PORT OF OAKLAND

April 21, 2000

Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

#1222

Subject: **Soil and Groundwater Investigation and Human and Ecological Risk Evaluation, Crowley Yard II, Oakland**

Dear Mr. Chan:

Please find enclosed the soil and groundwater investigation and human and ecological-risk evaluation report for Crowley Yard II, Oakland. This investigation was conducted in response to your approval of the final work plan on November 22, 1999. As described in the work plan, the Port over excavated the two former tank locations, installed three monitoring wells, and collected soil and groundwater for analysis.

The results of the investigation indicate that no remediation is necessary at the site for the protection of future park users or maintenance/construction workers. In addition, ecological impacts from residual concentrations of chemicals in groundwater are not expected based on the data collected to date. However, since the groundwater collected from the monitoring wells represents only one sampling event, the Port proposes to perform quarterly sampling for three more quarters commencing in May, 2000 and concluding in January, 2001.

At the conclusion of the quarterly sampling events the data will be compared to the ecological screening/action levels to confirm that no ecological impacts from residual groundwater contamination are expected at the site. At your concurrence, groundwater sampling will be continued for Total Extractable Petroleum Hydrocarbons as diesel, BTEX, metals, and PAHS.

If you have any questions concerning the report or would like to discuss the Port's proposed sampling schedule, please contact me at 510-627-1184.

Sincerely,

Douglas P. Herman
Associate Port Environmental Scientist

Cc w/encl.: Michele Heffes

Cc w/o encl.: Yane Nordhav, Baseline
Leroy Griffin, OES

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BASELINE

ENVIRONMENTAL CONSULTING

20 April 2000
97379-15

Mr. Douglas Herman
Port of Oakland
EH and SC Department
530 Water Street, 2nd Floor
Oakland, CA 94607

Subject: Soil and Groundwater Investigation/Human Health and Ecological Risk Evaluation, Pacific Dry Dock Yard II, 321 Embarcadero, Oakland

Dear Mr. Herman:

Please find enclosed our report on the Soil and Groundwater Investigation/Human Health and Ecological Risk Evaluation we recently completed for the Pacific Dry Dock Yard II site at 321 Embarcadero in Oakland, California. Should you have any questions or comments, please do not hesitate to contact us at your convenience.

Sincerely,

Yane Nordhav
Principal
Reg. Geologist #4009

Jeffrey Kane, E.I.T.
Environmental Engineer

YN:JK:cr
Enclosure

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SOIL AND GROUNDWATER INVESTIGATION / HUMAN HEALTH AND ECOLOGICAL RISK EVALUATION

APRIL 2000

PACIFIC DRY DOCK, YARD II
Oakland, California

For:

Port of Oakland
Oakland, California

98379-15

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PACIFIC DRY DOCK YARD II
321 Embarcadero, Oakland, California

INTRODUCTION

In June 1998, two underground tanks were removed from the Pacific Dry Dock Yard II site at 321 Embarcadero in Oakland (Figure 1). After the tanks had been removed, excavated soil from the tank removal activities was placed back into the excavation. In response to a request from Alameda County Health Care Services Agency, Environmental Health Services (County), the Port removed the backfill, installed three groundwater monitoring wells, and performed a risk evaluation to determine future site actions. The work was carried out in accordance with a workplan and amendments approved by the County (Appendix A). This report documents the County-requested work and provides recommendations for future site activities.

BACKFILL REMOVAL - February 2000

On 8 February 2000, the backfill previously placed in the former tank excavations was removed. The locations of the former tank excavations had been identified in the field by a BASELINE geologist. Performance Excavators of San Rafael, a Port contractor, excavated the backfill. The County was notified of the excavation activities, and Mr. Barney Chan was on-site representing the County. The following activities occurred at each former tank location.

Former Tank Location GF-11

In accordance with the approved workplan, the backfill was excavated to the depth of the shallow groundwater, which was encountered at a depth of about 4.5 feet below the ground surface (bgs). The excavation remained open for two days during which the groundwater level did not appear to fluctuate.

The excavation measured approximately 15 by 20 feet (Figure 2) with a portion extending partially under an adjacent building foundation (Figure 4A) (the building had been previously removed). The excavated material was placed on-site under plastic awaiting disposal off-site (Figure 4B).

Within the excavation, five pipelines were identified in the south wall of the excavation (Figures 2 and 4A); one of the pipelines appeared to be wrapped with asbestos. The pipelines appeared to extend from the excavation wall and through the adjacent foundation slab. Three pipelines were traced to their terminus, where each was sheared flush with the foundation slab. No material was removed from the three pipelines with the application of a vacuum truck hose. Because both of their ends were exposed, the pipes could be flushed with water. Ten gallons of water were poured into each pipeline while the vacuum truck hose was attached to the opposite end in the excavation (Figure

5A). The flushed water contained no product and was hauled off-site and disposed of by the vacuum truck contractor. The remaining two pipelines were either plugged or blocked; therefore, no material could be removed from them by vacuuming. Each pipeline was sealed with concrete, including both ends of the three pipelines (Figures 5B). The excavation was subsequently backfilled with clean pea gravel.

Soil samples were collected in six-inch stainless steel tubes from each of the four sidewalls of the excavation prior to backfilling. The samples were collected at the groundwater interface at the approximate center of each wall (Samples GF-11-N, GF-11-S, GF-11-W, and GF-11-E; all at 4.5 feet bgs). Following sample collection, the sample tubes were labeled, sealed with plastic caps and silicon tape, and placed in a ziplock bag in a cooled container prior to transport to Curtis and Tompkins laboratory in Berkeley. With the concurrence of the County, the four samples were composited in the laboratory into one sample for analysis. The composited sample was analyzed for total petroleum hydrocarbons as diesel (TPHd) and polycyclic aromatic hydrocarbons (PAHs). The analytical results are summarized in Table 1 and the laboratory reports are included in Appendix B

The composite sample was reported to contain 250 mg/kg of diesel; however, the laboratory indicated that the hydrocarbons identified did not match the diesel standard, as the sample primarily consisted of heavier hydrocarbons. The sample also contained a total of 6.93 mg/kg of polycyclic aromatic hydrocarbons (PAHs) (Table 1).

Former Tank Location GF-12

In accordance with the approved workplan, the backfill was excavated to the depth of the shallow groundwater. Groundwater was encountered at a depth of about 6.0 feet below the ground surface (bgs).

The excavation measured approximately 15 by 20 feet (Figure 2) with a portion extending partially under an adjacent building foundation (the building had been previously removed) (Figure 7A). The excavated material was placed on-site and under plastic awaiting disposal offsite (Figure 3B).

Within the excavation, a single product line was identified in the south wall of the excavation, which appeared to extend under the adjacent foundation slab (Figure 7A). The product line was vacuumed out with a vacuum truck hose (Figure 7B), resulting in the collection of approximately 2 liters of black product slightly more viscous than motor oil. The product was hauled off-site and disposed of by the vacuum truck contractor. The product line was capped with concrete (Figure 8A) and the excavation subsequently filled with clean pea gravel (Figure 8B).

Soil samples were collected in six-inch stainless steel tubes from each of the four sidewalls of the excavation prior to backfilling. The samples were collected at the groundwater interface at the approximate center of each wall (Samples GF-12-N, GF-12-S, GF-12-W, and GF-12-E; all at 6.0 feet bgs). Following sample collection, the sample tubes were labeled, sealed with plastic caps and silicon tape and placed in a ziplock bag in a cooled container prior to transport to Curtis and Tompkins laboratory in Berkeley. The four samples were composited into one sample in the

laboratory with the concurrence of the County. The composited sample was analyzed for TPHd and PAHs. The analytical results are summarized in Table 1 and the laboratory reports are included in Appendix B.

The composite sample was reported to contain 710 mg/kg of diesel; however, the laboratory indicated that the hydrocarbons identified did not match the diesel standard, as the sample was mostly composed of heavier hydrocarbons. The sample also contained a total of 1.24 mg/kg of PAHs (Table 1).

Stockpile Sampling

The stockpiled excavated material was sampled to augment analytical data previously collected at the time of tank removal. Four randomly selected samples were collected from the stockpile. The samples were collected and handled similarly to the samples collected from the former tank excavations. The four samples were composited into one sample in the laboratory and analyzed for soluble lead. The soluble lead concentration using the Waste Extraction Test (WET) was 0.97 mg/L (Appendix B). The soil stockpile (about 140 tons) was removed on 28 February 2000 by Performance Excavators and disposed of as a non-hazardous waste at Altamont landfill. Appendix C contains the documentation for disposal.

GROUNDWATER INVESTIGATION

In accordance with the County approved workplan, three groundwater monitoring wells (Figure 2) were installed at the site on 1 March 2000. Prior to well installation, a drilling permit was obtained from the Alameda County Public Works Agency (Appendix D). The field work was conducted in accordance with a site health and safety plan prepared by BASELINE (Appendix D). Underground Service Alert was contacted prior to field activities to delineate any underground utilities; Port records were searched to determine the location of utilities in the vicinity of the proposed well locations. The wells were installed by Clearheart Drilling of Santa Rosa under the supervision of a BASELINE registered geologist.

Well Installation and Development

Boreholes for wells MW-1, MW-2, and MW-3 were advanced to the top of the Bay Mud interface using an eight-inch diameter continuous flight hollow stem auger. Groundwater was encountered during drilling at depths of three, four, and 6.5 feet bgs, respectively, and the bottoms of the wells were set at ten, ten and twelve feet bgs, respectively. Each well was constructed with two-inch PVC casing that included eight feet of 0.010-inch machine-slotted screening set from the bottom. Each well annulus was packed with Lonestar 2/12 filter sand to 0.5 feet above the screening, sealed with one foot of bentonite, and grouted with neat cement to the ground surface. A traffic-rated christy box and locking well cap were installed to protect the well head and prevent tampering. Well construction and drilling logs are included in Appendix E. Water well driller's reports for each well have been submitted to the California Department of Water Resources.

The monitoring wells were developed on 2 March 2000 using peristaltic and double diaphragm (MW-1 only) pumps to remove water and sediment from the wells. Fine-grained sediments at the bottom of the wells were dislodged and put into suspension by the use of a surge block. Prior to development, depth to groundwater in the wells was measured using a dual interface probe. During development the recharge rate in each well was measured. Development of the wells continued at or below infiltration rate until the water appeared clear, and a total of eight to 25 gallons was pumped from each well. Well development details and field measurements are provided on the Well Development forms included in Appendix E.

Drill cuttings, decontamination water, and water purged from the wells were temporarily stored on site in 55-gallon drums. The drums were removed for disposal as a non-hazardous waste at the Altamont Landfill by Performance Excavator on 22 March 2000 (Appendix C).

Soil Sampling

Soil samples were collected from above the saturated zone during the drilling of each of the three well borings using a California-modified split spoon sampler lined with stainless-steel sample tubes. Once the samples were collected, the ends of the sample tubes were covered with teflon tape and plastic caps, and sealed with silicone tape. The samples were labeled, placed in individual ziplock bags, stored in a plastic cooler containing blue ice, and transported under chain-of-custody procedures to Sequoia Analytical in Walnut Creek, California, a California-certified analytical laboratory. Four samples (MW-1, 2.5-3.0; MW-2, 3.5-4.0; MW-3, 3.0-3.5; and MW-3, 5.0-5.5), including at least one from each well boring, were analyzed for total petroleum hydrocarbons as motor oil (TPHmo), PAHs, and copper, total chromium, lead, nickel, and zinc. Five additional samples were analyzed for physical soil properties, including soil density, porosity, and volumetric water content (moisture content). Additional details regarding soil sample collection are provided in the Drilling Logs included in Appendix E.

Groundwater Sampling

A groundwater sample was collected from each well on 6 March 2000. Depth to groundwater and the presence of floating product were checked in each well prior to well purging. Groundwater was slowly purged from each well using a peristaltic pump and clean disposable tubing until the temperature, conductivity, and pH of the purged water had stabilized, or a minimum of three well casing volumes had been removed. Purged water was temporarily stored on-site in 55-gallon drums awaiting disposal on 22 March. Water levels were measured again prior to sampling to ensure that levels had recovered sufficiently to allow sample collection.

Groundwater samples were collected using a peristaltic pump and clean disposable tubing. Once filled, sample containers were sealed, labeled, stored in a plastic cooler containing blue ice, and transported under chain-of-custody procedures to Sequoia Analytical in Walnut Creek, California, a California-certified analytical laboratory. Each sample was analyzed for TPHd and TPHmo, benzene, toluene, ethylbenzene, and xylenes (BTEX), PAHs, and copper, total chromium, lead, nickel, and zinc. All groundwater sampling data was recorded on the Groundwater Sampling sheets included in Appendix E.

Monitoring Well Elevation Survey

The horizontal positions and elevations of the top of the well casings for each well were surveyed by Bates and Bailey Land Surveyors. Elevations were surveyed to an accuracy of 0.01 foot relative to mean sea level (msl). The well elevations are summarized in Table 4 and a copy of the survey report is included in Appendix E.

Analytical Results

Soil

The analytical results for the soil samples are summarized in Table 1. TPHd was detected in soil samples from borings MW-1 and MW-3 at concentrations of up to 7.1 mg/kg, and TPHmo was detected in one sample from MW-3 at a concentration of 51 mg/kg. However, the laboratory indicated that discrete peaks as well as unidentified hydrocarbons heavier than C16 were detected in each of these samples. Inspection of the chromatograms from the analyses (Appendix B) confirmed that the hydrocarbons detected do not resemble the diesel or motor oil standards. No PAHs were detected above laboratory reporting limits in any of the soil samples, nor was cadmium. The maximum concentrations of total chromium (65 mg/kg), lead (13 mg/kg), nickel (60 mg/kg) and zinc (180 mg/kg) were detected in samples from MW-3, MW-1, MW-3, and MW-1, respectively. None of the detected concentrations of metals exceeded ten times their corresponding soluble threshold limit concentration (STLC). The physical soil properties are summarized in Table 3. The laboratory reports are included in Appendix B.

Groundwater

The analytical results for the groundwater samples are summarized in Table 2. TPHd was detected in groundwater samples MW-1 and MW-2 at concentrations of 120 and 240 µg/L, respectively, and TPHmo was detected in MW-1 only, at 250 µg/L. However, the laboratory indicated that discrete peaks as well as unidentified hydrocarbons ranging between C9 and C24 and hydrocarbons heavier than C16 were detected in these samples. Inspection of the chromatograms from the analyses (Appendix B) confirmed that the hydrocarbons detected do not resemble the diesel or motor oil standards. Of the BTEX compounds, benzene was detected in sample MW-1 only at 0.67 µg/L, and ethylbenzene in MW-1 and MW-2 at 3.6 and 4.4 µg/L, respectively. Toluene and xylenes were not detected above laboratory reporting limits in any of the samples. Only sample MW-2 had detectable concentrations of PAHs, which included naphthalene (39 µg/L), acenaphthene (15 µg/L), fluorene (5.8 µg/L), and phenanthrene (6.5 µg/L); all other PAHs were not detected above laboratory reporting limits. No metals were detected in any of the samples at concentrations exceeding the laboratory reporting limits. A copy of the laboratory reports is included in Appendix B.

SUBSURFACE CONDITIONS

The subsurface conditions at the site were observed during the drilling of the three monitoring well borings on 1 March 2000. Two to six inches of asphalt and concrete were encountered at the surface. In borings MW-2 and MW-3, 0.5 to two feet of base rock containing sand with gravel or gravel with sand occurred below the asphalt and concrete. The base rock was underlain by nine to 10.5 feet of

fill. The fill consisted of sandy clay with gravel (one-third- to one-inch in diameter), sand with clay, and gravel. The fill was underlain by Bay Muds containing black silty clays at high plasticity, with abundant peat.

The direction of groundwater flow at the site, calculated using the three point method, was to the west-northwest (N76W), with a gradient magnitude of 0.0099 (Table 4, Figure 2). Detailed information on subsurface conditions was recorded in the Boring Logs included in Appendix E.

RISK-BASED REMEDIAL APPROACH

The September 1999 workplan proposed a risk-based remediation approach for the two UST areas. This risk-based approach recommended an evaluation of both human health risks and ecological risks posed by residual site contaminants. A human health risk evaluation for both park users and construction/maintenance workers, as included in the September 1999 workplan, is described below; this human health risk evaluation was updated, as presented below, to reflect data collected during the March 2000 investigation and new human health risk screening values that have become available since September 1999.

The human health risk evaluation was conducted assuming future use of the site as a park, the future land use identified in the Oakland Estuary Plan. A well inventory for the site vicinity indicated that there are no water supply wells within 2,000 feet of the site (Magallanes, 2000). The preliminary ecological health risk analysis, based on groundwater samples collected during the March 2000 investigation, follows the human health risk analysis.

Human Health Risk Analysis

To supplement the U.S. EPA Region 9 Preliminary Remediation Goals (PRGs), significant work has been performed recently to assess human health risks from contaminated soils adjacent to the Bay. This work has resulted in development of threshold values for specific site conditions and contaminants. Recently completed risk assessments applicable to the Pacific Dry Dock site include Regional Water Quality Control Board (RWQCB) orders 99-045 and 98-072.[1]

San Francisco International Airport, RWQCB Order No. 99-045

Order No. 99-045 pertains to risk-based remediation for the San Francisco International Airport (airport). The Order provides clean-up standards for the protection of human health and ecological receptors (described below).

The airport is generally covered by asphalt or concrete, which is underlain by fill varying from a few to about 35 feet in thickness. The fill is underlain by young Bay Mud. Groundwater occurs at varying depths ranging from four to 16 feet, depending on the thickness of the fill. These conditions are similar to the conditions at the Pacific Dry Dock Yard II site. Since most of the airport site is

[1] The City of Oakland has also developed risk-based clean-up goals; however, those are not directly applicable to this site because of the shallow depth to groundwater (i.e., less than ten feet below the ground surface).

covered by manmade surfaces, the human health protection standards apply to construction/maintenance workers and indoor workers. The clean-up standards are not applicable for park uses or residential uses. However, park users (the proposed future land use at the Pacific Dry Dock II site) would be expected to have less exposure to site contaminants on a daily basis than construction/maintenance workers or indoor workers, and therefore comparison of site concentrations to screening levels for these receptors would be protective for future park users.

Comparison of Site Data to Human Health Screening Levels for the Airport. The Human Health Protection Tier 1 Standards applicable to construction, maintenance, and indoor workers (Table 4 in Order No. 99-045) are summarized in Table 5 for those contaminants identified both at the airport and at the Pacific Dry Dock site. Table 5 also includes the maximum concentration of chemicals of potential concern (COPCs) reported above the laboratory reporting limits, the investigation conducted by ITSI during removal of the tanks, as well as the maximum concentration in soil and groundwater reported above the laboratory reporting limit during the March 2000 investigation.

Review of the data in Table 5 reveals that the maximum on-site soil concentrations as reported by ITSI during the tank removal and as encountered during the March 2000 investigation for TPHd, benzo(a)pyrene, and total PAHs were below the thresholds for protection of human health for the potential receptors (construction/maintenance and indoor worker receptors). All maximum on-site groundwater concentrations as reported during the March 2000 investigation were also below applicable screening levels for groundwater for all human receptors.

Catellus Eastshore Park Property, RWQCB Order No. 98-072

Order No. 98-072 pertains to risk-based soil and groundwater remediation at the Catellus proposed Eastshore Park property in Berkeley, Albany, and Richmond. Action levels were developed for the protection of human health and ecological receptors. Specific action levels were developed for soil and groundwater in upland and upland buffer zones. The groundwater action levels were developed for the protection of aquatic ecological receptors (discussed in the preliminary ecological health risk analysis below).

Soil action levels in Order No. 98-072 apply only to soils within the top two feet of the ground surface. The order does not provide action levels for deeper soils based on the rationale that future users and terrestrial ecological receptors would only be exposed to the shallow soils. Action levels for the upland soil action levels were developed for the protection of both human and terrestrial ecological receptors.

The soil contamination associated with excavations GF-11 and GF-12 was observed to begin about three and six feet below the ground surface, respectively. Soil samples collected from the excavations in 1998 were from seven and eight feet below the ground surface (bgs). Soil contamination during the March 2000 investigation was identified at depths ranging from 2.5 to six feet bgs, with the maximum concentration of COPCs reported at 4.5 and six feet bgs. Even though the contamination encountered during the tank removals was deeper than two feet, the maximum concentrations found among the samples collected from the bottom of the tank excavations were

compared to the upland soil action levels listed in Order No. 98-072 for the purpose of conducting an ultra-conservative human health screening. The maximum soil sample concentrations from the March 2000 investigation for COPCs reported above the laboratory reporting limit were also compared with action levels from the Catellus Order as shown in Table 5.

It is important to note that in comparing the maximum concentration of site data with the Catellus action levels, these levels are the lower of the human health and ecological action levels developed. The human health action levels were adjusted preliminary remediation goals (PRGs) for residential use. The adjustment of the PRGs took into account less frequent use of the site by a park user compared to a resident. The ecological receptor was a mouse chosen by the Oak Ridge National Laboratory, Department of Energy (DOE mouse).

Comparison of Site Data to Human Health Action Levels for Catellus Property. Table 5 lists the action levels for upland soils from Order No. 98-072. Comparison of the action levels with the maximum concentrations found in the 1998 and the March 2000 investigations indicates that the maximum on-site concentrations of TPHd and benzo(a)pyrene exceed the Order No. 98-072 action levels, using the maximum concentrations as reported by ITSI during the tank removal activities. The maximum concentration of benzo(a)pyrene from the March 2000 investigation (0.55 mg/kg) also exceeded the action level developed for the park user (0.39 mg/kg). The maximum concentration of TPHd from the March 2000 investigation did not exceed the TPHd action level.

It is important to note that exceedance of the Catellus action levels for benzo(a)pyrene would not represent a human health risk since the exposure pathway for human health receptors is incomplete. The maximum concentration of benzo(a)pyrene (1.2 mg/kg) was found in the soil of samples collected from the UST GF-12 excavation. At this location, contaminated soil was identified during tank removal, as evidenced by visual observations, at a depth of six feet below the ground surface to the depth of the groundwater surface. The sample was collected at a depth of eight feet below ground surface. The maximum concentration of the sample collected during the March 2000 investigation (0.55 mg/kg) was reported at 4.5 feet bgs.[2] Future park users would not be exposed to soil at a depth of 4.5 to 8 feet and, therefore, would not be exposed to the maximum concentration of benzo(a)pyrene.

Also for TPHd, the 1,000 mg/kg action level in Order No. 98-072 was based on toxicity to aquatic receptors and not human health; it is therefore not applicable in this evaluation of human health. Human health risks from petroleum are generally assessed by indicator species in the fuel, such as PAHs and BTEX (which have been evaluated above, where these chemicals exceeded laboratory reporting limits).

[2] It should also be noted that soil samples from shallower depths from the monitoring well locations did not contain PAHs above laboratory reporting limits (Table 1).

U.S. Environmental Protection Agency Preliminary Remediation Goals

For some of the COPCs identified at the Pacific Dry Dock site, the RWQCB orders do not provide action levels or standards. Table 5 lists PRGs for residential soil for the COPCs for which human health action levels for park users were not established in order 98-072. The September 1999 workplan used the 1998 EPA Region 9 PRGs to assess the possible health risks from residual contaminants at the site (Table 5). Since the issuance of this workplan, 1999 EPA Region 9 PRGs were established by EPA. Table 5 has been updated to reflect the new 1999 residential PRGs.

Comparison of Site Data to Human Health U.S. EPA Preliminary Remediation Goals. Comparison of the 1999 residential PRGs with maximum on-site soil concentrations as reported from the 1998 and March 2000 investigations shows that none of the on-site concentrations exceeds PRGs, except for benzo(b,k) fluoranthene (from the ITSI investigation) and benzo(b)fluoranthene (from the March 2000 investigation).

The concentrations that exceed PRGs would not pose an unacceptable risk to human health. The PRGs were back-calculated based on protection of an excess lifetime cancer risk of 1.0×10^{-6} for residential site users; exposures to future park users (and any commercial users) would be expected to be less than residential site users. Also, the maximum benzo(b,k)fluoranthene concentration (4.9 mg/kg) represents a 7.9×10^{-6} excess lifetime cancer risk (assuming the lower PRG of benzo(b)fluoranthene).[3] The concentration of benzo(b)fluoranthene (0.87 mg/kg) from the March 2000 investigation represents a 1.4×10^{-6} excess lifetime cancer risk. These risk values are within the range considered permissible by regulatory agencies of 1×10^{-4} to 1×10^{-6}.

Preliminary Ecological Health Risk Analysis

The groundwater quality data from 6 March 2000 provides the basis for comparison of site concentrations with screening/action levels developed for protection of ecological receptors. Based on the direction of groundwater flow and other site conditions, the only complete pathway for potential ecological receptors at the site was assumed to be groundwater discharge into the Estuary of Lake Merritt channel, which is located about 40 feet northwest of GF-12.

Grab groundwater data collected by ITSI during removal of the USTs were excluded from the comparison of screening/actions levels for ecological protection since the two soil/water samples were collected from the open UST excavation and therefore are not indicative of groundwater conditions at the site. The grab groundwater samples would have contained soil particles mixed with the water. The analytical results from grab groundwater samples could have been significantly affected by any contaminants adhering to the soil particles and therefore would not represent dissolved concentrations in the groundwater. Instead, comparisons were made of groundwater data collected from three wells (MW-1 through MW-3) installed at the site in March 2000.

[3]A PRG is not available for benzo(b,k) fluoranthene. PRGs are available for benzo(b)fluoranthene or benzo(k)fluoranthene.

As in the human health risk analysis, screening/action levels for protection of ecological receptors for residual contaminants in groundwater have not been developed for the Pacific Dry Dock II site. However, screening/action levels for protection of ecological receptors from exposure to petroleum hydrocarbons and other contaminants have been developed, as described above, for the San Francisco International Airport in Order 99-045 and the Catellus Eastshore Park property, Order 98-072. Both orders were prepared with oversight from RWQCB. The screening/actions levels for the airport and the Catellus properties, although not developed for the project site, would be applicable to the site, since they have been developed for similar contaminants, and the hydrogeology and conditions at the all the sites are similar, as discussed above.

San Francisco International Airport, RWQCB Order No. 99-045

Tier 1 ecological cleanup standards for TPH developed in RWQCB Order 99-045 were based on the results of site-specific studies of TPH toxicity on aquatic organisms. For other COPCs the standards were developed based on the protection of the beneficial uses of the adjacent surface water receptor (San Francisco Bay), as indicated by Federal and State ecological criteria. The results of the toxicity testing for TPH, with applied uncertainty factors, and the Federal and State ecological criteria, were used to form the basis for the Tier 1 cleanup standards for groundwater (with no dilution attenuation factors [DAFs]) applied (i.e., DAF = 0). Since the groundwater screening levels were used to calculate the corresponding soil screening levels using modeling approaches, and the exposure pathway for potential ecological receptors is assumed to be groundwater discharge into the Estuary, only Tier 1 values for groundwater for ecological protection are included in Table 6. A DAF for the project site was estimated to be 0, since the site is located adjacent to the Estuary of the Lake Merritt Channel and no to minimal dilution attenuation from the site would be expected.

Comparison of Site Data to Ecological Screening Levels (DAF = 0) Developed for the Airport. Comparisons of site groundwater concentrations from March 2000 to ecological screening levels (DAF = 0) for the airport were made for chemicals reported above the laboratory reporting limit including diesel, benzene, ethylbenzene, naphthalene, and total polycyclic aromatic hydrocarbons (PAHs). The maximum concentration of these COPCs from groundwater samples collected were used for comparison with ecological screening levels. Ecological screening levels for the airport were not identified for TPHmo, acenaphthalene, fluorene, or phenanthrene. (Ecological screening levels for the Catellus property were used to compare against the maximum groundwater concentration for phenanthrene, see below.)

The maximum concentration of TPHd, benzene, ethylbenzene, and naphthalene were below the airport ecological screening levels for these contaminants (see Table 6). Total PAHs (0.0663 mg/L) were above the action level of 0.015 mg/L.

Catellus Eastshore Park Property, RWQCB Order No. 98-072

As described in the human health risk analysis above, groundwater action levels were developed for protection of aquatic ecological receptors for the Catellus Eastshore Park property. For this reason, a comparison of the maximum groundwater concentrations for COPCs reported above the laboratory reporting limit with groundwater action levels established for the Catellus property was made below.

Non-buffer groundwater action levels were used for comparison with the maximum groundwater concentrations.

Comparison of Site Data to Ecological Action Levels for Catellus Property. Comparisons for site groundwater concentrations to ecological action levels for the Catellus Eastshore property were made for the following chemicals: TPHd, benzene, ethylbenzene, naphthalene, phenanthrene, and total PAHs. Screening levels for TPH motor oil, acenaphthene, and fluorene were not identified in the Catellus order for comparison with site groundwater concentrations.

The maximum concentration of TPHd, benzene, ethylbenzene, naphthalene, phenanthrene, and total PAHs were below the groundwater non-buffer action levels developed for the Catellus property.

Conclusions for the Human Health and Preliminary Ecological Health Risk Analyses

Human Health

There are no adverse human health risks associated with the residual contamination at the Pacific Dry Dock site because:

- Maximum concentrations of chemicals of potential concern in soil and groundwater are below the RWQCB Order No. 99-045 for protection of maintenance, construction, and indoor workers.

- Maximum concentrations of chemicals of potential concern in soil are either below RWQCB Order No. 98-072 action levels or were within acceptable U.S. EPA Region 9 permissible cancer risk range.

Ecological Health

There are no adverse ecological health risks associated with the residual contamination at the Pacific Dry Dock site, based on the data collected to date, because:

- The maximum groundwater concentrations of TPH as diesel, benzene, ethylbenzene, naphthalene, phenanthrene, and total PAHs were below screening levels developed for the San Francisco International Airport, and/or the action levels developed for the Catellus Eastshore property, both developed under the authority of the RWQCB.

- Screening/action levels were not identified for comparison with the maximum residual concentrations of acenaphthene (0.015 µg/L), fluorene (0.0058 µg/L), or TPH as motor oil (0.25 µg/L) in groundwater for either the SFIA or the Catellus property. These chemicals could therefore not be evaluated with respect to potential ecological harm. It is important to note that the total PAH concentration in the groundwater samples collected at the site, based on the March 2000 investigation, were below the Catellus screening/action levels. Acenaphthene and fluorene would comprise a portion of the total PAHs.

RECOMMENDATIONS

- No remediation is proposed for the protection of future park users or maintenance/construction workers at the site.

- Ecological impacts from residual concentrations of chemical in groundwater are not expected based on the data collected to date. However, since the groundwater data collected from the monitoring wells represent only one sampling event, it is recommended that quarterly sampling be conducted for three more quarters and the data compared at the end of this sampling to the ecological screening/action levels contained in this report to confirm that no ecological impacts from residual groundwater contamination are expected at the site. Groundwater sampling should be continued for Total Extractable hydrocarbons as diesel, BTEX, metals, and PAHs.

REFERENCES

ITSI, 1998, *Tank Closure Report; Port of Oakland Tank Numbers GF-11 and GF-12*, 3 September.

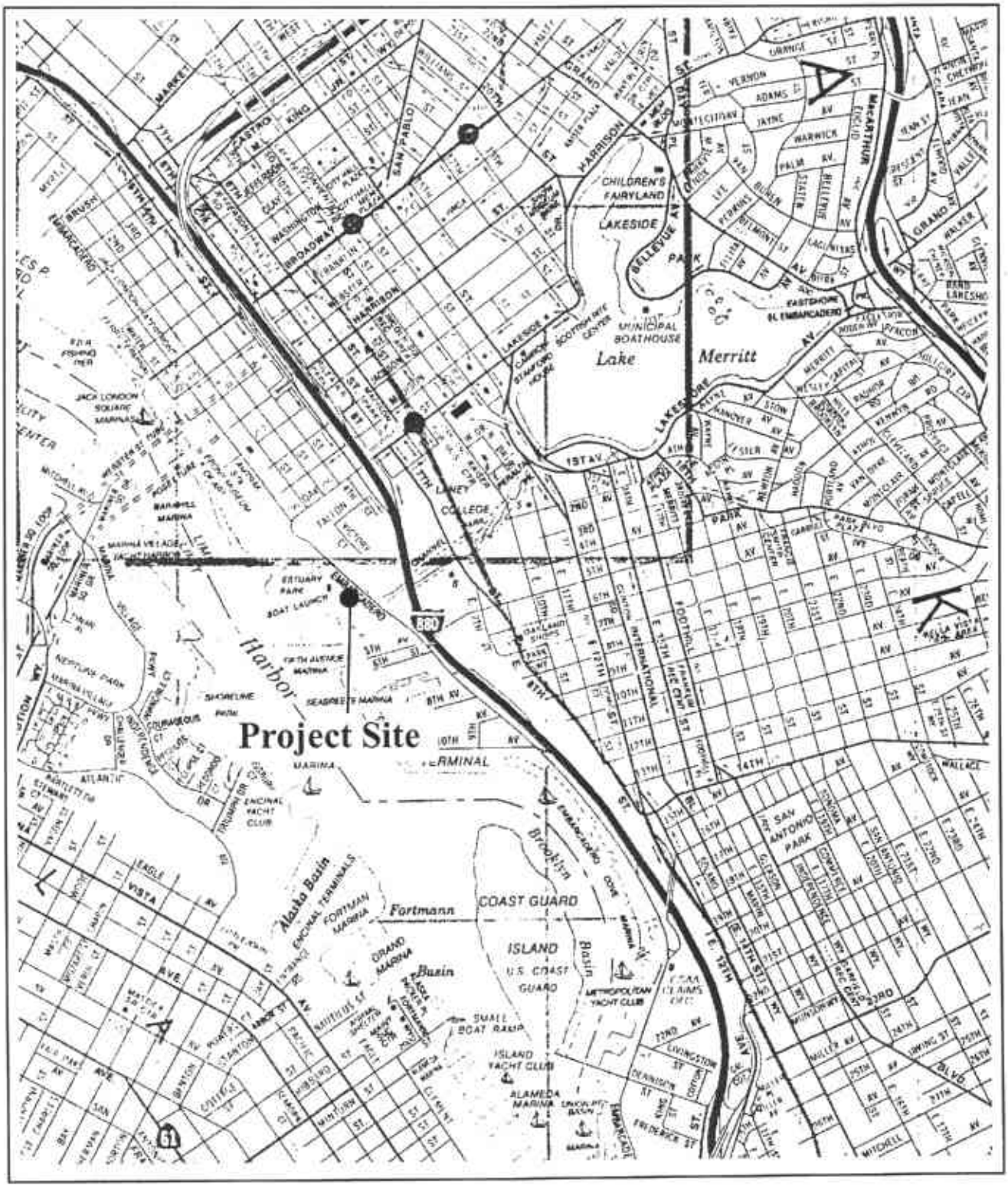
Magallanes, Marlin, 2000, Alameda County Public Works Agency, Water Resources Section, personal communication with Jeff Kane of BASELINE, 14 April.

RWQCB Order No. 99-045, *Adoption of Revised Site Cleanup Requirements [...] For the Property at San Francisco International Airport, San Mateo County*.

RWQCB Order No. 98-072, *Adoption of Site Cleanup Requirements for: Catellus Development Corporation and SF Pacific Property, Inc.; Proposed Eastshore Park Property: Berkeley and Albany (Alameda County) and Richmond (Contra Costa County)*.

