy in 1989, we were concerned about shortages of water in the Los Angeles Region, and therefore all inland groundwaters are considered to be sources of drinking water, as designated in the Water Quality Control Plan (Basin Plan). No exclusions were made on the basis of salinity. Accordingly, our Basin Plan (which incorporates the Sources of Drinking Water policy) does not exclude protection of groundwaters on the basis of total dissolved solids (TDS) levels.

As a final point, we again point out that beneficial uses are designated on the basis of existing and future use. We recognize that there may be areas of groundwater in the Wilmington, Signal Hill, and Long Beach areas that may have TDS values exceeding 3,000 mg/L. This may be due to one or a combination of several factors, such as: past historical petroleum exploration, production and refining activities; and contamination from nonpoint sources (e.g. infiltration of contaminated runoff from agricultural activities and from industrial and urban activities). Elevated TDS levels due to these factors cannot be used as a reason not to remediate a contaminated site, unless the discharger believes that cleanup is technologically and/or economically infeasible and is not consistent with maximum benefit to the people of the state. In such a case, a discharger would need to comply with containment zone requirements set forth in State Water Resources Control Board Resolution 92-49 (Attachment D).

As such, your cleanup goals for total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylenes (BTEX) shall follow Table 4-1 Maximum Soil Screening Levels (mg/kg) for TPH and BTEX above Drinking Water Aquifers in our Interim Site Assessment & Cleanup Guidebook (May, 1996).

California Environmental Protection Agency

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption
For a list of simple ways to reduce demand and cut your energy costs, see the tips at: <http://www.swrcb.ca.gov/news/echallenge.html>



and enhance the quality of California's water resources for the benefit of present and future generations.

- 2 -

2. Given the current groundwater depth at approximately 29 feet below ground surface, the cleanup levels for TPH, and BTEX shall be as follows:

Benzene	0.011 mg/kg
Toluene	0.45 mg/kg
Ethylbenzene	2 mg/kg
Xylenes	5.3 mg/kg
TPH (C4 – C12)	100 mg/kg
TPH (C13 – C22)	100 mg/kg
TPH (C23 – C32)	1,000 mg/kg

3. The depth of excavation shall be determined by the extent of contamination above the cleanup levels.
4. A minimum of one soil sample shall be collected from the vicinity of former Tanks No. 14 and No. 15 for Polycyclic Aromatic Hydrocarbons (PAHs) screening using EPA Method 8310. The detection limits shall be sufficiently low for the evaluation of human health protection.
5. As required for other technical work performed at the site, all work must be performed by or under the direction of a registered geologist, certified engineering geologist, or registered civil engineer. A statement is required in the report that the registered professional in direct responsible charge actually supervised or personally conducted all the work associated with the project. All technical submittals must contain a wet ink signature and seal by one of the registered professionals.
6. Notify the Regional Board three working days in advance so the Regional Board staff can be present on site for site inspection.

Please submit a Soil Remediation Report by September 16, 2002.

Should you have any questions, please contact me at (213) 576-6736.

Sincerely,

G. Jeffrey Hu, P.E.
Water Resource Control Engineer
Site Cleanup I Unit

cc: Stephen M. Testa

California Environmental Protection Agency

California Environmental Protection Agency
 The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption
 For a list of simple ways to reduce demand and cut your energy costs, see the tips at: <http://www.swrcb.ca.gov/news/echallenge.html>

DATE: 11-11-1964

APPENDIX A

AGENCY CORRESPONDENCE

January 8, 2002

Mr. Ted Chrestensen
Chemoil Corporation
2365 E. Sepulveda Boulevard
Long Beach, CA 90810-1944

**REVIEW OF PROPOSAL FOR SUBSURFACE ASSESSMENT AT WESTERN PARCEL -
CHEMOIL REFINERY - 2020 WALNUT AVENUE, SIGNAL HILL, CALIFORNIA 93033
(SLIC NO. 453A)**

Dear Mr. Chrestensen:

The Los Angeles Regional Water Quality Control Board (Regional Board) staff has received and reviewed the Proposed Workplan for Subsurface Assessment at Western Parcel (Work Plan), dated November 18, 2001, prepared by Testa Environmental Corporation (TEC). The Work Plan proposes that all existing groundwater monitoring wells on the western portion of the site (Western Parcel), bounded by Walnut Avenue, 20th Street, and Gundry Avenue, will be measured and sampled. Four soil borings will be drilled on the subparcels of the Western Parcel and two soil borings will be drilled off site. Based on our review, you are authorized to implement the Work Plan with the following conditions:

1. The groundwater monitoring well, MW-7, and former recovery well, R-6, can not be abandoned because the previous investigation indicated that the groundwater up-gradient of these two wells is contaminated with total petroleum hydrocarbons (TPHs) and volatile organic compounds (VOCs). Therefore, MW-7 and R-6 shall be included in the survey and groundwater sampling plan.
2. Additional soil borings on the northern portion of the Western Parcel, which is defined as two separate subparcels in Figure No. 1 in the Work Plan, shall be drilled in the oil and grease area, and on the former tank area. At least one background soil sample away from the suspected source area shall be collected for comparison purposes.
3. All soil borings proposed within the Western Parcel and off-site must be drilled to the water table. Soil shall be sampled at depths of 1 foot below ground surface (bgs), 5 feet bgs, and at every 5 feet thereafter until groundwater is reached for each boring location. Groundwater samples must be collected at all boring locations by hydropunch.
4. To fully delineate the groundwater contamination plume on the Western Parcel and off-site toward the residential area south of 20th Street, more off-site groundwater and soil data are necessary. Based on the proposed locations at B-1 and B-2, off-site of the southwestern boundary of the Western Parcel, B-1 is approximately 300 feet away from the southwestern corner of the Site. The location of B-1 shall be adjusted relative to the locations of former borings GP-1, GP-2, and GP-3. One more

California Environmental Protection Agency

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption
For a list of simple ways to reduce demand and cut your energy costs, see the tips at: <http://www.swrcb.ca.gov/news/echallenge.html>



Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

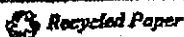
January 8, 2002

soil boring shall be proposed down-gradient of R-6. All the soil borings off-site from the southwestern boundary of the Site must be converted into groundwater monitoring wells.

5. Proposed soil boring identification numbers, B-1, B-2, B-3, and B-4 on the subparcels at the Western Parcel, and B-1 and B-2 for the off-site borings, were used in the previous investigation, and are being repeated. Do not reuse identifications that have already been used. The reuse of the identifications can easily lead to confusion. You are required to re-number your proposed borings in order to avoid confusion.
6. If free product is detected in any groundwater monitoring well during this investigation, free product must be recovered by hand-bailing immediately. The bailed free product must be properly contained and disposed of. A free product recovery progress report including, but not limited to, the volume of free product bailed, constituents of contamination, product thickness before and after recovery, shall be submitted to the Regional Board along with next groundwater monitoring report.
7. Permits for groundwater sampling associated with soil borings shall be obtained from applicable regulatory agencies.
8. Groundwater and soil samples shall be analyzed by a laboratory certified to do the analyses by the State of California. Laboratory reports and method detection limits (MDL) for soil and groundwater samples shall meet the requirements specified in the Regional Board May 1996, *Interim Site Assessment & Cleanup Guidebook*, Appendix B.
9. All soil and groundwater samples must be analyzed for volatile organic compounds (VOCs) by using EPA Method 8260B, semi-volatile organic compounds (SVOCs) by EPA Method 8270B, total petroleum hydrocarbons (TPHs) by EPA Method 8015M, and metals by EPA Method 6010B.
10. A map illustrating all soil borings from previous investigations and showing the analytical results shall be prepared for the Regional Board's review. The horizontal and vertical extent of the soil and groundwater plumes must be defined with isoconcentration contour using all available data in separate maps.
11. Please notify the Regional Board at least 10 working days prior to the start of field work.
12. Prior to the commencement of any field work, a site-specific Health and Safety Plan (H&SP) shall be prepared in accordance with Section 5192 of the California Code of Regulations (CCR), Title 8. The jurisdictional agency, the California Occupational Safety and Health Administration (Ca-OSHA), may inspect the drilling and sampling activities. The H&SP was not included in the Work Plan, a final copy of the H&SP, with signatures of all workers involved with the drilling and sampling activities, shall be submitted to the Regional Board prior to the start of field work.
13. In the Regional Board's letter, dated September 12, 2001, you were requested to monitor the groundwater quality quarterly for the entire site, including the Eastern and Western Parcels, by sampling all existing groundwater monitoring wells on-site and off-site. Groundwater monitoring

California Environmental Protection Agency

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption
For a list of simple ways to reduce demand and cut your energy costs, see the tips at <http://www.snrch.ca.gov/news/echallenge.html>



Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

January 8, 2002

-2-

Mr. Ted Chrestensen
Chemoil Corporation

wells on the Eastern Parcel shall be sampled within the first quarter of 2002, and the report shall be submitted by the date specified in the September 12, 2002 letter.

14. A report summarizing all soil and groundwater sampling data collected during this investigation and the previous soil boring investigation on the Western Parcel, and the quarterly groundwater monitoring report for the Eastern Parcel, shall be submitted to the Regional Board by April 15, 2002. The reports shall include the conclusions from this investigation, recommendations for additional investigations and plans for site remediation, as needed.

Please address all the comments above. If you have any questions, please contact Dr. Eric Wu at (213) 576-6743.

Sincerely,



C. Eric Wu, Ph.D., P.E.
Site Cleanup I Unit

cc: Mr. Stephen Testa, Testa Environmental Corp., 19814 Jesus Maria Rd., Mokelumne Hill, CA 95245

California Environmental Protection Agency

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption
For a list of simple ways to reduce demand and cut your energy costs, see the tips at: <http://www.swrcb.ca.gov/news/echallenge.html>

 Recycled Paper

Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.



Aston H. Hickox
Secretary for
Environmental
Protection

California Regional Water Quality Control Board

Los Angeles Region

Over 50 Years Serving Coastal Los Angeles and Ventura Counties

Recipient of the 2001 Environmental Leadership Award from Keep California Beautiful

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: <http://www.swrcb.ca.gov/rwqcb4>



Gray Davis
Governor

September 12, 2001

Mr. Ted Chrestensen
Chemoil Corporation
2365 E. Sepulveda Boulevard
Long Beach, CA 90810-1944

REVIEW OF SUBSURFACE INVESTIGATION REPORTS AND GROUNDWATER MONITORING REPORTS - CHEMOIL REFINERY - 2020 WALNUT AVENUE, SIGNAL HILL, CALIFORNIA 93033 (SLIC NO. 453A)

Dear Mr. Chrestensen:

The Los Angeles Regional Water Quality Control Board (Regional Board) staff has received and reviewed the following reports:

- Additional Subsurface Assessment, dated August 1994, prepared by Testa Environmental Corporation (TEC),
- Additional Subsurface Assessment and Groundwater Monitoring, dated May 1999, prepared by TEC, and
- Biannual Interim Monitoring Report, dated July 1997, prepared by TEC.

Based on our review, we have the following comments:

1. You are required to submit information to show the depth to the drinking water aquifer, and a scaled map showing the locations of the production wells and surface water bodies within a one-mile radius of the site. The production well information must include the following: the well owner, the well identification number, well construction detail, and the status of the well.
2. The Regional Board requires a complete characterization of both soil and groundwater quality at the site, and remediation if necessary. Soil and groundwater contamination shall be delineated laterally and vertically to non-detect level. You are also required to develop site-specific soil cleanup levels by using the on-site data in accordance with the Regional Board's *Interim Site Assessment and Cleanup Guidebook*, dated May 1996.
3. At least one groundwater monitoring well at the hot spot is required to vertically define the thickness of the groundwater contamination plume. More groundwater monitoring wells shall be installed off-site to the southwestern edge of the property near 20th Street.
4. Groundwater collected from monitoring well MW-9, located near the western fence of the northern portion of the property, contains elevated concentrations of total petroleum hydrocarbons (TPHs), benzene, toluene, ethylbenzene, xylenes, and methyl tertiary butyl ether (MTBE). MW-9 is also possibly situated on a free product plume, and can not be considered as the background well.

California Environmental Protection Agency

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption
For a list of simple ways to reduce demand and cut your energy costs, see the tips at: <http://www.swrcb.ca.gov/news/echallenge.html>

♻ Recycled Paper

Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

September 12, 2001

-2-

Mr. Ted Chrestensen
Chemoil Corporation

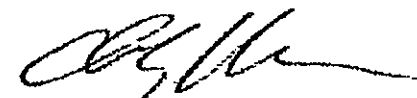
5. All soil and groundwater samples must be analyzed for volatile organic compounds (VOCs) by using EPA Method 8260B, semi-volatile organic compounds (SVOCs) by EPA Method 8270B, total petroleum hydrocarbons (TPHs) by EPA Method 8015M, and metals by EPA Method 6010B.
6. The horizontal and vertical extent of the soil and groundwater plumes must be defined with isoconcentration maps using all available data.
7. It appears that there are reports in addition to those that have been submitted to the Regional Board. Please provide a list of reports for previous investigations and remedial activities.
8. Free product detected at several locations on site must be recovered by hand-bailing immediately. The next investigation report must include information on the thickness of free product before and after recovery, volume bailed, and the composition of free product.
9. The quarterly groundwater monitoring program must be resumed. The quarterly groundwater monitoring report must be submitted by the fifteenth day following the end of the quarter, as shown in the following schedule with the first monitoring report due **January 15, 2002**:

Report Period
January - March
April - June
July - September
October - December

Report Due Date
April 15th
July 15th
October 15th
January 15th

As agreed during the meeting of August 30, 2001, at the Regional Board, groundwater samples will be collected and analyzed from all existing groundwater monitoring wells. A work plan, addressing all the comments above, for the property at east of the Walnut Avenue shall be submitted to the Regional Board by **September 20, 2001**. A work plan for the leased properties and the rest of the site must be submitted to the Regional Board by **November 1, 2001**. If you have any questions, please contact Dr. Eric Wu at (213) 576-6743.

Sincerely,


C. Eric Wu, Ph.D., P.E.
Site Cleanup I Unit

cc: Mr. Stephen Testa, Testa Environmental Corp., 19814 Jesus Maria Rd., Mokelumne Hill, CA 95245

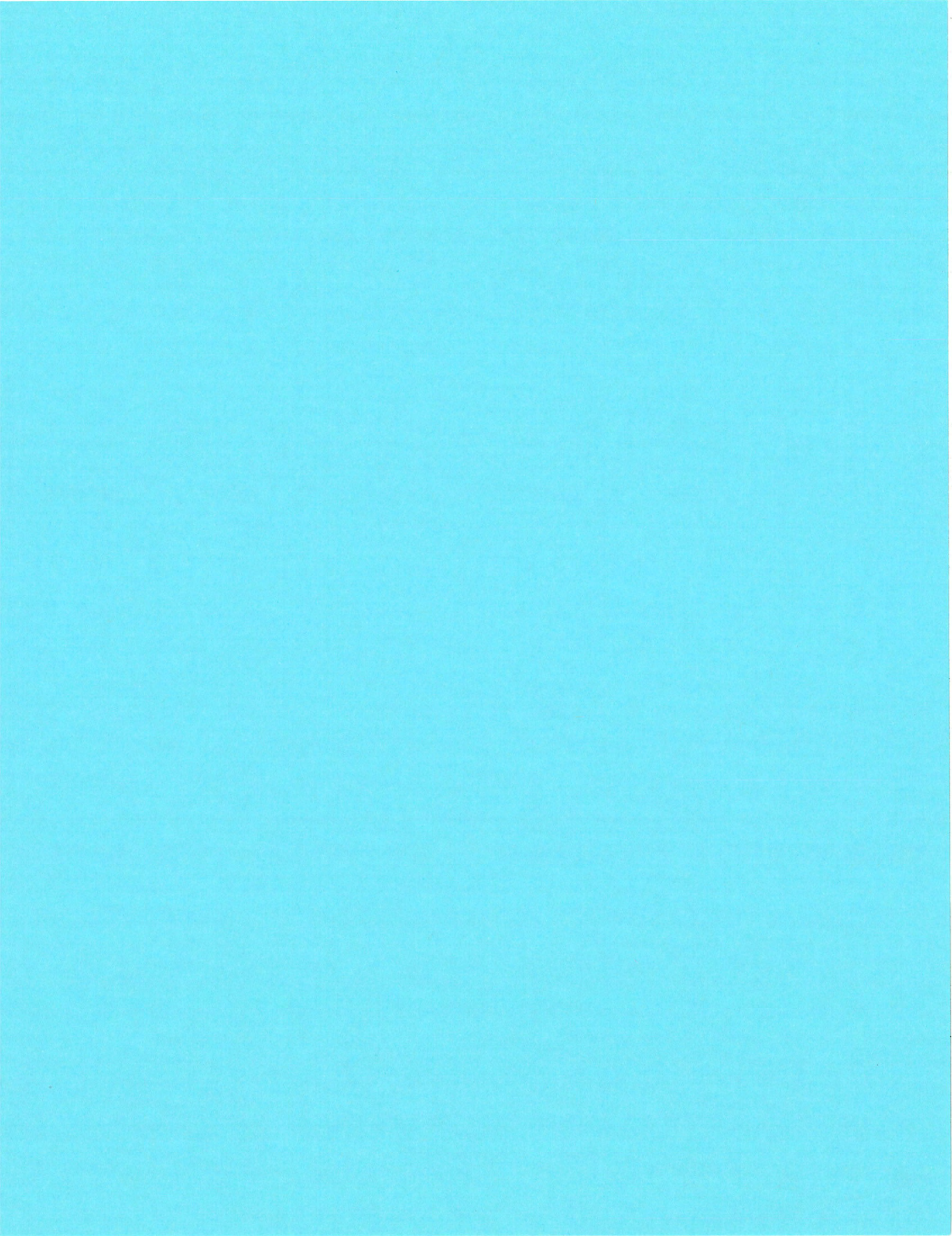
California Environmental Protection Agency

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption
For a list of simple ways to reduce demand and cut your energy costs, see the tips at <http://www.swrcb.ca.gov/news/echallenge.html>



Recycled Paper

...to enhance the quality of California's water resources for the benefit of present and future generations.



APPENDIX B

GROUNDWATER GAUGING DATA

APPENDIX B – PART I

SUMMARY OF GAUGING DATA

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(a)	Top of Screen Elevation	Total Well Depth ^(b)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(a)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
MW-1	07/19/94	4	24.13	-7.87	64.04	ND	23.34	0.79	ND	NA	23.34	0.79
	08/15/94	4	24.13	-7.87	64.04	ND	21.95	0.91	ND	NA	21.95	0.91
	09/14/94	4	24.13	-7.87	64.04	ND	23.29	0.91	ND	NA	23.29	0.91
	10/20/94	4	24.13	-7.87	64.04	ND	23.37	0.76	ND	NA	23.37	0.76
	11/17/94	4	24.13	-7.87	64.04	ND	23.31	0.82	ND	NA	23.31	0.82
	12/14/94	4	24.13	-7.87	64.04	ND	23.32	0.81	ND	NA	23.32	0.81
	01/19/95	4	24.13	-7.87	64.05	ND	22.81	1.32	ND	NA	22.81	1.32
	02/07/95	4	24.13	-7.87	64.05	ND	22.66	1.47	ND	NA	22.66	1.47
	03/13/95	4	24.13	-7.87	64.05	ND	22.56	1.57	ND	NA	22.56	1.57
	04/26/95	4	24.13	-7.87	64.05	ND	22.12	2.01	ND	NA	22.12	2.01
	05/26/95	4	24.13	-7.87	64.05	ND	22.06	2.07	ND	NA	22.06	2.07
	06/29/95	4	24.13	-7.87	64.05	ND	21.93	2.20	ND	NA	21.93	2.20
	07/31/95	4	24.13	-7.87	64.05	ND	21.89	2.24	ND	NA	21.89	2.24
	08/22/95	4	24.13	-7.87	64.05	ND	21.84	2.29	ND	NA	21.84	2.29
	09/06/95	4	24.13	-7.87	64.05	ND	21.90	2.23	ND	NA	21.90	2.23
	01/03/96	4	24.13	-7.87	64.05	ND	21.95	2.18	ND	NA	21.95	2.18
	02/26/96	4	24.13	-7.87	64.05	ND	21.70	2.43	ND	NA	21.70	2.43
	03/27/96	4	24.13	-7.87	64.05	ND	21.53	2.60	ND	NA	21.53	2.60
	04/28/96	4	24.13	-7.87	64.05	ND	21.45	2.68	ND	NA	21.45	2.68
	06/17/96	4	24.13	-7.87	64.05	ND	21.55	2.58	ND	NA	21.55	2.58
	07/10/96	4	24.13	-7.87	64.05	ND	21.63	2.50	ND	NA	21.63	2.50
	08/20/96	4	24.13	-7.87	64.05	ND	21.63	2.50	ND	NA	21.63	2.50
	09/11/96	4	24.13	-7.87	64.05	ND	21.65	2.48	ND	NA	21.65	2.48
	10/16/96	4	24.13	-7.87	64.05	ND	21.77	2.36	ND	NA	21.77	2.36
	11/23/96	4	24.13	-7.87	64.05	ND	21.77	2.36	ND	NA	21.77	2.36
	01/20/97	4	24.13	-7.87	64.05	ND	21.36	2.77	ND	NA	21.36	2.77
	02/19/97	4	24.13	-7.87	64.05	ND	21.17	2.96	ND	NA	21.17	2.96
	03/12/97	4	24.13	-7.87	64.05	ND	21.07	3.06	ND	NA	21.07	3.06
	03/01/98	4	24.13	-7.87	64.05	ND	17.75	6.38	ND	NA	17.75	6.38
	06/29/99	4	ND	-7.87	64.05	ND	22.80	1.33	ND	NA	22.80	1.33
	06/06/02	4	24.00	-7.87	64.05	ND	20.00	4.00	ND	NA	20.00	4.00
	09/05/02	4	24.00	-7.87	64.05	ND	19.50	4.50	ND	NA	19.50	4.50
	12/04/02	4	24.00	-7.87	64.05	ND	20.35	3.65	ND	NA	20.35	3.65
	12/09/03	4	24.00	-7.87	64.05	ND	20.50	3.50	ND	NA	20.50	3.50

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(a)	Top of Screen Elevation	Total Well Depth ^(a)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(b)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
MW-1	06/04/03	4	24.00	-7.87	64.05	ND	21.10	3.90	ND	NA	21.10	3.90
	09/04/03	4	24.00	-7.87	64.05	ND	19.20	4.80	ND	NA	19.20	4.80
	12/09/03	4	24.00	-7.87	64.05	ND	20.50	3.50	ND	NA	20.50	3.50
	03/09/04	4	24.00	-7.87	64.05	ND	19.20	4.80	ND	NA	19.20	4.80
	06/03/04	4	24.00	-7.87	64.05	ND	19.52	4.48	ND	NA	19.52	4.48
	09/15/04	4	24.00	-7.87	64.05	ND	19.76	4.24	ND	NA	19.76	4.24
MW-1A	12/09/04	4	24.00	-7.87	64.05	ND	19.50	4.50	ND	ND	19.50	4.50
	07/19/94	4	22.85	8.86	34	ND	22.22	0.64	ND	NA	22.22	0.64
	08/15/94	4	22.86	8.86	34	ND	21.95	0.91	ND	NA	21.95	0.91
	09/14/94	4	22.86	8.86	34	ND	21.95	0.91	ND	NA	21.95	0.91
	10/20/94	4	22.86	8.86	34	ND	22.04	0.82	ND	NA	22.04	0.82
	11/17/94	4	22.86	8.86	34	ND	21.97	0.89	ND	NA	21.97	0.89
	12/14/94	4	22.86	8.86	34	ND	21.99	0.81	ND	NA	21.99	0.81
	01/19/95	4	22.86	8.86	35.35	ND	21.52	1.34	ND	NA	21.52	1.34
	02/07/95	4	22.86	8.86	35.35	ND	21.27	1.59	ND	NA	21.27	1.59
	03/13/95	4	22.86	8.86	35.35	ND	21.09	1.77	ND	NA	21.09	1.77
	04/26/95	4	22.86	8.86	35.35	ND	20.70	2.16	ND	NA	20.70	2.16
	05/26/95	4	22.86	8.86	35.35	ND	20.66	2.20	ND	NA	20.66	2.20
	06/29/95	4	22.86	8.86	35.35	ND	20.57	2.29	ND	NA	20.57	2.29
	07/31/95	4	22.86	8.86	35.35	ND	20.52	2.34	ND	NA	20.52	2.34
	08/22/95	4	22.86	8.86	35.35	ND	20.52	2.34	ND	NA	20.52	2.34
	09/06/95	4	22.86	8.86	35.35	ND	20.55	2.31	ND	NA	20.55	2.31
	01/03/96	4	22.86	8.86	35.35	ND	20.55	2.31	ND	NA	20.55	2.31
	02/26/96	4	22.86	8.86	35.35	ND	20.27	2.59	ND	NA	20.27	2.59
	03/27/96	4	22.86	8.86	35.35	ND	20.08	2.78	ND	NA	20.08	2.78
	04/03/96	4	22.86	8.86	35.35	ND	20.09	2.77	ND	NA	20.09	2.77
	04/28/96	4	22.86	8.86	35.35	ND	20.11	2.75	ND	NA	20.11	2.75
	06/17/96	4	22.86	8.86	35.35	ND	20.18	2.68	ND	NA	20.18	2.68
	07/10/96	4	22.86	8.86	35.35	ND	20.23	2.63	ND	NA	20.23	2.63
	08/20/96	4	22.86	8.86	35.35	ND	20.24	2.62	ND	NA	20.24	2.62
	09/11/96	4	22.86	8.86	35.35	ND	20.27	2.59	ND	NA	20.27	2.59
	10/16/96	4	22.86	8.86	35.35	ND	20.37	2.49	ND	NA	20.37	2.49
	11/23/96	4	22.86	8.86	35.35	ND	20.35	2.51	ND	NA	20.35	2.51
	01/20/97	4	22.86	8.86	35.35	ND	19.80	3.06	ND	NA	19.80	3.06
	02/19/97	4	22.86	8.86	35.35	ND	19.42	3.44	ND	NA	19.42	3.44
	03/12/97	4	22.86	8.86	35.35	ND	19.54	3.32	ND	NA	19.54	3.32
	03/01/98	4	22.86	8.86	35.35	ND	18.65	4.21	ND	NA	18.65	4.21

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(a)	Top of Screen Elevation	Total Well Depth ^(a)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(a)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
MW-1A	06/29/99	4	22.86	8.86	35.35	ND	19.53	3.33	ND	NA	19.53	3.33
	06/06/02	4	22.98	8.86	35.35	ND	20.60	2.38	ND	NA	20.60	2.38
	09/05/02	4	22.98	8.86	35.35	ND	20.76	2.22	ND	NA	20.76	2.22
	12/04-02	4	22.98	8.86	35.35	ND	20.22	2.01	ND	NA	20.92	2.01
	03.05.03	4	22.98	8.86	35.35	ND	20.60	2.06	ND	NA	20.60	2.06
	06/04/03	4	22.98	8.86	35.35	ND	20.21	2.77	ND	NA	20.21	2.77
	09/04/03	4	22.98	8.86	35.35	ND	24.20	2.77	ND	NA	24.20	2.77
	12/09/03	4	22.98	8.86	35.35	ND	21.50	1.48	ND	NA	21.50	1.48
	03/09/04	4	22.98	8.86	35.35	ND	20.45	2.53	ND	NA	20.45	2.53
	06/03/04	4	22.98	8.86	35.35	ND	20.30	2.68	ND	NA	20.30	2.68
MW-2	09/15/04	4	22.98	8.86	35.35	ND	20.42	2.56	ND	NA	20.42	2.56
	12/09/04	4	22.98	8.86	35.35	ND	20.38	2.60	ND	NA	20.38	2.60
	07/19/94	4	31.81	1.81	60	ND	30.32	1.49	ND	NA	30.32	1.49
	08/15/94	4	31.81	1.81	60	ND	30.30	1.51	ND	NA	30.30	1.51
	09/14/94	4	31.81	1.81	60	ND	30.32	1.49	ND	NA	30.32	1.49
	10/20/94	4	31.81	1.81	60	ND	30.37	1.44	ND	NA	30.37	1.44
	11/17/94	4	31.81	1.81	60	ND	30.35	1.46	ND	NA	30.35	1.46
	12/14/94	4	31.81	1.81	60	ND	30.36	1.45	ND	NA	30.36	1.45
	01/19/95	4	31.81	1.81	63.04	ND	29.69	2.12	ND	NA	29.69	2.12
	02/07/95	4	31.81	1.81	63.04	ND	29.43	2.38	ND	NA	29.43	2.38
	03/13/95	4	31.81	1.81	63.04	ND	29.24	2.57	ND	NA	29.24	2.57
	04/26/95	4	31.81	1.81	63.04	ND	28.95	2.86	ND	NA	28.95	2.86
	06/29/95	4	31.81	1.81	63.04	ND	28.84	2.97	ND	NA	28.84	2.97
	05/26/95	4	31.81	1.81	63.04	ND	28.90	2.91	ND	NA	28.90	2.91
	07/31/95	4	31.81	1.81	63.04	ND	28.83	2.98	ND	NA	28.83	2.98
	08/22/95	4	31.81	1.81	63.04	ND	28.85	2.96	ND	NA	28.85	2.96
	09/06/95	4	31.81	1.81	63.04	ND	28.88	2.93	ND	NA	28.88	2.93
	01/03/96	4	31.81	1.81	63.04	ND	28.79	3.02	ND	NA	28.79	3.02
	02/26/96	4	31.81	1.81	63.04	ND	28.61	3.20	ND	NA	28.61	3.20
	03/27/96	4	31.81	1.81	63.04	ND	28.42	3.39	ND	NA	28.42	3.39
	04/03/96	4	31.81	1.81	63.04	ND	28.44	3.37	ND	NA	28.44	3.37
	04/28/96	4	31.81	1.81	63.04	ND	28.49	3.32	ND	NA	28.49	3.32
	06/17/96	4	31.81	1.81	63.04	ND	28.57	3.24	ND	NA	28.57	3.24
	07/10/96	4	31.81	1.81	63.04	ND	28.63	3.18	ND	NA	28.63	3.18
	08/20/96	4	31.81	1.81	63.04	ND	28.71	3.10	ND	NA	28.71	3.10
	09/11/96	4	31.81	1.81	63.04	ND	28.73	3.08	ND	NA	28.73	3.08
	10/16/96	4	31.81	1.81	63.04	ND	28.80	3.01	ND	NA	28.80	3.01
	11/23/96	4	31.81	1.81	63.04	ND	28.65	3.16	ND	NA	28.65	3.16

