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NOV 06 2001

TRANSMITTAL MEMORANDUM

TO: ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPT. OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
1131 HARBOR BAY PKWY, SUITE 250
ALAMEDA, CA 94502

DATE: 11/02/01

ATTENTION: SCOTT SEERY

FILE: SES-2001-53

SUBJECT: REDWOOD REGIONAL PARK FUEL LEAK SITE

WE ARE SENDING: ☒ HEREWITH ☐ UNDER SEPARATE COVER
☒ VIA MAIL ☐ VIA

THE FOLLOWING: WELL INSTALLATION, SITE MONITORING, AND CORRECTIVE ACTION REPORT FOR REDWOOD REGIONAL PARK SERVICE YARD SITE – OAKLAND, CALIFORNIA (NOV. 2001)

☐ AS REQUESTED ☐ FOR YOUR APPROVAL
☐ FOR REVIEW ☒ FOR YOUR USE
☐ FOR SIGNATURE ☐ FOR YOUR FILES

COPIES TO: K. BURGER (EBRPD)
M. RUGG (FISH & GAME)
R. BREWER (REGIONAL BOARD)

BY: Bruce Rucker

BMR 11/2/01

★ **Stellar Environmental Solutions**

2198 Sixth Street, Suite 201, Berkeley, CA 94710
Tel: (510) 644-3123 • Fax: (510) 644-3859
Geoscience & Engineering Consulting

October 26, 2001

Mr. Scott O. Seery
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department of Environmental Health, Hazardous Materials Division
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: Well Installation, Site Monitoring, and Corrective Action Report
Redwood Regional Park Service Yard Site – Oakland, California

Dear Mr. Seery:

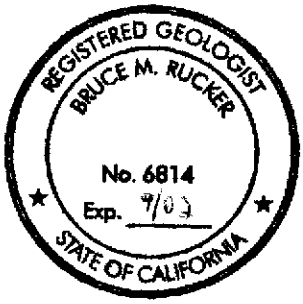
Attached is the Stellar Environmental Solutions (SES) Well Installation, Site Monitoring, and Remedial Action Report for the underground fuel storage tank (UFST) site at the Redwood Regional Park Service Yard, located at 7867 Redwood Road, Oakland, California. This project is being conducted for the East Bay Regional Park District, and follows previous site investigation and remediation activities associated with former leaking underground fuel storage tanks, conducted since 1993. The key regulatory agencies for this investigation are the Alameda County Health Care Services Agency, the California Regional Water Quality Control Board, and the California Department of Fish and Game.

This report summarizes activities conducted between August and October 2001, including: installation, development, and surveying of three additional groundwater monitoring wells; monitoring and sampling of site wells; surface water sampling; injection of ORC™ in the central area of contamination; and disposal of waste soil and water. If you have any questions regarding this report, please contact Mr. Ken Burger of the East Bay Regional Park District, or contact us directly at (510) 644-3123.

Sincerely,

Bruce M. Rucker, R.G., R.E.A
Project Manager

Richard S. Makdisi, R.G., R.E.A
Principal



cc: Michael Rugg, California Department of Fish and Game
Roger Brewer, California Regional Water Quality Control Board
Ken Burger, East Bay Regional Park District

WELL INSTALLATION, SITE MONITORING, AND CORRECTIVE ACTION REPORT

REDWOOD REGIONAL PARK
SERVICE YARD
OAKLAND, CALIFORNIA

Prepared For:

EAST BAY REGIONAL PARK DISTRICT
OAKLAND, CALIFORNIA

Prepared By:

STELLAR ENVIRONMENTAL SOLUTIONS
2198 SIXTH STREET
BERKELEY, CALIFORNIA 94710

October 26, 2001

Project No. 2001-53

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1.0 INTRODUCTION

PROJECT BACKGROUND

The subject property is the East Bay Regional Park District (EBRPD) Redwood Regional Park Service Yard located at 7867 Redwood Road in Oakland, Alameda County, California. The site has undergone site investigations and remediation since 1993 to address subsurface contamination caused by leakage from one or more of two former underground fuel storage tanks (UFSTs) that contained gasoline and diesel fuel. The Alameda County Health Care Services Agency (ACHCSA) has provided regulatory oversight of the investigation since its inception. Other regulatory agencies with historical involvement in site review include the California Regional Water Quality Control Board (RWQCB) and the California Department of Fish and Game (CDFG).

OBJECTIVES AND SCOPE OF WORK

This report discusses activities conducted between August 21 and October 2, 2001, including:

- Installation, development, and surveying of three additional groundwater monitoring wells (MW-9, MW-10, and MW-11);
- Collecting water levels in site wells to determine shallow groundwater flow direction;
- Sampling of site wells for contaminant analysis and natural attenuation indicators;
- Collecting a surface water sample for contaminant analysis;
- Conducting an ORC™ injection program in the central area of contamination; and
- Disposing of accumulated wastewater and drilling cuttings.

Previous SES reports submitted in June 1999 and April 2000 provided a full discussion of previous site remediation and investigations; site geology and hydrogeology; residual site contamination; conceptual model for contaminant fate and transport; and evaluation of hydrochemical trends and plume stability. An October 2000 Feasibility Study report for the site, submitted to ACHCSA, provided detailed analyses of the regulatory implications of the site contamination and an assessment of viable corrective actions (SES, 2000d). The well installations and ORC™ injection activities

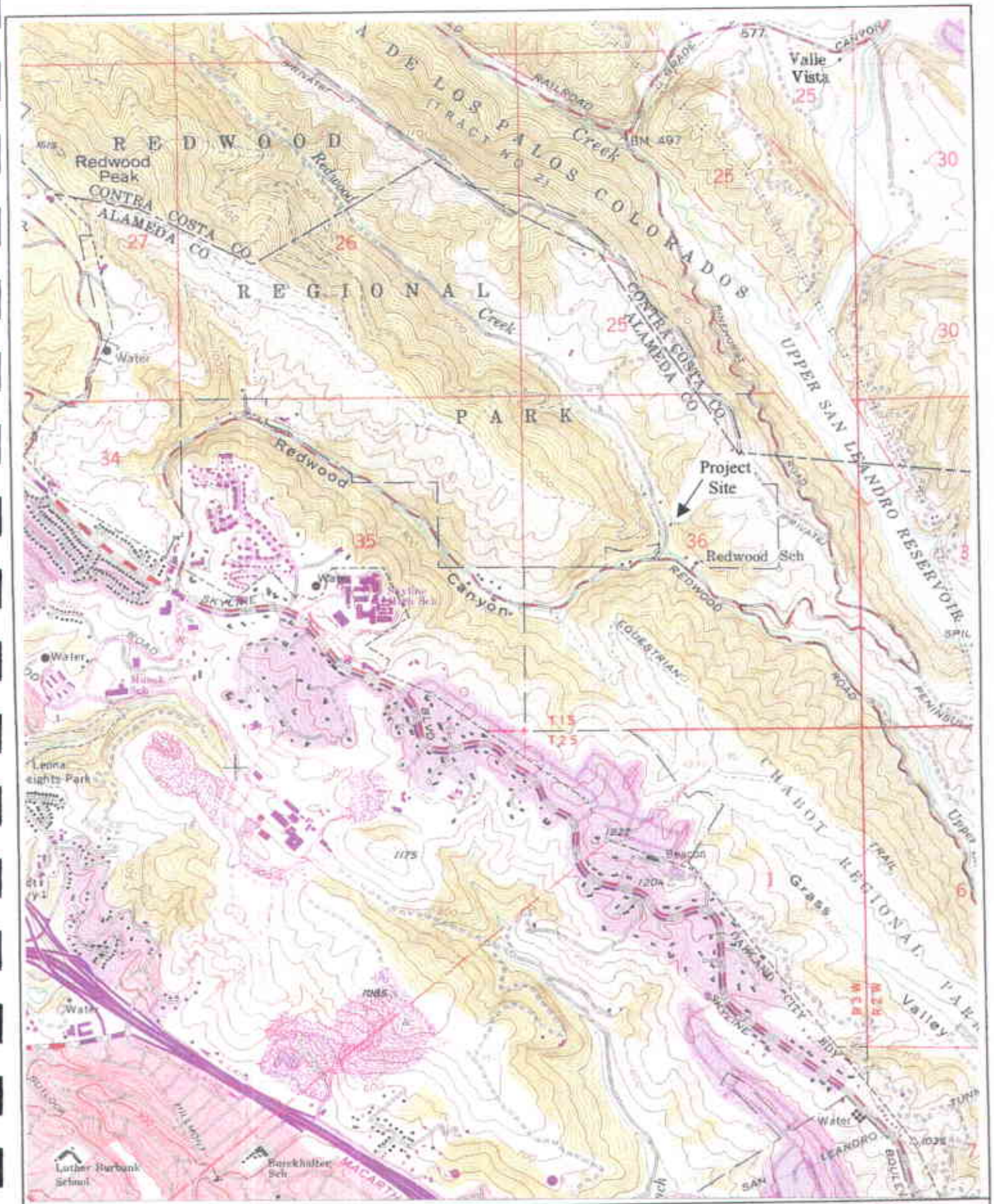
proposed by SES were approved by the ACHCSA in its January 8, 2001 letter to the EBRPD. The previous most recent site monitoring event was conducted in April 2001.

SITE DESCRIPTION

The project site is located at 7867 Redwood Road in Oakland, Alameda County, California. Figure 1 shows the location of the project site. The site slopes to the west, from an elevation of approximately 564 feet above mean sea level (amsl) at the eastern edge of the service yard to approximately 545 feet amsl at Redwood Creek, which approximately defines the western edge of the project site with regard to this investigation. Figure 2 shows the site plan.

REGULATORY OVERSIGHT

The lead regulatory agency for the site investigation and remediation is ACHCSA, with oversight provided by the RWQCB. The CDFG is also involved due to concerns over water quality impacts to Redwood Creek. All workplans and reports are submitted to these agencies. The most recent ACHCSA directive regarding the site (letter dated January 8, 2001) approved the ORC™ injection corrective action and requested continued quarterly groundwater monitoring and sampling. Historical ACHCSA-approved revisions to the groundwater sampling program have included: 1) discontinuing hydrochemical sampling and analysis in wells MW-1, MW-3, MW-5, and MW-6; 2) discontinuing creek surface water sampling at upstream location SW-1; and 3) reducing the frequency of creek surface water sampling from quarterly to semi-annually (ACHCSA, 1996). The latter recommendation has not yet been implemented due to continued concern over potential impacts to Redwood Creek.



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U.S.G.S. TOPOGRAPHIC MAP SHOWING SITE LOCATION

Redwood Regional Park Service Yard
Oakland, Alameda County, California

By: MJC | NOVEMBER 1997

Figure 1

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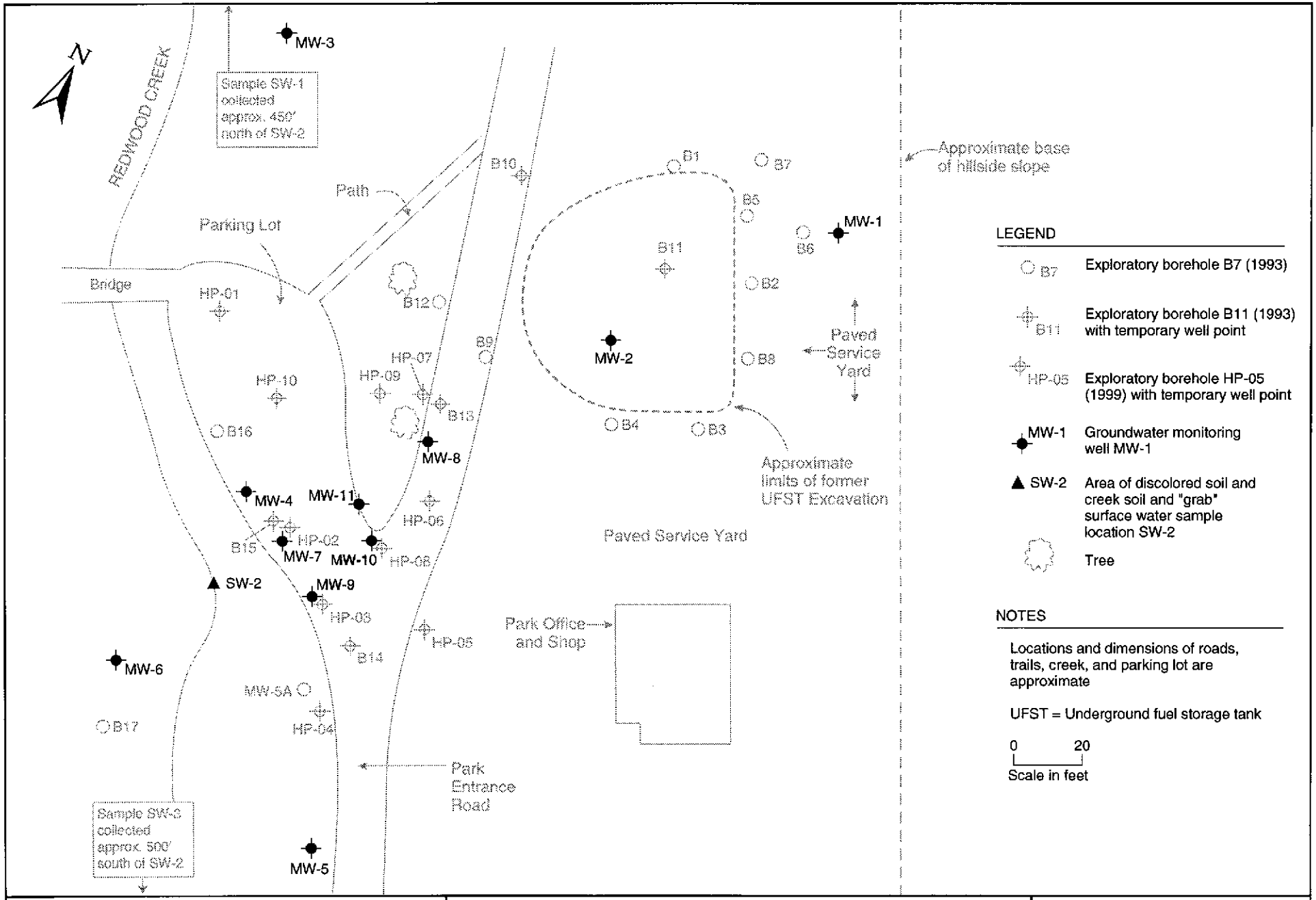


Stellar Environmental Solutions

Geoscience & Engineering Consulting

SITE PLAN AND HISTORICAL SAMPLING LOCATIONS

Redwood Regional Park Service Yard, Oakland, CA

Figure 2

by: MJC

OCTOBER 2001

2001-53-01

2.0 PHYSICAL SETTING

Following is a brief summary of the site hydrogeologic conditions based on geologic logging and water level measurements collected at the site since September 1993. A full discussion is presented in the SES June 1999 report.

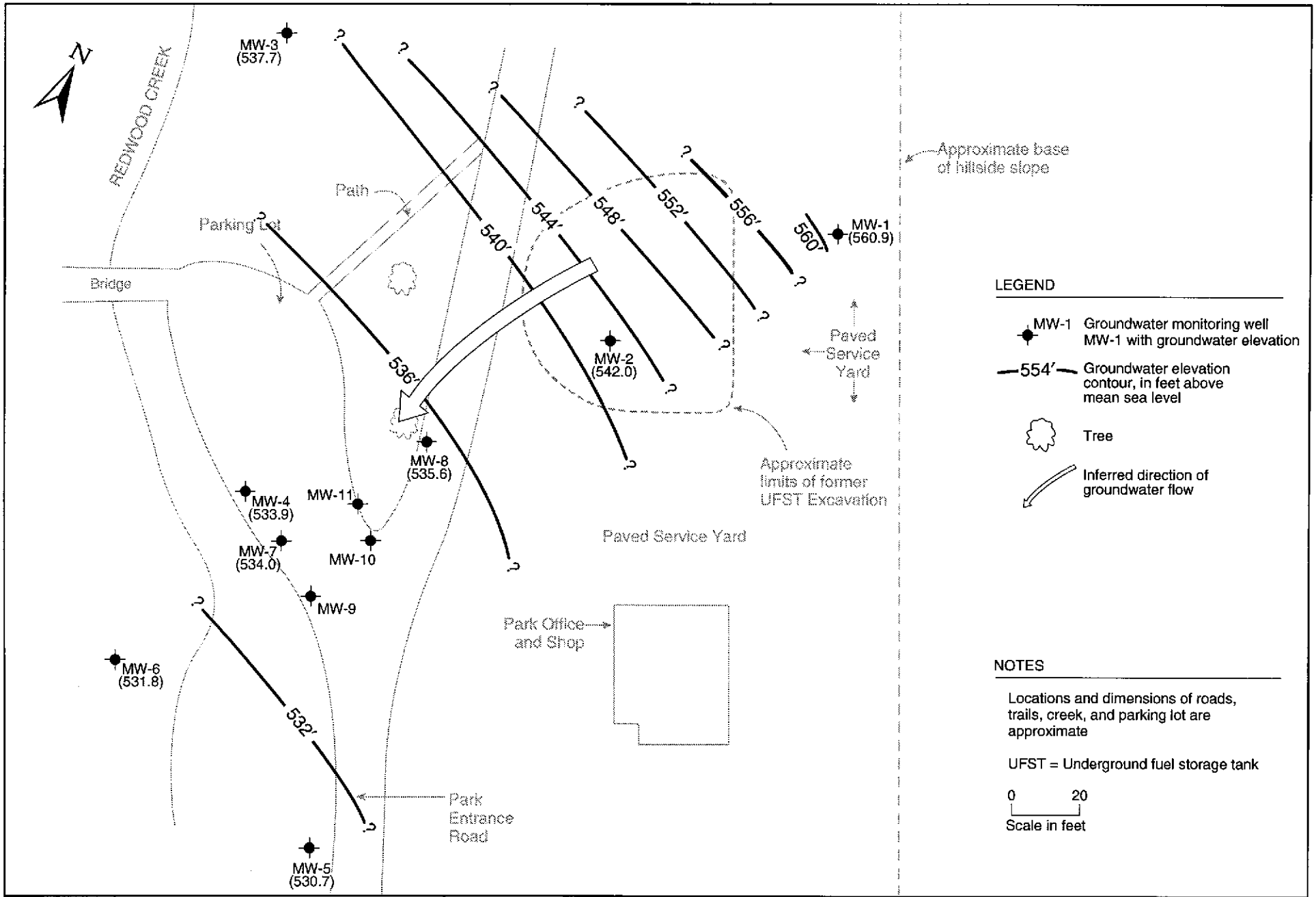
Shallow soil stratigraphy consists of a surficial 3- to 10-foot-thick clayey silt unit underlain by a 5- to 15-foot-thick silty clay unit. In the majority of boreholes, a 5- to 10-foot-thick clayey coarse-grained sand and clayey gravel unit was encountered that laterally grades to a clay or silty clay. This unit overlies a weathered siltstone at the base of the observed soil profile. Soils in the vicinity of MW-1 are inferred to be landslide debris.

Groundwater at the site occurs under unconfined and semi-confined conditions, generally within the clayey, silty sand-gravel zone. The top of this zone varies between approximately 12 and 19 feet below ground surface (bgs), and the bottom of the water-bearing zone (approximately 25 to 28 feet bgs) corresponds to the top of the siltstone bedrock unit. Seasonal fluctuations in groundwater depth create a capillary fringe of several feet which is saturated in the rainy period (late fall through early spring) and unsaturated the remainder of the year. The thickness of the saturated zone plus the capillary fringe varies between approximately 10 and 15 feet in the area of contamination. Local perched water zones have been observed well above the top of the capillary fringe. Local groundwater flow direction has been consistently measured as northeast to southwest.

Figure 3 is a groundwater elevation map constructed from the current event monitoring well static water levels, and Table 1 (in Section 4.0) summarizes current event groundwater elevation data. The groundwater gradient is relatively steep—approximately 2 feet per foot—between well MW-1 and the former UFST source area, resulting from the topography and the highly disturbed nature of sediments in the landslide debris. Downgradient from (west of) the UFST source area (between MW-2 and Redwood Creek), the groundwater gradient is approximately 0.1 feet per foot. The direction of shallow groundwater flow during the current event was to the west-southwest (toward Redwood Creek), which is consistent with site historical groundwater flow direction.

From site-specific empirical data (using the estimated time for UFST-sourced contamination to reach Redwood Creek), a conservative estimate of groundwater velocity within the aquifer material is at 7 to 10 feet per year, with the rate of movement within the clay rich zones being substantially less.

Redwood Creek borders the site to the west, and is a seasonal creek known for the occurrence of rainbow trout. Creek flow in the vicinity of the site shows significant seasonal variation, with little to no flow during the summer and fall dry season, and vigorous flow with depths to 1 foot during the winter and spring wet season. The creek is a gaining stream (i.e., it is recharged by groundwater) in the vicinity of the site that discharges into Upper San Leandro Reservoir, located approximately 1 mile southeast of the site.



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GROUNDWATER ELEVATION MAP–SEPTEMBER, 2001
Redwood Regional Park Service Yard, Oakland, CA

Figure 3

by: MJC | OCTOBER 2001

2001-53-03

3.0 GROUNDWATER MONITORING WELL INSTALLATIONS

In accordance with recommendations made in our Feasibility Study Report (SES, 2000d), three additional groundwater monitoring wells were installed at the site in order to evaluate the effectiveness of the ORC™ injection remedial action. **Wells MW-9, MW-10, and MW-11 were installed in the area of inferred maximum groundwater contamination,** based on previous exploratory borehole and groundwater sampling results. The locations of the new wells are shown on Figure 2.

Prior to drilling, drilling permits were obtained from the Alameda County Public Works Agency (copies included as Appendix A). EBRPD-provided utility drawings were reviewed to identify potential underground utilities. **Boreholes were drilled and wells were constructed by West Hazmat** Drilling (Rancho Cordova, California) **on September 17, 2001.** The boreholes for the wells were drilled with 8-inch-diameter hollow-stem augers. The boreholes were geologically logged in accordance with the visual method of the Unified Soils Classification System. Borehole geologic logs are included as Appendix A. Photodocumentation of well installation activities is included as Appendix B.

The wells were constructed in accordance with California Environmental Protection Agency (Cal/EPA) guidelines for sampling dissolved petroleum products in groundwater. The wells were not anticipated to be used for groundwater extraction, and were therefore constructed of 2-inch diameter casing. Table 1 (in the following Section 4.0) summarizes well construction details, as summarized below:

- 15 feet of **2-inch** diameter PVC factory-slotted well screen (0.010 inch slots) from total well depth;
- Annular sand pack from total well depth to 2 feet above the top of the well screen, overlain by approximately 2 feet of hydrated bentonite pellets, overlain by neat Portland cement grout slurry;
- 2-inch-diameter PVC blank casing from top of well screen to surface with locking well caps; and

- Surface completion with a flush-mounted, Christy-type, traffic-rated well box (MW-10) and aboveground "stovepipe" type box with protective traffic bollards (MW-9 and MW-11).

Blaine Tech Services (San Jose, California) developed the wells on September 21, 2001 by surging and bailing to set the annular sand pack and reduce the potential for fine-grained native materials to infiltrate the sand pack. During development, aquifer stability parameters (temperature, pH, electrical conductivity, and turbidity) were measured. Approximately 20 gallons (approximately 10 wetted casing volumes) was bailed from each well. Copies of the well development field documentation report are included as Appendix C.

On behalf of the EBRPD, SES completed and submitted California Department of Water Resources Well Completion Forms for the two wells (copies included in Appendix A).

WELL SURVEYING

The vertical elevations of the well casing tops were surveyed by a licensed California land surveyor so that accurate groundwater elevations can be measured over time. Elevations of the new wells were surveyed using existing well elevations as datum. Surveying was conducted on October 2, 2001. A copy of the surveyor's plan showing vertical elevations is included as Appendix A.

WASTE DISPOSAL

The approximately 60 gallons of well development water was temporarily containerized in the EBRPD's onsite poly tank that has historically been used to containerize groundwater well development and purge water. A composite "grab" sample of the accumulated wastewater in the tank was collected on September 12, 2001, and determined to be non-hazardous. On September 21, 2001, the approximately 900 gallons of water that had been accumulated in the tank was pumped into a vacuum truck and offhauled by Foss Environmental to Seaport Petroleum (Redwood City, California) for treatment and disposal.

Five 55-gallon labeled drums of soil cuttings from the well installation were temporarily stored onsite. A composite soil sample was collected from the drums for chemical profiling. The soil was determined to be non-hazardous. The drums were transported offsite on October 24, 2001 by FOSS Environmental for disposal at a non-hazardous landfill in the near future. The certified analytical laboratory reports and chain-of-custody record for the soil and wastewater profile samples are included in Appendix E. Copies of the soil and wastewater profiles and transport documentation are included in Appendix D.

GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

Lithologic conditions in the three boreholes were substantially similar to those encountered in previous adjacent boreholes. As shown on the geologic logs (Appendix A), shallow lithology consists of low permeability clayey silt and silty clay to approximately 19 feet bgs in MW-9 and MW-10, and 16 feet bgs in MW-11. Deeper lithology consists of alternating layers of silt/clay with sand/gravel. All boreholes encountered the top of the weathered siltstone bedrock at approximately 27 to 28 feet bgs.

Groundwater was first encountered during drilling at approximately 12 feet bgs in the MW-11 borehole (possibly representing perched water conditions) and at approximately 19 feet in the MW-9 and MW-10 boreholes. Equilibrated water levels in the installed monitoring wells were several feet above first occurrence of groundwater, indicating confining or semi-confining conditions.

4.0 SEPTEMBER 2001 CREEK AND GROUNDWATER SAMPLING

This section presents the creek surface water and groundwater sampling and analytical methods for the current event. Groundwater and surface water analytical results are summarized in Section 5.0. Monitoring and sampling protocols were in accordance with the ACHCSA-approved SES technical workplan (SES 1998a). Activities conducted included:

- Measuring static water levels and field analyzing pre-purge groundwater samples for indicators of natural attenuation (dissolved oxygen, ferrous iron, and redox potential) in wells MW-1 through MW-8;
- Measuring static water levels collecting post-development samples for laboratory analysis of dissolved oxygen in wells MW-9, MW-10, and MW-11;
- Collecting pre-purge groundwater samples for laboratory analysis of the natural attenuation indicators nitrate and sulfate from monitoring wells MW-3, MW-4, MW-7, and MW-8;
- Collecting post-purge groundwater samples for laboratory analysis of site contaminants from wells located within the groundwater plume (MW-2, MW-4, MW-7, MW-8, MW-9, MW-10, and MW-11); and
- Collecting Redwood Creek surface water samples for laboratory analysis from location SW-2 (there was no water at or in the vicinity of location SW-3).

Creek sampling and monitoring/sampling of wells MW-1 through MW-8 was conducted on August 27, 2001. New wells MW-9, MW-10, and MW-11 were sampled on September 21, 2001. The locations of all site monitoring wells and creek water sampling locations are shown on Figure 2. Well construction information and water level data are summarized in Table 1. Appendix C contains the groundwater monitoring field record.

GROUNDWATER LEVEL MONITORING AND SAMPLING

Groundwater monitoring well water level measurements, purging, sampling, and field analyses were conducted by Blaine Tech Services under the direct supervision of SES personnel. Groundwater sampling was conducted in accordance with State of California guidelines for sampling dissolved

Table 1
Groundwater Monitoring Well Construction and Groundwater Elevation Data
Redwood Regional Park Corporation Yard, Oakland, California

Well	Well Depth	Screened Interval	TOC Elevation	Groundwater Elevation (9/01)
MW-1	18	7 to17	565.9	560.9
MW-2	36	20 to 35	566.5	542.0
MW-3	42	7 to 41	560.9	537.7
MW-4	26	10 to 25	548.1	533.9
MW-5	26	10 to 25	547.5	530.7
MW-6	26	10 to 25	545.6	531.8
MW-7	24	9 to24	547.7	534.0
MW-8	23	8 to 23	549.2	535.6
MW-9	26	11 to 26	549.4	[a]
MW-10	26	11 to 26	547.3	[a]
MW-11	26	11 to 26	547.9	[a]

Notes:

[a] Top of casing in wells had not been surveyed prior to monitoring water levels.

TOC = Top of casing.

Wells MW-1 through MW-6 are 4-inch diameter; all other wells are 2-inch diameter.

All elevations are feet above USGS mean sea level. Elevations of Wells MW-1 through MW-6 were surveyed by EBRPD relative to USGS Benchmark No. JHF-49. Wells MW-7 through MW-11 were surveyed by a licensed land surveyor using existing site wells as datum.

analytes in groundwater associated with leaking UFSTs (RWQCB, 1989), and followed the methods and protocols approved by the ACHCSA in the SES 1998 workplan (SES, 1998a).

As the first task of the monitoring event, static water levels were measured using an electric water level indicator. Pre-purge groundwater samples were then collected for field and laboratory analysis of natural attenuation indicators. The wells to be sampled for contaminant analyses were then purged (by bailing and/or pumping) of three wetted casing volumes for existing wells MW-2, MW-4, MW-7 and MW-8, and 10 wetted casing volumes for new wells MW-9, MW-10, and MW-11 (sampled immediately following development). Aquifer stability parameters (temperature, pH, and electrical conductivity) were measured after each purged casing volume to ensure that representative formation water would be sampled.

The well development, purge water, and decontamination rinseate from the current event was containerized in the onsite plastic tank and then transported offsite the same day (discussed in

Section 3.0). Purge water from future events will continue to be accumulated in the onsite tank until it is full, at which time it will be transported offsite for proper disposal.

CREEK SURFACE WATER SAMPLING

Surface water sampling was conducted by SES on August 23, 2001. Surface water samples were collected from Redwood Creek location SW-2 (immediately downgradient of the former UFST source area and within the area of documented creek bank soil contamination). There was no water at or within several hundred feet of the SW-3 location (approximately 500 feet downstream from SW-2) (see Figure 2 for locations). In accordance with a previous ACHCSA-approved SES recommendation, upstream sample location SW-1 was not sampled.

At the time of sampling, water was found only in the immediate vicinity of SW-2; the water was not visibly flowing and depth at SW-2 was approximately 6 to 12 inches. At the SW-2 location, where contaminated groundwater discharge to the creek has historically been observed, a petroleum sheen was noted, as was an orange algae growing on the saturated portion of the creek bank. It is inferred that this algae is utilizing the petroleum as a carbon source, and is therefore a good indicator of the presence of petroleum contamination.

5.0 MONITORING EVENT ANALYTICAL RESULTS

This section presents the field and laboratory analytical results of the most recent monitoring event, preceded by a brief summary of regulatory considerations regarding surface water and groundwater contamination. Table 2 and Figure 4 summarize the contaminant analytical results of the current monitoring event; Table 3 summarizes natural attenuation indicator results from the current event. Appendix E contains the certified analytical laboratory report and chain-of-custody record. A detailed discussion of hydrochemical and surface water trends was included in the October 2000 Feasibility Study report, and will continue to be addressed in upcoming annual summary reports. Appendix F contains a tabular summary of historical groundwater and surface water analytical results.

REGULATORY CONSIDERATIONS

Groundwater Contamination

As specified in the RWQCB's *San Francisco Bay Region Water Quality Control Plan*, all groundwaters are considered potential sources of drinking water unless otherwise approved by the RWQCB, and are also assumed to ultimately discharge to a surface water body and potentially impact aquatic organisms. While it is likely that site groundwater would satisfy geology-related criteria for exclusion as a drinking water source (excessive total dissolved solids and/or insufficient sustained yield), RWQCB approval for this exclusion has not been obtained for the site. As summarized in Table 2, site groundwater contaminant levels are compared to two sets of criteria: 1) RWQCB Tier 1 Risk-Based Screening Levels (RBSLs) for sites where groundwater is a current or potential drinking water source; and 2) RBSLs for sites where groundwater is not a current or potential drinking water source.

As stipulated in the RBSL document (August 2000, Interim Final), the RBSLs are not cleanup criteria; rather they are conservative screening-level criteria designed to be protective of both drinking water resources and aquatic environments in general. The groundwater RBSLs are composed of one or more components, including ceiling value, human toxicity, indoor air impacts, and aquatic life protection. Exceedance of RBSLs suggests that additional investigation and/or remediation is warranted. While drinking water standards (e.g., Maximum Contaminant Levels [MCLs]) are published for the site contaminants of concern, the ACHCSA has indicated that impacts to nearby Redwood Creek are of primary importance and that site target cleanup standards should be primarily evaluated in the context of surface water quality criteria.