REGIONAL LOCATION

Figure 1



Pacific Dry Dock Yard II
321 Embarcadero
Oakland, California

0 2000 Feet

BASELINE

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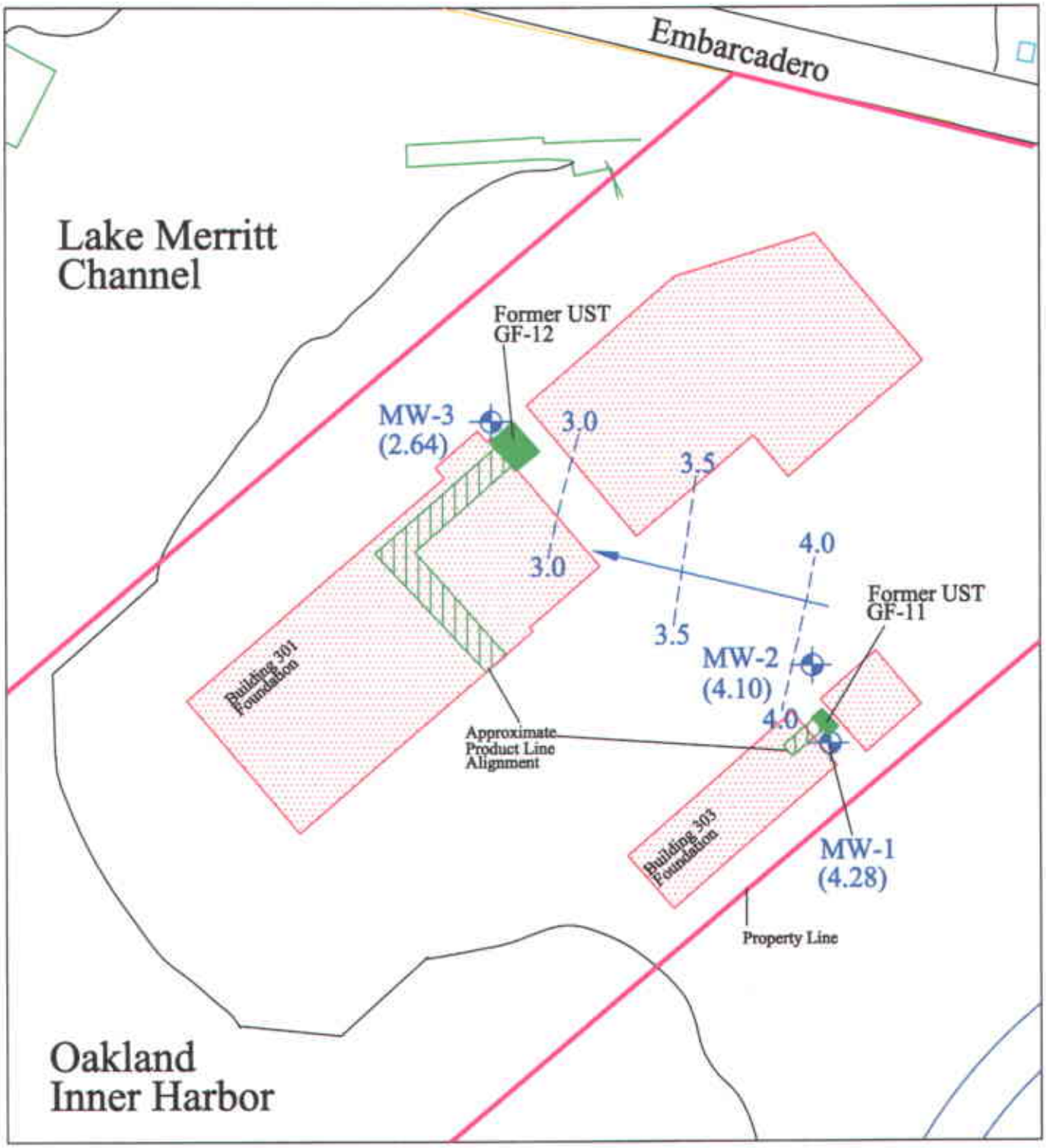
SITE PLAN AND GROUNDWATER CONTOURS
March 2000

Figure 2



Legend

Monitoring Well Location

Groundwater Flow Direction

3.0 – – – 3.0 Groundwater Elevation Contour

(4.28) Groundwater Elevation (feet msl)

N

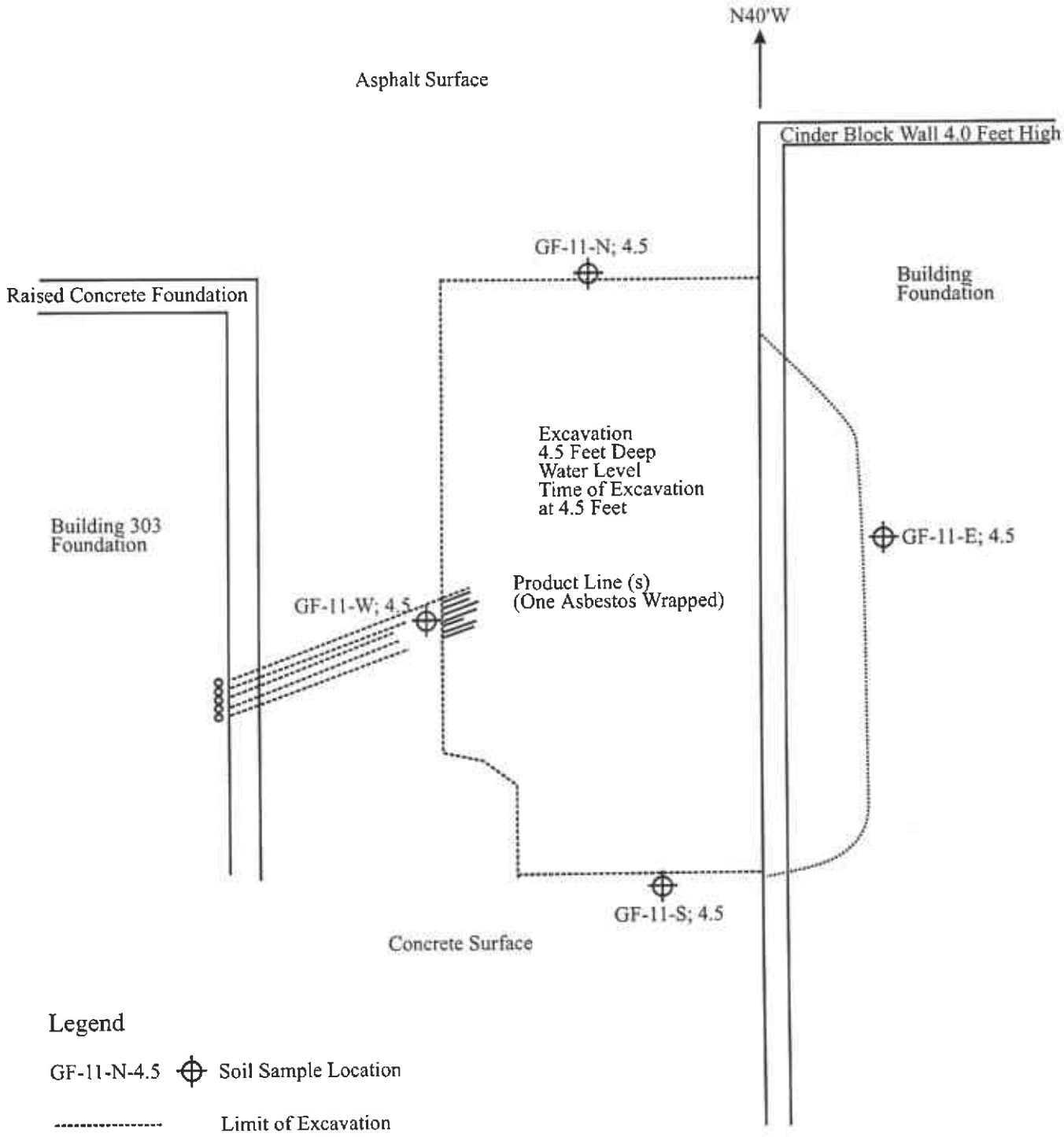
0 75 Feet

BASELINE

Pacific Dry Dock Yard II
321 Embarcadero, Oakland

TANK EXCAVATION GF-11
8 FEBRUARY 2000

Figure 3



Pacific Dry Dock Yard II
321 Embarcadero
Oakland, California

0 5 Feet

BASELINE

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EXCAVATION GF-11

Figure 4

4A: Excavation and pipes.

4B: Excavated backfill stockpiles.

Pacific Dry Dock Yard II
321 Embarcadero
Oakland, California

BASELINE

D:\Graphics\98379-09\F3.cdr 3/2/00

EXCAVATION GF-11

Figure 5

5A: Flushing pipelines.

5B: Sealing pipeline ends and vacuuming excavation.

Pacific Dry Dock Yard II
321 Embarcadero
Oakland, California

BASELINE

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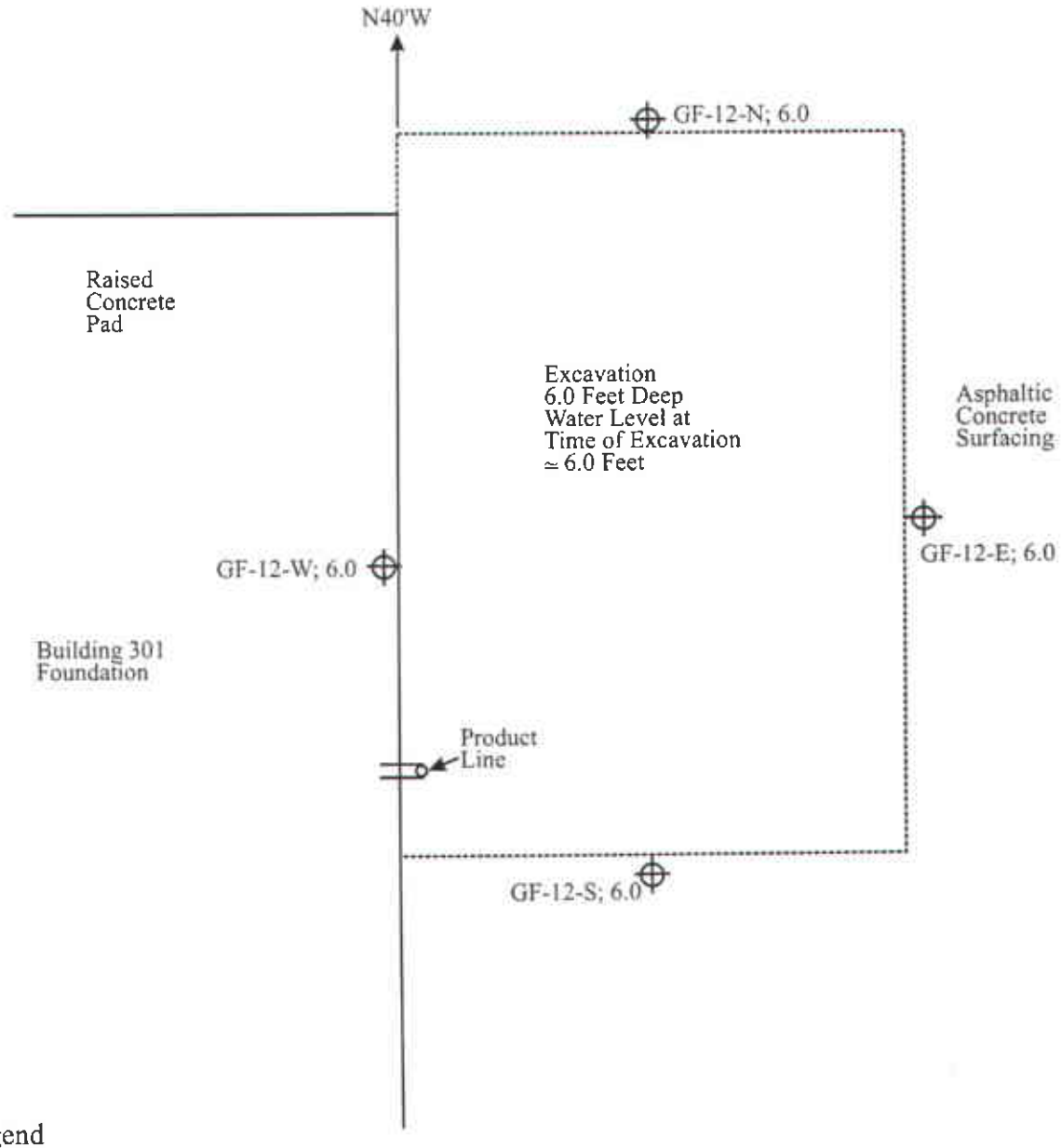
TANK EXCAVATION GF-12
8 FEBRUARY 2000

Figure 6



Legend

GF-12-N; 6.0 ⊕ Soil Sample Location

---------- Limit of Excavation

Pacific Dry Dock Yard II
321 Embarcadero
Oakland, California

0 5 Feet

BASELINE

D:\Graphics\98379-09\Tank.cdr 4/12/00

EXCAVATION GF-12

Figure 7

7A: Product line.

7B: Vacuuming product line.

Pacific Dry Dock Yard II
321 Embarcadero
Oakland, California

BASELINE

D:\Graphics\98379-09\F5.cdr 3/2/00

EXCAVATION GF-12

Figure 8

8A: Sealing product line.

8B: Backfilling the excavation.

Pacific Dry Dock Yard II
321 Embarcadero
Oakland, California

BASELINE

D:\Graphics\98379-09\F7.cdr 3/2/00

TABLE 1
SUMMARY OF ANALYTICAL RESULTS, SOIL
Pacific Dry Dock, Yard II
321 Embarcadero, Oakland, CA
(mg/kg)

	MW-1:	MW-2:	MW-3:	MW-3:	GF-11	GF-12
Date	3/1/00	3/1/00	3/1/00	3/1/00	2/8/00	2/8/00
Petroleum Hydrocarbons[1]						
TPH as diesel	2.6[3,4]	<1.0	1.5[3,4]	7.1[4]	250[5,6]	710[5,6]
TPH as motor oil	<10	<10	<10	51	--	--
Polycyclic Aromatic						
Naphthalene	<0.10	<0.10	<1.0[7]	<1.0[7]	<1.7	<1.7
Acenaphthalene	<0.10	<0.10	<1.0[7]	<1.0[7]	<3.4	<3.4
Acenaphthene	<0.10	<0.10	<1.0[7]	<1.0[7]	<0.34	<0.34
Fluorene	<0.10	<0.10	<1.0[7]	<1.0[7]	<0.34	<0.34
Phenanthrene	<0.10	<0.10	<1.0[7]	<1.0[7]	<0.17	<0.17
Anthracene	<0.10	<0.10	<1.0[7]	<1.0[7]	<0.17	<0.17
Fluoranthene	<0.10	<0.10	<1.0[7]	<1.0[7]	**0.9**	**0.19**
Pyrene	<0.10	<0.10	<1.0[7]	<1.0[7]	**1.1**	**0.2**
Benzo(a)anthracene	<0.10	<0.10	<1.0[7]	<1.0[7]	**0.55**	**0.11**
Chrysene	<0.10	<0.10	<1.0[7]	<1.0[7]	**0.56**	**0.12**
Benzo(b)fluoranthene	<0.10	<0.10	<1.0[7]	<1.0[7]	**0.87**	**0.15**
Benzo(k)fluoranthene	<0.10	<0.10	<1.0[7]	<1.0[7]	**0.32**	**0.05**
Benzo(a)pyrene	<0.10	<0.10	<1.0[7]	<1.0[7]	**0.55**	**0.11**
Dibenz(a,b,)anthracene	<0.10	<0.10	<1.0[7]	<1.0[7]	**0.4**	<0.068
Benzo(g,h,i)perylene	<0.10	<0.10	<1.0[7]	<1.0[7]	**0.7**	**0.12**
Indeno(1,2,3-cd)pyrene	<0.10	<0.10	<1.0[7]	<1.0[7]	**0.98**	**0.19**
Total PAHs	<0.10	<0.10	<1.0	<1.0	**6.93**	**1.24**
Metals (ICP Scan)						
Cadmium	<0.50	<0.50	<0.50	<0.50	--	--
Chromium	**8.5**	**31**	**65**	**35**	--	--
Lead	**13**	**9.5**	**2.6**	**9.0**	--	--
Nickel	**9.0**	**32**	**60**	**40**	--	--
Zinc	**180**	**28**	**47**	**50**	--	--

Notes: <x.x = Compound not identified above laboratory reporting limit of x.
-- = Not analyzed.
mg/kg = Milligrams per kilogram
TPH = Total petroleum hydrocarbons

1 Samples MW-1,2.5-3.0, MW-2; 3.5-4.0, MW-3; 3.0-3.5, and MW-3; 5.0-5.5 were analyzed using the DHS LUFT Method; samples GF-11 and GF-12 were analyzed using Method 8015M.
2 Samples MW-1,2.5-3.0, MW-2; 3.5-4.0, MW-3; 3.0-3.5, and MW-3; 5.0-5.5 were analyzed using Method 8270 B; samples GF-11 and GF-12 were analyzed using Method 8310.
3 Discrete peaks.
4 Chromatogram pattern: Unidentified Hydrocarbons > C16.
5 Sample exhibits fuel pattern that does not resemble laboratory standard.
6 Heavier hydrocarbons contributed to the quantitation.
7 Reporting limit for this sample has been raised due to high levels of non-target compounds.

TABLE 2
SUMMARY OF ANALYTICAL RESULTS, GROUNDWATER
Pacific Dry Dock, Yard II
321 Embarcadero, Oakland, California
(µg/L)

	MW-1	MW-2	MW-3
Date	**3/6/00**	**3/6/00**	**3/6/00**
Petroleum Hydrocarbons (DHS LUFT Method)			
TPH as diesel	**120**[1, 2]	**240**[3]	<50
TPH as motor oil	**250**	<250	<250
Volatile Organic Compounds (DHS LUFT Method)			
Benzene	**0.67**	<0.50	<0.50
Toluene	<0.50	<0.50	<0.50
Ethylbenzene	**3.6**	**4.4**	<0.50
Xylenes (total)	<0.50	<0.50	<0.50
Polycyclic Aromatic Hydrocarbons (Method 8270B)			
Naphthalene[3]	<5.0	**39**	<5.0
Acenaphthylene	<5.0	<5.0	<5.0
Acenaphthene	<5.0	**15**	<5.0
Fluorene	<5.0	**5.8**	<5.0
Phenanthrene	<5.0	**6.5**	<5.0
Anthracene	<5.0	<5.0	<5.0
Fluoranthene	<5.0	<5.0	<5.0
Pyrene	<5.0	<5.0	<5.0
Benzo(a)anthracene	<5.0	<5.0	<5.0
Chrysene	<5.0	<5.0	<5.0
Benzo(b)fluoranthene	<5.0	<5.0	<5.0
Benzo(k)fluoranthene	<5.0	<5.0	<5.0
Benzo(a)pyrene	<5.0	<5.0	<5.0
Dibenzo(a,b)anthracene	<5.0	<5.0	<5.0
Benzo(g,h,i)perylene	<5.0	<5.0	<5.0
Indeno(1,2,3-cd)pyrene	<5.0	<5.0	<5.0
Metals (ICP Scan Method)			
Cadmium	<0.00001	<0.00001	<0.00001
Chromium	<0.000023	<0.000024	<0.00001
Lead	<0.00002	<0.00002	<0.00002
Nickel	<0.000016	<0.000029	<0.00001
Zinc	<0.00004	<0.00004	<0.00004

Notes: <x = Compound not identified above reporting limit of x.
-- = Not analyzed.
µg/L = micrograms per liter.
TPH = Total petroleum hydrocarbons.

1. Discrete peaks.
2. Chromatogram pattern: Unidentified Hydrocarbons > C16.
3. Chromatogram pattern: Unidentified Hydrocarbons > C9-C4.

TABLE 3
PHYSICAL PARAMETERS, SOIL
Pacific Dry Dock, Yard II
321 Embarcadero, Oakland, California

Sample ID	Dry Bulk Density (g/cc)	Total Porosity (%)	Volumetric Water Content (%)
MW-2; 1.0-1.5	1.97	26.4	30.3
MW-2; 1.5-2.0	1.93	27.9	33.5
MW-2; 3.0-3.5	1.69	37.6	34.7
MW-3; 3.0-3.5	1.89	25.0	39.4
MW-3; 5.0-5.5	1.99	24.7	20.2

Notes: g/cc = gram per cubic centimeter.
Grain and pore volumes were determined using Boyle's Law methods as per API RP-40.
Total porosity, bulk, and grain densities were calculated using API RP-40.

TABLE 4

GROUNDWATER ELEVATIONS AND GRADIENT DETERMINATION

Pacific Dry Dock, Yard II

321 Embarcadero, Oakland, California

Date	MW-1[1]		MW-2[2]		MW-3[3]		Groundwater[5] Flow Direction	Gradient[5] Magnitude
	Depth to Groundwater (ft)	Groundwater Elevations[4] (ft)	Depth to Groundwater (ft)	Groundwater Elevations[4] (ft)	Depth to Groundwater (ft)	Groundwater Elevations[4] (ft)		
3/6/00	2.15	4.28	3.63	4.10	3.85	2.64	N76W	0.0099

[1] Top of well casing elevation = 6.43.
[2] Top of well casing elevation = 7.73.
[3] Top of well casing elevation = 6.49.
[4] Elevations are in feet above mean sea level.
[5] Flow direction and gradient magnitude determined by three-point method.

TABLE 5
HUMAN HEALTH SCREENING
Pacific Dry Dock, Yard II
321 Embarcadero, Oakland, California

Chemical of Concern at Pacific Dry Dock Yard II	Soil (mg/kg)							Groundwater (mg/L)			
	Maximum Concentration		Screening/Action Levels					Maximum Concentration	Screening/Action Levels		
	ITSI[1]	March 2000[2]	Construction Workers[3]	Maintenance Workers[3]	Park User[4]	Indoor Worker[3]	PRG[5] Residential	March 2000[2]	Construction Worker[1]	Maintenance Worker[1]	Indoor Worker[1]
TPHd	2,800	710	7,900	17,000	1,000	--		0.24	--	--	--
TPHmo	3,100	51	--	--	--	--		0.25	--	--	--
Chlorobenzene	0.0061	NA	--	--	--	--	150	NA	--	--	--
1,4-dichlorobenzene	0.005	NA	--	--	--	--	3.4	NA	--	--	--
Benzene	ND	--	--	--	--	--	--	0.00067	11	13	4.2
Ethylbenzene	ND	--	--	--	--	--	--	0.0044	170	170	170
Acenaphthene	0.35	ND	--	--	--	--	3,700	0.015	--	--	--
Fluorene	0.47	ND	--	--	--	--	2,600	0.0058	--	--	--
Phenanthrene	3.8	ND	--	--	8,100	--		0.0065	--	--	--
Anthracene	1.1	ND	--	--	5.7	--		ND	--	--	--
Fluoranthene	6.4	0.9	--	--	27,000	--		ND	--	--	--
Pyrene	5.0	1.1	--	--	100	--		ND	--	--	--
Benzo(a)anthracene	3.1	0.55	--	--	3.9	--		ND	--	--	--
Chrysene	3.4	0.56	--	--	7.2	--		ND	--	--	--
Benzo(b,k)fluoranthene	4.9	1.19[6]	--	--	--	--	0.62/6.2[7]	ND	--	--	--
Benzo(a)pyrene	1.2	0.55	2.6	1.6	0.39	13		ND	0.00032	0.0002	0.0016
Indeno(1,2,3-cd)pyrene	0.43	0.98	--	--	3.9	--		ND	--	--	--
Dibenz(a,h)anthracene	0.41	0.4	--	--	--	--	0.062	ND	--	--	--
Benzo(g,h,i)perylene	ND	0.7	--	--	20,000	--		ND			
Naphthalene	ND	--	--	--	--	--		0.039	0.53	3.8	25
Total PAHs	30.56	6.93	92	92	44.8[8]	92		0.0663	0.82	0.82	0.82
Lead	52	13	--	--	840	--		ND	--	--	--
Cadmium	ND	ND	--	--	33	--		ND	--	--	--

(continued)

Table 5 - *continued*

Chemical of Concern at Pacific Dry Dock Yard II	Soil (mg/kg)							Groundwater (mg/L)			
	Maximum Concentration		Screening/Action Levels					Maximum Concentration	Screening/Action Levels		
	ITSI[1]	March 2000[2]	Construction Workers[3]	Maintenance Workers[3]	Park User[4]	Indoor Worker[3]	PRG[5] Residential	March 2000[2]	Construction Worker[1]	Maintenance Worker[1]	Indoor Worker[1]
Chromium (total)	41	65	--	--	91.4	--		ND	--	--	--
Nickel	36	60	--	--	345	--		ND	--	--	--
Zinc	130	180	--	--	1,140	--		ND	--	--	--

Source:

Notes: -- = No action level.
NA = Not analyzed.
ND = Not detected.

[1] ITSI Investigation, September 1998.
[2] BASELINE, March 2000.
[3] RWQCB Order No. 99-045, Tier 1, Table 4.
[4] RWQCB Order No. 98-072 for "Upland Soil All."
[5] 1999 PRG for residential soil; PRGs are listed only for constituents that do not have action levels in RWQCB Order No. 98-072.
[6] The result for benzo (b) fluoranthene was 0.87 mg/kg and for benzo (k) fluoranthene was 0.32 mg/kg.
[7] Value given for benzo (b) fluoranthene/benzo (k) fluoranthene
[8] RWQCB Order No. 98-072 for "upland soil buffer"; value for "Upland Soil All" not available.

TABLE 6

ECOLOGICAL HEALTH SCREENING

Pacific Dry Dock, Yard II

321 Embarcadero, Oakland, California

Chemical of Concern at Pacific Dry Dock Yard II	Groundwater Screening/Action Levels		
	Maximum Groundwater Concentration (mg/L)	SFIA, Tier 1 DAF = 0 (mg/L)[1]	Catellus, Non buffer (mg/L)[2]
TPHd	0.24	0.64	3 to 30[3]
TPHmo	0.25	--	--
Benzene	0.00067	0.071	5.1
Ethylbenzene	0.0044	0.086	0.43
Naphthalene	0.039	0.47	2.35
Acenaphthene	0.015	--	--
Fluorene	0.0058	--	--
Phenanthrene	0.0065	--	0.3
Total PAHs	0.0663	0.015	0.15

Notes: -- = Not available

1 SFRWQCB Order 99-045.
2 SFRWQCB Order 98-072.
3 Lower value represents concentration that caused no effects in 90 percent of studies identified in literature survey. Higher value represents no-effect concentration based on SFIA studies.

Soil data left out!

APPENDIX A

WORKPLAN AND ADDENDA

WORK PLAN
REMEDIATION OF
UST SITES
GF-11 AND GF-12

SEPTEMBER 1999

PACIFIC DRY DOCK YARD II
321 Embarcadero
Oakland, California

For:

Port of Oakland
Oakland, California

98379-09

5900 Hollis Street, Suite D • Emeryville, California 94608 • (510) 420-8686

BASELINE

ENVIRONMENTAL CONSULTING

7 September 1999
98379-09

Mr. Douglas Herman
Port of Oakland
EH & SC Department
530 Water Street, 2nd Floor
Oakland, CA 94607

Subject: Work Plan for Pacific Dry Dock Yard II, USTs GF-11 and GF-12, 321 Embarcadero, Oakland

Dear Mr. Herman:

At your request, we have prepared the following Work Plan for remediation activities at the Pacific Dry Dock Yard II site at 321 Embarcadero Oakland. It is our understanding that the Port will be submitting this proposed work plan to Mr. Barney Chan of Alameda County for review, comment, and approval. We will look forward to responding to any comments that the County may have on this work plan.

Sincerely,

Yane Nordhav
Reg. Geologist 4009
Principal

YN:km

98379-09-9/7/99

5900 Hollis Street, Suite D • Emeryville, CA 94608 • (510) 420-8686 • FAX: (510) 420-1707
Emeryville Petaluma San Francisco

WORK PLAN
REMEDIATION OF UST SITES
GF-11 AND GF-12

SEPTEMBER 1999

PACIFIC DRY DOCK YARD II
321 Embarcadero
Oakland, California

For:

Port of Oakland
Oakland, California

98379-09

BASELINE Environmental Consulting
5900 Hollis Street, Suite D Emeryville, California 94608
(510) 420-8686

TABLE OF CONTENTS

WORK PLAN FOR REMEDIATION OF UST SITES GF-11 AND GF-12
Pacific Dry Dock Yard II
321 Embarcadero, Oakland, California

INTRODUCTION

This document is a work plan for risk-based remediation of two areas impacted by underground storage tanks (UST) at the Pacific Dry Dock Yard II site at 321 Embarcadero in Oakland. This work plan replaces an 11 January 1999 work plan previously submitted by SCA Environmental on behalf of the Port of Oakland (Port) to Alameda County Health Care Services Agency, Environmental Health Services (County). The January 1999 work plan was approved by the County in a letter dated 27 July 1999.

BASELINE was requested by the Port to review and implement the January 1999 work plan approved by the County. Following review of the site history and site conditions, BASELINE recommended that the Port use a risk-based approach to site remediation. The Port subsequently met with the County on 12 August 1999 to discuss a risk-based approach to site remediation, which would supersede the approach approved by the County in July 1999. This work plan presents the Port's proposal for remediation at the two UST areas at 321 Embarcadero based on the discussions from the 12 August 1999 meeting. The remaining portion of the Pacific Dry Dock site has previously been characterized by Crowley Marine Services. It is our understanding that the County has issued a letter to Crowley Marine Services indicating that no further action is required for the remaining portions of the site to protect human health and the environment.

BACKGROUND

Two USTs were removed from the site (GF-11 and GF-12) in June 1998. A tank removal report, dated 3 September 1998, was submitted to the County and the City of Oakland on 11 September 1998 (ITSI, 1998). The tanks had capacities of about 5,000 gallons and were constructed of single-walled steel. The time of tank installations is unknown but is believed by Port staff to have been in the early 1940s, when the Navy occupied the site. At least one of the tanks (GF-11) was shown on a 1947 drawing as having an internal steam coil to heat the product to facilitate pumping (SCA, 1999).

At the time of tank removal, the tanks were inspected and did not have any holes through the walls. Piping was found to extend from the tanks to below adjacent foundation slabs. The piping between the tanks and about five feet from the slabs was removed and the remainder left in-place. The location and extent of piping below the foundation slabs are unknown.

After tank removal, two soil samples were collected from each UST excavation; one four-point composite soil sample was collected from the stockpiles of soil generated from each of the tank locations; and one soil/water sample was collected from each open excavation. Discolored soils

were present at UST GF-11 at a depth of about three feet below the ground surface and at about six feet below the ground surface at UST GF-12.[1] The excavated soils and concrete rubble were placed back into the excavations.

Discussion of Analytical Results

The soil and soil/water samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg), as diesel (TPHd), and as motor oil (TPHmo), oil and grease, benzene, toluene, ethylbenzene, and xylenes (BTEX), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), MTBE, cadmium, chromium, lead, nickel, and zinc.

The following compounds were not detected in any of the soils samples: BTEX, MTBE, and cadmium. The absence of BTEX and MTBE suggests that gasoline was not stored in the tanks.

TPH was quantified by the laboratory as gasoline, as diesel, and as motor oil for all soil samples. Review of the chromatograms (included in Appendix A) for the TPH analyses indicates that the petroleum contained in the soil samples is a mixture that is significantly "heavier" than gasoline, diesel, and motor oil. This would be consistent with the historic construction drawing of UST GF-11 that showed heating coils in the tank.[2] Polynuclear aromatic compounds (PAHs) were also quantified by the laboratory in all the soil samples. The relatively high concentrations of PAHs are associated with the late distillates, such as heavy fuel oils and/or Bunker C. Metals and chlorinated VOCs (up to 6.1 µg/kg of chlorobenzene) were detected in all the soil samples at relatively low concentrations.[3]

The two soil/water samples collected from the open excavation are not indicative of groundwater conditions at the site, since they contained soil particles mixed with the water. The analytical results would be significantly affected by any contaminants adhering to the soil particles and would therefore not represent dissolved concentrations in the groundwater. However, the analytical results are meaningful for those analytes that were not identified above the laboratory reporting limits. The following analytes were not reported above the laboratory reporting limit for the soil/water samples from either tank excavation: benzene and cadmium. The absence of benzene suggests that gasoline may not have been stored in the tanks during tank operations.

Site Conditions

The site is located in an area formerly part of the Oakland Estuary. It was filled at least by 1942 when the Navy operated the site as a ship repair and maintenance facility. Fill was observed in the tank excavations and extended at least seven feet below the ground surface. Along the shoreline,

---

[1] The summary tables of the analytical results are included in Appendix A to this work plan. Laboratory reports were included in the original report by ITSI (1998).

[2] Heating coils would be used to mobilize a viscous fuel, such as Bunker C, used in boilers.

[3] Chlorobenzene has been identified at the Yard II site in numerous locations and is likely unrelated to tank operations.

fill is generally underlain by fine-grained Bay Mud containing interfingering sand lenses. The Lake Merritt Channel is located about 40 feet northwest of UST GF-12 and the Oakland Inner Harbor is about 100 feet southeast of UST GF-11. Groundwater was found in the tank excavations at depths of about 6 to 7.5 feet below the ground surface at the time of tank removal (June 1998). Groundwater levels would be expected to vary with tidal fluctuations. Groundwater flow direction at the site was found to be toward the north-northwest in the spring of 1996 (Versar, 1996).

RISK-BASED REMEDIAL ACTION PLAN

This work plan proposes a risk-based remediation approach for the two UST areas. This risk-based approach considers both human health risks and ecological risks. Human health risk for both park users and construction/maintenance workers are addressed below. The Oakland Estuary Plan identifies the site as a future park. As described below, no further actions are needed for the protection of human health (future site users, construction/maintenance workers) at this site but additional data collection is proposed to evaluate whether the site could pose an ecological risk.

Human Health Risk

In addition to the U.S. EPA Region 9 Preliminary Remediation Goals (PRGs), significant work has been performed to assess human health risks from contaminated soils adjacent to the Bay in the past couple of years. This work has resulted in development of threshold values for specific site conditions and contaminants. The recently completed risk assessments applicable to the Pacific Dry Dock site include Regional Water Quality Control Board (RWQCB) orders 99-045 and 98-072.[4]

RWQCB Order No. 99-045

Order No. 99-045 pertains to risk-based remediation for the San Francisco International Airport (airport). The Order provides clean-up standards for the protection of human health and ecological receptors. The airport is generally covered by asphalt or concrete, which is underlain by fill with thicknesses varying from a few to about 35 feet in thickness; the fill is underlain by young Bay Mud; groundwater occurs at varying depths ranging from four to 16 feet, depending on the thickness of the fill. These conditions are similar to the conditions at the Pacific Dry Dock Yard II site. Since most of the airport site is covered by manmade surfaces, the human health protection standards apply to construction/maintenance workers and indoor workers. The clean-up standards are not applicable for park uses or residential uses.

The Human Health Protection Tier 1 Standards (Table 4 in Order No. 99-045) are summarized in Table 1 for those contaminants identified both at the airport and at the Pacific Dry Dock site for construction, maintenance, and indoor workers. Review of the data in the table reveals that the maximum on-site concentrations of total PAHs and TPH are below the thresholds for protection of human health for the potential receptors. It should be noted that the TPH standards at the airport are for diesel and motor oil and not heavier fuels, identified at the project site.

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[4] The City of Oakland has also developed risk-based clean-up goals; however, those are not directly applicable to this site because of the shallow depth to groundwater (i.e., less than ten feet below the ground surface).

RWQCB Order No. 98-072

Order No. 98-072 pertains to risk-based soil and groundwater remediation at the Catellus proposed Eastshore Park property in Berkeley, Albany, and Richmond. Action levels were developed for the protection of human health and ecological receptors. Specific action levels were developed for soil and groundwater in upland and upland buffer zones. The groundwater action levels were developed for the protection of aquatic ecological receptors. Soil action levels in Order No. 98-072 apply only to soils within the top two feet of the ground surface. The order does not provide action levels for deeper soils based on the rationale that future users and terrestrial ecological receptors would only be exposed to the shallow soils. Action levels for the upland soil buffer zone were developed to protect aquatic ecological receptors, and upland soil action levels were developed for the protection of both human and terrestrial ecological receptors.

The soil contamination associated with USTs GF-11 and GF-12 were observed to begin about three and six feet below the ground surface, respectively. The soil samples were collected at seven and eight feet below the ground surface. Even though the contamination was deeper than two feet, we compared the maximum concentrations found among the samples collected from the bottom of tank excavations to the upland soil action levels listed in Order No. 98-072 for the purpose of conducting an ultra-conservative human health screening. These action levels are the lower of the human health and ecological action levels. The human health action levels were adjusted PRGs for residential use; the adjustment of the PRGs took into account less frequent use of the site by a park user compared to a resident. The ecological receptor was a mouse chosen by the Oak Ridge National Laboratory, Department of Energy (DOE mouse).

Table 1 lists the action levels for upland soils from Order No. 98-072. Comparison of the action levels with the maximum on-site concentrations found at the UST locations shows that the on-site maximum concentrations of TPHd and benzo(a)pyrene exceed the Order No. 98-072 action levels. We do not believe that the exceedance of these action levels represents a human health risk, even by using these conservative action levels, for the following reasons:

- The exposure pathway for human health effects is incomplete. The maximum concentration of benzo(a)pyrene was found in the soil of sample collected from the UST GF-12 excavation. At this location, contaminated soil was identified during tank removal, as evidenced by visual observations, at a depth of six feet below the ground surface to the depth of the groundwater surface. The sample was collected at a depth of eight feet below ground surface. Future park users would not be exposed to soil at a depth of at least six feet and, therefore, would not be exposed to the maximum concentration of benzo(a)pyrene.

- The 1,000 mg/kg action level in Order No. 98-072 is based on toxicity to aquatic receptors and not human health; it is therefore not applicable in this evaluation of human health. Human health risks from petroleum is generally assessed by indicator species in the fuel, such as PAHs and BTEX.

Preliminary Remediation Goals

For some of the chemicals of concern identified at the Pacific Dry Dock site, the RWQCB orders do not provide action levels or standards. We have therefore used the U.S. EPA Region 9 PRGs to assess the possible health risks from residual contaminants at the site (Table 1).

Table 1 lists PRGs for residential soil. Comparison of the PRGs with maximum on-site concentrations shows that none of the on-site concentrations exceed PRGs, except benzo(a)pyrene and dibenz(a,h)anthracene. We do not believe that the benzo(a)pyrene and dibenz(a,h)anthracene exceedances of the residential PRG represent a human health risk for the following reasons:

- The exposure to future park users would be less than that assumed for developing the residential PRGs.

- The residential PRGs for benzo(a)pyrene and dibenz(a,h)anthracene are 0.056 mg/kg (Table 1). That level was determined based on not exceeding an excess cancer risk of 10^{-6}. The maximum benzo(a)pyrene concentration found at the UST excavation of 1.2 mg/kg represents a 2.1×10^{-5} excess cancer risk, which is within U.S. EPA Region 9's permissible cancer risk range of 10^{-6} to 10^{-4}. The maximum dibenz(a,h)anthracene concentration was 0.41, representing an excess cancer risk of 1.3×10^{-5}, also within permissible cancer risk range.