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(a)	Top of Screen Elevation	Total Well Depth ^(a)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(a)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
MW-2	01/20/97	4	31.81	1.81	63.04	ND	28.21	3.60	ND	NA	28.21	3.60
	02/19/97	4	31.81	1.81	63.04	ND	28.00	3.81	ND	NA	28.00	3.81
	03/12/97	4	31.81	1.81	63.04	ND	27.96	3.85	ND	NA	27.96	3.85
	03/01/98	4	31.81	1.81	63.04	ND	27.36	4.45	ND	NA	27.36	4.45
	06/29/99	4	31.81	1.81	63.04	ND	27.80	4.01	ND	NA	27.80	4.01
	06/06/02	4	31.97	1.81	63.04	ND	29.60	2.37	ND	NA	29.60	2.37
	09/05/02	4	31.97	1.81	63.04	ND	29.37	2.60	ND	NA	29.37	2.60
	12/04/02	4	31.97	1.81	63.04	ND	29.20	2.77	ND	NA	29.20	2.77
	03/05/03	4	31.97	1.81	63.04	ND	28.90	3.07	ND	NA	28.90	3.07
	06/04/03	4	31.97	1.81	63.04	ND	28.52	3.45	ND	NA	28.52	3.45
	09/04/03	4	31.97	1.81	63.04	ND	26.60	3.45	ND	NA	26.60	3.45
	12/09/03	4	31.07	1.81	63.04	ND	27.10	4.87	ND	NA	27.10	4.87
	03/09/04	4	31.07	1.81	63.04	ND	26.55	5.42	ND	NA	26.55	5.42
	06/03/04	4	31.07	1.81	63.04	ND	26.90	5.07	ND	NA	26.90	5.07
	09/15/04	4	31.07	1.81	63.04	ND	26.94	5.03	ND	NA	26.94	5.03
	12/09/04	4	31.07	1.81	63.04	ND	26.86	5.11	ND	NA	26.86	5.11
MW-3	07/19/94	4	48.48	6.48	70.00	ND	45.67	2.81	ND	NA	45.67	2.81
	08/15/94	4	48.48	6.48	70.00	ND	45.58	2.90	ND	NA	45.58	2.90
	09/14/94	4	48.48	6.48	70.00	ND	45.66	2.82	ND	NA	45.66	2.82
	10/20/94	4	48.48	6.48	70.00	ND	45.78	2.70	ND	NA	45.78	2.70
	11/17/94	4	48.48	6.48	70.00	ND	45.73	2.75	ND	NA	45.73	2.75
	12/14/94	4	48.48	6.48	70.00	ND	45.76	2.72	ND	NA	45.76	2.72
	01/19/95	4	48.48	6.48	70.28	ND	45.37	3.11	ND	NA	45.37	3.11
	02/07/95	4	48.48	6.48	70.28	ND	45.38	3.10	ND	NA	45.38	3.10
	03/13/95	4	48.48	6.48	70.28	ND	45.40	3.08	ND	NA	45.40	3.08
	04/26/95	4	48.48	6.48	70.28	ND	44.97	3.51	ND	NA	44.97	3.51
	05/26/95	4	48.48	6.48	70.28	ND	44.86	3.62	ND	NA	44.86	3.62
	06/29/95	4	48.48	6.48	70.28	ND	44.62	3.86	ND	NA	44.62	3.86
	07/31/95	4	48.48	6.48	70.28	ND	44.44	4.04	ND	NA	44.44	4.04
	08/22/95	4	48.48	6.48	70.28	ND	44.33	4.15	ND	NA	44.33	4.15
	09/06/95	4	48.48	6.48	70.28	ND	44.34	4.14	ND	NA	44.34	4.14
	01/03/96	4	48.48	6.48	70.28	ND	44.23	4.25	ND	NA	44.23	4.25
	02/26/96	4	48.48	6.48	70.28	ND	44.02	4.46	ND	NA	44.02	4.46
	03/27/96	4	48.48	6.48	70.28	ND	43.95	4.53	ND	NA	43.95	4.53
	04/03/96	4	48.48	6.48	70.28	ND	43.99	4.49	ND	NA	43.99	4.49
	04/28/96	4	48.48	6.48	70.28	ND	43.93	4.55	ND	NA	43.99	4.55
	06/17/96	4	48.48	6.48	70.28	ND	44.03	4.45	ND	NA	44.03	4.45

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(e)	Top of Screen Elevation	Total Well Depth ^(e)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(e)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
MW-3	07/10/96	4	48.48	6.48	70.28	ND	44.09	4.39	ND	NA	44.09	4.39
	08/20/96	4	48.48	6.48	70.28	ND	44.06	4.42	ND	NA	44.06	4.42
	09/11/96	4	48.48	6.48	70.28	ND	44.09	4.39	ND	NA	44.09	4.39
	10/16/96	4	48.48	6.48	70.28	ND	44.18	4.30	ND	NA	44.18	4.30
	11/23/96	4	48.48	6.48	70.28	ND	44.29	4.19	ND	NA	44.29	4.19
	01/20/97	4	48.48	6.48	70.28	ND	44.08	4.40	ND	NA	44.08	4.40
	02/19/97	4	48.48	6.48	70.28	ND	43.99	4.49	ND	NA	43.99	4.49
	03/12/97	4	48.48	6.48	70.28	ND	43.88	4.60	ND	NA	43.88	4.60
	03/01/98	4	48.48	6.48	70.28	ND	43.73	4.75	ND	NA	43.73	4.75
	06/29/99	4	ND	6.48	70.28	ND	43.89	4.59	ND	NA	43.89	4.59
	06/06/02	4	50.65	6.48	70.28	ND	46.17	4.48	ND	NA	46.17	4.48
	09/05/02	4	50.65	6.48	70.28	ND	46.60	4.05	ND	NA	46.60	4.05
	12/04/02	4	50.65	6.48	70.28	ND	46.75	3.90	ND	NA	46.75	3.90
	03/05/03	4	50.65	6.48	70.28	ND	46.52	4.13	ND	NA	46.52	4.13
	06/04/03	4	50.65	6.48	70.28	ND	46.22	4.43	ND	NA	46.22	4.43
MW-7	09/04/03	4	50.65	6.48	70.28	ND	43.50	4.43	ND	NA	43.50	4.43
	12/09/03	4	50.65	6.48	70.28	ND	46.60	4.05	ND	NA	46.60	4.05
	03/09/04	4	50.65	6.48	70.28	ND	46.05	4.60	ND	NA	46.05	4.60
	06/03/04	4	50.65	6.48	70.28	ND	45.70	4.95	ND	NA	45.70	4.95
	09/15/04	4	50.65	6.48	70.28	ND	45.48	5.17	ND	NA	45.48	5.17
	12/09/04	4	50.65	6.48	70.28	ND	45.45	5.20	ND	NA	45.45	5.20
	07/19/94	4	21.14	4.14	50	ND	20.07	1.07	ND	NA	20.07	1.07
	08/15/94	4	21.14	4.14	50	ND	19.99	1.15	ND	NA	19.99	1.15
	09/14/94	4	21.14	4.14	50	ND	20.02	1.14	ND	NA	20.02	1.14
	10/20/94	4	21.14	4.14	50	ND	20.12	1.02	ND	NA	20.12	1.02
	11/17/94	4	21.14	4.14	50	ND	20.05	1.09	ND	NA	20.05	1.09
	12/14/94	4	21.14	4.14	50	ND	20.06	1.08	ND	NA	20.06	1.08
	01/19/95	4	21.14	4.14	52.66	ND	19.58	1.56	ND	NA	19.58	1.56
	02/07/95	4	21.14	4.14	52.66	ND	19.36	1.78	ND	NA	19.36	1.78
	03/13/95	4	21.14	4.14	52.66	ND	19.24	1.90	ND	NA	19.24	1.90
	04/26/95	4	21.14	4.14	52.55	ND	18.73	2.41	ND	NA	18.73	2.41
	05/26/95	4	21.14	4.14	52.55	ND	18.67	2.47	ND	NA	18.67	2.47
	06/29/95	4	21.14	4.14	52.55	ND	18.58	2.56	ND	NA	18.58	2.56
	07/31/95	4	21.14	4.14	52.55	ND	18.55	2.59	ND	NA	18.55	2.59
	08/22/95	4	21.14	4.14	52.55	ND	18.54	2.60	ND	NA	18.54	2.60
	09/06/95	4	21.14	4.14	52.55	ND	18.60	2.54	ND	NA	18.60	2.54
	01/03/96	4	21.14	4.14	52.55	ND	18.70	2.44	ND	NA	18.70	2.44
	02/26/96	4	21.14	4.14	52.55	ND	18.39	2.75	ND	NA	18.39	2.75

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(a)	Top of Screen Elevation	Total Well Depth ^(a)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(a)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
MW-7	03/27/96	4	21.14	4.14	52.55	ND	18.19	2.91	ND	NA	18.19	2.91
	04/03/96	4	21.14	4.14	52.55	ND	18.22	2.92	ND	NA	18.22	2.92
	04/28/96	4	21.14	4.14	52.55	ND	18.17	2.97	ND	NA	18.17	2.97
	06/17/96	4	21.14	4.14	52.55	ND	18.28	2.86	ND	NA	18.28	2.86
	07/10/96	4	21.14	4.14	52.55	ND	18.34	2.80	ND	NA	18.34	2.80
	08/20/96	4	21.14	4.14	52.55	ND	18.34	2.80	ND	NA	18.34	2.80
	09/11/96	4	21.14	4.14	52.55	ND	18.35	2.79	ND	NA	18.35	2.79
	10/16/96	4	21.14	4.14	52.55	ND	18.45	2.69	ND	NA	18.45	2.69
	11/23/96	4	21.14	4.14	52.55	ND	18.43	2.71	ND	NA	18.43	2.71
	01/20/97	4	21.14	4.14	52.55	ND	17.99	3.15	ND	NA	17.99	3.15
	02/19/97	4	21.14	4.14	52.55	ND	17.78	3.36	ND	NA	17.78	3.36
MW-8	03/12/97	4	21.14	4.14	52.55	ND	17.64	3.50	ND	NA	17.64	3.50
	03/01/98	4	21.14	4.14	52.55	ND	16.73	4.41	ND	NA	16.73	4.41
	07/19/94	4	27.54	5.7	45.54	ND	26.66	0.88	ND	NA	26.66	0.88
	08/15/94	4	27.54	5.7	45.54	ND	26.58	0.96	ND	NA	26.58	0.96
	09/14/94	4	27.54	5.7	45.54	ND	26.61	0.93	ND	NA	26.61	0.93
	10/20/94	4	27.54	5.7	45.54	ND	26.70	0.84	ND	NA	26.70	0.84
	11/17/94	4	27.54	5.7	45.54	ND	26.61	0.93	ND	NA	26.61	0.93
	12/14/94	4	27.54	5.7	45.54	ND	26.65	0.86	ND	NA	26.65	0.86
	01/19/95	4	27.54	5.7	45.54	ND	26.17	1.37	ND	NA	26.17	1.37
	02/07/95	4	27.54	5.7	45.54	ND	26.65	0.86	ND	NA	26.65	0.86
	03/13/95	4	27.54	5.7	45.54	ND	25.93	1.61	ND	NA	25.93	1.61
	04/26/95	4	27.54	5.7	45.54	ND	25.45	2.09	ND	NA	25.45	2.09
	05/26/95	4	27.54	5.7	45.54	ND	25.40	2.14	ND	NA	25.40	2.14
	06/29/95	4	27.54	5.7	45.54	ND	25.26	2.28	ND	NA	25.26	2.28
	07/31/95	4	27.54	5.7	45.54	ND	25.21	2.31	ND	NA	25.21	2.31
	08/22/95	4	27.54	5.7	45.54	ND	25.16	2.38	ND	NA	25.16	2.38
	09/06/95	4	27.54	5.7	45.54	ND	25.23	2.31	ND	NA	25.23	2.31
	01/03/96	4	27.54	5.7	45.54	ND	25.27	2.27	ND	NA	25.27	2.27
	02/26/96	4	27.54	5.7	45.54	ND	25.03	2.51	ND	NA	25.03	2.51
	03/27/96	4	27.54	5.7	45.54	ND	24.85	2.69	ND	NA	24.85	2.69
	04/03/96	4	27.54	5.7	45.54	ND	24.86	2.68	ND	NA	24.86	2.68
	04/28/96	4	27.54	5.7	45.54	ND	24.78	2.76	ND	NA	24.78	2.76
	06/17/96	4	27.54	5.7	45.54	ND	24.90	2.64	ND	NA	24.90	2.64
	07/10/96	4	27.54	5.7	45.54	ND	24.95	2.59	ND	NA	24.95	2.59
	08/20/96	4	27.54	5.7	45.54	ND	24.95	2.59	ND	NA	24.95	2.59
	09/11/96	4	27.54	5.7	45.54	ND	24.97	2.57	ND	NA	24.97	2.57

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(e)	Top of Screen Elevation	Total Well Depth ^(e)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(e)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
MW-8	10/16/96	4	27.54	5.7	45.54	ND	25.09	2.45	ND	NA	25.09	2.45
	11/23/96	4	27.54	5.7	45.54	ND	25.10	2.44	ND	NA	25.10	2.44
	01/20/97	4	27.54	5.7	45.54	ND	24.72	2.88	ND	NA	24.72	2.88
	02/19/97	4	27.54	5.7	45.54	ND	24.51	3.03	ND	NA	24.51	3.03
	03/12/97	4	27.54	5.7	45.54	ND	24.39	3.15	ND	NA	24.39	3.15
	03/01/98	4	27.54	5.7	45.54	ND	23.77	3.77	ND	NA	23.77	3.77
	06/29/99	4	27.54	5.7	45.54	ND	24.30	3.24	ND	NA	24.30	3.24
	06/06/02	4	27.66	5.7	45.54	ND	26.10	1.56	ND	NA	26.10	1.56
	09/05/02	4	27.66	5.7	45.54	ND	25.46	2.20	ND	NA	25.46	2.20
	12/04/02	4	27.66	5.7	45.54	ND	25.73	1.93	ND	NA	25.73	1.93
	03/05/03	4	27.66	5.7	45.54	ND	25.30	2.36	ND	NA	25.30	2.36
	06/04/03	4	27.66	5.7	45.54	ND	24.96	2.70	ND	NA	24.96	2.70
	12/09/03	4	27.66	5.7	45.54	ND	23.30	4.36	ND	NA	23.30	4.36
	03/09/04	4	27.66	5.7	45.54	ND	23.11	4.55	ND	NA	23.11	4.55
	06/03/04	4	27.66	5.7	45.54	ND	23.30	4.36	ND	NA	23.30	4.36
	12/09/04	4	27.66	5.7	45.54	ND	23.37	4.29	ND	NA	23.37	4.29
MW-9	07/19/94	4	36.73	-12.27	49	NA	NA	NA	NA	NA	NA	NA
	08/15/94	4	36.73	-12.27	49	35.44	35.61	1.12	0.17	0.791	35.48	1.25
	09/14/94	4	36.73	-12.27	49	NA	NA	NA	NA	NA	NA	NA
	10/20/94	4	36.73	-12.27	49	35.58	35.89	0.84	0.31	0.791	35.64	1.09
	11/17/94	4	36.73	-12.27	49	35.49	35.74	0.99	0.25	0.791	35.54	1.19
	12/14/94	4	36.73	-12.27	49	35.53	35.88	0.85	0.35	0.791	35.60	1.13
	01/19/95	4	36.73	-12.27	49	35.10	35.33	1.40	0.23	0.791	35.15	1.58
	02/07/95	4	36.73	-12.27	49	35.06	35.28	1.45	0.22	0.791	35.11	1.62
	03/13/95	4	36.73	-12.27	49	34.96	35.14	1.59	0.18	0.791	35.00	1.73
	04/26/95	4	36.73	-12.27	49	34.45	34.65	2.08	0.20	0.791	34.49	2.24
	05/26/95	4	36.73	-12.27	49	34.39	34.54	2.19	0.15	0.791	34.42	2.31
	06/29/95	4	36.73	-12.27	49	34.22	34.29	2.44	0.07	0.791	34.23	2.50
	07/31/95	4	36.73	-12.27	49	34.15	32.23	2.50	0.08	0.791	34.16	2.57
	08/22/95	4	36.73	-12.27	49	34.09	34.18	2.55	0.09	0.791	34.10	2.63
	09/06/95	4	36.73	-12.27	49	NA	34.16	2.57	NA	0.791	34.16	2.57
	01/03/96	4	36.73	-12.27	49	34.22	34.41	2.32	0.19	0.791	34.25	2.48
	02/26/96	4	36.73	-12.27	49	NA	34.02	2.71	NA	NA	34.02	2.71
	03/27/96	4	36.73	-12.27	49	33.55	33.98	2.75	0.10	0.791	33.90	2.83
	04/03/96	4	36.73	-12.27	49	33.90	34.01	2.72	0.11	0.791	33.92	2.81
	04/28/96	4	36.73	-12.27	49	33.80	33.86	2.87	0.06	0.791	33.81	2.92
	06/17/96	4	36.73	-12.27	49	33.90	34.04	2.69	0.14	0.791	33.92	2.81

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(e)	Top of Screen Elevation	Total Well Depth ^(e)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(e)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
MW-9	07/10/96	4	36.73	-12.27	49	33.93	34.08	2.65	0.15	0.791	33.96	2.77
	08/20/96	4	36.73	-12.27	49	33.91	34.02	2.71	0.11	0.791	33.93	2.80
	09/11/96	4	36.73	-12.27	49	33.91	34.01	2.72	0.10	0.791	33.93	2.80
	10/16/96	4	36.73	-12.27	49	34.05	34.18	2.55	0.16	0.791	34.07	2.66
	11/23/96	4	36.73	-12.27	49	34.05	34.12	2.61	0.16	0.791	34.12	2.61
	01/20/97	4	36.73	-12.27	49	33.83	2.90	2.61	0.16	0.791	33.83	2.90
	02/19/97	4	36.73	-12.27	49	33.66	3.07	2.61	0.16	0.791	33.66	3.07
	03/12/97	4	36.73	-12.27	49	33.53	3.20	2.61	0.16	0.791	33.53	3.20
	03/01/98	4	36.73	-12.27	49	Sheen	32.99	3.74	<0.01	0.791	32.99	3.74
	06/29/99	4	36.73	-12.27	49	Sheen	33.38	3.35	<0.01	0.791	33.38	3.35
	06/06/02	4	36.85	-12.27	49	Sheen	33.10	3.75	ND	NA	33.10	3.75
	09/05/02	4	36.85	-12.27	49	Sheen	34.51	2.34	ND	NA	34.51	2.34
	12/04/02	4	36.86	-12.27	49	Sheen	34.65	2.20	ND	NA	34.65	2.20
	03/-5/03	4	36.86	-12.27	49	Sheen	34.32	2.53	ND	NA	34.32	2.53
	06/04/03	4	36.85	-12.27	49	Sheen	33.90	2.95	ND	NA	33.90	2.95
	09/04/03	4	36.85	-12.27	49	Sheen	33.85	2.90	ND	NA	33.85	2.90
	12/09/03	4	36.85	-12.27	49	ND	33.90	2.95	ND	NA	33.90	2.95
	03/09/04	4	36.85	-12.27	49	ND	34.20	2.65	ND	NA	34.20	2.65
	06/03/04	4	36.85	-12.27	49	ND	33.90	2.95	ND	NA	33.90	2.95
	09/15/04	4	36.85	-12.27	49	ND	34.00	2.85	ND	NA	34.00	2.85
	12/09/04	4	36.85	-12.27	49	ND	33.98	2.87	ND	NA	33.98	2.87
MW-10	07/19/94	4	31.39	5.39	46	ND	30.25	1.14	ND	NA	30.25	1.14
	08/15/94	4	31.39	5.39	46	ND	30.18	1.21	ND	NA	30.18	1.21
	09/14/94	4	31.39	5.39	46	ND	30.22	1.17	ND	NA	30.22	1.17
	10/20/94	4	31.39	5.39	46	ND	30.29	1.10	ND	NA	30.29	1.10
	11/17/94	4	31.39	5.39	46	ND	30.23	1.16	ND	NA	30.23	1.16
	12/14/94	4	31.39	5.39	46	ND	30.23	1.16	ND	NA	30.23	1.16
	01/19/95	4	31.39	5.39	46.75	ND	29.81	1.58	ND	NA	29.81	1.58
	02/07/95	4	31.39	5.39	46.75	ND	29.68	1.71	ND	NA	29.68	1.71
	03/13/95	4	31.39	5.39	46.75	ND	29.52	1.87	ND	NA	29.52	1.87
	04/26/95	4	31.39	5.39	46.75	ND	29.04	2.35	ND	NA	29.04	2.35
	05/26/95	4	31.39	5.39	46.75	ND	28.95	2.44	ND	NA	28.95	2.44
	06/29/95	4	31.39	5.39	46.75	ND	28.79	2.60	ND	NA	28.79	2.60
	07/31/95	4	31.39	5.39	46.75	ND	28.76	2.63	ND	NA	28.76	2.63
	08/22/95	4	31.39	5.39	46.75	ND	28.70	2.69	ND	NA	28.70	2.69
	09/06/95	4	31.39	5.39	46.75	ND	28.76	2.63	ND	NA	28.76	2.63
	01/03/96	4	31.39	5.39	46.75	ND	28.81	2.58	ND	NA	28.81	2.58

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(a)	Top of Screen Elevation	Total Well Depth ^(a)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(a)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
MW-10	02/26/96	4	31.39	5.39	46.75	ND	28.59	2.80	ND	NA	28.59	2.80
	03/27/96	4	31.39	5.39	46.75	ND	28.45	2.94	ND	NA	28.45	2.94
	04/03/96	4	31.39	5.39	46.75	ND	28.49	2.90	ND	NA	28.49	2.90
	04/28/96	4	31.39	5.39	46.75	ND	28.19	3.20	ND	NA	28.19	3.20
	06/17/96	4	31.39	5.39	46.75	ND	28.34	2.05	ND	NA	28.34	2.05
	07/10/96	4	31.39	5.39	46.75	ND	28.45	2.94	ND	NA	28.45	2.94
	08/20/96	4	31.39	5.39	46.75	ND	28.50	2.89	ND	NA	28.50	2.89
	09/11/96	4	31.39	5.39	46.75	ND	28.52	2.87	ND	NA	28.52	2.87
	10/16/96	4	31.39	5.39	46.75	ND	28.64	2.75	ND	NA	28.64	2.75
	11/23/96	4	31.39	5.39	46.75	ND	28.61	2.78	ND	NA	28.61	2.78
	01/20/97	4	31.39	5.39	46.75	ND	28.27	3.12	ND	NA	28.27	3.12
	02/19/97	4	31.39	5.39	46.75	ND	28.10	3.29	ND	NA	28.10	3.29
	03/12/97	4	31.39	5.39	46.75	ND	27.94	3.45	ND	NA	27.94	3.45
	03/01/98	4	31.39	5.39	46.75	ND	27.54	3.85	ND	NA	27.54	3.85
	06/29/99	4	31.39	5.39	46.75	ND	27.69	3.70	ND	NA	27.69	3.70
	06/06/02	4	31.57	5.39	46.75	ND	28.95	2.62	ND	NA	28.95	2.62
	09/05/02	4	31.57	5.39	46.75	ND	29.21	2.36	ND	NA	29.21	2.36
	12/04/02	4	31.57	5.39	46.75	ND	29.30	2.27	ND	NA	29.30	2.27
	03/05/03	4	31.57	5.39	46.75	ND	29.00	2.57	ND	NA	29.00	2.57
	06/04/03	4	31.57	5.39	46.75	ND	28.50	3.07	ND	NA	28.50	3.07
R-4	09/04/03	4	31.57	5.39	46.75	ND	28.40	3.17	ND	NA	28.40	3.17
	12/09/03	4	31.57	5.39	46.75	ND	28.60	2.97	ND	NA	28.60	2.97
	03/09/04	4	31.57	5.39	46.75	ND	28.48	3.09	ND	NA	28.48	3.09
	06/03/04	4	31.57	5.39	46.75	ND	28.92	2.65	ND	NA	28.92	2.65
	09/15/04	4	31.57	5.39	46.75	ND	28.78	2.79	ND	NA	28.78	2.79
	12/09/04	4	31.57	5.39	46.75	ND	28.72	2.85	ND	NA	28.72	2.85
	01/19/95	4	36.53	6.53	61.97	ND	35.32	1.21	ND	NA	35.32	1.21
	02/07/95	4	36.53	6.53	61.97	ND	35.27	1.26	ND	NA	35.27	1.26
	03/13/95	4	36.53	6.53	61.97	ND	35.16	1.37	ND	NA	35.16	1.37
	04/26/95	4	36.53	6.53	61.97	ND	34.70	1.83	ND	NA	34.70	1.83
R-4	05/26/95	4	36.53	6.53	61.97	ND	34.60	1.93	ND	NA	34.60	1.93
	06/29/95	4	36.53	6.53	61.97	ND	34.41	2.12	ND	NA	34.41	2.12
	07/31/95	4	36.53	6.53	61.97	ND	34.34	2.19	ND	NA	34.34	2.19
	08/22/95	4	36.53	6.53	61.97	ND	34.30	2.23	ND	NA	34.30	2.23
	09/06/95	4	36.53	6.53	61.97	ND	34.37	2.16	ND	NA	34.37	2.16
	01/03/96	4	36.53	6.53	61.97	ND	34.44	2.09	ND	NA	34.44	2.09
	02/26/96	4	36.53	6.53	61.97	ND	34.22	2.31	ND	NA	34.22	2.31
	03/27/96	4	36.53	6.53	61.97	ND	34.06	2.47	ND	NA	34.06	2.47

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(a)	Top of Screen Elevation	Total Well Depth ^(a)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(a)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
R-4	04/03/96	4	36.53	6.53	61.97	ND	34.09	2.44	ND	NA	34.09	2.44
	04/28/96	4	36.53	6.53	61.97	33.98	33.99	2.54	0.01	0.791	33.98	2.54
	06/17/96	4	36.53	6.53	61.97	ND	34.09	2.44	ND	0.791	34.09	2.44
	07/10/96	4	36.53	6.53	61.97	34.13	34.15	2.38	0.02	0.791	34.13	2.40
	08/20/96	4	36.53	6.53	61.97	34.10	34.12	2.41	0.02	0.791	34.10	2.43
	09/11/96	4	36.53	6.53	61.97	34.11	34.13	2.40	0.02	0.791	34.11	2.42
	10/16/96	4	36.53	6.53	61.96	34.25	34.26	2.27	0.01	0.791	34.25	2.28
	11/23/96	4	36.53	6.53	61.96	ND	34.29	2.24	ND	0.791	34.29	2.24
	01/20/97	4	36.53	6.53	61.96	ND	34.00	2.53	ND	0.791	34.00	2.53
	02/19/97	4	36.53	6.53	61.96	ND	33.82	2.71	ND	0.791	33.82	2.71
	03/12/97	4	36.53	6.53	61.96	ND	33.70	2.83	ND	0.791	33.70	2.83
	03/01/98	4	36.53	6.53	61.96	NA	NA	NA	NA	0.791	NA	NA
	06/29/99	4	ND	6.53	61.96	ND	32.53	3.55	4.49	0.791	ND	ND
	06/06/02	4	36.12	6.53	61.96	ND	33.90	2.20	2.25	0.791	32.12	4.00
R-5	09/05/02	4	36.12	6.53	61.96	ND	33.65	2.47	2.45	0.791	33.71	2.41
	12/04/02	4	36.12	6.53	61.96	ND	36.10	2.12	2.65	0.791	34.73	2.12
	01/19/95	4	30.78	0.78	61.70	29.62	29.82	0.96	0.20	0.8208	29.66	1.12
	02/07/95	4	30.78	0.78	61.70	29.46	29.71	1.07	0.25	0.8208	29.50	1.28
	03/13/95	4	30.78	0.78	61.70	29.36	29.52	1.26	0.16	0.8208	29.39	1.39
	04/26/95	4	30.78	0.78	61.70	28.83	29.08	1.70	0.25	0.8208	28.87	1.91
	05/26/95	4	30.78	0.78	61.70	28.81	29.00	11.78	0.19	0.8208	28.84	1.94
	06/29/95	4	30.78	0.78	61.70	28.76	28.84	1.94	0.08	0.8208	28.77	2.01
	07/31/95	4	30.78	0.78	61.70	ND	28.69	2.09	NA	0.8208	28.69	2.09
	08/22/95	4	30.78	0.78	61.70	28.66	28.77	2.01	0.11	0.8208	28.68	2.10
	09/06/95	4	30.78	0.78	61.70	ND	28.72	2.06	NA	0.8208	28.72	2.06
	01/03/96	4	30.78	0.78	61.70	28.76	28.79	1.99	0.03	0.8208	28.76	2.02
	02/26/96	4	30.78	0.78	61.70	ND	28.53	2.25	NA	0.8208	28.53	2.25
	03/27/96	4	30.78	0.78	61.70	ND	28.33	2.45	NA	0.8208	28.33	2.45
	04/03/96	4	30.78	0.78	61.70	28.38	28.48	2.48	0.02	0.8208	28.38	2.40
	04/28/96	4	30.78	0.78	61.70	28.29	28.34	2.44	0.05	0.8208	28.36	2.42
	06/17/96	4	30.78	0.78	61.70	ND	28.40	2.38	ND	0.8208	28.40	2.38
	07/10/96	4	30.78	0.78	61.70	28.44	28.50	2.28	0.06	0.8208	28.45	2.33
	08/20/96	4	30.78	0.78	61.70	28.43	28.43	2.35	ND	0.8208	28.43	2.35
	09/11/96	4	30.78	0.78	61.70	28.45	28.52	2.26	0.07	0.8208	28.46	2.32