Table 2
Groundwater and Surface Water Sample
Analytical Results – August and September, 2001
Redwood Regional Park Corporation Yard, Oakland, California

Compound	Concentrations in µg/L						
	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
GROUNDWATER SAMPLES							
MW-2	260	120	30	6.7	1.6	6.4	27
MW-4	1,300	810	3.2	4.0	29	9.7	< 2.0
MW-7	12,000	5,000	55	25	440	198.2	19
MW-8	9,600	3,200	130	14	470	463	14
MW-9	11,000	170	340	13	720	616	48
MW-10	550	2,100	17	< 0.5	31	43.5	40
MW-11	17,000	7,800	390	17	820	344	< 10
Groundwater RBSLs [a]	100/500	100/640	1.0/46	40/130	30/290	13/13	5/1,800
REDWOOD CREEK SURFACE WATER SAMPLES							
SW-2	440	200	2.1	< 0.5	17	1.3	10
SW-3	Not Sampled *(no water in creek at this location)*						
Surface Water Screening Levels [a, b]	500	640	46	130	290	13	8,000

Notes:

[a] RWQCB Risk-Based Screening Levels (drinking water resource threatened/not threatened) (RWQCB, 2000)

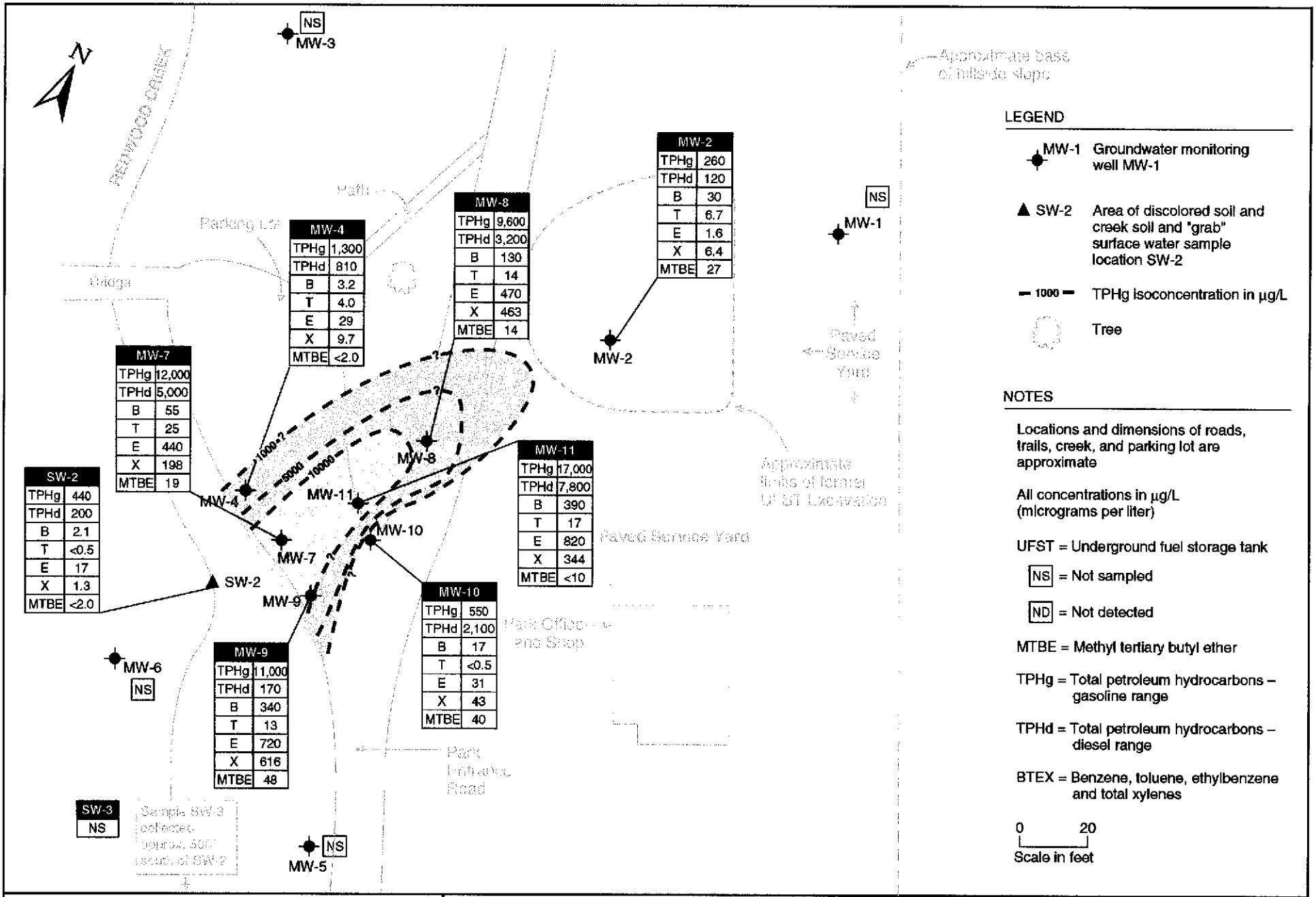
[b] Lowest of chronic and acute surface water criteria published by the State of California, U.S. Environmental Protection Agency, or U.S. Department of Energy.

MTBE = Methyl *tertiary*-butyl ether.

TPHg = Total petroleum hydrocarbons - gasoline range (equivalent to total volatile hydrocarbons - gasoline range).

TPHd = Total petroleum hydrocarbons - diesel range (equivalent to total extractable hydrocarbons - diesel range).

µg/L = Micrograms per liter, equivalent to parts per billion (ppb).



LEGEND

- MW-1 — Groundwater monitoring well MW-1
- ▲ SW-2 — Area of discolored soil and creek soil and "grab" surface water sample location SW-2
- 1000 — TPHg isoconcentration in µg/L
- Tree

NOTES

Locations and dimensions of roads, trails, creek, and parking lot are approximate

All concentrations in µg/L (micrograms per liter)

UFST = Underground fuel storage tank

NS = Not sampled

ND = Not detected

MTBE = Methyl tertiary butyl ether

TPHg = Total petroleum hydrocarbons – gasoline range

TPHd = Total petroleum hydrocarbons – diesel range

BTEX = Benzene, toluene, ethylbenzene and total xylenes

0 20
Scale in feet

Stellar Environmental Solutions
Geoscience & Engineering Consulting

GROUNDWATER MONITORING WELL AND SURFACE WATER ANALYTICAL RESULTS–SEPTEMBER, 2001
Redwood Regional Park Service Yard, Oakland, CA

Figure 4

by: MJC | OCTOBER 2001

2001-53-02

Table 3
Groundwater Sample Analytical Results
Natural Attenuation Indicators - April 13, 2001
Redwood Regional Park Corporation Yard, Oakland, California

Sample I.D.	Nitrogen (as Nitrate) (mg/L)	Sulfate (mg/L)	Dissolved Oxygen (mg/L)	Ferrous Iron (mg/L)	Redox Potential (milliVolts)
MW-1	NA	NA	0.9	0.0	193
MW-2	NA	NA	0.5	0.4	62
MW-3	0.05	36	0.7	0.5	- 46
MW-4	< 0.05	14	0.7	2.5	- 88
MW-5	NA	NA	1.8	0.0	79
MW-6	NA	NA	2.3	0.2	- 4
MW-7	< 0.05	< 0.5	0.4	3.6	116
MW-8	< 0.05	85	0.6	1.4	- 83
MW-9	NA	NA	6.7	NA	NA
MW-10	NA	NA	4.6	NA	NA
MW-11	NA	NA	3.0	NA	NA

Notes:

mg/L = Milligrams per liter, equivalent to parts per million (ppm).

NA = Not analyzed.

Surface Water Contamination

As summarized in Table 2, site surface water contaminant levels are compared to the most stringent screening level criteria published by the State of California, U.S. Environmental Protection Agency, and U.S. Department of Energy. These screening criteria address chronic and acute exposures to aquatic life. As discussed in the RWQCB August 2000 RBSL document, benthic communities at the groundwater/surface water interface (e.g., at site groundwater discharge location SW-2) are assumed to be exposed to the full concentration of groundwater contamination prior to dilution/mixing with the surface water). This was also a fundamental assumption in the instream benthic macro-invertebrate bioassessment events, which documented no measurable impacts.

Historical surface water sampling in the immediate vicinity of contaminated groundwater discharge (SW-2) has sporadically documented petroleum contamination, usually in periods of low stream flow, and generally at concentrations several orders of magnitude less than adjacent (within 20 feet)

groundwater monitoring well concentrations. It is likely that mixing/dilution between groundwater and surface water precludes obtaining an "instantaneous discharge" surface water sample that is wholly representative of groundwater contamination at the discharge location. Therefore, the most conservative assumption is that surface water contamination at the groundwater/surface water interface is equivalent to the upgradient groundwater contamination (e.g., site downgradient wells MW-4, MW-7, and MW-9).

While site target cleanup standards for groundwater have not been determined, it is likely that no further action will be required by regulatory agencies when groundwater (and surface water) contaminant concentrations are all below their respective screening level criteria. Residual contaminant concentrations in excess of screening level criteria might be acceptable to regulatory agencies, provided that a more detailed risk assessment (e.g. Tier 2 and/or Tier 3) demonstrates that no significant impacts are likely.

FINDINGS

Historical and current event groundwater and surface water data indicate the following:

- Current site groundwater contaminant concentrations exceed their respective groundwater RBSLs (for both cases where drinking water resource is and is not threatened), with the exception of toluene, which does not exceed either set of criteria. Site groundwater contaminant concentrations also exceed all surface water screening levels, with the exception of toluene and MTBE.
- Maximum groundwater contaminant concentrations for TPHg, TPHd, benzene, and ethylbenzene were detected in new well MW-11 (approximately 25 feet upgradient of downgradient well MW-7 and approximately 50 feet upgradient of Redwood Creek). Maxima for MTBE and xylenes were detected in new downgradient well MW-9 (approximately 25 feet upgradient of Redwood Creek). Concentrations in former source area well MW-2 (approximately 130 feet upgradient of Redwood Creek) are 1 order of magnitude below downgradient well concentrations.
- The existing well layout fully constrains the lateral extent of groundwater contamination, and the vertical limit is very likely the top of the near-surface (25 to 28 feet) siltstone bedrock. The saturated interval extends approximately 12 to 15 feet from top of bedrock through the capillary fringe.
- The area of groundwater contamination in excess of screening level criteria is no greater than 150 feet long and 250 feet wide, and is likely to be less.

- The groundwater contaminant plume has become disconnected from the former source and migrated well beyond the former source area (represented by well MW-2) toward Redwood Creek.
- The zone of greatest contamination is an approximately 60-foot by 60-foot area just upgradient of the three downgradient wells bordering the creek bank. Current and historical data suggest that maximum concentrations for the majority of the contaminants have not reached the creek and may reach the creek within 1 to 2 years if unabated, and that continued discharge of elevated concentrations could continue for at least several years.
- No site-sourced contaminants were detected in the SW-2 surface water sample in excess of surface water screening level criteria.

NATURAL ATTENUATION PARAMETERS MEASURED

Pre-purge groundwater samples from selected wells were collected and analyzed for indicators of the natural biodegradation of the hydrocarbon contamination or "natural attenuation." With the exception of dissolved oxygen (DO), natural attenuation indicators were not collected in newly installed wells MW-9 through MW-11 because meters were not available. In those wells, samples for DO analysis were submitted to the laboratory (in lieu of our normal procedure of field measurement).

Petroleum hydrocarbons require molecular oxygen to break down the ring structure of specific constituents. Accordingly, although biodegradation of hydrocarbons can occur under anaerobic conditions, hydrocarbon biodegradation is greatest under aerobic conditions. As a result of the demonstrated degradability of petroleum hydrocarbons, remediation by natural attenuation has been found to be a viable option for addressing many hydrocarbon plumes, replacing the need for active remediation. However, such natural attenuation only occurs if the concentration of hydrocarbons is low enough to facilitate the infiltration of natural oxygen through the interstitial space around the contamination, supporting the microorganisms for which the contamination is a food source, thus "attenuating" it. The concentration in soil or groundwater above which natural attenuation is unlikely to take place is still the subject of various research studies. In general, biodegradation of petroleum hydrocarbons in groundwater has a significant role in creating a stable plume and minimizing groundwater plume configuration and concentrations over time. Evidence of the historical occurrence and potential for future occurrence of biodegradation can be obtained from analysis of groundwater for specific biodegradation-indicator parameters, including dissolved oxygen, oxidation-reduction potential, and general mineral analyses.

Dissolved Oxygen

Dissolved oxygen (DO) is the most thermodynamically-favored electron acceptor used in aerobic biodegradation of hydrocarbons. Active aerobic biodegradation of petroleum hydrocarbon compounds requires at least 1 to 2 mg/L of DO in groundwater. During aerobic biodegradation, DO levels are reduced in the hydrocarbon plume as respiration occurs. Therefore, DO levels that vary inversely to hydrocarbon concentrations are consistent with the occurrence of aerobic biodegradation. Current monitoring event DO concentrations ranged from 0.4 to 2.3 mg/L in wells MW-1 through MW-8 (field-measured). The DO readings in new wells MW-9 through MW-11 (lab-measured) were between 3.0 and 6.7 mg/L, which are greater than previous site readings, possibly attributed to the laboratory versus field measurements. The highest concentrations of hydrocarbons are found in wells MW-7, MW-8, MW-9, and MW-11. Of these, MW-7 and MW-8 showed relatively low DO, but MW-9 and MW-11 show relatively high levels. Thus, the variation in the DO readings cannot be definitively attributed to natural oxygen uptake by microorganisms because of the differences in the methods used to measure the DO.

Oxidation-Reduction Potential

The oxidation-reduction potential (ORP) of groundwater is a measure of electron activity, and is an indicator of the relative tendency of a solute species to gain or lose electrons. The ORP of groundwater generally ranges from -400 millivolts (mV) to +800 mV. In oxidizing conditions, the ORP of groundwater is positive; while in reducing conditions, the ORP is typically negative (or less positive). Reducing conditions (less positive ORP) are consistent with occurrence of anaerobic biodegradation. Therefore, ORP values of groundwater inside a hydrocarbon plume are typically less than those measured outside the plume. Current monitoring event ORP concentrations ranged from -88 to 193 mV. ORP readings were not collected for wells MW-9, MW-10, or MW-11. Of the two wells with pronounced hydrocarbon contamination—MW-7 and MW-8—the ORP values showed a high contrast of 116 and –83, respectively. Thus, the ORP readings in this field event did not show a consistent inverse correlation with hydrocarbon concentrations.

General Mineral Analyses

An inverse relationship between general minerals—including ferrous iron (Fe_2^+), nitrate (NO_3^-), and sulfate (SO_4^{2-})—and hydrocarbon concentrations is also indicative of the occurrence of biodegradation. Specifically, anaerobic degradation and oxidation of compounds is implied where general mineral concentrations are low and TPH concentrations are high. In the current site monitoring event, the ferrous iron results measured in MW-1 through MW-8 did not show the expected inverse correlation with hydrocarbon concentrations, with the highest Fe_2^+ levels associated with MW-4, MW-7, and MW-8 that have the highest hydrocarbon concentrations. Nitrate and sulfate concentrations do not show a viable correlation.

While the natural attenuation indicator data provide no compelling correlation with expected values inside as opposed to outside the plume, this is attributed to insufficient data coverage in this field event rather than an actual lack of hydrocarbon degradation. It is reasonable to assume that natural attenuation is likely occurring on the fringes of the plume, where there is less contamination and more oxygen, while oxygen levels in the area of maximum groundwater contamination are likely to be insufficient to support significant natural attenuation. This was one of the main technical rationale criteria for implementing the ORC™ injection corrective action. Future monitoring for bio-indicator analyses will allow for a more complete evaluation of the occurrence of enhanced biodegradation at the site as a result of the ORC™ injection. SES will further evaluate the occurrence of biodegradation, the influence of natural attenuation, and the ultimate extent of the hydrocarbon plume underlying the site.

QUALITY CONTROL SAMPLE ANALYTICAL RESULTS

Laboratory QC samples (e.g., method blanks, matrix spikes, surrogate spikes, etc.) were analyzed by the laboratory in accordance with requirements of each analytical method. All laboratory QC sample results and sample holding times were within the acceptance limits of the methods (see Appendix E).

5.0 ORC™ INJECTION PROGRAM

The following discusses the implementation of the ORC™ injection corrective action program at the site.

The SES October 2000 Feasibility Study report provided detailed analyses of the regulatory implications of the site contamination and an assessment of viable corrective actions (SES, 2000d). Injection of ORC™ was determined to be the most viable corrective action, and the approach was approved by the ACHCSA in its January 8, 2001 letter to the EBRPD.

OBJECTIVES OF CORRECTIVE ACTION

Various assessment and monitoring studies since 1993 have concluded that the site-specific conditions (predominantly available oxygen) for the natural attenuation of the hydrocarbon plume are not sufficient to reduce the hydrocarbon plume concentrations before the plume interfaces with Redwood Creek. This fact was the basis for the more aggressive corrective action program involving the injection of the ORC™ compound to provide a catalyst for enhanced biodegradation to occur.

Current conditions include a 30- to 60-foot-wide groundwater fuel plume in the approximately 20-foot-long area between the downgradient edge of the parking area and Redwood Creek, a steep vegetated hillside slope with no vehicle access. There is no reasonably cost-effective method for remediating contamination within this zone. A substantial mass of groundwater and capillary fringe soil contamination is located upgradient of that zone, primarily west of the roadway. Based on the current plume configuration and hydraulic regime, groundwater contamination equaling or exceeding current site maxima could persist at the downgradient plume limits (adjacent to Redwood Creek) for at least several years, in the absence of corrective action.

The overall corrective action objective is to arrest the migration of the hydrocarbon plume from daylighting downgradient in Redwood Creek. While the discharge has been occurring since at least 1993 when it was noted for the first time, the site data suggests that a higher concentration portion of the plume is moving closer to the Creek, and that this part of the plume needs to be mitigated.

METHOD DESCRIPTION

The ORC™ product is a patented formulation of magnesium peroxide that produces a slow and sustained (generally 6- to 9-month duration) release of molecular oxygen when in contact with soil moisture or groundwater. The oxygen release function stimulates the growth of naturally-occurring microbes that will aerobically degrade petroleum hydrocarbons, using the carbon as a food source. This process is especially useful in areas where elevated levels of petroleum hydrocarbons have inhibited naturally-occurring oxygen to levels below those required for microbial degradation. A smaller percentage of hydrocarbon degradation is anticipated via direct oxidation, especially in close proximity to the injection boreholes. For the subject site, the ORC™ was delivered as a slurry across the saturated interval via injection by a direct-push Geoprobe™ rig.

A 4,400-square foot grid system consisting of 44 square cells (each 100 square feet) was overlain over the area of maximum groundwater contamination, as determined by available soil and groundwater analytical data. Figure 5 shows the grid layout and location of injection points—one in each cell—with color-coded sub-grid cells showing amounts of ORC™ injected. Cells were grouped into five sub-grids according to similarity in groundwater contamination and/or saturated intervals. Cells were identified by sub-grid name and cell number (e.g., "Cell 3-4" is the fourth cell in Sub-Grid 3). Using methods prescribed by the ORC™ vendor, the mass of ORC™ to be injected in each cell was calculated based on inferred average contaminant concentrations. The saturated interval was determined based on existing borehole data, and included the interval between the top of the siltstone bedrock and the top of the capillary fringe (15 feet in the majority of the cells).

Table 4 summarizes data regarding the ORC™ injection program, including: size of sub-grids; ORC™ injection intervals; inferred average contaminant concentrations; and mass of ORC™ injected at each cell. **Between 30 and 100 pounds of ORC™ was injected at each cell,** depending on the inferred contaminant concentrations at each cell and the height of the saturated interval. Further sub-division of the grid was not supported by the density of available geologic and contaminant data from the site. **A total of 3,000 pounds of ORC™ was injected in all 44 cells.**

As shown on Figure 5, injection points along the roughly north-south lines perpendicular to the plume's longitudinal axis were staggered to maximize the distribution of oxygen release and minimize the potential for "channels" where contaminated groundwater would not intercept oxygenated areas. **To ensure maximum efficacy of the ORC™ in the downgradient area of the plume, adjacent to the creek, cells in sub-grid 5 received the site maximum of 100 pounds ORC™ per injection point.** To ensure that the effectiveness of site wells in monitoring representative formation water would not be compromised (i.e., ORC™ slurry was not injected into the wells' annular sand pack), no injection points were placed within approximately 5 feet of any well.

ORC INJECTION LAYOUT—REDWOOD REGIONAL PARK SERVICE YARD

7867 Redwood Rd. Oakland, CA	By: MJC	OCTOBER 2001
	Figure 5	

Stellar Environmental Solutions
Geoscience & Engineering Consulting

2001-03-04

TABLE 4
ORC INJECTION GRID CRITERIA
REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CA

Sub-grid I.D.	Sub-grid Area (sq ft)	Thickness of Saturated Interval (ft)	Representative Boreholes	BTEX Conc. (mg/L)	TPH Conc. (mg/L)	# Injection Points	Injection Interval (ft bgs)	ORC (lbs/inj. point)
1	**2,000**	**15**					**25-10**	
		14	MW-8	1.1	12.8	9		50
		16	HP-8	1.8	14.9	(cells 1, 2, 3, 6, 7, 8, 9, 11, 12 & 15)		
		16	HP-6	14.8	70	9		100
		Average Concentrations		*5.9*	*32.6*	(cells 4, 5, 10, 13, 14, 16, 17 & 18)		
			Total Number of Injection Points in Sub-grid			**18**		
						Mass (lbs) ORC in sub-grid		**1,350**
2	**700**	**12**				7	**23-12**	35
		10	HP-9	11	46.7			
		13	HP-10	1.6	31.4			
		Average Concentrations		*4.2*	*26.0*			
			Total Number of Injection Points in Sub-grid			7		
						Mass (lbs) ORC in sub-grid		**245**
3	**700**	**15**					**26-11**	
		16	HP-6	14.8	70	4		50
		15	HP-3	0.23	5.1	(cells 3-1 through 3-4)		
		Average Concentrations		*5.01*	*25.0*	1	(cell 3-5)	100
			Total Number of Injection Points in Sub-grid			**5**		
						Mass (lbs) ORC in sub-grid		**300**
4	**500**	**15**				5	**27-12**	30
		15	HP-3	0.23	5.1			
		11	MW-4	0.05	2.1			
		13	MW-7	0.8	17			
		15	MW-9	NA	NA			
		Average Concentrations		*0.36*	*8.1*			
			Total Number of Injection Points in Sub-grid			**5**		
						Mass (lbs) ORC in sub-grid		**150**
5	**900**	**15**				9	**27-12**	100
		11	MW-4	0.05	2.1			
		13	MW-7	0.8	17			
		15	MW-9	NA	NA			
		15	HP-3	0.23	5.1			
		Average Concentrations		*0.36*	*8.1*			
			Total Number of Injection Points in Sub-grid			**9**		
						Mass (lbs) ORC in sub-grid		**900**

Total Number of Injection Points at Site:	**44**

Total Mass (lbs) ORC Injected:	**2,945**

INJECTION PROCEDURE

The Geoprobe rig advanced an approximately 1.5-inch-diameter, hollow, steel drive casing to the bottom of the pre-determined saturated interval. The casing was then lifted approximately 4 feet to drop the sacrificial drive point and expose the inner screened casing through which the ORC™ slurry was pumped. A slurry of approximately 1 gallon of water to 3 pounds of ORC™ powder was mixed in buckets. The slurry was transferred to an in-line hopper and pumped down the casing, through the screen and into the formation at a pressure of approximately 2,000 pounds per square inch. Care was taken to deliver an approximately uniform mass of ORC™ over each saturated interval. At several of the boreholes, "short-circuiting" of the ORC™ slurry around the drive casing and to ground surface was observed; however, this was generally near the top of the injection interval and represented a small percentage of the total ORC™ slurry for each borehole. No communication between boreholes or groundwater monitoring wells was observed (i.e., slurry observed exiting a well or adjacent borehole during injection). Following full injection over the interval, the drive casing was fully withdrawn and the open portion of the borehole was filled with bentonite chips and hydrated.

FUTURE ACTIVITIES

Now that the ORC™ injection has taken place, the effectiveness of ORC™ to reduce the hydrocarbons in soil and groundwater and inhibit the plume from discharging into Redwood Creek will be evaluated. This evaluation will occur though the comparison of the pre-injection baseline data with post-injection groundwater monitoring well analytical results over the next three quarterly events. The post-injection groundwater data will be evaluated in the context of effectiveness of the corrective action, including both indicators of natural attenuation and hydrochemical trends. It is likely that a second injection phase will be required in "hot spot" areas where the hydrocarbon contamination persists beyond the active life of the ORC™ (estimated to be approximately 9 months).

5.0 SUMMARY, CONCLUSIONS AND PROPOSED ACTIONS

The following conclusions and proposed actions are focused on the findings of the current event activities, as well as salient historical findings.

SUMMARY AND CONCLUSIONS

- Groundwater sampling has been conducted on an approximately quarterly basis since November 1994 (19 events).
- Three additional groundwater monitoring wells (MW-9 through MW-11) were installed in August 2001 in the area of the plume and where the ORC™ injection was to take place in order to collect both baseline and post-ORC™ injection data to evaluate the effectiveness of the remedy. The three new wells encountered significant groundwater contamination.
- Current site groundwater contaminant concentrations exceed their respective groundwater RBSLs (for both cases where drinking water resource is and is not threatened), with the exception of toluene, which does not exceed either set of criteria. Site groundwater contaminant concentrations also exceed all surface water screening levels, with the exception of toluene and MTBE.
- Maximum groundwater contaminant concentrations for TPHg, TPHd, benzene, and ethylbenzene were detected in new well MW-11 (approximately 25 feet upgradient of downgradient well MW-7 and approximately 50 feet upgradient of Redwood Creek). Maxima for MTBE and xylenes were detected in new downgradient well MW-9 (approximately 25 feet upgradient of Redwood Creek). Concentrations in former source area well MW-2 (approximately 130 feet upgradient of Redwood Creek) are 1 order of magnitude below downgradient well concentrations.
- The existing well layout fully constrains the lateral extent of groundwater contamination, and the vertical limit is very likely the top of the near-surface (25 to 28 feeet) siltstone bedrock. The saturated interval extends approximately 12 to 15 feet from top of bedrock through the capillary fringe.
- The area of groundwater contamination in excess of screening level criteria is no greater than 150 feet long and 250 feet wide, and is likely to be less.

- The groundwater contaminant plume has become disconnected from the former source and migrated well beyond the former source area (represented by well MW-2) toward Redwood Creek.
- The zone of greatest contamination is an approximately 60-foot by 60-foot area just upgradient of the three downgradient wells bordering the creek bank. Current and historical data suggest that maximum concentrations for the majority of the contaminants have not reached the creek and may reach the creek within 1 to 2 years if unabated, and that continued discharge of elevated concentrations could continue for at least several years.
- No site-sourced contaminants were detected in the SW-2 surface water sample in excess of surface water screening level criteria.
- Natural attenuation is suggested to be occurring at the site, mainly at the plume margins and former source area. Prior to ORC™ injection, natural attenuation was likely minimal to non-existent in the higher concentration portion along the centerline of the plume due to limited oxygen content, suggesting that natural attenuation has not historically been sufficient to mitigate impacts to the creek.
- The first phase of an anticipated two-phase ORC™ injection corrective action program was implemented in September 2001. Approximately 3,000 pounds of ORC™ was injected into 44 boreholes over a 4,400 square foot area of the maximum groundwater contamination. The ORC™ was injected over the full saturated interval (including capillary fringe). The corrective action is designed to facilitate biodegradation within the central area of the plume, with the ultimate objective of reducing or eliminating continued discharge of contaminated groundwater to Redwood Creek.

PROPOSED ACTIONS

The EBRPD proposes to implement the following actions to address regulatory concerns:

- Continue the quarterly program of creek and groundwater sampling and reporting.
- Evaluate the results of the next three quarterly events in the context of the efficacy of the corrective action, and implement the second ORC™ injection phase, if warranted.

6.0 REFERENCES AND BIBLIOGRAPHY

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7.0 LIMITATIONS

This report has been prepared for the exclusive use of the East Bay Regional Park District, its authorized representatives, and the regulatory agencies. No reliance on this report shall be made by anyone other than those for whom it was prepared.

The findings and conclusions presented in this report are based on the review of previous investigators' findings at the site, as well as onsite activities conducted by SES since September 1998. This report provides neither a certification nor guarantee that the property is free of hazardous substance contamination. This report has been prepared in accordance with generally accepted methodologies and standards of practice. The SES personnel who performed this limited remedial investigation are qualified to perform such investigations and have accurately reported the information available, but cannot attest to the validity of that information. No warranty, expressed or implied, is made as to the findings, conclusions, and recommendations included in the report.

The findings of this report are valid as of the present. Site conditions may change with the passage of time, natural processes, or human intervention, which can invalidate the findings and conclusions presented in this report. As such, this report should be considered a reflection of the current site conditions as based on the investigation and remediation completed.

Well Installation Permits

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-5554
FAX (510)782-1939

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 7867 Redwood Road
Oakland CA

CLIENT
Name East Bay Regional Parks District - Mr. Ken Burger
Address P.O. Box 5381 Phone 544-3347
City Oakland CA Zip 94605

APPLICANT
Name Stellar Environmental Solutions (Mr. Bruce Rueker)
Fax 644-3859
Address 2198 Sixth Street #201 Phone 644-3123
City Berkeley CA Zip 94710

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☐
Monitoring	☒	Well Destruction	☐

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other ____	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☒
Cable	☐	Other	☐		

DRILLER'S NAME West Hazmat Drilling
DRILLER'S LICENSE NO. C 554979

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 25 ft.
Surface Seal Depth 5 ft. Owner's Well Number MW-9 (Office)

GEOTECHNICAL PROJECTS
Number of Borings ____ Maximum
Hole Diameter ____ in. Depth ____ ft.

ESTIMATED STARTING DATE 9/17/01
ESTIMATED COMPLETION DATE 9/18/01

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Bruce M. Rueker DATE 8/20/01

PLEASE PRINT NAME Bruce Rueker

Rev.5-13-00

FOR OFFICE USE

PERMIT NUMBER WO1-756
WELL NUMBER ____
APN ____

PERMIT CONDITIONS
Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources-Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL
Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings.

E. CATHODIC
Fill hole anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
Send a map of work site. A separate permit is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [signature] DATE 8-28-01

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-5554
FAX (510)782-1939

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 7867 Redwood Road
Oakland CA

CLIENT
Name East Bay Regional Parks District - Mr. Kirk Berger
Address P.O. Box 5381 Phone 544-3241
City Oakland CA Zip 94605

APPLICANT
Name Stellar Environmental Solutions (Mr. Bruce Rucker)
Fax 644-3859
Address 2198 Sixth Street #201 Phone 644-3123
City Berkeley CA Zip 94710

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☐
Monitoring	☒	Well Destruction	☐

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other _____	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☒
Cable	☐	Other	☐		

DRILLER'S NAME West Hazmat Drilling
DRILLER'S LICENSE NO. C-554979

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 25 ft. MW-10
Surface Seal Depth 5 ft. Owner's Well Number [redacted]

GEOTECHNICAL PROJECTS
Number of Borings _____ Maximum
Hole Diameter _____ in. Depth _____ ft.

ESTIMATED STARTING DATE 9/17/01
ESTIMATED COMPLETION DATE 9/18/01

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68

APPLICANT'S SIGNATURE Bruce M. Rucker DATE 8/30/01

PLEASE PRINT NAME Bruce Rucker

Rev.5-13-00

FOR OFFICE USE

PERMIT NUMBER W01-957
WELL NUMBER _____
APN _____

PERMIT CONDITIONS
Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources-Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL
Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings.

E. CATHODIC
Fill hole anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
Send a map of work site. A separate permit is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [signature] DATE 8-28-01

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-5554
FAX (510)782-1939

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 7867 Redwood Road
Oakland CA

CLIENT
Name East Bay Regional Parks District - Mr. Ken Bridges
Address P.O. Box 5381 Phone 544-2341
City Oakland CA Zip 94605

APPLICANT
Name Stellar Environmental Solutions (Mr. Bruce Rucker)
Fax 644-3859
Address 2198 Sixth Street #201 Phone 644-3123
City Berkeley CA Zip 94710

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☐
Monitoring	☒	Well Destruction	☐

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☒
Cable	☐	Other	☐		

DRILLER'S NAME West HazMat Drilling
DRILLER'S LICENSE NO. C 554 979

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 45 ft.
Surface Seal Depth 5 ft. Owner's Well Number [redacted] MW-11

GEOTECHNICAL PROJECTS
Number of Borings _____ Maximum
Hole Diameter _____ in. Depth _____ ft.

ESTIMATED STARTING DATE 9/17/01
ESTIMATED COMPLETION DATE 9/18/01

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Bruce M. Rucker DATE 8/20/01

PLEASE PRINT NAME Bruce Rucker

Rev.5-13-00

FOR OFFICE USE

PERMIT NUMBER W01-758
WELL NUMBER _____
APN _____

PERMIT CONDITIONS
Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources-Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL
Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings.