Conclusion

There are no adverse human health risks associated with the residual contamination at the Pacific Dry Dock site because:

- Maximum concentrations of chemicals of concern are below the RWQCB Order No. 99-045 for protection of maintenance, construction, and indoor workers.

- Maximum concentrations of chemicals of concern are either below RWQCB Order No. 98-072 action levels or within acceptable US EPA Region 9's permissible cancer risk range.

Therefore, no remediation is proposed for the protection of future park users or maintenance/construction workers at the site.

ECOLOGICAL RISKS

There are currently insufficient data to determine the ecological risks associated with the former UST operations. The USTs have not been in use at the site for possibly 19 years, since Pacific Dry Dock began leasing the property. Thus, releases from the tanks are likely to have occurred between tank installation in the mid-1940s to about 1980. Equilibrium between the petroleum released and the groundwater would be expected to have been established over the past 19+ years. The only complete pathway for potential ecological receptors is for the groundwater to discharge into the Estuary of Lake Merritt channel. Therefore, ecological risk can be best assessed by evaluating the groundwater quality prior to discharge.

Monitoring Well Installation and Groundwater Sampling

We propose to install three groundwater monitoring wells downgradient of the two former UST locations. The purpose of the wells would be to test the groundwater quality in the fill (above the Bay Mud) and compare the results with applicable surface water quality criteria. If surface water quality criteria were not exceeded, then we can conclude that the former UST locations are not affecting ecological receptors.

The proposed well locations are shown on Figure 1. A total of three wells would be installed using a hollow-stem auger drilling method after a permit has been obtained from Zone 7. The wells would extend through the artificial fill and terminate in the top of the Bay Mud. The maximum depth of the wells is not expected to be more than about ten feet below the ground surface. The wells would be constructed of two-inch PVC casings with 0.01-inch screens placed to intercept the groundwater table (to be determined in the field). The annulus between the screen and the borehole walls would be filled with clean 2/16 sand to two feet above the top of the screen, overlain by a two-foot bentonite seal, and followed by neat cementing to the ground surface. A traffic-rated Christy-box would be installed around the top of the well and a locked cap would be placed at the top of the casing. The wells would be developed until field parameters (temperature, electrical conductivity, and pH) had stabilized and the water turbidity reduced. The top of the casings would be surveyed relative to the Port datum by a licensed surveyor.

All well installation and sampling equipment would be decontaminated with steam on-site. The decontamination water and drill cuttings would be contained on-site for off-site disposal following receipt of analytical results.

The groundwater from each well would be sampled with a peristaltic pump with clean Teflon tubing without initial purging of the wells. Field measurements would be collected for electrical conductivity, pH, temperature, and turbidity. If product were present in the well(s), the thickness of the separate phase material would be measured, but the well water would not be sampled. The samples would be placed directly into the laboratory glassware, labeled, and kept in a cooled container. The samples would be analyzed for TPHd and TPHmo (EPA Method 8015M with silica gel cleanup and glass fiber filtering; duplicate samples would not be filtered); cadmium, chromium, lead, nickel, and zinc (EPA Method 7010, filtered samples in the laboratory); PAHs (EPA Method 8310); and halogenated and aromatic volatile organic compounds, including MTBE (EPA Method 8021B). The samples would be submitted to Curtis and Tompkins, Ltd., Analytical Laboratories in Berkeley on the day of sample collection for analysis.

Reporting

Four weeks following sample collection, a report would be submitted to the County. The report would document field methods and analytical results. Quarterly sampling for one year to provide data on seasonal variability may be recommended. If quarterly sampling indicates that ecological receptors were not affected, a risk management plan would be provided to manage on-site residual contamination to ensure that future users of the site would not be affected by residual contaminants

associated with the former underground tanks. Recommendations on future remediation would be provided, if the groundwater quality were to appear to potentially affect ecological receptors.

REFERENCES

ITSI, 1998, Tank Closure Report Port of Oakland Tank Numbers GF-11 and GF-12, Pacific Dry Dock (Crowley Yard II), 325 Embarcadero Street, Oakland, California, 3 September - Project No. 95-113.54.

SCA Environmental, Inc., 1999, Final Work Plan for Subsurface Investigation & Remediation, Two Underground Storage Tank Sites, Pacific Dry Dock Yard II, 321 Embarcadero, Port of Oakland, CALIFORNIA; 25 January 1999 - Project No.: F-3070.

Versar, 1996, Preliminary Investigation and Evaluation Report, Former Pacific Dry Dock and Repair Company Yard II Facility, Oakland, California, prepared for Crowley Marine Services; 20 March - Project No. 2463-108.

TABLE 1
HUMAN HEALTH SCREENING
PACIFIC DRY DOCK, YARD II

Chemical of Concern at Pacific Dry Dock Yard II	Maximum Concentration Soil (mg/kg)	Soil Thresholds (mg/kg)				
		Construction Workers[1]	Maintenance Workers[1]	Park User[2]	Indoor Worker[1]	PRG[3] Industrial
TPHd	2,800	7,900	17,000	1,000	--	
TPHmo	3,100	8,500	15,000	--	--	
Chlorobenzene	6.1	--	--	--	--	54
1,4-dichlorobenzene	5.0	--	--	--	--	3.0
Acenaphthene	0.35	--	--	--	--	2,600
Fluorene	0.47	--	--	--	--	1,800
Phenanthene	3.8	--	--	8,100	--	
Anthracene	1.1	--	--	5.7	--	
Fluoranthene	6.4	--	--	27,000	--	
Pyrene	5.0	--	--	100	--	
Benzo(a)anthracene	3.1	--	--	3.9	--	
Chrysene	3.4	--	--	7.2	--	
Benzo(b,k)fluoranthene	4.9	--	--	--	--	
Benzo(a)pyrene	1.2	2.6	1.6	0.39	13	0.056
Indeno(1,2,3-cd)pyrene	0.43	--	--	3.9	--	
Dibenz(a,h)anthracene	0.41	--	--	--	--	0.056
Benzo(g,h,i)perylene	ND	--	--	20,000	--	
Total PAHs	30.56	92	92	44.8[4]	92	
Lead	52	--	--	840	--	
Cadmium	ND	--	--	33	--	
Chromium (total)	41	--	--	91.4	--	
Nickel	36	--	--	345	--	
Zinc	130	--	--	1,140	--	

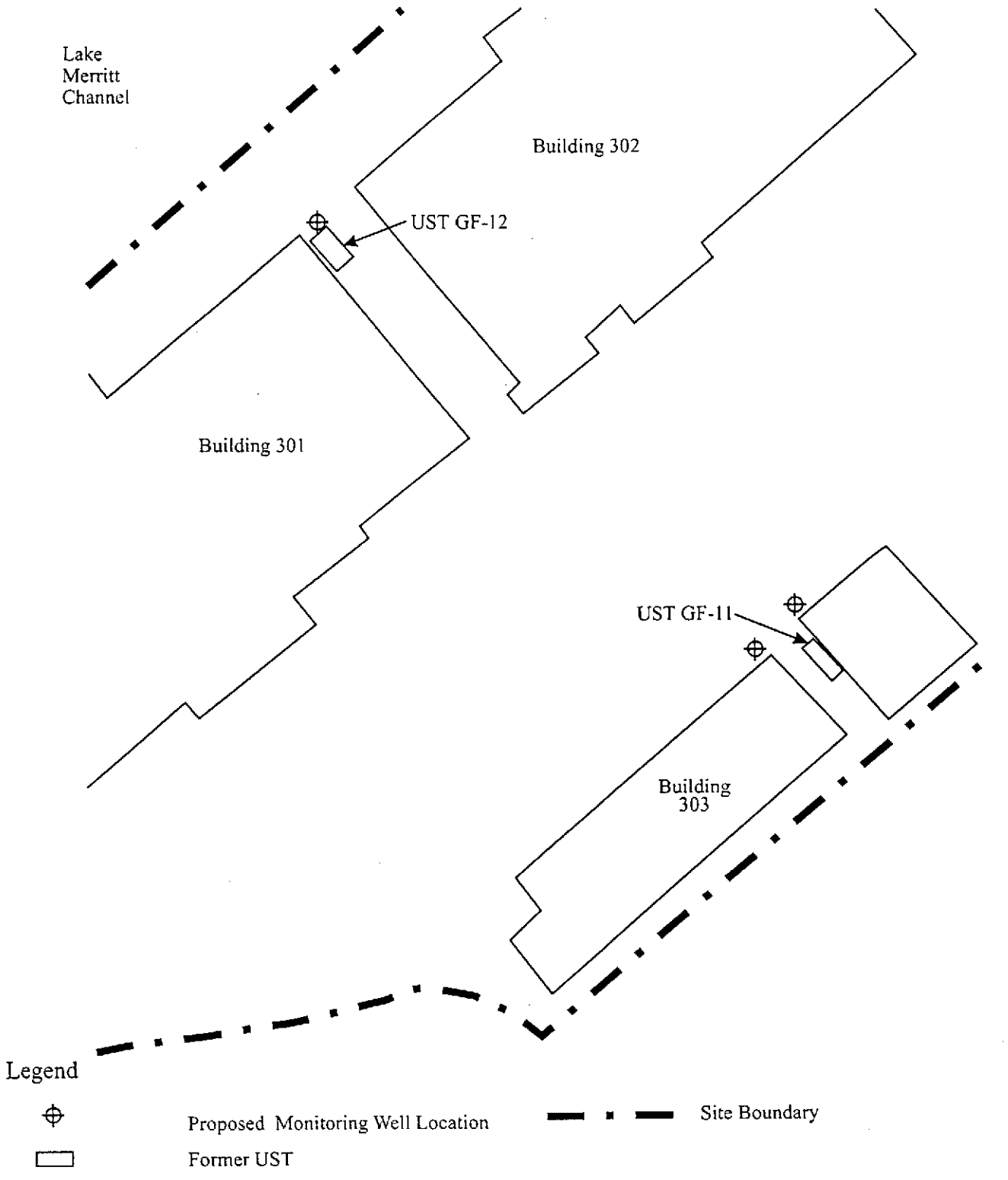
Source:

Notes: -- = No action level.
ND= Not detected.

[1] RWQCB Order No. 99-045, Tier 1, Table 4.
[2] RWQCB Order No. 98-072 for "upland soils all."
[3] PRG for residential soil; PRGs are listed only for constituents that do not have action levels in RWQCB Order No. 98-072.
[4] RWQCB Order No. 98-072 - for "upland soil buffer"; "value for upland soil all" not available.

PROPOSED MONITORING WELL LOCATIONS

Figure 1



Pacific Dry Dock Yard II
321 Embarcadero
Oakland, California

Approximate
0 50 Feet

BASELINE

D:\Graphics\98379-09\PMWL.cdr 8/25/99

APPENDIX A

SUMMARY TABLES FOR ANALYTICAL RESULTS AND CHROMATOGRAMS

Table 1

Laboratory Results for Petroleum Hydrocarbons In Soil and Groundwater
GF-11 and GF-12 Tank Removals
Pacific Dry Dock (Crowley Yard II)
325 Embarcadero Street
Oakland, California

Sample I.D.	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	O & G (mg/kg)
SOIL SAMPLES (in mg/kg)									
S-A-7'-N	8.9[1,3]	<5	<5	<5	<10	<20	2,800[1]	3,100[1,2]	650
S-A-7'-S	7.6[1,3]	<5	<5	<5	<10	<20	300[1]	590[1,2]	130
S-B-8'-N	<1	<5	<5	<5	<10	<20	270[1,3]	1,400[1,2]	230
S-B-8'-S	14[1,3]	<5	<5	<5	<10	<20	640[1]	740[1,2]	430
S-SP1-A,B,C,D	7.1[1,3]	<5	<5	<5	<10	<20	620[1,3]	1,900[1,2]	470
S-SP2-A,B,C,D	1.1[1,3]	<5	<5	<5	<10	<20	240[1]	910[1,2]	180
GROUNDWATER SAMPLES (in µg/L)									
W-TP-A	1,000[1,3]	<0.5	<0.5	1.3	0.5	3.8	91,000[1,3]	-	<5,000
W-TP-B	1,000[1,3]	<0.5	<0.5	<0.5	<0.5	<2	34,000[1]	-	56,000

[1]Heavier hydrocarbons than indicated standard.
[2]Lighter hydrocarbons than indicated standard.
[3]Sample exhibits fuel pattern which does not resemble standard.

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Table 2

Laboratory Results for HVOCs and SVOCs In Soil And Groundwater
GF-11 and GF-12 Tank Removals
Pacific Dry Dock (Crowley Yard II)
325 Embarcadero Street
Oakland, California

Compound	SOIL SAMPLES						GROUNDWATER SAMPLES	
	S-A-7'-N	S-A-7'-S	S-B-8'-N	S-B-8'-S	S-SP1-A,B,C,D	S-SP2-A,B,C,D	W-TP-A	W-TP-B
HALOGENATED VOLATILE ORGANIC COMPOUNDS (HVOCs) (in µg/kg)								
Chlorobenzene	<5	6.1	<5	<5	<5	<5	32	<1
1,4-Dichlorobenzene	<5	5.0	<5	<5	<5	<5	8.9	<1
1,2-Dichlorobenzene	<5	<5	<5	<5	<5	<5	5.5	<1
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) (in µg/kg)								
Acenaphthene	210	<330	350	<670	<670	<670	<240	<47
Fluorene	240	<330	470	<670	<670	<670	<240	<47
Phenanthrene	1,300	<330	3,800	1,000	470	<670	150	<47
Anthracene	380	<330	1,100	<670	<670	<670	130	<47
Fluoranthene	1,600	190	6,400	2,400	2,700	460	1,400	90
Pyrene	1,700	320	5,000	2,400	3,400	540	1,700	150
Benzo(a)anthracene	770	<330	3,100	1,400	1,900	<670	930	59
Chrysene	920	<330	3,400	1,600	2,300	380	880	38
Benzo(b,k)fluoranthene	1,200	290	4,900	2,600	3,700	680	1,600	<47
Benzo(a)pyrene	540	<330	1,200	900	1,200	<670	760	51
Indeno(1,2,3-cd)pyrene	<330	<330	430	<670	410	<670	250	<47
Dibenzo(a,h)anthracene	<330	<330	410	<670	<670	<670	<240	<47
Benzo(g,h,i)perylene	<330	<330	<670	<670	<670	<670	260	<47

8.86 - 0.8 30.56 8.3 16.08 8.06

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Table 3

Laboratory Results for Metals In Soil and Groundwater
GF-11 and GF-12 Tank Removals
Pacific Dry Dock (Crowley Yard II)
325 Embarcadero Street
Oakland, California

Sample I.D.	Cadmium	Chromium	Lead	Nickel	Zinc
SOIL SAMPLES (in mg/kg)					
S-A-7'-N	<0.097	41	24	36	82
S-A-7'-S	<0.096	24	5.4	17	110
S-B-8'-N	<0.095	26	19	24	93
S-B-8'-S	<0.094	19	33	20	110
S-SP1-A,B,C,D	<0.099	18	11	17	89
S-SP2-A,B,C,D	<0.095	31	52	23	130
GROUNDWATER SAMPLES (in µg/L)					
W-TP-A	<5	570	350	510	2,400
W-TP-B	<5	68	140	54	420

GC19 TVH 'X' Data File (FID)

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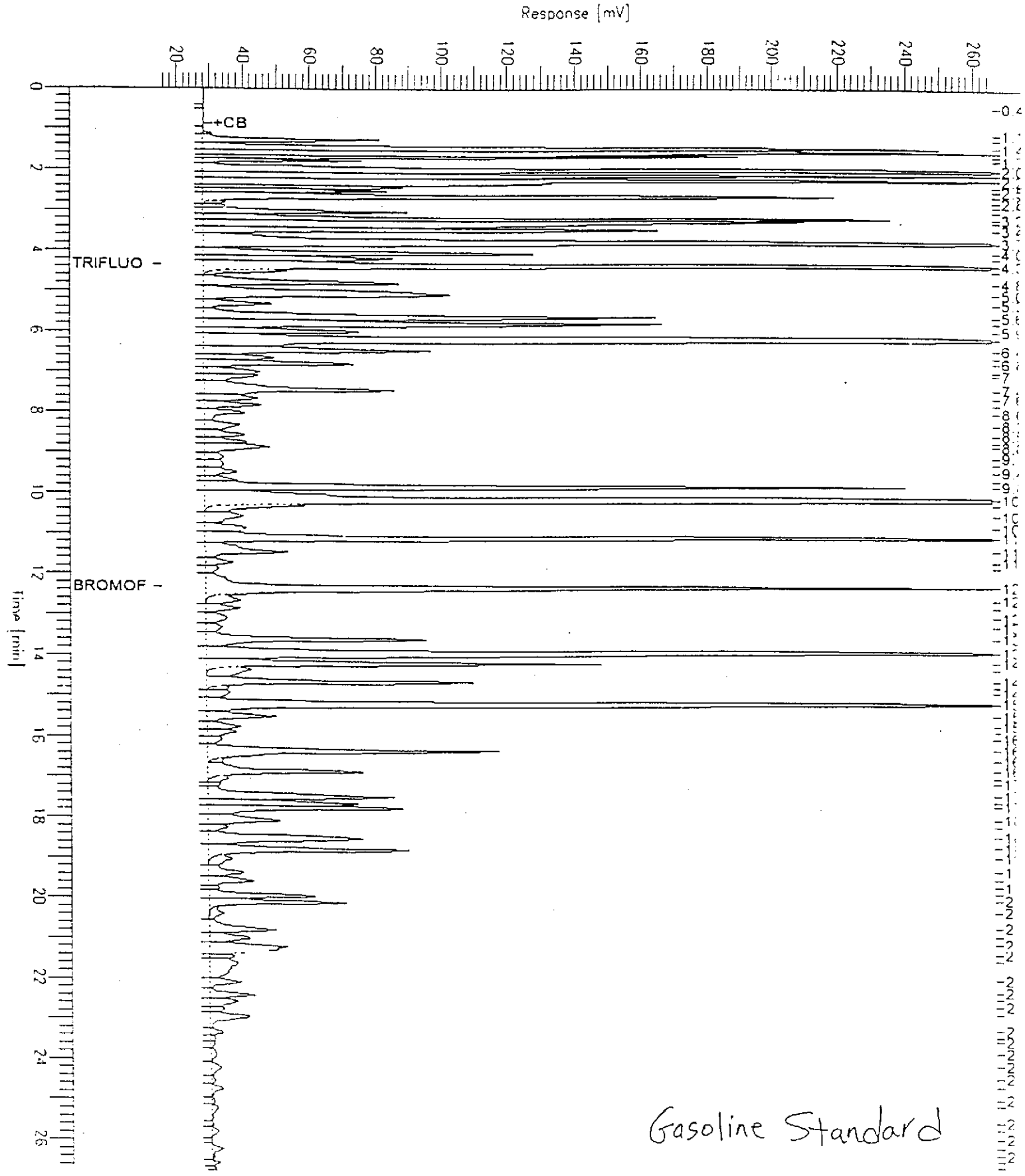
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: -1.0 Plot Offset: 16 mV

Sample #: GAS Page 1 of 1
Date : 7/10/98 09:38 AM
Time of Injection: 7/10/98 09:11 AM
Low Point : 15.60 mV High Point : 265.60 mV
Plot Scale: 250.0 mV

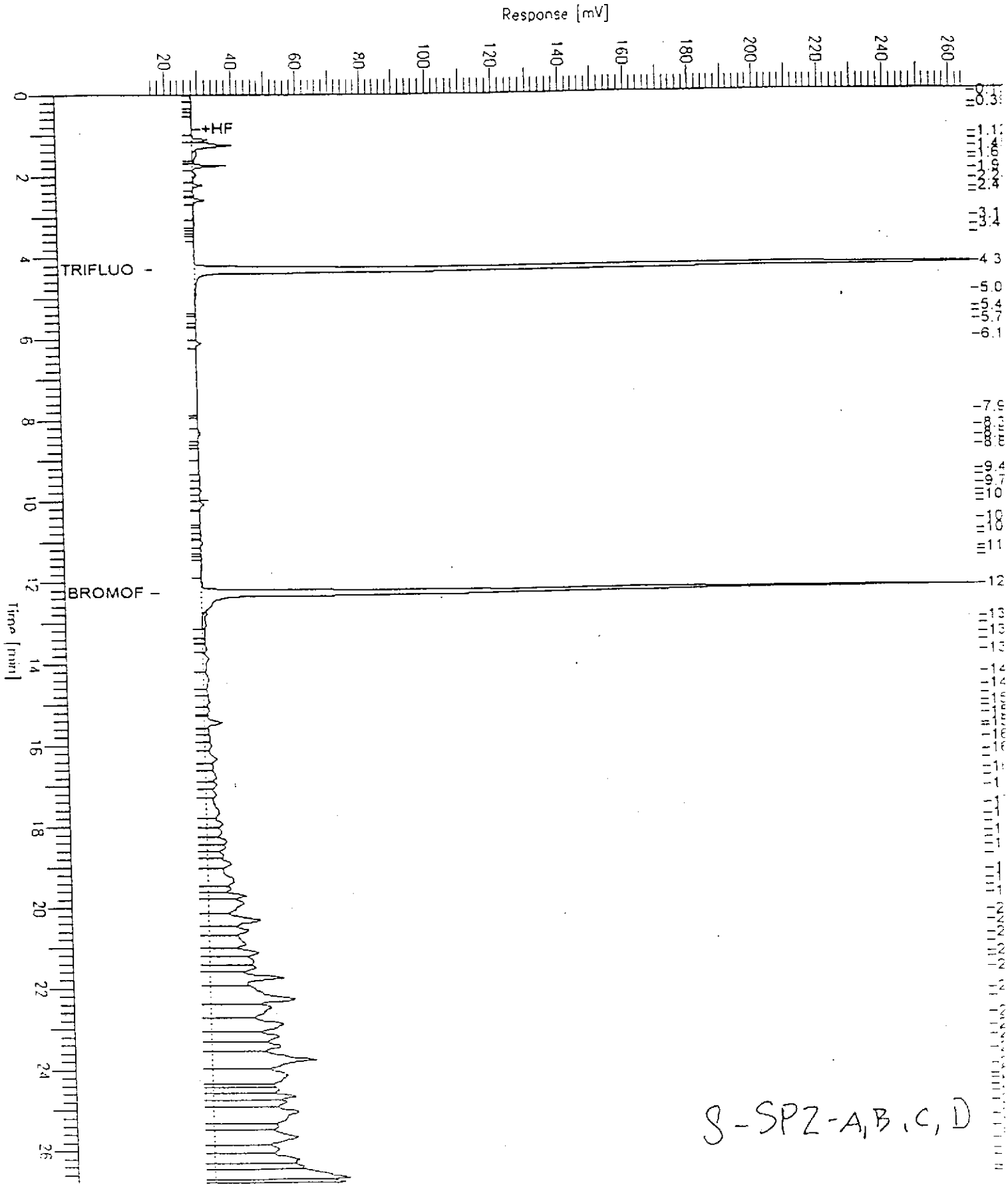


Gasoline Standard

GC19 TVH 'X' Data File (FID)

ample Name : 7.111353-117,41926
FileName : H:\GC19 BAK\DATA\191X032.raw
Method : TVHBTXE
Start Time : 1.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 15 mV

Sample #:
Date : 7/13/98 12:31 PM
Time of Injection: 7/11/98 10:30 AM
Low Point : 15.39 mV High Point : 265.39 mV
Plot Scale: 250.0 mV



S-SPZ-A,B,C,D

GC19 TVH 'X' Data File (FID)

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Scale Factor: 1.0 Plot Offset: 15 mV

Sample #:
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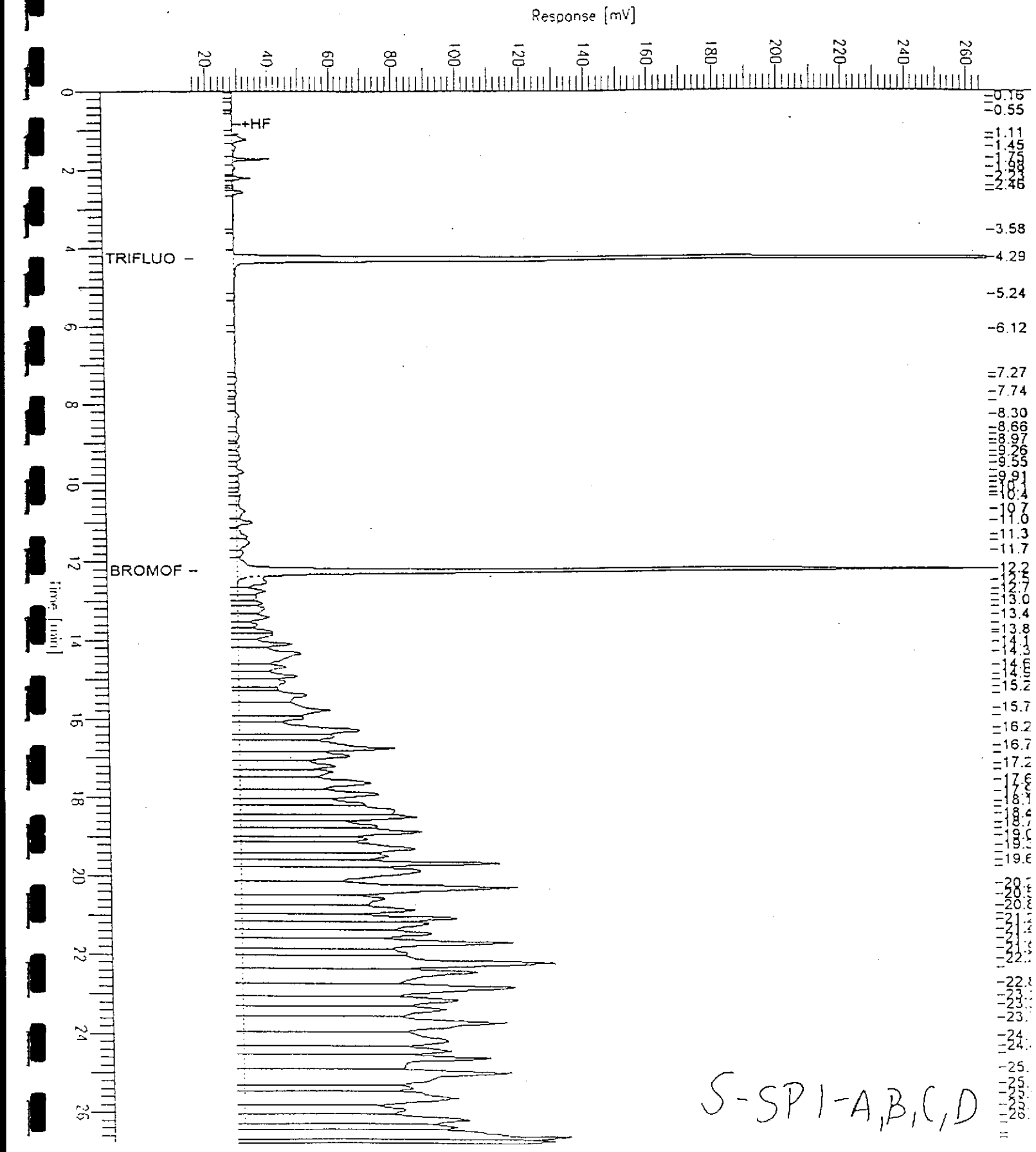
Time of Injection: 7/11/98 01:08 PM
Low Point : 15.82 mV High Point : 265.82 mV
Plot Scale: 250.0 mV



S-SP1-A,B,C,D

GC19 TVH 'X' Data File (FID)

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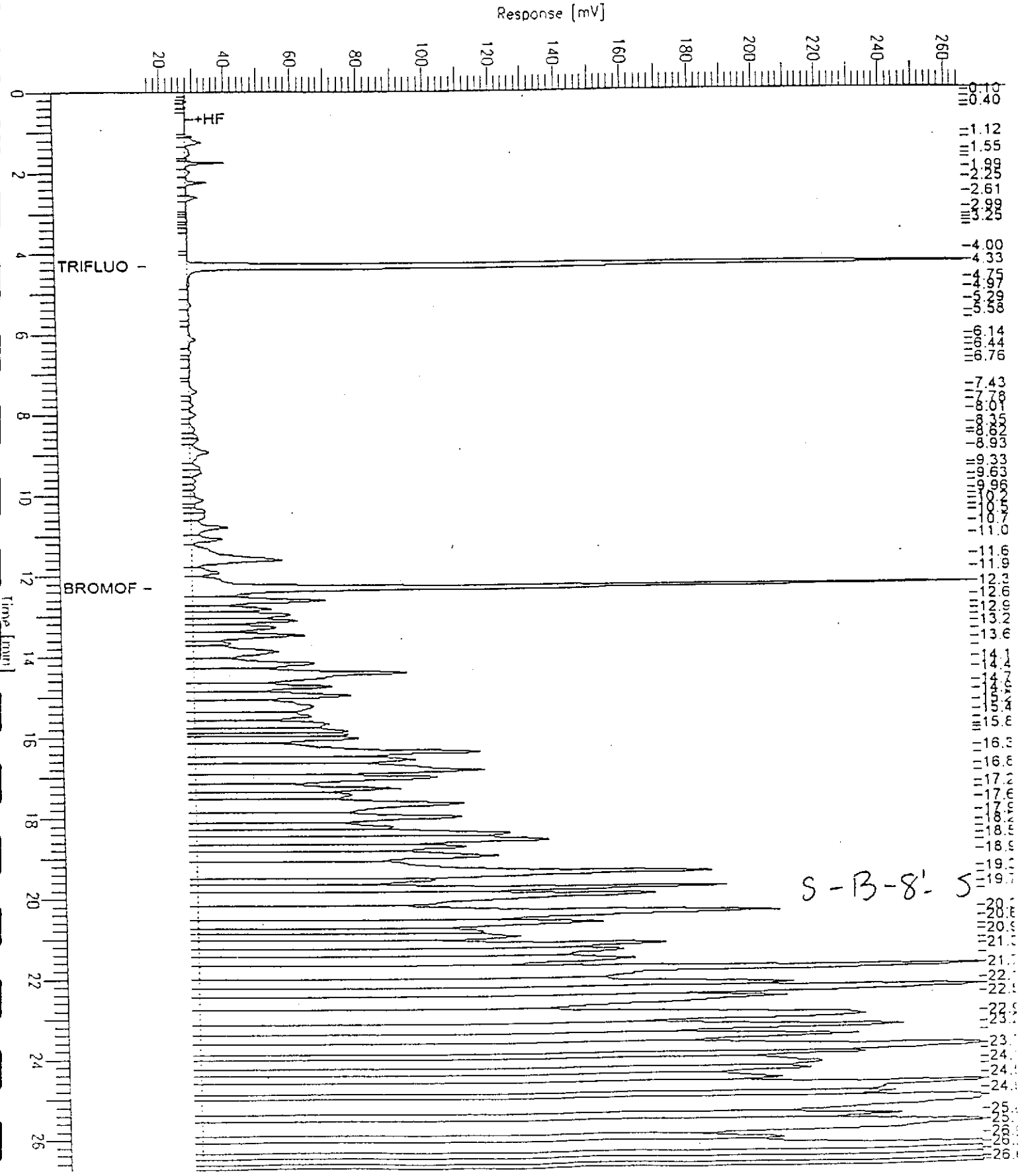
cale Factor: -1.0 Plot Offset: 15 mV

Sample #:
Date : 7/13/98 12:21 PM
Time of Injection: 7/11/98 06:33 AM
Low Point : 14.97 mV High Point : 161.97 mV
Plot Scale: 250.0 mV



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tart Time : .00 min End Time : 26.80 min
ple Factor : 1.0 Plot Offset: 15 mV

Sample #:
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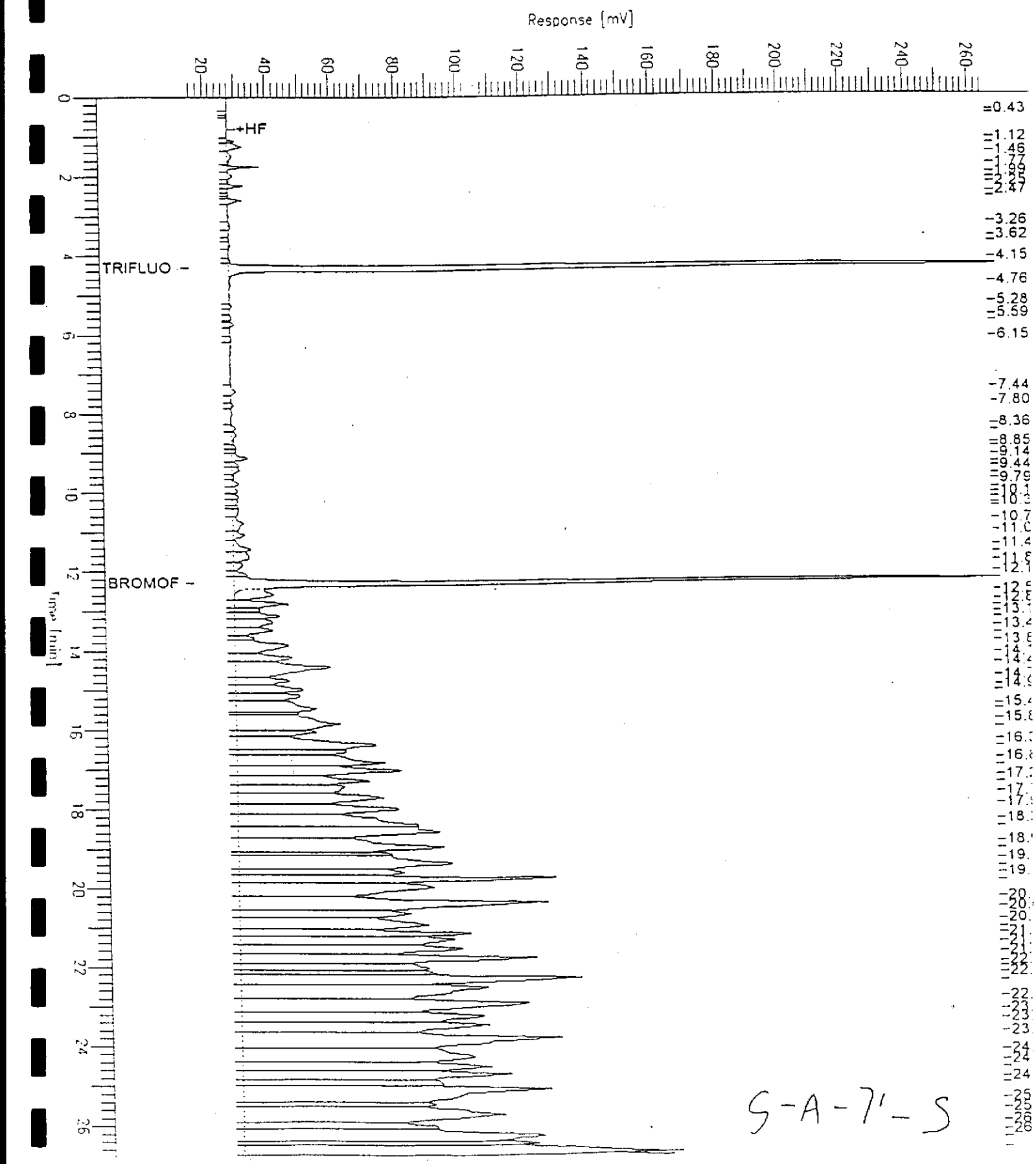
Time of Injection: 7/11/98 0:13 AM
Low Point : 15.17 mV High Point : 265.17 mV
Plot Scale: 250.0 mV