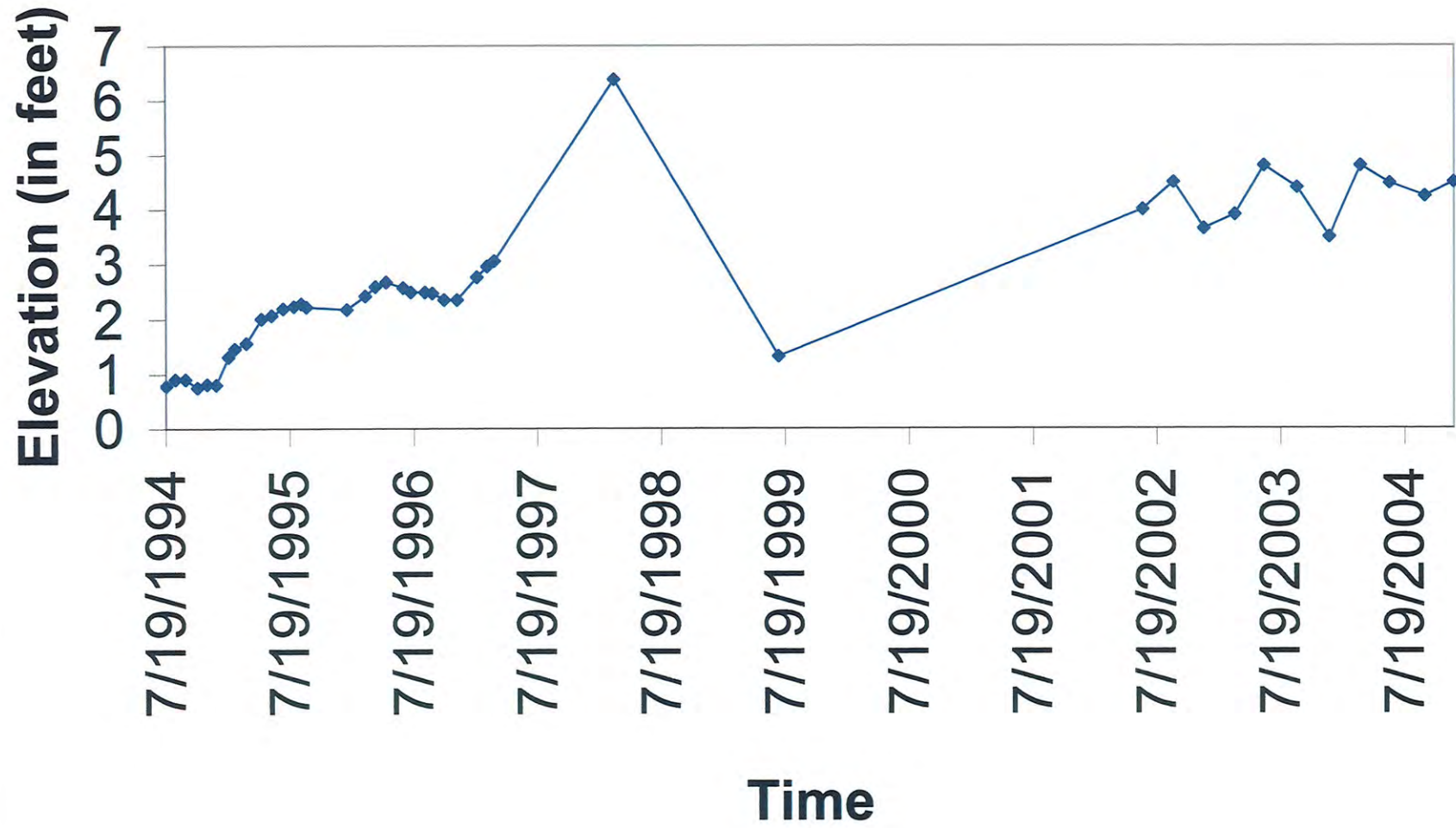
Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(a)	Top of Screen Elevation	Total Well Depth ^(a)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(a)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
R-5	10/16/96	4	30.78	0.78	61.70	28.58	28.63	2.15	0.05	0.8208	28.59	2.19
	11/23/96	4	30.78	0.78	61.70	28.59	28.67	2.11	0.08	0.8208	28.60	2.18
	01/20/97	4	30.78	0.78	61.70	28.20	28.27	2.51	0.07	0.8208	28.21	2.57
	02/19/97	4	30.78	0.78	61.70	27.96	28.03	2.75	0.07	0.8208	27.97	2.81
	03/12/97	4	30.78	0.78	61.70	27.88	27.93	2.85	0.05	0.8208	27.89	2.89
	03/01/98	4	30.78	0.78	61.70	NA	NA	NA	NA	0.8208	NA	NA
	06/29/99	4	ND	ND	61.70	ND	29.47	ND	NA	0.8208	NA	NA
	06/06/02	4	28.14	ND	61.70	ND	ND	ND	ND	ND	ND	ND
	09/05/02	4	28.14	ND	61.70	ND	26.80	1.34	ND	NA	NA	1.34
R-6	01/19/95	4	24.26	4.26	52.55	ND	22.20	2.06	ND	NA	22.20	2.06
	02/07/95	4	24.26	4.26	52.55	ND	22.08	2.18	ND	NA	22.08	2.18
	03/13/95	4	24.26	4.26	52.55	ND	21.98	2.28	ND	NA	21.98	2.28
	04/26/95	4	24.26	4.26	52.55	ND	21.73	2.53	ND	NA	21.73	2.53
	05/26/95	4	24.26	4.26	52.55	ND	21.74	2.52	ND	NA	21.74	2.52
	06/29/95	4	24.26	4.26	52.55	ND	21.69	2.57	ND	NA	21.69	2.57
	07/31/95	4	24.26	4.26	52.55	ND	21.69	2.57	ND	NA	21.69	2.57
	08/22/95	4	24.26	4.26	52.55	ND	21.72	2.54	ND	NA	21.72	2.54
	09/06/95	4	24.26	4.26	52.55	ND	21.75	2.51	ND	NA	21.75	2.51
	01/03/96	4	24.26	4.26	52.55	ND	21.71	2.55	ND	NA	21.71	2.55
	02/26/96	4	24.26	4.26	52.55	ND	21.44	2.82	ND	NA	21.44	2.82
	03/27/96	4	24.26	4.26	52.55	ND	21.29	2.97	ND	NA	21.29	2.97
	04/03/96	4	24.26	4.26	52.55	ND	21.31	2.95	ND	NA	21.31	2.95
	04/28/96	4	24.26	4.26	52.55	ND	21.38	2.88	ND	NA	21.38	2.88
	06/17/96	4	24.26	4.26	52.55	ND	21.48	2.78	ND	NA	21.48	2.78
	07/10/96	4	24.26	4.26	52.55	ND	21.53	2.73	ND	NA	21.53	2.73
	08/20/96	4	24.26	4.26	52.55	21.55	21.62	2.64	0.07	NA	NA	NA
	09/11/96	4	24.26	4.26	52.55	21.58	21.64	2.62	0.66	NA	NA	NA
	10/16/96	4	24.26	4.26	52.55	21.66	21.67	2.59	0.01	NA	NA	NA
	11/23/96	4	24.26	4.26	52.55	21.46	21.47	2.79	0.01	NA	21.46	2.80
	01/20/97	4	24.26	4.26	52.55	20.99	21.00	3.26	0.01	NA	20.99	3.27
	02/19/97	4	24.26	4.26	52.55	ND	20.81	3.45	ND	NA	20.81	3.45

Well No.	Julian Date	Well Diameter (inches)	Top of Casing Elevation ^(a)	Top of Screen Elevation	Total Well Depth ^(a)	Depth to LNAPL	Depth to Water	Groundwater Elevation	Apparent LNAPL Thickness ^(a)	Specific Gravity	Corrected Depth to Groundwater	Corrected Groundwater Elevation
	03/12/97	4	24.26	4.26	52.55	20.81	20.83	3.43	0.02	NA	20.82	3.44
	03/01/98	4	24.226	4.26	52.55	NA	NA	NA	NA	NA	NA	NA
	06/29/99	4	ND	4.26	52.55	21.75	22.00	ND	.25	NA	ND	NA