E. CATHODIC
Fill hole anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
Send a map of work site. A separate permit is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [signature] DATE 8-28-01

Borehole Geologic Logs

Stellar Environmental Solutions
2198 Sixth Street, Berkeley, CA 94710
Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER MW-9 Page 1 of 3

PROJECT Redwood Park Service Yard OWNER East Bay Regional Park District
LOCATION 7867 Redwood Rd., Oakland, CA PROJECT NUMBER 2001-53
TOTAL DEPTH 27.5 feet BOREHOLE DIA. 8-inch
SURFACE ELEV. Approx. 547 feet WATER FIRST ENCOUNTERED 19 feet
DRILLING COMPANY West Haz Mat DRILLING METHOD Hollow-stem auger
DRILLER Mike R. GEOLOGIST H. Pietropaoli DATE DRILLED 9/17/01

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0					Light brown silty clay (CL), dry, friable	
1						
2						
3			13		@3′ dense zones with laminations begin	
4			13			
			13			
5			4		@5′ ~2% red and yellow siltstone fragments	
			5			
6			6			
			4		@6.5′ color change to red brown, clay content increases	
7			6			
			7			
8			6		@8′ color change to dark brown	
			8			
			11			
9			6		@9′ approx. 10% black organics	
			7			
10			8			

2001-53-05

Stellar Environmental Solutions
2198 Sixth Street, Berkeley, CA 94710
Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER MW-9 Page 2 of 3

PROJECT Redwood Park Service Yard OWNER East Bay Regional Park District
LOCATION 7867 Redwood Rd., Oakland, CA PROJECT NUMBER 2001-53
TOTAL DEPTH 27.5 feet BOREHOLE DIA. 8-inch
SURFACE ELEV. Approx. 547 feet WATER FIRST ENCOUNTERED 19 feet
DRILLING COMPANY West Haz Mat DRILLING METHOD Hollow-stem auger
DRILLER Mike R. GEOLOGIST H. Pietropaoli DATE DRILLED 9/17/01

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
10						
			4			
11			8			
			12		Olive-brown clay (CL), med. plasticity, med.-stiff, moist	
12			3			
			5		@12.5' color change to blue-grey, moist to wet with free water pockets, 2% siltstone fragments, fuel odor	
13			5			
			5		@14' fuel odor increases	
14			9			
			9			
15			4			
			4			
16			5			
			4		@17' fuel odor decreases but still present	
17			8			
			5			
18			4			
			5			
19			6		Grey-brown clayey, gravelly sand (SW), poorly sorted, friable, saturated	Groundwater encountered at 19'
			6			
20			4			
			13			

2001-53-06

Stellar Environmental Solutions
2198 Sixth Street, Berkeley, CA 94710
Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER MW-9 Page 3 of 3

PROJECT Redwood Park Service Yard OWNER East Bay Regional Park District
LOCATION 7867 Redwood Rd., Oakland, CA PROJECT NUMBER 2001-53
TOTAL DEPTH 27.5 feet BOREHOLE DIA. 8-inch
SURFACE ELEV. Approx. 547 feet WATER FIRST ENCOUNTERED 19 feet
DRILLING COMPANY West Haz Mat DRILLING METHOD Hollow-stem auger
DRILLER Mike R. GEOLOGIST H. Pietropaoli DATE DRILLED 9/17/01

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
20						
21			3 5 7		Blue-grey clay (CH), soft, plastic, saturated, black organic and wood fragments	
22			3 7 10		Blue grey silty clay (CL)	
23						
24			3 5 8		@24.5′ color change to green-grey	
25						
26			8 10 20		Blue clayey gravel (GC), loose, saturated, fragments	
27	Bedrock		50		Blue-grey siltstone, laminated, dense, hard	
28					Bottom of Borehole at 27.5′	
29						
30						

2001-53-07

Stellar Environmental Solutions
2198 Sixth Street, Berkeley, CA 94710
Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER MW-10 Page 1 of 3

PROJECT Redwood Park Service Yard
OWNER East Bay Regional Park District
LOCATION 7867 Redwood Rd., Oakland, CA
PROJECT NUMBER 2001-53
TOTAL DEPTH 28.5 feet
BOREHOLE DIA. 8-inch
SURFACE ELEV. Approx. 548 feet
WATER FIRST ENCOUNTERED 18.5 feet
DRILLING COMPANY West Haz Mat
DRILLING METHOD Hollow-stem auger
DRILLER Mike R.
GEOLOGIST H. Pietropaoli
DATE DRILLED 9/17/01

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0					4" asphalt pavement	
1					Dark brown clayey silt (ML), friable, moist, minor fine sand	
2						
3			10		@3' silt content increases, light brown, hard, dry, laminations	
4			12			
5			20			
			6			
			11		Dark brown silty clay (CL) slightly plastic, moist	
6			11			
			7			
7			12			
			12			
			7			
8			10			
			11			
9			6		@9.5' plasticity increases, red silt patches, organic stringers	
			8			
10			10			

2001-53-11

Stellar Environmental Solutions
2198 Sixth Street, Berkeley, CA 94710
Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER MW-10 Page 2 of 3

PROJECT Redwood Park Service Yard OWNER East Bay Regional Park District
LOCATION 7867 Redwood Rd., Oakland, CA PROJECT NUMBER 2001-53
TOTAL DEPTH 28.5 feet BOREHOLE DIA. 8-inch
SURFACE ELEV. Approx. 548 feet WATER FIRST ENCOUNTERED 18.5 feet
DRILLING COMPANY West Haz Mat DRILLING METHOD Hollow-stem auger
DRILLER Mike R. GEOLOGIST H. Pietropaoli DATE DRILLED 9/17/01

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
10						
			8		@11.5' fuel odor and blue-grey color begins	
11			12			
			12			
12			6			
			12			
13			10			
			8			
14			10			
			12			
15			5		@15' rootlets	
			6			
16			8			
			4			
17			5		@17' fuel odor heavier	
			9			
18			9			Groundwater encountered at 18.5'
			11			
19			15			
20					Brown silty sand (SM), wet, friable, yellow & red siltstone fragments, blue mottling	

2001-53-12

Stellar Environmental Solutions
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Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER MW-10 Page 3 of 3

PROJECT Redwood Park Service Yard OWNER East Bay Regional Park District
LOCATION 7867 Redwood Rd., Oakland, CA PROJECT NUMBER 2001-53
TOTAL DEPTH 28.5 feet BOREHOLE DIA. 8-inch
SURFACE ELEV. Approx. 548 feet WATER FIRST ENCOUNTERED 18.5 feet
DRILLING COMPANY West Haz Mat DRILLING METHOD Hollow-stem auger
DRILLER Mike R. GEOLOGIST H. Pietropaoli DATE DRILLED 9/17/01

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
20						
21			NS		Sandy gravel (GM), saturated	
22			8 8 7		Gravelly sand (SP), saturated	
23			2 3 4		Blue-grey silty clay (CH), plastic, 15% black organics, saturated	
24			6		Gravelly sand (SP), saturated	
25			13 14		Brown silty clay (CL), saturated, siltstone fragments, blue mottling	
26			8 14 10		Gravel (GW) consisting of fractured siltstone fragments, saturated	
27			14 50		Blue grey siltstone, dense, moist, iron-staining	
28	Bedrock				Bottom of Borehole at 28.5′	
29						
30						

2001-53-14

Stellar Environmental Solutions
2198 Sixth Street, Berkeley, CA 94710
Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER MW-11 Page 1 of 3

PROJECT Redwood Park Service Yard
OWNER East Bay Regional Park District
LOCATION 7867 Redwood Rd., Oakland, CA
PROJECT NUMBER 2001-53
TOTAL DEPTH 27 feet
BOREHOLE DIA. 8-inch
SURFACE ELEV. Approx. 548 feet
WATER FIRST ENCOUNTERED Approx. 12 feet
DRILLING COMPANY West Haz Mat
DRILLING METHOD Hollow-stem auger
DRILLER Mike R.
GEOLOGIST H. Pietropaoli
DATE DRILLED 9/17/01

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
0					Light brown clayey silt (ML), friable, dry	
1						
2						
3			9		@2.5′ color change to dark brown, becomes sl. moist	
4			9 10			
5			5 8 10		@5′ becomes stiffer	
6			11			
7			16 20		@7′ color change to light brown, fragments of red and yellow siltstone	
8			11 13 18		@8′ organics and rootlets	
9			4		@10′ clay content increases	
10			16 16			

2001-53-08

Stellar Environmental Solutions
2198 Sixth Street, Berkeley, CA 94710
Geoscience & Engineering Consulting

Soil Boring Log

BORING NUMBER MW-11 Page 2 of 3

PROJECT Redwood Park Service Yard
OWNER East Bay Regional Park District
LOCATION 7867 Redwood Rd., Oakland, CA
PROJECT NUMBER 2001-53
TOTAL DEPTH 27 feet
BOREHOLE DIA. 8-inch
SURFACE ELEV. Approx. 548 feet
WATER FIRST ENCOUNTERED Approx. 12 feet
DRILLING COMPANY West Haz Mat
DRILLING METHOD Hollow-stem auger
DRILLER Mike R.
GEOLOGIST H. Pietropaoli
DATE DRILLED 9/17/01

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
10						
11			6 8 12		Blue grey clay (CL), minor gravel, friable, wet, sl. petroleum odor	Groundwater encountered at ~12'
12			6 7 6		Blue-green clayey gravel (GC), friable, saturated, **heavy fuel odor**	
13			5 6 7			
14			32 50 NR		Brown silty clay (CH), plastic, soft, wet, sl. fuel odor	
15			35 50 NR			
16			25 35 35		Yellow-brown clayey gravel (GC), consisting of siltstone fragments (large), dense, wet	
17			35 50 NS			
18						
19						
20						

2001-53-09

Stellar Environmental Solutions
2198 Sixth Street, Berkeley, CA 94710
Geoscience & Engineering Consulting

Soil Boring Log

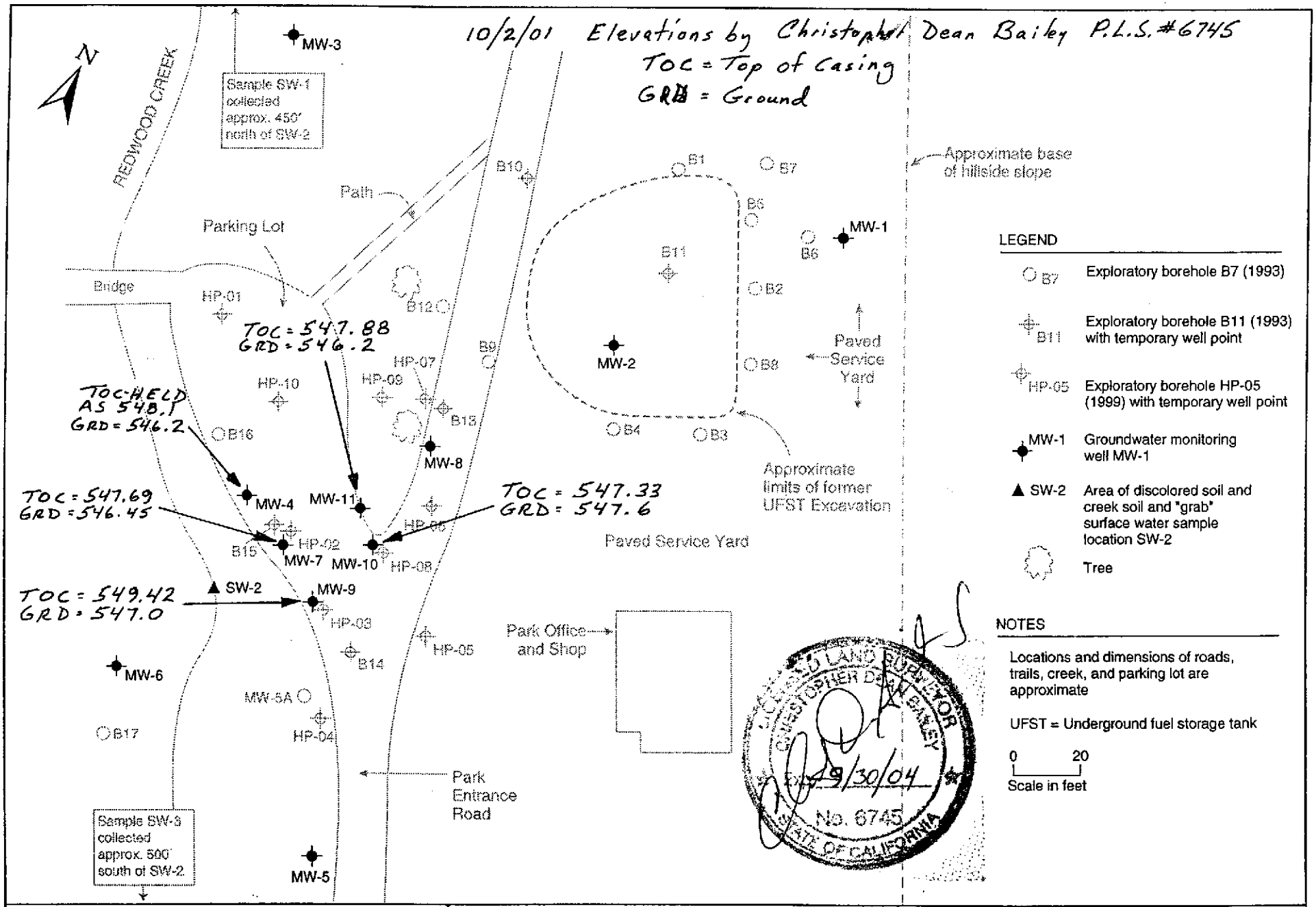
BORING NUMBER MW-11 Page 3 of 3

PROJECT Redwood Park Service Yard OWNER East Bay Regional Park District
LOCATION 7867 Redwood Rd., Oakland, CA PROJECT NUMBER 2001-53
TOTAL DEPTH 27 feet BOREHOLE DIA. 8-inch
SURFACE ELEV. Approx. 548 feet WATER FIRST ENCOUNTERED Approx. 12 feet
DRILLING COMPANY West Haz Mat DRILLING METHOD Hollow-stem auger
DRILLER Mike R. GEOLOGIST H. Pietropaoli DATE DRILLED 9/17/01

DEPTH (feet)	GRAPHIC LOG	SAMPLE INTERVAL/ RECOVERY	BLOW COUNTS	INSTRUMENT READING	DESCRIPTION/SOIL CLASSIFICATION	REMARKS
20						
21						
22			13 20 27			
23			13 17 21		Blue-grey clayey sand (SC), med. plasticity, saturated	
24						
25			5 26 27			
26	Bedrock		15 50		Grey siltstone, dry, iron-staining, fractures and laminae	
27					Bottom of Borehole at 27′	
28						
29						
30						

2001-53-10

Well Elevation Survey Plat



Stellar Environmental Solutions
Geoscience & Engineering Consulting

SITE PLAN AND HISTORICAL SAMPLING LOCATIONS
Redwood Regional Park Service Yard, Oakland, CA

Figure 2

by: MJC | OCTOBER 2001

2000-46-04

DWR Well Completion Forms

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

STELLAR ENVIRONMENTAL SOLUTIONS
2198 SIXTH STREET, BERKELEY, CA 94710
TEL: 510.644.3123 ★ FAX: 510.644.3859

TRANSMITTAL MEMORANDUM

TO: CALIFORNIA DEPT. OF WATER RESOURCES
3251 "S" STREET
SACRAMENTO, CA 95816-7017

DATE: 10/18/01

ATTENTION: CONFIDENTIAL WELL LOG FILE

FILE: SES2001-53

SUBJECT: WELL INSTALLATIONS (3) AT 7867 REDWOOD ROAD, OAKLAND, CA

WE ARE SENDING:
- ☒ HEREWITH
- ☐ UNDER SEPARATE COVER
- ☐ VIA MAIL
- ☐ VIA

THE FOLLOWING: (3) SETS OF DWR WELL COMPLETION REPORTS (DWR FORM + SITE PLAN)
- ☐ AS REQUESTED
- ☐ FOR YOUR APPROVAL
- ☐ FOR REVIEW
- ☐ FOR YOUR USE
- ☐ FOR SIGNATURE
- ☒ FOR YOUR FILES

BY: Bruce Rucker
(BMR 10/18/01)

Subject: Hollow-stem auger rig at location MW-11.	
Site: Redwood Regional Park Service Yard, 7867 Redwood Road, Oakland, CA	
Date Taken: September 17, 2001	Project No.: SES 2001-53
Photographer: H. Pietropaoli	Photo No.: 01

Subject: Decontaminating hollow-stem auger drilling equipment.	
Site: Redwood Regional Park Service Yard, 7867 Redwood Road, Oakland, CA	
Date Taken: September 17, 2001	Project No.: SES 2001-53
Photographer: H. Pietropaoli	Photo No.: 02

Subject: ORC injection via Geoprobe rig, near monitoring well MW-4	
Site: Redwood Regional Park Service Yard, 7867 Redwood Road, Oakland, CA	
Date Taken: September 24, 2001	Project No.: SES 2001-53
Photographer: F. Hayden	Photo No.: 03

Subject: ORC slurry mixing and injection	
Site: Redwood Regional Park Service Yard, 7867 Redwood Road, Oakland, CA	
Date Taken: September 17, 2001	Project No.: SES 2001-53
Photographer: F. Hayden	Photo No.: 04

WELL GAUGING DATA

Project # 010827-N11 Date 8/27/01 Client Stellar Env.

Site Redwood Regional Park Service Yard Oakland

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Pre D.O mg/l
MW-1	4					5.05	18.85		0.9
MW-2	4					24.55	38.82		0.5
MW-3	4					23.23	44.10		0.7
MW-4	4					14.19	26.57		0.7
MW-5	4					16.83	26.92		1.8
MW-6	4					13.78	27.93		2.3
MW-7	2					13.75	25.33		0.4
MW-8	2					13.65	22.21	U	0.6

WELL MONITORING DATA SHEET

Project #: 010827-N1	Client: Stellar Environmental
Sampler: Mike N.	Start Date: 8/27/01
Well I.D.: MW-1	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth: 18.85	Depth to Water: 5.05
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

Bailer
Disposable Bailer
Middleburg
Electric Submersible
Waterra
Peristaltic
Extraction Pump
Other_____

Sampling Method: Bailer
(Disposable Bailer)
Extraction Port
Dedicated Tubing
Other: _____

No Purge
_____ (Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1018	66.1	6.7	812	16	0	
				Ferrous	Iron —	0

Did well dewater? Yes (No)		Gallons actually evacuated:	0
Sampling Time:		Sampling Date: 8/27/01	
Sample I.D.: MW-1		Laboratory: Curtis & Tompkins	
Analyzed for: TPH-G BTEX MTBE TPH-D		Other: ~~Ferrous Iron~~	
Equipment Blank I.D.:	@ Time	Duplicate I.D.: ~~Ferrous Iron~~	
Analyzed for: TPH-G BTEX MTBE TPH-D		Other:	
D.O. (if req'd):	Pre-purge: .9 mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge: 193 mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 010827-N1	Client: Stellar Environmental
Sampler: Mike N.	Start Date: 8/27/01
Well I.D.: MW-2	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 38.82	Depth to Water: 24.55
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

- Bailer
- Disposable Bailer
- Middleburg
- (Electric Submersible)
- Waterra
- Peristaltic
- Extraction Pump
- Other ___

Sampling Method: Bailer

- (Disposable Bailer)
- Extraction Port
- Dedicated Tubing
- Other: ___

9.5 (Gals.) X	3	=	28.5 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1101	65.2	7.1	792	72	9.5	Cloudy
1102	62.7	7.0	850	97	19.0	
1103	62.1	7.0	855	125	28.0	
				Ferrous Iron -	.4	

Did well dewater? Yes (No)		Gallons actually evacuated: 28.5	
Sampling Time: 1108		Sampling Date: 8/27/01	
Sample I.D.: MW-2		Laboratory: Curtis & Tompkins	
Analyzed for: (TPH-G BTEX MTBE TPH-D)		Other: [redacted]	
Equipment Blank I.D.:	@ Time	Duplicate I.D.: Ferrous Iron	
Analyzed for: TPH-G BTEX MTBE TPH-D		Other:	
D.O. (if req'd):	Pre-purge: .5 mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge: 60.2 mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 010827-N1	Client: Stellar Environmental
Sampler: Mike N.	Start Date: 8/27/01
Well I.D.: MW-3	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 44.10	Depth to Water: 23.23
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

- Bailer
- Disposable Bailer
- Middleburg
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other ___

Sampling Method: Bailer

- (Disposable Bailer)
- Extraction Port
- Dedicated Tubing
- Other: ___

No Purge

___ (Gals.) X ___ = ___ Gals.

1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1313	64.4	7.3	596	74	0	
						Ferrous Iron - .5

Did well dewater? Yes (No) Gallons actually evacuated: 0

Sampling Time: 1313 Sampling Date: 8/27/01

Sample I.D.: MW-3 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Other: ~~Ferrous Iron~~ Nitrate, Sulfate

Equipment Blank I.D.: @ Time Duplicate I.D.: ~~Ferrous Iron, Nitrate, Sulfate~~

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	.7	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	-46	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 010827-N1	Client: Stellar Environmental
Sampler: Mike N.	Start Date: 8/27/01
Well I.D.: MW-4	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 26.51	Depth to Water: 14.19
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

Bailer
Disposable Bailer
Middleburg
(Electric Submersible)
Waterra
Peristaltic
Extraction Pump
Other ___

Sampling Method: Bailer
(Disposable Bailer)
Extraction Port
Dedicated Tubing
Other: ___

7.5 (Gals.) X 3 = 22.5 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1204	64.4	6.8	669	25	7.5	
1210	64.5	6.8	686	21	15.0	
1211	64.5	6.8	697	24	22.5	
				Ferrous Iron -		2.5

Did well dewater? Yes (No)
Gallons actually evacuated: 22.5

Sampling Time: 1216
Sampling Date: 8/27/01

Sample I.D.: MW-4
Laboratory: Curtis & Tomkins

Analyzed for: TPH-G BTEX MTBE TPH-D
Other: ~~Ferrous Iron~~, Nitrate, Sulfate

Equipment Blank I.D.: @ Time
Duplicate I.D.: ~~Ferrous Iron~~

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	(Pre-purge):	.7 mg/L	Post-purge:	mg/L
ORP (if req'd):	(Pre-purge):	-88 mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 010827-N1	Client: Stellar Environmental
Sampler: Mike M.	Start Date: 8/27/01
Well I.D.: MW-5	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth: 26.92	Depth to Water: 16.83
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

- Bailer
- Disposable Bailer
- Middleburg
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other_____

Sampling Method: Bailer

- (Disposable Bailer)
- Extraction Port
- Dedicated Tubing
- Other: _____

No Purge

_____ (Gals.) X _____ = _____ Gals.

1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1121	63.5	7.6	587	34	0	
				Ferrous Iron		0

Did well dewater? Yes (No)		Gallons actually evacuated: 0	
Sampling Time:		Sampling Date: 8/27/01	
Sample I.D.: MW-5		Laboratory: Curtis & Tompkins	
Analyzed for: TPH-G BTEX MTBE TPH-D		Other: ~~Ferrous Iron~~	
Equipment Blank I.D.:	@ Time	Duplicate I.D.: ~~Ferrous Iron~~	
Analyzed for: TPH-G BTEX MTBE TPH-D		Other:	
D.O. (if req'd):	Pre-purge: 1.8 mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge: 79 mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 010827-N1	Client: Stellar Environmental
Sampler: Mike N.	Start Date: 8/27/01
Well I.D.: MW-6	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 27.93	Depth to Water: 13.78
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

Bailer	Waterra	
Disposable Bailer	Peristaltic	
Middleburg	Extraction Pump	
Electric Submersible	Other_____	

Sampling Method: Bailer
(Disposable Bailer)
Extraction Port
Dedicated Tubing
Other: _____

No Purge

___ (Gals.) X _____ = _____ Gals.
1 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1228	63.4	6.7	547	8	0	
				Ferrous Iron - .2		

Did well dewater? Yes (No)		Gallons actually evacuated:	
Sampling Time:		Sampling Date: 8/27/01	
Sample I.D.: MW-6		Laboratory: Curtis & Tompkins	
Analyzed for: TPH-G BTEX MTBE TPH-D		Other: Ferrous Iron	
Equipment Blank I.D.:	@ Time	Duplicate I.D.: ~~Ferrous Iron~~	
Analyzed for: TPH-G BTEX MTBE TPH-D		Other:	
D.O. (if req'd):	(Pre-purge): 2.3 mg/L	Post-purge:	mg/L
ORP (if req'd):	(Pre-purge): -4 mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 010827-N11	Client: Stellar Environmental
Sampler: Mike C.	Start Date: 8/27/01
Well I.D.: MW-7	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 25.33	Depth to Water: 13.75
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

(Disposable Bailer)

Sampling Method: Bailer (Disposable Bailer)

Bailer	Waterra	Extraction Port
~~Disposable Bailer~~	Peristaltic	Dedicated Tubing
Middleburg	Extraction Pump	
Electric Submersible	Other:	

Other: ___

2.0 (Cals.) X 3 = 6.0 Gals.

1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1136	60.4	6.7	705	>200	2.0	dark, Cloudy
1146	60.1	6.8	702	>200	4.0	
1149	59.2	6.8	696	>200	6.0	
					Ferrous Iron - 3.6	

Did well dewater? Yes (No) Gallons actually evacuated: 6.0

Sampling Time: 1154 Sampling Date: 8/27/01

Sample I.D.: MW-7 Laboratory: Curtis & Tompkins

Analyzed for: (TPH-G) BTEX MTBE TPH-D Other: Ferrous Iron, Nitrate, Sulfate

Equipment Blank I.D.: @ Time Duplicate I.D.: Ferrous Iron

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	(Pre-purge):	.4 mg/L	Post-purge:	mg/L
ORP (if req'd):	(Pre-purge):	116 mV	Post-purge:	mV

Blaine Tech Services, Inc. 985 Timothy Drive, San Jose, CA 95112 (408) 573-0555

WELL MONITORING DATA SHEET

Project #: 010827-N1	Client: Stellar Environmental
Sampler: Mike N.	Start Date: 8/27/01
Well I.D.: MW-8	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 22.21	Depth to Water: 17.65
Before: After:	Before: After:
Depth to Free Product:	Thickness of Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH

Purge Method:

Bailer	Waterra	
(Disposable Bailer)	Peristaltic	
Middleburg	Extraction Pump	
Electric Submersible	Other	

Sampling Method: Bailer / (Disposable Bailer) / Extraction Port / Other

1 Case Volume	Specified Volumes	Calculated Volume
1.5 (Gals.) X	3	= 4.5 Gals.

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1257	63.0	6.9	800	>200	1.5	Silty, Turbid
1255	59.9	6.9	799	>200	3.0	odor
1258	59.7	7.0	796	>200	4.5	
						Ferrous Iron - 1.4

Did well dewater? Yes (No) Gallons actually evacuated: 4.5

Sampling Time: 1303 Sampling Date: 8/27/01

Sample I.D.: MW-8 Laboratory: Curtis & Tompkins

Analyzed for: (TPH-G) (BTEX) (MTBE) (TPH-D) Other: Ferrous Iron, Nitrate, Sulfate

Equipment Blank I.D.: @ Time Duplicate I.D.: ~~Ferrous Iron~~

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	(Pre-purge):	1.6 mg/L	Post-purge:	mg/L
ORP (if req'd):	(Pre-purge):	-83 mV	Post-purge:	mV

WELL GAUGING DATA

Project # 010921-N1 Date 9-28-01 Client STUART ENV.

Site Redwood Hwy - Park Service Yard

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: ~~TOB~~ or ~~TOC~~ ~ ground level	
MW-1									
MW-2									
MW-3									
MW-4									
MW-5									
MW-6									
MW-7									
MW-8									
* MW-9	2					14.50	26.00		
* MW-10	2					14.40	~~26.65~~ 28.75		
* MW-11	2					~13.00	26.00		

* Wells in stand pipes gauged to ~ ground level.

WELL DEVELOPMENT DATA SHEET

Project #: 01092I-N1	Client: STELLAR
Developer: MN-SS	Date Developed: 9-21-01
Well I.D. MW-9	Well Diameter: (circle one) (2) 3 4 6
Total Well Depth: 26.00	Depth to Water: 14.50
Before After	Before After
Reason not developed:	If Free Product, thickness:
Additional Notations:	

Volume Conversion Factor (VCF):	Well dia.		VCF
{12 x (d^2/4) x π} /231	2"	=	0.16
where	3"	=	0.37
12 = in / foot	4"	=	0.65
d = diameter (in.)	6"	=	1.47
π = 3.1416	10"	=	4.08
231 = in 3/gal	12"	=	6.87

1.8	X	10	=	20.0
1 Case Volume		Specified Volumes		gallons

Purging Device: Bailer ☐ Electric Submersible ☐
Middleburg ☒ Suction Pump ☐

Type of Installed Pump _____
Other equipment used _____

surged well ~~prior~~ 15 min prior to purge.

TIME	TEMP (F)	pH	COND.	TURBIDITY	VOLUME REMOVED:	NOTATIONS:
1321	61.9	6.9	1314	>200	2	SILTY / ODOR
1325	60.3	6.9	1157	>200	4	" "
1329	59.1	6.9	1055	>200	6	" "
1332	58.9	6.9	1016	>200	8	DTW - 20.80
1336	58.9	7.0	1051	>200	10	SILTY
1340	58.6	7.0	1151	>200	12	HARD BOTTOM
1344	58.5	7.3	1242	>200	14	~~DEWATERED~~
~~1344~~ 1344 -		WELL DEWATERED @			24.30	
~~1425~~ 1425	62.3	7.1	969	>200	16	DTW 15.00
1427	60.3	7.0	985	>200	18	SILTY
1429	58.8	7.0	949	>200	20	"

[1] Well Dewater? If yes, note above. Gallons Actually Evacuated:

WELL MONITORING DATA SHEET

Project #: 010921-N1	Client: STELLAR
Sampler: MN/SS	Start Date: 9-21-01
Well I.D.: MW-9	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 26.00	Depth to Water: 14.50
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC (Grade)	D.O. Meter (if req'd): YSI HACH

No box ~ ground level

Purge Method:

- Bailer
- Disposable Bailer
- Middleburg
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other_____

Sampling Method: Bailer

- (Disposable Bailer)
- Extraction Port
- Dedicated Tubing
- Other: _____

Grab Sample

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1432	62.5	7.4	953	>200	0	

Did well dewater? Yes No		Gallons actually evacuated:	
Sampling Time: 1432		Sampling Date: 9/21/00	
Sample I.D.: MW-9		Laboratory:	
Analyzed for: (TPH-G) (BTEX) (MTBE) (TPH-D)		Other:	
Equipment Blank I.D.:	@ Time	Duplicate I.D.:	
Analyzed for: TPH-G BTEX MTBE TPH-D		Other:	
D.O. (if req'd):	Pre-purge: mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge: mV	Post-purge:	mV

WELL DEVELOPMENT DATA SHEET

Project #: 010921-N1	Client: STEWART
Developer: MN/SS	Date Developed: 9-21-01
Well I.D. MW-10	Well Diameter: (circle one) (2) 3 4 6
Total Well Depth: ~~26.0~~ 28.75	Depth to Water: 14.40
Before After	Before After
Reason not developed:	If Free Product, thickness:
Additional Notations:	

Volume Conversion Factor (VCF):	Well dia.		VCF
(12 x (d^2/4) x π) /231	2"	=	0.16
where	3"	=	0.37
12 = in / foot	4"	=	0.65
d = diameter (in.)	6"	=	1.47
π = 3.1416	10"	=	4.08
231 = in 3/gal	12"	=	6.87

1.9	X	10	=	20.0
1 Case Volume		Specified Volumes		gallons

Purging Device: Bailer ☐ Electric Submersible ☐
Middleburg ☒ Suction Pump ☐

Type of Installed Pump _____
Other equipment used _____

surveyed 15 min prior to purging.

TIME	TEMP (F)	pH	COND.	TURBIDITY	VOLUME REMOVED:	NOTATIONS:
1209	64.0	7.5	1557	>200	2	SILTY
1212	62.8	7.5	1789	>200	4	"
1216	62.1	7.4	1564	>200	6	"
1220	61.6	7.4	1215	>200	8	" DTW - 22.80
1224	62.6	7.4	1163	>200	10	SILTY
1232	62.5	7.5	1053	>200	12	"
1236	62.8	7.8	992.5	>200	14	Hard Bottom
1238	WELL DEWATERED.					DTW 26.45
						DTW 1530
1404	61.8	7.4	956.4	>200	16	LESS SILTY.
1407	60.7	7.4	1072	>200	18	"
1410	60.6	7.3	1131	>200	20	"

Did Well Dewater? If yes, note above. Gallons Actually Evacuated:

WELL MONITORING DATA SHEET

Project #: 010921-N1	Client: STEVAR
Sampler: MW/SS	Start Date: 9-21-01
Well I.D.: MW-10	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: ~~26.60~~ 28.25	Depth to Water: 14.40
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC (Grade) ~ ground level	D.O. Meter (if req'd): YSI HACH

Purge Method:

- Bailer
- Disposable Bailer
- Middleburg
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other ____

Sampling Method: Bailer

- X Disposable Bailer
- Extraction Port
- Dedicated Tubing
- Other: ____

Grab sample.