S-A-7-S

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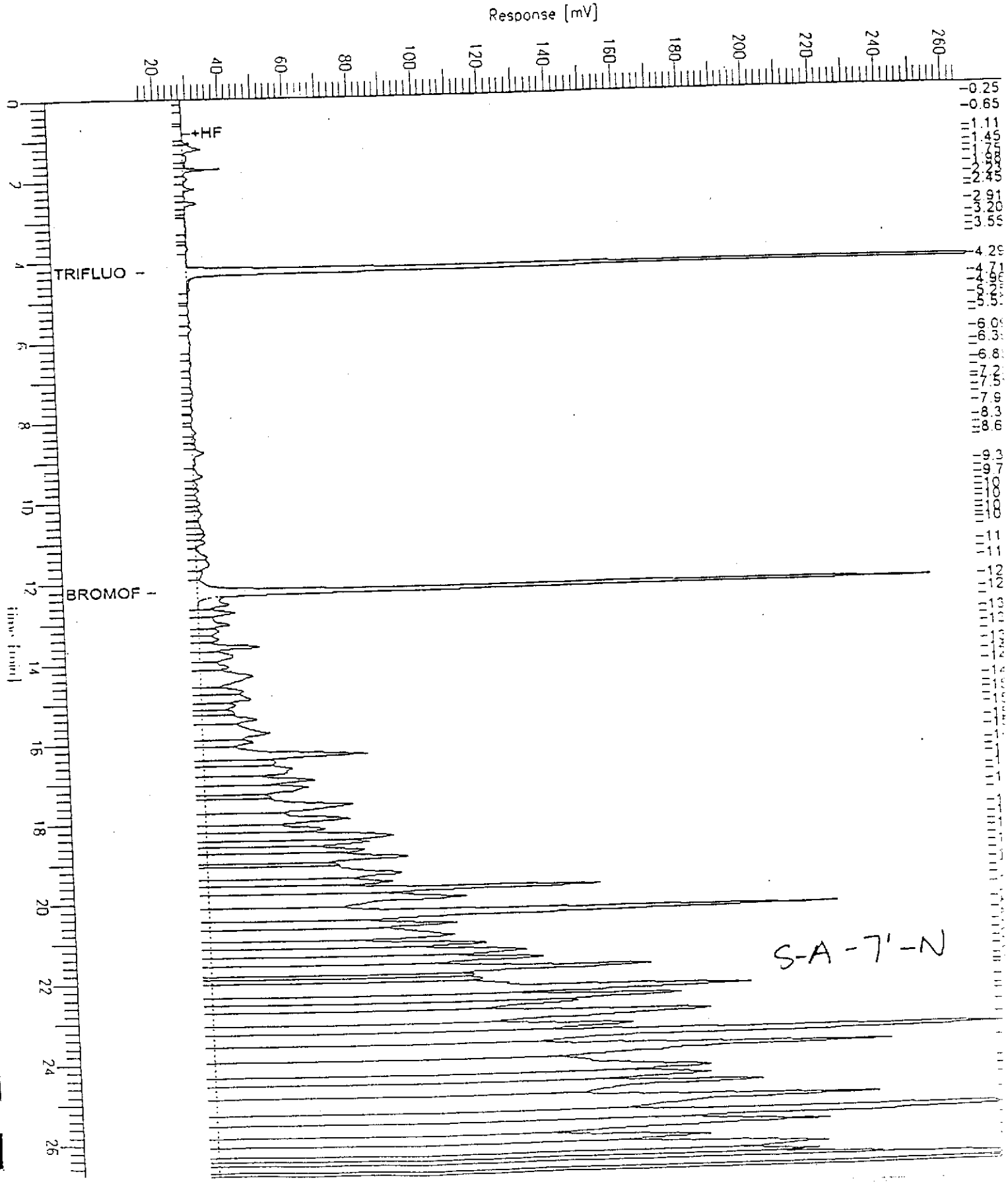
Low Point : 15.92 mV High Point : 265.92 mV
Plot Scale: 250.0 mV



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Method : TVHBTXE
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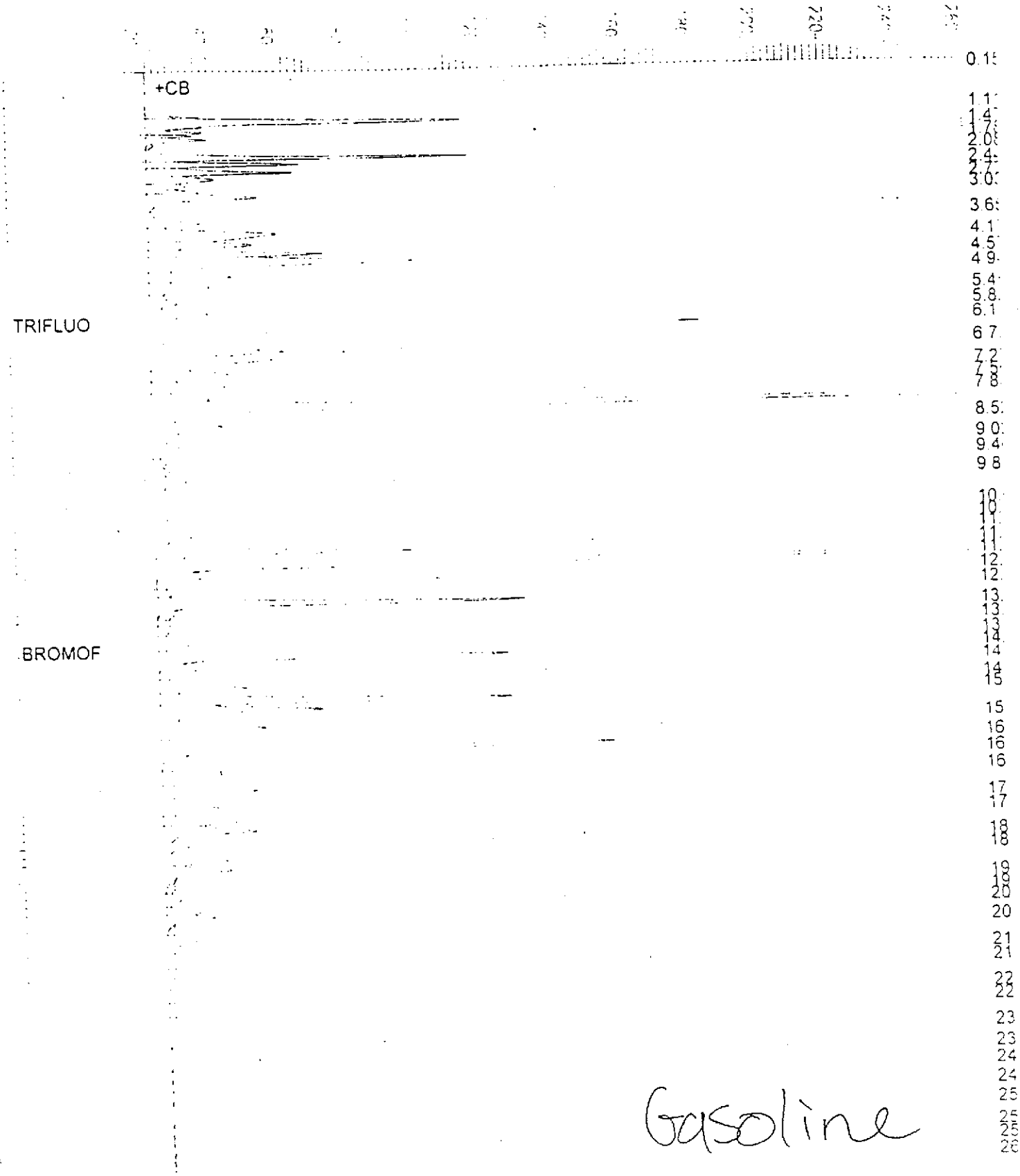

Gasoline

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Sample #: Page 1 of 1
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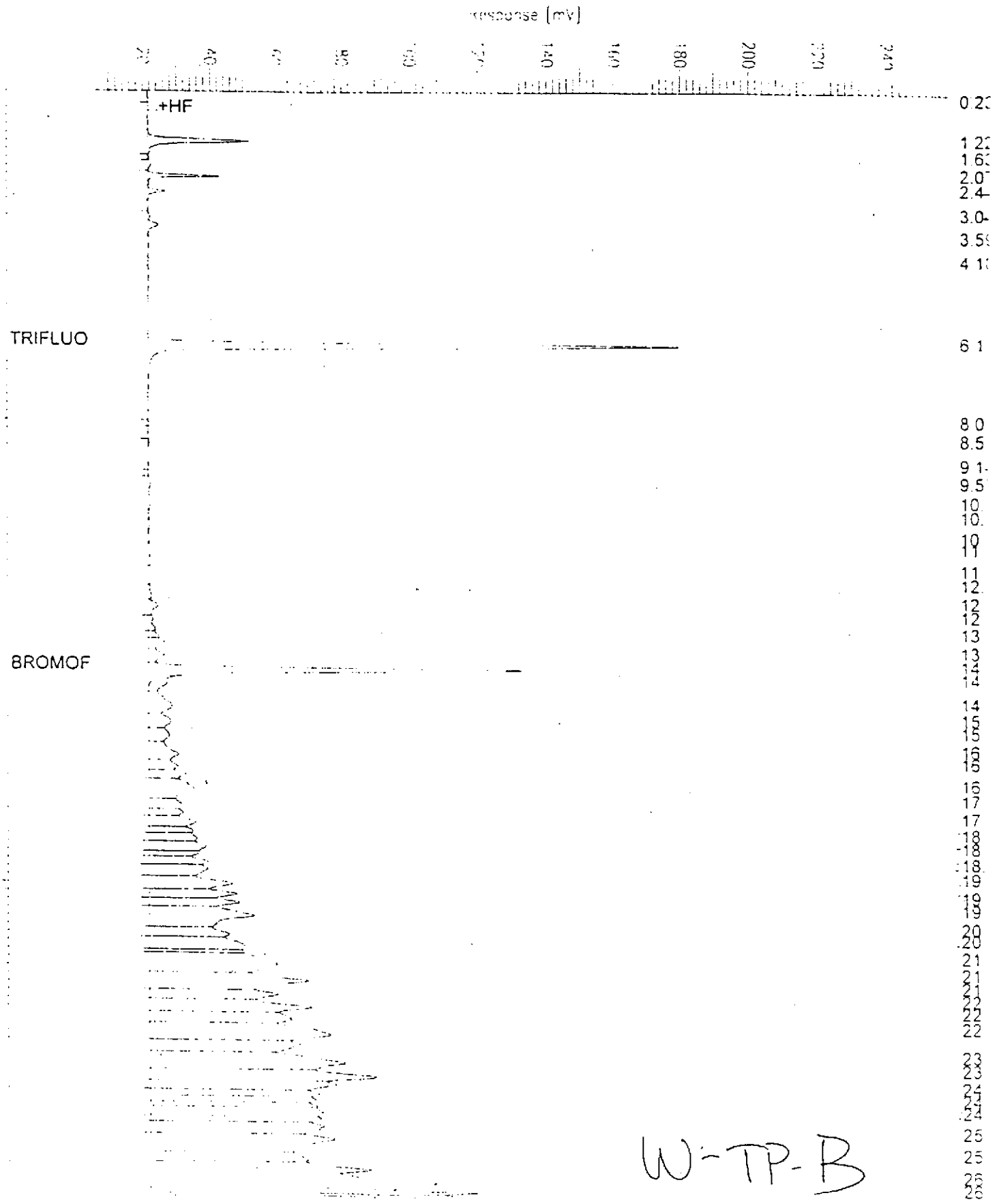
Low Point : 8.98 mV High Point : 258.98 mV
Plot Scale: 250.0 mV



W-TP-B

GC05 'H' File TVH

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FileName : G:\GC05\DATA\189G011.RAW
Method :
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 9 mV

Sample #: Page 1 of 1
Date : 7/9/98 01:28 PM
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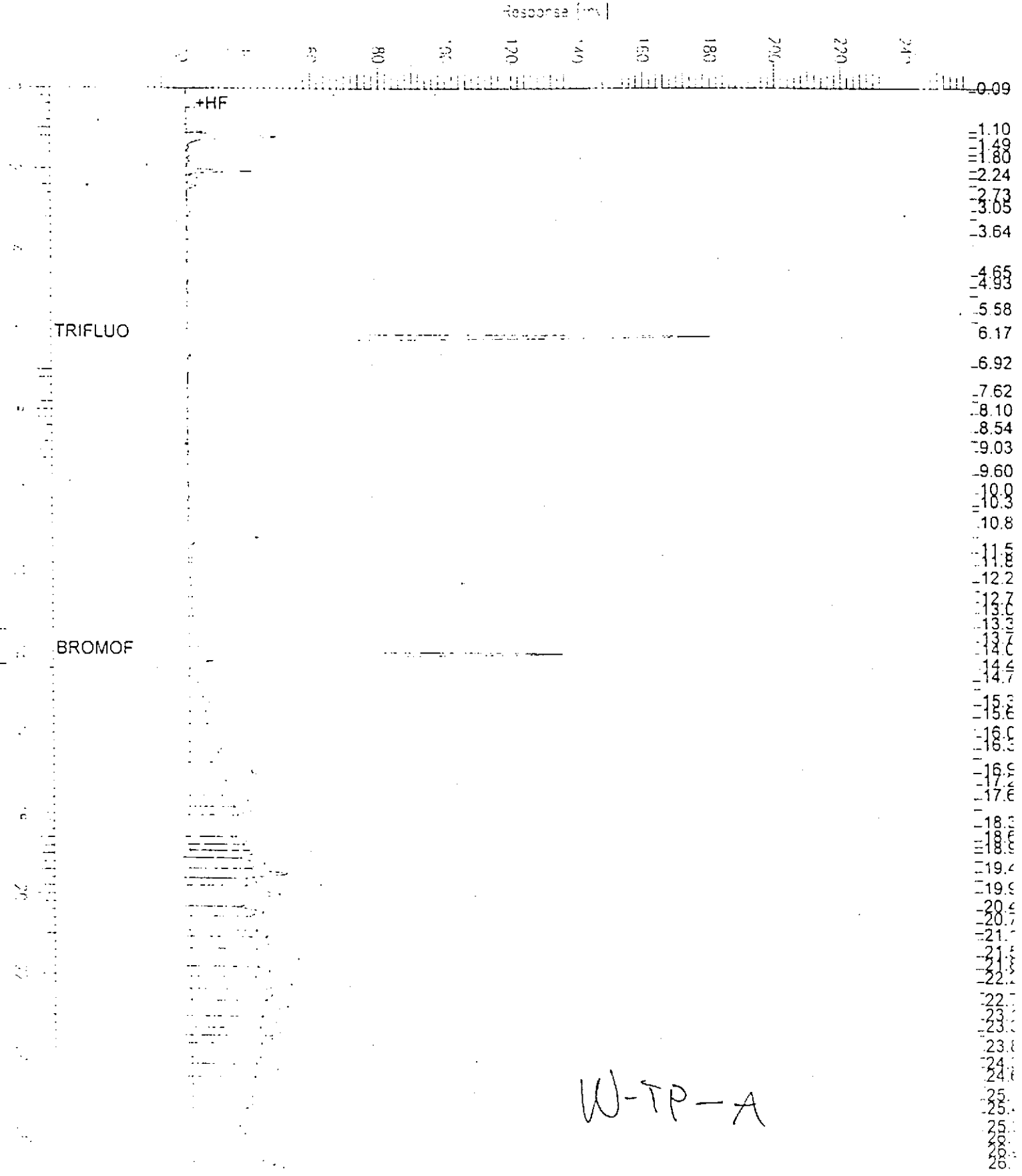
Low Point : 8.91 mV High Point : 258.91 mV
Plot Scale: 250.0 mV



W-TP-A

GC15 Channel B TEH

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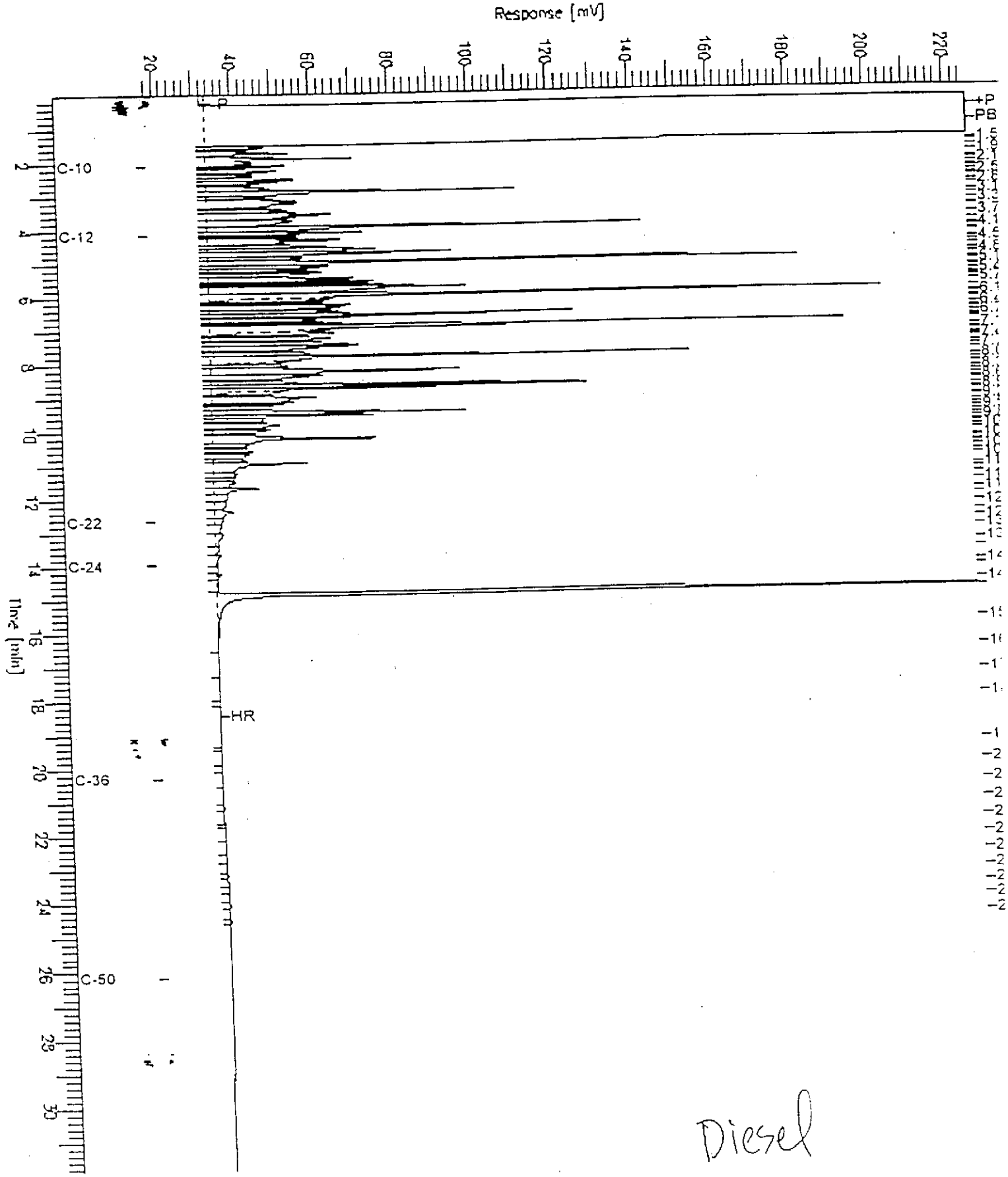
Method : B190TEH.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 18 mV

Sample I: 500MG/L
Date : 7/9/98 03:27 PM
Time of Injection: 7/9/98 12:26 PM
Low Point : 17.83 mV High Point : 225.66 mV
Plot Scale: 207.8 mV



Diesel

GC15 Channel B TEH

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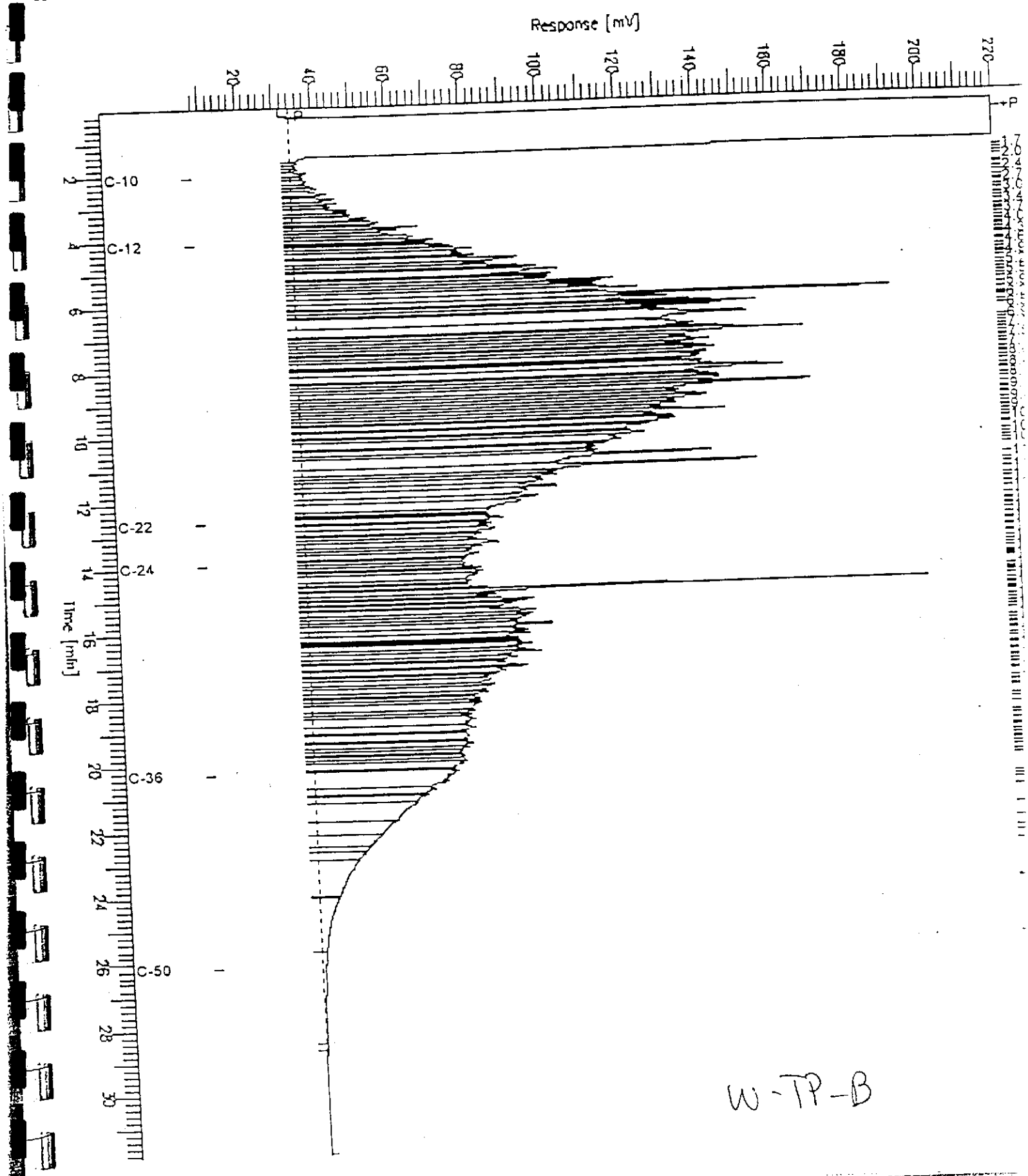
FileName : C:\GC15\CHB\1898066.RAW
Method : S180TEH.MTH
Start Time : 0.01 min
Scale Factor: 0.0

End Time : 31.91 min
Plot Offset: 8 mV

Sample #: 41865
Date : 7/13/98 10:47 AM
Time of Injection: 7/10/98 27:54 PM
Low Point : 7.52 mV
High Point : 220.25 mV
Plot Scale: 212.7 mV



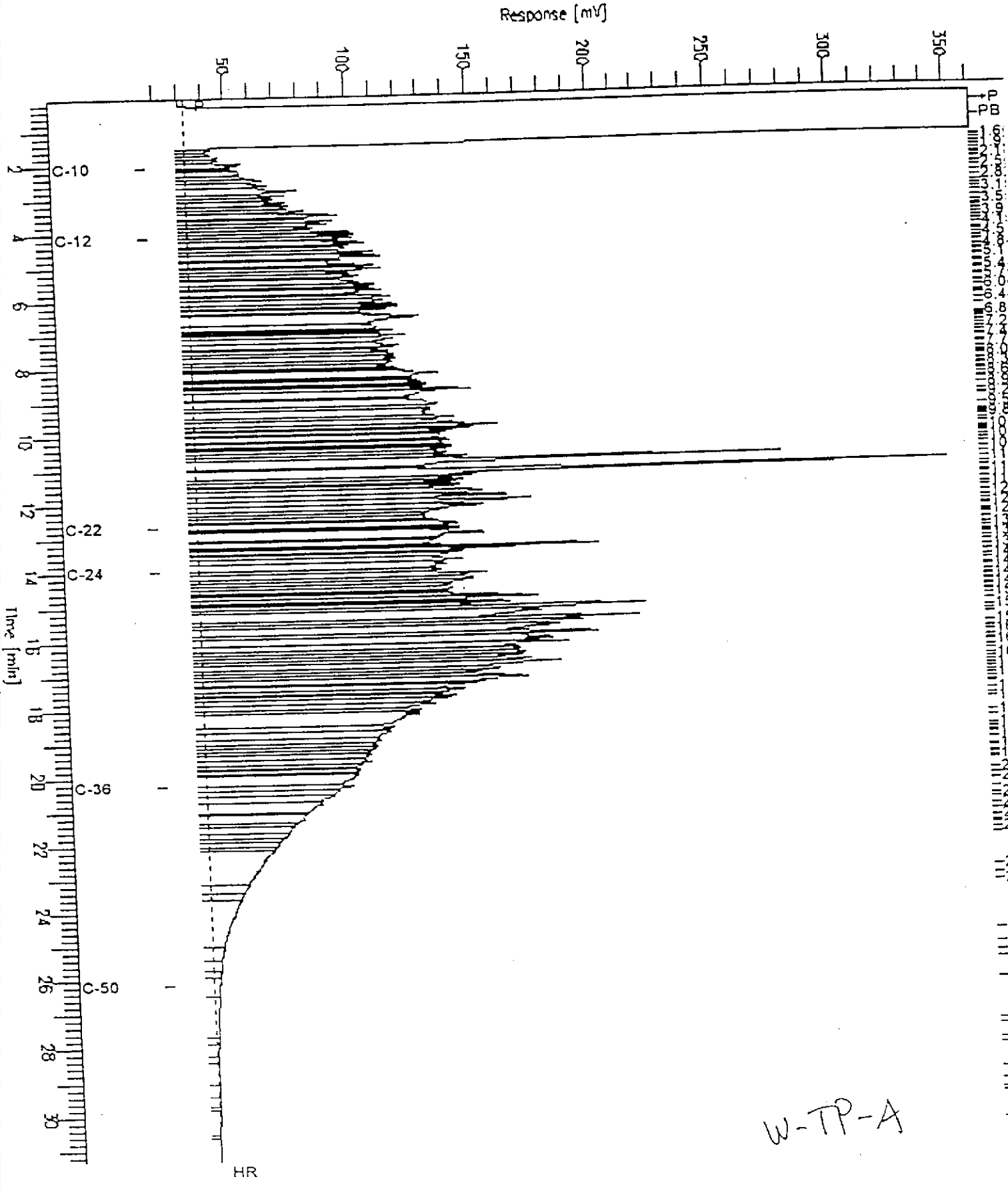
W-TP-B

GC15 Channel B TEH

ple Name : 134353-008,41865
FileName : C:\GC15\CHB\1898065.RAW
Method : B180TEH.MTH
Start Time : 0.07 min
Scale Factor: 0.0

End Time : 31.91 min
Plot Offset: 16 mV

Sample #: 41865
Date : 7/13/98 10:37 AM
Time of Injection: 7/10/98 07:11 PM
Low Point : 16.43 mV
High Point : 361.70 mV
Plot Scale: 345.3 mV

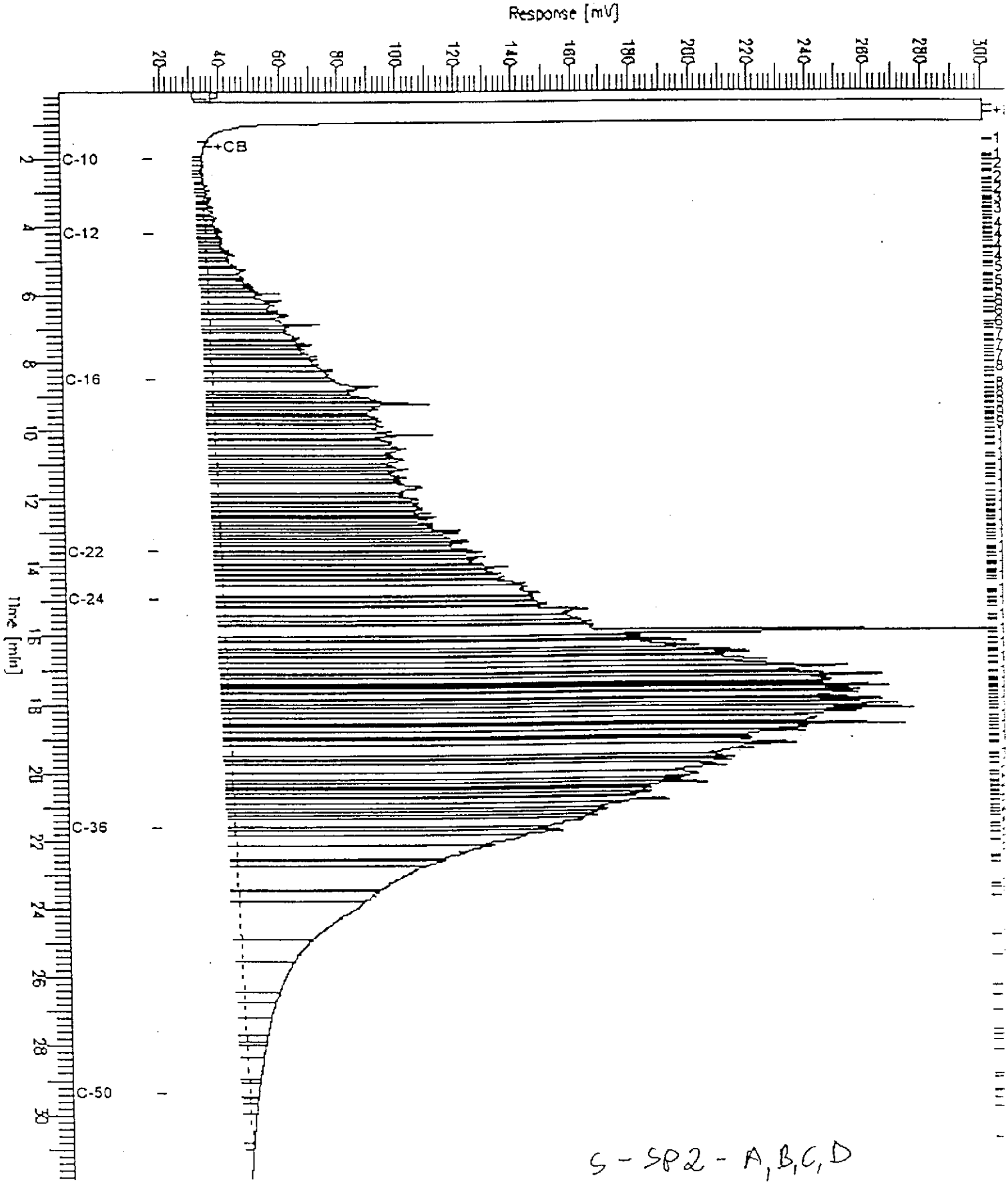


W-TP-A

Chromatogram

Sample Name : 124353-007,41975
FileName : D:\GC11\CHA\195A074.RAW
Method : ATEH180.MTH
Start Time : 0.07 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 17 mV

Sample #: 41975 Page 1 of 1
Date : 7/17/98 12:30 PM
Time of Injection: 7/16/98 11:33 PM
Low Point : 16.91 mV High Point : 300.64 mV
Plot Scale: 283.7 mV



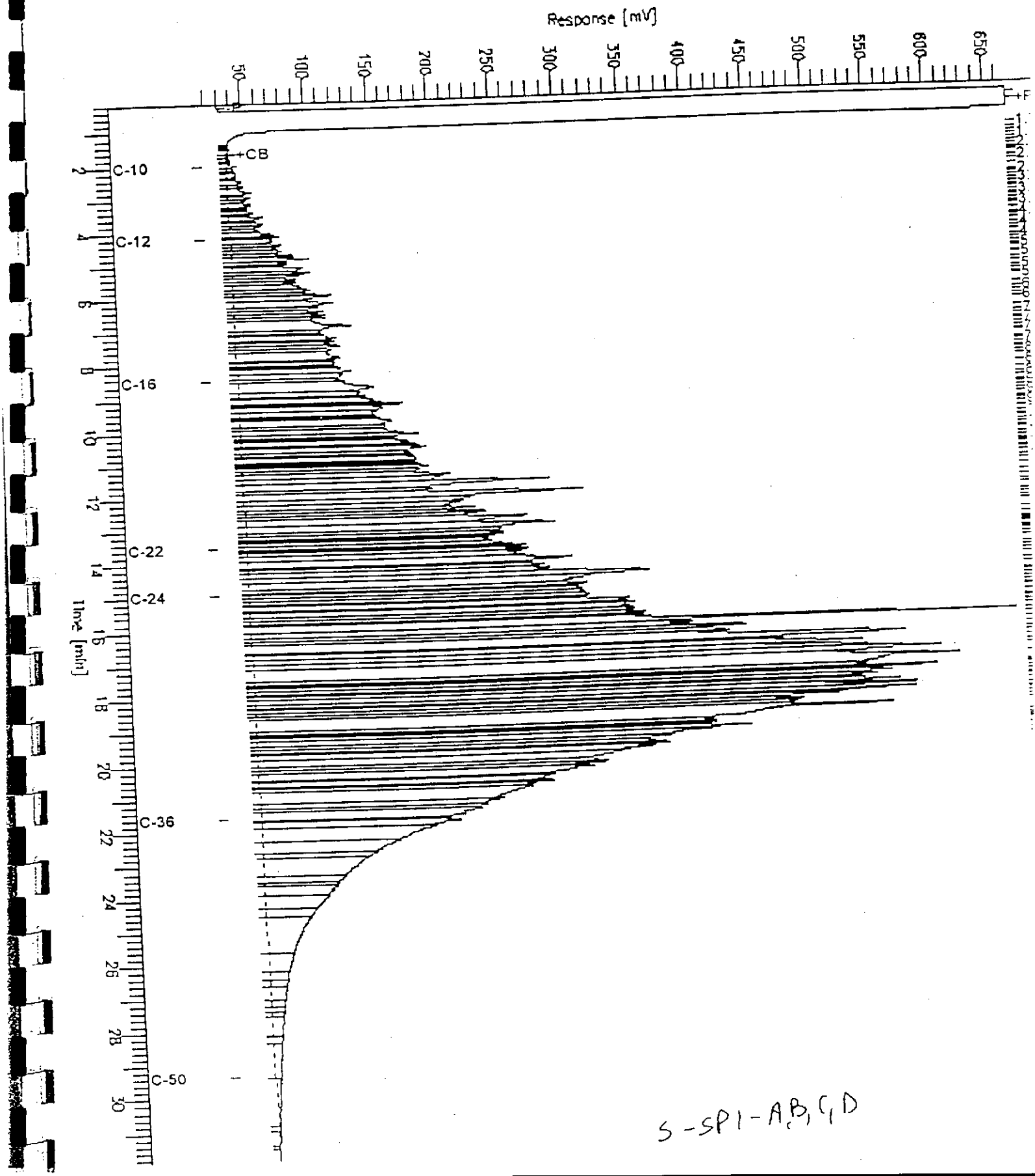
S - SP2 - A, B, C, D

Chromatogram

Sample Name : 134353-006,41975
FileName : D:\GC11\CHA\195A073.RAW
Method : ATEH180.MTH
Start Time : 0.17 min
Scale Factor: 0.0

End Time : 31.91 min
Plot Offset: 17 mV

Sample #: 41975
Date : 7/17/98 12:29 PM
Time of Injection: 7/16/98 10:52 PM
Low Point : 16.76 mV
High Point : 669.26 mV
Plot Scale: 652.5 mV

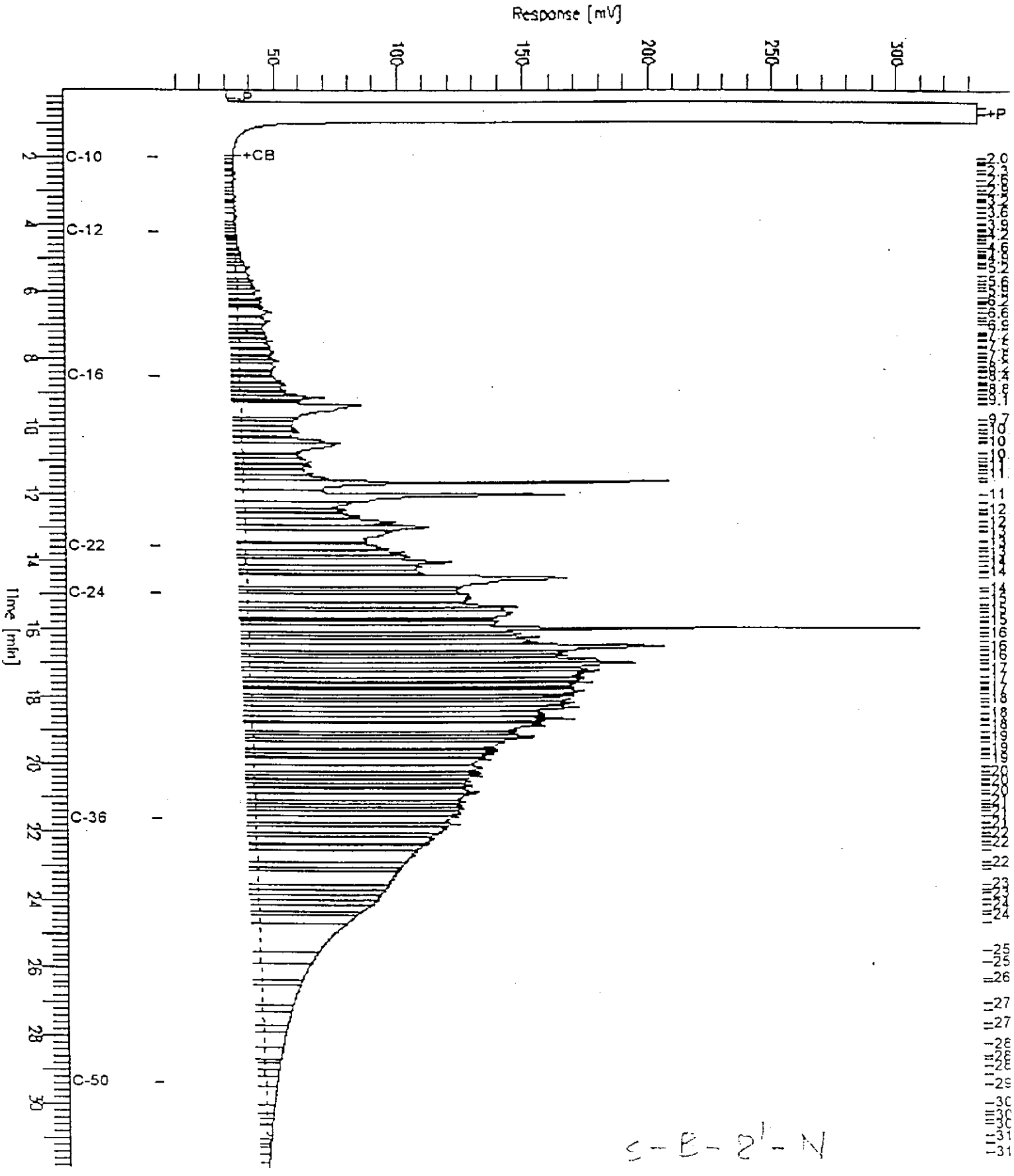


S-SP1-A,B,C,D

Chromatogram

Sample Name : 134353-005,41975
FileName : D:\GC11\CHA\195A072.RAW
Method : ATEH180.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 3 mV