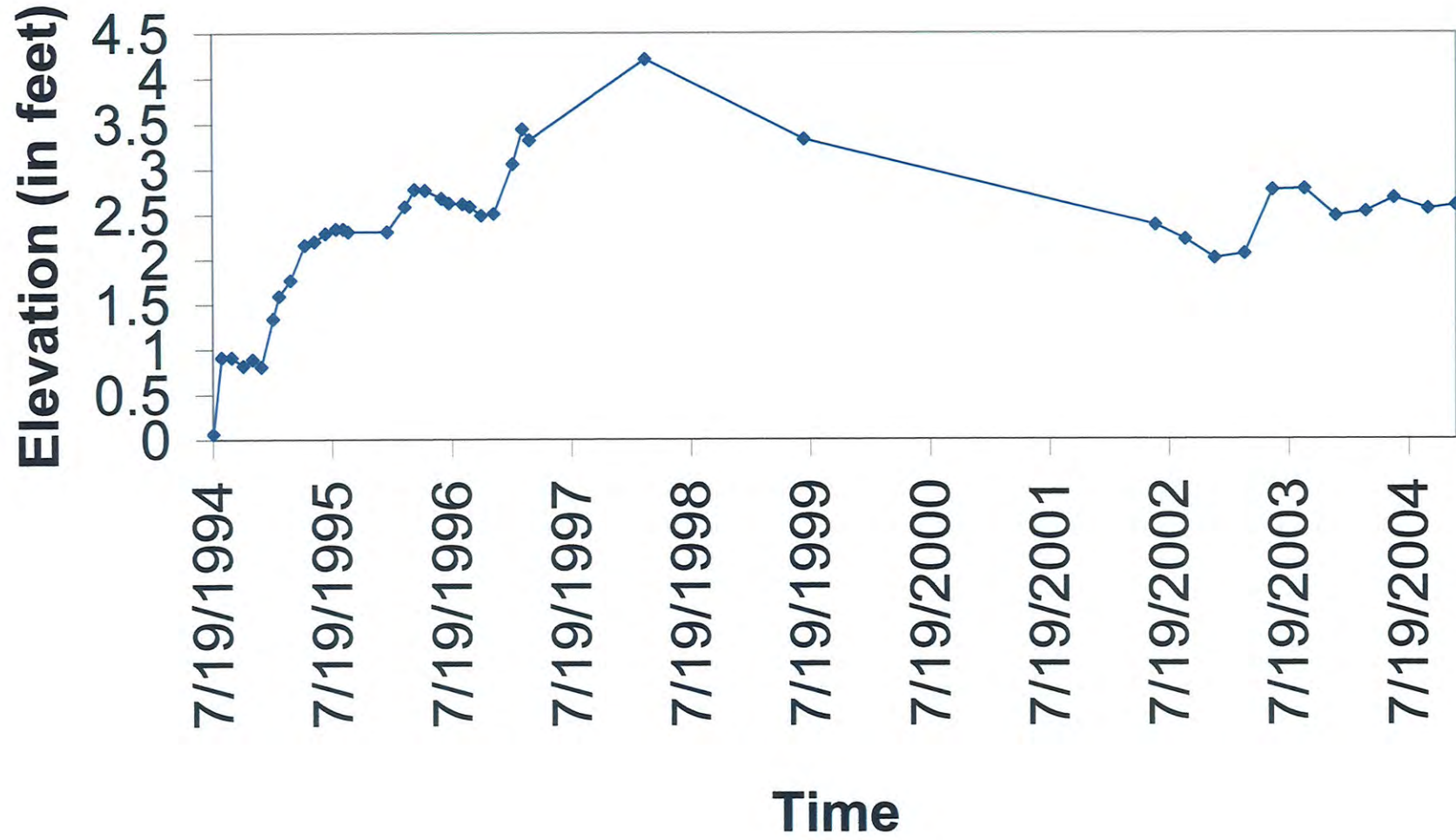
APPENDIX B – PART II

ANNOTATED HYDROGRAPHS

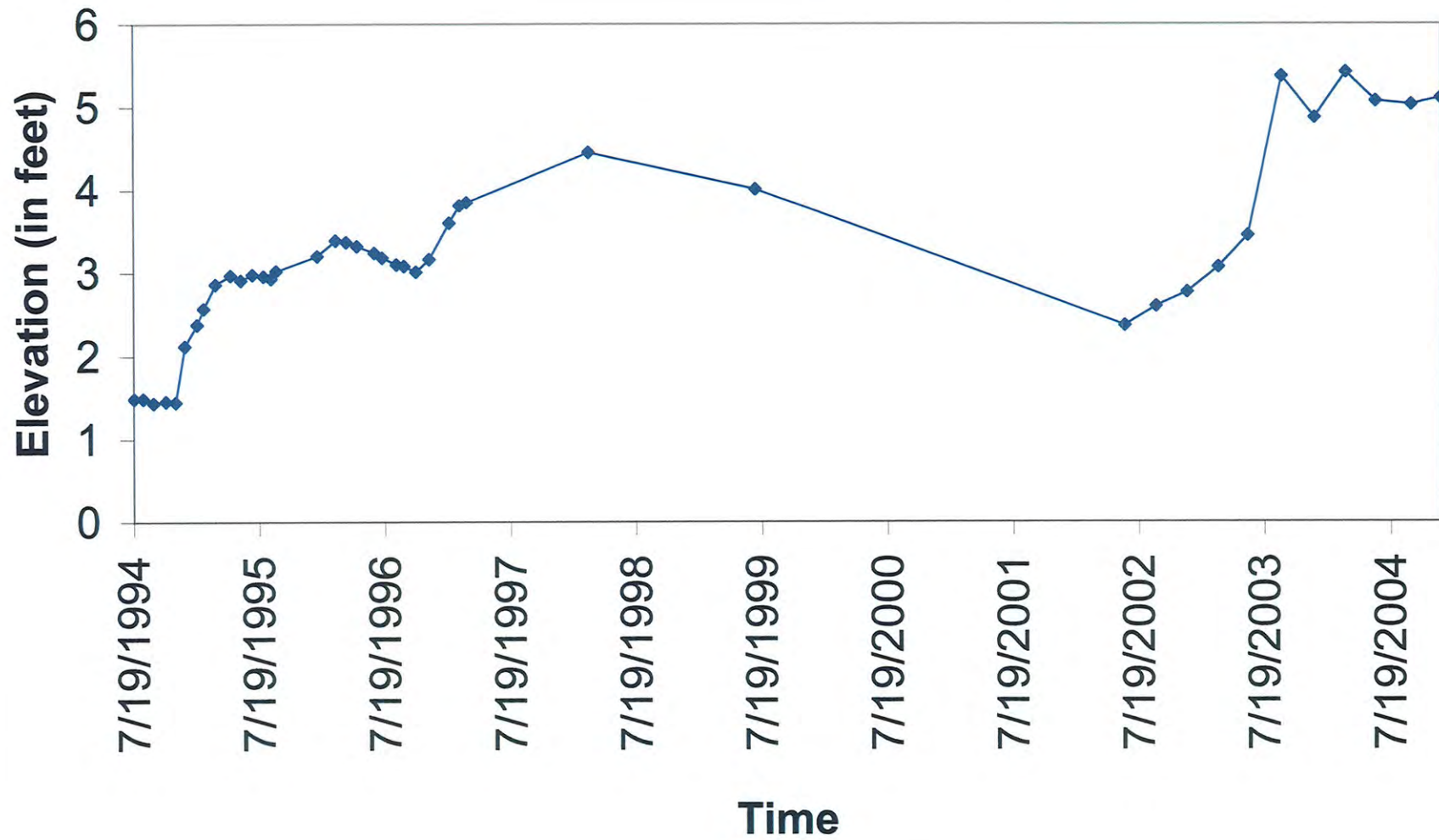
Hydrograph for MW-1



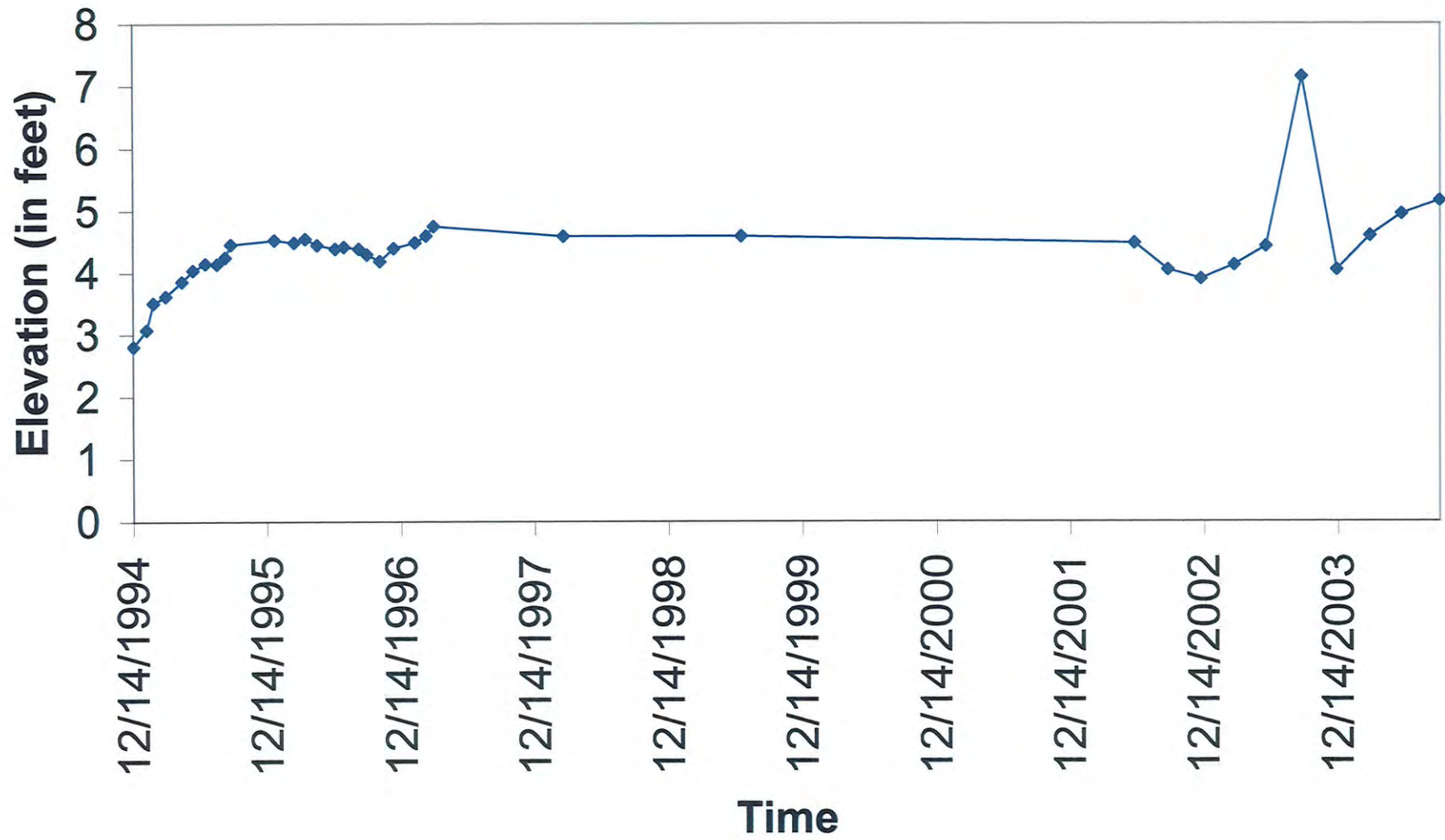
Hydrograph for MW-1A



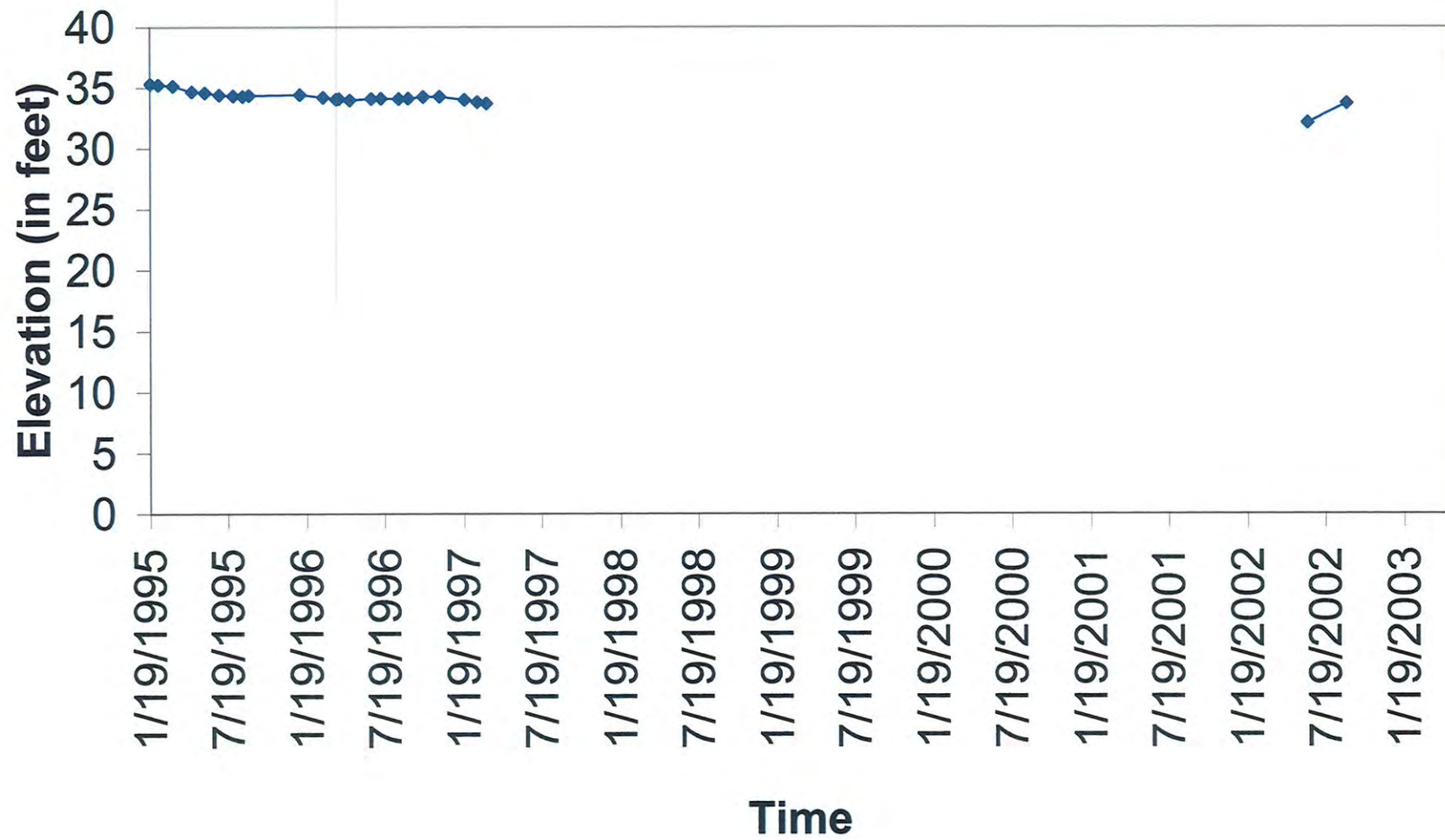
Hydrograph for MW-2



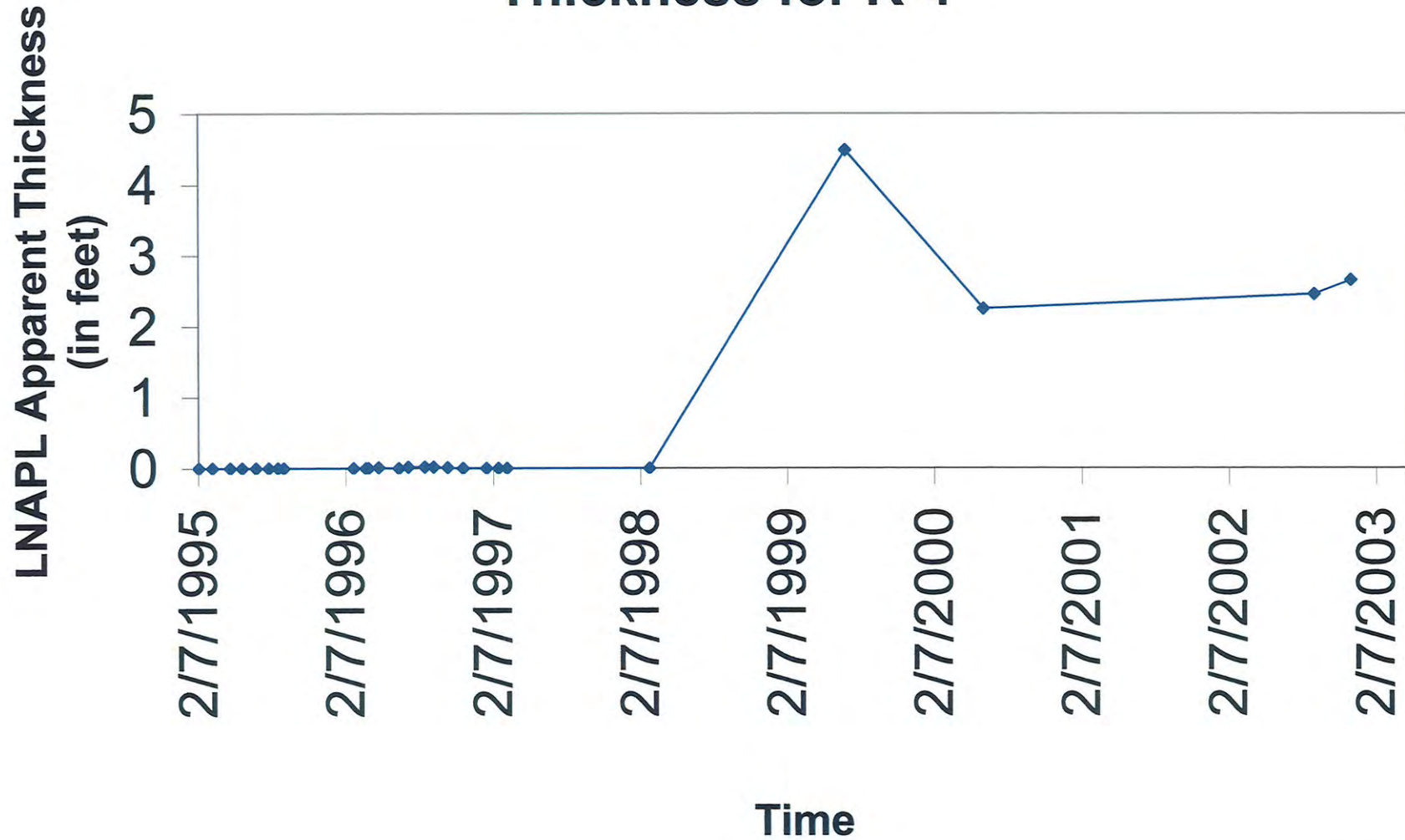
Hydrograph for MW-3



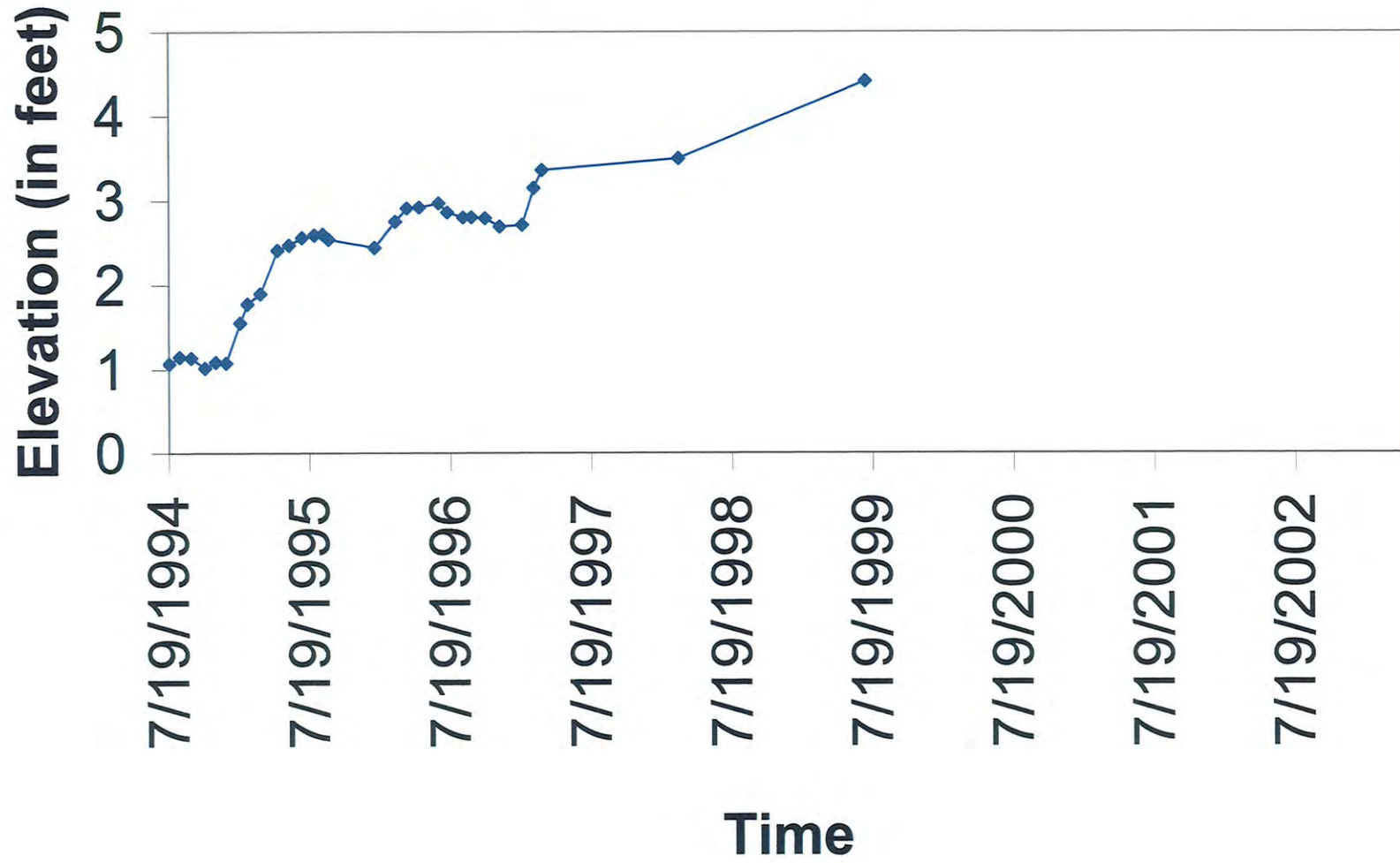
Historic Hydrograph for R-4



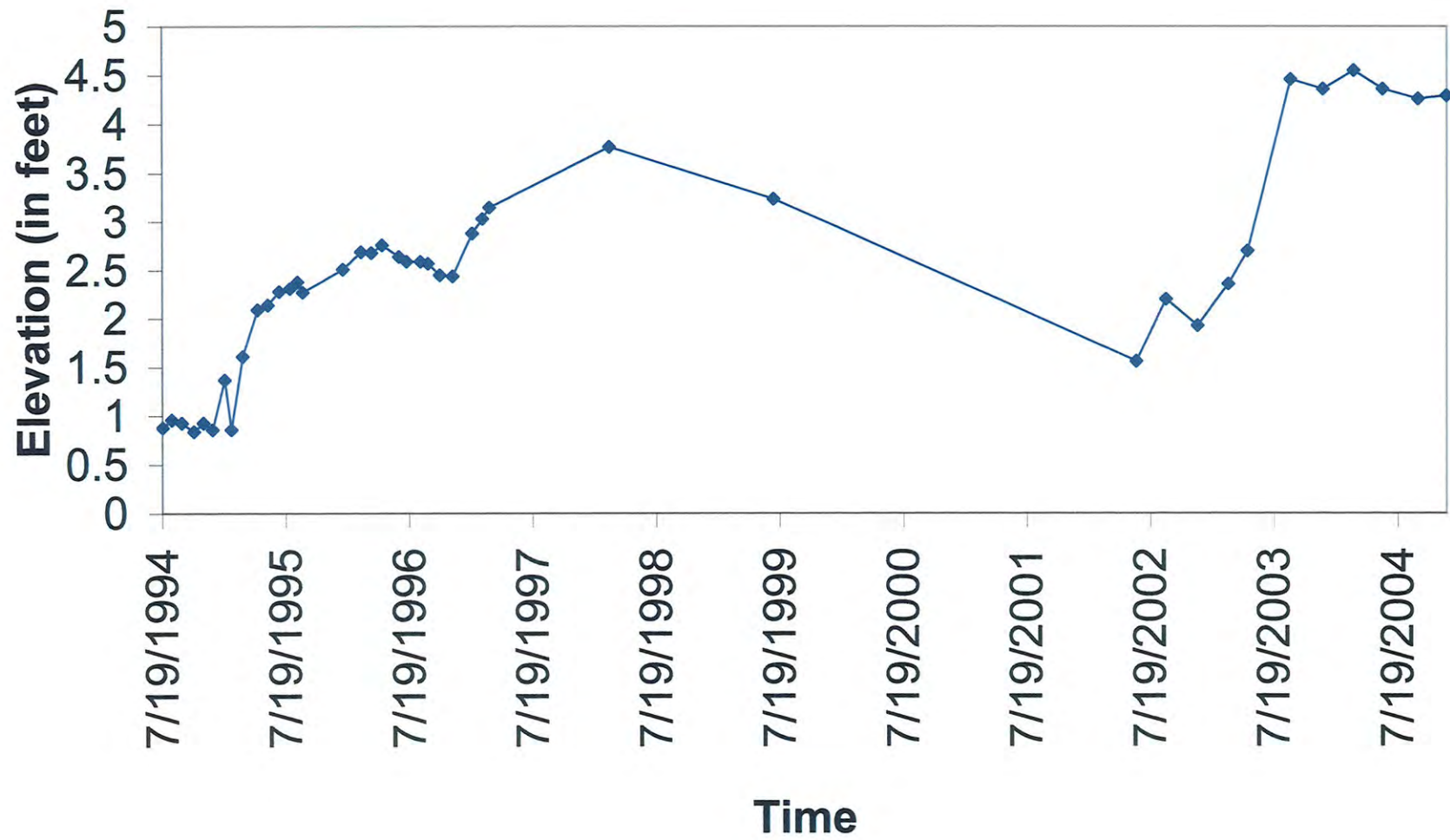
Historic Hydrograph of Apparent LNAPL Thickness for R-4



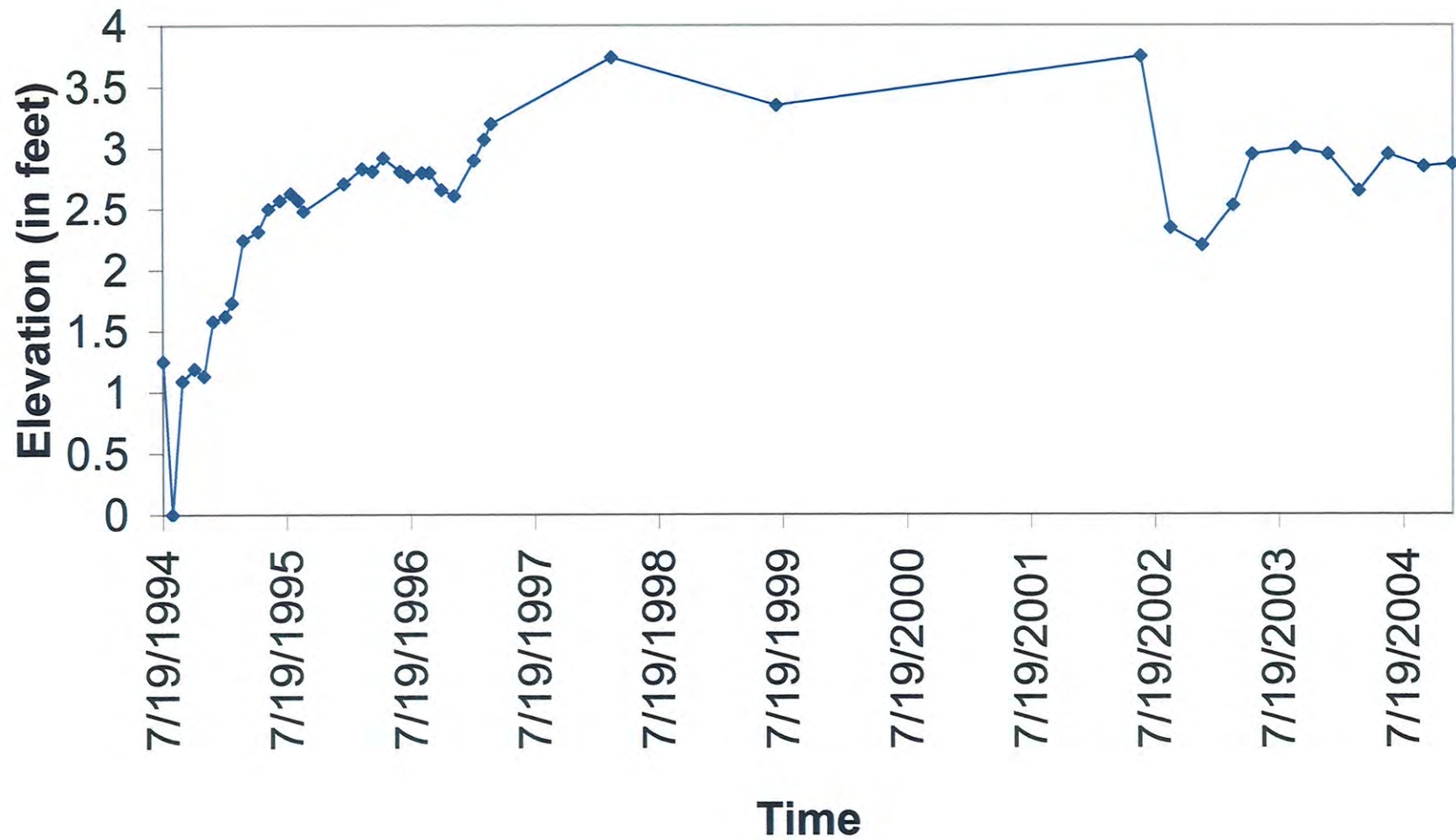
Historic Hydrograph for MW-7



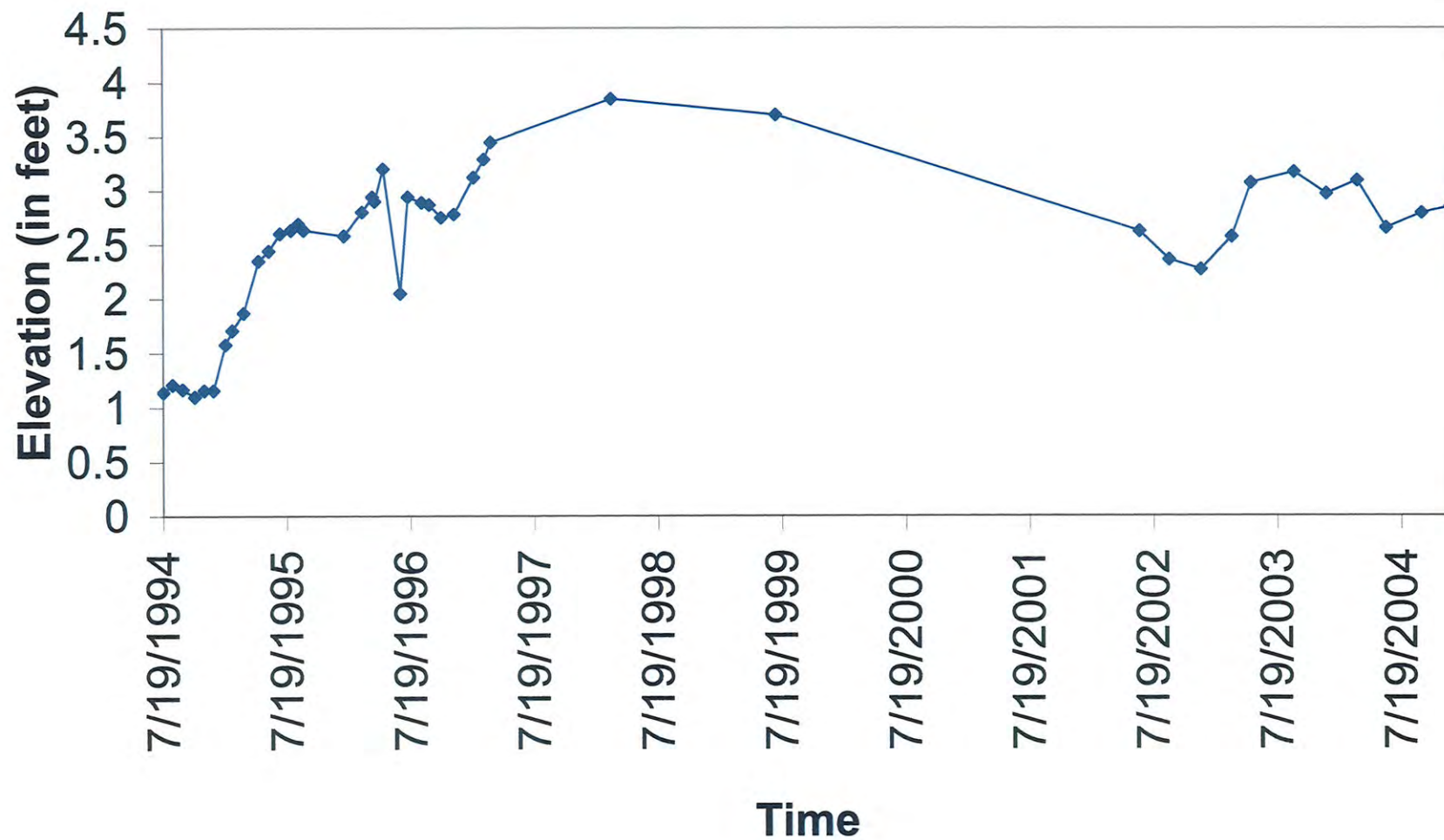
Hydrograph for MW-8



Hydrograph for MW-9



Hydrograph for MW-10



APPENDIX C

GROUNDWATER QUALITY

APPENDIX C – PART I

GROUNDWATER SAMPLING PROTOCOL

APPENDIX C (Part I)

MONITORING WELL SAMPLING PROTOCOL

Presented in this appendix is the methodology employed by TEC personnel and representatives for retrieval of representative groundwater samples for all sampling events at the former Chemoil Refinery summarized below, and assumes sampling from monitoring wells with casing diameters of 4 inches. The sampling procedures followed by TEC are consistent with those recommended within the State of California Water Resources Control Board LUFT Manual (1989), the State Department of Water Resources Bulletin 74-81 (Water Well Standards; 1981), and the EPA Groundwater Handbook, Volume II-Methodology (1991), among others (refer to references contained herein).

1.0 WELL EVACUATION OR PURGING TECHNIQUE

Depth-to-groundwater is measured in each well prior to evacuation using either an electronic water level indicator or interface probe in order to calculate well casing volume. Different purging methods are followed for shallow wells with smaller well volumes which screen essentially unconfined aquifers (e.g., 75-foot well depth or less, or static water column height less than or equal to 40 feet) versus deeper wells or those wells with large casing volumes (e.g., greater than 40-foot height of static water column); such deeper wells frequently screen confined or semi-confined aquifers. These differences in purging methodology reflect both the need to achieve time efficiency and acquire representative samples (e.g., greater than 80 percent aquifer water), as well as the desire to minimize the volume of contaminated groundwater requiring special handling as hazardous waste, per CFR 40 Part 261 and CCR Title 22, Division 4.5 Regulations.

1.1 Well Purging

All wells currently installed at the Chemoil Refinery screen a shallow unconfined aquifer. The well evacuation and sampling technique for the shallow, unconfined-aquifer wells is accomplished with the use of dedicated disposable teflon bailers featuring bottom check balls. During well purging, multiple field measurements of pH, specific conductance, dissolved oxygen, and temperature of the groundwater are taken with a Hydac pH-conductivity meter generally after purging of one well volume. When the readings for each field parameter have stabilized to within one-tenth of a pH unit (but no before a minimum of three casing volumes have been evacuated), groundwater is considered representative of the formation fluid.

A minimum of three well volumes are evacuated for all shallow wells screening unconfined aquifers, given the greater potential for groundwater/atmosphere gas exchange (i.e., particularly CO₂ escape) or recharge of non-representative pore fluids through the vadose zone above unconfined aquifers, versus those deeper, semi-confined or confined aquifers which are not as readily affected directly by atmospheric chemistry. Stabilization of field parameters (pH, conductivity, temperature) generally occurs once three to five well volumes have been purged.

2.0 DECONTAMINATION

Following purging and sampling of deep wells with the submersible pump, the pump and associated discharge lines or hoses are decontaminated, consisting of rinsing with potable water, sodium bicarbonate detergent, and distilled water. Because dedicated teflon bailers are utilized for shallow well purging and sampling, decontamination for these wells is unnecessary, and thus cross-contamination potential is eliminated. Discharge line materials consist of either teflon tubing, wire-mesh-reinforced rubber hose or ½-inch diameter Schedule 40 PVC pipe attached in 10-foot sections by standard threaded PVC couplings. Couplings are glued to the PVC pipe sections using either Oatey or EZ-WELD PVC Primer and Cement, both of which contain the compounds methylethylketone (MEK), tetrahydrofuran, cyclohexanone and acetone. Reinforced hose is preferably utilized as discharge line, where possible, in order to minimize introduction of PVC-cement compounds into the groundwater sample. Should these compounds be present, however,

they are easily discriminated in chromatograph analysis, if pump blanks or discharge-line blanks are collected for comparison.

All purged fluids and submersible pump decontamination rinsate are either removed via vacuum truck or are contained in 55-gallon DOT drums, which are appropriately labeled with contents, date and well number. DOT drums are either subsequently transported to an off-site TSD facility for disposal, or their contents are introduced into an available on-site wastewater treatment system.

3.0 SAMPLE COLLECTION AND STORAGE

After the well is sufficiently evacuated, samples are collected at a low flow rate to minimize volatilization, using the dedicated disposable teflon bailers or submersible pumps. Samples are collected in containers with the appropriate preservative, if required, as provided by the analytical laboratory, in accordance with methods and procedures for wastewater/effluent preservation described in 40 CFR Part 136 (Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, EPA "600 Series"; or in EPA SW-846 "Test Methods for Evaluating Solid Waste", EPA "8,000 Series"). Samples are introduced into their appropriate containers by overfilling to eliminate headspace and trapped air bubbles which might otherwise hasten volatilization of purgeable target compounds.

Each sample container is clearly marked with the well number, project name, date and time of collection, and the laboratory analyses requested. Sample containers are stored at 4°C in coolers with blue ice packs immediately after collection. The samples are stored in this manner until picked up by representatives of the analytical laboratory, or delivered directly to the State DOHS-certified laboratory by TEC personnel. Samples are generally delivered to the laboratory within a 24-hour period following sample collection.

4.0 CHAIN-OF-CUSTODY

A chain-of-custody record is maintained on all samples, either a standard TEC form or a form provided by the analytical laboratory. The laboratory custodian verifies that the sample containers are properly secured and correctly identified upon receipt. The samples are then relinquished by the appropriate TEC representative subsequent to laboratory receipt signature. The laboratory employees enter each container into a log book and assign the work to an analyst.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

For purposes of QA/QC, a minimum of one duplicate sample and one "pump blank" per analytical sample batch are typically collected by TEC, unless more of such samples are requested by the lead regulatory agency or client. As a rule, one pump blank or discharge line blank is collected following decontamination of the submersible pump following purging/sampling of each deep well. If PVC piping is utilized as a discharge line for the submersible pump, one pump blank is also collected prior to purging the first deep well in the series.

6.0 REFERENCES

California Department of Water Resources, 1981, Water Well Standards: State of California, 92p.

California Water Resources Control Board, 1989, Revised Leaking Underground Fuel Tank Field Manual: 62p.

U.S. Environmental Protection Agency, 1986, Test Methods for Evaluating Solid Waste-EPA SW846, 3rd Edition: prepared by the Office of Solid Waste and Energy Response, 538p.

U.S. Environmental Protection Agency, 1991, Groundwater Handbook, Volume II: Methodology: prepared by Office of Research and Development, 141p.

U.S. Office of the Federal Register, 1989, Code of Federal Regulations: CFR 40, Part 136 - Guidelines for Establishing Test Procedures for the Analyses of Pollutants Under the Clean Water Act: revised edition dated July 1, 1989.

GROUNDWATER SAMPLING FORM

Project Name:
Chemoil Former Refinery Site

Date:
December 9, 2004

Purge Method:
Disposable Bailer & Submersible Pump

Project #:

Field Rep:
Justin Stepanian & Seth Thomas

Sheet 1 of 2

Well No.	#10					#2					#1A				
Well Depth (Ft)	46.00					60.00					34.00				
Depth To Water (Ft)	28.72					26.89					20.38				
Wtr. Thickness (Ft)	17.28					33.11					13.62				
Casing Volume (Gal)	11.40					21.85					8.99				
Vol. Purged (Gal)	30.00					50.00					30.00				
Purge Time	Start 7:30		End 8:15			Start 8:30		End 9:30			Start 10:40		End 11:30		
Field Parameters	Time	pH	Temp	TDS (mg/L)	DO (ppm)	Time	pH	Temp	TDS (mg/L)	DO (ppm)	Time	pH	Temp	TDS (mg/L)	DO (ppm)
	7:35	7.1	73	1,800	.40	8:35	7.0	73	2,100	.35	10:50	6.9	73	2,700	.35
	7:45	7.0	73	2,000	.40	8:45	7.1	73	2,000	.40	11:00	7.0	73	2,900	.35
	7:55	7.1	73	2,100	.45	8:55	7.1	73	2,200	.40	11:10	6.9	74	3,000	.40
	8:10	7.1	73	2,200	.40	9:10	7.1	73	2,200	.35	11:20	6.9	73	3,200	.35
			73.5			9:20	7.1	73	2,200	.40					
Comments:	no real odor or turbidity					no odor					yellow color moderate odor				

Testa Environmental Corporation
19814 Jesus Maria Road
Mokelumne Hill, CA 95245
Phone/Fax (209) 754-1422 email: stesta@goldrush.com

GROUNDWATER SAMPLING FORM

Project Name: Chemoil Former Refinery Site	Date: December 9, 2004	Purge Method: Disposable Bailer & Submersible Pump
Project #:	Field Rep: Justin Stepanian & Seth Thomas	Sheet <u>2</u> of <u>2</u>

Well No.	#3	#9	#8
Well Depth (Ft)	72.00	49.00	52.00
Depth To Water (Ft)	43.45	33.98	23.37
Wtr. Thickness (Ft)	28.55	15.02	28.63
Casing Volume (Gal)	18.84	9.91	18.90
Vol. Purged (Gal)	55.00	30.00	60.00

Purge Time	Start 1140	End 1240	Start 1250	End 1340	Start 1400	End 1520									
Field Parameters	Time	pH	Temp	TDS (mg/L)	DO (ppm)	Time	pH	Temp	TDS (mg/L)	DO (ppm)	Time	pH	Temp	TDS (mg/L)	DO (ppm)
	1145	6.7	74	3,100	.25	1300	6.7	74	3,800	.70	1410	6.8	74	5,900	.40
	1155	6.6	73	3,200	.25	1310	6.8	73	3,400	.70	1420	6.7	73	5,700	.35
	1205	6.7	72	3,100	.30	1320	6.7	73	3500	.75	1430	6.8	73	5,700	.40
	1215	6.7	72	3,400	.30	1330	6.7	73	3500	.75	1450	6.8	72	5,900	.40
	1225		72	3,300	.25						1500	6.8	72	5,900	.40
	1235										1510		72		

Comments:	Opening well head there is a strong odor that quickly passes. Water (pu-ged) contained no odor!	turbid Strong odor!	Yellow, metallic flakes Folky!!!
-----------	--	------------------------	-------------------------------------

Testa Environmental Corporation
 19814 Jesus Maria Road
 Mokelumne Hill, CA 95245
 Phone/Fax (209) 754-1422 email: stesta@goldrush.com

GROUNDWATER SAMPLING FORM

Project Name: <u>CHEMICAL REFINERY</u>	Date: <u>12/20/04</u>	Purge Method: <u>DISP. BAILERS</u>
Project #:	Field Rep:	Sheet <u>1</u> of <u>1</u>

Well No.	<u>MU #1</u>		
Well Depth (Ft)	<u>62.00</u>		
Depth To Water (Ft)	<u>19.5</u>		
Wtr. Thickness (Ft)	<u>42.5</u>		
Casing Volume (Gal)	<u>28.05</u>		
Vol. Purged (Gal)	<u>15.00</u>		

Purge Time	Start <u>9:00</u>	End <u>11:30</u>	Start	End	Start	End									
Field Parameters	Time	pH	Temp	TDS (mg/L)	DO (ppm)	Time	pH	Temp	TDS (mg/L)	DO (ppm)	Time	pH	Temp	TDS (mg/L)	DO (ppm)
	9:30	7.2	75	6,866	.50										
	9:45	7.2	74	7,266	.70										
	10:00	7.1	74	7,106	.75										
	10:15	7.1	74	7,000	.75										

Comments:	<u>STRONG ODOOR</u>		
-----------	---------------------	--	--

Testa Environmental Corporation
 19814 Jesus Maria Road
 Mokelumne Hill, CA 95245
 Phone/Fax (209) 754-1422 email: stesta@goldrush.com

APPENDIX C – PART II

LABORATORY REPORTS FOR GROUNDWATER

December 17, 2004



Stephen Testa
Testa Environmental Corporation
19814 Jesus Maria Road,
Mokelumne Hill, CA 95245

ELAP No.: 1838
NELAP No.: 02107CA
CSDLAC No.: 10196

TEL: (209) 754-1422

FAX: (209) 754-1422

Workorder No.: 072839

RE: REFINERY-CHEMOIL

Attention: Stephen Testa

Enclosed are the results for sample(s) received on December 10, 2004 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.



CLIENT: Testa Environmental Corporation
Project: REFINERY-CHEMOIL
Lab Order: 072839

CASE NARRATIVE

Analytical Comments for Method 8015 (Diesel)

Samples 072839-001D, 072839-003D, 072839-004D, 072839-005D and 072839-006D contain hydrocarbons within the diesel range that do not match the diesel pattern. Quantitation was based on a diesel standard.



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-001A

Client Sample ID: MW#10
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_041215A	QC Batch:	A04VW311	PrepDate	Analyst: MFR
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
2-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	12/15/2004
Benzene	ND	5.0	µg/L	1	12/15/2004
Bromobenzene	ND	5.0	µg/L	1	12/15/2004
Bromodichloromethane	ND	5.0	µg/L	1	12/15/2004
Bromoform	ND	5.0	µg/L	1	12/15/2004
Bromomethane	ND	5.0	µg/L	1	12/15/2004
Carbon tetrachloride	ND	5.0	µg/L	1	12/15/2004
Chlorobenzene	ND	5.0	µg/L	1	12/15/2004
Chloroethane	ND	5.0	µg/L	1	12/15/2004
Chloroform	ND	5.0	µg/L	1	12/15/2004
Chloromethane	ND	5.0	µg/L	1	12/15/2004
cis-1,2-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
Di-isopropyl ether	ND	5.0	µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-001A

Client Sample ID: MW#10
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS**EPA 8260B**

RunID: MS11_041215A	QC Batch: A04VW311	PrepDate	Analyst: MFR
Dibromochloromethane	ND	5.0 µg/L	1 12/15/2004
Dibromomethane	ND	5.0 µg/L	1 12/15/2004
Dichlorodifluoromethane	ND	5.0 µg/L	1 12/15/2004
Ethyl tert-butyl ether	ND	5.0 µg/L	1 12/15/2004
Ethylbenzene	ND	5.0 µg/L	1 12/15/2004
Hexachlorobutadiene	ND	5.0 µg/L	1 12/15/2004
Isopropylbenzene	ND	5.0 µg/L	1 12/15/2004
m,p-Xylene	ND	10 µg/L	1 12/15/2004
Methylene chloride	ND	5.0 µg/L	1 12/15/2004
MTBE	ND	5.0 µg/L	1 12/15/2004
n-Butylbenzene	ND	5.0 µg/L	1 12/15/2004
n-Propylbenzene	ND	5.0 µg/L	1 12/15/2004
Naphthalene	ND	5.0 µg/L	1 12/15/2004
o-Xylene	ND	5.0 µg/L	1 12/15/2004
sec-Butylbenzene	ND	5.0 µg/L	1 12/15/2004
Styrene	ND	5.0 µg/L	1 12/15/2004
Tert-amyl methyl ether	ND	5.0 µg/L	1 12/15/2004
Tert-Butanol	ND	100 µg/L	1 12/15/2004
tert-Butylbenzene	ND	5.0 µg/L	1 12/15/2004
Tetrachloroethene	ND	5.0 µg/L	1 12/15/2004
Toluene	ND	5.0 µg/L	1 12/15/2004
trans-1,2-Dichloroethene	ND	5.0 µg/L	1 12/15/2004
Trichloroethene	ND	5.0 µg/L	1 12/15/2004
Trichlorofluoromethane	ND	5.0 µg/L	1 12/15/2004
Vinyl chloride	ND	5.0 µg/L	1 12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-001B

Client Sample ID: MW#10
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

GASOLINE RANGE ORGANICS BY GC/FID

EPA 8015B(M)

RunID: GC6_041213A	QC Batch: I04VW213	PrepDate	Analyst: JPC
GRO	ND	0.20 mg/L	1
			12/13/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-001C

Client Sample ID: MW#10
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS						
(EPA 3510C)			EPA 8270C			
RunID: MS7_041214A	QC Batch: 20561		PrepDate	12/14/2004	Analyst: JWS	
1,2,4-Trichlorobenzene	ND	10	µg/L	1	12/14/2004	
1,2-Dichlorobenzene	ND	10	µg/L	1	12/14/2004	
1,3-Dichlorobenzene	ND	10	µg/L	1	12/14/2004	
1,4-Dichlorobenzene	ND	10	µg/L	1	12/14/2004	
2,4,5-Trichlorophenol	ND	10	µg/L	1	12/14/2004	
2,4,6-Trichlorophenol	ND	10	µg/L	1	12/14/2004	
2,4-Dichlorophenol	ND	10	µg/L	1	12/14/2004	
2,4-Dimethylphenol	ND	10	µg/L	1	12/14/2004	
2,4-Dinitrophenol	ND	52	µg/L	1	12/14/2004	
2,4-Dinitrotoluene	ND	10	µg/L	1	12/14/2004	
2,6-Dinitrotoluene	ND	10	µg/L	1	12/14/2004	
2-Chloronaphthalene	ND	10	µg/L	1	12/14/2004	
2-Chlorophenol	ND	10	µg/L	1	12/14/2004	
2-Methylnaphthalene	ND	10	µg/L	1	12/14/2004	
2-Nitroaniline	ND	52	µg/L	1	12/14/2004	
2-Nitrophenol	ND	10	µg/L	1	12/14/2004	
3,3'-Dichlorobenzidine	ND	21	µg/L	1	12/14/2004	
3-Nitroaniline	ND	52	µg/L	1	12/14/2004	
4,6-Dinitro-2-methylphenol	ND	52	µg/L	1	12/14/2004	
4-Bromophenyl-phenylether	ND	10	µg/L	1	12/14/2004	
4-Chloro-3-methylphenol	ND	52	µg/L	1	12/14/2004	
4-Chloroaniline	ND	21	µg/L	1	12/14/2004	
4-Chlorophenyl-phenylether	ND	10	µg/L	1	12/14/2004	
4-Nitroaniline	ND	21	µg/L	1	12/14/2004	
4-Nitrophenol	ND	52	µg/L	1	12/14/2004	
Acenaphthene	ND	10	µg/L	1	12/14/2004	
Acenaphthylene	ND	10	µg/L	1	12/14/2004	
Anthracene	ND	10	µg/L	1	12/14/2004	
Benzidine (M)	ND	52	µg/L	1	12/14/2004	
Benzo(a)anthracene	ND	10	µg/L	1	12/14/2004	
Benzo(a)pyrene	ND	10	µg/L	1	12/14/2004	
Benzo(b)fluoranthene	ND	10	µg/L	1	12/14/2004	
Benzo(g,h,i)perylene	ND	10	µg/L	1	12/14/2004	
Benzo(k)fluoranthene	ND	10	µg/L	1	12/14/2004	
Benzoic acid	120	52	µg/L	1	12/14/2004	
Benzyl alcohol	ND	21	µg/L	1	12/14/2004	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-004A