____(Gals.) X ____ = ____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
~~1250~~	61.0	7.3	1105	>200	0	

Did well dewater? Yes No — Gallons actually evacuated: 0

Sampling Time: ~~1250~~ 1405 — Sampling Date: 9/21/01

Sample I.D.: MW-10 — Laboratory:

Analyzed for: TPH-G BTEX MTBE TPH-D — Other:

Equipment Blank I.D.: @ Time — Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D — Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL DEVELOPMENT DATA SHEET

Project #: 010921-N1	Client: STELLAR
Developer: MN/SS	Date Developed: 9-21-01
Well I.D. MW-11	Well Diameter: (circle one) (2) 3 4 6
Total Well Depth: 26.0	Depth to Water: 13.00
Before After	Before After
Reason not developed:	If Free Product, thickness:
Additional Notations:	

Volume Conversion Factor (VCF):	Well dia.		VCF
{12 x (d^2/4) x π} /231	2"	=	0.16
where	3"	=	0.37
12 = in / foot	4"	=	0.65
d = diameter (in.)	6"	=	1.47
π = 3.1416	10"	=	4.08
231 = in 3/gal	12"	=	6.87

2	X	10	=	20.0
1 Case Volume		Specified Volumes		gallons

Purging Device: Bailer ☐ Electric Submersible ☐
Middleburg ☒ Suction Pump ☐

Type of Installed Pump _____
Other equipment used _____

15 MIN - SURGE PRIOR TO PURGING.

TIME	TEMP (F)	pH	COND.	TURBIDITY	VOLUME REMOVED:	NOTATIONS:
1029	57.9	6.4	1951	>200	2.0	SILTY, odor
1030	57.4	6.4	1789	>200	4.0	" "
1034	57.3	6.6	1349	>200	6.0	" "
1040	57.7	6.7	1077	>200	8.0	DTW = 12.60
1049	59.9	6.8	1025	>200	10.0	Less silty.
1054	60.3	6.8	1023	>200	12.0	hard n bottom
1058	60.1	6.8	993	>200	14.0	" "
1104	60.5	6.8	964	>200	16.0	" "
1112	62.4	6.8	915	>200	18.0	DTW = 12.40
1116	61.2	6.8	918	>200	20.0	

Did Well Dewater? If yes, note above. Gallons Actually Evacuated:

WELL MONITORING DATA SHEET

Project #: 010921-N1	Client: STELLAR
Sampler: MN/SS	Start Date: 9-29-01
Well I.D.: MW-11	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 26.0	Depth to Water: 13.0
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC (Grade) Ground level	D.O. Meter (if req'd): YSI HACH

Purge Method:

- Bailer
- Disposable Bailer
- Middleburg
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other: Grab sample

Sampling Method:

- Bailer
- (X) Disposable Bailer
- Extraction Port
- Dedicated Tubing
- Other: ___

2 (Gals.) X	10	=	6 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
1125	64.1	6.9	846	>200	0	Silty

Did well dewater? Yes (No)

Gallons actually evacuated: 0

Sampling Time: 1125

Sampling Date: 9-29-01

Sample I.D.: MW-11

Laboratory:

Analyzed for: (TPH-G BTEX MTBE TPH-D) @ Time

Other:

Equipment Blank I.D.:

Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D

Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

Seaport Environmental
675 Seaport Blvd.
Redwood City, CA 94063 650.364.8154 Phone
Epa Id# CA 000032058 650.364.1021 Fax

Non-Hazardous Waste Water Characterization Form

Address of Responsible Party

Name: East Bay Regional Park District
Authorized Rep: Ken Burger
Street: P.O. Box 5381
City: Oakland State: CA
Phone: 510/544-2341

Site Address (if different)

Name: Redwood Park Service Yard
Contact: not applicable
Street: 7867 Redwood Rd.
City: Oakland State: CA
Phone: not applicable

Billing Party
Stetler Environmental Solutions
2198 Sixth Street
Berkeley CA 94710
510/644-3123
Attn: Bruce Rucker

Activity or Process Producing Wastewater (check all that apply):

X Monitoring well sampling
Excavation and Dewatering ____
____ Monitoring well development/auger rinsate
Pump test ____
Other (describe):

Suspected Source of Contaminants:

Does (or did) the site contain one or more underground storage tanks (UST's) for fuel? Yes✓ No__
Is a UST the suspected source of contamination? Yes✓ No__
Are you aware of any other possible sources or causes of waste water contamination at the site? If Yes, please describe: Yes__ No✓

Wastewater Characterization:

Please provide copies of the results of any analytical work carried out on the wastewater.

Is the pH less than 2 or greater than 12.5? Yes__ No✓
Is the flashpoint less than 140 F (60 C)? Yes__ No✓
Is there any reason to suspect the presence of reactive cyanides or sulfides? Yes__ No✓
Is there any reason to suspect that the waste water would prove toxic in a fish bio-assay test? Yes__ No✓
Is there separate-phase liquid present in the waste water? Yes__ No✓
Can you detect any hydrocarbon odor from the wastewater? Yes__ No✓
Was the wastewater tested for hydrocarbons? Yes✓ No__
Is there any reason to suspect the presence of chlorinated hydrocarbons such as Yes__ No✓

trichloroethylene?

Was the wastewater tested for chlorinated hydrocarbons ? Yes__ No✓

Is there any reason to suspect the presence of heavy metals, such as lead? Yes__ No✓

Was the wastewater tested for heavy metals?If "Yes", please describe tests and attach copies of the test results. Yes__ No✓

Was the wastewater tested for anything other than the above contaminants? If "Yes", please describe tests and attach copies of the test results. Yes__ No✓

Is there any other analytical test data (eg soil samples) for this site? Yes✓ No__

Is there any soil vapor monitoring data for this site? Yes__ No✓

Please describe the appearance of the waste water.

slightly turbid

Color clear

Estimated amount of sediment (% wt) < 1%

Is there evidence of an emulsion? Yes__ No✓

Estimated Volume of waste water (USG) 500 gals

Generator's Certification that Wastewater is Non-Hazardous

DESCRIPTION OF WATER: CERTIFY THAT THE ABOVE NAMED MATERIAL IS A LIQUID EXEMPT FROM RCRA PER 40 CFR 261.4(b)(10)AND DOES NOT MEET THE CRITERIA OF HAZARDOUS WASTE AS DESCRIBED IN 22 CCR ARTICLE 11 OR ANY OTHER APPLICABLE STATE LAW, HAS BEEN PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED AND IS IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS.

The information and representations presented above are true and correct to the best of my knowledge.

Bruce Rucker
Stellar Environmental Solutions B. M. Rucker 9/19/01

Generator/Authorised Agent) Signature & Date Approval #

Approval#

[redacted]

.02

Seaport Environmental

NON-HAZARDOUS WATER TRANSPORT FORM

GENERATOR INFORMATION

East Bay Regional Park Dist-Service yard
7867 Redwood Rd.
Oakland Ca

CUSTOMER INFORMATION

Stellar Environmental Solutions
Attn: Bruce Rucker
PO # 2001-53

2198 Sixth Street
Berkeley, CA 94710
510/644-3123

DESCRIPTION OF WATER: Monitoring Well Sampling
NON-HAZARDOUS WASTE WATER, MONITORING WELL PURGE WATER AND/OR AUGER RINSATE, TANK RINSATE OR ABOVE DESCRIBED WATER. THIS WATER MAY CONTAIN DISSOLVED HYDROCARBONS. I CERTIFY THAT THE ABOVE NAMED MATERIAL IS A LIQUID EXEMPT FROM RCRA PER 40 CFR 261.4 (b)(10)AND DOES NOT MEET THE CRITERIA OF HAZARDOUS WASTE AS DESCRIBED IN 22 CCR ARTICLE 11 OR ANY OTHER APPLICABLE STATE LAW, HAS BEEN PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED AND IS IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS.

Bruce Rucker – Stellar Environmental Solutions
Generator/Authorised Agent

B.M. Rucker 9/19/01
Sign date

SITE INFORMATION

7867 Redwood Rd. (Redwood Park Service Yard)
Oakland
Ca

Estimated 900 gallons

GROSS	
TARE	
NET	
TOTAL GALLONS	900

Calculated at 8.34lbs per USG

TRANSPORTER INFORMATION

Foss Environmental Services
1605 Ferry Point
Alameda, CA 94501
510/ 749-1390

Truck ID: 94-9802

Driver: JALIL WHITFIELD 9/21/01
Print full name & sign date

TIME OUT	
TIME IN	
TIME SPENT	

DISPOSAL FACILITY INFORMATION **EPA ID: CAL 000032058**

Seaport Environmental
675 Seaport Boulevard
Redwood City, Ca 94063
Phone: (650) 364 1024

Approval Number: 302 - 722

Solids %Wt: 0

pH: 7

Solids Surcharge ¢/USG:

FR 13 72

Received by:
Print full name & sign

P. Shaw C. 9-21-01
date

1118 14840

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Doc. No.	2. Page 1 of 1
N.A.	0.0.0.0/	

GENERATOR

3. Generator's Name and Mailing Address
East Bay Regional Parks District.
P.O. Box 5381 Oakland CA 94602

Site
7867 Redwood Rd.
Oakland CA

4. Generator's Phone (510)

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
FOSS ENVIRONMENTAL SERVICES	CAR.000.030114	510-749-1390
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone

9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
ALTAMONT LANDFILL 10840 ALTAMONT PASS Rd LIVERMORE, CA 94550	CAD.981382.732	925-449-6348

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON-HAZARDOUS WASTE SOLID (SOIL)	005	DM	1,500	P
b.				
c. 5-55 gals DRUMS				
d.				

D. Additional Descriptions for Materials Listed Above
Approval No. 55011200

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Disposal P/O A1861

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bruce Rucker	B.M. Rucker	10	24	01

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Bill Ernst	Bill Ernst	10	24	01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
[illegible]	[illegible]	10	26	01

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

Stellar Environmental Solutions
2198 6th Street
Suite 201
Berkeley, CA 94710

Date: 30-AUG-01
Lab Job Number: 153764
Project ID: 2001-53
Location: Redwood Park Service Yard

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____
Operations Manager

Chain of Custody Record

15364

Lab Job No. _____

Date 8/23/01

Page 1 of 1

Laboratory Curtis & Tompkins, Ltd.
Address 2323 Fifth Street
Berkeley CA 94710
510 /486-0900

Method of Shipment hand delivered
Shipment No. —
Airbill No. —
Cooler No. —

Project Owner East Bay Regional Park District
Site Address 7867 Redwood Road
Oakland CA
Project Name Redwood Park Service Yard
Project Number 2001-53

Project Manager Bruce Rueker
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature) B.M. Rueker

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	Analysis Required: TVH + BTEX + MTBE	Analysis Required: TEH-diesel	Remarks
SW-2		8/23/01		H_2O	1 L amber	✓			1		X	
					40 ml VOAs	✓	HCl		2	X		
~~SW-3~~		~~8/23/01~~		H_2O	~~1 L amber~~	✓			1		X	BNR
					~~40 ml VOAs~~	✓	HCl		2	X		

Received ☐ On Ice ☐ Cold ☐ Ambient ☑ Intact

Preservation Correct? ☑ Yes ☐ No ☐ N/A

Relinquished by:	Date	Received by:	Date
Signature B.M. Rueker	8/23/01	Signature [illegible]	8/23/01
Printed Bruce Rueker	Time 940	Printed [illegible]	Time
Company Stellar Env. Sols		Company Curtis & Tompkins	940

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	

Turnaround Time: 5 DAY

Comments:

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	153764	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2001-53	Analysis:	8015B(M)
Field ID:	SW-2	Sampled:	08/23/01
Matrix:	Water	Received:	08/23/01
Units:	ug/L	Prepared:	08/24/01
Diln Fac:	1.000	Analyzed:	08/27/01
Batch#:	65977		

ype: SAMPLE Lab ID: 153764-001

Analyte	Result	RL
Diesel C10-C24	200 L Y	50

Surrogate	%REC	Limits
Hexacosane	68	44-121

ype: BLANK Cleanup Method: EPA 3630C
Lab ID: QC154359

Analyte	Result	RL
Diesel C10-C24	ND	50

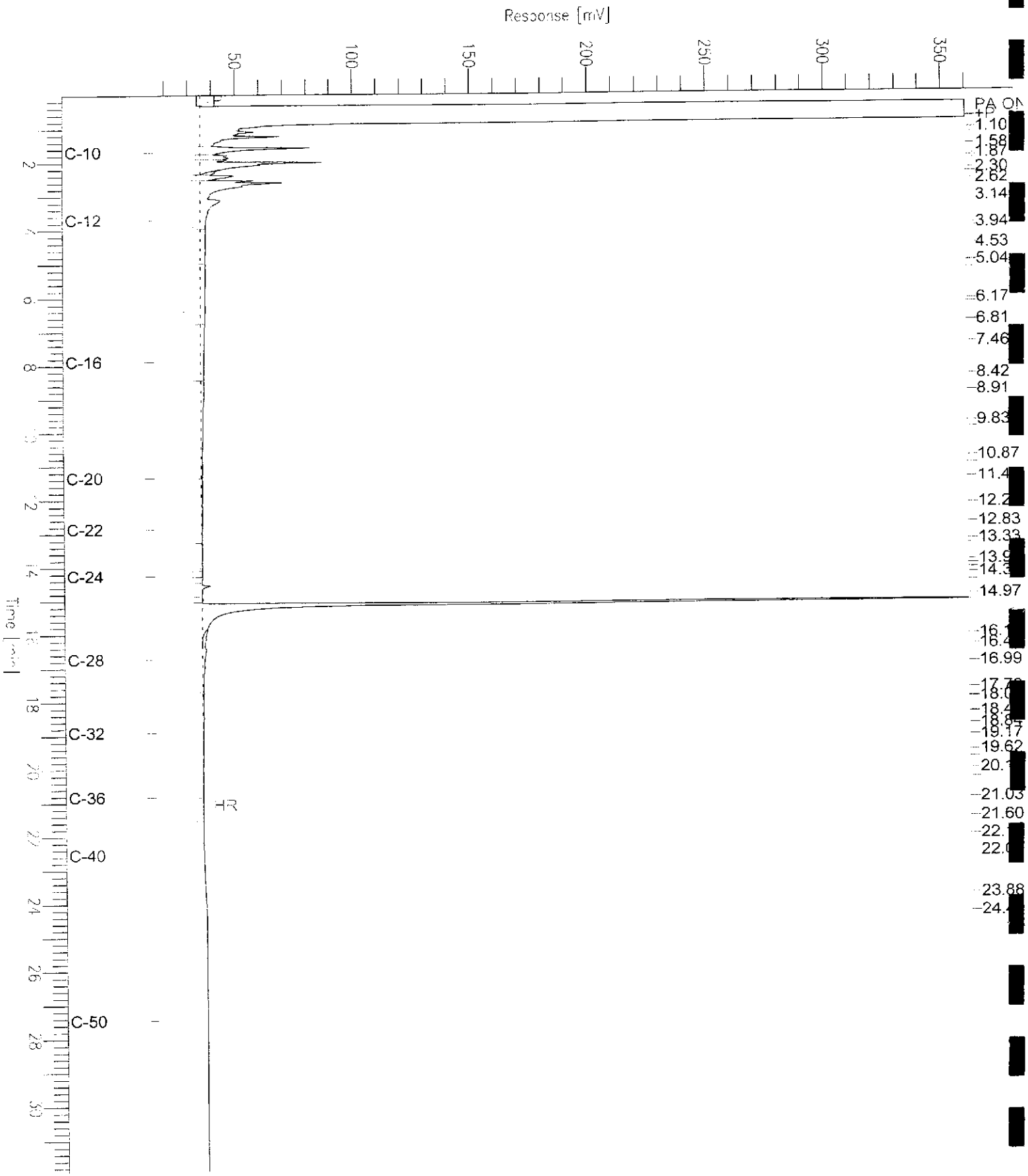
Surrogate	%REC	Limits
Hexacosane	75	44-121

L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 153764-001,65977
FileName : G:\GC13\CHB\239B010.RAW
Method : BTEH191.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 16 mV

Sample #: 65977
Date : 08/28/2001 08:04 AM
Time of Injection: 08/27/2001 07:10 PM
Low Point : 15.65 mV High Point : 360.42 mV
Plot Scale: 344.8 mV



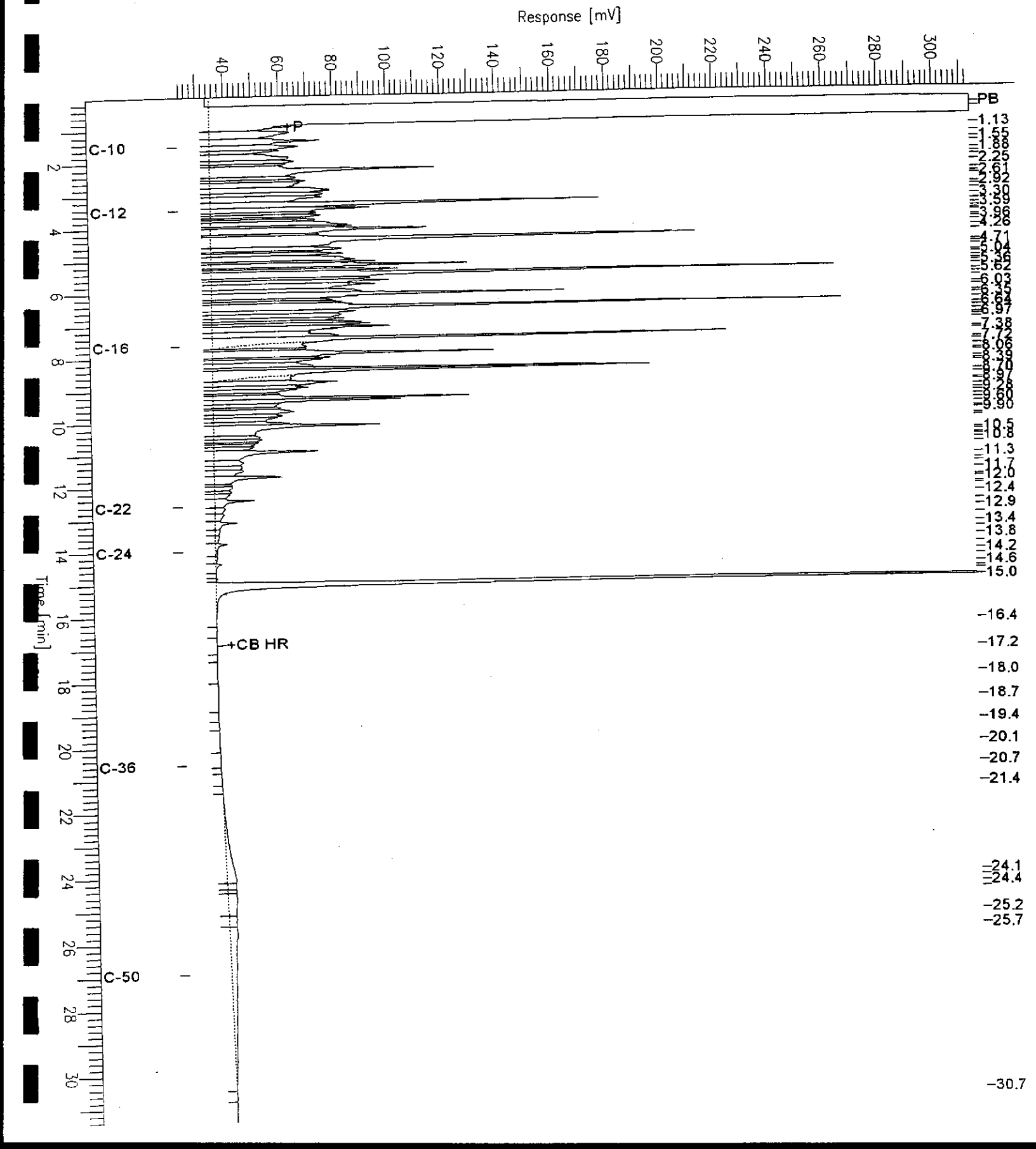
Chromatogram

ple Name : ccv,01ws1631,dsl
ileName : G:\GC15\CHB\239B002.RAW
ethod : BTEH211.MTH
rt Time : 0.01 min
le Factor: 0.0

End Time : 31.47 min
Plot Offset: 23 mV

Sample #: 500mg/L
Date : 08/27/2001 12:41 PM
Time of Injection: 08/27/2001 10:33 AM
Low Point : 23.39 mV
Plot Scale: 290.3 mV

High Point : 313.66 mV



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	153764	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2001-53	Analysis:	8015B(M)
Matrix:	Water	Batch#:	65977
Units:	ug/L	Prepared:	08/24/01
Diln Fac:	1.000	Analyzed:	08/27/01

Type: BS
Lab ID: QC154360
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,202	88	45-110

Surrogate	%REC	Limits
Hexacosane	60	44-121

Type: BSD
Lab ID: QC154361
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,330	93	45-110	6	22

Surrogate	%REC	Limits
Hexacosane	60	44-121

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153764	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	8015B(M)
Field ID:	SW-2	Batch#:	66020
Matrix:	Water	Sampled:	08/23/01
Units:	ug/L	Received:	08/23/01
Diln Fac:	1.000	Analyzed:	08/28/01

Type: SAMPLE Lab ID: 153764-001

Analyte	Result	RL
Gasoline C7-C12	440	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	124	59-135
Bromofluorobenzene (FID)	108	60-140

Type: BLANK Lab ID: QC154550

Analyte	Result	RL
Gasoline C7-C12	ND	50

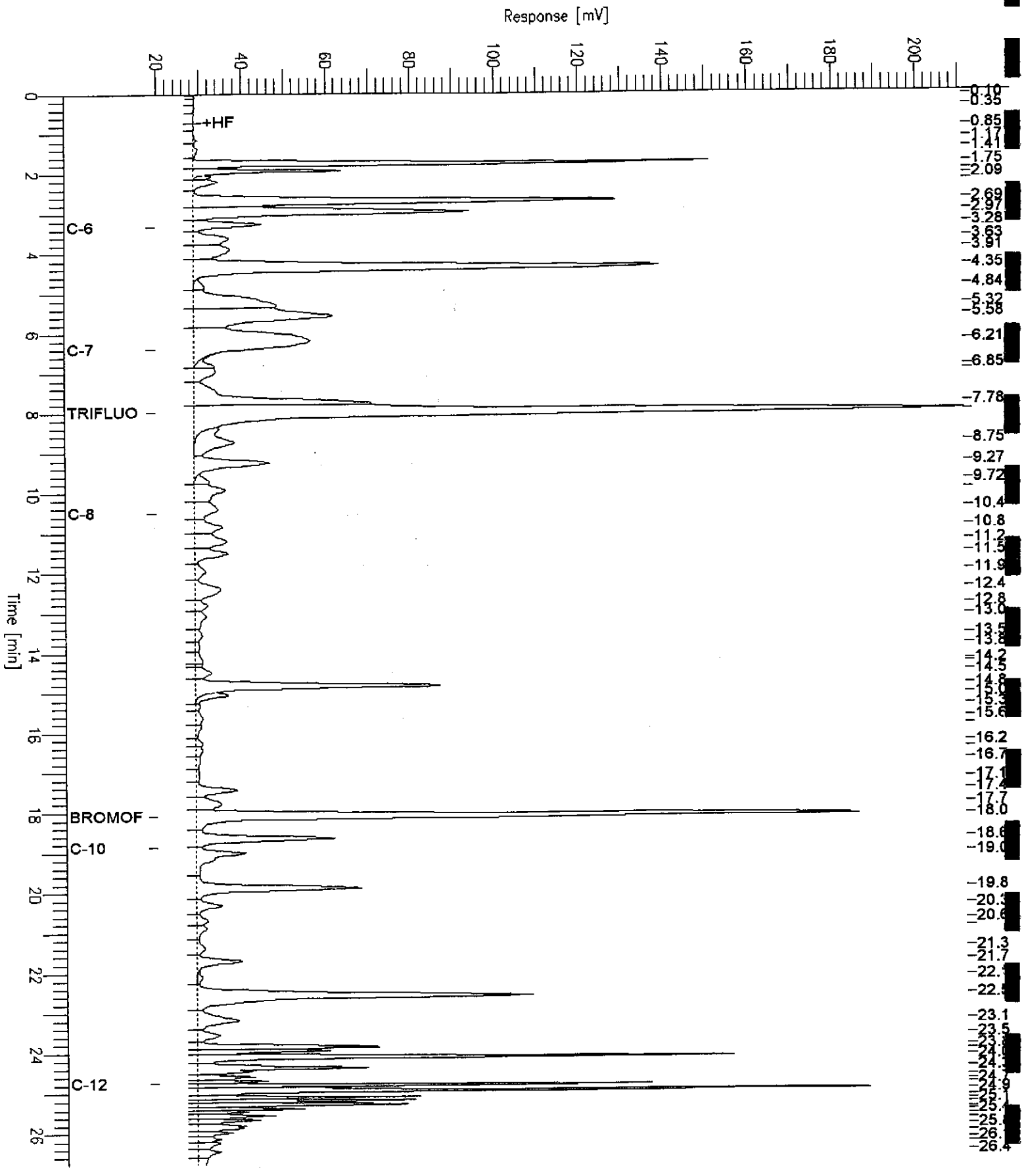
Surrogate	%REC	Limits
Trifluorotoluene (FID)	95	59-135
Bromofluorobenzene (FID)	92	60-140

ND= Not Detected
RL= Reporting Limit

GC19 TVH 'X' Data File (FID)

Sample Name : 153764-001,66020
FileName : G:\GC19\DATA\239X048.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 20 mV

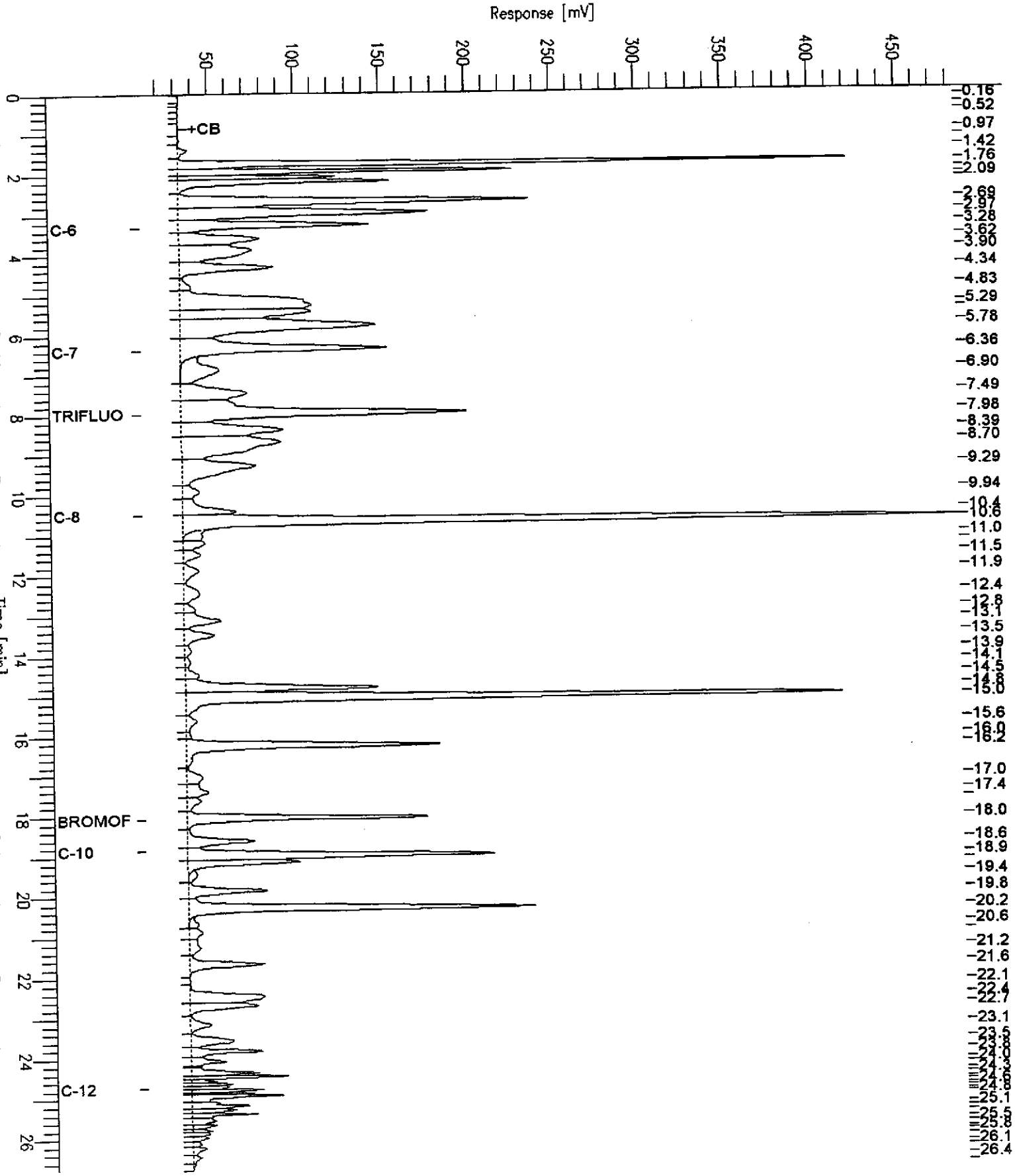
Sample #: A1 Page 1 of 1
Date : 8/29/01 01:54 PM
Time of Injection: 8/28/01 08:14 PM
Low Point : 19.62 mV High Point : 210.94 mV
Plot Scale: 191.3 mV



GC19 TVH 'X' Data File (FID)

mple Name : CCV/LCS,QC154548,66020,01WS1657,5/5000
leName : G:\GC19\DATA\239X029.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
ale Factor: 1.0 Plot Offset: 10 mV

Sample #:
Date : 8/28/01 09:18 AM
Time of Injection: 8/28/01 08:51 AM
Low Point : 10.47 mV High Point : 484.99 mV
Plot Scale: 474.5 mV



Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	153764	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	EPA 8021B
Field ID:	SW-2	Batch#:	66020
Matrix:	Water	Sampled:	08/23/01
Units:	ug/L	Received:	08/23/01
Diln Fac:	1.000	Analyzed:	08/28/01

Type: SAMPLE Lab ID: 153764-001

Analyte	Result	RL
MTBE	10	2.0
Benzene	2.1	0.50
Toluene	ND	0.50
Ethylbenzene	17	0.50
m,p-Xylenes	1.3	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	56-142
Bromofluorobenzene (PID)	102	55-149

Type: BLANK Lab ID: QC154550

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	83	56-142
Bromofluorobenzene (PID)	85	55-149

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153764	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC154548	Batch#:	66020
Matrix:	Water	Analyzed:	08/28/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,785	89	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	122	59-135
Bromofluorobenzene (FID)	100	60-140

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	153764	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	66020
Units:	ug/L	Analyzed:	08/28/01
Diln Fac:	1.000		

Type: BS Lab ID: QC154589

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	19.62	98	51-125
Benzene	20.00	20.79	104	67-117
Toluene	20.00	20.62	103	69-117
Ethylbenzene	20.00	20.85	104	68-124
m,p-Xylenes	40.00	41.40	103	70-125
o-Xylene	20.00	20.57	103	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	98	56-142
Bromofluorobenzene (PID)	102	55-149

Type: BSD Lab ID: QC154590

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	18.27	91	51-125	7	20
Benzene	20.00	19.69	98	67-117	5	20
Toluene	20.00	19.27	96	69-117	7	20
Ethylbenzene	20.00	19.62	98	68-124	6	20
m,p-Xylenes	40.00	39.16	98	70-125	6	20
o-Xylene	20.00	19.25	96	65-129	7	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	91	56-142
Bromofluorobenzene (PID)	95	55-149

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153764	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	66020
MSS Lab ID:	153774-003	Sampled:	08/23/01
Matrix:	Water	Received:	08/23/01
Units:	ug/L	Analyzed:	08/28/01
Diln Fac:	1.000		

Type: MS Lab ID: QC154551

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,754	88	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	129	59-135
Bromofluorobenzene (FID)	112	60-140

Type: MSD Lab ID: QC154552

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,778	89	65-131	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	131	59-135
Bromofluorobenzene (FID)	111	60-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Stellar Environmental Solutions
2198 6th Street
Suite 201
Berkeley, CA 94710

Date: 12-SEP-01
Lab Job Number: 153825
Project ID: 010827-NI
Location: Redwood Regional park Sv

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____
Operations Manager

Curtis & Tompkins, Ltd.

Laboratory Number: **153825**
Client: **Stellar Environmental Solutions**
Location: **Redwood Regional park Sv**

Sampled Date: **08/27/01**
Received Date: **08/27/01**

CASE NARRATIVE

This hardcopy data package contains sample and QC results for five water samples, which were received from the site referenced above on August 27, 2001. The samples were received cold and intact.

TEH (EPA 8015B (M)):
No analytical problems were encountered.

TVH/BTXE:
High Trifluorotoluene surrogate recoveries were observed for sample MW-7 (CT# 153825-004) and the matrix spike recoveries for sample CT# 153882-001 due to hydrocarbons coeluting with the surrogate peaks. No other analytical problems were encountered.

General Chemistry:
No analytical problems were encountered.

CHAIN OF CUSTODY FORM

Page 1 of 1

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 Phone
(510)486-0532 Fax

C&T LOGIN # 153825

Sampler: Mike N.

Project No: 010827-N1

Report To: ~~Betty~~ Bruce Rucker

Project Name: Redwood Regional Park Service yard

Company: ~~Blaine Tech~~ Stellar Env.

Project P.O.:

Telephone: ~~408 573-0555~~

Turnaround Time: Std

Fax:

Laboratory Number	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO	Preservative: HNO_3	Preservative: ICE	Field Notes	Analyses: TVH, BTEX, MTBE	Analyses: TEH - D	Analyses: Nitrate	Analyses: Sulfate
	MW-2	8/27/01 1108		X		4				X		X	X		
	MW-3	1313		X		1				X				X	X
	MW-4	1216		X		5				X		X	X	X	X
	MW-7	1154		X		5				X		X	X	X	X
	MW-8	1303		X		5				X		X	X	X	X
For Laboratory Use															

Received: ☑ On Ice ☑ Cold ☐ Ambient ☐ Intact

Preservation Correct? ☑ Yes ☐ No ☐ N/A

Notes: * Short hold time

Bill to Stellar Env.