Sample #: 41975 Page 1 of 1
Date : 7/17/98 12:28 PM
Time of Injection: 7/16/98 10:12 PM
Low Point : 2.51 mV High Point : 333.59 mV
Plot Scale: 331.1 mV



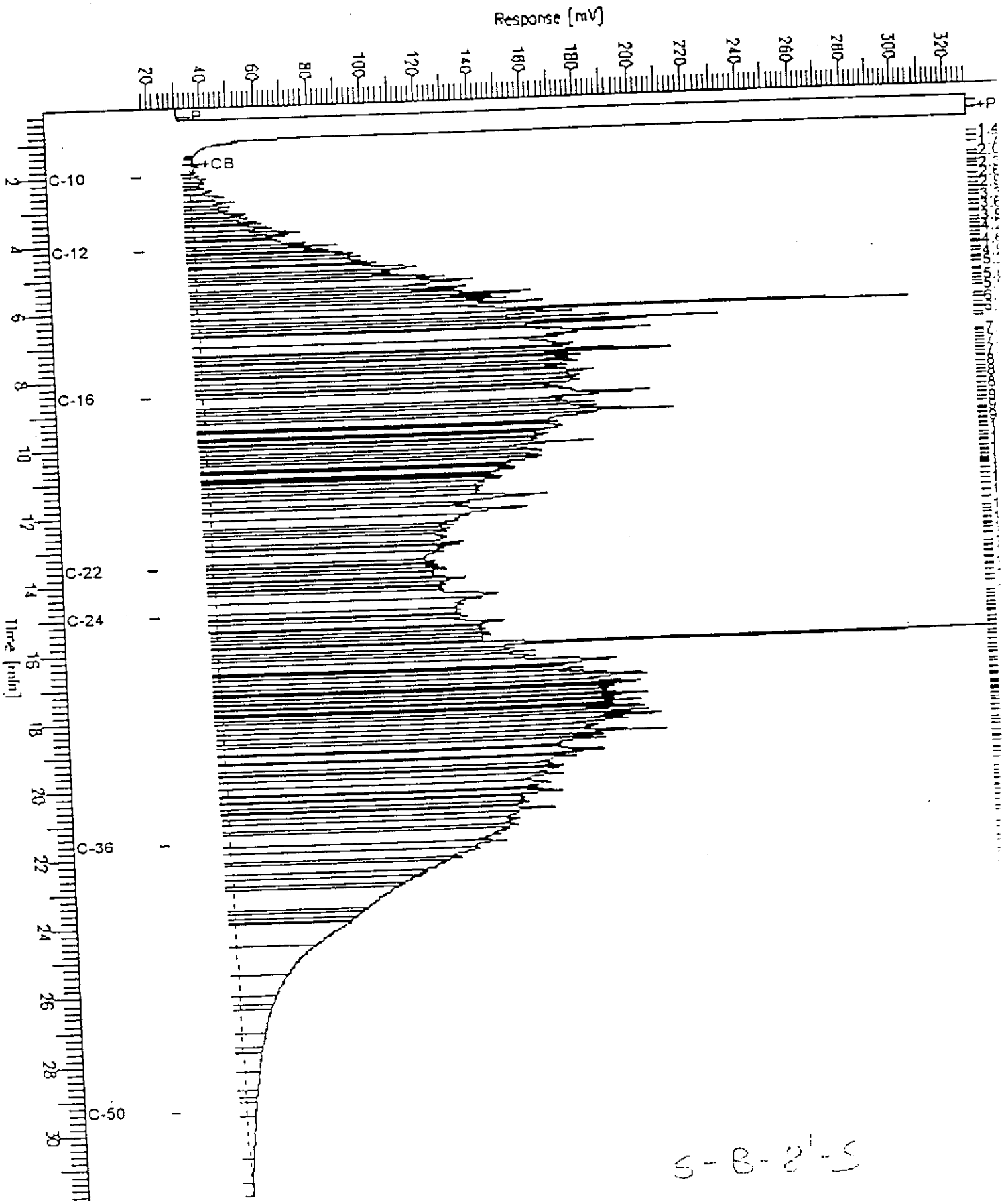
S-E-2'-N

Chromatogram

Sample Name : 134353-004,41975
FileName : D:\GC11\CHA\19SA011.RAW
Method : ATEH180.MTH
Start Time : 0.01 min
Scale Factor: 0.0

End Time : 31.91 min
Plot Offset: 16 mV

Sample #: 41975
Date : 7/17/98 12:26 PM
Time of Injection: 7/16/98 09:31 PM
Low Point : 16.40 mV
High Point : 328.54 mV
Plot Scale: 312.1 mV

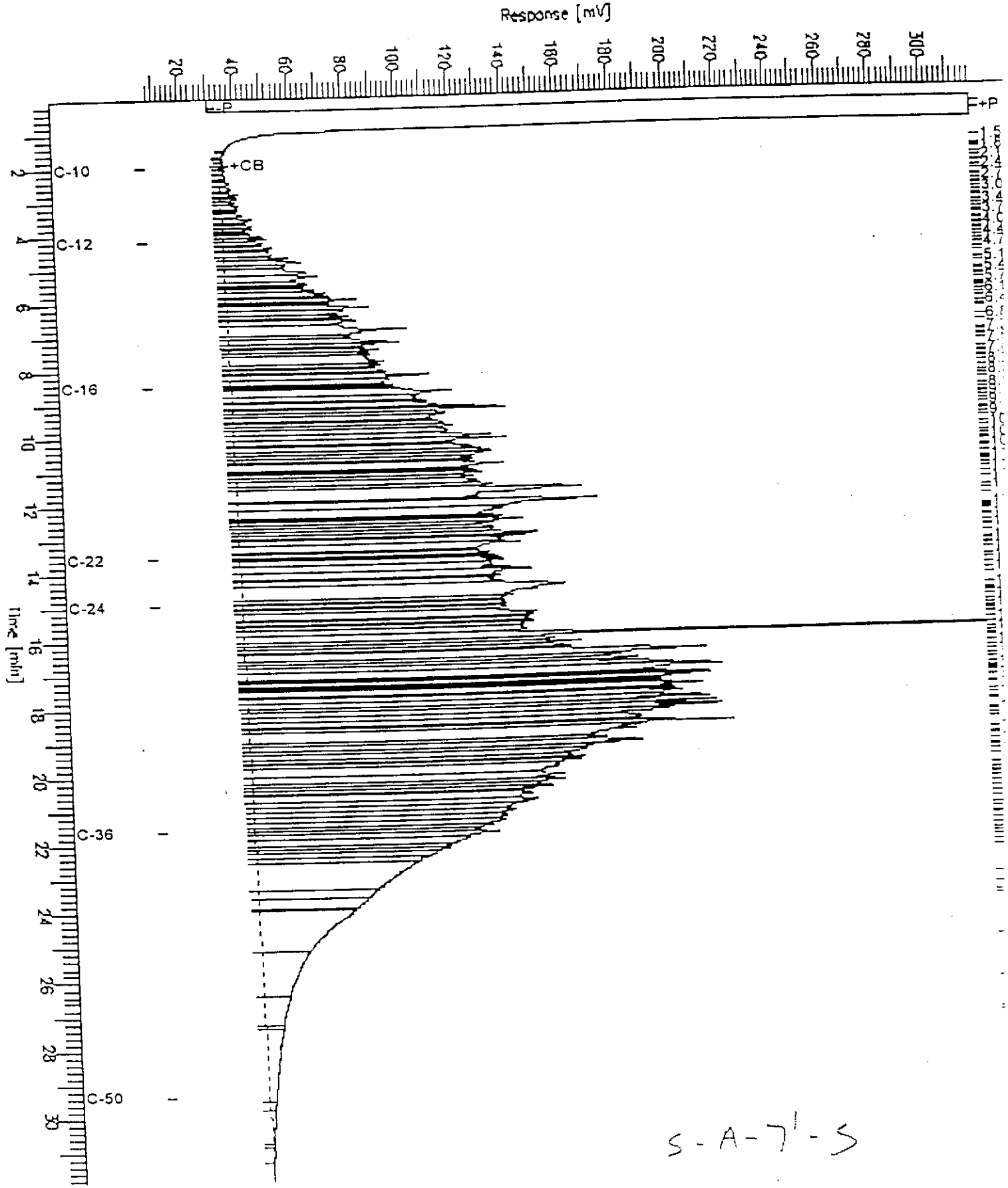


S-B-21-S

Chromatogram

Sample Name : 134353-003,41975
FileName : D:\GC11\CHA\195A070.RAW
Method : ATEH180.MTH
Start Time : 0.01 min
Scale Factor: 2.0
End Time : 31.91 min
Plot Offset: 7 mV

Sample #: 41975
Date : 7/17/98 12:24 PM
Time of Injection: 7/16/98 08:51 PM
Low Point : 6.62 mV
Plot Scale: 312.3 mV
High Point : 319.92 mV

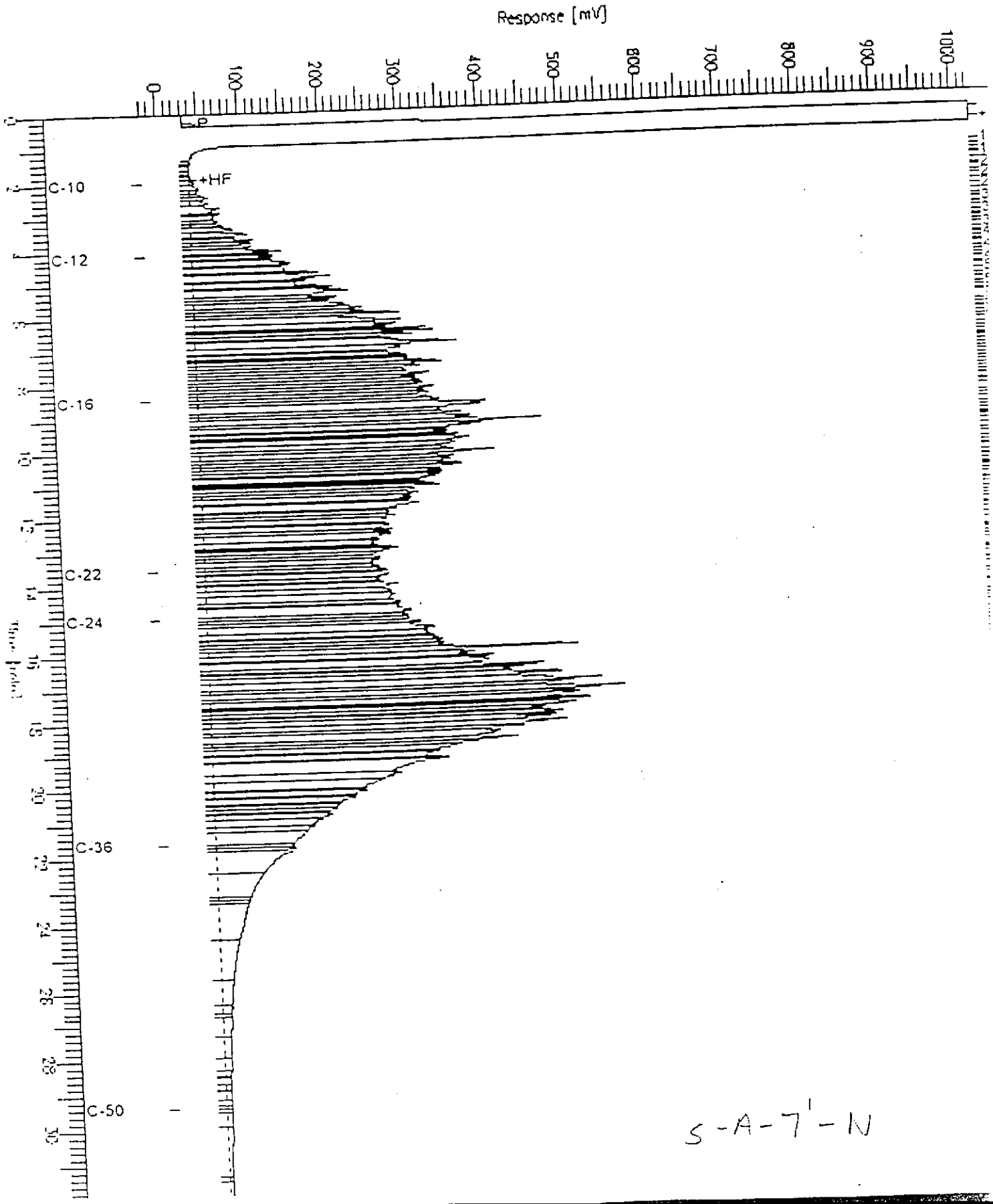


S-A-7'-5

Chromatogram

Sample #: 41975
Date : 7/20/98 02:16 PM
Time of Injection: 7/18/98 06:43 PM
Low Point : -20.05 mV
High Point : 1024.00 mV
Plot Scale: 1044.0 mV

[illegible]353-002.41975
[illegible]GC11\CHA\198A033.RAW
[illegible]AT&H180.MTH
[illegible].00 min
[illegible].0
End Time : 31.90 min
Plot Offset: -23 mV



S-A-7'-N

98379-C

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

September 16, 1999
StID # 1222

Mr. Douglas Herman
Port of Oakland
530 Water St., 2nd Floor
Oakland CA 94607

Re: Work Plan for Pacific Dry Dock Yard II, USTs GF-11 and GF-12, 321 Embarcadero, Oakland CA 94606

Dear Mr. Herman:

Our office has received and reviewed the September 7, 1999 Baseline work plan referenced above. The work plan follows our meeting where the initial January 1999 work plan by SCA Environmental was replaced with this one, which reflects a risk-based approach for site investigation. Our office would like to first address the requirements of the underground tank removal process then comment on this work plan. To complete the tank removal process, please address the following concerns:

- The underground piping from both underground tanks must be properly closed and appropriate sampling performed. Please provide a work plan, which describes how this will be done.
- The excavated soil samples were returned to the tank pits pending future remediation. Even though over-excavation is not proposed, the spoils should be removed and disposed of properly. Groundwater, if encountered during this removal, should be removed as much as possible, particularly if free product is present.

Prior to applying a risk-based approach for these USTs, you should determine if any additional site characterization is necessary. As you are aware, this is required before a risk-based approach may be applied. You are encouraged to review all past work to see if this data already exists. If necessary, please provide a work plan for additional site characterization or show the limits of soil and groundwater impact based on existing data.

Assuming that no additional characterization is shown necessary, our office has the following comments to the risk-based remedial action plan:

- It is appropriate to look at existing Water Board orders for similar sites when determining clean-up levels for this site ie Order No. 99-045 and 98-072. Therefore, as stated in your work plan, although on-site maximum concentrations of TPHd and benzo(a) pyrene in soil exceed the order action levels, they likely do not pose a risk to human health under current site conditions.
- The ecological risk of the UST releases, although lacking true groundwater samples from monitoring wells, may be estimated by existing grab groundwater data. Doing this, there appears potential TPHd and PAH levels above the cleanup levels, in addition to elevated oil and grease concentration without a site specific clean-up level being proposed.

- The work plan proposes the installation of three monitoring wells located down-gradient of the two tank pits. The well adjacent to UST GF-12 is acceptable. Because groundwater is likely tidally influenced and the existence of MW1 near one of the proposed well, I recommend that the northeast well near UST GF-11 be relocated south of the former tank. Groundwater samples will be analyzed for TPHd, TPHmo, cadmium, chromium, lead, nickel and zinc and PAHs (following silica gel clean-up and glass fiber filtering) and aromatic volatile organics. Please take one shallow soil sample from each well borehole for the same chemical analysis mentioned above. Monitoring well MW1 should be included in your sampling and your gradient determination. You may proceed with the well installations if the amendments are acceptable.

Please provide your written response to this letter **within 30 days or by October 18, 1999.**

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M Chan

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Ms. Y. Nordhav, Baseline Environmental Consulting, 5900 Hollis St., Suite D, Emeryville, CA 94608
PDDIIwp

98379 - 09

PORT OF OAKLAND

October 8, 1999

Mr. Barney Chan
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: **Response to Comments on Work Plan for Pacific Dry Dock, Yard II, 321 Embarcadero, Oakland (StID # 1222)**

Dear Mr. Chan:

We are in receipt of your letter, dated 16 September 1999 with comments on our work plan for the underground storage tank (UST) sites at the subject property. In your letter, you have six comments, which are responded to, below:

1. *Provide a work plan for closure of the piping and appropriate sampling.*

On 12 August 1999, we met with you regarding our proposed change in approach to remediation of the UST sites at Pacific Dry Dock. We discussed the difficulty of removing the pipelines at that time because, it is unknown where they may connect to, and they are below concrete foundations. We indicated that at the time of UST removals, the pipelines were drained (and that some petroleum was contained in the pipelines), suggesting that the pipelines were of sufficient integrity to contain liquids. We further suggested that it would be preferable to wait to remove the pipelines until the foundations were removed. Therefore, the following work plan for pipeline removal is proposed:

> At such time that the foundations are removed, the pipelines will also be removed. We propose that at the time of foundation removal, soil samples be collected every 20 feet along the pipeline alignment(s) and that these soil samples be analyzed for total petroleum hydrocarbons (TPH) as gasoline, diesel, and motor oil (with silica gel cleanup). Further analyses will include benzene, toluene, ethylbenzene, and xylenes (BTEX). The data obtained from the collected soil samples will be evaluated to determine compliance with risk-based remediation goals for the site. If the concentration of contaminants of concern indicate a potential health risk to future users, remediation of the soil will be recommended.

Please advise us whether it would be acceptable to the County to defer pipeline removal until the site will be developed. For your information, a "flag" will be placed in the site file alerting future development proposals that additional remedial activities are needed prior to site development.

2. *Stockpiled soils from the UST removal activities should be removed from the former excavations, where they were reintroduced and if free product were identified during soils removal, the groundwater should be pumped out of the excavation.*

Soil samples were collected from the stockpiled soils after removal from around the tanks. The TPH concentrations from the stockpiled soils were less than the concentrations of the in-place samples

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Telephone (510) 272-1100 ■ Fax (510) 272-1172 ■ TDD (510) 763-5703 ■ Cable address, PORTOFOAK, Oakland

collected from the tank excavations and the concentrations are also below threshold in RWQCB orders for the protection of human health; therefore, the work plan did not propose to excavate the soils that were used to fill the UST excavations. If the proposed groundwater sampling activity should indicate that the groundwater quality has been affected by the contaminants of concern at the site, then, removal of the soils placed in the excavations may be one of the remediation options to be recommended. Until such time that the groundwater investigation results have been obtained, and it has been determined if the groundwater discharging into the Estuary poses an ecological risk, the Port proposes that the soils remain in-place.

3. *Determine whether additional site characterization activities are necessary for a risk-based remedial approach.*

As indicated in the work plan, no additional characterization of the UST sites are proposed. The rationale for no further site characterization activities is that soil samples were collected at the source of releases (i.e., the USTs). The concentrations of contaminants would therefore be expected to be the highest at the locations sampled. Since the concentrations of contaminants at these locations do not exceed RWQCB thresholds for the protection of human health, no further characterization activities are proposed, except for the groundwater investigation proposed in the work plan.

4. *The use of RWQCB Orders 99-045 and 98-072 thresholds appear appropriate for the site and indicate that the on-site contamination does not present a human health risk under current site conditions.*

Comment noted.

5. *Grab groundwater samples can be used to estimate ecological risks. The grab groundwater samples from the site indicate that TPHd, PAHs, and oil and grease may be above clean-up levels for protection of ecological receptors.*

The work plan proposes to install three groundwater monitoring wells near the UST sites to determine potential ecological risks to receiving waters. The purpose of installation of the groundwater monitoring wells is to determine actual groundwater quality at the site and whether the contaminants of concern from the UST sites may present a risk to ecological receptors.

6. *The locations of the proposed monitoring well by UST GF-12 is appropriate. The northeast well by UST GF-11 should be moved to the south and the existing MW-1 should be used for monitoring and gradient determination. In addition, one soil sample should be collected from each monitoring well borehole and the sample should be analyzed for the same constituents as the groundwater samples. Well installations can proceed, if the suggested changes are acceptable.*

The Port has not proposed to use the on-site monitoring well MW-1 as part of the monitoring network for the UST sites because the well is owned by Crowley. Coordination with a third party for groundwater monitoring may prove to be complex and time consuming. Therefore, the Port is proposing to install a nearby well for groundwater monitoring purposes. If the County should wish to have a well in the apparent upgradient location from GF-11, we propose to move the southwestern well near GF-11 to the southern location.

We are not proposing to collect soil samples from the monitoring well boreholes. The entire Pacific Dry Dock Yard II has been investigated and determined by the County to have been sufficiently characterized

and not to present an ecological or health risk, even though residual contaminants are present at the site. We do not believe that collection of additional soil samples away from the UST locations would add useful data to the site evaluation, because the maximum concentrations of contaminants of concern have already been identified and because contaminants of concern away from the USTs may be attributable to historic site activities unrelated to the operation of the USTs. Please advise us whether it would be acceptable to the County not to collect the soil samples from the monitoring well boreholes.

We have appreciated your prompt attention and advice on remediation of this site. We will be awaiting further direction from you regarding:

- Delay of pipeline removal until site development.
- Excavated soils will remain in the former tank excavations until the ecological risk evaluation has been completed to determine whether the soil presents an ecological risk. If the soil present an ecological risk, it will be removed.
- The southwest monitoring well by UST GF-11 will either be moved to the south or remain in place rather than moving the northeastern monitoring well and using the existing MW-1 for monitoring.
- Soil samples will not be collected from the monitoring well boreholes.

We will look forward to receiving your concurrence or suggestions at your earliest convenience. Please feel free to call me at 510-272-1184 if you have any questions.

Sincerely,

Douglas P. Herman
Assistant Port Environmental Scientist

Cc: Neil Werner
Yane Nordhav, Baseline Environmental Consultants

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

October 18, 1999
StID # 1222

Mr. Doug Herman
Port of Oakland
530 Water St., 2nd Floor
Oakland CA 94607

Re: Port of Oakland Response Letter for Pacific Dry Dock, Yard II, 321 Embarcadero, Oakland, CA 94606

Dear Mr. Herman:

Our office has received and reviewed your October 8, 1999 response letter to my September 16, 1999 letter dealing with the investigation and remediation of the two former diesel underground tanks at the above site. I would like to address your comments as numbered in your response letter.

The piping closure is requested to be postponed until the concrete foundation, where the pipeline is located, is removed. It is assumed that this will be done when the site has been authorized for redevelopment as part of the Estuary Plan. Our office agrees in delaying the removal of the underground piping on the condition that the pipeline locations are determined and that the pipelines are rinsed to remove residual product and capped. Please describe how this will be done. Please add the analysis for semi-volatiles in addition to the proposed suite of analytes for the piping run samples when samples are taken and notify us in advance of this action.

The stockpiled soils from both tank removals are proposed to be left in-place, however, our office again requests their removal based upon the following observations:

- Although the concentration of the stockpiled soils may be less than RWQCB orders for the protection of human health, the protection of **ecological health** has not been considered. Both the residual soil concentration and that of the spoils exceed the clean-up levels recommended in the SFIA and Catellus Water Board orders.
- The grab groundwater sample, which is at least partially the result of groundwater contact with contaminated soil, exhibited 91ppm diesel, greatly exceeding the recommended groundwater cleanup levels in the Water Board orders.
- Because the stockpile soil samples were 4 point composite samples, the reported results could be "diluted" and be much higher in localized areas within the spoils.
- The spoils now likely lie deeper than they did originally and are closer to groundwater. In fact, these soils may be in direct contact with groundwater and are acting as a source of contamination.

The Port does not propose any additional site characterization because the samples were collected beneath the source (the tank) and are likely the highest concentrations. In addition, the Port states again that the concentrations are less than the RWQCB order threshold concentrations for the protection of human health. You are reminded that protection of ecological health is also required. You are also reminded that risk evaluation is only **part** of what is required for the investigation of fuel tank releases. The RWQCB requires the following, as part of the evaluation of a low risk soil or groundwater case:

- The leak must be stopped and free product removed
- The site must be adequately characterized
- The dissolved plume must not be migrating
- Surface water or other sensitive receptors must not be impacted, and
- There should be no significant risk to human health or the environment.

Therefore, unless there is data showing the current extent of soil and groundwater contamination, additional site characterization will be required. Please provide a work plan for additional site characterization or data indicating the current limits of soil and groundwater contamination near both former USTs.

Three monitoring wells are proposed for the site. The location of the wells can use the northerly gradient previously determined at the site. Because of the known gradient and the Port's inability to use existing MW-1, one well should be located near MW-1 and one should be located south of UST GF-11. As mentioned in my prior letter, the well adjacent to UST GF-12 is approved, however, it should be installed after the tank pit spoils are removed. Unless the extent of soil and groundwater contamination has been previously determined, **both** soil and groundwater samples should be sampled in the monitoring well borings.

The Port also states that the entire Pacific Dry Dock Yard II site has already been sufficiently characterized and determined not to present an ecological or (human) health risk. The Port has taken this statement out of context. This statement was referring to the non-UST releases identified as being related to operations by the former tenant, Crowley Marine Services (Crowley). Clearly, this was not referring to the underground tank releases of which Crowley and our office had no knowledge of at the time of closure of the non-UST release case. It appears, upon review of past data, that the prior investigation was not extensive enough to characterize the UST release areas.

In regards to your letter dated September 1, 1999 commenting on perceived problems of residual contamination attributed to past Crowley operations, our office has received and reviewed the October 5, 1999 letter from Crowley responding to your claims. Our office does not intend to request any further information or work from Crowley regarding this matter. Our office welcomes your response to their letter.

Please provide your written response to this letter **within 30 days or by November 19, 1999.** You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Ms. Y. Nordhav, Baseline Environmental Consulting, 5900 Hollis St., Suite D, Emeryville, CA, 94608
Mr. S. Wilson, Crowley Marine Services, P.O. Box 2287, Seattle, WA 98111-2287
2PDDIIwp

PORT OF OAKLAND

November 15, 1999

RECEIVED
NOV 18 1999
BASELINE

Mr. Barney Chan
Hazardous Materials Specialists
Alameda County Health Care Services Agency
Department of Environmental Health
1131 harbor bay Parkway, suite 250
Alameda, CA 94502-6577

Subject: **Addendum to the September 7, 1999 Work Plan for Pacific Dry Dock Yard II, 321 Embarcadero Road, Oakland**

Dear Mr. Chan:

In response to your letter dated October 18, 1999 and our conversation of October 25, 1999, we hereby amend our September 7, 1999 Work Plan for the subject site. The purpose of this revision is to respond to your request that the previously excavated soils at each of the former UST locations, which was placed back into the excavations following tank removals, be removed and disposed off-site. To accomplish this, we propose to implement the following activities:

1. Identify the former tank excavation areas using the best available maps and remaining on-site landmarks. The perimeter of the tank excavation will be marked and a backhoe will be used to remove previously back filled soil.

2. The extent of excavation will be the following: UST GF-11: 20 x11 x 6 feet (assuming that the groundwater is encountered at 6.0 feet below ground surface); UST GF-12: 19 x 13 x 7.5 feet (assuming groundwater is encountered at a depth of 7.5 feet below ground surface). If groundwater is encountered at shallower or greater depths, the excavation depth will be adjusted accordingly. Any obvious free product on the groundwater surface will be skimmed and disposed off site.

3. The excavated soils will be placed on and under plastic until sampled and characterized for off-site disposal. The former tank excavation areas will be back-filled with clean soil from off-site vendors.

As indicated in the Work Plan, dated September 7, 1999, the Port is proposing additional site characterization through installation of three groundwater monitoring wells. Well installation activities will include collection of soil samples from the bore holes, as requested by the County. As we have previously indicated, one of the wells will be near the existing MW-1, and a second well will be located south of UST GF-11, as requested by the County.

Following receipt of soil and groundwater data obtained from the investigation outlined herein and in the previous Work Plan of September 7, 1999, the Port will review the data to assess fulfillment of the County and the RWQCB requirements for site closure. The data results will determine the ability of the Port of Oakland to request for site closure or the need to develop a Work Plan for additional site investigation/remediation activities for County review, comment, and or concurrence.

530 Water Street ■ Jack London Square ■ P.O. Box 2064 ■ Oakland, California 94604-2064
Telephone (510) 272-1100 ■ Fax (510) 272-1172 ■ TDD (510) 763-5703 ■ Cable address, PORTOFOAK, Oakland

We understand from our conversations that it is acceptable to the County to remove the pipelines at the time of site demolition (we anticipate demolition in 2-3 years). However, the County is requesting that the pipelines, if they remain in place be flushed and capped. At this time the extent and terminus of the pipelines are unknown and we are, therefore, hesitant to introduce fluids into the pipelines for flushing. Instead if acceptable to the County, we propose that after the soil has been excavated and the pipes exposed, a vacuum truck hose (used for removing any floating product or groundwater in the excavations) will be applied to the ends of the pipelines to draw any fluids out. Any liquids collected will be transported off-site. Thereafter, the pipe-ends will be sealed with grout.

Your letter of October 18, 1999 indicates the Port may have been mistaken in its interpretation of the County's determination of the Crowley Yard II Human Health and Ecological Risk Assessment. We understand the UST releases were not part of the human health and ecological risk evaluations performed by Crowley. Our only point was that the UST investigation moves away from the former tank locations, and TRPH concentrations were identified at other locations of the yard, including higher TRPH concentrations than those identified at the UST sites. For this reason the Port proposed in the original September 7, 1999 Work Plan, not to collect soil samples away form the former UST locations. However, as the County believes that soil samples from the monitoring well locations can provide additional data for the UST sites, the Port has agreed to collect such samples in this Work Plan addendum.

We hope that this addendum to the September 7, 1999 Work Plan addresses the County's concerns and responds to your comments in the October 18, 1999 letter to the Port. If the County concurs with the Work Plan and the enclosed amendments, please advise us at your earliest convenience.

As an aside, the Port will submit under separate cover our comments on the October 5, 1999 letter from Crowley Marine Services for your review and information.

If you should have additional comments or concerns, please contact me at 510-627-1184.

Sincerely,

Douglas P. Herman
Assistant Port Environmental Scientist

cc: Michele Heffes
Joyce Washington
Jeff Jones
Yane Nordhav

98379-09

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9432

November 22, 1999
StID # 1222

RECEIVED
NOV 23 1999
BASELINE

Mr. Doug Herman
Port of Oakland
530 Water St., 2nd Floor
Oakland CA 94607

Re: Work Plan for Pacific Dry Dock II, 321 Embarcadero, Oakland CA 94606

Dear Mr. Herman:

This letter serves to respond to your November 15, 1999 letter regarding the proposed investigation and work at the above site, which in turn responded to the County's October 18, 1999 letter regarding the Port's original work plan. Your letter appropriately addresses the County's concern, therefore, you should proceed as soon as possible with the following work:

- The two underground storage tank pits should be over-excavated to remove the reused spoils for proper disposal. At that time, it would be prudent to take confirming soil samples to verify the residual soil contaminant concentrations. In addition, any free product or groundwater with sheen should also be removed from the excavation pits.
- The three monitoring wells, as proposed, should be installed after the over-excavation of the pits. Both soil and groundwater samples will be taken from the well borings for chemical analysis.
- In order to remove residual product from pipelines, you may use a vacuum truck hose (equipped with a stinger) to remove as much product as possible prior to capping the piping. Soil sampling will be done when the piping is removed in the future.

Please provide your schedule for this work and contact our office prior to this activity.