Client Sample ID: MW#3
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS**EPA 8260B**

RunID: MS11_041215A	QC Batch: A04VW311	PrepDate	Analyst: MFR
Dibromochloromethane	ND	5.0 µg/L	1 12/15/2004
Dibromomethane	ND	5.0 µg/L	1 12/15/2004
Dichlorodifluoromethane	ND	5.0 µg/L	1 12/15/2004
Ethyl tert-butyl ether	ND	5.0 µg/L	1 12/15/2004
Ethylbenzene	ND	5.0 µg/L	1 12/15/2004
Hexachlorobutadiene	ND	5.0 µg/L	1 12/15/2004
Isopropylbenzene	ND	5.0 µg/L	1 12/15/2004
m,p-Xylene	ND	10 µg/L	1 12/15/2004
Methylene chloride	ND	5.0 µg/L	1 12/15/2004
MTBE	ND	5.0 µg/L	1 12/15/2004
n-Butylbenzene	ND	5.0 µg/L	1 12/15/2004
n-Propylbenzene	ND	5.0 µg/L	1 12/15/2004
Naphthalene	ND	5.0 µg/L	1 12/15/2004
o-Xylene	ND	5.0 µg/L	1 12/15/2004
sec-Butylbenzene	ND	5.0 µg/L	1 12/15/2004
Styrene	ND	5.0 µg/L	1 12/15/2004
Tert-amyl methyl ether	ND	5.0 µg/L	1 12/15/2004
Tert-Butanol	ND	100 µg/L	1 12/15/2004
tert-Butylbenzene	ND	5.0 µg/L	1 12/15/2004
Tetrachloroethene	ND	5.0 µg/L	1 12/15/2004
Toluene	ND	5.0 µg/L	1 12/15/2004
trans-1,2-Dichloroethene	ND	5.0 µg/L	1 12/15/2004
Trichloroethene	ND	5.0 µg/L	1 12/15/2004
Trichlorofluoromethane	ND	5.0 µg/L	1 12/15/2004
Vinyl chloride	ND	5.0 µg/L	1 12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-001C

Client Sample ID: MW#10
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS
(EPA 3510C)

EPA 8270C

RunID: MS7_041214A	QC Batch: 20561	PrepDate	12/14/2004	Analyst: JWS	
Bis(2-chloroethoxy)methane	ND	10	µg/L	1	12/14/2004
Bis(2-chloroethyl)ether	ND	10	µg/L	1	12/14/2004
Bis(2-chloroisopropyl)ether	ND	10	µg/L	1	12/14/2004
Bis(2-ethylhexyl)phthalate	ND	10	µg/L	1	12/14/2004
Butylbenzylphthalate	ND	10	µg/L	1	12/14/2004
Chrysene	ND	10	µg/L	1	12/14/2004
Di-n-butylphthalate	ND	10	µg/L	1	12/14/2004
Di-n-octylphthalate	ND	10	µg/L	1	12/14/2004
Dibenz(a,h)anthracene	ND	10	µg/L	1	12/14/2004
Dibenzofuran	ND	10	µg/L	1	12/14/2004
Diethylphthalate	ND	10	µg/L	1	12/14/2004
Dimethylphthalate	ND	10	µg/L	1	12/14/2004
Fluoranthene	ND	10	µg/L	1	12/14/2004
Fluorene	ND	10	µg/L	1	12/14/2004
Hexachlorobenzene	ND	10	µg/L	1	12/14/2004
Hexachlorobutadiene	ND	21	µg/L	1	12/14/2004
Hexachlorocyclopentadiene	ND	10	µg/L	1	12/14/2004
Hexachloroethane	ND	10	µg/L	1	12/14/2004
Indeno(1,2,3-cd)pyrene	ND	10	µg/L	1	12/14/2004
Isophorone	ND	10	µg/L	1	12/14/2004
N-Nitrosodi-n-propylamine	ND	10	µg/L	1	12/14/2004
N-Nitrosodiphenylamine	ND	10	µg/L	1	12/14/2004
Naphthalene	ND	10	µg/L	1	12/14/2004
Nitrobenzene	ND	10	µg/L	1	12/14/2004
Pentachlorophenol	ND	52	µg/L	1	12/14/2004
Phenanthrene	ND	10	µg/L	1	12/14/2004
Phenol	ND	10	µg/L	1	12/14/2004
Pyrene	ND	10	µg/L	1	12/14/2004
2-Methylphenol	ND	10	µg/L	1	12/14/2004
4-Methylphenol	ND	10	µg/L	1	12/14/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

7 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-001D

Client Sample ID: MW#10
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

DIESEL RANGE ORGANICS BY GC/FID

(EPA 3510C)

EPA 8015B(M)

RunID: GC7_041213B	QC Batch: 20558	PrepDate	12/13/2004	Analyst: CBR	
Diesel	2.1	0.20	mg/L	1	12/14/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-002A

Client Sample ID: MW#2
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_041215A	QC Batch:	A04VW311	PrepDate	Analyst: MFR
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
2-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	12/15/2004
Benzene	ND	5.0	µg/L	1	12/15/2004
Bromobenzene	ND	5.0	µg/L	1	12/15/2004
Bromodichloromethane	ND	5.0	µg/L	1	12/15/2004
Bromoform	ND	5.0	µg/L	1	12/15/2004
Bromomethane	ND	5.0	µg/L	1	12/15/2004
Carbon tetrachloride	ND	5.0	µg/L	1	12/15/2004
Chlorobenzene	ND	5.0	µg/L	1	12/15/2004
Chloroethane	ND	5.0	µg/L	1	12/15/2004
Chloroform	ND	5.0	µg/L	1	12/15/2004
Chloromethane	ND	5.0	µg/L	1	12/15/2004
cis-1,2-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
Di-isopropyl ether	ND	5.0	µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-002A

Client Sample ID: MW#2**Collection Date:** 12/9/2004**Matrix:** WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS**EPA 8260B**

RunID:	MS11_041215A	QC Batch:	A04VW311	PrepDate	Analyst: MFR
Dibromochloromethane	ND	5.0	µg/L	1	12/15/2004
Dibromomethane	ND	5.0	µg/L	1	12/15/2004
Dichlorodifluoromethane	ND	5.0	µg/L	1	12/15/2004
Ethyl tert-butyl ether	ND	5.0	µg/L	1	12/15/2004
Ethylbenzene	ND	5.0	µg/L	1	12/15/2004
Hexachlorobutadiene	ND	5.0	µg/L	1	12/15/2004
Isopropylbenzene	ND	5.0	µg/L	1	12/15/2004
m,p-Xylene	ND	10	µg/L	1	12/15/2004
Methylene chloride	ND	5.0	µg/L	1	12/15/2004
MTBE	ND	5.0	µg/L	1	12/15/2004
n-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
n-Propylbenzene	ND	5.0	µg/L	1	12/15/2004
Naphthalene	ND	5.0	µg/L	1	12/15/2004
o-Xylene	ND	5.0	µg/L	1	12/15/2004
sec-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
Styrene	ND	5.0	µg/L	1	12/15/2004
Tert-amyl methyl ether	ND	5.0	µg/L	1	12/15/2004
Tert-Butanol	ND	100	µg/L	1	12/15/2004
tert-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
Tetrachloroethene	ND	5.0	µg/L	1	12/15/2004
Toluene	ND	5.0	µg/L	1	12/15/2004
trans-1,2-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
Trichloroethene	ND	5.0	µg/L	1	12/15/2004
Trichlorofluoromethane	ND	5.0	µg/L	1	12/15/2004
Vinyl chloride	ND	5.0	µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

10 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-002B

Client Sample ID: MW#2
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

GASOLINE RANGE ORGANICS BY GC/FID

EPA 8015B(M)

RunID: GC6_041213A	QC Batch: I04VW213	PrepDate	Analyst: JPC
GRO	ND	0.20 mg/L	1
			12/13/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-002C

Client Sample ID: MW#2
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (EPA 3510C)

EPA 8270C

RunID: MS7_041214A	QC Batch: 20561	PrepDate	12/14/2004	Analyst: JWS	
1,2,4-Trichlorobenzene	ND	10	µg/L	1	12/14/2004
1,2-Dichlorobenzene	ND	10	µg/L	1	12/14/2004
1,3-Dichlorobenzene	ND	10	µg/L	1	12/14/2004
1,4-Dichlorobenzene	ND	10	µg/L	1	12/14/2004
2,4,5-Trichlorophenol	ND	10	µg/L	1	12/14/2004
2,4,6-Trichlorophenol	ND	10	µg/L	1	12/14/2004
2,4-Dichlorophenol	ND	10	µg/L	1	12/14/2004
2,4-Dimethylphenol	ND	10	µg/L	1	12/14/2004
2,4-Dinitrophenol	ND	50	µg/L	1	12/14/2004
2,4-Dinitrotoluene	ND	10	µg/L	1	12/14/2004
2,6-Dinitrotoluene	ND	10	µg/L	1	12/14/2004
2-Chloronaphthalene	ND	10	µg/L	1	12/14/2004
2-Chlorophenol	ND	10	µg/L	1	12/14/2004
2-Methylnaphthalene	ND	10	µg/L	1	12/14/2004
2-Nitroaniline	ND	50	µg/L	1	12/14/2004
2-Nitrophenol	ND	10	µg/L	1	12/14/2004
3,3'-Dichlorobenzidine	ND	20	µg/L	1	12/14/2004
3-Nitroaniline	ND	50	µg/L	1	12/14/2004
4,6-Dinitro-2-methylphenol	ND	50	µg/L	1	12/14/2004
4-Bromophenyl-phenylether	ND	10	µg/L	1	12/14/2004
4-Chloro-3-methylphenol	ND	50	µg/L	1	12/14/2004
4-Chloroaniline	ND	20	µg/L	1	12/14/2004
4-Chlorophenyl-phenylether	ND	10	µg/L	1	12/14/2004
4-Nitroaniline	ND	20	µg/L	1	12/14/2004
4-Nitrophenol	ND	50	µg/L	1	12/14/2004
Acenaphthene	ND	10	µg/L	1	12/14/2004
Acenaphthylene	ND	10	µg/L	1	12/14/2004
Anthracene	ND	10	µg/L	1	12/14/2004
Benzidine (M)	ND	50	µg/L	1	12/14/2004
Benzo(a)anthracene	ND	10	µg/L	1	12/14/2004
Benzo(a)pyrene	ND	10	µg/L	1	12/14/2004
Benzo(b)fluoranthene	ND	10	µg/L	1	12/14/2004
Benzo(g,h,i)perylene	ND	10	µg/L	1	12/14/2004
Benzo(k)fluoranthene	ND	10	µg/L	1	12/14/2004
Benzoic acid	ND	50	µg/L	1	12/14/2004
Benzyl alcohol	ND	20	µg/L	1	12/14/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

12 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-002C

Client Sample ID: MW#2
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (EPA 3510C)

EPA 8270C

RunID:	MS7_041214A	QC Batch:	20561	PrepDate	12/14/2004	Analyst: JWS
Bis(2-chloroethoxy)methane	ND	10	µg/L	1	12/14/2004	
Bis(2-chloroethyl)ether	ND	10	µg/L	1	12/14/2004	
Bis(2-chloroisopropyl)ether	ND	10	µg/L	1	12/14/2004	
Bis(2-ethylhexyl)phthalate	ND	10	µg/L	1	12/14/2004	
Butylbenzylphthalate	ND	10	µg/L	1	12/14/2004	
Chrysene	ND	10	µg/L	1	12/14/2004	
Di-n-butylphthalate	ND	10	µg/L	1	12/14/2004	
Di-n-octylphthalate	ND	10	µg/L	1	12/14/2004	
Dibenz(a,h)anthracene	ND	10	µg/L	1	12/14/2004	
Dibenzofuran	ND	10	µg/L	1	12/14/2004	
Diethylphthalate	ND	10	µg/L	1	12/14/2004	
Dimethylphthalate	ND	10	µg/L	1	12/14/2004	
Fluoranthene	ND	10	µg/L	1	12/14/2004	
Fluorene	ND	10	µg/L	1	12/14/2004	
Hexachlorobenzene	ND	10	µg/L	1	12/14/2004	
Hexachlorobutadiene	ND	20	µg/L	1	12/14/2004	
Hexachlorocyclopentadiene	ND	10	µg/L	1	12/14/2004	
Hexachloroethane	ND	10	µg/L	1	12/14/2004	
Indeno(1,2,3-cd)pyrene	ND	10	µg/L	1	12/14/2004	
Isophorone	ND	10	µg/L	1	12/14/2004	
N-Nitrosodi-n-propylamine	ND	10	µg/L	1	12/14/2004	
N-Nitrosodiphenylamine	ND	10	µg/L	1	12/14/2004	
Naphthalene	ND	10	µg/L	1	12/14/2004	
Nitrobenzene	ND	10	µg/L	1	12/14/2004	
Pentachlorophenol	ND	50	µg/L	1	12/14/2004	
Phenanthrene	ND	10	µg/L	1	12/14/2004	
Phenol	ND	10	µg/L	1	12/14/2004	
Pyrene	ND	10	µg/L	1	12/14/2004	
2-Methylphenol	ND	10	µg/L	1	12/14/2004	
4-Methylphenol	ND	10	µg/L	1	12/14/2004	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-002D

Client Sample ID: MW#2
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

DIESEL RANGE ORGANICS BY GC/FID

(EPA 3510C)

EPA 8015B(M)

RunID: GC7_041213B	QC Batch: 20558	PrepDate	12/13/2004	Analyst: CBR	
Diesel	ND	0.20	mg/L	1	12/14/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

14 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-003A

Client Sample ID: MW#1A
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_041215A	QC Batch:	A04VW311	PrepDate	Analyst: MFR
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
2-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	12/15/2004
Benzene	ND	5.0	µg/L	1	12/15/2004
Bromobenzene	ND	5.0	µg/L	1	12/15/2004
Bromodichloromethane	ND	5.0	µg/L	1	12/15/2004
Bromoform	ND	5.0	µg/L	1	12/15/2004
Bromomethane	ND	5.0	µg/L	1	12/15/2004
Carbon tetrachloride	ND	5.0	µg/L	1	12/15/2004
Chlorobenzene	ND	5.0	µg/L	1	12/15/2004
Chloroethane	ND	5.0	µg/L	1	12/15/2004
Chloroform	ND	5.0	µg/L	1	12/15/2004
Chloromethane	ND	5.0	µg/L	1	12/15/2004
cis-1,2-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
Di-isopropyl ether	ND	5.0	µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

15 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-003A

Client Sample ID: MW#1A
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_041215A	QC Batch:	A04VW311	PrepDate	Analyst: MFR
Dibromochloromethane	ND	5.0	µg/L	1	12/15/2004
Dibromomethane	ND	5.0	µg/L	1	12/15/2004
Dichlorodifluoromethane	ND	5.0	µg/L	1	12/15/2004
Ethyl tert-butyl ether	ND	5.0	µg/L	1	12/15/2004
Ethylbenzene	ND	5.0	µg/L	1	12/15/2004
Hexachlorobutadiene	ND	5.0	µg/L	1	12/15/2004
Isopropylbenzene	50	5.0	µg/L	1	12/15/2004
m,p-Xylene	ND	10	µg/L	1	12/15/2004
Methylene chloride	ND	5.0	µg/L	1	12/15/2004
MTBE	22	5.0	µg/L	1	12/15/2004
n-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
n-Propylbenzene	35	5.0	µg/L	1	12/15/2004
Naphthalene	55	5.0	µg/L	1	12/15/2004
o-Xylene	ND	5.0	µg/L	1	12/15/2004
sec-Butylbenzene	8.0	5.0	µg/L	1	12/15/2004
Styrene	ND	5.0	µg/L	1	12/15/2004
Tert-amyl methyl ether	ND	5.0	µg/L	1	12/15/2004
Tert-Butanol	ND	100	µg/L	1	12/15/2004
tert-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
Tetrachloroethene	ND	5.0	µg/L	1	12/15/2004
Toluene	ND	5.0	µg/L	1	12/15/2004
trans-1,2-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
Trichloroethene	ND	5.0	µg/L	1	12/15/2004
Trichlorofluoromethane	ND	5.0	µg/L	1	12/15/2004
Vinyl chloride	ND	5.0	µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-003B

Client Sample ID: MW#1A
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

GASOLINE RANGE ORGANICS BY GC/FID

EPA 8015B(M)

RunID: GC6_041213A	QC Batch: I04VW213	PrepDate	Analyst: JPC		
GRO	1.6	0.20	mg/L	1	12/13/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

17 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-003C

Client Sample ID: MW#1A
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS						
(EPA 3510C)			EPA 8270C			
RunID: MS7_041214A	QC Batch: 20561		PrepDate	12/14/2004	Analyst: JWS	
1,2,4-Trichlorobenzene	ND	10	µg/L	1	12/14/2004	
1,2-Dichlorobenzene	ND	10	µg/L	1	12/14/2004	
1,3-Dichlorobenzene	ND	10	µg/L	1	12/14/2004	
1,4-Dichlorobenzene	ND	10	µg/L	1	12/14/2004	
2,4,5-Trichlorophenol	ND	10	µg/L	1	12/14/2004	
2,4,6-Trichlorophenol	ND	10	µg/L	1	12/14/2004	
2,4-Dichlorophenol	ND	10	µg/L	1	12/14/2004	
2,4-Dimethylphenol	ND	10	µg/L	1	12/14/2004	
2,4-Dinitrophenol	ND	50	µg/L	1	12/14/2004	
2,4-Dinitrotoluene	ND	10	µg/L	1	12/14/2004	
2,6-Dinitrotoluene	ND	10	µg/L	1	12/14/2004	
2-Chloronaphthalene	ND	10	µg/L	1	12/14/2004	
2-Chlorophenol	ND	10	µg/L	1	12/14/2004	
2-Methylnaphthalene	41	10	µg/L	1	12/14/2004	
2-Nitroaniline	ND	50	µg/L	1	12/14/2004	
2-Nitrophenol	ND	10	µg/L	1	12/14/2004	
3,3'-Dichlorobenzidine	ND	20	µg/L	1	12/14/2004	
3-Nitroaniline	ND	50	µg/L	1	12/14/2004	
4,6-Dinitro-2-methylphenol	ND	50	µg/L	1	12/14/2004	
4-Bromophenyl-phenylether	ND	10	µg/L	1	12/14/2004	
4-Chloro-3-methylphenol	ND	50	µg/L	1	12/14/2004	
4-Chloroaniline	ND	20	µg/L	1	12/14/2004	
4-Chlorophenyl-phenylether	ND	10	µg/L	1	12/14/2004	
4-Nitroaniline	ND	20	µg/L	1	12/14/2004	
4-Nitrophenol	ND	50	µg/L	1	12/14/2004	
Acenaphthene	ND	10	µg/L	1	12/14/2004	
Acenaphthylene	ND	10	µg/L	1	12/14/2004	
Anthracene	ND	10	µg/L	1	12/14/2004	
Benzidine (M)	ND	50	µg/L	1	12/14/2004	
Benzo(a)anthracene	ND	10	µg/L	1	12/14/2004	
Benzo(a)pyrene	ND	10	µg/L	1	12/14/2004	
Benzo(b)fluoranthene	ND	10	µg/L	1	12/14/2004	
Benzo(g,h,i)perylene	ND	10	µg/L	1	12/14/2004	
Benzo(k)fluoranthene	ND	10	µg/L	1	12/14/2004	
Benzoic acid	ND	50	µg/L	1	12/14/2004	
Benzyl alcohol	ND	20	µg/L	1	12/14/2004	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-003C

Client Sample ID: MW#1A
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS						
(EPA 3510C)			EPA 8270C			
RunID: MS7_041214A	QC Batch: 20561		PrepDate	12/14/2004	Analyst: JWS	
Bis(2-chloroethoxy)methane	ND	10	µg/L	1	12/14/2004	
Bis(2-chloroethyl)ether	ND	10	µg/L	1	12/14/2004	
Bis(2-chloroisopropyl)ether	ND	10	µg/L	1	12/14/2004	
Bis(2-ethylhexyl)phthalate	ND	10	µg/L	1	12/14/2004	
Butylbenzylphthalate	ND	10	µg/L	1	12/14/2004	
Chrysene	ND	10	µg/L	1	12/14/2004	
Di-n-butylphthalate	ND	10	µg/L	1	12/14/2004	
Di-n-octylphthalate	ND	10	µg/L	1	12/14/2004	
Dibenz(a,h)anthracene	ND	10	µg/L	1	12/14/2004	
Dibenzofuran	ND	10	µg/L	1	12/14/2004	
Diethylphthalate	ND	10	µg/L	1	12/14/2004	
Dimethylphthalate	ND	10	µg/L	1	12/14/2004	
Fluoranthene	ND	10	µg/L	1	12/14/2004	
Fluorene	ND	10	µg/L	1	12/14/2004	
Hexachlorobenzene	ND	10	µg/L	1	12/14/2004	
Hexachlorobutadiene	ND	20	µg/L	1	12/14/2004	
Hexachlorocyclopentadiene	ND	10	µg/L	1	12/14/2004	
Hexachloroethane	ND	10	µg/L	1	12/14/2004	
Indeno(1,2,3-cd)pyrene	ND	10	µg/L	1	12/14/2004	
Isophorone	ND	10	µg/L	1	12/14/2004	
N-Nitrosodi-n-propylamine	ND	10	µg/L	1	12/14/2004	
N-Nitrosodiphenylamine	ND	10	µg/L	1	12/14/2004	
Naphthalene	61	10	µg/L	1	12/14/2004	
Nitrobenzene	ND	10	µg/L	1	12/14/2004	
Pentachlorophenol	ND	50	µg/L	1	12/14/2004	
Phenanthrene	ND	10	µg/L	1	12/14/2004	
Phenol	ND	10	µg/L	1	12/14/2004	
Pyrene	ND	10	µg/L	1	12/14/2004	
2-Methylphenol	ND	10	µg/L	1	12/14/2004	
4-Methylphenol	ND	10	µg/L	1	12/14/2004	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

19 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-003D

Client Sample ID: MW#1A
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

DIESEL RANGE ORGANICS BY GC/FID

(EPA 3510C)

EPA 8015B(M)

RunID: GC7_041213B	QC Batch: 20558	PrepDate	12/13/2004	Analyst: CBR	
Diesel	8.2	1.0	mg/L	5	12/14/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

20 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-004A

Client Sample ID: MW#3
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_041215A	QC Batch:	A04VW311	PrepDate	Analyst: MFR
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
2-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	12/15/2004
Benzene	ND	5.0	µg/L	1	12/15/2004
Bromobenzene	ND	5.0	µg/L	1	12/15/2004
Bromodichloromethane	ND	5.0	µg/L	1	12/15/2004
Bromoform	ND	5.0	µg/L	1	12/15/2004
Bromomethane	ND	5.0	µg/L	1	12/15/2004
Carbon tetrachloride	ND	5.0	µg/L	1	12/15/2004
Chlorobenzene	ND	5.0	µg/L	1	12/15/2004
Chloroethane	ND	5.0	µg/L	1	12/15/2004
Chloroform	ND	5.0	µg/L	1	12/15/2004
Chloromethane	ND	5.0	µg/L	1	12/15/2004
cis-1,2-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
Di-isopropyl ether	ND	5.0	µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-004B

Client Sample ID: MW#3
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

GASOLINE RANGE ORGANICS BY GC/FID

EPA 8015B(M)

RunID: GC6_041213A	QC Batch: I04VW213	PrepDate	Analyst: JPC
GRO	ND	0.20 mg/L	1
			12/13/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

23 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-004C

Client Sample ID: MW#3
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (EPA 3510C)

EPA 8270C

RunID: MS7_041214A	QC Batch: 20561	PrepDate	12/14/2004	Analyst: JWS	
1,2,4-Trichlorobenzene	ND	11	µg/L	1	12/14/2004
1,2-Dichlorobenzene	ND	11	µg/L	1	12/14/2004
1,3-Dichlorobenzene	ND	11	µg/L	1	12/14/2004
1,4-Dichlorobenzene	ND	11	µg/L	1	12/14/2004
2,4,5-Trichlorophenol	ND	11	µg/L	1	12/14/2004
2,4,6-Trichlorophenol	ND	11	µg/L	1	12/14/2004
2,4-Dichlorophenol	ND	11	µg/L	1	12/14/2004
2,4-Dimethylphenol	ND	11	µg/L	1	12/14/2004
2,4-Dinitrophenol	ND	54	µg/L	1	12/14/2004
2,4-Dinitrotoluene	ND	11	µg/L	1	12/14/2004
2,6-Dinitrotoluene	ND	11	µg/L	1	12/14/2004
2-Chloronaphthalene	ND	11	µg/L	1	12/14/2004
2-Chlorophenol	ND	11	µg/L	1	12/14/2004
2-Methylnaphthalene	ND	11	µg/L	1	12/14/2004
2-Nitroaniline	ND	54	µg/L	1	12/14/2004
2-Nitrophenol	ND	11	µg/L	1	12/14/2004
3,3'-Dichlorobenzidine	ND	22	µg/L	1	12/14/2004
3-Nitroaniline	ND	54	µg/L	1	12/14/2004
4,6-Dinitro-2-methylphenol	ND	54	µg/L	1	12/14/2004
4-Bromophenyl-phenylether	ND	11	µg/L	1	12/14/2004
4-Chloro-3-methylphenol	ND	54	µg/L	1	12/14/2004
4-Chloroaniline	ND	22	µg/L	1	12/14/2004
4-Chlorophenyl-phenylether	ND	11	µg/L	1	12/14/2004
4-Nitroaniline	ND	22	µg/L	1	12/14/2004
4-Nitrophenol	ND	54	µg/L	1	12/14/2004
Acenaphthene	ND	11	µg/L	1	12/14/2004
Acenaphthylene	ND	11	µg/L	1	12/14/2004
Anthracene	ND	11	µg/L	1	12/14/2004
Benzidine (M)	ND	54	µg/L	1	12/14/2004
Benzo(a)anthracene	ND	11	µg/L	1	12/14/2004
Benzo(a)pyrene	ND	11	µg/L	1	12/14/2004
Benzo(b)fluoranthene	ND	11	µg/L	1	12/14/2004
Benzo(g,h,i)perylene	ND	11	µg/L	1	12/14/2004
Benzo(k)fluoranthene	ND	11	µg/L	1	12/14/2004
Benzoic acid	ND	54	µg/L	1	12/14/2004
Benzyl alcohol	ND	22	µg/L	1	12/14/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-004C

Client Sample ID: MW#3
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (EPA 3510C)

EPA 8270C

RunID:	MS7_041214A	QC Batch:	20561	PrepDate	12/14/2004	Analyst: JWS
Bis(2-chloroethoxy)methane	ND	11	µg/L	1	12/14/2004	
Bis(2-chloroethyl)ether	ND	11	µg/L	1	12/14/2004	
Bis(2-chloroisopropyl)ether	ND	11	µg/L	1	12/14/2004	
Bis(2-ethylhexyl)phthalate	ND	11	µg/L	1	12/14/2004	
Butylbenzylphthalate	ND	11	µg/L	1	12/14/2004	
Chrysene	ND	11	µg/L	1	12/14/2004	
Di-n-butylphthalate	ND	11	µg/L	1	12/14/2004	
Di-n-octylphthalate	ND	11	µg/L	1	12/14/2004	
Dibenz(a,h)anthracene	ND	11	µg/L	1	12/14/2004	
Dibenzofuran	ND	11	µg/L	1	12/14/2004	
Diethylphthalate	ND	11	µg/L	1	12/14/2004	
Dimethylphthalate	ND	11	µg/L	1	12/14/2004	
Fluoranthene	ND	11	µg/L	1	12/14/2004	
Fluorene	ND	11	µg/L	1	12/14/2004	
Hexachlorobenzene	ND	11	µg/L	1	12/14/2004	
Hexachlorobutadiene	ND	22	µg/L	1	12/14/2004	
Hexachlorocyclopentadiene	ND	11	µg/L	1	12/14/2004	
Hexachloroethane	ND	11	µg/L	1	12/14/2004	
Indeno(1,2,3-cd)pyrene	ND	11	µg/L	1	12/14/2004	
Isophorone	ND	11	µg/L	1	12/14/2004	
N-Nitrosodi-n-propylamine	ND	11	µg/L	1	12/14/2004	
N-Nitrosodiphenylamine	ND	11	µg/L	1	12/14/2004	
Naphthalene	ND	11	µg/L	1	12/14/2004	
Nitrobenzene	ND	11	µg/L	1	12/14/2004	
Pentachlorophenol	ND	54	µg/L	1	12/14/2004	
Phenanthrene	ND	11	µg/L	1	12/14/2004	
Phenol	ND	11	µg/L	1	12/14/2004	
Pyrene	ND	11	µg/L	1	12/14/2004	
2-Methylphenol	ND	11	µg/L	1	12/14/2004	
4-Methylphenol	ND	11	µg/L	1	12/14/2004	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

25 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-006D

Client Sample ID: MW#8
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

DIESEL RANGE ORGANICS BY GC/FID

(EPA 3510C)

EPA 8015B(M)

RunID: GC7_041216B	QC Batch: 20592	PrepDate	12/16/2004	Analyst: CBR	
Diesel	15	1.0	mg/L	5	12/16/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