RELINQUISHED BY:	RECEIVED BY:
Michael Nmokata 8/27/01 251 DATE/TIME	8/27/01 2:51 pm DATE/TIME
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME

Signature

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	010827-NI	Analysis:	8015B(M)
Matrix:	Water	Sampled:	08/27/01
Units:	ug/L	Received:	08/27/01
Batch#:	66076	Prepared:	08/29/01

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	08/31/01
Lab ID:	153825-001		

Analyte	Result	RL
Diesel C10-C24	120 Y	50

Surrogate	%REC	Limits
Hexacosane	112	44-121

Field ID:	MW-4	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	08/31/01
Lab ID:	153825-003		

Analyte	Result	RL
Diesel C10-C24	810 L Y	50

Surrogate	%REC	Limits
Hexacosane	113	44-121

Field ID:	MW-7	Diln Fac:	2.000
Type:	SAMPLE	Analyzed:	09/01/01
Lab ID:	153825-004		

Analyte	Result	RL
Diesel C10-C24	5,000 L Y	100

Surrogate	%REC	Limits
Hexacosane	108	44-121

L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	010827-NI	Analysis:	8015B(M)
Matrix:	Water	Sampled:	08/27/01
Units:	ug/L	Received:	08/27/01
Batch#:	66076	Prepared:	08/29/01

Field ID:	MW-8	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	08/31/01
Lab ID:	153825-005		

Analyte	Result	RL
Diesel C10-C24	3,200 L Y	50

Surrogate	%REC	Limits
Hexacosane	104	44-121

Type:	BLANK	Analyzed:	08/30/01
Lab ID:	QC154766	Cleanup Method:	EPA 3630C
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	ND	50

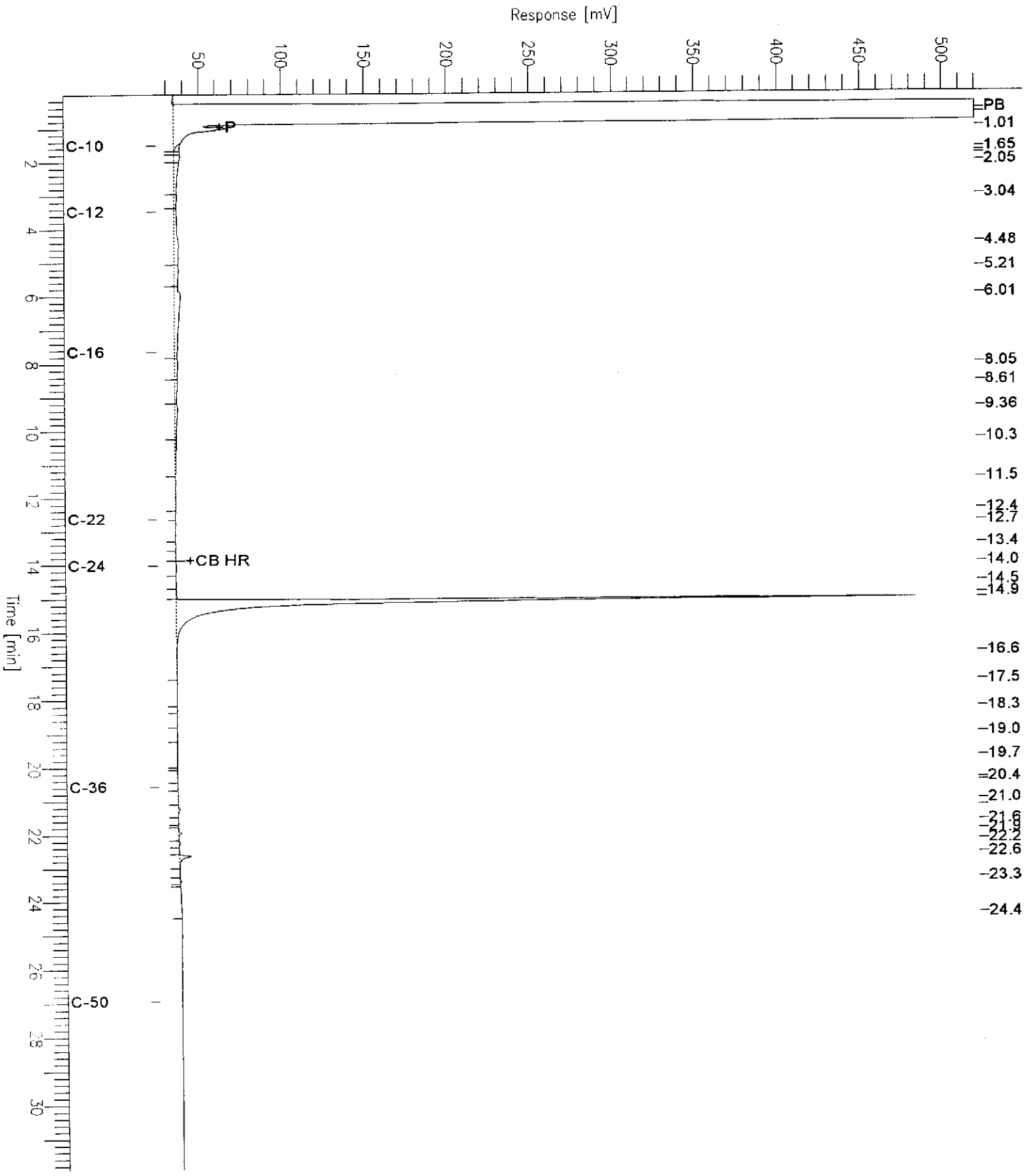
Surrogate	%REC	Limits
Hexacosane	82	44-121

L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 153825-001,66076
FileName : G:\GC15\CHB\242B018.RAW
Method : BTEH211.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 24 mV

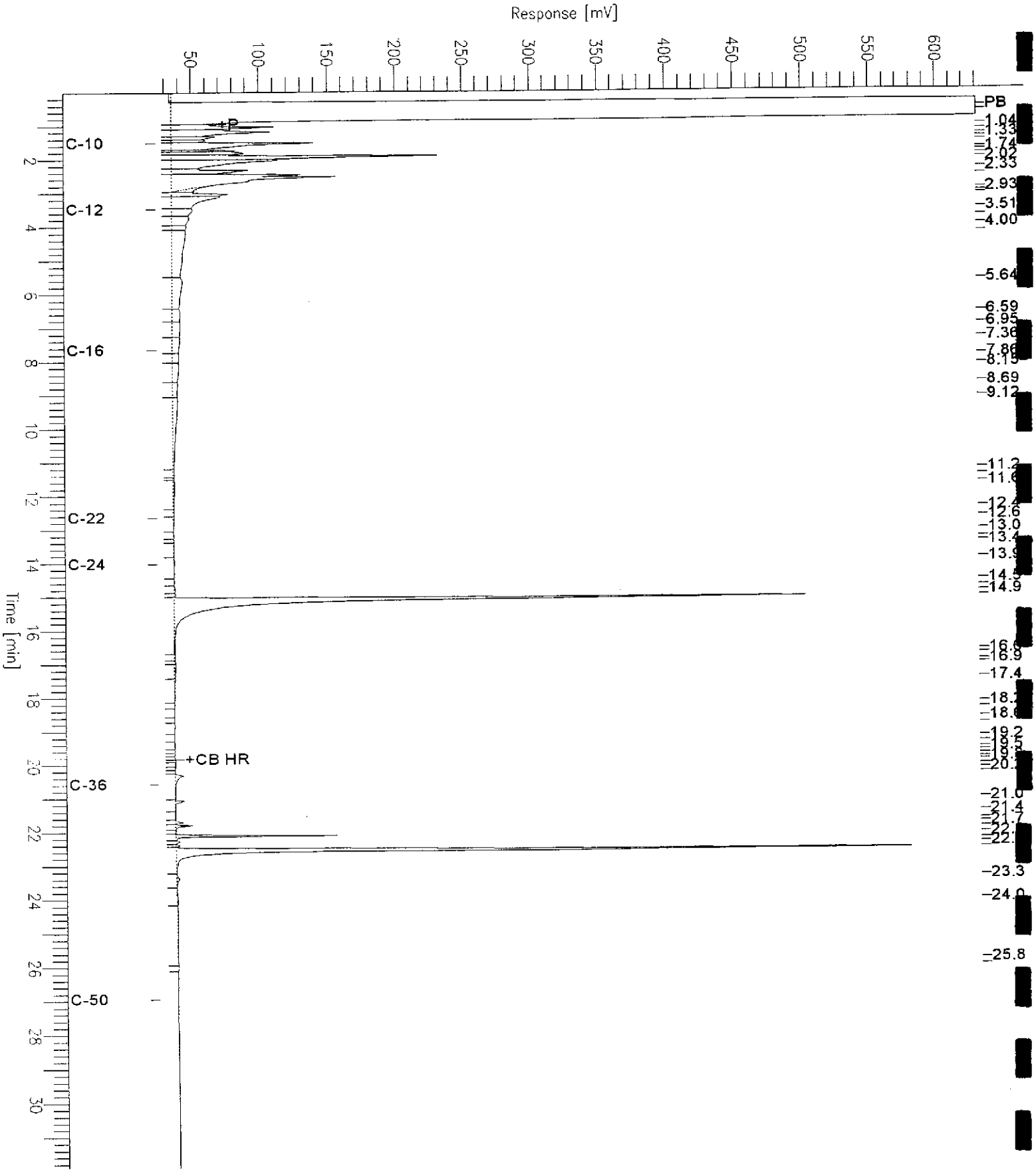
Sample #: 66076 Page 1 of 1
Date : 08/31/2001 08:58 AM
Time of Injection: 08/31/2001 01:40 AM
Low Point : 24.15 mV High Point : 520.32 mV
Plot Scale: 496.2 mV



Chromatogram

Sample Name : 153825-003,66076
FileName : G:\GC15\CHB\242B019.RAW
Method : BTEH211.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 24 mV

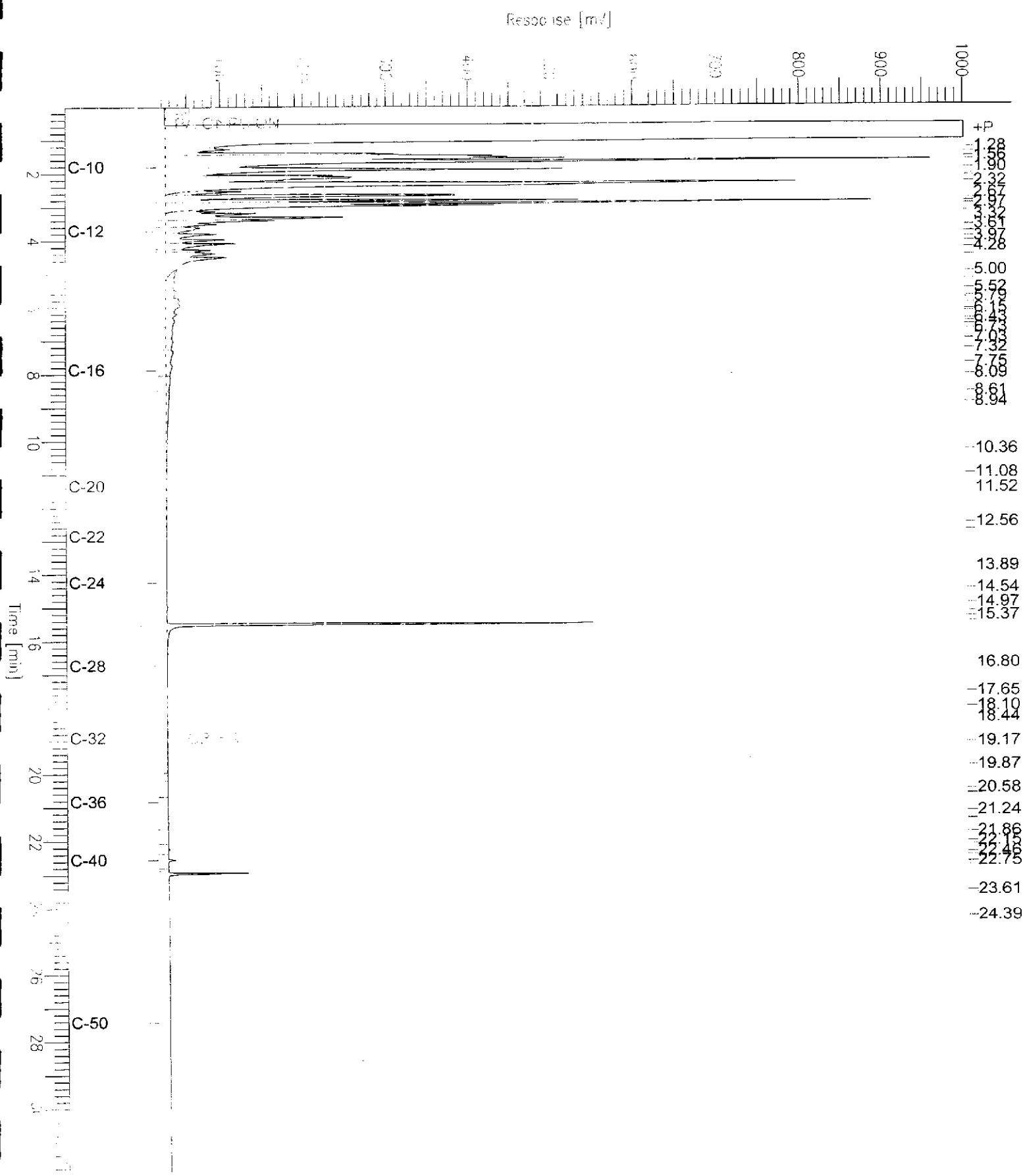
Sample #: 66076 Page 1 of 1
Date : 08/31/2001 08:59 AM
Time of Injection: 08/31/2001 02:20 AM
Low Point : 23.93 mV High Point : 630.90 mV
Plot Scale: 607.0 mV



Chromatogram

Sample Name : 153825-004,66076
FileName : G:\GC13\CHB\243B032.RAW
Method : BTEH241.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 23 mV

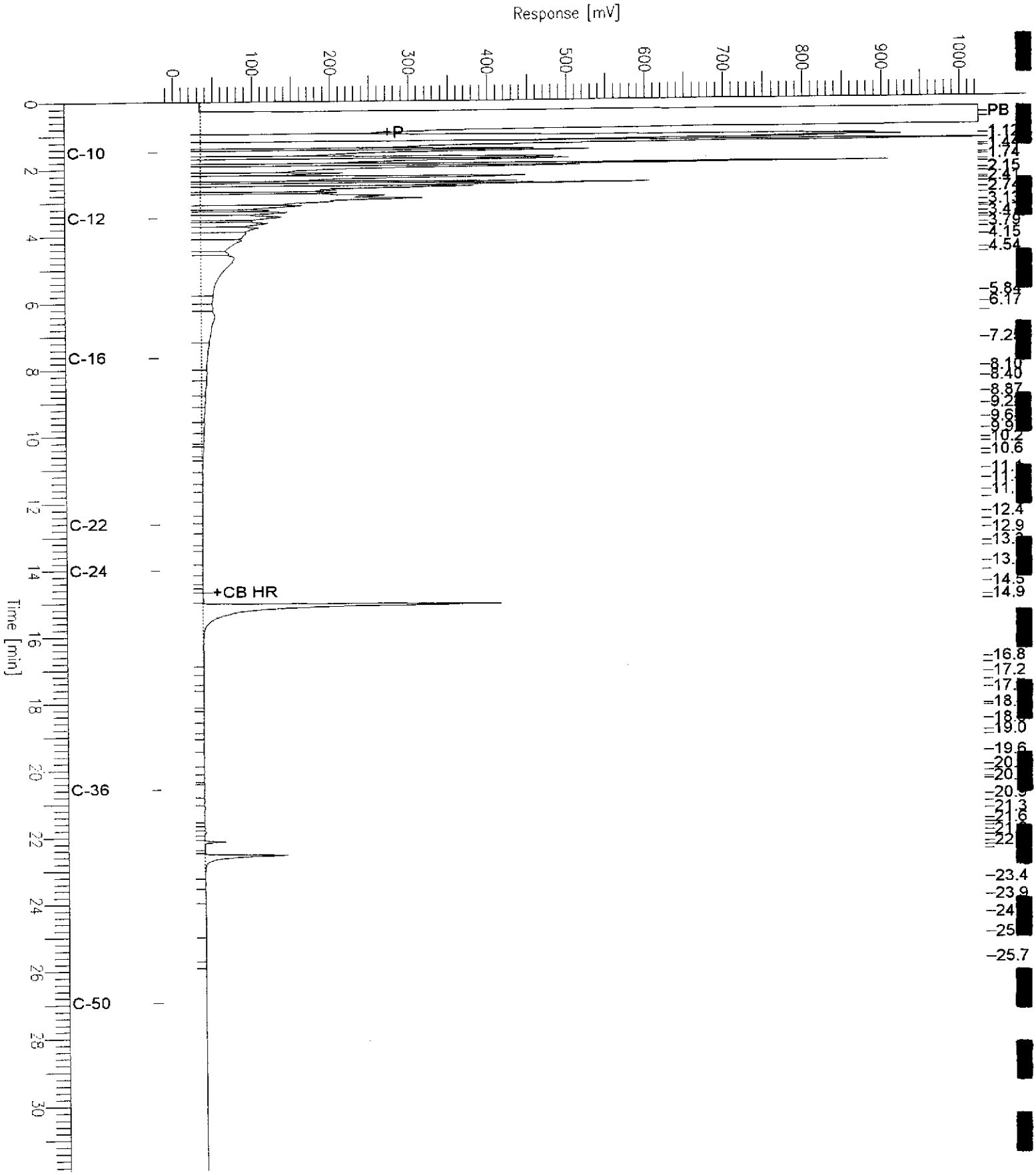
Sample #: 66076
Date : 09/04/2001 10:12 AM
Time of Injection: 09/01/2001 07:56 AM
Low Point : 23.30 mV High Point : 1001.47 mV
Plot Scale: 978.2 mV



Chromatogram

Sample Name : 153825-005,66076
FileName : G:\GC15\CHB\242B021.RAW
Method : BTEH211.MTH
Start Time : 0.00 min End Time : 31.90 min
Scale Factor: 0.0 Plot Offset: -19 mV

Sample #: 66076 Page 1 of 1
Date : 08/31/2001 09:02 AM
Time of Injection: 08/31/2001 03:42 AM
Low Point : -18.93 mV High Point : 1024.00 mV
Plot Scale: 1042.9 mV

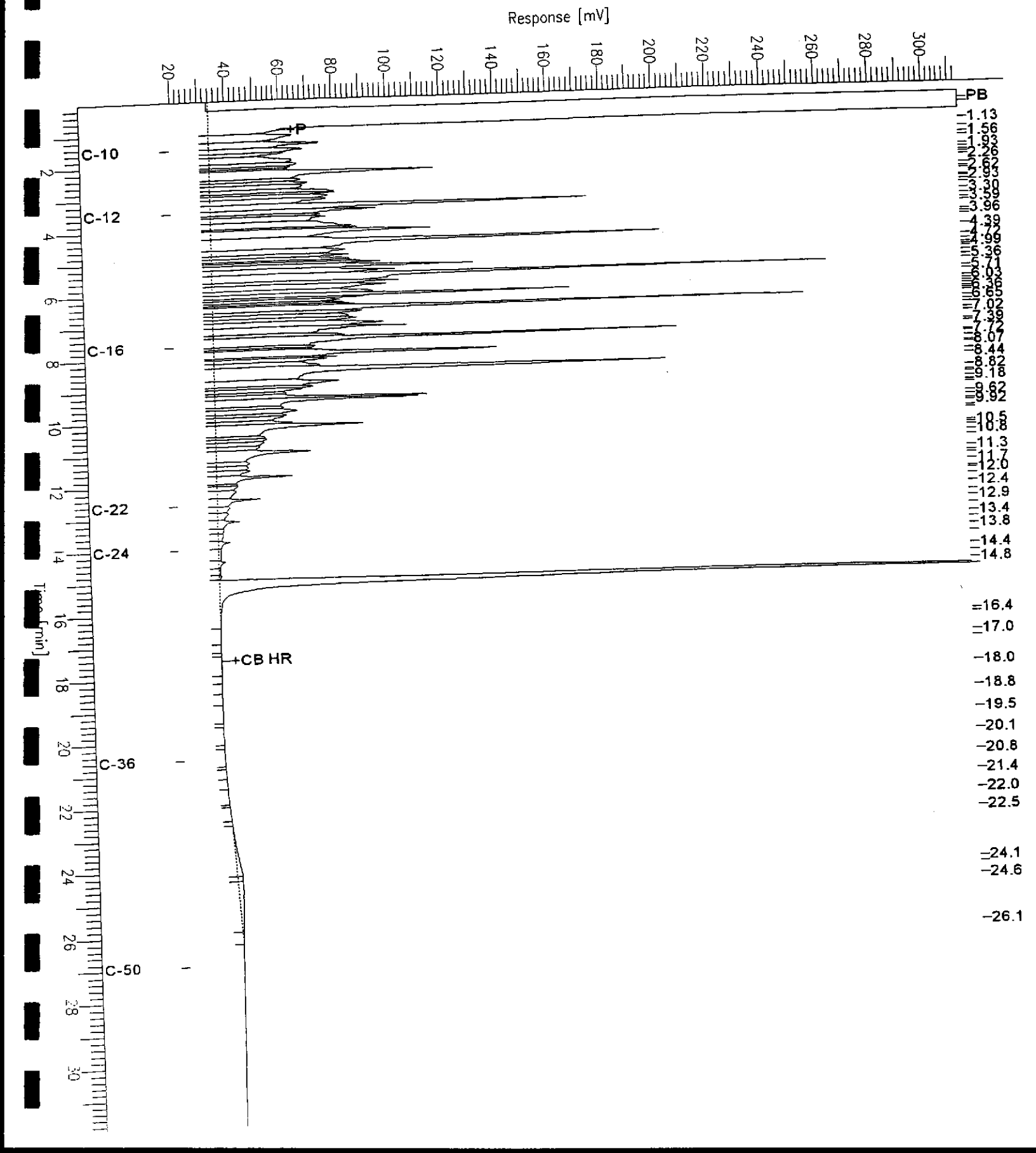


Chromatogram

le Name : ccv,01ws1631,dsl
leName : G:\GC15\CHB\242B002.RAW
thod : BTEH211.MTH
t Time : 0.01 min
e Factor: 0.0

End Time : 31.91 min
Plot Offset: 20 mV

Sample #: 500mg/L
Date : 08/30/2001 11:42 AM
Time of Injection: 08/30/2001 09:45 AM
Low Point : 19.52 mV
High Point : 313.54 mV
Plot Scale: 294.0 mV



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	010827-NI	Analysis:	8015B(M)
Matrix:	Water	Batch#:	66076
Units:	ug/L	Prepared:	08/29/01
Diln Fac:	1.000	Analyzed:	08/30/01

Type: BS
Lab ID: QC154767

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,820	73	45-110

Surrogate	%REC	Limits
Hexacosane	90	44-121

Type: BSD
Lab ID: QC154768

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,075	83	45-110	13	22

Surrogate	%REC	Limits
Hexacosane	89	44-121

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	8015B(M)
Matrix:	Water	Sampled:	08/27/01
Units:	ug/L	Received:	08/27/01

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	66153
Lab ID:	153825-001	Analyzed:	09/04/01

Analyte	Result	RL
Gasoline C7-C12	260 L	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	59-135
Bromofluorobenzene (FID)	104	60-140

Field ID:	MW-4	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	66153
Lab ID:	153825-003	Analyzed:	09/04/01

Analyte	Result	RL
Gasoline C7-C12	1,300	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	133	59-135
Bromofluorobenzene (FID)	107	60-140

Field ID:	MW-7	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	66222
Lab ID:	153825-004	Analyzed:	09/06/01

Analyte	Result	RL
Gasoline C7-C12	12,000	250

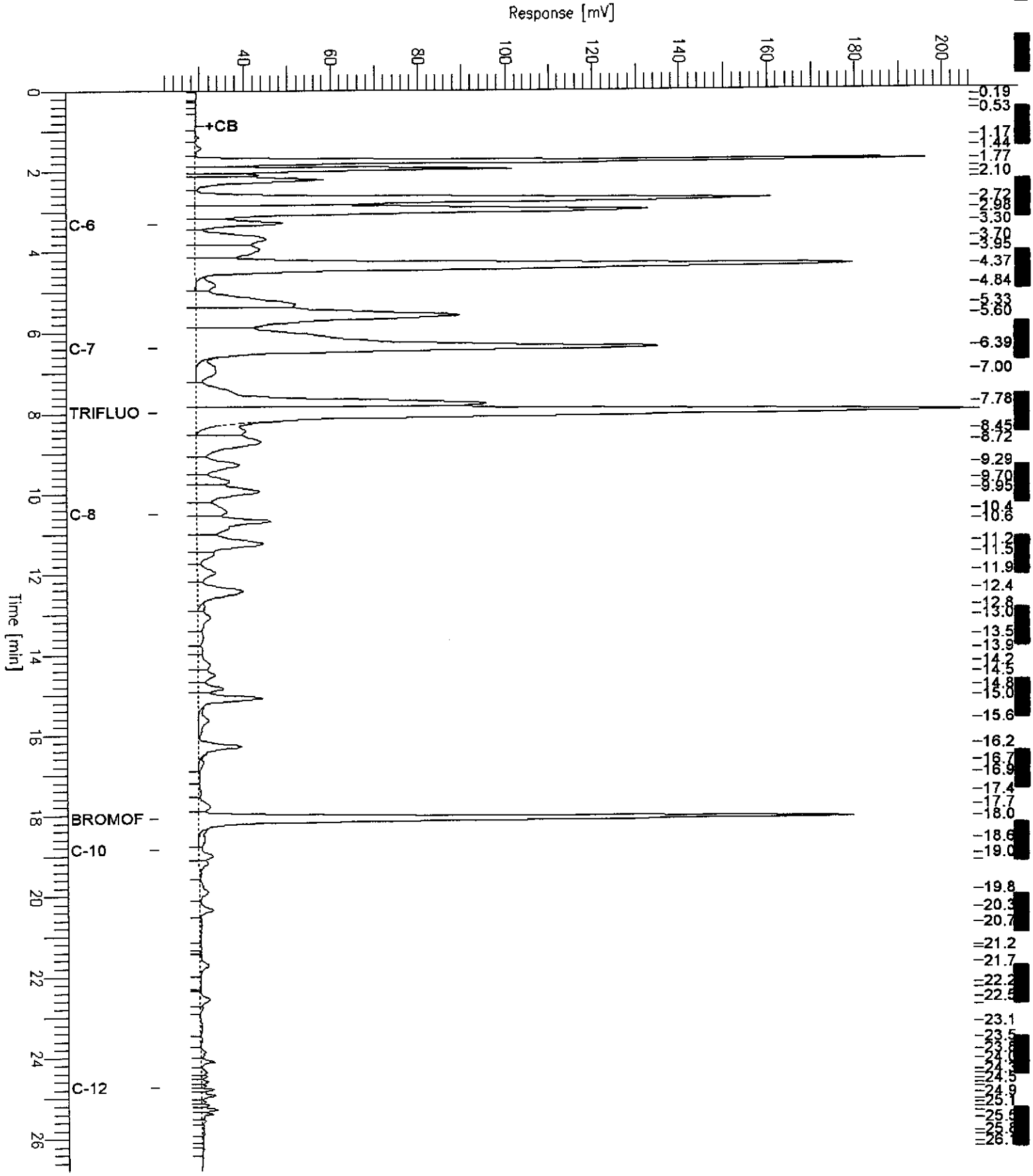
Surrogate	%REC	Limits
Trifluorotoluene (FID)	149 *	59-135
Bromofluorobenzene (FID)	104	60-140

*= Value outside of QC limits; see narrative
L= Lighter hydrocarbons contributed to the quantitation
ND= Not Detected
RL= Reporting Limit

GC19 TVH 'X' Data File (FID)

Sample Name : 153825-001,66153
FileName : G:\GC19\DATA\247X011.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 20 mV

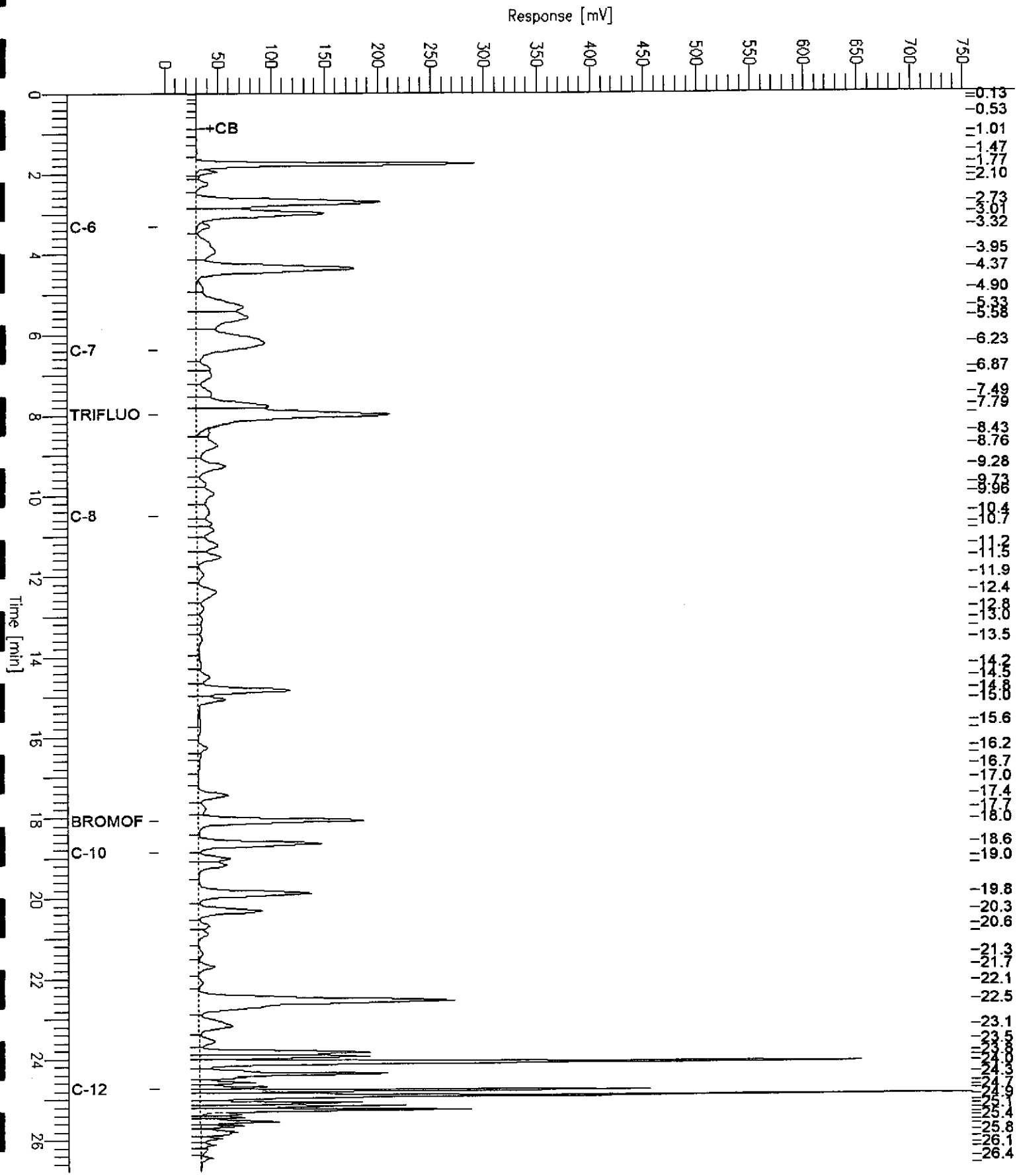
Sample #: B1
Date : 9/4/01 07:20 PM
Time of Injection: 9/4/01 06:53 PM
Low Point : 20.06 mV High Point : 206.36 mV
Plot Scale: 186.3 mV



GC19 TVH 'X' Data File (FID)

Sample Name : 153825-003,66153
FileName : G:\GC19\DATA\247X012.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: -7 mV