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Ms. Y. Nordhav, Baseline Environmental Consulting, 5900 Hollis St., Suite D, Emeryville, CA, 94608
3PDDIIwp

APPENDIX B

LABORATORY RESULTS - SOIL AND GROUNDWATER SAMPLING

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673

23 March, 2000

RECEIVED
APR 7 2000
BASELINE

Yane Nordhon
Baseline
5900 Hollis St. Suite D
Emeryville, CA 94608

RE: Pacific Dry Dock Yard II
Sequoia Report: W003091

Enclosed are the results of analyses for samples received by the laboratory on 02-Mar-00 12:30. As per your request, results for Volume Water Content are included as follows:

MW-2; 1.0-1.5	30.3%
MW-2; 1.5-2.0	33.5%
MW-2; 3-3.5	34.7%
MW-3; 3.0-3.5	39.4%
MW-3; 5.0-5.5	20.2%

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Alan B. Kemp
Laboratory Director

CA ELAP Certificate #1274

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1; 2.5-3.0	W003091-01	Soil	01-Mar-00 09:51	02-Mar-00 12:30
MW-2; 1.0-1.5	W003091-02	Soil	01-Mar-00 11:30	02-Mar-00 12:30
MW-2; 1.5-2.0	W003091-03	Soil	01-Mar-00 11:31	02-Mar-00 12:30
MW-2; 3-3.5	W003091-04	Soil	01-Mar-00 13:10	02-Mar-00 12:30
MW-2; 3.5-4	W003091-05	Soil	01-Mar-00 13:15	02-Mar-00 12:30
MW-3; 3.0-3.5	W003091-06	Soil	01-Mar-00 16:15	02-Mar-00 12:30
MW-3; 5.0-5.5	W003091-07	Soil	01-Mar-00 16:20	02-Mar-00 12:30

Alan B. Kemp, Laboratory Director

Sequoia Analytical

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

Diesel Hydrocarbons (C9-C24) with Silica Gel Cleanup by DHS LUFT

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1; 2.5-3.0 (W003091-01) Soil	**Sampled: 01-Mar-00 09:51**		**Received: 02-Mar-00 12:30**						
Diesel Range Hydrocarbons	**2.6**	1.0	mg/kg	1	0C13022	13-Mar-00	15-Mar-00	DHS LUFT	D-06,D-12
Motor Oil (C16-C36)	ND	10	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*115 %*	*50-150*		"	"	"	"	
MW-2; 3.5-4 (W003091-05) Soil	**Sampled: 01-Mar-00 13:15**		**Received: 02-Mar-00 12:30**						
Diesel Range Hydrocarbons	ND	1.0	mg/kg	1	0C13022	13-Mar-00	15-Mar-00	DHS LUFT	
Motor Oil (C16-C36)	ND	10	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*106 %*	*50-150*		"	"	"	"	
MW-3; 3.0-3.5 (W003091-06) Soil	**Sampled: 01-Mar-00 16:15**		**Received: 02-Mar-00 12:30**						
Diesel Range Hydrocarbons	**1.5**	1.0	mg/kg	1	0C13022	13-Mar-00	15-Mar-00	DHS LUFT	D-06,D-12
Motor Oil (C16-C36)	ND	10	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*105 %*	*50-150*		"	"	"	"	
MW-3; 5.0-5.5 (W003091-07) Soil	**Sampled: 01-Mar-00 16:20**		**Received: 02-Mar-00 12:30**						
Diesel Range Hydrocarbons	**7.1**	1.0	mg/kg	1	0C13022	13-Mar-00	15-Mar-00	DHS LUFT	D-12
Motor Oil (C16-C36)	**51**	10	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*153 %*	*50-150*		"	"	"	"	*D-07*

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5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

Metals Scan by ICP

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1; 2.5-3.0 (W003091-01) Soil Sampled: 01-Mar-00 09:51 Received: 02-Mar-00 12:30									
Cadmium	ND	0.50	mg/kg	1	0C13024	13-Mar-00	14-Mar-00	ICP Scan	
Chromium	**8.5**	0.50	"	"	"	"	"	"	
Lead	**13**	1.0	"	"	"	"	"	"	
Nickel	**9.0**	1.0	"	"	"	"	"	"	
Zinc	**180**	1.0	"	"	"	"	"	"	
MW-2; 3.5-4 (W003091-05) Soil Sampled: 01-Mar-00 13:15 Received: 02-Mar-00 12:30									
Cadmium	ND	0.50	mg/kg	1	0C13024	13-Mar-00	14-Mar-00	ICP Scan	
Chromium	**31**	0.50	"	"	"	"	"	"	
Lead	**9.5**	1.0	"	"	"	"	"	"	
Nickel	**32**	1.0	"	"	"	"	"	"	
Zinc	**28**	1.0	"	"	"	"	"	"	
MW-3; 3.0-3.5 (W003091-06) Soil Sampled: 01-Mar-00 16:15 Received: 02-Mar-00 12:30									
Cadmium	ND	0.50	mg/kg	1	0C13024	13-Mar-00	14-Mar-00	ICP Scan	
Chromium	**65**	0.50	"	"	"	"	"	"	
Lead	**2.6**	1.0	"	"	"	"	"	"	
Nickel	**60**	1.0	"	"	"	"	"	"	
Zinc	**47**	1.0	"	"	"	"	"	"	
MW-3; 5.0-5.5 (W003091-07) Soil Sampled: 01-Mar-00 16:20 Received: 02-Mar-00 12:30									
Cadmium	ND	0.50	mg/kg	1	0C13024	13-Mar-00	17-Mar-00	ICP Scan	
Chromium	**35**	0.50	"	"	"	"	"	"	
Lead	**9.0**	1.0	"	"	"	"	"	"	
Nickel	**40**	1.0	"	"	"	"	"	"	
Zinc	**50**	1.0	"	"	"	"	"	"	

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

Semivolatile Organic Compounds by EPA Method 8270B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1; 2.5-3.0 (W003091-01) Soil Sampled: 01-Mar-00 09:51 Received: 02-Mar-00 12:30									
Acenaphthene	ND	0.10	mg/kg	1	0C07009	07-Mar-00	13-Mar-00	EPA 8270B	
Acenaphthylene	ND	0.10	"	"	"	"	"	"	
Anthracene	ND	0.10	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.10	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.10	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.10	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.10	"	"	"	"	"	"	
Benzo[a]pyrene	ND	0.10	"	"	"	"	"	"	
Chrysene	ND	0.10	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.10	"	"	"	"	"	"	
Fluoranthene	ND	0.10	"	"	"	"	"	"	
Fluorene	ND	0.10	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.10	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.10	"	"	"	"	"	"	
Naphthalene	ND	0.10	"	"	"	"	"	"	
Phenanthrene	ND	0.10	"	"	"	"	"	"	
Pyrene	ND	0.10	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*72.0 %*	*25-121*		"	"	"	"	
Surrogate: Phenol-d6		*71.4 %*	*24-113*		"	"	"	"	
Surrogate: Nitrobenzene-d5		*81.4 %*	*23-120*		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*85.6 %*	*30-115*		"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*85.4 %*	*19-122*		"	"	"	"	
Surrogate: p-Terphenyl-d14		*80.2 %*	*18-137*		"	"	"	"	
MW-2; 3.5-4 (W003091-05) Soil Sampled: 01-Mar-00 13:15 Received: 02-Mar-00 12:30									
Acenaphthene	ND	0.10	mg/kg	1	0C07009	07-Mar-00	13-Mar-00	EPA 8270B	
Acenaphthylene	ND	0.10	"	"	"	"	"	"	
Anthracene	ND	0.10	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.10	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.10	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.10	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.10	"	"	"	"	"	"	
Benzo[a]pyrene	ND	0.10	"	"	"	"	"	"	
Chrysene	ND	0.10	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.10	"	"	"	"	"	"	
Fluoranthene	ND	0.10	"	"	"	"	"	"	
Fluorene	ND	0.10	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.10	"	"	"	"	"	"	

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

Semivolatile Organic Compounds by EPA Method 8270B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2; 3.5-4 (W003091-05) Soil Sampled: 01-Mar-00 13:15 Received: 02-Mar-00 12:30									
2-Methylnaphthalene	ND	0.10	mg/kg	1	0C07009	07-Mar-00	13-Mar-00	EPA 8270B	
Naphthalene	ND	0.10	"	"	"	"	"	"	
Phenanthrene	ND	0.10	"	"	"	"	"	"	
Pyrene	ND	0.10	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*75.4 %*	*25-121*		"	"	"	"	
Surrogate: Phenol-d6		*74.6 %*	*24-113*		"	"	"	"	
Surrogate: Nitrobenzene-d5		*84.1 %*	*23-120*		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*87.7 %*	*30-115*		"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*86.0 %*	*19-122*		"	"	"	"	
Surrogate: p-Terphenyl-d14		*83.8 %*	*18-137*		"	"	"	"	
MW-3; 3.0-3.5 (W003091-06) Soil Sampled: 01-Mar-00 16:15 Received: 02-Mar-00 12:30									R-05
Acenaphthene	ND	1.0	mg/kg	10	0C07009	07-Mar-00	13-Mar-00	EPA 8270B	
Acenaphthylene	ND	1.0	"	"	"	"	"	"	
Anthracene	ND	1.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	1.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	1.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1.0	"	"	"	"	"	"	
Benzo[a]pyrene	ND	1.0	"	"	"	"	"	"	
Chrysene	ND	1.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	1.0	"	"	"	"	"	"	
Fluoranthene	ND	1.0	"	"	"	"	"	"	
Fluorene	ND	1.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	1.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	1.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
Phenanthrene	ND	1.0	"	"	"	"	"	"	
Pyrene	ND	1.0	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*73.4 %*	*25-121*		"	"	"	"	
Surrogate: Phenol-d6		*75.4 %*	*24-113*		"	"	"	"	
Surrogate: Nitrobenzene-d5		*83.5 %*	*23-120*		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*88.0 %*	*30-115*		"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*73.4 %*	*19-122*		"	"	"	"	
Surrogate: p-Terphenyl-d14		*85.6 %*	*18-137*		"	"	"	"	

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

Semivolatile Organic Compounds by EPA Method 8270B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-3; 5.0-5.5 (W003091-07) Soil	**Sampled: 01-Mar-00 16:20**	**Received: 02-Mar-00 12:30**							**R-05**
Acenaphthene	ND	1.0	mg/kg	10	0C07009	07-Mar-00	13-Mar-00	EPA 8270B	
Acenaphthylene	ND	1.0	"	"	"	"	"	"	
Anthracene	ND	1.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	1.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	1.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1.0	"	"	"	"	"	"	
Benzo[a]pyrene	ND	1.0	"	"	"	"	"	"	
Chrysene	ND	1.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	1.0	"	"	"	"	"	"	
Fluoranthene	ND	1.0	"	"	"	"	"	"	
Fluorene	ND	1.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	1.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	1.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
Phenanthrene	ND	1.0	"	"	"	"	"	"	
Pyrene	ND	1.0	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*81.4 %*	*25-121*		"	"	"	"	
Surrogate: Phenol-d6		*82.6 %*	*24-113*		"	"	"	"	
Surrogate: Nitrobenzene-d5		*93.1 %*	*23-120*		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*103 %*	*30-115*		"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*83.4 %*	*19-122*		"	"	"	"	
Surrogate: p-Terphenyl-d14		*96.1 %*	*18-137*		"	"	"	"	

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

Diesel Hydrocarbons (C9-C24) with Silica Gel Cleanup by DHS LUFT - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C13022 - EPA 3550A										
Blank (0C13022-BLK1)				Prepared: 13-Mar-00 Analyzed: 14-Mar-00						
Diesel Range Hydrocarbons	ND	1.0	mg/kg							
Motor Oil (C16-C36)	ND	10	"							
Surrogate: n-Pentacosane	*1.17*		"	*1.11*		*105*	*50-150*			
LCS (0C13022-BS1)				Prepared: 13-Mar-00 Analyzed: 14-Mar-00						
Diesel Range Hydrocarbons	11.7	1.0	mg/kg	15.0		78.0	60-140			
Surrogate: n-Pentacosane	*1.07*		"	*1.11*		*96.4*	*50-150*			
LCS Dup (0C13022-BSD1)				Prepared: 13-Mar-00 Analyzed: 14-Mar-00						
Diesel Range Hydrocarbons	12.1	1.0	mg/kg	15.0		80.7	60-140	3.36	50	
Surrogate: n-Pentacosane	*1.12*		"	*1.11*		*101*	*50-150*			

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Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

Metals Scan by ICP - Quality Control
Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C13024 - EPA 3050B										
Blank (0C13024-BLK1)				Prepared: 13-Mar-00 Analyzed: 14-Mar-00						
Cadmium	ND	0.50	mg/kg							
Chromium	ND	0.50	"							
Lead	ND	1.0	"							
Nickel	ND	1.0	"							
Zinc	ND	1.0	"							
LCS (0C13024-BS1)				Prepared: 13-Mar-00 Analyzed: 14-Mar-00						
Cadmium	51.5	0.50	mg/kg	50.0		103	80-120			
Chromium	50.0	0.50	"	50.0		100	80-120			
Lead	51.5	1.0	"	50.0		103	80-120			
Nickel	51.5	1.0	"	50.0		103	80-120			
Zinc	57.5	1.0	"	50.0		115	80-120			
LCS Dup (0C13024-BSD1)				Prepared: 13-Mar-00 Analyzed: 14-Mar-00						
Cadmium	51.0	0.50	mg/kg	50.0		102	80-120	0.976	20	
Chromium	49.5	0.50	"	50.0		99.0	80-120	1.01	20	
Lead	51.5	1.0	"	50.0		103	80-120	0	20	
Nickel	51.0	1.0	"	50.0		102	80-120	0.976	20	
Zinc	55.5	1.0	"	50.0		111	80-120	3.54	20	

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

Semivolatile Organic Compounds by EPA Method 8270B - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C07009 - EPA 3550A										
Blank (0C07009-BLK1)				Prepared: 07-Mar-00 Analyzed: 13-Mar-00						
Acenaphthene	ND	0.10	mg/kg							
Acenaphthylene	ND	0.10	"							
Anthracene	ND	0.10	"							
Benzo (a) anthracene	ND	0.10	"							
Benzo (b) fluoranthene	ND	0.10	"							
Benzo (k) fluoranthene	ND	0.10	"							
Benzo (ghi) perylene	ND	0.10	"							
Benzo[a]pyrene	ND	0.10	"							
Chrysene	ND	0.10	"							
Dibenz (a,h) anthracene	ND	0.10	"							
Fluoranthene	ND	0.10	"							
Fluorene	ND	0.10	"							
Indeno (1,2,3-cd) pyrene	ND	0.10	"							
2-Methylnaphthalene	ND	0.10	"							
Naphthalene	ND	0.10	"							
Phenanthrene	ND	0.10	"							
Pyrene	ND	0.10	"							
Surrogate: 2-Fluorophenol	*3.73*		"	*5.00*		*74.6*	*25-121*			
Surrogate: Phenol-d6	*3.67*		"	*5.00*		*73.4*	*24-113*			
Surrogate: Nitrobenzene-d5	*2.75*		"	*3.33*		*82.6*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*2.88*		"	*3.33*		*86.5*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*3.97*		"	*5.00*		*79.4*	*19-122*			
Surrogate: p-Terphenyl-d14	*2.74*		"	*3.33*		*82.3*	*18-137*			
LCS (0C07009-BS1)				Prepared: 07-Mar-00 Analyzed: 13-Mar-00						
Acenaphthene	2.64	0.10	mg/kg	3.33		79.3	31-137			
Pyrene	2.48	0.10	"	3.33		74.5	35-142			
Surrogate: 2-Fluorophenol	*3.87*		"	*5.00*		*77.4*	*25-121*			
Surrogate: Phenol-d6	*3.70*		"	*5.00*		*74.0*	*24-113*			
Surrogate: Nitrobenzene-d5	*2.94*		"	*3.33*		*88.3*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*2.97*		"	*3.33*		*89.2*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*4.20*		"	*5.00*		*84.0*	*19-122*			
Surrogate: p-Terphenyl-d14	*2.69*		"	*3.33*		*80.8*	*18-137*			

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5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

Semivolatile Organic Compounds by EPA Method 8270B - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C07009 - EPA 3550A										
LCS Dup (0C07009-BSD1)				Prepared: 07-Mar-00 Analyzed: 13-Mar-00						
Acenaphthene	2.65	0.10	mg/kg	3.33		79.6	31-137	0.378	40	
Pyrene	2.41	0.10	"	3.33		72.4	35-142	2.86	40	
Surrogate: 2-Fluorophenol	*3.63*		"	*5.00*		*72.6*	*25-121*			
Surrogate: Phenol-d6	*3.60*		"	*5.00*		*72.0*	*24-113*			
Surrogate: Nitrobenzene-d5	*2.80*		"	*3.33*		*84.1*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*2.89*		"	*3.33*		*86.8*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*4.30*		"	*5.00*		*86.0*	*19-122*			
Surrogate: p-Terphenyl-d14	*2.57*		"	*3.33*		*77.2*	*18-137*			
Matrix Spike (0C07009-MS1)	**Source: W003091-07**			Prepared: 07-Mar-00 Analyzed: 13-Mar-00						**R-05**
Acenaphthene	3.16	1.0	mg/kg	3.33	ND	94.9	31-137			
Pyrene	3.08	1.0	"	3.33	ND	92.5	35-142			
Surrogate: 2-Fluorophenol	*4.63*		"	*5.00*		*92.6*	*25-121*			
Surrogate: Phenol-d6	*4.73*		"	*5.00*		*94.6*	*24-113*			
Surrogate: Nitrobenzene-d5	*3.31*		"	*3.33*		*99.4*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*3.53*		"	*3.33*		*106*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*4.80*		"	*5.00*		*96.0*	*19-122*			
Surrogate: p-Terphenyl-d14	*3.13*		"	*3.33*		*94.0*	*18-137*			
Matrix Spike Dup (0C07009-MSD1)	**Source: W003091-07**			Prepared: 07-Mar-00 Analyzed: 13-Mar-00						**R-05**
Acenaphthene	2.67	1.0	mg/kg	3.33	ND	80.2	31-137	16.8	40	
Pyrene	2.66	1.0	"	3.33	ND	79.9	35-142	14.6	40	
Surrogate: 2-Fluorophenol	*4.03*		"	*5.00*		*80.6*	*25-121*			
Surrogate: Phenol-d6	*4.10*		"	*5.00*		*82.0*	*24-113*			
Surrogate: Nitrobenzene-d5	*2.90*		"	*3.33*		*87.1*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*3.09*		"	*3.33*		*92.8*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*4.37*		"	*5.00*		*87.4*	*19-122*			
Surrogate: p-Terphenyl-d14	*2.75*		"	*3.33*		*82.6*	*18-137*			

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673

Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	22-Mar-00 09:24

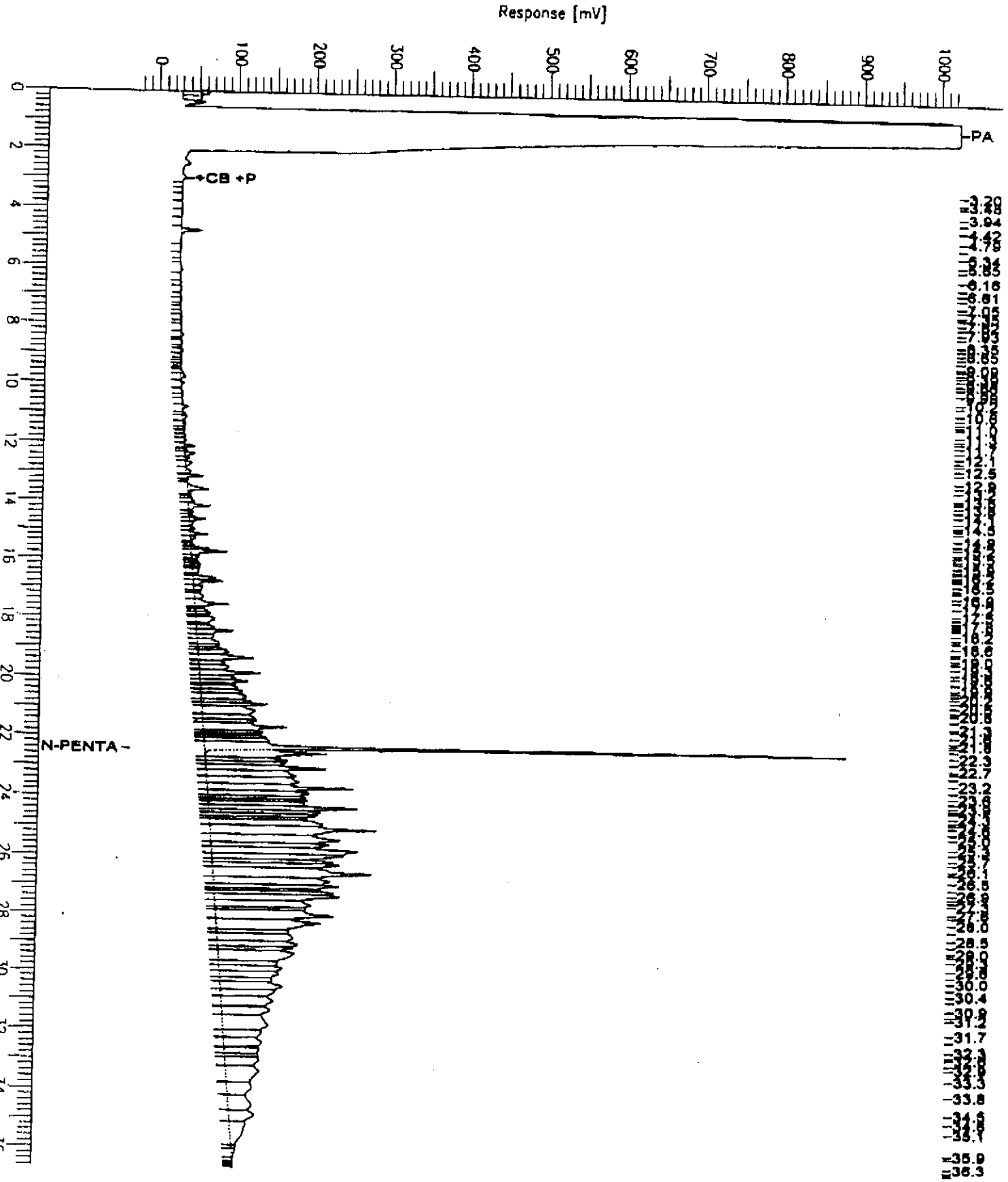
Notes and Definitions

D-06	Discrete peaks.
D-07	Surrogate out of control limits because of peak coelution with the sample.
D-12	Chromatogram Pattern: Unidentified Hydrocarbons > C16
R-05	The reporting limit(s) for this sample have been raised due to high levels of non-target compounds.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Chromatogram

Name : W003091-07
ame : C:\HP3DATA\3BMA333.RAW
od :
art Time : 0.00 min End Time : 36.65 min
cale Factor: 0.0 Plot Offset: -24 mV

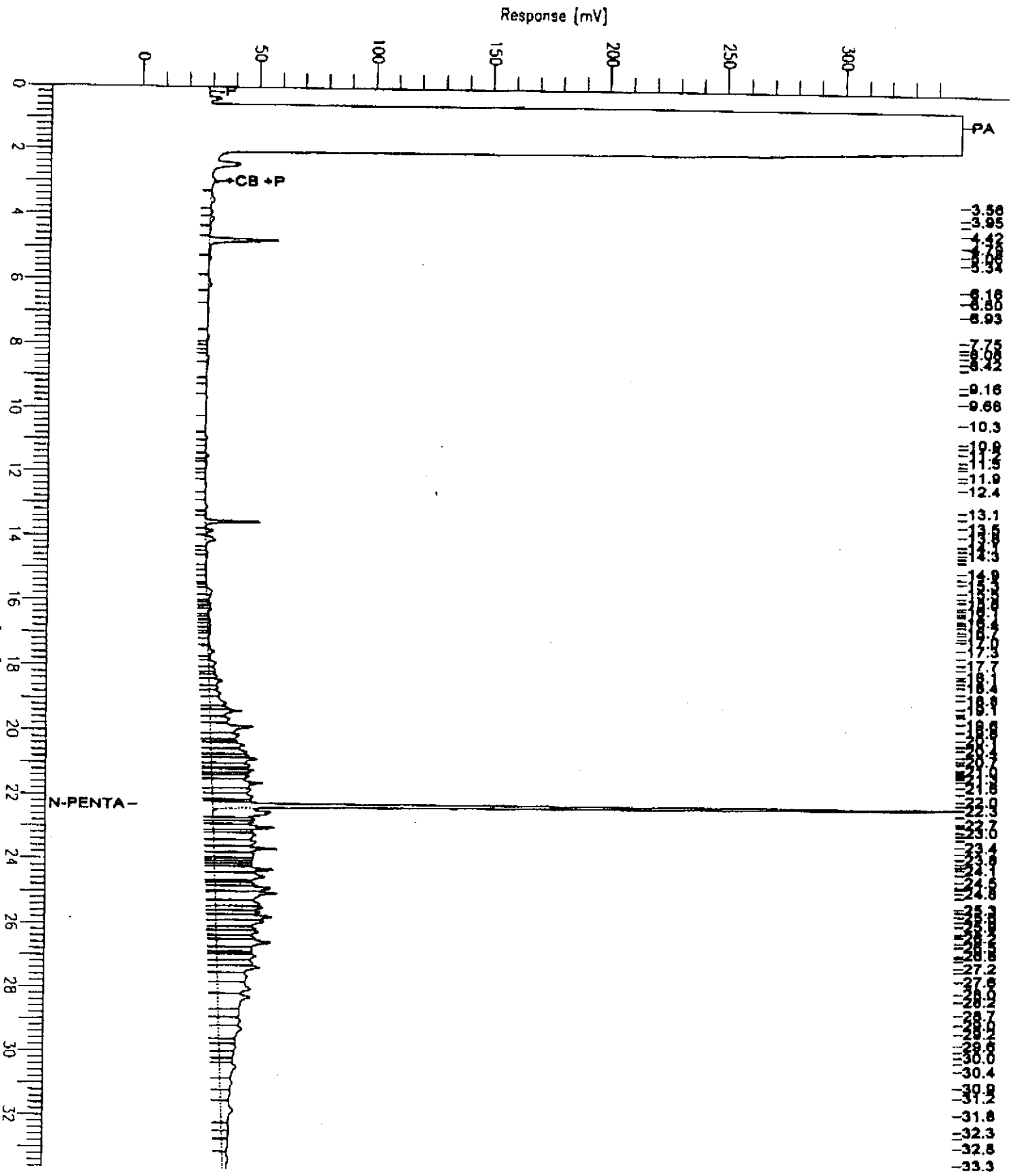
Sample #: Sample
Date : 3/16/00 09:59 AM
Time of Injection: 3/15/00 10:34 PM
Low Point : -24.43 mV High Point : 1024.00 mV
Plot Scale: 1048.4 mV



Chromatogram

Sample Name : W003091-06
FileName : C:\HP3DATA\3BMA332.raw
Method : TPH03A
Start Time : 0.00 min End Time : 33.65 min
Scale Factor: 0.0 Plot Offset: 0 mV

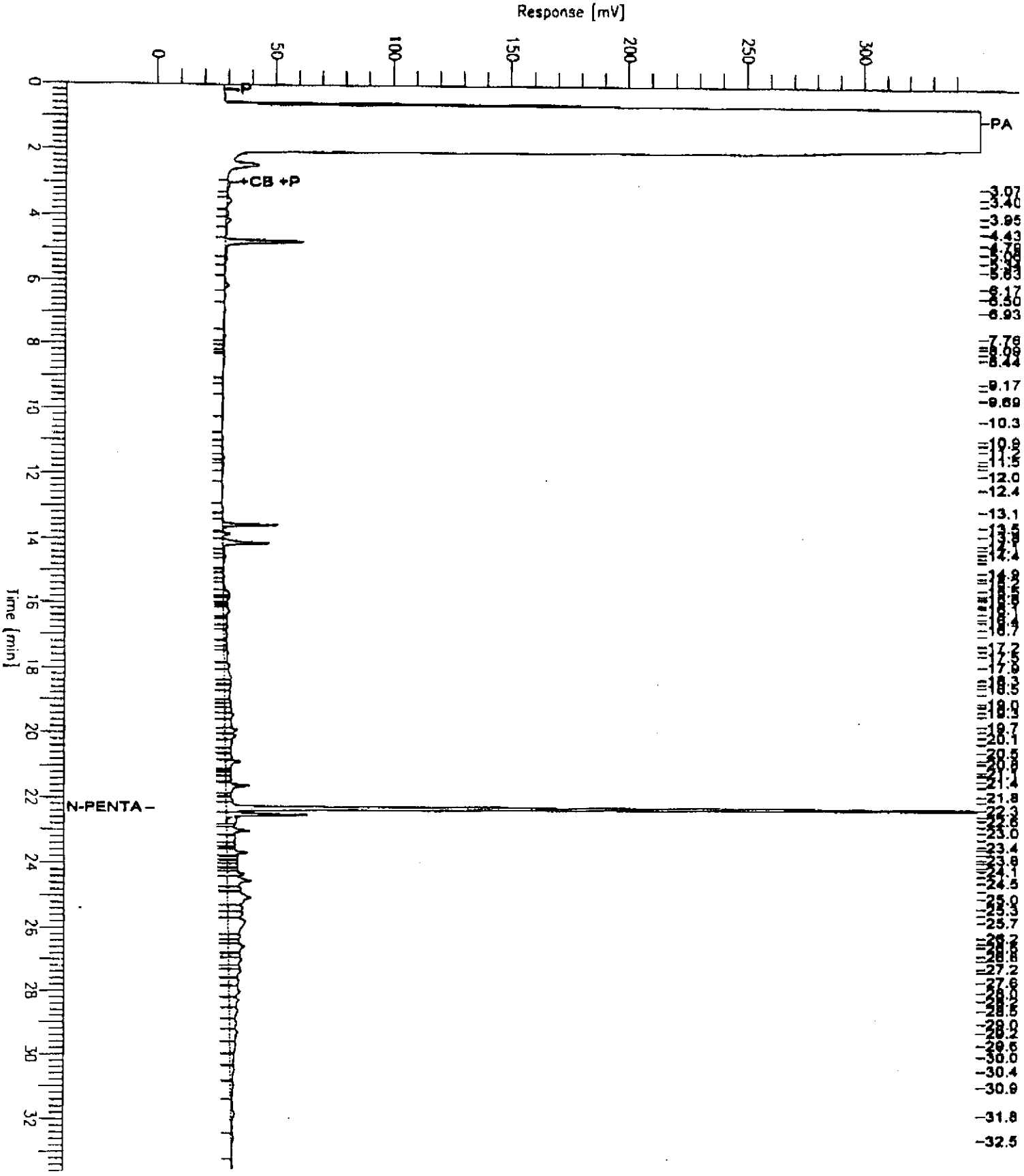
Sample #: Sample Page 1 of 1
Date : 3/15/00 10:27 PM
Time of Injection: 3/15/00 09:50 PM
Low Point : 0.00 mV High Point : 350.00 mV
Plot Scale: 350.0 mV



Chromatogram

File Name : W003091-05
FileName : C:\HP3DATA\3BMA331.raw
Method : TPH03A
Start Time : 0.00 min End Time : 33.65 min
Scale Factor: 0.0 Plot Offset: 0 mV

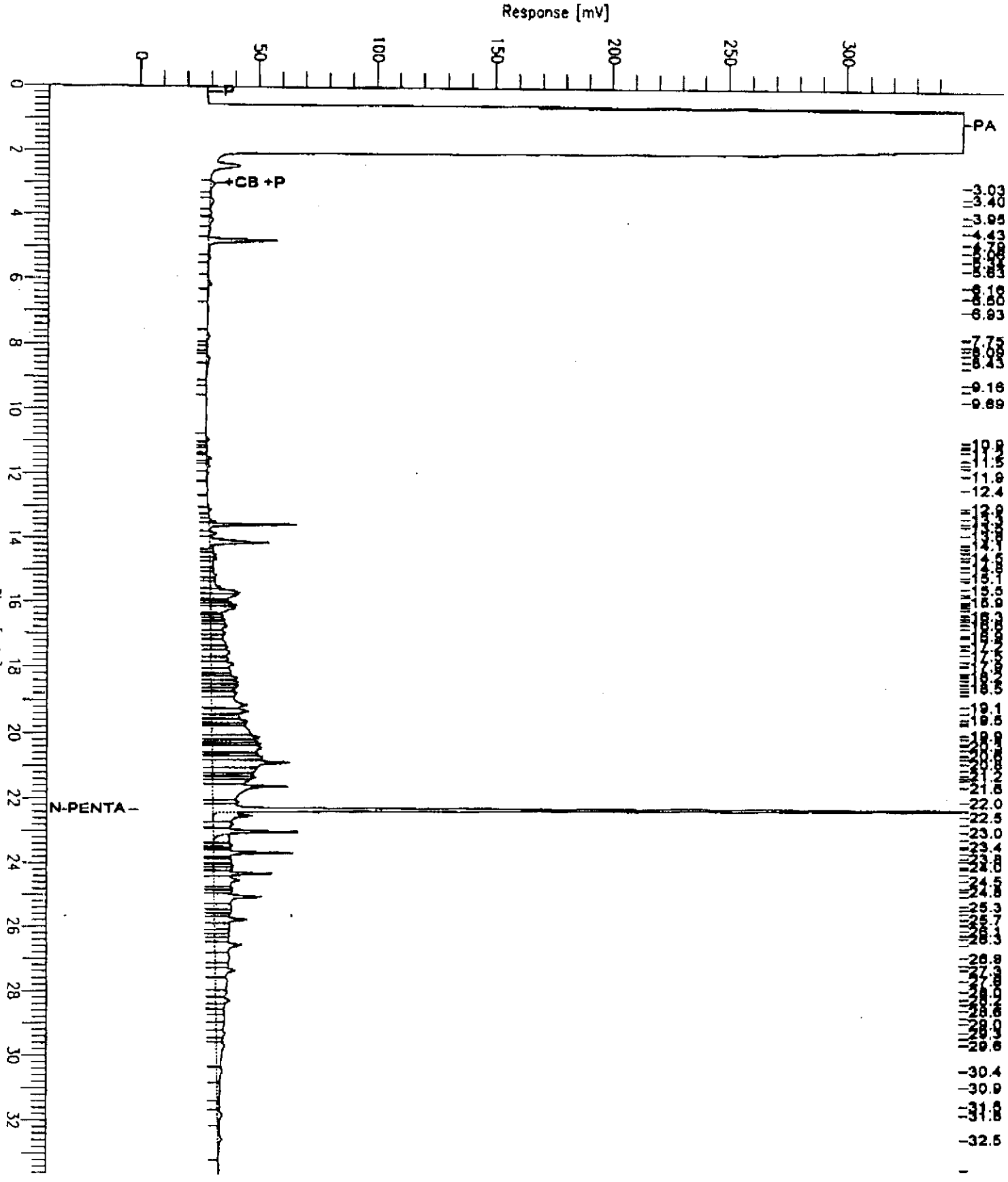
Sample #: Sample Page 1 of 1
Date : 3/15/00 09:43 PM
Time of Injection: 3/15/00 09:06 PM
Low Point : 0.00 mV High Point : 350.00 mV
Plot Scale: 350.0 mV



Chromatogram

Sample Name : W003091-01
FileName : C:\HP3DATA\3BMAJ29.raw
Method : TPH03A
Start Time : 0.00 min End Time : 33.65 min
Scale Factor: 0.0 Plot Offset: 0 mV

Sample #: Sample
Date : 3/15/00 08:14 PM
Time of Injection: 3/15/00 07:37 PM
Low Point : 0.00 mV High Point : 350.00 mV
Plot Scale: 350.0 mV



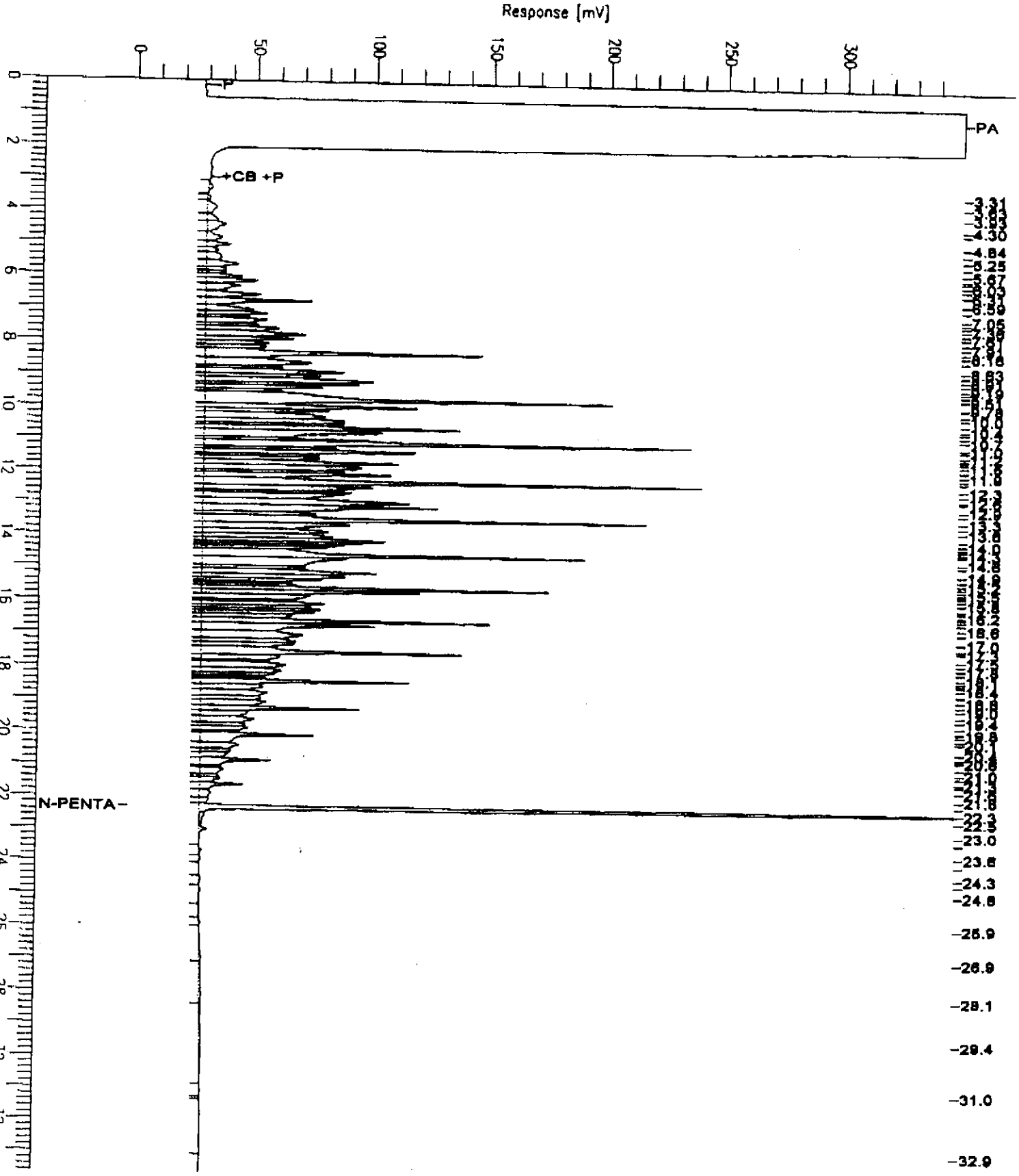
SEQUOIA ANALYTICAL ☎ 925 988 9673 04/11/00 13:49 :03/07 NO:330

Chromatogram

Diesel Std.

Sample Name : 0030103
FileName : C:\HP3DATA\3BMA330.raw
Method : TPH03A
Start Time : 0.00 min End Time : 33.65 min
Scale Factor: 0.0 Plot Offset: 0 mV

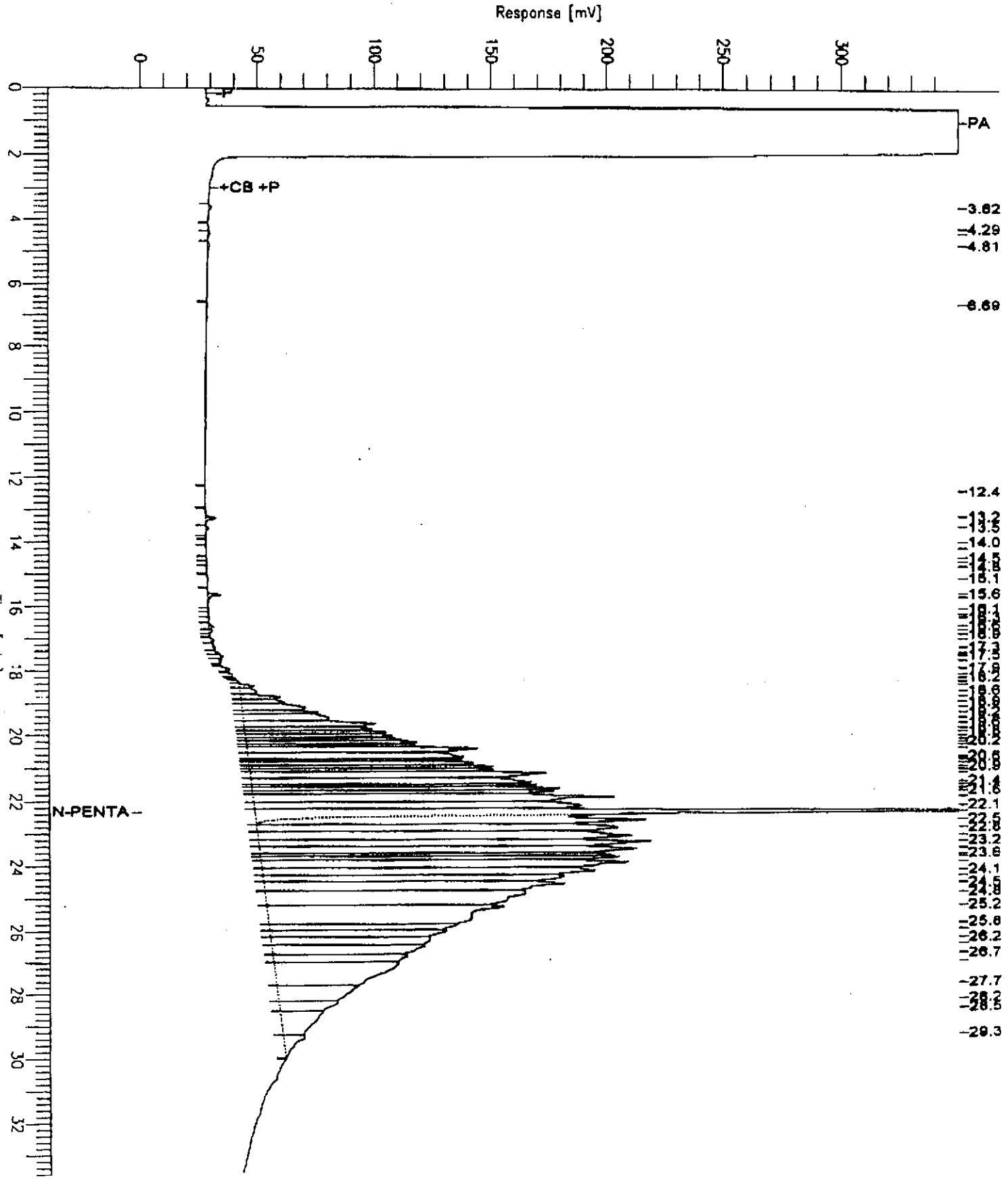
Sample #: 500ppm ICV Page 1 of 1
Date : 3/15/00 08:58 PM
Time of Injection: 3/15/00 08:21 PM
Low Point : 0.00 mV High Point : 350.00 mV
Plot Scale: 350.0 mV



Chromatogram Motor Oil Std.