38 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_DSL H

Sample ID	MB-20558	SampType: MBLK	TestCode: 8015_W_DSL	Units: mg/L	Prep Date: 12/13/2004	Run ID: GC7_041213B						
Client ID: ZZZZZ		Batch ID: 20558	TestNo: EPA 8015B(M (EPA 3510C)		Analysis Date: 12/13/2004	SeqNo: 649822						
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel		ND										

Sample ID	MB-20558	SampType:	MBLK	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	12/13/2004	Run ID:	GC7_041213B	
Client ID:	ZZZZZ	Batch ID:	20558	TestNo:	EPA 8015B(M	(EPA 3510C)		Analysis Date:	12/14/2004	SeqNo:	650374	
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	RPDLimit	Qual
Diesel		ND		0.20								

Sample ID	MB-20592	SampType: MBLK	TestCode: 8015_W_DSL	Units: mg/L	Prep Date: 12/16/2004	Run ID: GC7_041216B						
Client ID: ZZZZZ		Batch ID: 20592	TestNo: EPA 8015B(M (EPA 3510C)		Analysis Date: 12/16/2004	SeqNo: 651634						
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel		ND	0.20									

Sample ID	LCS-20558	SampType:	LCS	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	12/13/2004	Run ID:	GC7_041213B
Client ID:	ZZZZZ	Batch ID:	20558	TestNo:	EPA 8015B(M	(EPA 3510C)		Analysis Date:	12/14/2004	SeqNo:	649823
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	0.82	0.20	1	0	82	57	114	0	0		

Sample ID	LCS-20558	SampType: LCS	TestCode: 8015_W_DSL	Units: mg/L	Prep Date: 12/13/2004	Run ID: GC7_041213B					
Client ID: ZZZZZ		Batch ID: 20558	TestNo: EPA 8015B(M (EPA 3510C)		Analysis Date: 12/14/2004	SeqNo: 650375					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	0.7697	0.20	1	0	77	57	114	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 Calculations are based on raw values

DO- Surrogate dilute out
 H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_DSL H

Sample ID	LCS-20592	SampType:	LCS	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	12/16/2004	Run ID:	GC7_041216B
Client ID:	ZZZZZ	Batch ID:	20592	TestNo:	EPA 8015B(M	(EPA 3510C)		Analysis Date:	12/16/2004	SeqNo:	651635
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Diesel		0.7921		0.20	1	0	79.2	57	114	0	0

Sample ID	MB-20558MS	SampType:	MS	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	12/13/2004	Run ID:	GC7_041213B
Client ID:	ZZZZZ	Batch ID:	20558	TestNo:	EPA 8015B(M	(EPA 3510C)		Analysis Date:	12/14/2004	SeqNo:	649824
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Diesel		0.8612		0.20	1	0	86.1	46	125	0	0

Sample ID	MB-20592MS	SampType:	MS	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	12/16/2004	Run ID:	GC7_041216B
Client ID:	ZZZZZ	Batch ID:	20592	TestNo:	EPA 8015B(M	(EPA 3510C)		Analysis Date:	12/16/2004	SeqNo:	651636
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Diesel		0.8074		0.20	1	0	80.7	46	125	0	0

Sample ID	MB-20558MSD	SampType:	MSD	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	12/13/2004	Run ID:	GC7_041213B
Client ID:	ZZZZZ	Batch ID:	20558	TestNo:	EPA 8015B(M	(EPA 3510C)		Analysis Date:	12/14/2004	SeqNo:	649825
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Diesel		0.9147		0.20	1	0	91.5	46	125	0	0

Sample ID	MB-20592MSD	SampType:	MSD	TestCode:	8015_W_DSL	Units:	mg/L	Prep Date:	12/16/2004	Run ID:	GC7_041216B
Client ID:	ZZZZZ	Batch ID:	20592	TestNo:	EPA 8015B(M	(EPA 3510C)		Analysis Date:	12/16/2004	SeqNo:	651637
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Diesel		0.7873		0.20	1	0	78.7	46	125	0	0

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_G_UN

Sample ID	I121304MB1	SampleType:	MBLK	TestCode:	8015_W_G_U	Units:	mg/L	Prep Date:		Run ID:	GC6_041213A		
Client ID:	ZZZZZ	Batch ID:	I04VW213	TestNo:	EPA 8015B(M)			Analysis Date:	12/13/2004	SeqNo:	649795		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO		ND		0.20									

Sample ID	I121304LC2	Sample Type:	LCS	TestCode:	8015_W_G_U	Units:	mg/L	Prep Date:		Run ID:	GC6_041213A		
Client ID:	ZZZZZ	Batch ID:	I04VW213	TestNo:	EPA 8015B(M)			Analysis Date:	12/13/2004	SeqNo:	649802		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO		0.868		0.20	1	0	86.8	70	125	0	0		

Sample ID	I121304MB1MS	SampType:	MS	TestCode:	8015_W_G_U	Units:	mg/L	Prep Date:		Run ID:	GC6_041213A		
Client ID:	ZZZZZ	Batch ID:	I04VW213	TestNo:	EPA 8015B(M)			Analysis Date:	12/13/2004	SeqNo:	649793		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO		0.957		0.20	1	0	95.7	64	129	0	0	0	

Sample ID	I121304MB1MSD	SampType:	MSD	TestCode:	8015_W_G_U	Units:	mg/L	Prep Date:		Run ID:	GC6_041213A		
Client ID:	ZZZZZ	Batch ID:	I04VW213	TestNo:	EPA 8015B(M)			Analysis Date:	12/13/2004	SeqNo:	649794		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO		0.936		0.20	1	0	93.6	64	129	0.957	2.22	30	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values

DO- Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID	A121504MB2	SampType: MBLK	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_041215A					
Client ID: ZZZZZ		Batch ID: A04VW311	TestNo: EPA 8260B		Analysis Date: 12/15/2004	SeqNo: 651229					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	5.0									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									
Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									
Carbon tetrachloride	ND	5.0									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values

DO- Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID	A121504MB2	SampType: MBLK	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_041215A					
Client ID: ZZZZZ		Batch ID: A04VW311	TestNo: EPA 8260B		Analysis Date: 12/15/2004	SeqNo: 651229					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
Di-isopropyl ether	ND	5.0									
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethyl tert-butyl ether	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	10									
Methylene chloride	ND	5.0									
MTBE	ND	5.0									
n-Butylbenzene	ND	5.0									
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
Tert-amyl methyl ether	ND	5.0									
Tert-Butanol	ND	100									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									
Trichloroethene	ND	5.0									
Trichlorofluoromethane	ND	5.0									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values

DO- Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID	A121504MB2	SampType:	MBLK	TestCode:	8260_WU	Units:	µg/L	Prep Date:		Run ID:	MS11_041215A
Client ID:	ZZZZZ	Batch ID:	A04VW311	TestNo:	EPA 8260B			Analysis Date:	12/15/2004	SeqNo:	651229
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	ND	5.0									

Sample ID	A121504LC1	SampType:	LCS	TestCode:	8260_WU	Units:	µg/L	Prep Date:		Run ID:	MS11_041215A
Client ID:	ZZZZZ	Batch ID:	A04VW311	TestNo:	EPA 8260B			Analysis Date:	12/15/2004	SeqNo:	651226
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	19.66	5.0	20	0	98.3	63	147	0	0		
Benzene	21.35	5.0	20	0	107	77	125	0	0		
Chlorobenzene	21.47	5.0	20	0	107	69	126	0	0		
MTBE	20.82	5.0	20	0	104	61	136	0	0		
Toluene	22.45	5.0	20	0	112	76	122	0	0		
Trichloroethene	19.24	5.0	20	0	96.2	70	129	0	0		

Sample ID	A121504MB2MS	SampType:	MS	TestCode:	8260_WU	Units:	µg/L	Prep Date:		Run ID:	MS11_041215A
Client ID:	ZZZZZ	Batch ID:	A04VW311	TestNo:	EPA 8260B			Analysis Date:	12/15/2004	SeqNo:	651227
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	19.44	5.0	20	0	97.2	63	146	0	0		
Benzene	21.6	5.0	20	0	108	75	126	0	0		
Chlorobenzene	21.91	5.0	20	0	110	73	122	0	0		
MTBE	19.37	5.0	20	0	96.8	61	135	0	0		
Toluene	22.71	5.0	20	0	114	75	123	0	0		
Trichloroethene	19.49	5.0	20	0	97.5	68	129	0	0		

Sample ID	A121504MB2MSD	SampType:	MSD	TestCode:	8260_WU	Units:	µg/L	Prep Date:		Run ID:	MS11_041215A
Client ID:	ZZZZZ	Batch ID:	A04VW311	TestNo:	EPA 8260B			Analysis Date:	12/15/2004	SeqNo:	651228
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	18.62	5.0	20	0	93.1	63	146	19.44	4.31	30	
Benzene	20.9	5.0	20	0	104	75	126	21.6	3.29	30	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO - Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID	A121504MB2MSD	SampType: MSD	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_041215A					
Client ID: ZZZZZ		Batch ID: A04VW311	TestNo: EPA 8260B		Analysis Date: 12/15/2004	SeqNo: 651228					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	20.61	5.0	20	0	103	73	122	21.91	6.11	30	
MTBE	19.86	5.0	20	0	99.3	61	135	19.37	2.50	30	
Toluene	22.24	5.0	20	0	111	75	123	22.71	2.09	30	
Trichloroethene	19.59	5.0	20	0	98	68	129	19.49	0.512	30	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO- Surrogate dilute out
H - Sample exceeded holding time
Calculations are based on raw values



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20561	SampType: MBLK	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/14/2004	Run ID: MS6_041214A					
Client ID: ZZZZZ		Batch ID: 20561	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/14/2004	SeqNo: 651032					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	ND	10									
1,2-Dichlorobenzene	ND	10									
1,3-Dichlorobenzene	ND	10									
1,4-Dichlorobenzene	ND	10									
2,4,5-Trichlorophenol	ND	10									
2,4,6-Trichlorophenol	ND	10									
2,4-Dichlorophenol	ND	10									
2,4-Dimethylphenol	ND	10									
2,4-Dinitrophenol	ND	50									
2,4-Dinitrotoluene	ND	10									
2,6-Dinitrotoluene	ND	10									
2-Chloronaphthalene	ND	10									
2-Chlorophenol	ND	10									
2-Methylnaphthalene	ND	10									
2-Methylphenol	ND	10									
2-Nitroaniline	ND	50									
2-Nitrophenol	ND	10									
3,3'-Dichlorobenzidine	ND	20									
3-Nitroaniline	ND	50									
4,6-Dinitro-2-methylphenol	ND	50									
4-Bromophenyl-phenylether	ND	10									
4-Chloro-3-methylphenol	ND	50									
4-Chloroaniline	ND	20									
4-Chlorophenyl-phenylether	ND	10									
4-Methylphenol	ND	10									
4-Nitroaniline	ND	20									
4-Nitrophenol	ND	50									
Acenaphthene	ND	10									
Acenaphthylene	ND	10									
Anthracene	ND	10									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values

DO- Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20561	SampType:	MBLK	TestCode:	8270_W_FULL	Units:	µg/L	Prep Date:	12/14/2004	Run ID:	MS6_041214A
Client ID:	ZZZZZ	Batch ID:	20561	TestNo:	EPA 8270C	(EPA 3510C)		Analysis Date:	12/14/2004	SeqNo:	651032
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzidine (M)	ND	50									
Benzo(a)anthracene	ND	10									
Benzo(a)pyrene	ND	10									
Benzo(b)fluoranthene	ND	10									
Benzo(g,h,i)perylene	ND	10									
Benzo(k)fluoranthene	ND	10									
Benzoic acid	ND	50									
Benzyl alcohol	ND	20									
Bis(2-chloroethoxy)methane	ND	10									
Bis(2-chloroethyl)ether	ND	10									
Bis(2-chloroisopropyl)ether	ND	10									
Bis(2-ethylhexyl)phthalate	ND	10									
Butylbenzylphthalate	ND	10									
Chrysene	ND	10									
Di-n-butylphthalate	ND	10									
Di-n-octylphthalate	ND	10									
Dibenz(a,h)anthracene	ND	10									
Dibenzofuran	ND	10									
Diethylphthalate	ND	10									
Dimethylphthalate	ND	10									
Fluoranthene	ND	10									
Fluorene	ND	10									
Hexachlorobenzene	ND	10									
Hexachlorobutadiene	ND	20									
Hexachlorocyclopentadiene	ND	10									
Hexachloroethane	ND	10									
Indeno(1,2,3-cd)pyrene	ND	10									
Isophorone	ND	10									
N-Nitrosodi-n-propylamine	ND	10									
N-Nitrosodiphenylamine	ND	10									

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 DO - Surrogate dilute out
 H - Sample exceeded holding time

Calculations are based on raw values



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT
TestCode: 8270_W_FULL

Sample ID	MB-20561	SampType:	MBLK	TestCode:	8270_W_FUL	Units:	µg/L	Prep Date:	12/14/2004	Run ID:	MS6_041214A			
Client ID:	ZZZZZ	Batch ID:	20561	TestNo:	EPA 8270C	(EPA 3510C)		Analysis Date:	12/14/2004	SeqNo:	651032			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Naphthalene	ND	10									
Nitrobenzene	ND	10									
Pentachlorophenol	ND	50									
Phenanthrene	ND	10									
Phenol	ND	10									
Pyrene	ND	10									

Sample ID MB-20561	SampType: MBLK	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/14/2004	Run ID: MS7_041214A						
Client ID: ZZZZZ	Batch ID: 20561	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/14/2004	SeqNo: 651039						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,2,4-Trichlorobenzene	ND	10									
1,2-Dichlorobenzene	ND	10									
1,3-Dichlorobenzene	ND	10									
1,4-Dichlorobenzene	ND	10									
2,4,5-Trichlorophenol	ND	10									
2,4,6-Trichlorophenol	ND	10									
2,4-Dichlorophenol	ND	10									
2,4-Dimethylphenol	ND	10									
2,4-Dinitrophenol	ND	50									
2,4-Dinitrotoluene	ND	10									
2,6-Dinitrotoluene	ND	10									
2-Chloronaphthalene	ND	10									
2-Chlorophenol	ND	10									
2-Methylnaphthalene	ND	10									
2-Methylphenol	ND	10									
2-Nitroaniline	ND	50									
2-Nitrophenol	ND	10									
3,3'-Dichlorobenzidine	ND	20									
3-Nitroaniline	ND	50									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values

DO- Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20561	SampType:	MBLK	TestCode:	8270_W_FUL	Units:	µg/L	Prep Date:	12/14/2004	Run ID:	MS7_041214A		
Client ID:	ZZZZZ	Batch ID:	20561	TestNo:	EPA 8270C	(EPA 3510C)		Analysis Date:	12/14/2004	SeqNo:	651039		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

4,6-Dinitro-2-methylphenol	ND	50											
4-Bromophenyl-phenylether	ND	10											
4-Chloro-3-methylphenol	ND	50											
4-Chloroaniline	ND	20											
4-Chlorophenyl-phenylether	ND	10											
4-Methylphenol	ND	10											
4-Nitroaniline	ND	20											
4-Nitrophenol	ND	50											
Acenaphthene	ND	10											
Acenaphthylene	ND	10											
Anthracene	ND	10											
Benzidine (M)	ND	50											
Benzo(a)anthracene	ND	10											
Benzo(a)pyrene	ND	10											
Benzo(b)fluoranthene	ND	10											
Benzo(g,h,i)perylene	ND	10											
Benzo(k)fluoranthene	ND	10											
Benzoic acid	ND	50											
Benzyl alcohol	ND	20											
Bis(2-chloroethoxy)methane	ND	10											
Bis(2-chloroethyl)ether	ND	10											
Bis(2-chloroisopropyl)ether	ND	10											
Bis(2-ethylhexyl)phthalate	ND	10											
Butylbenzylphthalate	ND	10											
Chrysene	ND	10											
Di-n-butylphthalate	ND	10											
Di-n-octylphthalate	ND	10											
Dibenz(a,h)anthracene	ND	10											
Dibenzofuran	ND	10											
Diethylphthalate	ND	10											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values

DO- Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20561	SampType:	MBLK	TestCode:	8270_W_FUL	Units:	µg/L	Prep Date:	12/14/2004	Run ID:	MS7_041214A			
Client ID:	ZZZZZ	Batch ID:	20561	TestNo:	EPA 8270C	(EPA 3510C)		Analysis Date:	12/14/2004	SeqNo:	651039			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Dimethylphthalate	ND	10									
Fluoranthene	ND	10									
Fluorene	ND	10									
Hexachlorobenzene	ND	10									
Hexachlorobutadiene	ND	20									
Hexachlorocyclopentadiene	ND	10									
Hexachloroethane	ND	10									
Indeno(1,2,3-cd)pyrene	ND	10									
Isophorone	ND	10									
N-Nitrosodi-n-propylamine	ND	10									
N-Nitrosodiphenylamine	ND	10									
Naphthalene	ND	10									
Nitrobenzene	ND	10									
Pentachlorophenol	ND	50									
Phenanthrene	ND	10									
Phenol	ND	10									
Pyrene	ND	10									

Sample ID	MB-20561	SampType:	MBLK	TestCode:	8270_W_FUL	Units:	µg/L	Prep Date:	12/14/2004	Run ID:	MS7_041214A
Client ID:	ZZZZZ	Batch ID:	20561	TestNo:	EPA 8270C	(EPA 3510C)		Analysis Date:	12/15/2004	SeqNo:	651465
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	RPD Ref Val	Qual
										%RPD	RPDLimit

1,2,4-Trichlorobenzene	ND	10									
1,2-Dichlorobenzene	ND	10									
1,3-Dichlorobenzene	ND	10									
1,4-Dichlorobenzene	ND	10									
2,4,5-Trichlorophenol	ND	10									
2,4,6-Trichlorophenol	ND	10									
2,4-Dichlorophenol	ND	10									
2,4-Dimethylphenol	ND	10									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO - Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20561	SampType: MBLK	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/14/2004	Run ID: MS7_041214A						
Client ID: ZZZZZ		Batch ID: 20561	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/15/2004	SeqNo: 651465						
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,4-Dinitrophenol		ND	50									
2,4-Dinitrotoluene		ND	10									
2,6-Dinitrotoluene		ND	10									
2-Chloronaphthalene		ND	10									
2-Chlorophenol		ND	10									
2-Methylnaphthalene		ND	10									
2-Methylphenol		ND	10									
2-Nitroaniline		ND	50									
2-Nitrophenol		ND	10									
3,3'-Dichlorobenzidine		ND	20									
3-Nitroaniline		ND	50									
4,6-Dinitro-2-methylphenol		ND	50									
4-Bromophenyl-phenylether		ND	10									
4-Chloro-3-methylphenol		ND	50									
4-Chloroaniline		ND	20									
4-Chlorophenyl-phenylether		ND	10									
4-Methylphenol		ND	10									
4-Nitroaniline		ND	20									
4-Nitrophenol		ND	50									
Acenaphthene		ND	10									
Acenaphthylene		ND	10									
Anthracene		ND	10									
Benzidine (M)		ND	50									
Benzo(a)anthracene		ND	10									
Benzo(a)pyrene		ND	10									
Benzo(b)fluoranthene		ND	10									
Benzo(g,h,i)perylene		ND	10									
Benzo(k)fluoranthene		ND	10									
Benzoic acid		ND	50									
Benzyl alcohol		ND	20									

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 DO - Surrogate dilute out
 H - Sample exceeded holding time

Calculations are based on raw values



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20561	SampType:	MBLK	TestCode:	8270_W_FULL	Units:	µg/L	Prep Date:	12/14/2004	Run ID:	MS7_041214A
Client ID:	ZZZZZ	Batch ID:	20561	TestNo:	EPA 8270C	(EPA 3510C)		Analysis Date:	12/15/2004	SeqNo:	651465
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Bis(2-chloroethoxy)methane	ND	10									
Bis(2-chloroethyl)ether	ND	10									
Bis(2-chloroisopropyl)ether	ND	10									
Bis(2-ethylhexyl)phthalate	ND	10									
Butylbenzylphthalate	ND	10									
Chrysene	ND	10									
Di-n-butylphthalate	ND	10									
Di-n-octylphthalate	ND	10									
Dibenz(a,h)anthracene	ND	10									
Dibenzofuran	ND	10									
Diethylphthalate	ND	10									
Dimethylphthalate	ND	10									
Fluoranthene	ND	10									
Fluorene	ND	10									
Hexachlorobenzene	ND	10									
Hexachlorobutadiene	ND	20									
Hexachlorocyclopentadiene	ND	10									
Hexachloroethane	ND	10									
Indeno(1,2,3-cd)pyrene	ND	10									
Isophorone	ND	10									
N-Nitrosodi-n-propylamine	ND	10									
N-Nitrosodiphenylamine	ND	10									
Naphthalene	ND	10									
Nitrobenzene	ND	10									
Pentachlorophenol	ND	50									
Phenanthrene	ND	10									
Phenol	ND	10									
Pyrene	ND	10									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO - Surrogate dilute out
H - Sample exceeded holding time

Calculations are based on raw values

52 of 55



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT
TestCode: 8270_W_FULL

Sample ID	LCS-20561	SampType: LCS	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/14/2004	Run ID: MS6_041214A					
Client ID:	ZZZZZ	Batch ID: 20561	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/14/2004	SeqNo: 651033					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,2,4-Trichlorobenzene	85.55	10	100	0	85.6	57	101	0	0		
1,4-Dichlorobenzene	77.76	10	100	0	77.8	49	96	0	0		
2,4-Dinitrotoluene	89.97	10	100	0	90	69	116	0	0		
2-Chlorophenol	78.51	10	100	0	78.5	54	95	0	0		
4-Chloro-3-methylphenol	90.22	50	100	0	90.2	71	109	0	0		
4-Nitrophenol	50.35	50	100	0	50.4	34	72	0	0		
Acenaphthene	85.21	10	100	0	85.2	63	95	0	0		
N-Nitrosodi-n-propylamine	85.05	10	100	0	85	63	105	0	0		
Pentachlorophenol	102.4	50	100	0	102	69	122	0	0		
Phenol	40.2	10	100	0	40.2	32	57	0	0		
Pyrene	86.02	10	100	0	86	62	100	0	0		

Sample ID	LCS-20561	SampType: LCS	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/14/2004	Run ID: MS7_041214A					
Client ID:	ZZZZZ	Batch ID: 20561	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/14/2004	SeqNo: 651040					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,2,4-Trichlorobenzene	75.64	10	100	0	75.6	57	101	0	0		
1,4-Dichlorobenzene	70.51	10	100	0	70.5	49	96	0	0		
2,4-Dinitrotoluene	78.18	10	100	0	78.2	69	116	0	0		
2-Chlorophenol	74.87	10	100	0	74.9	54	95	0	0		
4-Chloro-3-methylphenol	88.78	50	100	0	88.8	71	109	0	0		
4-Nitrophenol	57.6	50	100	0	57.6	34	72	0	0		
Acenaphthene	71.95	10	100	0	72	63	95	0	0		
N-Nitrosodi-n-propylamine	82.71	10	100	0	82.7	63	105	0	0		
Pentachlorophenol	90.37	50	100	0	90.4	69	122	0	0		
Phenol	41.92	10	100	0	41.9	32	57	0	0		
Pyrene	79.85	10	100	0	79.8	62	100	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO- Surrogate dilute out
H - Sample exceeded holding time
Calculations are based on raw values



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	LCS-20561	SampType: LCS	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/14/2004	Run ID: MS7_041214A					
Client ID:	ZZZZZ	Batch ID: 20561	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/15/2004	SeqNo: 651466					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,2,4-Trichlorobenzene	73.9	10	100	0	73.9	57	101	0	0		
1,4-Dichlorobenzene	68.58	10	100	0	68.6	49	96	0	0		
2,4-Dinitrotoluene	75.9	10	100	0	75.9	69	116	0	0		
2-Chlorophenol	73.35	10	100	0	73.4	54	95	0	0		
4-Chloro-3-methylphenol	87.33	50	100	0	87.3	71	109	0	0		
4-Nitrophenol	54.4	50	100	0	54.4	34	72	0	0		
Acenaphthene	69.71	10	100	0	69.7	63	95	0	0		
N-Nitrosodi-n-propylamine	81.63	10	100	0	81.6	63	105	0	0		
Pentachlorophenol	87.32	50	100	0	87.3	69	122	0	0		
Phenol	40.93	10	100	0	40.9	32	57	0	0		
Pyrene	77.56	10	100	0	77.6	62	100	0	0		

Sample ID	MB-20561MS	SampType: MS	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/14/2004	Run ID: MS6_041214A					
Client ID:	ZZZZZ	Batch ID: 20561	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/14/2004	SeqNo: 651034					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,2,4-Trichlorobenzene	85.44	10	100	0	85.4	57	102	0	0		
1,4-Dichlorobenzene	78.23	10	100	0	78.2	49	97	0	0		
2,4-Dinitrotoluene	90.3	10	100	0	90.3	71	114	0	0		
2-Chlorophenol	80	10	100	0	80	56	94	0	0		
4-Chloro-3-methylphenol	93.27	50	100	0	93.3	72	108	0	0		
4-Nitrophenol	51.7	50	100	0	51.7	34	73	0	0		
Acenaphthene	85.73	10	100	0	85.7	64	94	0	0		
N-Nitrosodi-n-propylamine	88.88	10	100	0	88.9	63	107	0	0		
Pentachlorophenol	103.1	50	100	0	103	70	124	0	0		
Phenol	39.27	10	100	0	39.3	32	57	0	0		
Pyrene	85.59	10	100	0	85.6	63	99	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO - Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072839
Project: REFINERY-CHEMOIL

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20561MSD	SampType: MSD	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/14/2004	Run ID: MS6_041214A					
Client ID: ZZZZZ		Batch ID: 20561	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/14/2004	SeqNo: 651035					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	89.92	10	100	0	89.9	57	102	0	0		
1,4-Dichlorobenzene	81.52	10	100	0	81.5	49	97	0	0		
2,4-Dinitrotoluene	92.88	10	100	0	92.9	71	114	0	0		
2-Chlorophenol	82.58	10	100	0	82.6	56	94	0	0		
4-Chloro-3-methylphenol	94.86	50	100	0	94.9	72	108	0	0		
4-Nitrophenol	56.83	50	100	0	56.8	34	73	0	0		
Acenaphthene	88.84	10	100	0	88.8	64	94	0	0		
N-Nitrosodi-n-propylamine	90.12	10	100	0	90.1	63	107	0	0		
Pentachlorophenol	109.4	50	100	0	109	70	124	0	0		
Phenol	43.44	10	100	0	43.4	32	57	0	0		
Pyrene	87.55	10	100	0	87.6	63	99	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO- Surrogate dilute out
H - Sample exceeded holding time

CHAIN OF CUSTODY RECORD

Pg of

FOR LABORATORY USE ONLY:

 Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90755 (562) 989-4045 • Fax (562) 989-4040		P.O.#: <u> </u> Logged By: <u> </u> Date: <u>12/10/04</u>		Method of Transport ☒ Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: <u> </u> Sample Condition Upon Receipt 1. CHILLED <u>NO</u> Y ☐ N ☒ 4. SEALED Y ☐ N ☒ 2. HEADSPACE (VOA) Y ☒ N ☐ 5. # OF SPLS MATCH COC Y ☒ N ☐ 3. CONTAINER INTACT Y ☒ N ☐ 6. PRESERVED Y ☐ N ☒	
Client: <u>TESTA</u> Address: <u> </u> City: <u> </u> State: <u> </u> Zip Code: <u> </u> Attn: <u> </u>		Project #: <u> </u> Sampler: <u>JUSTIN STEPAJIAN</u> (Signature) Relinquished by: (Signature and Printed Name) <u> </u> Date: <u>12/10/04</u> Time: <u>0855</u> Relinquished by: (Signature and Printed Name) <u> </u> Date: <u> </u> Time: <u> </u> Relinquished by: (Signature and Printed Name) <u> </u> Date: <u> </u> Time: <u> </u>		Special Instructions/Comments: <u> </u> Bill To: <u> </u> Attn: <u>Ken E20C</u> Co: <u>Sig. Hill Holding Co.</u> Address: <u>2365 E. Sepulveda</u> City: <u>CA</u> State: <u>CA</u> Zip: <u>90810</u> Circle or Add Analysis(es) Requested: <u>TPH - 8015 M (6AS+Pestic)</u> 801A (Pesticides) 802 (PCB) 850B (Volatiles) 8270C (BNA) 6010B (Total Metal) 8015B (GRO) / BTX 8015B (DRO)	
I hereby authorize ATL to perform the work indicated below: Project Mgr /Submitter: <u>J. Skpanim</u> Date: <u>12/10/04</u> Signature: <u> </u>		Send Report To: <u>TESTA</u> Attn: <u> </u> Co: <u> </u> Address: <u>19814 Serrano Maria Rd.</u> City: <u>Hills</u> State: <u>CA</u> Zip: <u>95245</u>		Sample/Records - Archival & Disposal Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report. Storage Fees (applies when storage is requested): • Sample : \$2.00 / sample / mo (after 45 days) • Records : \$1.00 / ATL workorder / mo (after 1 year)	
LAB USE ONLY: Batch #: <u>42839-001</u> Lab No.: <u> </u>		Sample Description Sample I.D. / Location <u>MW #10</u> <u>MW #2</u> <u>MW #1A</u> <u>MW #3</u> <u>MW #9</u> <u>MW #8</u>		Date <u>12/9/04</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	
TAT: A= <u> </u> Overnight ≤ 24 hr B= <u> </u> Emergency Next workday T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal		Critical C= <u>2</u> Workdays Urgent D= <u>3</u> Workdays Routine E= <u>7</u> Workdays		Preservatives: H=HCl N=HNO ₃ S=H ₂ SO ₄ C=4°C Z=Zn(AC) ₂ O=NaOH T=Na ₂ S ₂ O ₃	

DISTRIBUTION: White with report, Yellow to folder, Pink to submitter.

December 29, 2004



Stephen Testa
Testa Environmental Corporation
19814 Jesus Maria Road,
Mokelumne Hill, CA 95245

TEL: (209) 754-1422
FAX: (209) 754-1422

ELAP No.: 1838
NELAP No.: 02107CA
CSDLAC No.: 10196

Workorder No.: 072979

RE: CHEMOIL REFINERY SITE

Attention: Stephen Testa

Enclosed are the results for sample(s) received on December 20, 2004 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.