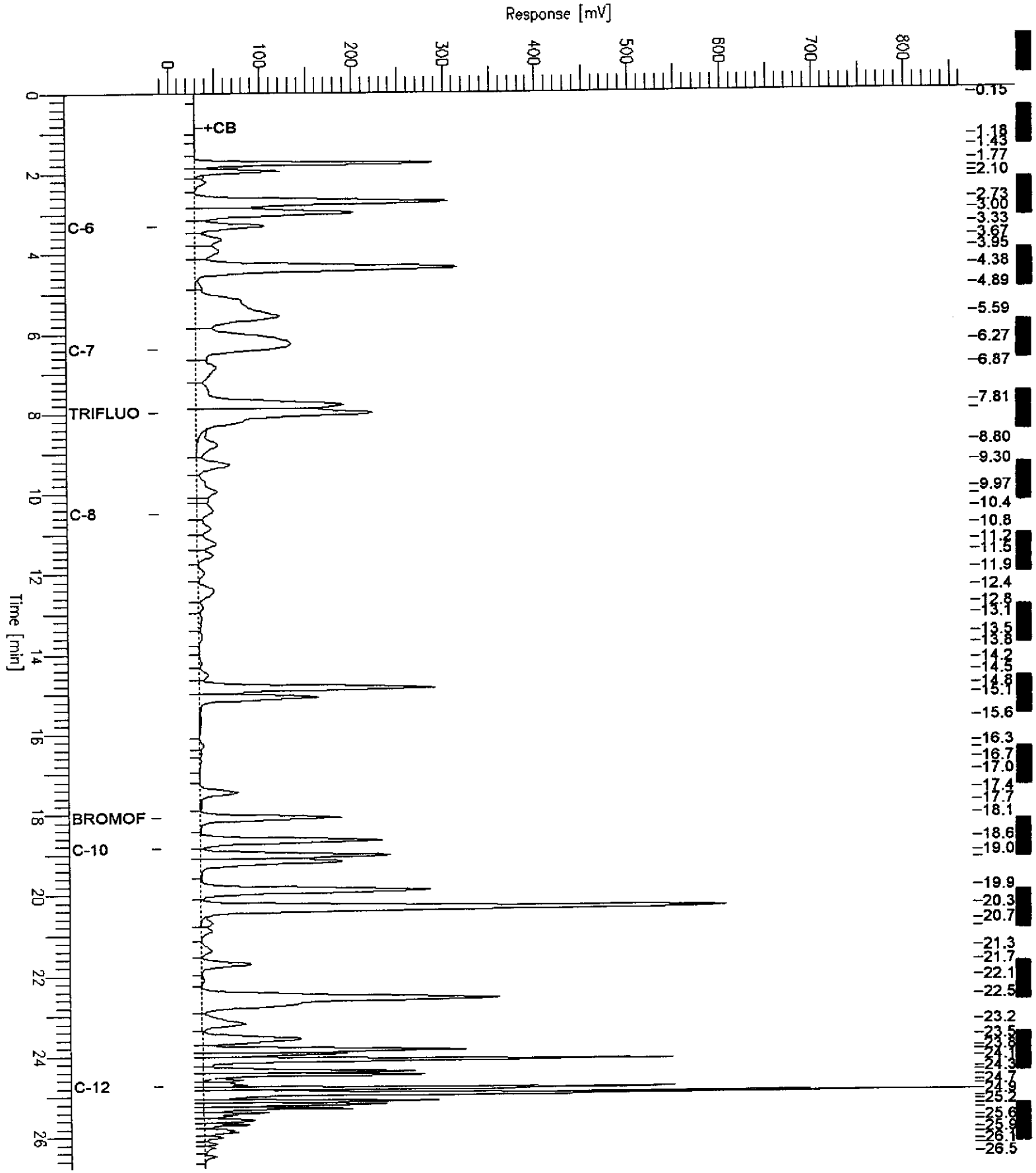
Sample #: B1
Date : 9/4/01 07:56 PM
Time of Injection: 9/4/01 07:29 PM
Low Point : -6.67 mV High Point : 753.39 mV
Plot Scale: 760.1 mV



GC19 TVH 'X' Data File (FID)

Sample Name : 153825-004,66222
FileName : G:\GC19\DATA\249X009.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: -13 mV

Sample #: C1 Page 1 of 1
Date : 9/6/01 03:55 PM
Time of Injection: 9/6/01 03:28 PM
Low Point : -13.17 mV High Point : 868.57 mV
Plot Scale: 881.7 mV



Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	8015B(M)
Matrix:	Water	Sampled:	08/27/01
Units:	ug/L	Received:	08/27/01

Field ID:	MW-8	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	66222
Lab ID:	153825-005	Analyzed:	09/06/01

Analyte	Result	RL
Gasoline C7-C12	9,600	250

Surrogate	%REC	Limits
Trifluorotoluene (FID)	135	59-135
Bromofluorobenzene (FID)	104	60-140

Type:	BLANK	Batch#:	66153
Lab ID:	QC155071	Analyzed:	09/04/01
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	99	59-135
Bromofluorobenzene (FID)	100	60-140

Type:	BLANK	Batch#:	66222
Lab ID:	QC155344	Analyzed:	09/06/01
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

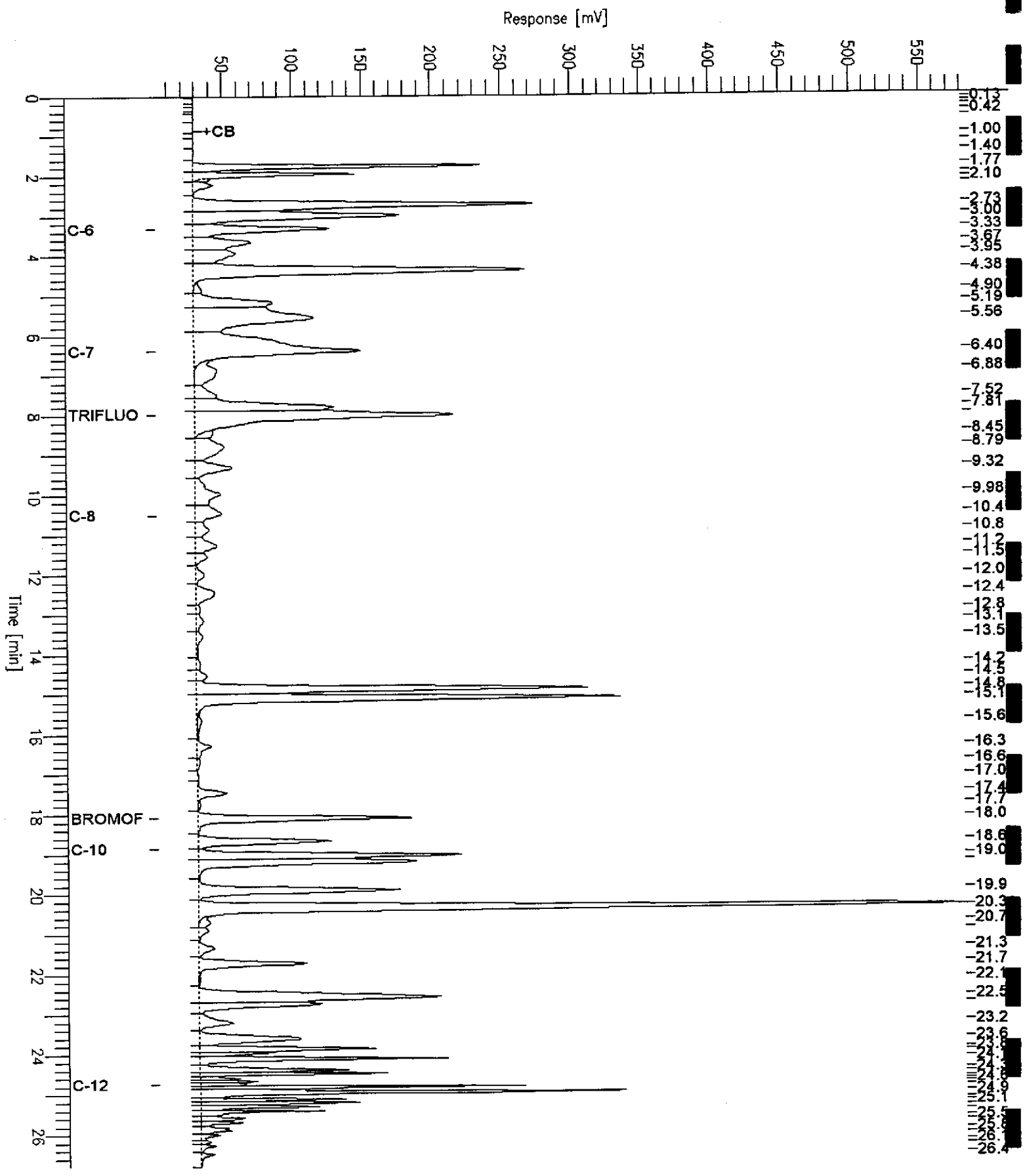
Surrogate	%REC	Limits
Trifluorotoluene (FID)	95	59-135
Bromofluorobenzene (FID)	94	60-140

*= Value outside of QC limits; see narrative
L= Lighter hydrocarbons contributed to the quantitation
ND= Not Detected
RL= Reporting Limit

GC19 TVH 'X' Data File (FID)

Sample Name : 153825-005,66222
FileName : G:\GC19\DATA\249X010.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 2 mV

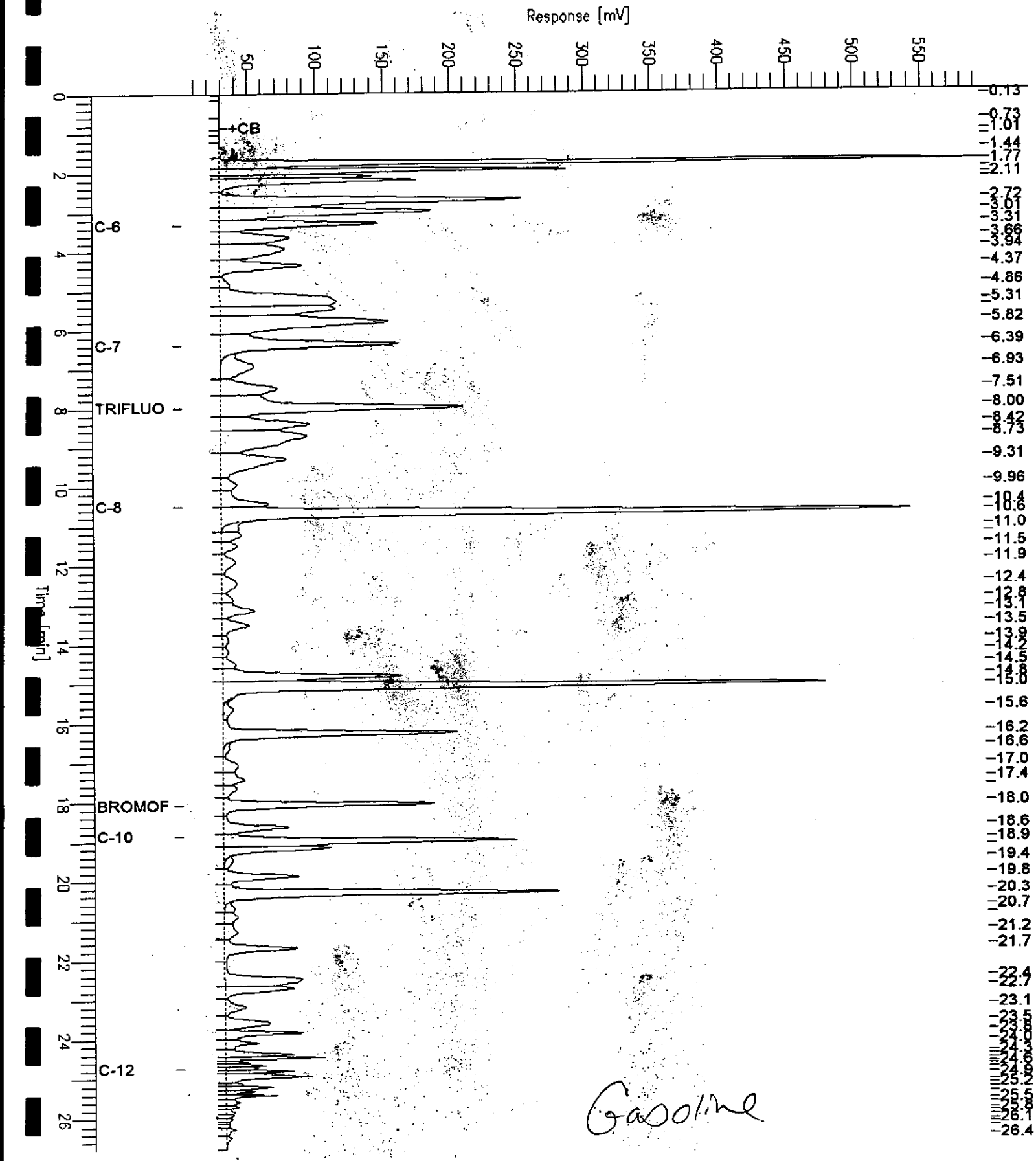
Sample #: B1
Date : 9/6/01 04:31 PM
Time of Injection: 9/6/01 04:04 PM
Low Point : 1.63 mV High Point : 580.87 mV
Plot Scale: 579.2 mV



GC19 TVH 'X' Data File (FID)

Sample Name : CCV/LCS,QC155072,66153,01WS1657,5/5000
FileName : G:\GC19\DATA\247X002.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 1 mV

Sample #:
Date : 9/4/01 11:27 AM
Time of Injection: 9/4/01 11:00 AM
Low Point : 0.88 mV High Point : 595.25 mV
Plot Scale: 594.4 mV



Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	08/27/01
Units:	ug/L	Received:	08/27/01

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	66153
Lab ID:	153825-001	Analyzed:	09/04/01

Analyte	Result	RL
MTBE	27 C	2.0
Benzene	30	0.50
Toluene	6.7	0.50
Ethylbenzene	1.6	0.50
m,p-Xylenes	3.2	0.50
o-Xylene	3.2	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	109	56-142
Bromofluorobenzene (PID)	108	55-149

Field ID:	MW-4	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	66153
Lab ID:	153825-003	Analyzed:	09/04/01

Analyte	Result	RL
MTBE	ND	2.0
Benzene	3.2 C	0.50
Toluene	4.0	0.50
Ethylbenzene	29	0.50
m,p-Xylenes	6.6	0.50
o-Xylene	3.1	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	108	56-142
Bromofluorobenzene (PID)	109	55-149

Field ID:	MW-7	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	66222
Lab ID:	153825-004	Analyzed:	09/06/01

Analyte	Result	RL
MTBE	19 C	10
Benzene	55	2.5
Toluene	25	2.5
Ethylbenzene	440	2.5
m,p-Xylenes	190	2.5
o-Xylene	8.2	2.5

Surrogate	%REC	Limits
Trifluorotoluene (PID)	120	56-142
Bromofluorobenzene (PID)	109	55-149

C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	08/27/01
Units:	ug/L	Received:	08/27/01

Field ID:	MW-8	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	66222
Lab ID:	153825-005	Analyzed:	09/06/01

Analyte	Result	RL
MTBE	14	10
Benzene	130	2.5
Toluene	14 C	2.5
Ethylbenzene	470	2.5
m,p-Xylenes	450	2.5
o-Xylene	13	2.5

Surrogate	%REC	Limits
Trifluorotoluene (PID)	128	56-142
Bromofluorobenzene (PID)	109	55-149

Type:	BLANK	Batch#:	66153
Lab ID:	QC155071	Analyzed:	09/04/01
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	96	56-142
Bromofluorobenzene (PID)	101	55-149

Type:	BLANK	Batch#:	66222
Lab ID:	QC155344	Analyzed:	09/06/01
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	90	56-142
Bromofluorobenzene (PID)	92	55-149

C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC155072	Batch#:	66153
Matrix:	Water	Analyzed:	09/04/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,013	101	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	131	59-135
Bromofluorobenzene (FID)	108	60-140

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC155345	Batch#:	66222
Matrix:	Water	Analyzed:	09/06/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,941	97	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	129	59-135
Bromofluorobenzene (FID)	104	60-140

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC155075	Batch#:	66153
Matrix:	Water	Analyzed:	09/04/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	19.77	99	51-125
Benzene	20.00	20.68	103	67-117
Toluene	20.00	21.61	108	69-117
Ethylbenzene	20.00	21.61	108	68-124
m,p-Xylenes	40.00	42.81	107	70-125
o-Xylene	20.00	21.17	106	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	97	56-142
Bromofluorobenzene (PID)	99	55-149

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	66222
Units:	ug/L	Analyzed:	09/06/01
Diln Fac:	1.000		

Type: BS Lab ID: QC155348

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	18.18	91	51-125
Benzene	20.00	20.01	100	67-117
Toluene	20.00	21.14	106	69-117
Ethylbenzene	20.00	20.87	104	68-124
m,p-Xylenes	40.00	41.77	104	70-125
o-Xylene	20.00	20.50	102	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	96	56-142
Bromofluorobenzene (PID)	99	55-149

Type: BSD Lab ID: QC155349

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	18.59	93	51-125	2	20
Benzene	20.00	19.80	99	67-117	1	20
Toluene	20.00	19.99	100	69-117	6	20
Ethylbenzene	20.00	20.32	102	68-124	3	20
m,p-Xylenes	40.00	40.28	101	70-125	4	20
o-Xylene	20.00	19.81	99	65-129	3	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	93	56-142
Bromofluorobenzene (PID)	96	55-149

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	66153
MSS Lab ID:	153882-001	Sampled:	08/29/01
Matrix:	Water	Received:	08/29/01
Units:	ug/L	Analyzed:	09/04/01
Diln Fac:	1.000		

Type: MS Lab ID: QC155073

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	976.8	2,000	2,724	87	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	136 *	59-135
Bromofluorobenzene (FID)	121	60-140

Type: MSD Lab ID: QC155074

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,684	85	65-131	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	136 *	59-135
Bromofluorobenzene (FID)	121	60-140

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	66222
MSS Lab ID:	153873-004	Sampled:	08/28/01
Matrix:	Water	Received:	08/29/01
Units:	ug/L	Analyzed:	09/06/01
Diln Fac:	1.000		

Type: MS Lab ID: QC155346

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,941	97	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	129	59-135
Bromofluorobenzene (FID)	110	60-140

Type: MSD Lab ID: QC155347

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,960	98	65-131	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	132	59-135
Bromofluorobenzene (FID)	112	60-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	66222
MSS Lab ID:	153984-001	Sampled:	09/05/01
Matrix:	Water	Received:	09/05/01
Units:	ug/L	Analyzed:	09/07/01
Diln Fac:	1.000		

Type: MS Lab ID: QC155459

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,937	97	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	59-135
Bromofluorobenzene (FID)	102	60-140

Type: MSD Lab ID: QC155460

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,959	98	65-131	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	126	59-135
Bromofluorobenzene (FID)	106	60-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	010827-NI	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	66222
MSS Lab ID:	153957-001	Sampled:	09/04/01
Matrix:	Water	Received:	09/04/01
Units:	ug/L	Analyzed:	09/07/01
Diln Fac:	1.000		

Type: MS Lab ID: QC155461

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,931	97	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	126	59-135
Bromofluorobenzene (FID)	106	60-140

Type: MSD Lab ID: QC155462

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,931	97	65-131	0	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	128	59-135
Bromofluorobenzene (FID)	106	60-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	010827-NI	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Batch#:	66037
Matrix:	Water	Sampled:	08/27/01
Units:	mg/L	Received:	08/27/01
Diln Fac:	1.000	Analyzed:	08/28/01

Field ID	Type	Lab ID	Result	RL
MW-3	SAMPLE	153825-002	0.05	0.05
MW-4	SAMPLE	153825-003	ND	0.05
MW-7	SAMPLE	153825-004	ND	0.05
MW-8	SAMPLE	153825-005	ND	0.05
	BLANK	QC154613	ND	0.05

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Sulfate

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	010827-NI	Analysis:	EPA 300.0
Analyte:	Sulfate	Sampled:	08/27/01
Matrix:	Water	Received:	08/27/01
Units:	mg/L	Analyzed:	08/28/01
Batch#:	66037		

Field ID	Type	Lab ID	Result	RL	Dil'n Fac
MW-3	SAMPLE	153825-002	36	0.50	1.000
MW-4	SAMPLE	153825-003	14	0.50	1.000
MW-7	SAMPLE	153825-004	ND	0.50	1.000
MW-8	SAMPLE	153825-005	85	5.0	10.00
	BLANK	QC154613	ND	0.50	1.000

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	010827-NI	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Batch#:	66037
Field ID:	ZZZZZZZZZZ	Sampled:	08/27/01
MSS Lab ID:	153827-003	Received:	08/27/01
Matrix:	Water	Analyzed:	08/28/01
Units:	mg/L		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Dil'n Fac
BS	QC154614		2.000	2.019	101	80-110			1.000
BSD	QC154615		2.000	1.980	99	80-110	2	20	1.000
MS	QC154616	<0.05000	20.00	20.06	100	80-111			20.00
MSD	QC154617		20.00	19.89	99	80-111	1	20	20.00

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Sulfate

Lab #:	153825	Location:	Redwood Regional park Sv
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	010827-NI	Analysis:	EPA 300.0
Analyte:	Sulfate	Batch#:	66037
Field ID:	ZZZZZZZZZZ	Sampled:	08/27/01
MSS Lab ID:	153827-003	Received:	08/27/01
Matrix:	Water	Analyzed:	08/28/01
Units:	mg/L		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Dlln Fac
BS	QC154614		20.00	19.60	98	80-110			1.000
BSD	QC154615		20.00	19.72	99	80-110	1	20	1.000
MS	QC154616	97.92	200.0	292.7	97	71-128			20.00
MSD	QC154617		200.0	290.1	96	71-128	1	20	20.00

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

Stellar Environmental Solutions
2198 6th Street
Suite 201
Berkeley, CA 94710

Date: 18-SEP-01
Lab Job Number: 154096
Project ID: 2001-53
Location: Redwood Park Service Yard

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____
Operations Manager

159076

Chain of Custody Record

Lab job no. _____
Date 9/12/01
Page 1 of 1

Laboratory Curtis + Tompkins Ltd
Address 2323 Fifth Street
Berkeley CA 94710
510/486-0900

Project Owner East Bay Regional Park District
Site Address 7867 Redwood Road
Oakland CA

Project Name Redwood Park Service Yard
Project Number 2001-53

Method of Shipment Hand delivery
Shipment No. —
Airbill No. —
Cooler No. —
Project Manager Bruce Rucker
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature) B.M. Rucker

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	Analysis Required: TVH + BTEX + MTBE	Analysis Required: TEH - Diesel	Remarks
1 Purge Water	—	9/12/01	730	H_2O	40 ml VOA vials	✓	HNO_3		3	X		
					1 Liter amber glass	✓	—		1		X	

Relinquished by: Signature B.M. Rucker; Printed Bruce Rucker; Company Stellar Env. Solutions; Date 9/12/01; Time 820
Received by: Signature _____; Printed Ayanna Alcalde; Company Curtis & Tompkins; Date _____; Time _____
Relinquished by: Signature _____; Printed _____; Company _____; Date _____; Time _____
Received by: Signature _____; Printed _____; Company _____; Date _____; Time _____
Relinquished by: Signature _____; Printed _____; Company _____; Date _____; Time _____
Received by: Signature _____; Printed _____; Company _____; Date _____; Time _____

Turnaround Time ★ 5 DAY (Critical Deadline) ★

Comments: _____

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154096	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	8015B(M)
Field ID:	PURGE WATER	Batch#:	66354
Matrix:	Water	Sampled:	09/12/01
Units:	ug/L	Received:	09/12/01
Diln Fac:	1.000	Analyzed:	09/12/01

Type: SAMPLE Lab ID: 154096-001

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	59-135
Bromofluorobenzene (FID)	100	60-140

Type: BLANK Lab ID: QC155885

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	96	59-135
Bromofluorobenzene (FID)	96	60-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	154096	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	EPA 8021B
Field ID:	PURGE WATER	Batch#:	66354
Matrix:	Water	Sampled:	09/12/01
Units:	ug/L	Received:	09/12/01
Diln Fac:	1.000	Analyzed:	09/12/01

Type: SAMPLE Lab ID: 154096-001

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	101	56-142
Bromofluorobenzene (PID)	100	55-149

Type: BLANK Lab ID: QC155885

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	95	56-142
Bromofluorobenzene (PID)	95	55-149

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154096	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC155888	Batch#:	66354
Matrix:	Water	Analyzed:	09/12/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,837	92	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	118	59-135
Bromofluorobenzene (FID)	94	60-140

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	154096	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	66354
Units:	ug/L	Analyzed:	09/12/01
Diln Fac:	1.000		

Type: BS Lab ID: QC155886

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	18.79	94	51-125
Benzene	20.00	19.43	97	67-117
Toluene	20.00	20.28	101	69-117
Ethylbenzene	20.00	20.61	103	68-124
m,p-Xylenes	40.00	40.54	101	70-125
o-Xylene	20.00	20.14	101	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	99	56-142
Bromofluorobenzene (PID)	103	55-149

Type: BSD Lab ID: QC155887

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	18.33	92	51-125	2	20
Benzene	20.00	19.49	97	67-117	0	20
Toluene	20.00	20.36	102	69-117	0	20
Ethylbenzene	20.00	20.66	103	68-124	0	20
m,p-Xylenes	40.00	40.77	102	70-125	1	20
o-Xylene	20.00	20.15	101	65-129	0	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	96	56-142
Bromofluorobenzene (PID)	98	55-149

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154096	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	66354
MSS Lab ID:	154093-001	Sampled:	09/11/01
Matrix:	Water	Received:	09/11/01
Units:	ug/L	Analyzed:	09/12/01
Diln Fac:	1.000		

Type: MS Lab ID: QC155889

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,919	96	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	59-135
Bromofluorobenzene (FID)	110	60-140

Type: MSD Lab ID: QC155890

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,856	93	65-131	3	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	126	59-135
Bromofluorobenzene (FID)	108	60-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	154096	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2001-53	Analysis:	8015B(M)
Field ID:	PURGE WATER	Sampled:	09/12/01
Matrix:	Water	Received:	09/12/01
Units:	ug/L	Prepared:	09/12/01
Diln Fac:	1.000	Analyzed:	09/13/01
Batch#:	66378		

Type: SAMPLE Lab ID: 154096-001

Analyte	Result	RL
Diesel C10-C24	55 Y	50

Surrogate	%REC	Limits
Hexacosane	66	44-121

Type: BLANK Lab ID: QC155970

Analyte	Result	RL
Diesel C10-C24	ND	50

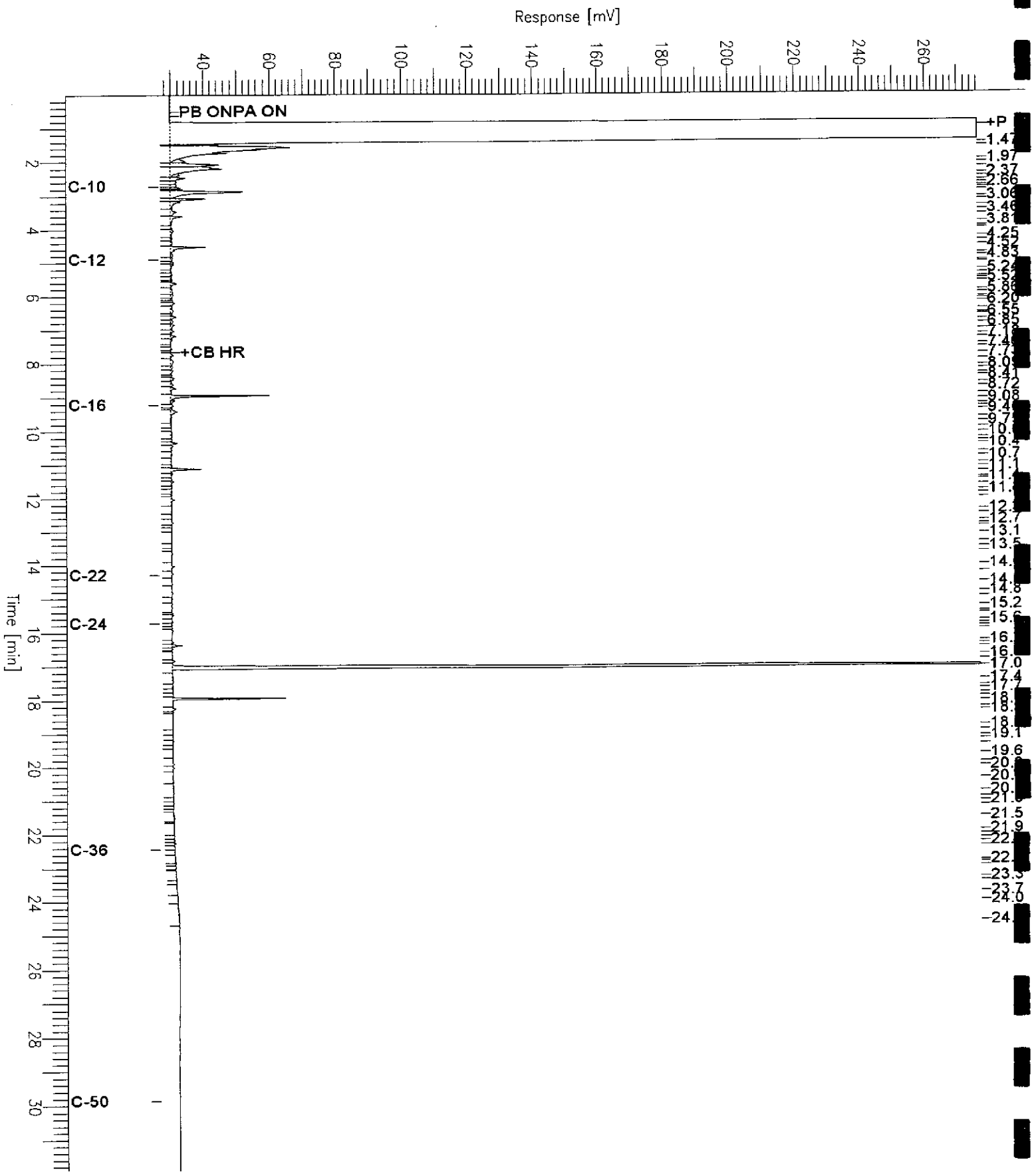
Surrogate	%REC	Limits
Hexacosane	74	44-121

Y= Sample exhibits fuel pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 154096-001,66378
FileName : G:\GC15\CHB\256B010.RAW
Method : BTEH255.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 26 mV

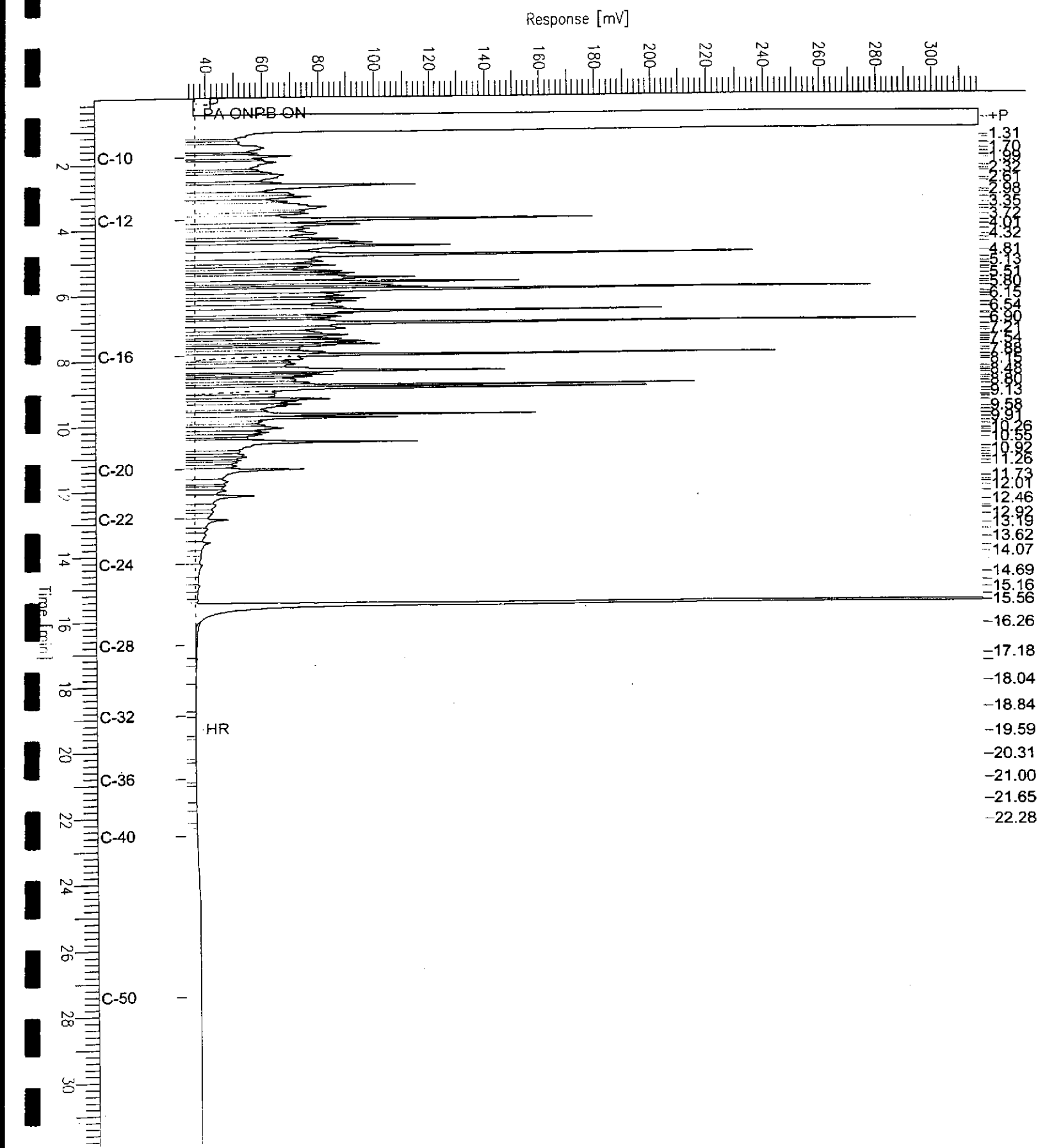
Sample #: 66378 Page 1 of 1
Date : 09/13/2001 04:36 PM
Time of Injection: 09/13/2001 03:56 PM
Low Point : 26.31 mV High Point : 276.43 mV
Plot Scale: 250.1 mV