Sample Name : 0021301
FileName : C:\HP3DATA\3BMA328.raw
Method : TPH03A
Start Time : 0.00 min End Time : 33.65 min
Scale Factor: 0.0 Plot Offset: 0 mV

Sample #: 1000ppm MO Page 1 of 1
Date : 3/15/00 07:30 PM
Time of Injection: 3/15/00 06:53 PM
Low Point : 0.00 mV High Point : 350.00 mV
Plot Scale: 350.0 mV



CORE LAB

PETROLEUM SERVICES

March 24, 2000

Sequoia Analytical
404 N. Wiget Lane
Walnut Creek, CA 94598

Subject : Transmittal of Geotechnical Analysis Data
Project # W003091
Core Lab File No. 57111-00062

Five soil samples were submitted to our Bakersfield laboratory for geotechnical analysis. Determinations of bulk density and total porosity were requested. Grain and pore volumes were determined by Boyles Law double-cell methods utilizing an extended range helium porosimeter. The bulk densities and total porosity measurements and calculations were performed as described in **API RP-40**, API Recommended Practice for Core-Analysis Procedure, 1960. Accompanying this letter please find the results of this study.

We appreciate this opportunity to be of service to you and to Sequoia Analytical. Should you have any questions, or if we may be of further help in the future, please do not hesitate to contact us.

Very truly yours,

Jeff Smith NW

Jeffry L. Smith
Laboratory Supervisor - Rock Properties

JLS:nw
1 original report: Addressee

Core Laboratories, Inc.
3430 Unicorn Road, Bakersfield, California 93308, (805) 392-8600, Fax (805) 392-0824

CORE LABORATORIES

Sequoia Analytical
(Walnut Creek)
W003091

C.L. File No.: 57111-00062
Work Order : W003091

Sample Information			Sample Density			Total Porosity	Description
Name	Date	Time	Dry Bulk g/cc	Natural Bulk g/cc	Matrix g/cc	%	
W003091-02	3-Mar-00	11:30	1.97	2.21	2.68	26.4	Gray vf-vcgr silty sl clayey sand w/pebbles
W003091-03	3-Mar-00	11:31	1.93	2.19	2.68	27.9	Gray vf-vcgr silty sl clayey sand
W003091-04	3-Mar-00	13:10	1.69	2.03	2.72	37.6	Gray vf-fgr sl silty sand
W003091-06	3-Mar-00	16:15	1.89	2.13	2.52	25.0	Gray vf-vcgr v silty clayey sand w/pebbles
W003091-07	3-Mar-00	16:20	1.99	2.22	2.65	24.7	Gray vf-vcgr silty sl clayey sand w/pebbles

Grain and pore volumes were determined using Boyle's Law methods as per API RP-40.
Total porosity, bulk and grain densities were calculated as per API RP-40.

BASELINE
5900 Hollis Street, Suite D
Emeryville, CA 94608
(510) 420-8686

CHAIN OF CUSTODY RECORD

W003091

Turn-around Time: Normal
Lab: Sequoia
BASELINE Contact Person: Yane Nordhav

Project No.: 98379-15

Project Name and Location: Pacific Dry Dock Yard II

Samplers: (Signature) William K Scott

Sample ID No. Station	Date	Time	Media	Depth	No. of Containers	LAB NO.	TEH as diesel/motor oil with silica gel cleanup	~~TPH with~~ BTX&E)	Oil & Grease	Motor Oil	PNAs	Title 22 Metals	Total Lead	Cd, Cr, Pb, Ni, Zn	PAHs	Porosity / Bulk Density	Volumetric water content / Moisture % solids (not with)			Remarks/ Composite	Detection Limits
MW-1; 2.5-3.0	3-1-00	9:51	soil	2.5-3.0	1	01A	X							X	X						
MW-2; 1.0-1.5		11:30		1.0-1.5	1	02A										X	X			Use as One Sample if needed	
MW-2; 1.5-2.0		11:31		1.5-2.0	1	03A										X	X				
MW-2; 3-3.5		13:10		3-3.5	1	04A										X	X				
MW-2; 3.5-4		13:15		3.5-4.0	1	05A	X							X	X						
MW-3; 3.0-3.5		16:15		3.0-3.5	1	06A										X	X				
MW-3; 5.0-5.5		16:20		5.0-5.5	1	07A	X							X	X	X	X				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	
William K Scott	3-2-00 / 11:15	Will H	3-2-00 11:15	Conditions of Samples Upon Arrival at Laboratory:
Will H	3-2-00 12:30			Remarks:
		WC. Ronald C. Jensen	3/2/00 12:30	

CCSTRCDE.FM2

ADMIN(AD4) 5/27/92

Quality Control Checklist
for Review of Laboratory Report

Job No.: 98379-15
Site: Pac. Dry Dock II
Laboratory: Sequoia
Laboratory Report No: W003091
Report Date: 3/23/00
BASELINE Review By: J. Kane

	Yes	No	NA
GENERAL QUESTIONS **(Describe "no" responses below in "comments" section. Contact the laboratory, as required, for further explanation or action on "no" responses; document discussion in comments section.)**			
1a. Does the report include a case narrative? *(A case narrative MUST be prepared by the lab for all analytical work requested by BASELINE)*	X		
1b. Is the number of pages for the lab report as indicated on the case narrative/lab transmittal consistent with the number of pages that are included in report?	X		
1c. Does the case narrative indicate which samples were analyzed by a subcontractor and the subcontractor's name?	X		
1d. Does the case narrative summarize subsequent requests not shown on the chain-of-custody (e.g., additional analyses requested, release of "hold" samples)?			X
1e. Does the case narrative explain why requested analyses could not be performed by laboratory (e.g., insufficient sample)?			X
1f. Does the case narrative explain all problems with the QA/QC data as identified in the checklist (as applicable) ?			X
2a. Is the laboratory report format consistent and legible throughout the report?	X		
2b. Are the sample and reported dates shown in the laboratory report correct?	X		
3a. Does the lab report include the original chain-of-custody form?		X	
3b. Were all samples appropriately analyzed as requested on the chain-of-custody form?		X	
4. Was the lab report signed and dated as being reviewed by the laboratory director, QA manager, or other appropriate personnel? (Some lab reports have signature spaces for each page). (This requirement also applies to any analyses subcontracted out by the laboratory)	X		
5a. Are preparation methods, cleanup methods (if applicable), and laboratory methods indicated for all analyses?	X		
5b. If additional analytes were requested as part of the reporting of the data for an analytical method, were these included in the lab report?			X
6. Are the units in the lab report provided for each analysis consistent throughout the report?	X		
7. Are the detection limits (DL) appropriate based on the intended use of the data? (e.g., DL below applicable MCLs for water quality issues?)	X		
8a. Are detection limits appropriate based on the analysis performed? (i.e., not elevated due to dilution effects)		X	
8b. If no, is an explanation provided by the laboratory?	X		

	Yes	No	NA
9a. Were the samples analyzed within the appropriate holding time? (generally 2 weeks for volatiles, and up to 6 months for total metals)	X		
9b. If no, was it flagged in the report?			X
10. If samples were composited prior to analysis, does the lab report indicate which samples were composited for each analysis?			X
11a. Do the chromatograms confirm quantitative laboratory results? (petroleum hydrocarbons)	X		
11b. Is a standard chromatogram(s) included in the laboratory report?	X		
11c. Do the chromatograms confirm laboratory notes, if present (e.g., sample exhibits lighter hydrocarbon than standard)	X		
12. Are the results consistent with previous analytical results from the site? *(If no, contact the lab and request review/reanalysis of data, as appropriate)*	X		
13a. REVISED LAB REPORTS ONLY. Is the revised lab report or revised pages to a lab report signed and dated as being reviewed by the laboratory director, QA manager, or other appropriate personnel?			X
13b. REVISED LAB REPORTS ONLY. Does the case narrative indicate the date of revision and provide an explanation for the revision?			X
13c. REVISED LAB REPORTS ONLY. Does the revised lab report adequately address the problem(s) which triggered the need for a revision?			X
13d. REVISED LAB REPORTS ONLY. Are the data included in the revised report the same as data reported in the original report, except where the report was revised to correct incorrectly reported data?			X
QA/QC Questions Field/Laboratory Quality Control - Groundwater Analyses			
14. Are field blanks reported as "ND"? (groundwater samples) *A field blank is a sample of DI water which is prepared in the field using the same collection and handling procedures as the other samples collected, and used to demonstrate that the sampling procedure has not contaminated the sample.*			X
15. Are trip blanks reported as "ND"? (groundwater samples/volatile analyses) *A trip blank is a sample of contaminant-free matrix placed in an appropriate container by the lab and transported with the field samples collected. Provides information regarding positive interference introduced during sample transport, storage, preservation, and analysis. The sample is NOT opened in the field.*			X
16. Are duplicate sample results consistent with the original sample? (groundwater samples) *Field duplicates consist of two independent samples collected at the same sampling location during a single sampling event. Used to evaluate precision of the analytical data and sampling technique. (Differences between the duplicate and sample results may also be attributed to environmental variability).*			X

	Yes	No	NA
Batch Quality Control (Samples are batched together by matrix [soil, water] and analyses requested. A batch generally consists of 20 or fewer samples of the same matrix type, and is prepared using the same reagents, standards, procedures, and time frame as the samples. QC samples are run with each batch to assess performance of the entire measurement process.)			
17. Do the sample batch numbers and corresponding laboratory QA/QC batch numbers match?	X		
18a. Are method blanks (MB) for the analytical method(s) below the laboratory reporting limits? *Used to assess lab contamination and prevent false positive results. MBs should be "ND."*	X		
18b. If no, is an explanation provided in the case narrative to validate the data?			X
18c. Are analytes which may be considered laboratory contaminants reported below the laboratory reporting limit? *Common lab contaminants include acetone, methylene chloride, diethylhexyl phthalate, and di-n-octyl phthalate.*			X
18d. If no, was the laboratory contacted to determine whether reported analyte could be a potential laboratory contaminant and was an explanation included in the case narrative?			X
19. Are laboratory control samples (LCS) and LCS duplicate (LCSD) [a.k.a., Blank Spike (BS) and BS duplicates (BSD)] within laboratory reporting limits? Limits should be provided on the report. *LCS is a reagent blank spike with a representative selection of target analyte(s) and prepared in the same manner as the samples analyzed. The LCS should be spiked with the same analytes as the matrix spike (below). The LCS is free from interferences from the sample matrix and demonstrates the ability of the lab instruments to recover the target analytes. Accuracy (recovery information) is generally reported as % spike recovery; precision (reproducibility of results) between the LCS and LCSD is generally reported as the relative percent difference (RPD). LCS/LCSD can be run in addition to or in lieu of, matrix QC data.*	X		
20a. Are the Matrix QC data (i.e., MS/MSD) within laboratory limits? Limits should be provided on the lab report. *The lab selects a sample from the batch and analyzes a spike and a spike duplicate of that sample. Matrix QC data is used to obtain precision and accuracy information and is reported in the same manner as LCS/LCSD. If the MS/MSD fails, the results may still be considered valid if the MB and either the LCS/LCSD or BS/BSD is within the lab's limits (failure is probably due to matrix interference).*	X		
20b. If no, is the MB and either LCS/LCSD or BS/BSD within lab limits to validate the data?			X

	Yes	No	NA
Sample Quality Control			
21a. Are the surrogate spikes reported within the lab's acceptable recovery limits? *A surrogate is a non-target analyte, which is similar in chemical structure to the analyte(s) being analyzed for, and which is not commonly found in environmental samples. A known concentration of the surrogate is spike into the sample or QA "sample" prior to extraction or sample preparation. Results are usually reported as % recovery of the spike. Failure to meet lab's limits for primary and secondary surrogates results in rebatching and reanalysis of the sample; failure of only the primary or the secondary surrogate may be acceptable under certain circumstances. Failure generally is due to coelution with the sample matrix.*		X	
21b. If no, is an explanation given in the case narrative to validate the data?	X		

Comments:
3a. Seaquoia will not provide original COC. Will store for 5 years.
3b. Analyzed 4 samples - only 3 req. for TEH, PAH, Metals.
8a. MW-3 sample DLs raised 10% due to non-target compounds.
21a. One TEH surrogate recovery above limits due to coelution.

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
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www.sequolalabs.com

28 March, 2000

RECEIVED
APR 7 2000
BASELINE

Yane Nordhon
Baseline
5900 Hollis St. Suite D
Emeryville, CA 94608

RE: Pacific Dry Dock Yard II
Sequoia Report: W003163

Enclosed are the results of analyses for samples received by the laboratory on 07-Mar-00 16:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Alan B. Kemp
Laboratory Director

CA ELAP Certificate #1271

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	W003163-01	Water	06-Mar-00 15:45	07-Mar-00 16:40
MW-2	W003163-02	Water	06-Mar-00 15:10	07-Mar-00 16:40
MW-3	W003163-03	Water	06-Mar-00 14:40	07-Mar-00 16:40

Alan B. Kemp, Laboratory Director

Sequoia Analytical

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Walnut Creek, CA 94598
(925) 988-9600
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www.sequoialabs.com

Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

Diesel Hydrocarbons (C9-C24) with Silica Gel Cleanup by DHS LUFT

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (W003163-01) Water	**Sampled: 06-Mar-00 15:45**	**Received: 07-Mar-00 16:40**							
Diesel Range Hydrocarbons	**120**	50	ug/l	1	0C13023	13-Mar-00	16-Mar-00	DHS LUFT	D-06,D-12
Motor Oil (C16-C36)	**250**	250	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*118 %*	*50-150*		"	"	"	"	
MW-2 (W003163-02) Water	**Sampled: 06-Mar-00 15:10**	**Received: 07-Mar-00 16:40**							
Diesel Range Hydrocarbons	**240**	50	ug/l	1	0C13023	13-Mar-00	16-Mar-00	DHS LUFT	D-14
Motor Oil (C16-C36)	ND	250	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*104 %*	*50-150*		"	"	"	"	
MW-3 (W003163-03) Water	**Sampled: 06-Mar-00 14:40**	**Received: 07-Mar-00 16:40**							
Diesel Range Hydrocarbons	ND	50	ug/l	1	0C13023	13-Mar-00	16-Mar-00	DHS LUFT	
Motor Oil (C16-C36)	ND	250	"	"	"	"	"	"	
Surrogate: n-Pentacosane		*74.2 %*	*50-150*		"	"	"	"	

Sequoia Analytical

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Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

BTEX by DHS LUFT

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (W003163-01) Water Sampled: 06-Mar-00 15:45 Received: 07-Mar-00 16:40									
Benzene	**0.67**	0.50	ug/l	1	0C14001	14-Mar-00	14-Mar-00	EPA 8020	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	**3.6**	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*86.3 %*	*70-130*		"	"	"	"	
MW-2 (W003163-02) Water Sampled: 06-Mar-00 15:10 Received: 07-Mar-00 16:40									
Benzene	ND	0.50	ug/l	1	0C10001	10-Mar-00	10-Mar-00	EPA 8020	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	**4.4**	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*94.3 %*	*70-130*		"	"	"	"	
MW-3 (W003163-03) Water Sampled: 06-Mar-00 14:40 Received: 07-Mar-00 16:40									
Benzene	ND	0.50	ug/l	1	0C09002	09-Mar-00	09-Mar-00	EPA 8020	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*111 %*	*70-130*		"	"	"	"	

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

Metals Scan by ICP

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (W003163-01) Water	**Sampled: 06-Mar-00 15:45**		**Received: 07-Mar-00 16:40**						
Cadmium	ND	0.010	mg/l	1	0C20014	20-Mar-00	22-Mar-00	ICP Scan	
Chromium	**0.023**	0.010	"	"	"	"	"	"	
Lead	ND	0.020	"	"	"	"	"	"	
Nickel	**0.016**	0.010	"	"	"	"	"	"	
Zinc	ND	0.040	"	"	"	"	"	"	
MW-2 (W003163-02) Water	**Sampled: 06-Mar-00 15:10**		**Received: 07-Mar-00 16:40**						
Cadmium	ND	0.010	mg/l	1	0C20014	20-Mar-00	22-Mar-00	ICP Scan	
Chromium	**0.024**	0.010	"	"	"	"	"	"	
Lead	ND	0.020	"	"	"	"	"	"	
Nickel	**0.029**	0.010	"	"	"	"	"	"	
Zinc	ND	0.040	"	"	"	"	"	"	
MW-3 (W003163-03) Water	**Sampled: 06-Mar-00 14:40**		**Received: 07-Mar-00 16:40**						
Cadmium	ND	0.010	mg/l	1	0C20014	20-Mar-00	22-Mar-00	ICP Scan	
Chromium	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.020	"	"	"	"	"	"	
Nickel	ND	0.010	"	"	"	"	"	"	
Zinc	ND	0.040	"	"	"	"	"	"	

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

Semivolatile Organic Compounds by EPA Method 8270B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (W003163-01) Water Sampled: 06-Mar-00 15:45 Received: 07-Mar-00 16:40									
Acenaphthene	ND	5.0	ug/l	1	0C08018	08-Mar-00	16-Mar-00	EPA 8270B	
Acenaphthylene	ND	5.0	"	"	"	"	"	"	
Anthracene	ND	5.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.0	"	"	"	"	"	"	
Benzo[a]pyrene	ND	5.0	"	"	"	"	"	"	
Chrysene	ND	5.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	5.0	"	"	"	"	"	"	
Fluoranthene	ND	5.0	"	"	"	"	"	"	
Fluorene	ND	5.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
Phenanthrene	ND	5.0	"	"	"	"	"	"	
Pyrene	ND	5.0	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*44.8 %*		*21-110*	"	"	"	"	
Surrogate: Phenol-d6		*29.1 %*		*10-110*	"	"	"	"	
Surrogate: Nitrobenzene-d5		*81.4 %*		*35-114*	"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*88.4 %*		*43-116*	"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*88.7 %*		*10-123*	"	"	"	"	
Surrogate: p-Terphenyl-d14		*85.0 %*		*33-141*	"	"	"	"	
MW-2 (W003163-02) Water Sampled: 06-Mar-00 15:10 Received: 07-Mar-00 16:40									
Acenaphthene	**15**	5.0	ug/l	1	0C08018	08-Mar-00	16-Mar-00	EPA 8270B	
Acenaphthylene	ND	5.0	"	"	"	"	"	"	
Anthracene	ND	5.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.0	"	"	"	"	"	"	
Benzo[a]pyrene	ND	5.0	"	"	"	"	"	"	
Chrysene	ND	5.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	5.0	"	"	"	"	"	"	
Fluoranthene	ND	5.0	"	"	"	"	"	"	
Fluorene	**5.8**	5.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.0	"	"	"	"	"	"	

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

Semivolatile Organic Compounds by EPA Method 8270B

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (W003163-02) Water Sampled: 06-Mar-00 15:10 Received: 07-Mar-00 16:40									
2-Methylnaphthalene	ND	5.0	ug/l	1	0C08018	08-Mar-00	16-Mar-00	EPA 8270B	
Naphthalene	**39**	5.0	"	"	"	"	"	"	
Phenanthrene	**6.5**	5.0	"	"	"	"	"	"	
Pyrene	ND	5.0	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*41.8 %*	*21-110*		"	"	"	"	
Surrogate: Phenol-d6		*25.9 %*	*10-110*		"	"	"	"	
Surrogate: Nitrobenzene-d5		*81.6 %*	*35-114*		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*89.1 %*	*43-116*		"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*87.3 %*	*10-123*		"	"	"	"	
Surrogate: p-Terphenyl-d14		*83.6 %*	*33-141*		"	"	"	"	
MW-3 (W003163-03) Water Sampled: 06-Mar-00 14:40 Received: 07-Mar-00 16:40									
Acenaphthene	ND	5.0	ug/l	1	0C08018	08-Mar-00	16-Mar-00	EPA 8270B	
Acenaphthylene	ND	5.0	"	"	"	"	"	"	
Anthracene	ND	5.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.0	"	"	"	"	"	"	
Benzo[a]pyrene	ND	5.0	"	"	"	"	"	"	
Chrysene	ND	5.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	5.0	"	"	"	"	"	"	
Fluoranthene	ND	5.0	"	"	"	"	"	"	
Fluorene	ND	5.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
Phenanthrene	ND	5.0	"	"	"	"	"	"	
Pyrene	ND	5.0	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*30.9 %*	*21-110*		"	"	"	"	
Surrogate: Phenol-d6		*19.3 %*	*10-110*		"	"	"	"	
Surrogate: Nitrobenzene-d5		*64.0 %*	*35-114*		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*70.8 %*	*43-116*		"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*86.7 %*	*10-123*		"	"	"	"	
Surrogate: p-Terphenyl-d14		*91.1 %*	*33-141*		"	"	"	"	

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

Diesel Hydrocarbons (C9-C24) with Silica Gel Cleanup by DHS LUFT - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C13023 - EPA 3510B										
Blank (0C13023-BLK1)				Prepared: 13-Mar-00 Analyzed: 15-Mar-00						
Jet-A (C9-C17)	ND	50	ug/l							
Diesel Range Hydrocarbons	ND	50	"							
Motor Oil (C16-C36)	ND	250	"							
Surrogate: n-Pentacosane	*25.0*		"	*33.3*		*75.1*	*50-150*			
LCS (0C13023-BS1)				Prepared: 13-Mar-00 Analyzed: 15-Mar-00						
Diesel Range Hydrocarbons	470	50	ug/l	500		94.0	35-125			
Surrogate: n-Pentacosane	*35.7*		"	*33.3*		*107*	*50-150*			
LCS Dup (0C13023-BSD1)				Prepared: 13-Mar-00 Analyzed: 15-Mar-00						
Diesel Range Hydrocarbons	481	50	ug/l	500		96.2	35-125	2.31	50	
Surrogate: n-Pentacosane	*37.7*		"	*33.3*		*113*	*50-150*			

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

BTEX by DHS LUFT - Quality Control
Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C09002 - EPA 5030B [P/T]										
Blank (0C09002-BLK1)				Prepared & Analyzed: 09-Mar-00						
Benzene	ND	0.50	ug/l							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Surrogate: a,a,a-Trifluorotoluene	*34.1*		"	*30.0*		*114*	*70-130*			
LCS (0C09002-BS1)				Prepared & Analyzed: 09-Mar-00						
Benzene	20.8	0.50	ug/l	20.0		104	70-130			
Toluene	20.6	0.50	"	20.0		103	70-130			
Ethylbenzene	21.3	0.50	"	20.0		106	70-130			
Xylenes (total)	64.9	0.50	"	60.0		108	70-130			
Surrogate: a,a,a-Trifluorotoluene	*29.8*		"	*30.0*		*99.3*	*70-130*			
Matrix Spike (0C09002-MS1)		**Source: W003104-01**		Prepared & Analyzed: 09-Mar-00						
Benzene	21.6	0.50	ug/l	20.0	ND	108	70-130			
Toluene	21.5	0.50	"	20.0	ND	108	70-130			
Ethylbenzene	22.2	0.50	"	20.0	ND	111	70-130			
Xylenes (total)	66.8	0.50	"	60.0	ND	111	70-130			
Surrogate: a,a,a-Trifluorotoluene	*30.9*		"	*30.0*		*103*	*70-130*			
Matrix Spike Dup (0C09002-MSD1)		**Source: W003104-01**		Prepared & Analyzed: 09-Mar-00						
Benzene	21.2	0.50	ug/l	20.0	ND	106	70-130	1.87	20	
Toluene	20.8	0.50	"	20.0	ND	104	70-130	3.31	20	
Ethylbenzene	21.6	0.50	"	20.0	ND	108	70-130	2.74	20	
Xylenes (total)	64.3	0.50	"	60.0	ND	107	70-130	3.81	20	
Surrogate: a,a,a-Trifluorotoluene	*28.1*		"	*30.0*		*93.7*	*70-130*			

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

BTEX by DHS LUFT - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C10001 - EPA 5030B [P/T]										
Blank (0C10001-BLK1)				Prepared & Analyzed: 10-Mar-00						
Benzene	ND	0.50	ug/l							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Surrogate: a,a,a-Trifluorotoluene	*30.8*		"	*30.0*		*103*	*70-130*			
LCS (0C10001-BS1)				Prepared & Analyzed: 10-Mar-00						
Benzene	17.2	0.50	ug/l	20.0		86.0	70-130			
Toluene	17.6	0.50	"	20.0		88.0	70-130			
Ethylbenzene	16.1	0.50	"	20.0		80.5	70-130			
Xylenes (total)	56.9	0.50	"	60.0		94.8	70-130			
Surrogate: a,a,a-Trifluorotoluene	*26.2*		"	*30.0*		*87.3*	*70-130*			
LCS Dup (0C10001-BSD1)				Prepared & Analyzed: 10-Mar-00						
Benzene	17.5	0.50	ug/l	20.0		87.5	70-130	1.73	20	
Toluene	18.0	0.50	"	20.0		90.0	70-130	2.25	20	
Ethylbenzene	16.6	0.50	"	20.0		83.0	70-130	3.06	20	
Xylenes (total)	58.8	0.50	"	60.0		98.0	70-130	3.28	20	
Surrogate: a,a,a-Trifluorotoluene	*28.1*		"	*30.0*		*93.7*	*70-130*			
Matrix Spike (0C10001-MS1)		**Source: W003107-04**		Prepared & Analyzed: 10-Mar-00						**Q-01**
Benzene	13.6	0.50	ug/l	20.0	ND	68.0	70-130			
Toluene	14.1	0.50	"	20.0	ND	70.5	70-130			
Ethylbenzene	14.3	0.50	"	20.0	ND	71.5	70-130			
Xylenes (total)	46.0	0.50	"	60.0	ND	76.7	70-130			
Surrogate: a,a,a-Trifluorotoluene	*22.3*		"	*30.0*		*74.3*	*70-130*			
Matrix Spike Dup (0C10001-MSD1)		**Source: W003107-04**		Prepared & Analyzed: 10-Mar-00						**Q-01**
Benzene	16.4	0.50	ug/l	20.0	ND	82.0	70-130	18.7	20	
Toluene	16.8	0.50	"	20.0	ND	84.0	70-130	17.5	20	
Ethylbenzene	18.7	0.50	"	20.0	ND	93.5	70-130	26.7	20	
Xylenes (total)	54.5	0.50	"	60.0	ND	90.8	70-130	16.9	20	
Surrogate: a,a,a-Trifluorotoluene	*26.0*		"	*30.0*		*86.7*	*70-130*			

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

BTEX by DHS LUFT - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C14001 - EPA 5030B [P/T]										
Blank (0C14001-BLK1)				Prepared & Analyzed: 14-Mar-00						
Benzene	ND	0.50	ug/l							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Surrogate: a,a,a-Trifluorotoluene	*30.6*		"	*30.0*		*102*	*70-130*			
LCS (0C14001-BS1)				Prepared & Analyzed: 14-Mar-00						
Benzene	17.0	0.50	ug/l	20.0		85.0	70-130			
Toluene	17.4	0.50	"	20.0		87.0	70-130			
Ethylbenzene	20.1	0.50	"	20.0		101	70-130			
Xylenes (total)	57.8	0.50	"	60.0		96.3	70-130			
Surrogate: a,a,a-Trifluorotoluene	*27.5*		"	*30.0*		*91.7*	*70-130*			
Matrix Spike (0C14001-MS1)		**Source: W003243-02**		Prepared & Analyzed: 14-Mar-00						
Benzene	17.5	0.50	ug/l	20.0	ND	87.5	70-130			
Toluene	17.6	0.50	"	20.0	ND	88.0	70-130			
Ethylbenzene	16.9	0.50	"	20.0	ND	84.5	70-130			
Xylenes (total)	57.4	0.50	"	60.0	ND	95.7	70-130			
Surrogate: a,a,a-Trifluorotoluene	*25.9*		"	*30.0*		*86.3*	*70-130*			
Matrix Spike Dup (0C14001-MSD1)		**Source: W003243-02**		Prepared & Analyzed: 14-Mar-00						
Benzene	17.2	0.50	ug/l	20.0	ND	86.0	70-130	1.73	20	
Toluene	17.7	0.50	"	20.0	ND	88.5	70-130	0.567	20	
Ethylbenzene	19.3	0.50	"	20.0	ND	96.5	70-130	13.3	20	
Xylenes (total)	56.5	0.50	"	60.0	ND	94.2	70-130	1.58	20	
Surrogate: a,a,a-Trifluorotoluene	*26.8*		"	*30.0*		*89.3*	*70-130*			

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

Metals Scan by ICP - Quality Control
Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C20014 - 200.7										
Blank (0C20014-BLK1)				Prepared: 20-Mar-00 Analyzed: 22-Mar-00						
Cadmium	ND	0.010	mg/l							
Chromium	ND	0.010	"							
Lead	ND	0.020	"							
Nickel	ND	0.010	"							
Zinc	ND	0.040	"							
LCS (0C20014-BS1)				Prepared: 20-Mar-00 Analyzed: 22-Mar-00						
Cadmium	1.02	0.010	mg/l	1.00		102	80-120			
Chromium	1.00	0.010	"	1.00		100	80-120			
Lead	1.000	0.020	"	1.00		100	80-120			
Nickel	1.01	0.010	"	1.00		101	80-120			
Zinc	1.08	0.040	"	1.00		108	80-120			
LCS Dup (0C20014-BSD1)				Prepared: 20-Mar-00 Analyzed: 22-Mar-00						
Cadmium	1.02	0.010	mg/l	1.00		102	80-120	0	20	
Chromium	1.00	0.010	"	1.00		100	80-120	0	20	
Lead	0.986	0.020	"	1.00		98.6	80-120	1.41	20	
Nickel	0.998	0.010	"	1.00		99.8	80-120	1.20	20	
Zinc	1.07	0.040	"	1.00		107	80-120	0.930	20	
Matrix Spike (0C20014-MS1)		Source: W003163-03		Prepared: 20-Mar-00 Analyzed: 22-Mar-00						
Cadmium	0.934	0.010	mg/l	1.00	0.0053	92.9	80-120			
Chromium	0.914	0.010	"	1.00	ND	91.4	80-120			
Lead	0.905	0.020	"	1.00	ND	90.5	80-120			
Nickel	0.921	0.010	"	1.00	0.0097	91.1	80-120			
Zinc	0.970	0.040	"	1.00	0.021	94.9	80-120			
Matrix Spike Dup (0C20014-MSD1)		Source: W003163-03		Prepared: 20-Mar-00 Analyzed: 22-Mar-00						
Cadmium	0.928	0.010	mg/l	1.00	0.0053	92.3	80-120	0.644	20	
Chromium	0.913	0.010	"	1.00	ND	91.3	80-120	0.109	20	
Lead	0.911	0.020	"	1.00	ND	91.1	80-120	0.661	20	
Nickel	0.916	0.010	"	1.00	0.0097	90.6	80-120	0.544	20	
Zinc	0.956	0.040	"	1.00	0.021	93.5	80-120	1.45	20	

Sequoia Analytical

404 N. Wiget Lane
Walnut Creek, CA 94598
(925) 988-9600
FAX (925) 988-9673
www.sequoialabs.com

Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

Semivolatile Organic Compounds by EPA Method 8270B - Quality Control
Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C08018 - EPA 3510B										
Blank (0C08018-BLK1)				Prepared & Analyzed: 08-Mar-00						
Acenaphthene	ND	5.0	ug/l							
Acenaphthylene	ND	5.0	"							
Anthracene	ND	5.0	"							
Benzo (a) anthracene	ND	5.0	"							
Benzo (b) fluoranthene	ND	5.0	"							
Benzo (k) fluoranthene	ND	5.0	"							
Benzo (ghi) perylene	ND	5.0	"							
Benzo[a]pyrene	ND	5.0	"							
Chrysene	ND	5.0	"							
Dibenz (a,h) anthracene	ND	5.0	"							
Fluoranthene	ND	5.0	"							
Fluorene	ND	5.0	"							
Indeno (1,2,3-cd) pyrene	ND	5.0	"							
2-Methylnaphthalene	ND	5.0	"							
Naphthalene	ND	5.0	"							
Phenanthrene	ND	5.0	"							
Pyrene	ND	5.0	"							
Surrogate: 2-Fluorophenol	*66.6*		"	*150*		*44.4*	*21-110*			
Surrogate: Phenol-d6	*41.8*		"	*150*		*27.9*	*10-110*			
Surrogate: Nitrobenzene-d5	*79.2*		"	*100*		*79.2*	*35-114*			
Surrogate: 2-Fluorobiphenyl	*80.2*		"	*100*		*80.2*	*43-116*			
Surrogate: 2,4,6-Tribromophenol	*129*		"	*150*		*86.0*	*10-123*			
Surrogate: p-Terphenyl-d14	*88.4*		"	*100*		*88.4*	*33-141*			
LCS (0C08018-BS1)				Prepared & Analyzed: 08-Mar-00						
Acenaphthene	79.7	5.0	ug/l	100		79.7	46-118			
Pyrene	85.7	5.0	"	100		85.7	26-127			
Surrogate: 2-Fluorophenol	*75.2*		"	*150*		*50.1*	*21-110*			
Surrogate: Phenol-d6	*46.5*		"	*150*		*31.0*	*10-110*			
Surrogate: Nitrobenzene-d5	*87.7*		"	*100*		*87.7*	*35-114*			
Surrogate: 2-Fluorobiphenyl	*85.2*		"	*100*		*85.2*	*43-116*			
Surrogate: 2,4,6-Tribromophenol	*139*		"	*150*		*92.7*	*10-123*			
Surrogate: p-Terphenyl-d14	*92.0*		"	*100*		*92.0*	*33-141*			

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

Semivolatile Organic Compounds by EPA Method 8270B - Quality Control

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0C08018 - EPA 3510B										
LCS Dup (0C08018-BSD1)				Prepared & Analyzed: 08-Mar-00						
Acenaphthene	75.9	5.0	ug/l	100		75.9	46-118	4.88	30	
Pyrene	78.9	5.0	"	100		78.9	26-127	8.26	30	
Surrogate: 2-Fluorophenol	*73.9*		"	*150*		*49.3*	*21-110*			
Surrogate: Phenol-d6	*46.4*		"	*150*		*30.9*	*10-110*			
Surrogate: Nitrobenzene-d5	*82.9*		"	*100*		*82.9*	*35-114*			
Surrogate: 2-Fluorobiphenyl	*81.0*		"	*100*		*81.0*	*43-116*			
Surrogate: 2,4,6-Tribromophenol	*132*		"	*150*		*88.0*	*10-123*			
Surrogate: p-Terphenyl-d14	*85.6*		"	*100*		*85.6*	*33-141*			

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Baseline	Project: Pacific Dry Dock Yard II	
5900 Hollis St. Suite D	Project Number: 98379-15	**Reported:**
Emeryville CA, 94608	Project Manager: Yane Nordhon	28-Mar-00 15:15