CLIENT: Testa Environmental Corporation
Project: CHEMOIL REFINERY SITE
Lab Order: 072979

CASE NARRATIVE**Analytical Comments for Method 8015 (Diesel)**

Sample 072979-001D contains hydrocarbons within the diesel range that do not match the diesel pattern. Quantitation was based on a diesel standard.



Advanced Technology Laboratories

Date: 29-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072979
Project: CHEMOIL REFINERY SITE
Lab ID: 072979-001A

Client Sample ID: MW-1
Collection Date: 12/20/2004
Matrix: GROUNDWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS2_041220A	QC Batch: Q04VW148	PrepDate	Analyst: MFR		
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	12/20/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	12/20/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	12/20/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	12/20/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	12/20/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	12/20/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	12/20/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	12/20/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	12/20/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	12/20/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	12/20/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	12/20/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	12/20/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	12/20/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	12/20/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	12/20/2004
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	12/20/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	12/20/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	12/20/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	12/20/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	12/20/2004
2-Chlorotoluene	ND	5.0	µg/L	1	12/20/2004
4-Chlorotoluene	ND	5.0	µg/L	1	12/20/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	12/20/2004
Benzene	ND	5.0	µg/L	1	12/20/2004
Bromobenzene	ND	5.0	µg/L	1	12/20/2004
Bromodichloromethane	ND	5.0	µg/L	1	12/20/2004
Bromoform	ND	5.0	µg/L	1	12/20/2004
Bromomethane	ND	5.0	µg/L	1	12/20/2004
Carbon tetrachloride	ND	5.0	µg/L	1	12/20/2004
Chlorobenzene	ND	5.0	µg/L	1	12/20/2004
Chloroethane	ND	5.0	µg/L	1	12/20/2004
Chloroform	ND	5.0	µg/L	1	12/20/2004
Chloromethane	ND	5.0	µg/L	1	12/20/2004
cis-1,2-Dichloroethene	ND	5.0	µg/L	1	12/20/2004
cis-1,3-Dichloropropene	ND	5.0	µg/L	1	12/20/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 29-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072979
Project: CHEMOIL REFINERY SITE
Lab ID: 072979-001A

Client Sample ID: MW-1
Collection Date: 12/20/2004
Matrix: GROUNDWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS**EPA 8260B**

RunID:	MS2_041220A	QC Batch:	Q04VW148	PrepDate	Analyst: MFR
Di-isopropyl ether	ND	5.0	µg/L	1	12/20/2004
Dibromochloromethane	ND	5.0	µg/L	1	12/20/2004
Dibromomethane	ND	5.0	µg/L	1	12/20/2004
Dichlorodifluoromethane	ND	5.0	µg/L	1	12/20/2004
Ethyl tert-butyl ether	ND	5.0	µg/L	1	12/20/2004
Ethylbenzene	ND	5.0	µg/L	1	12/20/2004
Hexachlorobutadiene	ND	5.0	µg/L	1	12/20/2004
Isopropylbenzene	29	5.0	µg/L	1	12/20/2004
m,p-Xylene	ND	10	µg/L	1	12/20/2004
Methylene chloride	ND	5.0	µg/L	1	12/20/2004
MTBE	ND	5.0	µg/L	1	12/20/2004
n-Butylbenzene	ND	5.0	µg/L	1	12/20/2004
n-Propylbenzene	24	5.0	µg/L	1	12/20/2004
Naphthalene	13	5.0	µg/L	1	12/20/2004
o-Xylene	ND	5.0	µg/L	1	12/20/2004
sec-Butylbenzene	7.3	5.0	µg/L	1	12/20/2004
Styrene	ND	5.0	µg/L	1	12/20/2004
Tert-amyl methyl ether	ND	5.0	µg/L	1	12/20/2004
Tert-Butanol	ND	100	µg/L	1	12/20/2004
tert-Butylbenzene	ND	5.0	µg/L	1	12/20/2004
Tetrachloroethene	ND	5.0	µg/L	1	12/20/2004
Toluene	ND	5.0	µg/L	1	12/20/2004
trans-1,2-Dichloroethene	ND	5.0	µg/L	1	12/20/2004
Trichloroethene	ND	5.0	µg/L	1	12/20/2004
Trichlorofluoromethane	ND	5.0	µg/L	1	12/20/2004
Vinyl chloride	ND	5.0	µg/L	1	12/20/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

4 of 16



Advanced Technology Laboratories

Date: 29-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072979
Project: CHEMOIL REFINERY SITE
Lab ID: 072979-001B

Client Sample ID: MW-1
Collection Date: 12/20/2004
Matrix: GROUNDWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

GASOLINE RANGE ORGANICS BY GC/FID

EPA 8015B(M)

RunID: GC6_041223A	QC Batch: I04VW222	PrepDate	Analyst: JPC
GRO	0.47 0.20	mg/L 1	12/23/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 29-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072979
Project: CHEMOIL REFINERY SITE
Lab ID: 072979-001C

Client Sample ID: MW-1
Collection Date: 12/20/2004
Matrix: GROUNDWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS						
(EPA 3510C)			EPA 8270C			
RunID: MS7_041227A	QC Batch: 20709			PrepDate	12/27/2004	Analyst: JWS
1,2,4-Trichlorobenzene	ND	11		µg/L	1	12/27/2004
1,2-Dichlorobenzene	ND	11		µg/L	1	12/27/2004
1,3-Dichlorobenzene	ND	11		µg/L	1	12/27/2004
1,4-Dichlorobenzene	ND	11		µg/L	1	12/27/2004
2,4,5-Trichlorophenol	ND	11		µg/L	1	12/27/2004
2,4,6-Trichlorophenol	ND	11		µg/L	1	12/27/2004
2,4-Dichlorophenol	ND	11		µg/L	1	12/27/2004
2,4-Dimethylphenol	ND	11		µg/L	1	12/27/2004
2,4-Dinitrophenol	ND	56		µg/L	1	12/27/2004
2,4-Dinitrotoluene	ND	11		µg/L	1	12/27/2004
2,6-Dinitrotoluene	ND	11		µg/L	1	12/27/2004
2-Chloronaphthalene	ND	11		µg/L	1	12/27/2004
2-Chlorophenol	ND	11		µg/L	1	12/27/2004
2-Methylnaphthalene	ND	11		µg/L	1	12/27/2004
2-Nitroaniline	ND	56		µg/L	1	12/27/2004
2-Nitrophenol	ND	11		µg/L	1	12/27/2004
3,3'-Dichlorobenzidine	ND	22		µg/L	1	12/27/2004
3-Nitroaniline	ND	56		µg/L	1	12/27/2004
4,6-Dinitro-2-methylphenol	ND	56		µg/L	1	12/27/2004
4-Bromophenyl-phenylether	ND	11		µg/L	1	12/27/2004
4-Chloro-3-methylphenol	ND	56		µg/L	1	12/27/2004
4-Chloroaniline	ND	22		µg/L	1	12/27/2004
4-Chlorophenyl-phenylether	ND	11		µg/L	1	12/27/2004
4-Nitroaniline	ND	22		µg/L	1	12/27/2004
4-Nitrophenol	ND	56		µg/L	1	12/27/2004
Acenaphthene	ND	11		µg/L	1	12/27/2004
Acenaphthylene	ND	11		µg/L	1	12/27/2004
Anthracene	ND	11		µg/L	1	12/27/2004
Benzidine (M)	ND	56		µg/L	1	12/27/2004
Benzo(a)anthracene	ND	11		µg/L	1	12/27/2004
Benzo(a)pyrene	ND	11		µg/L	1	12/27/2004
Benzo(b)fluoranthene	ND	11		µg/L	1	12/27/2004
Benzo(g,h,i)perylene	ND	11		µg/L	1	12/27/2004
Benzo(k)fluoranthene	ND	11		µg/L	1	12/27/2004
Benzoic acid	ND	56		µg/L	1	12/27/2004
Benzyl alcohol	ND	22		µg/L	1	12/27/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 29-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072979
Project: CHEMOIL REFINERY SITE
Lab ID: 072979-001C

Client Sample ID: MW-1
Collection Date: 12/20/2004
Matrix: GROUNDWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS

(EPA 3510C)

EPA 8270C

RunID:	MS7_041227A	QC Batch:	20709	PrepDate	12/27/2004	Analyst: JWS
Bis(2-chloroethoxy)methane	ND	11	µg/L	1	12/27/2004	
Bis(2-chloroethyl)ether	ND	11	µg/L	1	12/27/2004	
Bis(2-chloroisopropyl)ether	ND	11	µg/L	1	12/27/2004	
Bis(2-ethylhexyl)phthalate	ND	11	µg/L	1	12/27/2004	
Butylbenzylphthalate	ND	11	µg/L	1	12/27/2004	
Chrysene	ND	11	µg/L	1	12/27/2004	
Di-n-butylphthalate	ND	11	µg/L	1	12/27/2004	
Di-n-octylphthalate	ND	11	µg/L	1	12/27/2004	
Dibenz(a,h)anthracene	ND	11	µg/L	1	12/27/2004	
Dibenzofuran	ND	11	µg/L	1	12/27/2004	
Diethylphthalate	ND	11	µg/L	1	12/27/2004	
Dimethylphthalate	ND	11	µg/L	1	12/27/2004	
Fluoranthene	ND	11	µg/L	1	12/27/2004	
Fluorene	ND	11	µg/L	1	12/27/2004	
Hexachlorobenzene	ND	11	µg/L	1	12/27/2004	
Hexachlorobutadiene	ND	22	µg/L	1	12/27/2004	
Hexachlorocyclopentadiene	ND	11	µg/L	1	12/27/2004	
Hexachloroethane	ND	11	µg/L	1	12/27/2004	
Indeno(1,2,3-cd)pyrene	ND	11	µg/L	1	12/27/2004	
Isophorone	ND	11	µg/L	1	12/27/2004	
N-Nitrosodi-n-propylamine	ND	11	µg/L	1	12/27/2004	
N-Nitrosodiphenylamine	ND	11	µg/L	1	12/27/2004	
Naphthalene	ND	11	µg/L	1	12/27/2004	
Nitrobenzene	ND	11	µg/L	1	12/27/2004	
Pentachlorophenol	ND	56	µg/L	1	12/27/2004	
Phenanthrene	ND	11	µg/L	1	12/27/2004	
Phenol	ND	11	µg/L	1	12/27/2004	
Pyrene	ND	11	µg/L	1	12/27/2004	
2-Methylphenol	ND	11	µg/L	1	12/27/2004	
4-Methylphenol	ND	11	µg/L	1	12/27/2004	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 29-Dec-04

CLIENT: Testa Environmental Corporation

Client Sample ID: MW-1

Lab Order: 072979

Project: CHEMOIL REFINERY SITE

Collection Date: 12/20/2004

Lab ID: 072979-001D

Matrix: GROUNDWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS BY GC/FID						
(EPA 3510C)			EPA 8015B(M)			
RunID: GC7_041227C	QC Batch: 20687			PrepDate	12/27/2004	Analyst: CBR
Diesel	1.4	0.22		mg/L	1	12/27/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified





Advanced Technology Laboratories

Date: 29-Dec-04

CLIENT: Testa Environmental Corporation
Work Order: 072979
Project: CHEMOIL REFINERY SITE

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_DSL H

Sample ID	MB-20687	SampType: MBLK	TestCode: 8015_W_DSL	Units: mg/L	Prep Date: 12/27/2004	Run ID: GC7_041227C
Client ID:	ZZZZZ	Batch ID: 20687	TestNo: EPA 8015B(M (EPA 3510C)		Analysis Date: 12/27/2004	SeqNo: 655843
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Diesel		ND	0.20			

Sample ID	MB-20687	SampType: MBLK	TestCode: 8015_W_DSL	Units: mg/L	Prep Date: 12/27/2004	Run ID: GC7_041227C
Client ID:	ZZZZZ	Batch ID: 20687	TestNo: EPA 8015B(M (EPA 3510C)		Analysis Date: 12/28/2004	SeqNo: 656440
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Diesel		ND	0.20			

Sample ID	LCS-20687	SampType: LCS	TestCode: 8015_W_DSL	Units: mg/L	Prep Date: 12/27/2004	Run ID: GC7_041227C
Client ID:	ZZZZZ	Batch ID: 20687	TestNo: EPA 8015B(M (EPA 3510C)		Analysis Date: 12/27/2004	SeqNo: 655844
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Diesel		0.6615	0.20	1	0	66.1 57 114 0 0

Sample ID	LCS-20687	SampType: LCS	TestCode: 8015_W_DSL	Units: mg/L	Prep Date: 12/27/2004	Run ID: GC7_041227C
Client ID:	ZZZZZ	Batch ID: 20687	TestNo: EPA 8015B(M (EPA 3510C)		Analysis Date: 12/28/2004	SeqNo: 656441
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Diesel		0.7761	0.20	1	0	77.6 57 114 0 0

Sample ID	MB-20687MS	SampType: MS	TestCode: 8015_W_DSL	Units: mg/L	Prep Date: 12/27/2004	Run ID: GC7_041227C
Client ID:	ZZZZZ	Batch ID: 20687	TestNo: EPA 8015B(M (EPA 3510C)		Analysis Date: 12/27/2004	SeqNo: 655845
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Diesel		0.6603	0.20	1	0	66 46 125 0 0

Qualifiers: ND - Not Detected at the Reporting Limit DO- Surrogate dilute out
 J - Analyte detected below quantitation limits H - Sample exceeded holding time
 R - RPD outside accepted recovery limits
 S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 Calculations are based on raw values



CLIENT: Testa Environmental Corporation
Work Order: 072979
Project: CHEMOIL REFINERY SITE

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP

Sample ID	Q041220MB3	SampleType: MBLK	TestCode: 8260_WP	Units: µg/L	Prep Date:	Run ID: MS2_041220A					
Client ID: ZZZZZ		Batch ID: Q04VW148	TestNo: EPA 8260B		Analysis Date: 12/20/2004	SeqNo: 653525					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	5.0									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									
Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									
Carbon tetrachloride	ND	5.0									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO - Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072979
Project: CHEMOIL REFINERY SITE

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP

Sample ID	Q041220MB3	SampType: MBLK	TestCode: 8260_WP	Units: µg/L	Prep Date:	Run ID: MS2_041220A					
Client ID:	ZZZZZ	Batch ID: Q04VW148	TestNo: EPA 8260B		Analysis Date: 12/20/2004	SeqNo: 653525					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
cis-1,3-Dichloropropene	ND	5.0									
Di-isopropyl ether	ND	5.0									
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethyl tert-butyl ether	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	10									
Methylene chloride	ND	5.0									
MTBE	ND	5.0									
n-Butylbenzene	ND	5.0									
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
Tert-amyl methyl ether	ND	5.0									
Tert-Butanol	ND	100									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									
Trichloroethene	ND	5.0									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values

DO- Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072979
Project: CHEMOIL REFINERY SITE

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP

Sample ID	Q041220MB3	SampType: MBLK	TestCode: 8260_WP	Units: µg/L	Prep Date:	Run ID: MS2_041220A					
Client ID:	ZZZZZ	Batch ID: Q04VW148	TestNo: EPA 8260B		Analysis Date: 12/20/2004	SeqNo: 653525					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID	Q041220LC1	SampType:	LCS	TestCode:	8260_WP	Units:	µg/L	Prep Date:	Run ID: MS2_041220A			
Client ID:	ZZZZZ	Batch ID:	Q04VW148	TestNo:	EPA 8260B				Analysis Date:	12/20/2004		SeqNo: 653522
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
1,1-Dichloroethene	20.35	5.0	20	0	102	63	147	0	0			
Benzene	22	5.0	20	0	110	77	125	0	0			
Chlorobenzene	21.05	5.0	20	0	105	69	126	0	0			
MTBE	21.93	5.0	20	0	110	61	136	0	0			
Toluene	21.93	5.0	20	0	110	76	122	0	0			
Trichloroethene	22.3	5.0	20	0	112	70	129	0	0			

Sample ID	Q041220MB3MS	SampType: MS	TestCode: 8260_WP	Units: µg/L	Prep Date:	Run ID: MS2_041220A					
Client ID: ZZZZZ		Batch ID: Q04VW148	TestNo: EPA 8260B		Analysis Date: 12/20/2004	SeqNo: 653523					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	17.55	5.0	20	0	87.8	63	146	0	0		
Benzene	20.58	5.0	20	0	103	75	126	0	0		
Chlorobenzene	19.93	5.0	20	0	99.7	73	122	0	0		
MTBE	21.01	5.0	20	0	105	61	135	0	0		
Toluene	20.2	5.0	20	0	101	75	123	0	0		
Trichloroethene	21.38	5.0	20	0	107	68	129	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO - Surrogate dilute out
H - Sample exceeded holding time

Calculations are based on raw values
12 of 16



CLIENT: Testa Environmental Corporation
Work Order: 072979
Project: CHEMOIL REFINERY SITE

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20709	SampType:	MBLK	TestCode:	8270_W_FUL	Units:	µg/L	Prep Date:	12/27/2004	Run ID:	MS7_041227A		
Client ID:	ZZZZZ	Batch ID:	20709	TestNo:	EPA 8270C	(EPA 3510C)		Analysis Date:	12/27/2004	SeqNo:	655673		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,2,4-Trichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
2,4,5-Trichlorophenol	ND	10
2,4,6-Trichlorophenol	ND	10
2,4-Dichlorophenol	ND	10
2,4-Dimethylphenol	ND	10
2,4-Dinitrophenol	ND	50
2,4-Dinitrotoluene	ND	10
2,6-Dinitrotoluene	ND	10
2-Chloronaphthalene	ND	10
2-Chlorophenol	ND	10
2-Methylnaphthalene	ND	10
2-Methylphenol	ND	10
2-Nitroaniline	ND	50
2-Nitrophenol	ND	10
3,3'-Dichlorobenzidine	ND	20
3-Nitroaniline	ND	50
4,6-Dinitro-2-methylphenol	ND	50
4-Bromophenyl-phenylether	ND	10
4-Chloro-3-methylphenol	ND	50
4-Chloroaniline	ND	20
4-Chlorophenyl-phenylether	ND	10
4-Methylphenol	ND	10
4-Nitroaniline	ND	20
4-Nitrophenol	ND	50
Acenaphthene	ND	10
Acenaphthylene	ND	10
Anthracene	ND	10

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO- Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072979
Project: CHEMOIL REFINERY SITE

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20709	SampType: MBLK	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/27/2004	Run ID: MS7_041227A					
Client ID: ZZZZZ	Batch ID: 20709	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/27/2004	SeqNo: 655673						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benzidine (M)	ND	50								
Benzo(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	50								
Benzyl alcohol	ND	20								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
Butylbenzylphthalate	ND	10								
Chrysene	ND	10								
Di-n-butylphthalate	ND	10								
Di-n-octylphthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Diethylphthalate	ND	10								
Dimethylphthalate	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	20								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values

DO- Surrogate dilute out
H - Sample exceeded holding time



CLIENT: Testa Environmental Corporation
Work Order: 072979
Project: CHEMOIL REFINERY SITE

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20709	SampType: MBLK	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/27/2004	Run ID: MS7_041227A					
Client ID:	ZZZZZ	Batch ID: 20709	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/27/2004	SeqNo: 655673					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrobenzene	ND	10									
Pentachlorophenol	ND	50									
Phenanthrene	ND	10									
Phenol	ND	10									
Pyrene	ND	10									

Sample ID	LCS-20709	SampType: LCS	TestCode: 8270_W_FULL	Units: µg/L	Prep Date: 12/27/2004	Run ID: MS7_041227A					
Client ID: ZZZZZ		Batch ID: 20709	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/27/2004	SeqNo: 655674					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,2,4-Trichlorobenzene	76.82	10	100	0	76.8	57	101	0	0		
1,4-Dichlorobenzene	71.86	10	100	0	71.9	49	96	0	0		
2,4-Dinitrotoluene	82.62	10	100	0	82.6	69	116	0	0		
2-Chlorophenol	76.15	10	100	0	76.2	54	95	0	0		
4-Chloro-3-methylphenol	92.78	50	100	0	92.8	71	109	0	0		
4-Nitrophenol	62.75	50	100	0	62.8	34	72	0	0		
Acenaphthene	72.81	10	100	0	72.8	63	95	0	0		
N-Nitrosodi-n-propylamine	90.48	10	100	0	90.5	63	105	0	0		
Pentachlorophenol	90.48	50	100	0	90.5	69	122	0	0		
Phenol	42.68	10	100	0	42.7	32	57	0	0		
Pyrene	75.79	10	100	0	75.8	62	100	0	0		

Sample ID	MB-20709MS	SampType: MS	TestCode: 8270_W_FUL	Units: µg/L	Prep Date: 12/27/2004	Run ID: MS7_041227A					
Client ID:	ZZZZZ	Batch ID: 20709	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date: 12/27/2004	SeqNo: 655678					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,2,4-Trichlorobenzene	73.33	10	100	0	73.3	57	102	0	0		
1,4-Dichlorobenzene	69.39	10	100	0	69.4	49	97	0	0		
2,4-Dinitrotoluene	83.62	10	100	0	83.6	71	114	0	0		
2-Chlorophenol	71.83	10	100	0	71.8	56	94	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
DO - Surrogate dilute out
H - Sample exceeded holding time
Calculations are based on raw values



CLIENT: Testa Environmental Corporation
Work Order: 072979
Project: CHEMOIL REFINERY SITE

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270_W_FULL

Sample ID	MB-20709MS	SampType:	MS	TestCode: 8270_W_FUL	Units: µg/L	Prep Date:	12/27/2004	Run ID:	MS7_041227A		
Client ID:	ZZZZZ	Batch ID:	20709	TestNo: EPA 8270C	(EPA 3510C)	Analysis Date:	12/27/2004	SeqNo:	655678		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Chloro-3-methylphenol	91.73	50	100	0	91.7	72	108	0	0		
4-Nitrophenol	ND	50	100	0	41.5	34	73	0	0		
Acenaphthene	70.18	10	100	0	70.2	64	94	0	0		
N-Nitrosodi-n-propylamine	89.33	10	100	0	89.3	63	107	0	0		
Pentachlorophenol	83.03	50	100	0	83	70	124	0	0		
Phenol	39.63	10	100	0	39.6	32	57	0	0		
Pyrene	86.08	10	100	0	86.1	63	99	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values

DO- Surrogate dilute out
H - Sample exceeded holding time

Pg of

DISTRIBUTION: White with report, Yellow to folder, Pink to submitter.

APPENDIX C – PART III

GRAPHS ILLUSTRATING DISSOLVED HYDROCARBONS FLUCTUATIONS WITH TIME

APPENDIX C

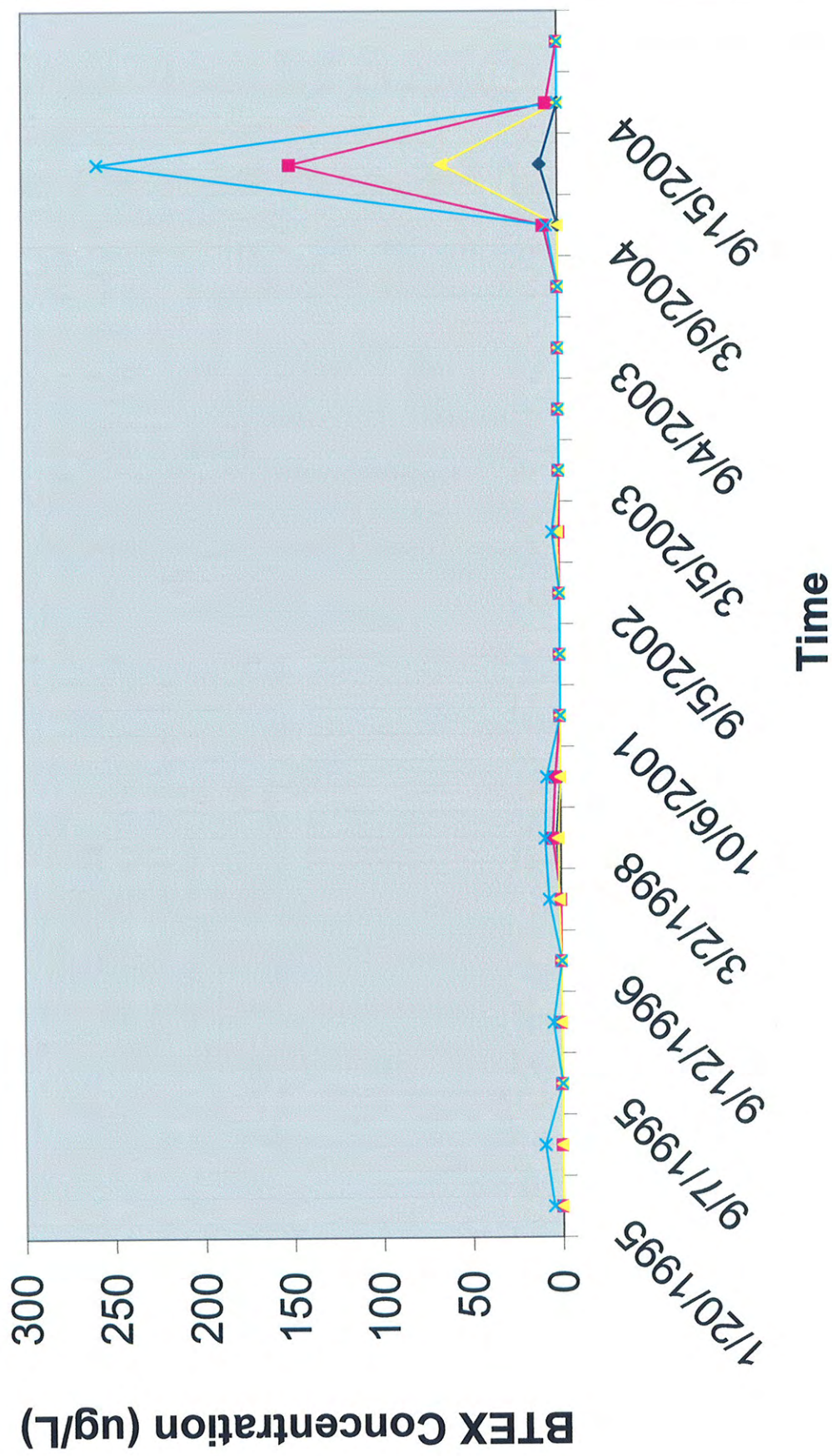
Part III

Graphs Showing BTEX Concentration Fluctuations with Time

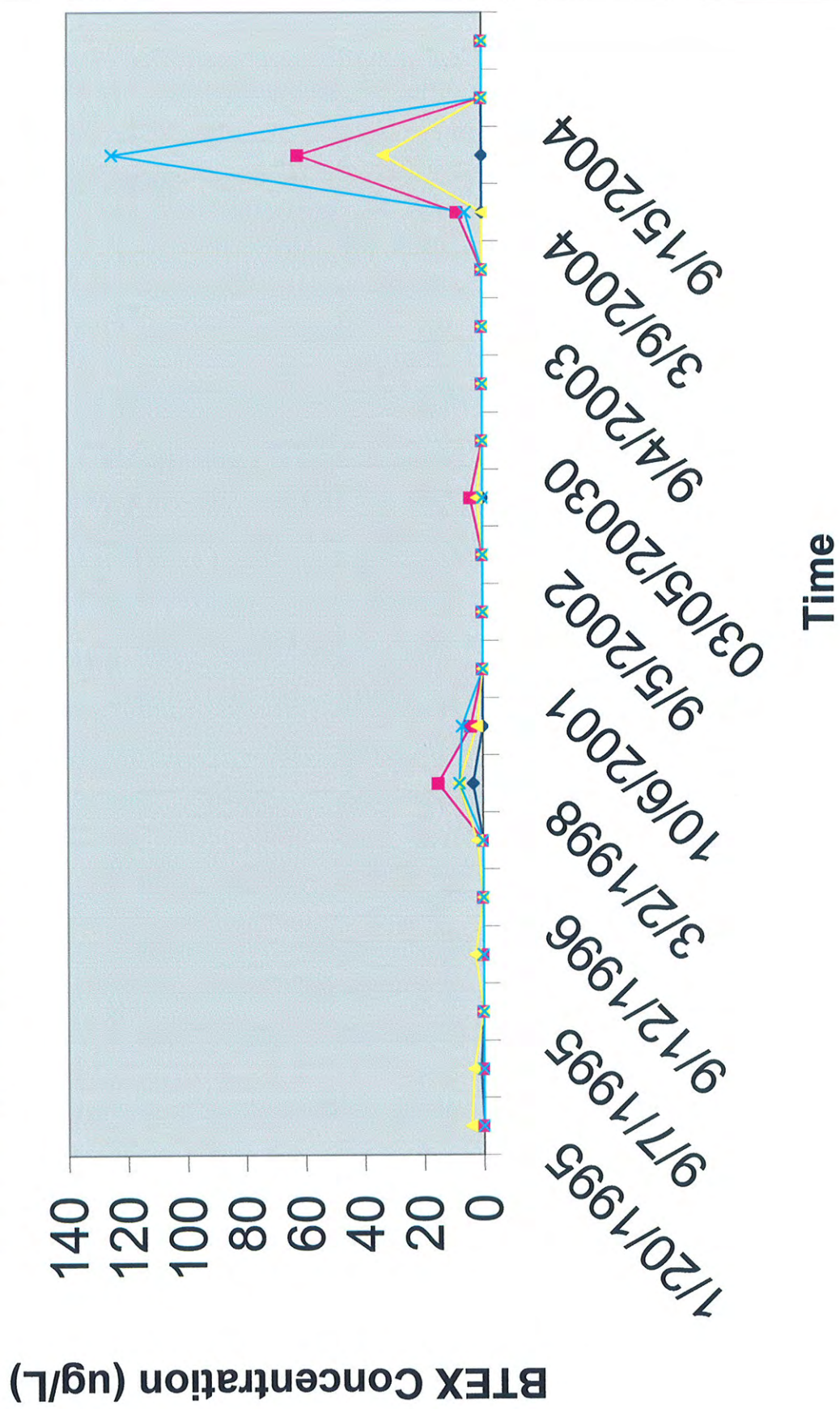
This appendix contains graphs illustrating fluctuations in dissolved BTEX concentrations in groundwater with time for the period from January 1995 through December 2004. Graphs are presented for wells MW-1, MW-1A, MW-3, MW-8, MW-9 and MW-10. MW-2 is not included since no dissolved BTEX has never been reported for this well. Concentrations of benzene, toluene, ethylbenzene and total xylenes are color coded as follows:

Benzene	Dark blue
Toluene	Red
Ethylbenzene	Yellow
Total Xylenes	Aquamarine

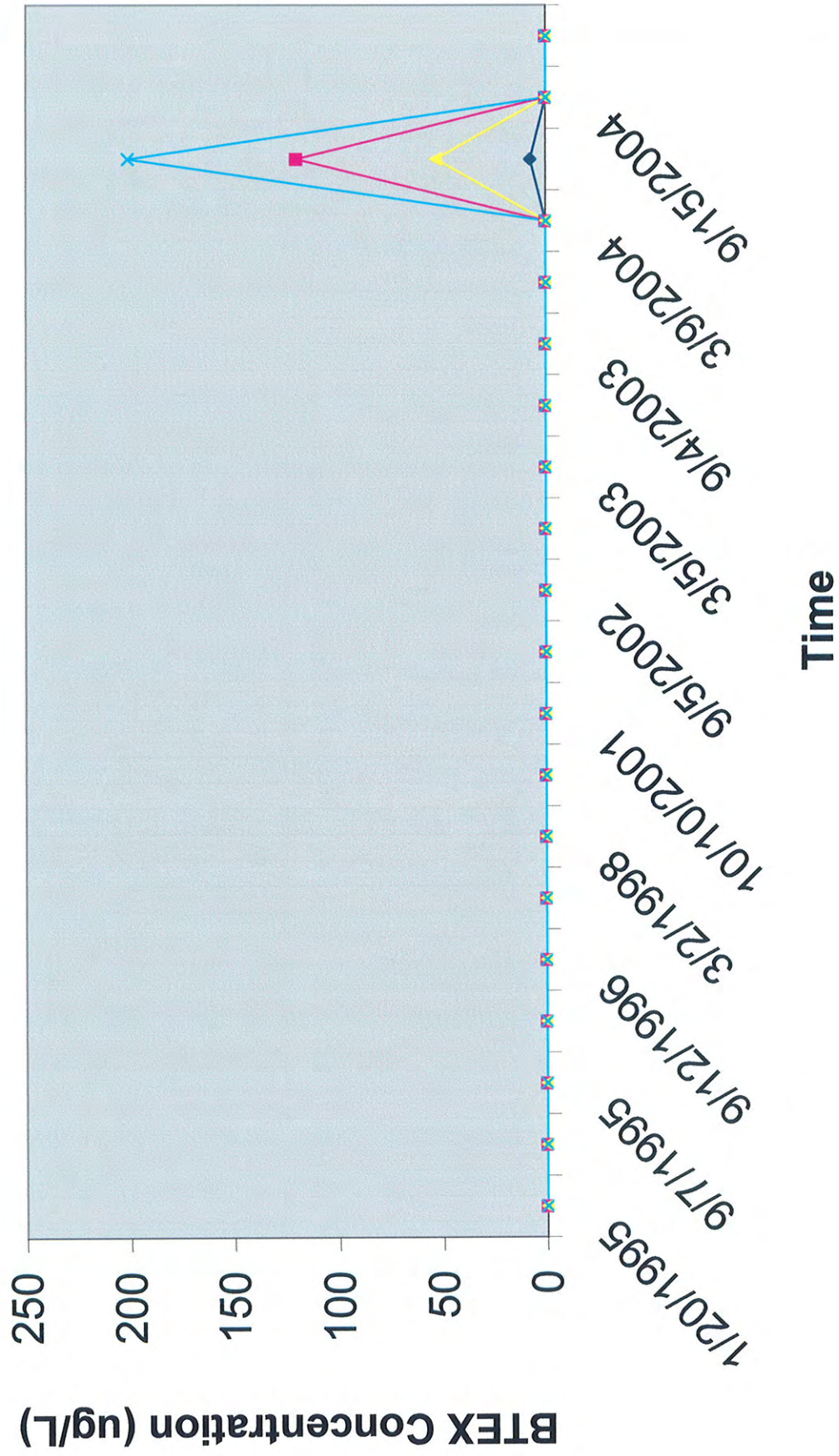
BTEX CONCENTRATION WITH TIME FOR MW-1



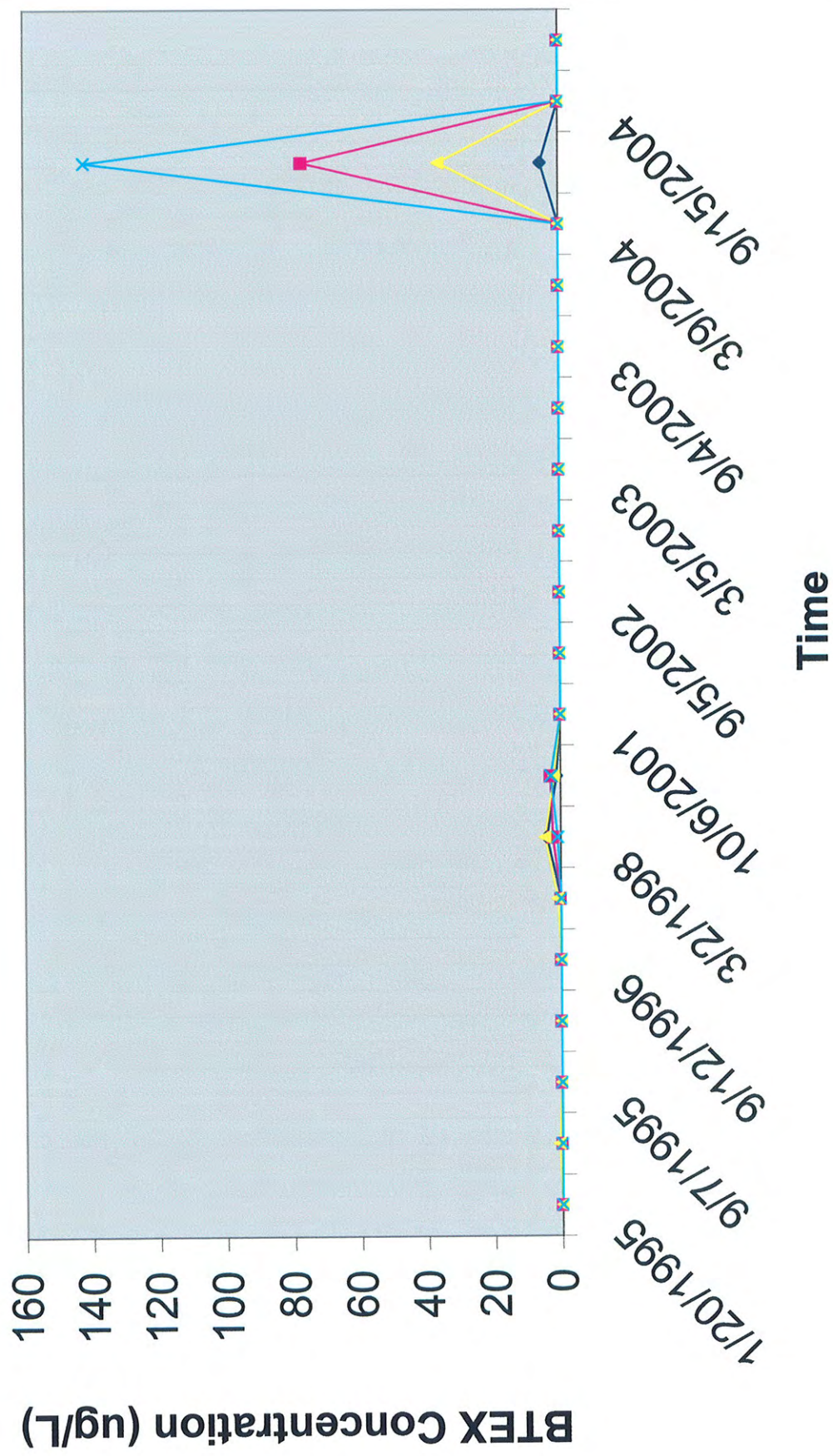
BTEX CONCENTRATION WITH TIME FOR MW-1A



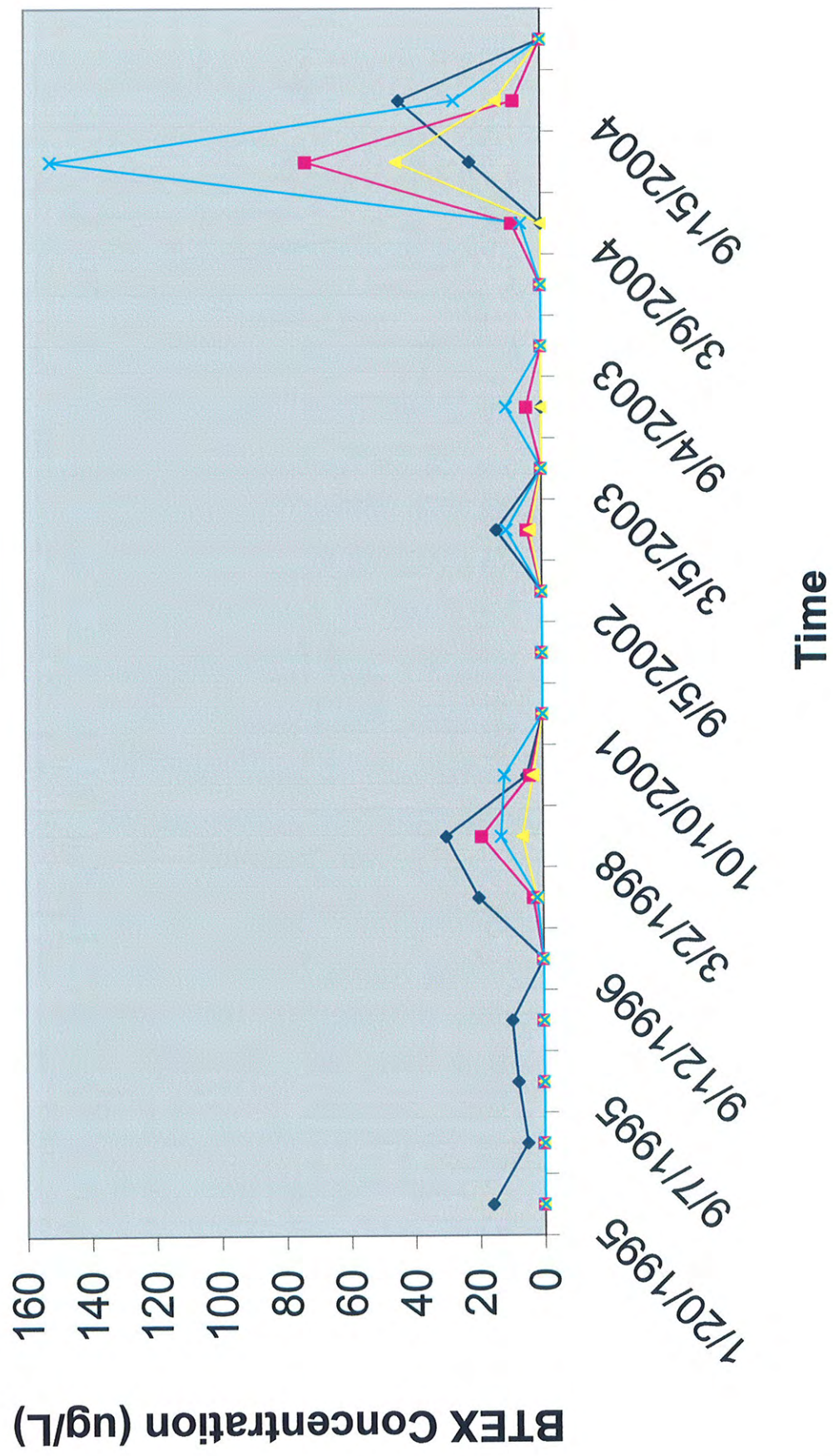
BTEX CONCENTRATION WITH TIME FOR MW-2



BTEX CONCENTRATION WITH TIME FOR MW-3



BTEX CONCENTRATION WITH TIME FOR MW-8



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-004D

Client Sample ID: MW#3
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS BY GC/FID						
(EPA 3510C)			EPA 8015B(M)			
RunID: GC7_041213B	QC Batch: 20558			PrepDate	12/13/2004	Analyst: CBR
Diesel	0.27	0.20		mg/L	1	12/14/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-005A

Client Sample ID: MW#9
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_041215A	QC Batch:	A04VW311	PrepDate	Analyst: MFR
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,3,5-Trimethylbenzene	5.0	5.0	µg/L	1	12/15/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
2-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	12/15/2004
Benzene	ND	5.0	µg/L	1	12/15/2004
Bromobenzene	ND	5.0	µg/L	1	12/15/2004
Bromodichloromethane	ND	5.0	µg/L	1	12/15/2004
Bromoform	ND	5.0	µg/L	1	12/15/2004
Bromomethane	ND	5.0	µg/L	1	12/15/2004
Carbon tetrachloride	ND	5.0	µg/L	1	12/15/2004
Chlorobenzene	ND	5.0	µg/L	1	12/15/2004
Chloroethane	ND	5.0	µg/L	1	12/15/2004
Chloroform	ND	5.0	µg/L	1	12/15/2004
Chloromethane	ND	5.0	µg/L	1	12/15/2004
cis-1,2-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
Di-isopropyl ether	ND	5.0	µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

27 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-005A

Client Sample ID: MW#9
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS**EPA 8260B**

RunID:	MS11_041215A	QC Batch:	A04VW311	PrepDate	Analyst: MFR
Dibromochloromethane	ND	5.0	µg/L	1	12/15/2004
Dibromomethane	ND	5.0	µg/L	1	12/15/2004
Dichlorodifluoromethane	ND	5.0	µg/L	1	12/15/2004
Ethyl tert-butyl ether	ND	5.0	µg/L	1	12/15/2004
Ethylbenzene	ND	5.0	µg/L	1	12/15/2004
Hexachlorobutadiene	ND	5.0	µg/L	1	12/15/2004
Isopropylbenzene	ND	5.0	µg/L	1	12/15/2004
m,p-Xylene	10	10	µg/L	1	12/15/2004
Methylene chloride	ND	5.0	µg/L	1	12/15/2004
MTBE	ND	5.0	µg/L	1	12/15/2004
n-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
n-Propylbenzene	ND	5.0	µg/L	1	12/15/2004
Naphthalene	ND	5.0	µg/L	1	12/15/2004
o-Xylene	ND	5.0	µg/L	1	12/15/2004
sec-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
Styrene	ND	5.0	µg/L	1	12/15/2004
Tert-amyl methyl ether	ND	5.0	µg/L	1	12/15/2004
Tert-Butanol	ND	100	µg/L	1	12/15/2004
tert-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
Tetrachloroethene	ND	5.0	µg/L	1	12/15/2004
Toluene	ND	5.0	µg/L	1	12/15/2004
trans-1,2-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
Trichloroethene	ND	5.0	µg/L	1	12/15/2004
Trichlorofluoromethane	ND	5.0	µg/L	1	12/15/2004
Vinyl chloride	ND	5.0	µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

28 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-005B

Client Sample ID: MW#9
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
GASOLINE RANGE ORGANICS BY GC/FID						
EPA 8015B(M)						
RunID: GC6_041213A	QC Batch: I04VW213			PrepDate	Analyst: JPC	
GRO	4.9	0.20		mg/L	1	12/13/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-005C

Client Sample ID: MW#9
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS						
(EPA 3510C)			EPA 8270C			
RunID: MS7_041214A	QC Batch: 20561		PrepDate	12/14/2004	Analyst: JWS	
1,2,4-Trichlorobenzene	ND	10	µg/L	1	12/15/2004	
1,2-Dichlorobenzene	ND	10	µg/L	1	12/15/2004	
1,3-Dichlorobenzene	ND	10	µg/L	1	12/15/2004	
1,4-Dichlorobenzene	ND	10	µg/L	1	12/15/2004	
2,4,5-Trichlorophenol	ND	10	µg/L	1	12/15/2004	
2,4,6-Trichlorophenol	ND	10	µg/L	1	12/15/2004	
2,4-Dichlorophenol	ND	10	µg/L	1	12/15/2004	
2,4-Dimethylphenol	ND	10	µg/L	1	12/15/2004	
2,4-Dinitrophenol	ND	52	µg/L	1	12/15/2004	
2,4-Dinitrotoluene	ND	10	µg/L	1	12/15/2004	
2,6-Dinitrotoluene	ND	10	µg/L	1	12/15/2004	
2-Chloronaphthalene	ND	10	µg/L	1	12/15/2004	
2-Chlorophenol	ND	10	µg/L	1	12/15/2004	
2-Methylnaphthalene	24	10	µg/L	1	12/15/2004	
2-Nitroaniline	ND	52	µg/L	1	12/15/2004	
2-Nitrophenol	ND	10	µg/L	1	12/15/2004	
3,3'-Dichlorobenzidine	ND	21	µg/L	1	12/15/2004	
3-Nitroaniline	ND	52	µg/L	1	12/15/2004	
4,6-Dinitro-2-methylphenol	ND	52	µg/L	1	12/15/2004	
4-Bromophenyl-phenylether	ND	10	µg/L	1	12/15/2004	
4-Chloro-3-methylphenol	ND	52	µg/L	1	12/15/2004	
4-Chloroaniline	ND	21	µg/L	1	12/15/2004	
4-Chlorophenyl-phenylether	ND	10	µg/L	1	12/15/2004	
4-Nitroaniline	ND	21	µg/L	1	12/15/2004	
4-Nitrophenol	ND	52	µg/L	1	12/15/2004	
Acenaphthene	ND	10	µg/L	1	12/15/2004	
Acenaphthylene	ND	10	µg/L	1	12/15/2004	
Anthracene	ND	10	µg/L	1	12/15/2004	
Benzidine (M)	ND	52	µg/L	1	12/15/2004	
Benzo(a)anthracene	ND	10	µg/L	1	12/15/2004	
Benzo(a)pyrene	ND	10	µg/L	1	12/15/2004	
Benzo(b)fluoranthene	ND	10	µg/L	1	12/15/2004	
Benzo(g,h,i)perylene	ND	10	µg/L	1	12/15/2004	
Benzo(k)fluoranthene	ND	10	µg/L	1	12/15/2004	
Benzoic acid	ND	52	µg/L	1	12/15/2004	
Benzyl alcohol	ND	21	µg/L	1	12/15/2004	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-005C

Client Sample ID: MW#9
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS						
(EPA 3510C)			EPA 8270C			
RunID: MS7_041214A	QC Batch: 20561			PrepDate	12/14/2004	Analyst: JWS
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	12/15/2004
Bis(2-chloroethyl)ether	ND	10		µg/L	1	12/15/2004
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	12/15/2004
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	12/15/2004
Butylbenzylphthalate	ND	10		µg/L	1	12/15/2004
Chrysene	ND	10		µg/L	1	12/15/2004
Di-n-butylphthalate	ND	10		µg/L	1	12/15/2004
Di-n-octylphthalate	ND	10		µg/L	1	12/15/2004
Dibenz(a,h)anthracene	ND	10		µg/L	1	12/15/2004
Dibenzofuran	ND	10		µg/L	1	12/15/2004
Diethylphthalate	ND	10		µg/L	1	12/15/2004
Dimethylphthalate	ND	10		µg/L	1	12/15/2004
Fluoranthene	ND	10		µg/L	1	12/15/2004
Fluorene	ND	10		µg/L	1	12/15/2004
Hexachlorobenzene	ND	10		µg/L	1	12/15/2004
Hexachlorobutadiene	ND	21		µg/L	1	12/15/2004
Hexachlorocyclopentadiene	ND	10		µg/L	1	12/15/2004
Hexachloroethane	ND	10		µg/L	1	12/15/2004
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	12/15/2004
Isophorone	ND	10		µg/L	1	12/15/2004
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	12/15/2004
N-Nitrosodiphenylamine	ND	10		µg/L	1	12/15/2004
Naphthalene	38	10		µg/L	1	12/15/2004
Nitrobenzene	ND	10		µg/L	1	12/15/2004
Pentachlorophenol	ND	52		µg/L	1	12/15/2004
Phenanthrene	ND	10		µg/L	1	12/15/2004
Phenol	14	10		µg/L	1	12/15/2004
Pyrene	ND	10		µg/L	1	12/15/2004
2-Methylphenol	ND	10		µg/L	1	12/15/2004
4-Methylphenol	ND	10		µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-005D

Client Sample ID: MW#9
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS BY GC/FID						
(EPA 3510C)			EPA 8015B(M)			
RunID: GC7_041216B	QC Batch: 20592			PrepDate	12/16/2004	Analyst: CBR
Diesel	5.8	1.0		mg/L	5	12/16/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-006A

Client Sample ID: MW#8
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS11_041215A	QC Batch: A04VW311	PrepDate	Analyst: MFR		
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	12/15/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	12/15/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	12/15/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	12/15/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	12/15/2004
2-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Chlorotoluene	ND	5.0	µg/L	1	12/15/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	12/15/2004
Benzene	ND	5.0	µg/L	1	12/15/2004
Bromobenzene	ND	5.0	µg/L	1	12/15/2004
Bromodichloromethane	ND	5.0	µg/L	1	12/15/2004
Bromoform	ND	5.0	µg/L	1	12/15/2004
Bromomethane	ND	5.0	µg/L	1	12/15/2004
Carbon tetrachloride	ND	5.0	µg/L	1	12/15/2004
Chlorobenzene	ND	5.0	µg/L	1	12/15/2004
Chloroethane	ND	5.0	µg/L	1	12/15/2004
Chloroform	ND	5.0	µg/L	1	12/15/2004
Chloromethane	ND	5.0	µg/L	1	12/15/2004
cis-1,2-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
Di-isopropyl ether	ND	5.0	µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-006A

Client Sample ID: MW#8
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS**EPA 8260B**

RunID:	MS11_041215A	QC Batch:	A04VW311	PrepDate	Analyst: MFR
Dibromochloromethane	ND	5.0	µg/L	1	12/15/2004
Dibromomethane	ND	5.0	µg/L	1	12/15/2004
Dichlorodifluoromethane	ND	5.0	µg/L	1	12/15/2004
Ethyl tert-butyl ether	ND	5.0	µg/L	1	12/15/2004
Ethylbenzene	ND	5.0	µg/L	1	12/15/2004
Hexachlorobutadiene	ND	5.0	µg/L	1	12/15/2004
Isopropylbenzene	ND	5.0	µg/L	1	12/15/2004
m,p-Xylene	ND	10	µg/L	1	12/15/2004
Methylene chloride	ND	5.0	µg/L	1	12/15/2004
MTBE	ND	5.0	µg/L	1	12/15/2004
n-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
n-Propylbenzene	ND	5.0	µg/L	1	12/15/2004
Naphthalene	6.8	5.0	µg/L	1	12/15/2004
o-Xylene	ND	5.0	µg/L	1	12/15/2004
sec-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
Styrene	ND	5.0	µg/L	1	12/15/2004
Tert-amyl methyl ether	ND	5.0	µg/L	1	12/15/2004
Tert-Butanol	620	100	µg/L	1	12/15/2004
tert-Butylbenzene	ND	5.0	µg/L	1	12/15/2004
Tetrachloroethene	ND	5.0	µg/L	1	12/15/2004
Toluene	ND	5.0	µg/L	1	12/15/2004
trans-1,2-Dichloroethene	ND	5.0	µg/L	1	12/15/2004
Trichloroethene	ND	5.0	µg/L	1	12/15/2004
Trichlorofluoromethane	ND	5.0	µg/L	1	12/15/2004
Vinyl chloride	ND	5.0	µg/L	1	12/15/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

34 of 55



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-006B

Client Sample ID: MW#8
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
GASOLINE RANGE ORGANICS BY GC/FID						
EPA 8015B(M)						
RunID: GC6_041213A	QC Batch: I04VW213				PrepDate	Analyst: JPC
GRO	2.1	0.20		mg/L	1	12/13/2004

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interfere
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

35 of 55



Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-006C

Client Sample ID: MW#8
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS						
(EPA 3510C)			EPA 8270C			
RunID: MS7_041214A	QC Batch: 20561		PrepDate	12/14/2004	Analyst: JWS	
1,2,4-Trichlorobenzene	ND	54	µg/L	5	12/15/2004	
1,2-Dichlorobenzene	ND	54	µg/L	5	12/15/2004	
1,3-Dichlorobenzene	ND	54	µg/L	5	12/15/2004	
1,4-Dichlorobenzene	ND	54	µg/L	5	12/15/2004	
2,4,5-Trichlorophenol	ND	54	µg/L	5	12/15/2004	
2,4,6-Trichlorophenol	ND	54	µg/L	5	12/15/2004	
2,4-Dichlorophenol	ND	54	µg/L	5	12/15/2004	
2,4-Dimethylphenol	ND	54	µg/L	5	12/15/2004	
2,4-Dinitrophenol	ND	270	µg/L	5	12/15/2004	
2,4-Dinitrotoluene	ND	54	µg/L	5	12/15/2004	
2,6-Dinitrotoluene	ND	54	µg/L	5	12/15/2004	
2-Chloronaphthalene	ND	54	µg/L	5	12/15/2004	
2-Chlorophenol	ND	54	µg/L	5	12/15/2004	
2-Methylnaphthalene	ND	54	µg/L	5	12/15/2004	
2-Nitroaniline	ND	270	µg/L	5	12/15/2004	
2-Nitrophenol	ND	54	µg/L	5	12/15/2004	
3,3'-Dichlorobenzidine	ND	110	µg/L	5	12/15/2004	
3-Nitroaniline	ND	270	µg/L	5	12/15/2004	
4,6-Dinitro-2-methylphenol	ND	270	µg/L	5	12/15/2004	
4-Bromophenyl-phenylether	ND	54	µg/L	5	12/15/2004	
4-Chloro-3-methylphenol	ND	270	µg/L	5	12/15/2004	
4-Chloroaniline	ND	110	µg/L	5	12/15/2004	
4-Chlorophenyl-phenylether	ND	54	µg/L	5	12/15/2004	
4-Nitroaniline	ND	110	µg/L	5	12/15/2004	
4-Nitrophenol	ND	270	µg/L	5	12/15/2004	
Acenaphthene	ND	54	µg/L	5	12/15/2004	
Acenaphthylene	ND	54	µg/L	5	12/15/2004	
Anthracene	ND	54	µg/L	5	12/15/2004	
Benzidine (M)	ND	270	µg/L	5	12/15/2004	
Benzo(a)anthracene	ND	54	µg/L	5	12/15/2004	
Benzo(a)pyrene	ND	54	µg/L	5	12/15/2004	
Benzo(b)fluoranthene	ND	54	µg/L	5	12/15/2004	
Benzo(g,h,i)perylene	ND	54	µg/L	5	12/15/2004	
Benzo(k)fluoranthene	ND	54	µg/L	5	12/15/2004	
Benzoic acid	ND	270	µg/L	5	12/15/2004	
Benzyl alcohol	ND	110	µg/L	5	12/15/2004	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interfere
 H - Sample exceeded analytical holding time
 E - Value above quantitation range
 R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 17-Dec-04

CLIENT: Testa Environmental Corporation
Lab Order: 072839
Project: REFINERY-CHEMOIL
Lab ID: 072839-006C

Client Sample ID: MW#8
Collection Date: 12/9/2004
Matrix: WASTEWATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS						
(EPA 3510C)			EPA 8270C			
RunID: MS7_041214A	QC Batch: 20561		PrepDate	12/14/2004	Analyst: JWS	
Bis(2-chloroethoxy)methane	ND	54	µg/L	5	12/15/2004	
Bis(2-chloroethyl)ether	ND	54	µg/L	5	12/15/2004	
Bis(2-chloroisopropyl)ether	ND	54	µg/L	5	12/15/2004	
Bis(2-ethylhexyl)phthalate	ND	54	µg/L	5	12/15/2004	
Butylbenzylphthalate	ND	54	µg/L	5	12/15/2004	
Chrysene	ND	54	µg/L	5	12/15/2004	
Di-n-butylphthalate	ND	54	µg/L	5	12/15/2004	
Di-n-octylphthalate	ND	54	µg/L	5	12/15/2004	
Dibenz(a,h)anthracene	ND	54	µg/L	5	12/15/2004	
Dibenzofuran	ND	54	µg/L	5	12/15/2004	
Diethylphthalate	ND	54	µg/L	5	12/15/2004	
Dimethylphthalate	ND	54	µg/L	5	12/15/2004	
Fluoranthene	ND	54	µg/L	5	12/15/2004	
Fluorene	ND	54	µg/L	5	12/15/2004	
Hexachlorobenzene	ND	54	µg/L	5	12/15/2004	
Hexachlorobutadiene	ND	110	µg/L	5	12/15/2004	
Hexachlorocyclopentadiene	ND	54	µg/L	5	12/15/2004	
Hexachloroethane	ND	54	µg/L	5	12/15/2004	
Indeno(1,2,3-cd)pyrene	ND	54	µg/L	5	12/15/2004	
Isophorone	ND	54	µg/L	5	12/15/2004	
N-Nitrosodi-n-propylamine	ND	54	µg/L	5	12/15/2004	
N-Nitrosodiphenylamine	ND	54	µg/L	5	12/15/2004	
Naphthalene	ND	54	µg/L	5	12/15/2004	
Nitrobenzene	ND	54	µg/L	5	12/15/2004	
Pentachlorophenol	ND	270	µg/L	5	12/15/2004	
Phenanthrene	ND	54	µg/L	5	12/15/2004	
Phenol	ND	54	µg/L	5	12/15/2004	
Pyrene	ND	54	µg/L	5	12/15/2004	
2-Methylphenol	ND	54	µg/L	5	12/15/2004	
4-Methylphenol	ND	54	µg/L	5	12/15/2004	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interfere
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