Chromatogram

Sample Name : ccv,01ws1731,dsl
FileName : G:\GC13\CHB\256B002.RAW
Method : BTEH241.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 32 mV

Sample #: 500mg/L
Date : 09/13/2001 11:28 AM
Time of Injection: 09/13/2001 09:54 AM
Low Point : 32.25 mV High Point : 316.61 mV
Plot Scale: 284.4 mV



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	154096	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2001-53	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC155971	Batch#:	66378
Matrix:	Water	Prepared:	09/12/01
Units:	ug/L	Analyzed:	09/13/01

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,214	89	45-110

Surrogate	%REC	Limits
Hexacosane	48	44-121

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

Stellar Environmental Solutions
2198 6th Street
Suite 201
Berkeley, CA. 94710

Date: 28-SEP-01
Lab Job Number: 154329
Project ID: N/A
Location: Redwood Park Service Yard

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____ for
Operations Manager

1534324

Chain of Custody Record

Lab job #

Date

Page ___ of ___

Laboratory Curtis + Tompkins Ltd.
Address
Method of Shipment hand-delivery
Shipment No. —
Airbill No. —
Cooler No. —

Project Owner East Bay Regional Park District
Site Address 7867 Redwood Rd. Oakland CA
Project Name Redwood Park Service Yard
Project Number
Project Manager Bruce Ruckes
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature) Bm Ruckes (a)

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	Analysis Required: TVH+BTEX+MTBE	Analysis Required: TEH-diesel	Analysis Required: Dissolved Oxygen	Remarks
MW-11	—	9/21/01	1125	H_2O	40 ml VOAs	✓	HCl		3	X			
					1-L amber		none		3		X	X	
MW-10	—		1415						3	X			
									3		X	X	
MW-9	—		1432						3	X			
									3		X	X	

Preservation Correct? ☒ Yes ☐ No ☐ N/A

Received ☒ On Ice ☒ Cold ☐ Ambient ☒ Intact

Relinquished by:	Date	Received by:	Date
Signature Bm Ruckes	9/21/01	Signature [illegible]	9/21/01
Printed Bruce Ruckes	Time	Printed Steve Stanley	Time
Company Stellar Env. Solutions	1520	Company Curtis + Tompkins	1520

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	

Turnaround Time:

Comments: (a) Samples collected by Blaine Tech Services under Bruce Ruckes Supervision

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	STANDARD	Analysis:	8015B(M)
Matrix:	Water	Received:	09/21/01
Units:	ug/L	Prepared:	09/25/01
Batch#:	66655	Analyzed:	09/27/01
Sampled:	09/21/01		

Field ID:	MW-11	Lab ID:	154329-001
Type:	SAMPLE	Diln Fac:	5.000

Analyte	Result	RL
Diesel C10-C24	7,800 L Y	250

Surrogate	%REC	Limits
Hexacosane	75	44-121

Field ID:	MW-10	Lab ID:	154329-002
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL
Diesel C10-C24	2,100 L Y	50

Surrogate	%REC	Limits
Hexacosane	87	44-121

Field ID:	MW-9	Lab ID:	154329-003
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL
Diesel C10-C24	170 L Y	50

Surrogate	%REC	Limits
Hexacosane	93	44-121

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC157033	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	86	44-121

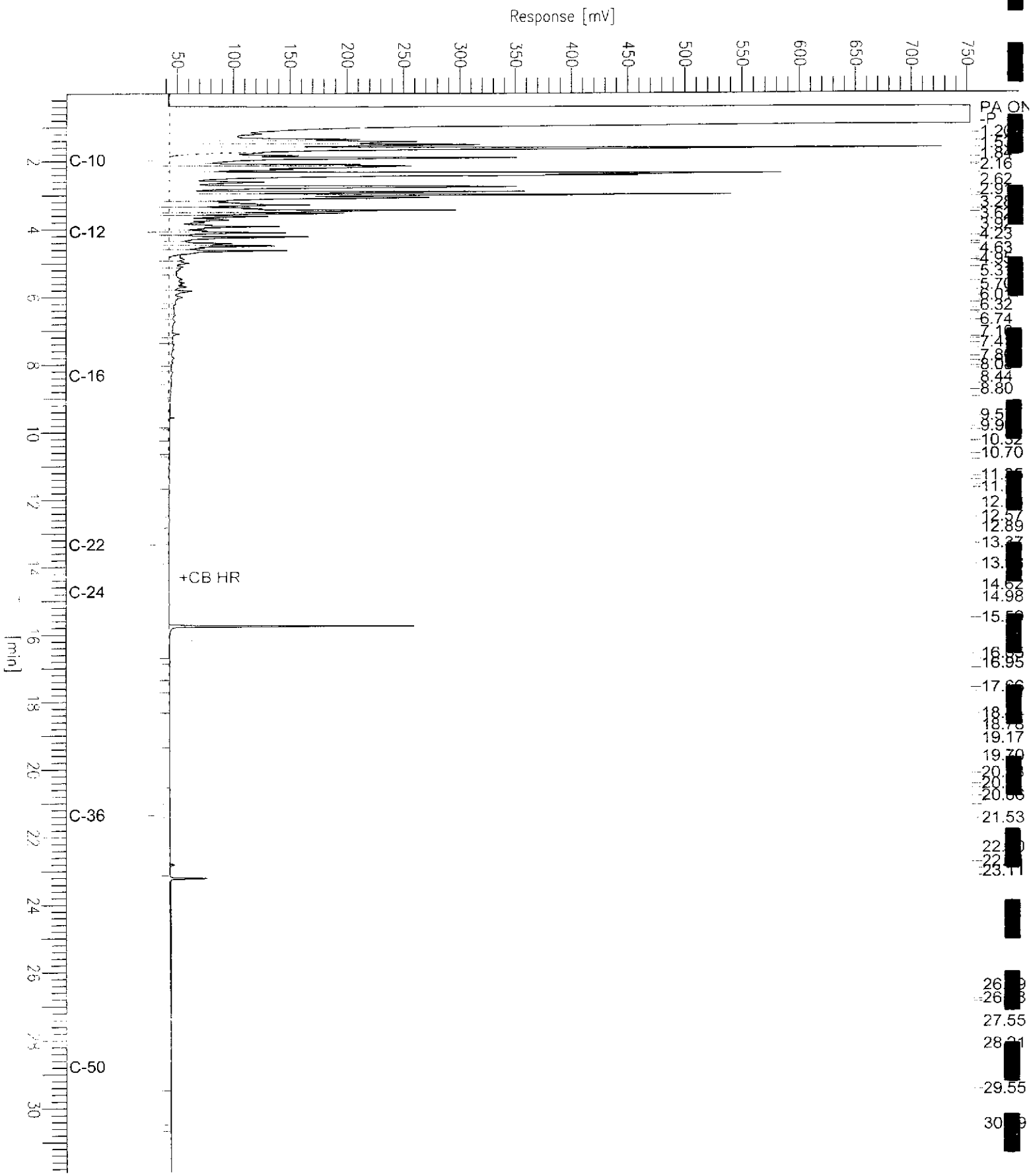
L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
D= Not Detected
L= Reporting Limit

Chromatogram

ASA 9/27/01

Sample Name : 154329-001SG,66655
FileName : G:\GC11\CHA\269A029.RAW
Method : ATEH212.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 32 mV

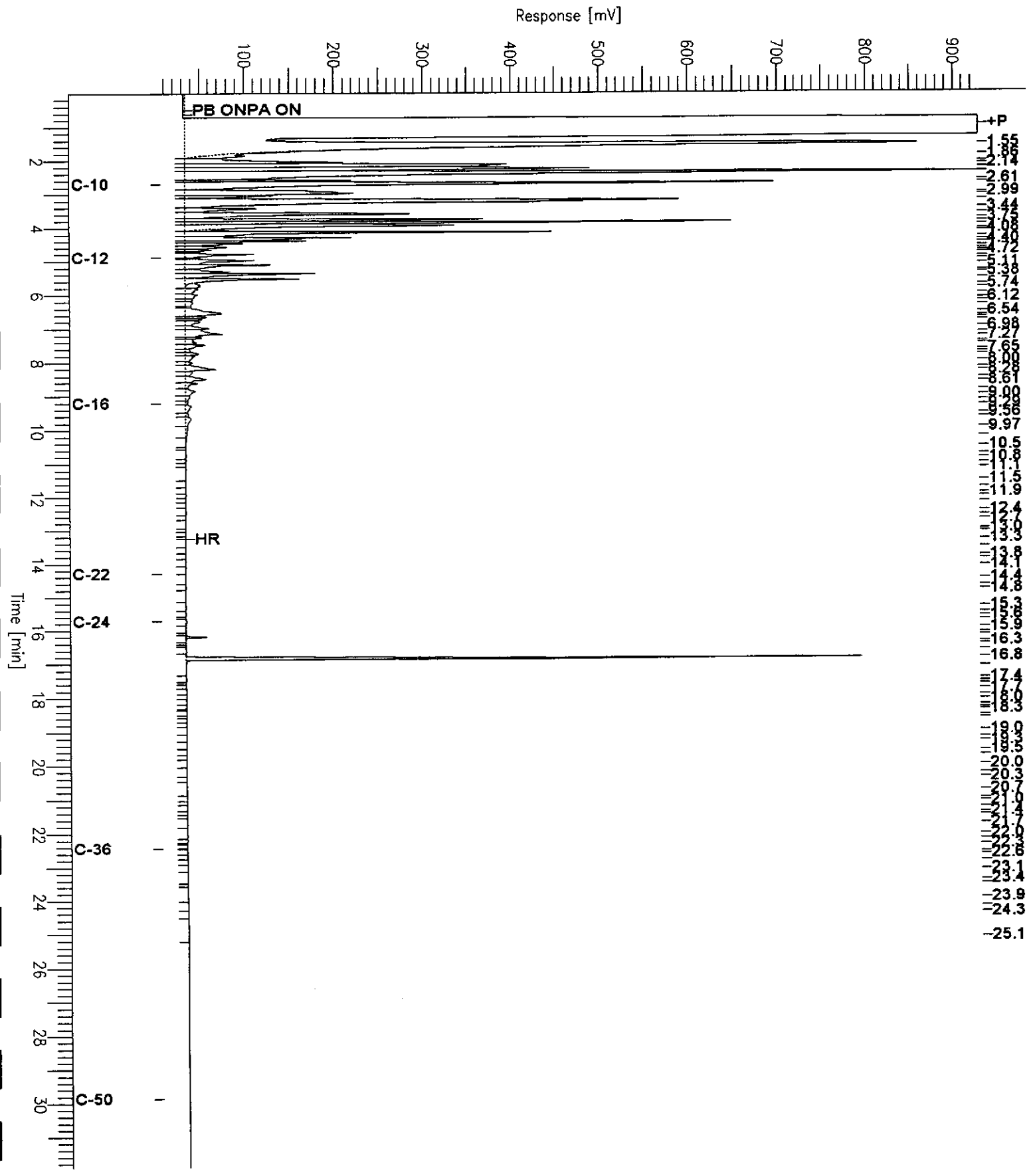
Sample #: 66655 Page 1 of 1
Date : 9/27/01 04:44 PM
Time of Injection: 9/27/01 12:02 PM
Low Point : 31.70 mV High Point : 752.66 mV
Plot Scale: 721.0 mV



Chromatogram

Sample Name : 154329-002,66655
FileName : G:\GC15\CHB\269B017.RAW
Method : BTEH255.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 7 mV

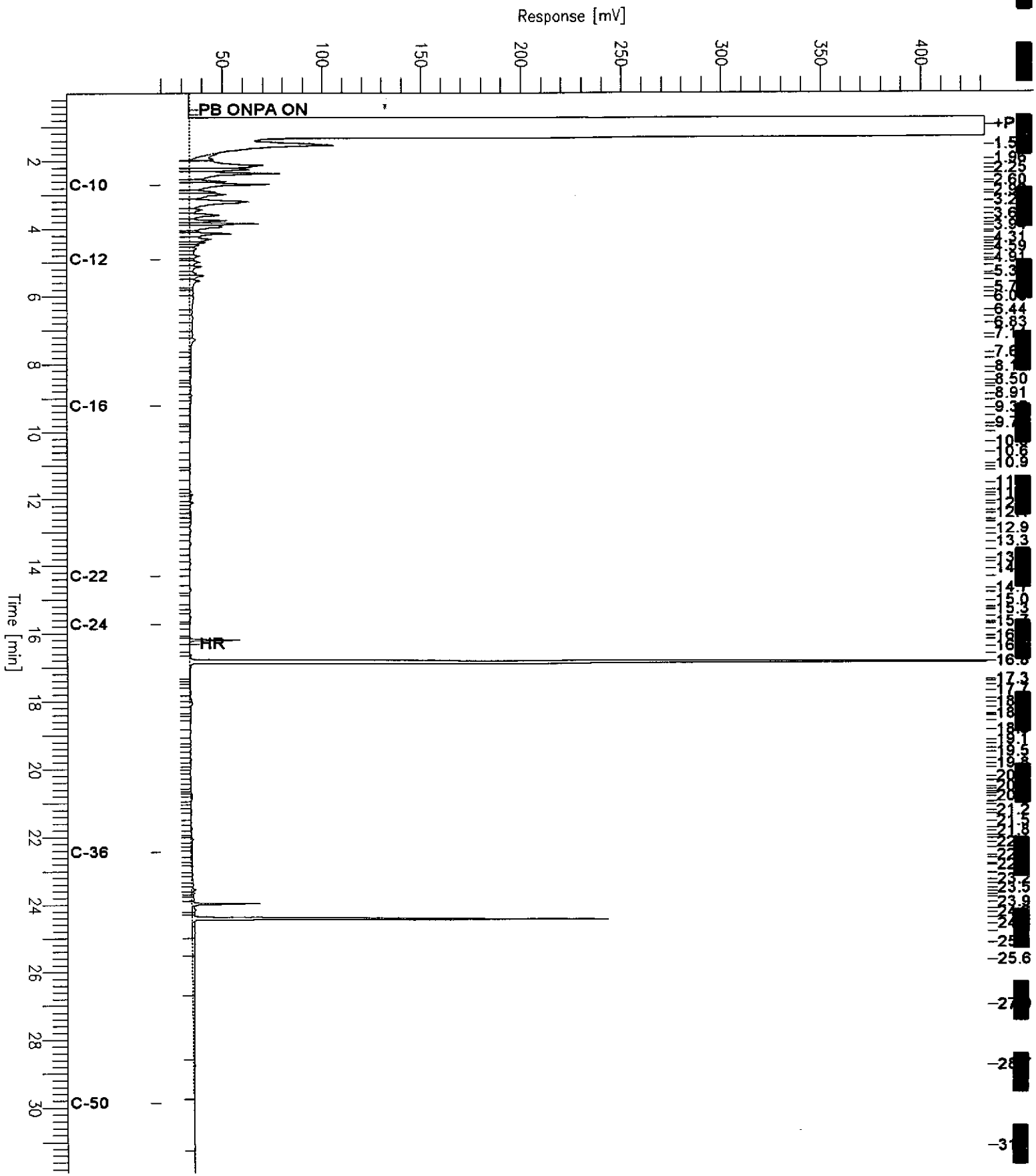
Sample #: 66655 Page 1 of 1
Date : 09/27/2001 07:53 AM
Time of Injection: 09/27/2001 04:17 AM
Low Point : 6.83 mV High Point : 928.34 mV
Plot Scale: 921.5 mV



Chromatogram

Sample Name : 154329-003,66655
FileName : G:\GC15\CHB\269B012.RAW
Method : BTEH255.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 19 mV

Sample #: 66655 Page 1 of 1
Date : 09/27/2001 07:49 AM
Time of Injection: 09/27/2001 12:53 AM
Low Point : 19.48 mV High Point : 432.03 mV
Plot Scale: 412.5 mV

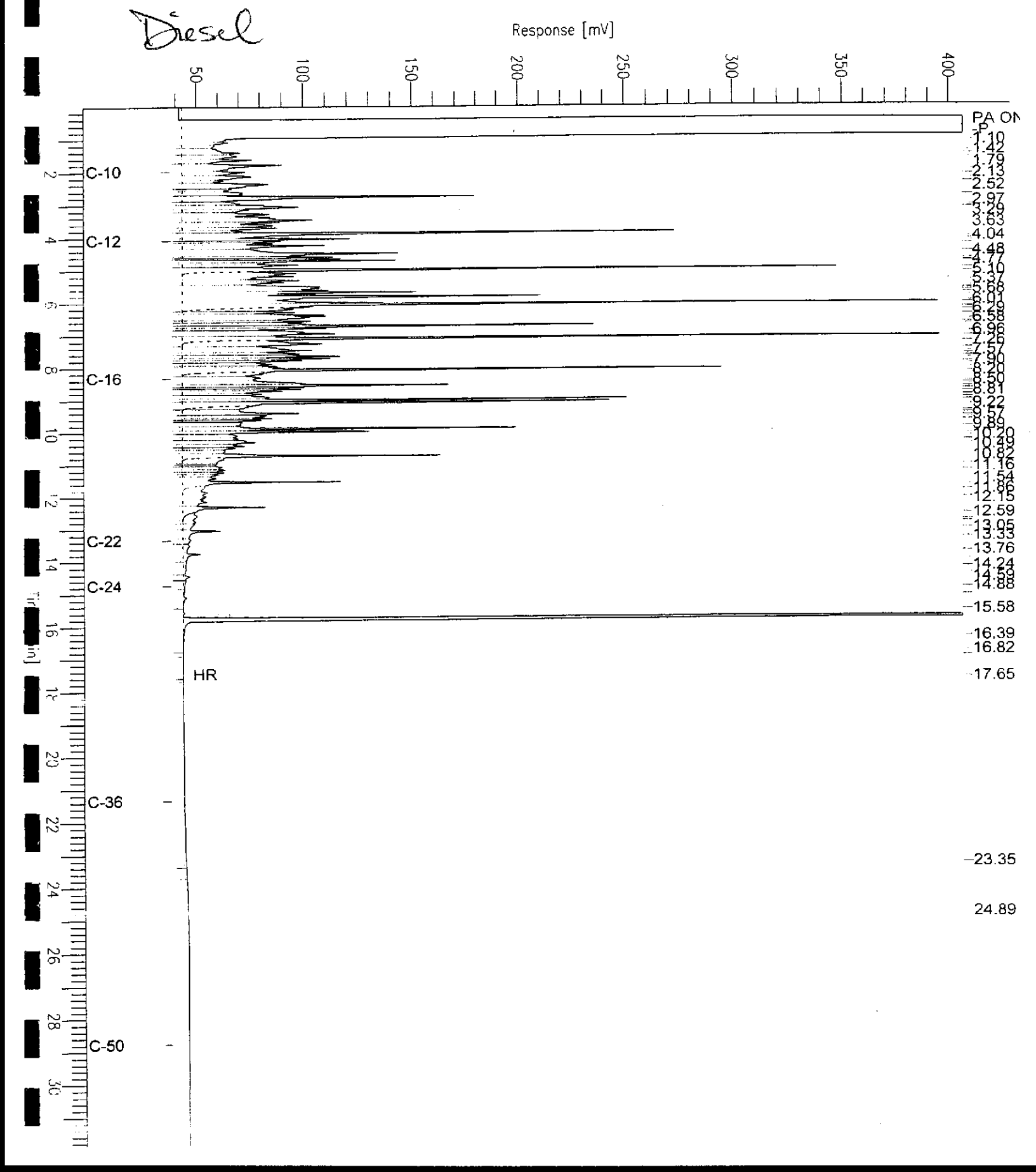


Chromatogram

[redacted]ple Name : ccv,01ws1731,dsl
[redacted]eName : G:\GC11\CHA\269A002.RAW
[redacted]ethod : ATEH212.MTH
[redacted]tart Time : 0.01 min End Time : 31.87 min
[redacted]ale Factor: 0.0 Plot Offset: 38 mV

Sample #: 500mg/L
Date : 9/26/01 05:01 PM
Time of Injection: 9/26/01 04:28 PM
Low Point : 37.82 mV High Point : 406.54 mV
Plot Scale: 368.7 mV

Diesel



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	STANDARD	Analysis:	8015B(M)
Matrix:	Water	Batch#:	66655
Units:	ug/L	Prepared:	09/25/01
Diln Fac:	1.000	Analyzed:	09/26/01

Type: BS
Lab ID: QC157034

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,892	76	45-110

Surrogate	%REC	Limits
Hexacosane	85	44-121

Type: BSD
Lab ID: QC157035

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	1,885	75	45-110	0	22

Surrogate	%REC	Limits
Hexacosane	85	44-121

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	8015B(M)
Matrix:	Water	Sampled:	09/21/01
Units:	ug/L	Received:	09/21/01

Field ID:	MW-11	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	66658
Lab ID:	154329-001	Analyzed:	09/26/01

Analyte	Result	RL
Gasoline C7-C12	17,000	250

Surrogate	%REC	Limits
Trifluorotoluene (FID)	118	59-135
Bromofluorobenzene (FID)	111	60-140

Field ID:	MW-10	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	66570
Lab ID:	154329-002	Analyzed:	09/22/01

Analyte	Result	RL
Gasoline C7-C12	550	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	113	59-135
Bromofluorobenzene (FID)	100	60-140

Field ID:	MW-9	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	66658
Lab ID:	154329-003	Analyzed:	09/26/01

Analyte	Result	RL
Gasoline C7-C12	11,000	250

Surrogate	%REC	Limits
Trifluorotoluene (FID)	125	59-135
Bromofluorobenzene (FID)	109	60-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	09/21/01
Units:	ug/L	Received:	09/21/01

Field ID:	MW-11	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	66658
Lab ID:	154329-001	Analyzed:	09/26/01

Analyte	Result	RL
MTBE	ND	10
Benzene	390	2.5
Toluene	17	2.5
Ethylbenzene	820	2.5
m,p-Xylenes	320	2.5
o-Xylene	24	2.5

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	56-142
Bromofluorobenzene (PID)	90	55-149

Field ID:	MW-10	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	66570
Lab ID:	154329-002	Analyzed:	09/22/01

Analyte	Result	RL
MTBE	40	2.0
Benzene	17	0.50
Toluene	ND	0.50
Ethylbenzene	31	0.50
m,p-Xylenes	41	0.50
o-Xylene	2.5	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	86	56-142
Bromofluorobenzene (PID)	85	55-149

Field ID:	MW-9	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	66658
Lab ID:	154329-003	Analyzed:	09/26/01

Analyte	Result	RL
MTBE	48 C	10
Benzene	340	2.5
Toluene	13	2.5
Ethylbenzene	720	2.5
m,p-Xylenes	590	2.5
o-Xylene	26	2.5

Surrogate	%REC	Limits
Trifluorotoluene (PID)	98	56-142
Bromofluorobenzene (PID)	93	55-149

C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	8015B(M)
Matrix:	Water	Sampled:	09/21/01
Units:	ug/L	Received:	09/21/01

Type: BLANK
Lab ID: QC156713
Diln Fac: 1.000

Batch#: 66570
Analyzed: 09/21/01

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	93	59-135
Bromofluorobenzene (FID)	92	60-140

Type: BLANK
Lab ID: QC157042
Diln Fac: 1.000

Batch#: 66658
Analyzed: 09/25/01

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	95	59-135
Bromofluorobenzene (FID)	96	60-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	09/21/01
Units:	ug/L	Received:	09/21/01

Type: BLANK
Lab ID: QC156713
Diln Fac: 1.000

Batch#: 66570
Analyzed: 09/21/01

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	76	56-142
Bromofluorobenzene (PID)	77	55-149

Type: BLANK
Lab ID: QC157042
Diln Fac: 1.000

Batch#: 66658
Analyzed: 09/25/01

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	79	56-142
Bromofluorobenzene (PID)	80	55-149

C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC156710	Batch#:	66570
Matrix:	Water	Analyzed:	09/21/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,856	93	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	59-135
Bromofluorobenzene (FID)	106	60-140

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC157043	Batch#:	66658
Matrix:	Water	Analyzed:	09/25/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,908	95	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	126	59-135
Bromofluorobenzene (FID)	106	60-140

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	66570
Units:	ug/L	Analyzed:	09/21/01
Diln Fac:	1.000		

Type: BS Lab ID: QC156711

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	17.31	87	51-125
Benzene	20.00	16.48	82	67-117
Toluene	20.00	16.43	82	69-117
Ethylbenzene	20.00	16.06	80	68-124
m,p-Xylenes	40.00	34.60	87	70-125
o-Xylene	20.00	17.58	88	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	79	56-142
Bromofluorobenzene (PID)	81	55-149

Type: BSD Lab ID: QC156712

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	17.71	89	51-125	2	20
Benzene	20.00	16.68	83	67-117	1	20
Toluene	20.00	16.50	83	69-117	0	20
Ethylbenzene	20.00	16.35	82	68-124	2	20
m,p-Xylenes	40.00	34.33	86	70-125	1	20
o-Xylene	20.00	17.49	87	65-129	0	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	78	56-142
Bromofluorobenzene (PID)	80	55-149

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	66658
Units:	ug/L	Analyzed:	09/25/01
Diln Fac:	1.000		

Type: BS Lab ID: QC157046

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	18.18	91	51-125
Benzene	20.00	17.01	85	67-117
Toluene	20.00	18.23	91	69-117
Ethylbenzene	20.00	16.97	85	68-124
m,p-Xylenes	40.00	36.75	92	70-125
o-Xylene	20.00	18.42	92	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	82	56-142
Bromofluorobenzene (PID)	84	55-149

Type: BSD Lab ID: QC157047

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	18.67	93	51-125	3	20
Benzene	20.00	16.86	84	67-117	1	20
Toluene	20.00	17.69	88	69-117	3	20
Ethylbenzene	20.00	16.46	82	68-124	3	20
m,p-Xylenes	40.00	35.53	89	70-125	3	20
o-Xylene	20.00	18.18	91	65-129	1	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	81	56-142
Bromofluorobenzene (PID)	83	55-149

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	66570
MSS Lab ID:	154285-001	Sampled:	09/20/01
Matrix:	Water	Received:	09/20/01
Units:	ug/L	Analyzed:	09/21/01
Diln Fac:	1.000		

Type: MS Lab ID: QC156714

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,698	85	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	123	59-135
Bromofluorobenzene (FID)	105	60-140

Type: MSD Lab ID: QC156715

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,783	89	65-131	5	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	124	59-135
Bromofluorobenzene (FID)	105	60-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	STANDARD	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	154355-001	Batch#:	66658
Matrix:	Water	Sampled:	09/24/01
Units:	ug/L	Received:	09/24/01

Type: MS
Lab ID: QC157044

Analyzed: 09/25/01

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,884	94	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	129	59-135
Bromofluorobenzene (FID)	109	60-140

Type: MSD
Lab ID: QC157045

Analyzed: 09/26/01

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,928	96	65-131	2	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	129	59-135
Bromofluorobenzene (FID)	108	60-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved Oxygen

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Analysis:	EPA 360.1
Project#:	STANDARD		
Analyte:	Dissolved Oxygen	Batch#:	66628
Matrix:	Water	Sampled:	09/21/01
Units:	mg/L	Received:	09/21/01
Diln Fac:	1.000	Analyzed:	09/21/01

Field ID	Lab ID	Result	RL
MW-11	154329-001	3.0	1.0
MW-10	154329-002	4.6	1.0
MW-9	154329-003	6.7	1.0

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved Oxygen

Lab #:	154329	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Analysis:	EPA 360.1
Project#:	STANDARD		
Analyte:	Dissolved Oxygen	Units:	mg/L
Field ID:	MW-11	Diln Fac:	1.000
Type:	SDUP	Batch#:	66628
MSS Lab ID:	154329-001	Sampled:	09/21/01
Lab ID:	QC156928	Received:	09/21/01
Matrix:	Water	Analyzed:	09/21/01

MSS Result	Result	RL	RPD	Lim
2.999	2.990	1.0	0	20

RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Stellar Environmental Solutions
2198 6th Street
Suite 201
Berkeley, CA 94710

Date: 05-OCT-01
Lab Job Number: 154194
Project ID: 2001-53
Location: Redwood Park Service Yard

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____
Operations Manager

Curtis & Tompkins, Ltd.

Laboratory Numbers: **154194**
Client: **Stellar Environmental Solutions**
Project #: **2001-53**
Location: **Redwood Park Service Yard**

Sampled Date: **09/17/01**
Received Date: **09/18/01**

CASE NARRATIVE

This hardcopy data package contains sample and QC results for one soil sample, which was received from the site referenced above on September 18, 2001. The sample was received cold and intact.

TEH (EPA 8015M):
No analytical problems were encountered.

TVH (EPA 8015M):
High surrogate recoveries were observe for sample WELL 9.,10,11 COMPOSITE (CT# 154194-001) and the matrix spikes of sample WELL 9,10,11 COMPOSITE (CT# 154194-001). This is due to hydrocarbons coeluting with the surrogate peaks. High gasoline recoveries for the matrix spike and matrix spike duplicate are not meaningful because the concentration in the sample is greater than four times the spiking level and the spike result indicates that the sample is not homogeneous. No other analytical problems were encountered.

Chain of Custody Record

Lab job no. —
Date 9/18/01
Page 1 of 1

Laboratory Curtis & Tompkins, Ltd.
Address 2323 Fifth Street
Berkeley CA 94710
510 / 486-0900

Method of Shipment Hand delivery
Shipment No. —
Airbill No. —
Cooler No. —

Project Owner East Bay Regional Park District
Site Address 7867 Redwood Road
Oakland CA
Project Name Redwood Park Service Yard
Project Number 2001-53

Project Manager Bruce Rueker
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature) H. Petropoli

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	Analysis Required: TVH + BTEX + MTBE	Analysis Required: TEH (diesel-range)	Remarks
-1 Well 9, 10, 11 Composite	—	9/17/01	1500	Soil	8 oz glass jar	✓	—		1	X	X	

Relinquished by: Signature H. Petropoli; Printed H. Petropoli; Company SES — Date 9/17/01; Time 1830

Received by: Signature Bruce Rueker; Printed Bruce Rueker; Company Stellar Envir. Solutions — Date 9/17/01; Time 1830

Relinquished by: Signature Bruce Rueker; Printed Bruce Rueker; Company Stellar Env. Solns — Date 9/18/01; Time 1030

Received by: Signature Alyssa Cilker; Printed Alyssa Cilker; Company Curtis & Tompkins — Date 9/18/01; Time 1030

Relinquished by: Signature —; Printed —; Company — — Date —; Time —

Received by: Signature —; Printed —; Company — — Date —; Time —

Turnaround Time: 5 Day

Comments:

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	154194	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	SHAKER TABLE
Project#:	2001-53	Analysis:	8015B(M)
Field ID:	WELL 9,10,11 COMPOSI	Batch#:	66564
Matrix:	Soil	Sampled:	09/17/01
Units:	mg/Kg	Received:	09/18/01
Basis:	as received	Prepared:	09/20/01

Type:	SAMPLE	Diln Fac:	2.000
Lab ID:	154194-001	Analyzed:	09/24/01

Analyte	Result	RL
Diesel C10-C24	180 L Y	2.0

Surrogate	%REC	Limits
Hexacosane	85	60-136

Type:	BLANK	Analyzed:	09/21/01
Lab ID:	QC156686	Cleanup Method:	EPA 3630C
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	ND	0.99

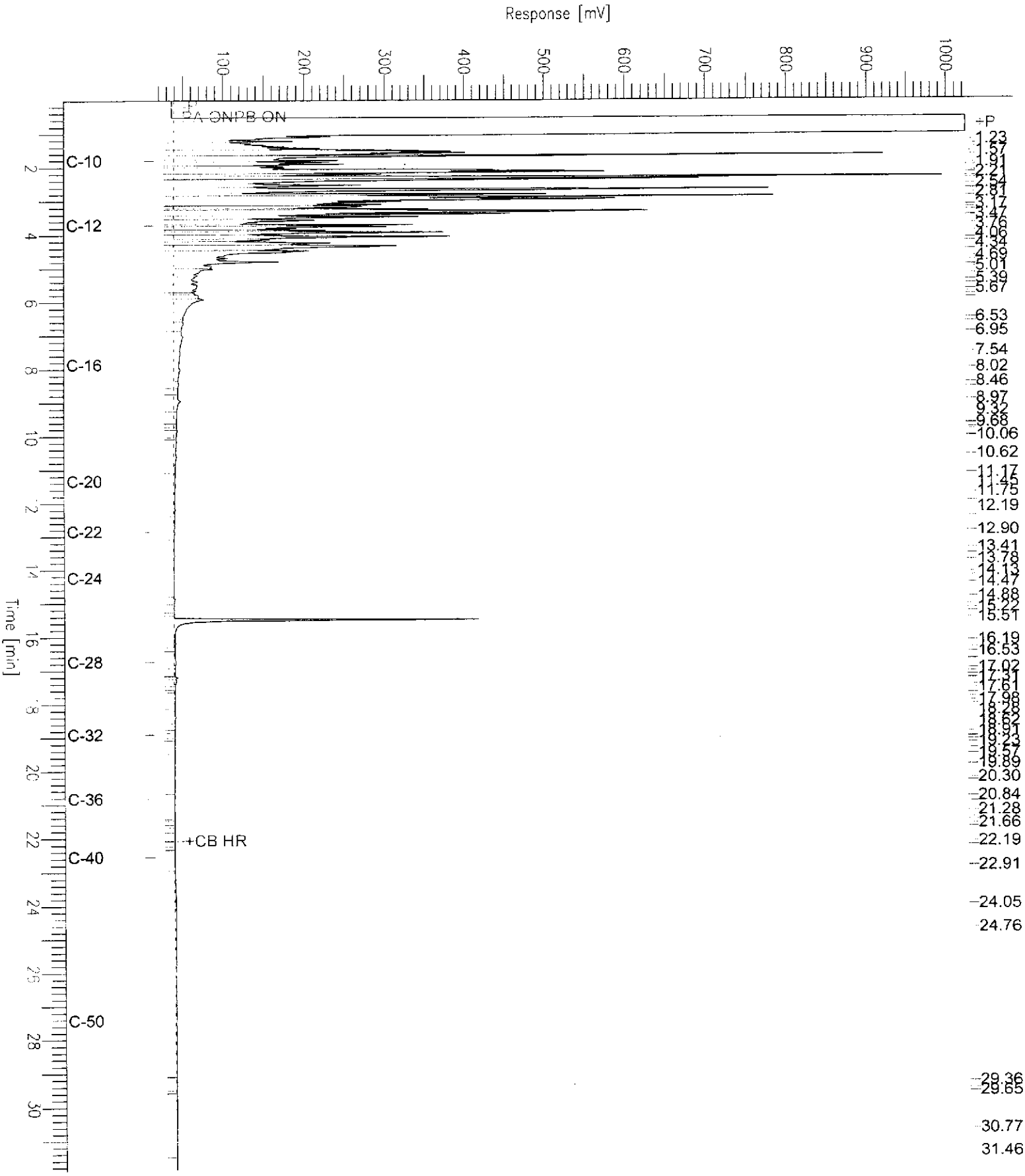
Surrogate	%REC	Limits
Hexacosane	74	60-136

L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 154194-001,66564
FileName : G:\GC13\CHB\267B005.RAW
Method : BTEH241.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 14 mV

Sample #: 66564
Date : 09/24/2001 11:59 AM
Time of Injection: 09/24/2001 11:26 AM
Low Point : 14.06 mV High Point : 1024.00 mV
Plot Scale: 1009.9 mV

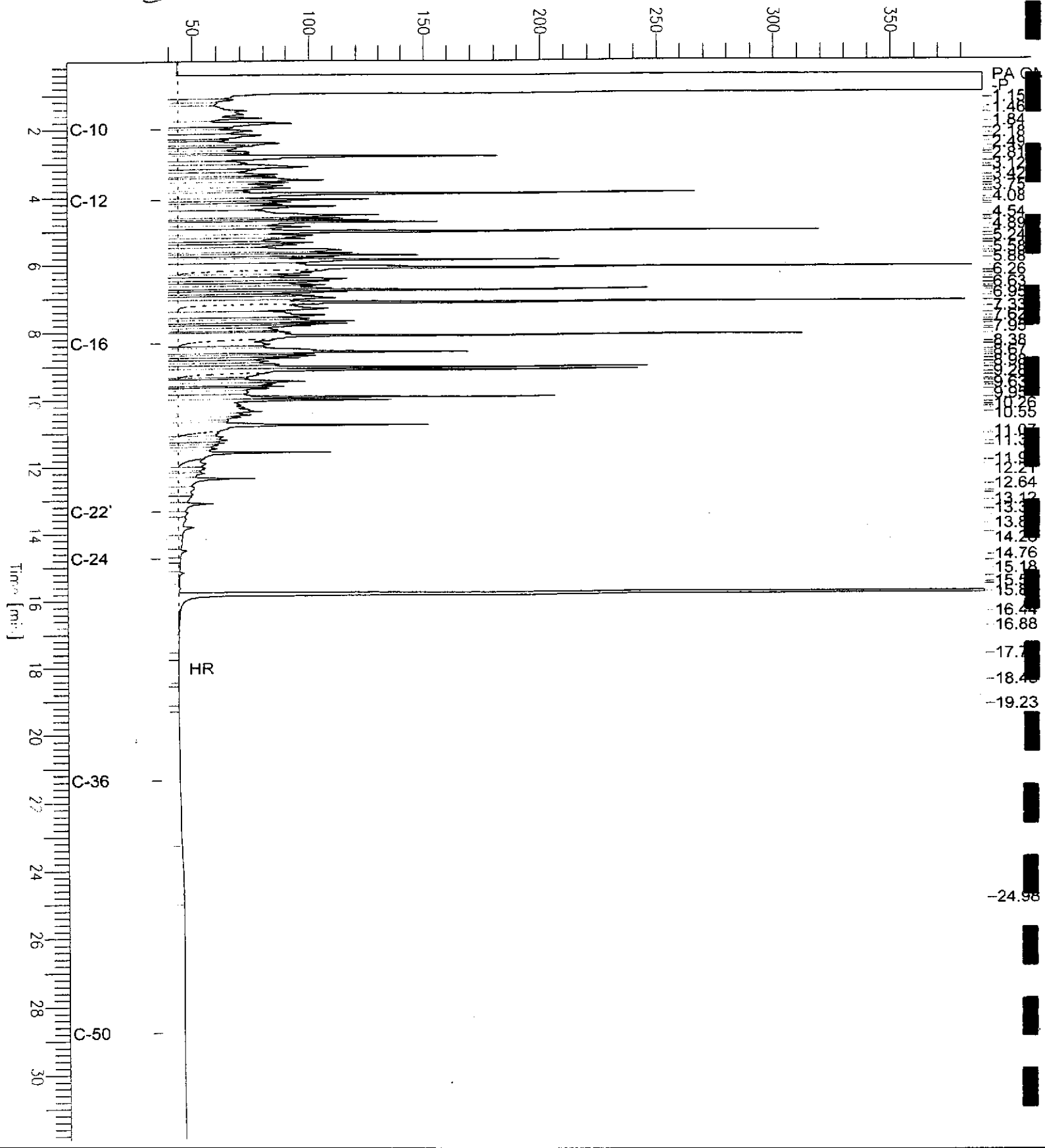


Chromatogram

Sample Name : ccv,01ws1731,dsl
FileName : G:\GC11\CHA\263A002.RAW
Method : ATEH212.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 37 mV

Sample #: 500mg/L Page 1 of 1
Date : 9/20/01 10:40 AM
Time of Injection: 9/20/01 09:19 AM
Low Point : 36.53 mV High Point : 389.14 mV
Plot Scale: 352.6 mV

Diesel Standard



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	154194	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	SHAKER TABLE
Project#:	2001-53	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC156687	Batch#:	66564
Matrix:	Soil	Prepared:	09/20/01
Units:	mg/Kg	Analyzed:	09/21/01
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.76	43.19	87	67-121

Surrogate	%REC	Limits
Hexacosane	76	60-136

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	154194	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	SHAKER TABLE
Project#:	2001-53	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	66564
MSS Lab ID:	154235-002	Sampled:	09/19/01
Matrix:	Soil	Received:	09/19/01
Units:	mg/Kg	Prepared:	09/20/01
Basis:	as received	Analyzed:	09/24/01
Diln Fac:	2.000		

Type: MS
Lab ID: QC156688

Cleanup Method: EPA 3630C

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	42.93	49.82	61.63	38	35-146

Surrogate	%REC	Limits
Hexacosane	81	60-136

Type: MSD
Lab ID: QC156689

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	49.75	76.40	67	35-146	21	48

Surrogate	%REC	Limits
Hexacosane	90	60-136

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154194	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	8015B(M)
Field ID:	WELL 9,10,11 COMPOSI	Batch#:	66491
Matrix:	Soil	Sampled:	09/17/01
Units:	mg/Kg	Received:	09/18/01
Basis:	as received	Analyzed:	09/19/01
Diln Fac:	1.000		

Type: SAMPLE Lab ID: 154194-001

Analyte	Result	RL
Gasoline C7-C12	41	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	146 *	62-138
Bromofluorobenzene (FID)	161 *	46-150

Type: BLANK Lab ID: QC156395

Analyte	Result	RL
Gasoline C7-C12	ND	0.20

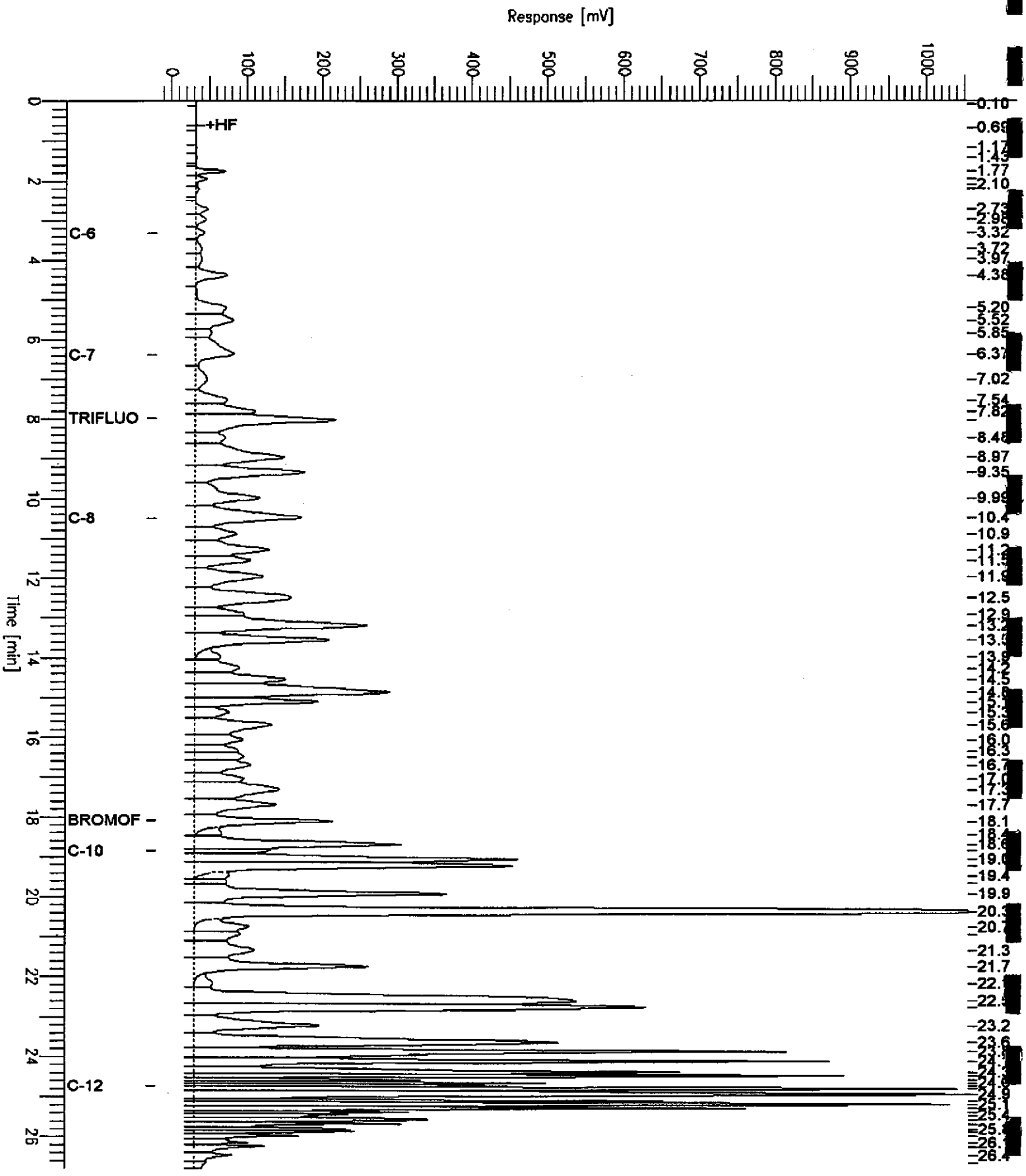
Surrogate	%REC	Limits
Trifluorotoluene (FID)	96	62-138
Bromofluorobenzene (FID)	98	46-150

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

GC19 TVH 'X' Data File (FID)

Sample Name : MSS,154194-001,66491
FileName : G:\GC19\DATA\261X034.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: -19 mV

Sample #: A Page 1 of 1
Date : 9/19/01 04:42 PM
Time of Injection: 9/19/01 03:05 AM
Low Point : -19.14 mV High Point : 1052.78 mV
Plot Scale: 1071.9 mV

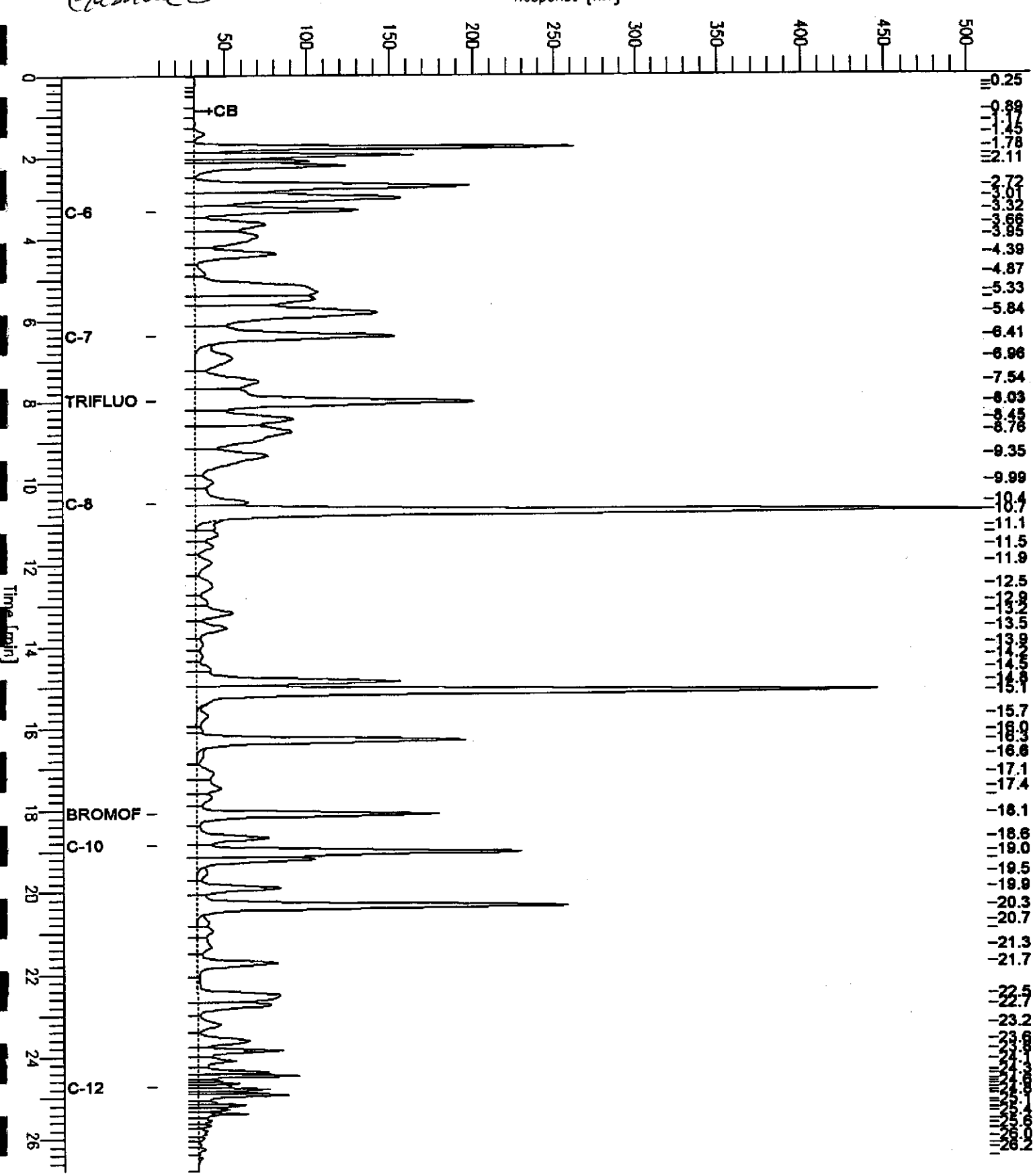


GC19 TVH 'X' Data File (FID)

Sample Name : CCV/LCS,QC156396,66941,01WS1795,5/5000
FileName : G:\GC19\DATA\261X029.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 8 mV

Sample #: Page 1 of 1
Date : 9/19/01 12:33 AM
Time of Injection: 9/19/01 12:06 AM
Low Point : 7.72 mV High Point : 509.21 mV
Plot Scale: 501.5 mV

Gasoline Standard



Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	154194	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	EPA 8021B
Field ID:	WELL 9,10,11 COMPOSI	Batch#:	66530
Matrix:	Soil	Sampled:	09/17/01
Units:	ug/Kg	Received:	09/18/01
Basis:	as received	Analyzed:	09/20/01
Diln Fac:	1.000		

Type: SAMPLE Lab ID: 154194-001

Analyte	Result	RL
MTBE	ND	20
Benzene	7.2	5.1
Toluene	ND	5.1
Ethylbenzene	250	5.1
m,p-Xylenes	220	5.1
o-Xylene	15	5.1

Surrogate	%REC	Limits
Trifluorotoluene (PID)	88	65-134
Bromofluorobenzene (PID)	87	55-138

Type: BLANK Lab ID: QC156552

Analyte	Result	RL
MTBE	ND	20
Benzene	ND	5.0
Toluene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	82	65-134
Bromofluorobenzene (PID)	82	55-138

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154194	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	8015B(M)
Type:	LCS	Basis:	as received
Lab ID:	QC156396	Diln Fac:	1.000
Matrix:	Soil	Batch#:	66491
Units:	mg/Kg	Analyzed:	09/19/01

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2.000	1.865	93	75-123

Surrogate	%REC	Limits
Trifluorotoluene (FID)	122	62-138
Bromofluorobenzene (FID)	102	46-150

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	154194	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	EPA 8021B
Matrix:	Soil	Diln Fac:	1.000
Units:	ug/Kg	Batch#:	66530
Basis:	as received	Analyzed:	09/20/01

Type: BS Lab ID: QC156554

Analyte	Spiked	Result	%REC	Limits
MTBE	100.0	93.42	93	65-135
Benzene	100.0	86.73	87	68-117
Toluene	100.0	87.85	88	70-120
Ethylbenzene	100.0	85.14	85	67-124
m,p-Xylenes	200.0	178.7	89	72-124
o-Xylene	100.0	90.38	90	72-123

Surrogate	%REC	Limits
Trifluorotoluene (PID)	81	65-134
Bromofluorobenzene (PID)	84	55-138

Type: BSD Lab ID: QC156555

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	100.0	95.84	96	65-135	3	20
Benzene	100.0	87.21	87	68-117	1	20
Toluene	100.0	91.66	92	70-120	4	20
Ethylbenzene	100.0	85.69	86	67-124	1	20
m,p-Xylenes	200.0	181.7	91	72-124	2	20
o-Xylene	100.0	92.04	92	72-123	2	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	82	65-134
Bromofluorobenzene (PID)	84	55-138

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154194	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	8015B(M)
Type:	LCS	Basis:	as received
Lab ID:	QC156396	Diln Fac:	1.000
Matrix:	Soil	Batch#:	66491
Units:	mg/Kg	Analyzed:	09/19/01

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	10.00	9.323	93	75-123

Surrogate	%REC	Limits
Trifluorotoluene (FID)	122	62-138
Bromofluorobenzene (FID)	102	46-150

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154194	Location:	Redwood Park Service Yard
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2001-53	Analysis:	8015B(M)
Field ID:	WELL 9,10,11 COMPOSI	Diln Fac:	1.000
MSS Lab ID:	154194-001	Batch#:	66491
Matrix:	Soil	Sampled:	09/17/01
Units:	mg/Kg	Received:	09/18/01
Basis:	as received	Analyzed:	09/19/01

Type: MS Lab ID: QC156397

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	40.65	10.99	148.6 >LR	982 *	41-132

Surrogate	%REC	Limits
Trifluorotoluene (FID)	149 *	62-138
Bromofluorobenzene (FID)	335 *	>LR 46-150

Type: MSD Lab ID: QC156398

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.42	181.0 >LR	1348 *	41-132	NC	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	534 *	>LR 62-138
Bromofluorobenzene (FID)	440 *	>LR 46-150

*= Value outside of QC limits; see narrative
NC= Not Calculated
>LR= Response exceeds instrument's linear range
RPD= Relative Percent Difference

Summary of Historical Soil Sample Analytical Results
Redwood Regional Park Service Yard
Oakland, California

Sample I.D.	Depth (ft bgs)	Sample Concentration (mg/kg)					
		TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes
*UFST Excavation Confirmation Samples – May & June 1993 (*indicates soil at that location was removed)*							
DT-1*	10	NA	**4**	< 0.005	< 0.005	< 0.005	< 0.005
DT-2*	10	NA	**3**	< 0.005	< 0.005	< 0.005	< 0.005
GT-1*	12	**800**	NA	**6.3**	**43**	**18**	**94**
GT-2	12	**2,200**	NA	**19**	**120**	**45**	**250**
E1-17	17	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
E2-16	16	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
E3-16	16	**12,000**	NA	**80**	**390**	**230**	**1,100**
E4-13	13	**6**	NA	**0.37**	**0.006**	**0.1**	**0.1**
E5-7.5	7.5	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
Exploratory Borehole Samples – September and October 1993							
B1-11	11	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B1-27	27	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B2-11	11	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B2-15	15	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B3-12	12	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B3-18	18	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B4-18	18	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B4-23	23	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B5-11	11	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B7-12	12	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B8-4	4	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B8-10	10	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
B9-11	11	**370**	NA	**1.7**	**7.9**	**6.9**	**34**
B9-21	21	< 1	NA	**0.1**	**0.011**	**0.017**	**0.069**
B9-28	28	< 1	NA	< 0.005	**0.033**	**0.035**	**0.14**
B10-6	6	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005

Sample I.D.	Depth (ft bgs)	Sample Concentration (mg/kg)					
		TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes
B10-21	21	< 1	7	< 0.005	< 0.005	< 0.005	< 0.005
B11-11.5	11.5	< 1	< 2	0.021	< 0.005	< 0.005	< 0.005
B12-14.5	14.5	150	NA	0.24	0.44	1.7	4.6
B12-15	15	77	NA	0.15	0.24	0.9	2.7
B12-21	21	97	NA	0.46	1.2	2	5.4
B13-12	12	1,500	NA	< 0.4	< 0.4	13	78
B13-15	15	1,800	420	8.8	39	30	120
B14-18	18	210	50	0.017	0.1	0.34	0.63
B15-17	17	1,900	1,300	1.1	0.8	9.1	14
B16-17.5	17.5	50	NA	< 0.1	< 0.1	0.2	0.2
B17-12.5	12.5	< 1	NA	< 0.005	< 0.005	< 0.005	< 0.005
Monitoring Well Installation Borehole Samples – October 1994							
MW1-5	5	< 1	3	< 0.005	< 0.005	< 0.005	< 0.005
MW-21	21	130	48	0.31	0.18	1.3	4.4
MW3-10	10	< 1	3	< 0.005	< 0.005	< 0.005	< 0.005
MW3-25	25	< 1	5	< 0.005	< 0.005	< 0.005	< 0.005
MW4-15.5	15.5	22	4	< 0.005	0.038	< 0.005	0.49
MW4-16.5	16.5	10	43	< 0.005	0.009	0.11	0.21
MW5A-15	15	570	200	< 0.005	1.1	1.9	2.9
MW5-15	15	< 1	2	< 0.005	< 0.005	< 0.005	< 0.005
MW6-19	19	< 1	2	< 0.005	< 0.005	< 0.005	< 0.005
Exploratory Borehole Samples - April 1999							
HP-01-17.5'	17.5'	< 1.0	3.8	< 0.005	< 0.005	< 0.005	< 0.005
HP-02-14'	14'	970	640	1.3	1.3	5.5	8.7
HP-03-13'	13'	< 1.0	5.8	< 0.005	< 0.005	< 0.005	< 0.005
HP-04-15'	15'	< 1.0	1.7	< 0.005	< 0.005	< 0.005	< 0.005
HP-05-15'	15'	< 1.0	4.3	< 0.005	< 0.005	< 0.005	< 0.005
HP-06-11'	11'	1,700	360	1.4	2.7	21	81
HP-07-12'	12'	2.9	340	0.028	< 0.005	0.13	0.347
HP-08-15.5'	15.5'	580	83	< 0.1	1.0	4.7	4.7

Sample ID	Depth (ft bgs)	Sample Concentration (mg/kg)					
		TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes
HP-09-15'	15'	**610**	**630**	**1.5**	**1.5**	**3.8**	**11.2**
HP-10-14'	14'	**500**	**76**	**0.19**	**1.6**	**2.0**	**3.21**
Monitoring Well Installation Borehole Samples – December 2000							
MW-7-15.5' (a)	15.5'	**640**	**170**	**3.0**	< 0.1	**5.1**	**4.4**
MW-8-16' (a)	16'	**1,800**	**780**	**6.2**	**< 1.3**	**23**	**43.7**

Notes:

TPHg = Total petroleum hydrocarbons – gasoline range (equivalent to total volatile hydrocarbons)

TPHd =Total petroleum hydrocarbons – diesel range (equivalent to total extractable hydrocarbons)

NA = Not Analyzed

mg/kg = milligrams per kilogram (equivalent to parts per million – ppm)

(a) MTBE (methyl tertiary butyl ether) analyzed for and not detected in this sample.

HISTORICAL GROUNDWATER MONITORING WELLS ANALYTICAL RESULTS

REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CALIFORNIA

(all concentrations in µg/L, equivalent to parts per billion [ppb])

Well MW-2									
Event	Date	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Nov-94	66	< 50	3.4	< 0.5	< 0.5	0.9	4.3	NA
2	Feb-95	89	< 50	18	2.4	1.7	7.5	29.6	NA
3	May-95	< 50	< 50	3.9	< 0.5	1.6	2.5	8	NA
4	Aug-95	< 50	< 50	5.7	< 0.5	< 0.5	< 0.5	5.7	NA
5	May-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
6	Aug-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
7	Dec-96	< 50	< 50	6.3	< 0.5	1.6	< 0.5	7.9	NA
8	Feb-97	< 50	< 50	0.69	< 0.5	0.55	< 0.5	1.24	NA
9	May-97	67	< 50	8.9	< 0.5	5.1	< 1.0	14	NA
10	Aug-97	< 50	< 50	4.5	< 0.5	1.1	< 0.5	5.6	NA
11	Dec-97	61	< 50	21	< 0.5	6.5	3.9	31.4	NA
12	Feb-98	2,000	200	270	92	150	600	1,112	NA
13	Sep-98	< 50	<50	< 0.5	< 0.5	< 0.5	< 0.5	—	7
14	Apr-99	82	710	4.2	< 0.5	3.4	4	11.6	7.5
15	Dec-99	57	<50	20	0.61	5.9	<0.5	26.5	4.5
16	Sep-00	< 50	<50	0.72	< 0.5	< 0.5	< 0.5	0.7	7.9
17	Jan-01	51	<50	8.3	< 0.5	1.5	< 0.5	9.8	8.0
18	Apr-01	110	<50	10	< 0.5	11	6.4	27.4	10.0
19	Aug-01	260	120	30	6.7	1.6	6.4	44.7	27.0

NA = Not Analyzed for this constituent

(continued)

Well MW-4									
Event	Date	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Nov-94	2,600	230	120	4.8	150	88	363	*NA*
2	Feb-95	11,000	330	420	17	440	460	1,337	*NA*
3	May-95	7,200	440	300	13	390	330	1,033	*NA*
4	Aug-95	1,800	240	65	6.8	89	66.5	227	*NA*
5	May-96	1,100	140	51	*< 0.5*	*< 0.5*	47	98	*NA*
6	Aug-96	3,700	120	63	2	200	144	409	*NA*
7	Dec-96	2,700	240	19	*< 0.5*	130	92.9	242	*NA*
8	Feb-97	3,300	*< 50*	120	1.0	150	102.5	374	*NA*
9	May-97	490	*< 50*	2.6	6.7	6.4	6.7	22	*NA*
10	Aug-97	1,900	150	8.6	3.5	78	52.6	143	*NA*
11	Dec-97	1,000	84	4.6	2.7	61	54.2	123	*NA*
12	Feb-98	5,300	340	110	24	320	402	856	*NA*
13	Sep-98	1,800	*<50*	8.9	*< 0.5*	68	26.9	104	23
14	Apr-99	2,900	710	61	1.2	120	80.4	263	32
15	Dec-99	1,000	430	4	2	26	13.9	45.9	*<2*
16	Sep-00	570	380	*< 0.5*	*< 0.5*	16	4.1	20.1	2.4
17	Jan-01	1,600	650	4.2	0.89	46	13.8	64.9	8.4
18	Apr-01	1,700	1,100	4.5	2.8	48	10.7	66.0	5
19	Aug-01	1,300	810	3.2	4.0	29	9.7	45.9	*<2*

NA = Not Analyzed for this constituent

(continued)

Well MW-5									
Event	**Date**	**TPHg**	**TPHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Nov-94	**50**	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
2	Feb-95	**70**	*< 50*	**0.6**	*< 0.5*	*< 0.5*	*< 0.5*	**0.6**	*NA*
3	May-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
4	Aug-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
5	May-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
6	Aug-96	**80**	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
7	Dec-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
8	Feb-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
9	May-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
10	Aug-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
11	Dec-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
12	Feb-98	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
13	Sep-98	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2*
Groundwater monitoring in this well discontinued with Alameda County Health Care Services Agency approval									

NA = Not Analyzed for this constituent

(continued)

Well MW-7									
Event	Date	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Jan-01	13,000	3,100	95	4	500	289	888	95
2	Apr-01	13,000	3,900	140	*<0.5*	530	278	948	52
3	Aug-01	12,000	5,000	55	25	440	198.2	718	19

Well MW-8									
Event	Date	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Jan-01	14,000	1,800	430	17	360	1230	2,037	96
2	Apr-01	11,000	3,200	320	13	560	1,163	2,056	42
3	Aug-01	9,600	3,200	130	14	470	463	1,077	14

Well MW-9									
Event	Date	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Sep-01	11,000	170	340	13	720	616	1,689	48

Well MW-10									
Event	Date	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Sep-01	550	2,100	17	*< 0.5*	31	43.5	92	40

Well MW-11									
Event	Date	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Sep-01	17,000	7,800	390	17	820	344	1,571	*< 10*

HISTORICAL SURFACE WATER ANALYTICAL RESULTS

REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CALIFORNIA

(all concentrations in µg/L, equivalent to parts per billion [ppb])

Sampling Location SW-1 (Upstream of Contaminated Groundwater Discharge Location SW-2)									
Event	**Date**	**TPHg**	**TPHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Feb-94	**50**	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
2	May-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
3	May-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
4	Aug-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
5	Dec-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
6	Feb-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
7	Aug-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
8	Dec-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
9	Feb-98	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
10	Sep-98	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2*
11	Apr-99	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2*
Samplingat this location discontinued after April 1999.									

NA = Not Analyzed for this constituent

(continued)

Sampling Location SW-2 (Area of Contaminated Groundwater Discharge)									
Event	Date	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Feb-94	130	< 50	1.9	< 0.5	4.4	3.2	9.5	NA
2	May-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
3	Aug-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
4	May-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
5	Aug-96	200	< 50	7.5	< 0.5	5.4	< 0.5	12.9	NA
6	Dec-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
7	Feb-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
8	Aug-97	350	130	13	0.89	19	10.7	43.6	NA
9	Dec-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
10	Feb-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
11	Sep-98	< 50	<50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2
12	Apr-99	81	<50	2.0	< 0.5	2.5	1.3	5.8	2.3
13	Dec-99	1,300	250	10.0	1.0	47	27	85.0	2.2
14	Sep-00	160	100	2.1	< 0.5	5.2	1.9	9.2	3.4
15	Jan-01	< 50	< 50	< 0.5	< 0.5	0.53	< 0.5	0.5	< 2
16	Apr-01	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2
17	Sep-01	440	200	2.1	< 0.5	17	1.3	20.4	10

NA = Not Analyzed for this constituent

(continued)

Sampling Location SW-3 (Downstream of Contaminated Groundwater Discharge Location SW-2)									
Event	**Date**	**TPHg**	**TPHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	May-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
2	Aug-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
3	May-96	*< 50*	**74**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
4	Aug-96	**69**	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
5	Dec-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
6	Feb-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
7	Aug-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
8	Dec-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
9	Feb-98	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
10	Sep-98	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2*
11	Apr-99	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2*
12	Dec-99	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2*
13	Sep-00	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	—	*NS*
14	Jan-01	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2*
15	Apr-01	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2*
16	Sep-01	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	—	*NS*

NS = Not Sampled (no surface water present during sampling event)
NA = Not Analyzed for this constituent