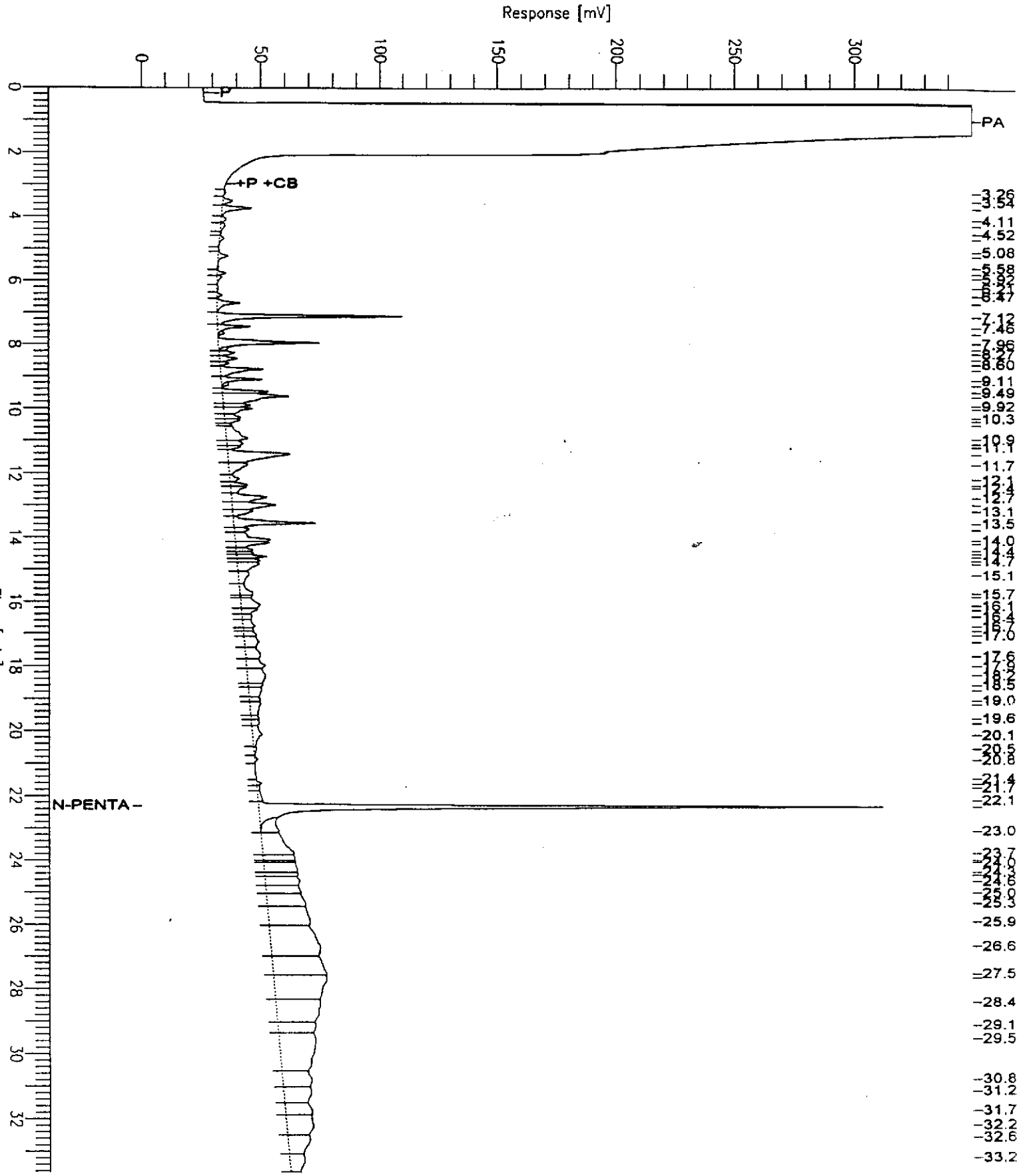
Notes and Definitions

D-06	Discrete peaks.
D-12	Chromatogram Pattern: Unidentified Hydrocarbons > C16
D-14	Chromatogram Pattern: Unidentified Hydrocarbons C9-C24
Q-01	The spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Chromatogram

ple Name : W003163-01
leName : C:\HP3DATA\3AMA338.raw
Method : TPH03A
Start Time : 0.00 min End Time : 33.65 min
Scale Factor: 0.0 Plot Offset: 0 mV

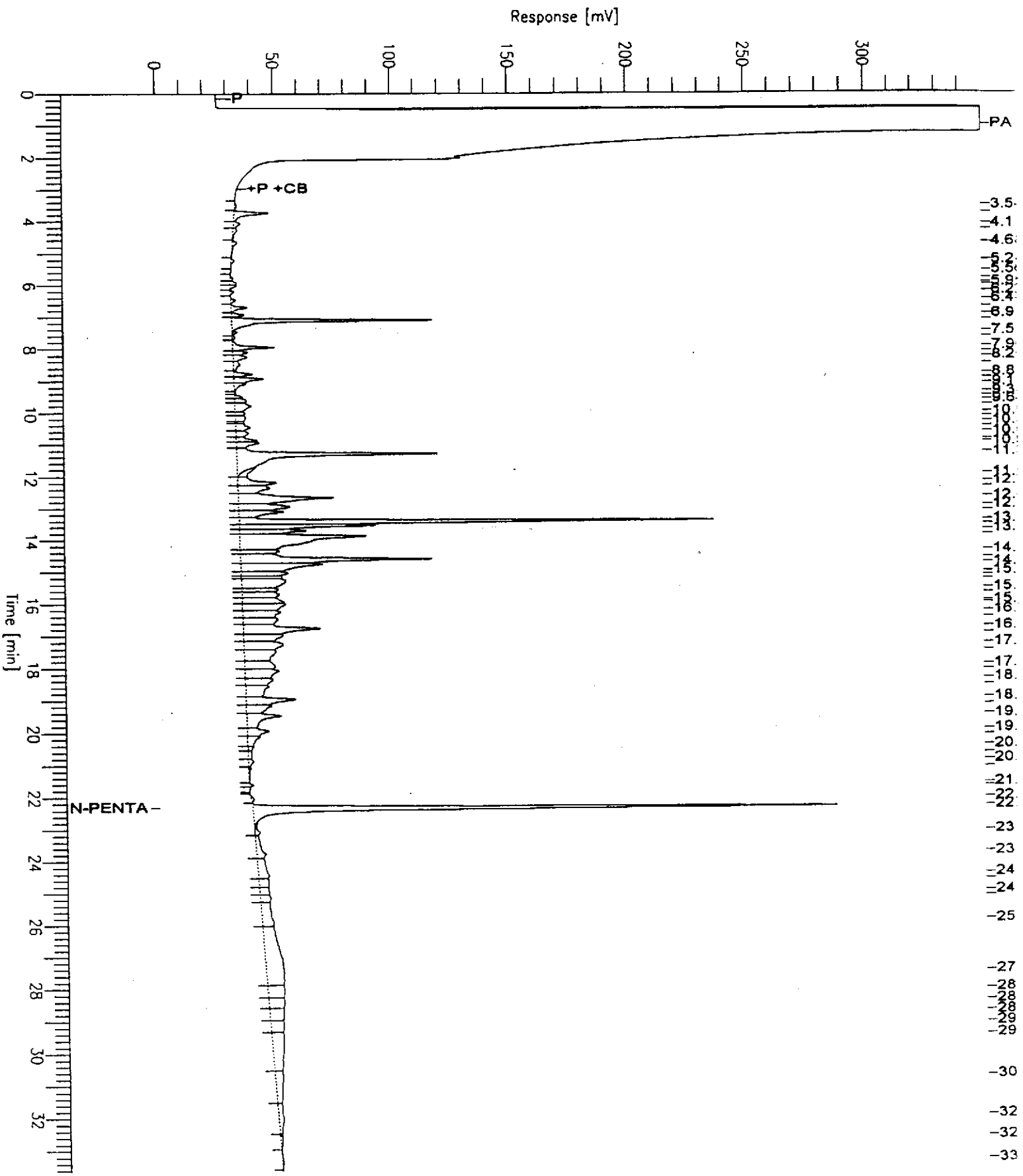
Sample #: Sample Page 1 of 1
Date : 3/16/00 09:17 AM
Time of Injection: 3/16/00 02:16 AM
Low Point : 0.00 mV High Point : 350.00 mV
Plot Scale: 350.0 mV



Chromatogram

Sample Name : W003163-02
FileName : C:\HP3DATA\3AMA343.raw
Method : TPHO3A
Start Time : 0.00 min End Time : 33.65 min
Scale Factor: 0.0 Plot Offset: 0 mV

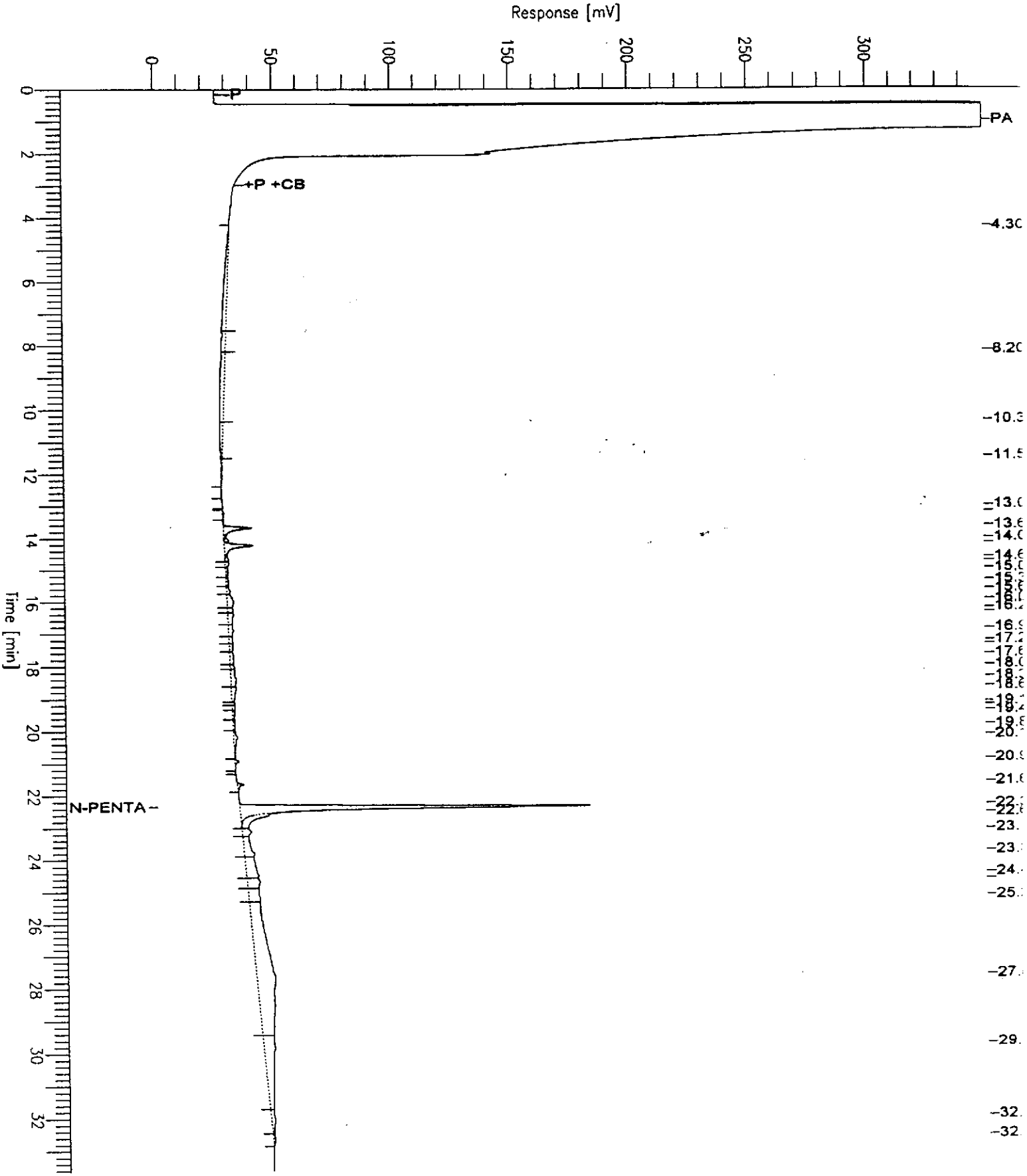
Sample #: Sample Page 1 of 1
Date : 3/16/00 09:19 AM
Time of Injection: 3/16/00 05:58 AM
Low Point : 0.00 mV High Point : 350.00 mV
Plot Scale: 350.0 mV



Chromatogram

Sample Name : W003163-03
FileName : C:\HP3DATA\3AMA344.raw
Method : TPH03A
Start Time : 0.00 min End Time : 33.65 min
Scale Factor: 0.0 Plot Offset: 0 mV

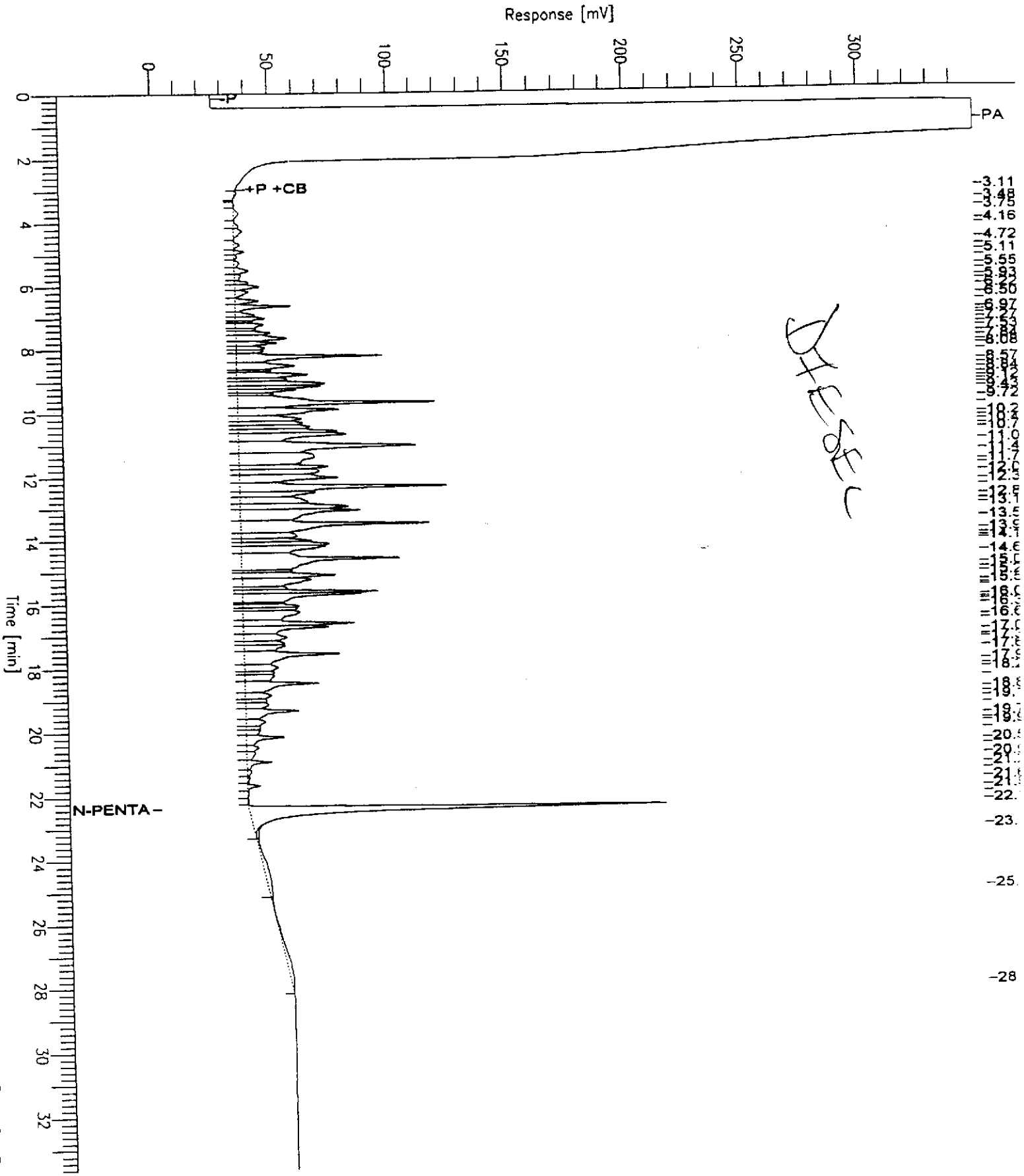
Sample #: Sample
Date : 3/16/00 09:19 AM
Time of Injection: 3/16/00 06:42 AM
Low Point : 0.00 mV High Point : 350.00 mV
Plot Scale: 350.0 mV



Chromatogram

Sample Name : 0030103
FileName : C:\HP3DATA\3AMA328.raw
Method : TPH03A
Start Time : 0.00 min End Time : 33.65 min
Scale Factor: 0.0 Plot Offset: 0 mV

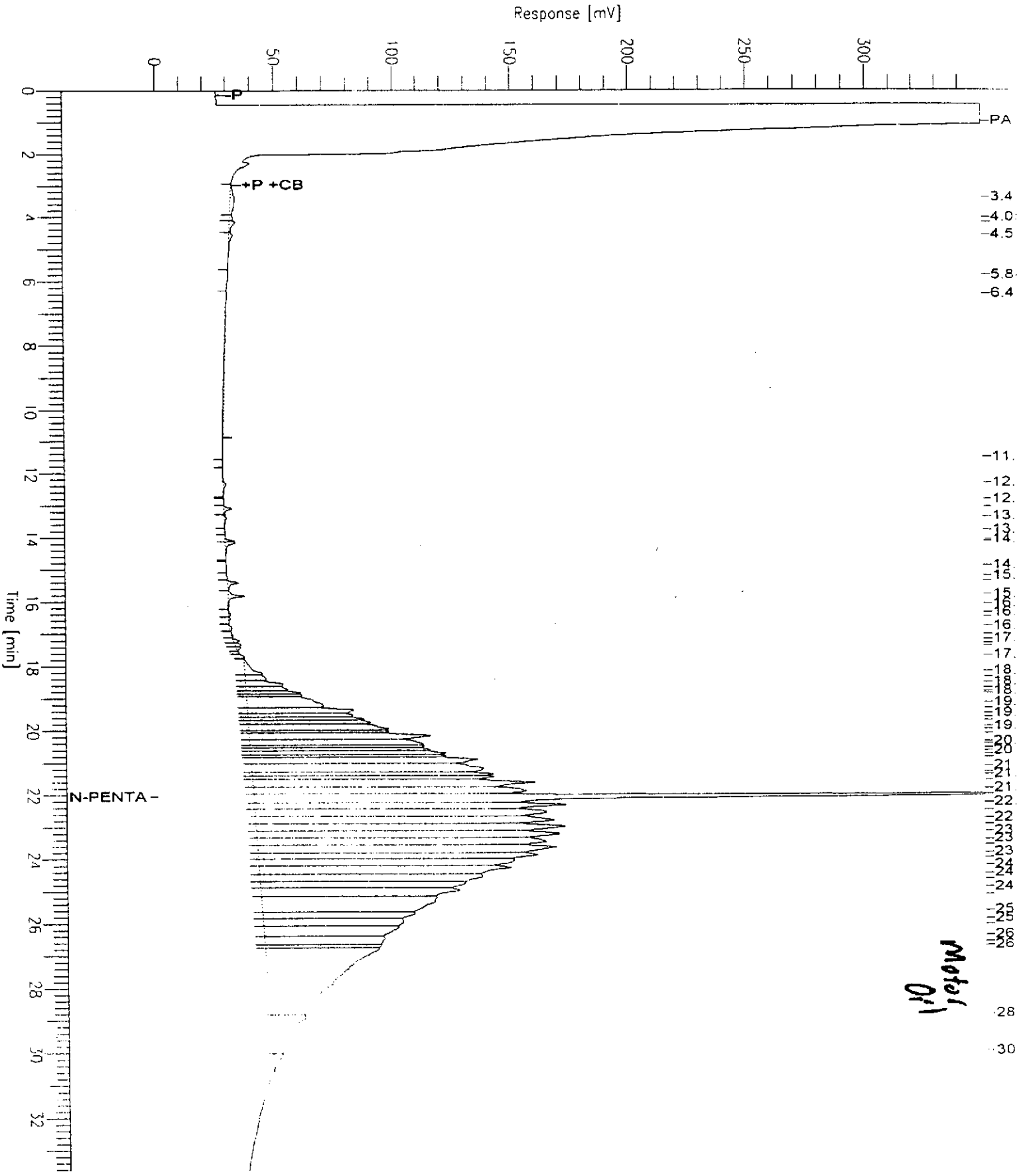
Sample #: 500ppm ICV Page 1 of 1
Date : 3/16/00 09:15 AM
Time of Injection: 3/15/00 06:53 PM
Low Point : 0.00 mV High Point : 350.00 mV
Plot Scale: 350.0 mV



Chromatogram

Sample Name : 0011901
FileName : J:\HP3DATA\3AFB016.raw
Method : TPH03A
Start Time : 0.00 min End Time : 33.65 min
Scale Factor: 0.0 Plot Offset: 0 mV

Sample #: 1000ppm MO Page 1 of 1
Date : 2/2/00 12:20 AM
Time of Injection: 2/1/00 11:43 PM
Low Point : 0.00 mV High Point : 350.00 mV
Plot Scale: 350.0 mV



BASELINE
5900 Hollis Street, Suite D
Emeryville, CA 94608
(510) 420-8686

CHAIN OF CUSTODY RECORD

W003163

Turn-around Time: Normal
Lab: Sequoia Analytical
BASELINE Contact Person: Jane Nadhorne

Project No.	Project Name and Location
98379-15	Pacific Dry Dock yard II

Samplers: (Signature) William K Scott

Sample ID No. Station	Date	Time	Media	Depth	No. of Containers	Analysis: w/ silicagel cleanup TPH as diesel + motor oil	PAHs	BTEX	cd Cr Pb Ni Zn									Remarks/ Composite	Detection Limits
MW-1	3-6-00	15:45	Water	–	5 (1-poly, 2-amber, 2-vials)	X	X	X	X			01	A	E					
MW-2	3-6-00	15:10	Water	–	5 (1-poly, 2-amber, 2-vials)	X	X	X	X			02	↓						
MW-3	3-6-00	14:40	Water	–	5 "	X	X	X	X			03	↓						

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Conditions of Samples Upon Arrival at Laboratory:
William K Scott	6-7-00 / 13:40	[illegible]	3-7-00 13:42	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Remarks: ~~Bill~~ Send invoice to Port of Oakland
[illegible]	3-7-00 / 16:40			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	
		Ronald C. Jensen WC	3/7/00 16:40	

Quality Control Checklist
for Review of Laboratory Report

Job No.: 98379-15 Site: Pac. Dry Dock II

Laboratory: Sequoia Laboratory Report No: W003163

Report Date: 3/28/00 BASELINE Review By: J. Kane

	Yes	No	NA
GENERAL QUESTIONS **(Describe "no" responses below in "comments" section. Contact the laboratory, as required, for further explanation or action on "no" responses; document discussion in comments section.)**			
1a. Does the report include a case narrative? *(A case narrative MUST be prepared by the lab for all analytical work requested by BASELINE)*	X		
1b. Is the number of pages for the lab report as indicated on the case narrative/lab transmittal consistent with the number of pages that are included in report?	X		
1c. Does the case narrative indicate which samples were analyzed by a subcontractor and the subcontractor's name?			X
1d. Does the case narrative summarize subsequent requests not shown on the chain-of-custody (e.g., additional analyses requested, release of "hold" samples)?			X
1e. Does the case narrative explain why requested analyses could not be performed by laboratory (e.g., insufficient sample)?			X
1f. Does the case narrative explain all problems with the QA/QC data as identified in the checklist (as applicable) ?			X
2a. Is the laboratory report format consistent and legible throughout the report?	X		
2b. Are the sample and reported dates shown in the laboratory report correct?	X		
3a. Does the lab report include the original chain-of-custody form?		X	
3b. Were all samples appropriately analyzed as requested on the chain-of-custody form?	X		
4. Was the lab report signed and dated as being reviewed by the laboratory director, QA manager, or other appropriate personnel? (Some lab reports have signature spaces for each page). (This requirement also applies to any analyses subcontracted out by the laboratory)	X		
5a. Are preparation methods, cleanup methods (if applicable), and laboratory methods indicated for all analyses?	X		
5b. If additional analytes were requested as part of the reporting of the data for an analytical method, were these included in the lab report?	X		
6. Are the units in the lab report provided for each analysis consistent throughout the report?	X		
7. Are the detection limits (DL) appropriate based on the intended use of the data? (e.g., DL below applicable MCLs for water quality issues?)		X	
8a. Are detection limits appropriate based on the analysis performed? (i.e., not elevated due to dilution effects)	X		
8b. If no, is an explanation provided by the laboratory?			X

	Yes	No	NA
9a. Were the samples analyzed within the appropriate holding time? (generally 2 weeks for volatiles, and up to 6 months for total metals)	X		
9b. If no, was it flagged in the report?			X
10. If samples were composited prior to analysis, does the lab report indicate which samples were composited for each analysis?			X
11a. Do the chromatograms confirm quantitative laboratory results? (petroleum hydrocarbons)	X		
11b. Is a standard chromatogram(s) included in the laboratory report?	X		
11c. Do the chromatograms confirm laboratory notes, if present (e.g., sample exhibits lighter hydrocarbon than standard)	X		
12. Are the results consistent with previous analytical results from the site? *(If no, contact the lab and request review/reanalysis of data, as appropriate)*	X		
13a. REVISED LAB REPORTS ONLY. Is the revised lab report or revised pages to a lab report signed and dated as being reviewed by the laboratory director, QA manager, or other appropriate personnel?			X
13b. REVISED LAB REPORTS ONLY. Does the case narrative indicate the date of revision and provide an explanation for the revision?			X
13c. REVISED LAB REPORTS ONLY. Does the revised lab report adequately address the problem(s) which triggered the need for a revision?			X
13d. REVISED LAB REPORTS ONLY. Are the data included in the revised report the same as data reported in the original report, except where the report was revised to correct incorrectly reported data?			X
QA/QC Questions Field/Laboratory Quality Control - Groundwater Analyses			
14. Are field blanks reported as "ND"? (groundwater samples) *A field blank is a sample of DI water which is prepared in the field using the same collection and handling procedures as the other samples collected, and used to demonstrate that the sampling procedure has not contaminated the sample.*	N/A		X
15. Are trip blanks reported as "ND"? (groundwater samples/volatile analyses) *A trip blank is a sample of contaminant-free matrix placed in an appropriate container by the lab and transported with the field samples collected. Provides information regarding positive interference introduced during sample transport, storage, preservation, and analysis. The sample is NOT opened in the field.*			X
16. Are duplicate sample results consistent with the original sample? (groundwater samples) *Field duplicates consist of two independent samples collected at the same sampling location during a single sampling event. Used to evaluate precision of the analytical data and sampling technique. (Differences between the duplicate and sample results may also be attributed to environmental variability).*			X

	Yes	No	NA
Batch Quality Control (Samples are batched together by matrix [soil, water] and analyses requested. A batch generally consists of 20 or fewer samples of the same matrix type, and is prepared using the same reagents, standards, procedures, and time frame as the samples. QC samples are run with each batch to assess performance of the entire measurement process.)			
17. Do the sample batch numbers and corresponding laboratory QA/QC batch numbers match?	X		
18a. Are method blanks (MB) for the analytical method(s) below the laboratory reporting limits? *Used to assess lab contamination and prevent false positive results. MBs should be "ND."*	X		
18b. If no, is an explanation provided in the case narrative to validate the data?			X
18c. Are analytes which may be considered laboratory contaminants reported below the laboratory reporting limit? *Common lab contaminants include acetone, methylene chloride, diethylhexyl phthalate, and di-n-octyl phthalate.*			X
18d. If no, was the laboratory contacted to determine whether reported analyte could be a potential laboratory contaminant and was an explanation included in the case narrative?			X
19. Are laboratory control samples (LCS) and LCS duplicate (LCSD) [a.k.a., Blank Spike (BS) and BS duplicates (BSD)] within laboratory reporting limits? Limits should be provided on the report. *LCS is a reagent blank spike with a representative selection of target analyte(s) and prepared in the same manner as the samples analyzed. The LCS should be spiked with the same analytes as the matrix spike (below). The LCS is free from interferences from the sample matrix and demonstrates the ability of the lab instruments to recover the target analytes. Accuracy (recovery information) is generally reported as % spike recovery; precision (reproducibility of results) between the LCS and LCSD is generally reported as the relative percent difference (RPD). LCS/LCSD can be run in addition to or in lieu of, matrix QC data.*	X		
20a. Are the Matrix QC data (i.e., MS/MSD) within laboratory limits? Limits should be provided on the lab report. *The lab selects a sample from the batch and analyzes a spike and a spike duplicate of that sample. Matrix QC data is used to obtain precision and accuracy information and is reported in the same manner as LCS/LCSD. If the MS/MSD fails, the results may still be considered valid if the MB and either the LCS/LCSD or BS/BSD is within the lab's limits (failure is probably due to matrix interference).*	X		
20b. If no, is the MB and either LCS/LCSD or BS/BSD within lab limits to validate the data?			X

	Yes	No	NA
Sample Quality Control			
21a. Are the surrogate spikes reported within the lab's acceptable recovery limits? *A surrogate is a non-target analyte, which is similar in chemical structure to the analyte(s) being analyzed for, and which is not commonly found in environmental samples. A known concentration of the surrogate is spike into the sample or QA "sample" prior to extraction or sample preparation. Results are usually reported as % recovery of the spike. Failure to meet lab's limits for primary and secondary surrogates results in rebatching and reanalysis of the sample; failure of only the primary or the secondary surrogate may be acceptable under certain circumstances. Failure generally is due to coelution with the sample matrix.*	X		
21b. If no, is an explanation given in the case narrative to validate the data?			X

Comments:
7. RL for Cd, Pb & Benzo(a)pyrene >MCL, however RL for Cd & Pb < Catellus ecorisk #'s.
3a. Sequoia will not provide original COC. They store for 5 years min.

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

ANALYTICAL REPORT

Prepared for:

Baseline Environmental
5900 Hollis Street
Suite D
Emeryville, CA 94608

Date: 29-FEB-00
Lab Job Number: 143827
Project ID: 98379-09
Location: Former Pacific Dry Dock

Reviewed by: Anna Lafontaine

Reviewed by:

Curtis & Tompkins, Ltd.

Laboratory Number: 143827
Client: Baseline
Location: Former Pacific Dry Dock
Project#: 98379-09

Receipt Date: 02/08/00

CASE NARRATIVE

This hardcopy data package contains sample and QC results for three soil samples that were received on February 08, 2000.

Total Extractable Hydrocarbons: No analytical problems were encountered.

Polyaromatic Hydrocarbons: The samples were analyzed at dilutions, causing the surrogates to be diluted out. No analytical problems were encountered.

Lead: No analytical problems were encountered.

BASELINE
5900 Hollis Street, Suite D
Emeryville, CA 94608
(510) 420-8686

CHAIN OF CUSTODY RECORD

14 3827

Turn-around Time: Normal
Lab: Curtis & Tompkins
BASELINE Contact Person: YANE Nordhav

Project No.	Project Name and Location
98379-09	Former Pacific Dry Dock, 321 Embarcadero

Samplers: (Signature) William K Scott

	Sample ID No. Station	Date	Time	Media	Depth	No. of Containers	TEH	~~TPH with~~ BTX&E)	Oil & Grease	Motor Oil	PNAs	Title 22 Metals	Total Lead	STLC wet Lead	Remarks/ Composite	Detection Limits
1	GF-11-S; 4.5	2-8-00	10:38	Soil	4.5	1	X	X			X					
2	GF-11-W; 4.5	2-8-00	10:52		4.5	1									Composite into one Sample	5
3	GF-11-N; 4.5	2-8-00	10:59		4.5	1										
4	GF-11-E; 4.5	2-8-00	11:13		4.5	1										
5	GF-12-N; 6.0	2-8-00	12:10		6.0	1									Composite into one Sample	10
6	GF-12-E; 6.0	2-8-00	12:15		6.0	1										
7	GF-12-S; 6.0	2-8-00	12:20		6.0	1										
8	GF-12-W 6.0	2-8-00	12:25		6.0	1										
1	S-1	2-8-00	13:00		0.5	1										5
2	S-2	2-8-00	13:02		0.5	1									Composite into one Sample	
3	S-3	2-8-00	13:10		0.5	1										
4	S-4	2-8-00	13:12		0-5	1										

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Conditions of Samples Upon Arrival at Laboratory:
William K Scott	2-8-00 / 15:40		2/8/01 15:40	Chilled on 2/8/00
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Remarks:
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	

COSTRCDF.PM2

ADMIN(ADD) 5/27/99

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons, GC/FID

Lab #:	143827	Location:	Former Pacific Dry Dock
Client:	Baseline Environmental	Prep:	SHAKER TABLE
Project#:	98379-09	Analysis:	EPA 8015M
Matrix:	Soil	Sampled:	02/08/00
Units:	mg/Kg	Received:	02/08/00
Basis:	wet	Prepared:	02/15/00
Batch#:	53804		

Field ID: COMP GF-11
Type: SAMPLE
Lab ID: 143827-005
Diln Fac: 3.000
Analyzed: 02/19/00

Analyte	Result	RL
Diesel C10-C24	250 H Y	3.0

Surrogate	%REC	Limits
Hexacosane	121	60-136

Field ID: COMP GF-12
Type: SAMPLE
Lab ID: 143827-010
Diln Fac: 5.000
Analyzed: 02/19/00

Analyte	Result	RL
Diesel C10-C24	710 H Y	5.0

Surrogate	%REC	Limits
Hexacosane	110	60-136

Type: BLANK
Lab ID: QC108018
Diln Fac: 1.000
Analyzed: 02/17/00

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
Hexacosane	65	60-136

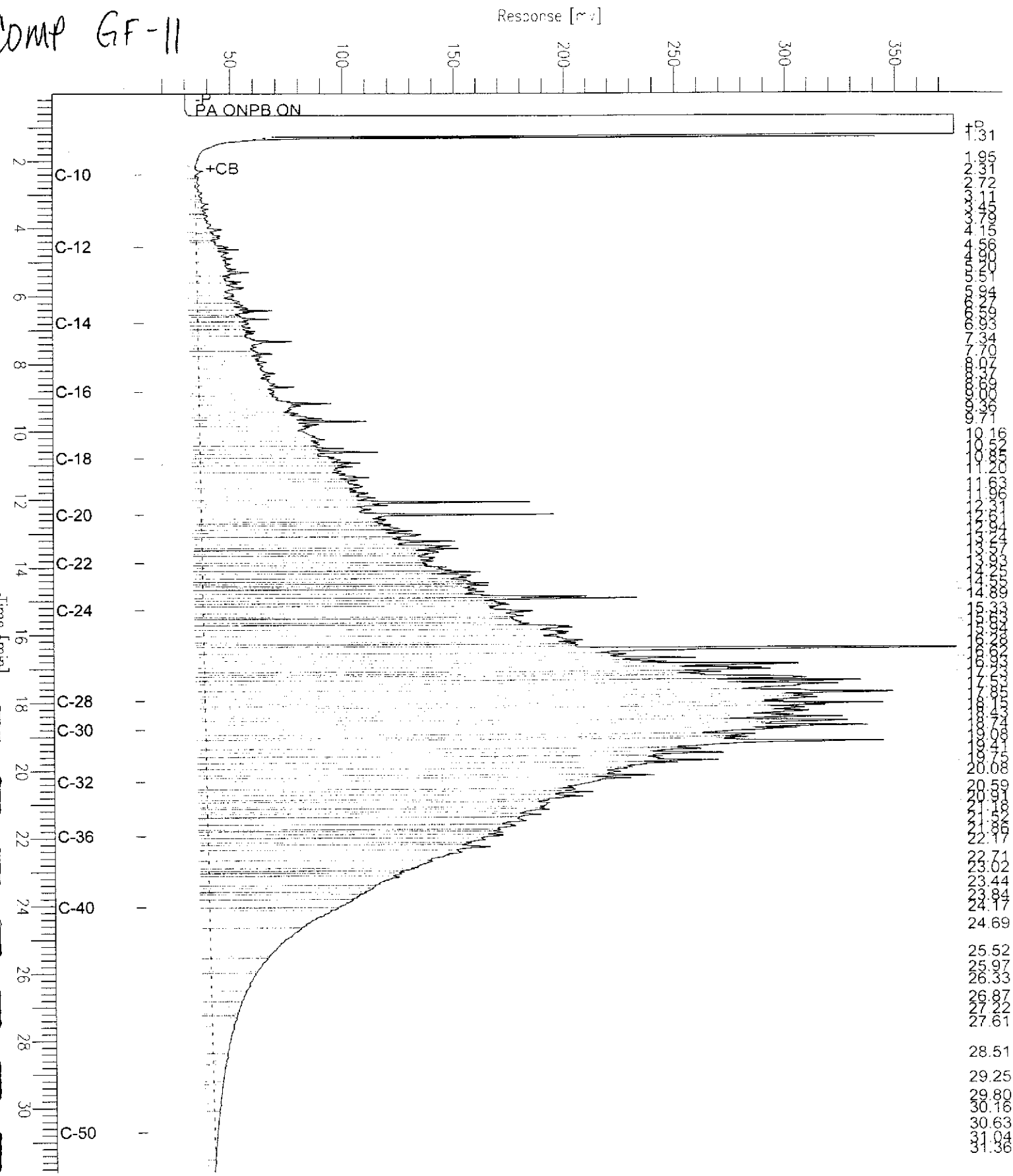
H = Heavier hydrocarbons contributed to the quantitation
Y = Sample exhibits fuel pattern which does not resemble standard
ND = Not Detected
RL = Reporting Limit

Chromatogram

Sample Name : 143827-005,53804
FileName : G:\GC13\CHB\049B040.RAW
Method : BTEH040.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 12 mV

Sample #: 53804 Page 1 of 1
Date : 02/21/2000 11:09 AM
Time of Injection: 02/19/2000 09:31 PM
Low Point : 11.56 mV High Point : 376.74 mV
Plot Scale: 365.2 mV

Comp GF-11

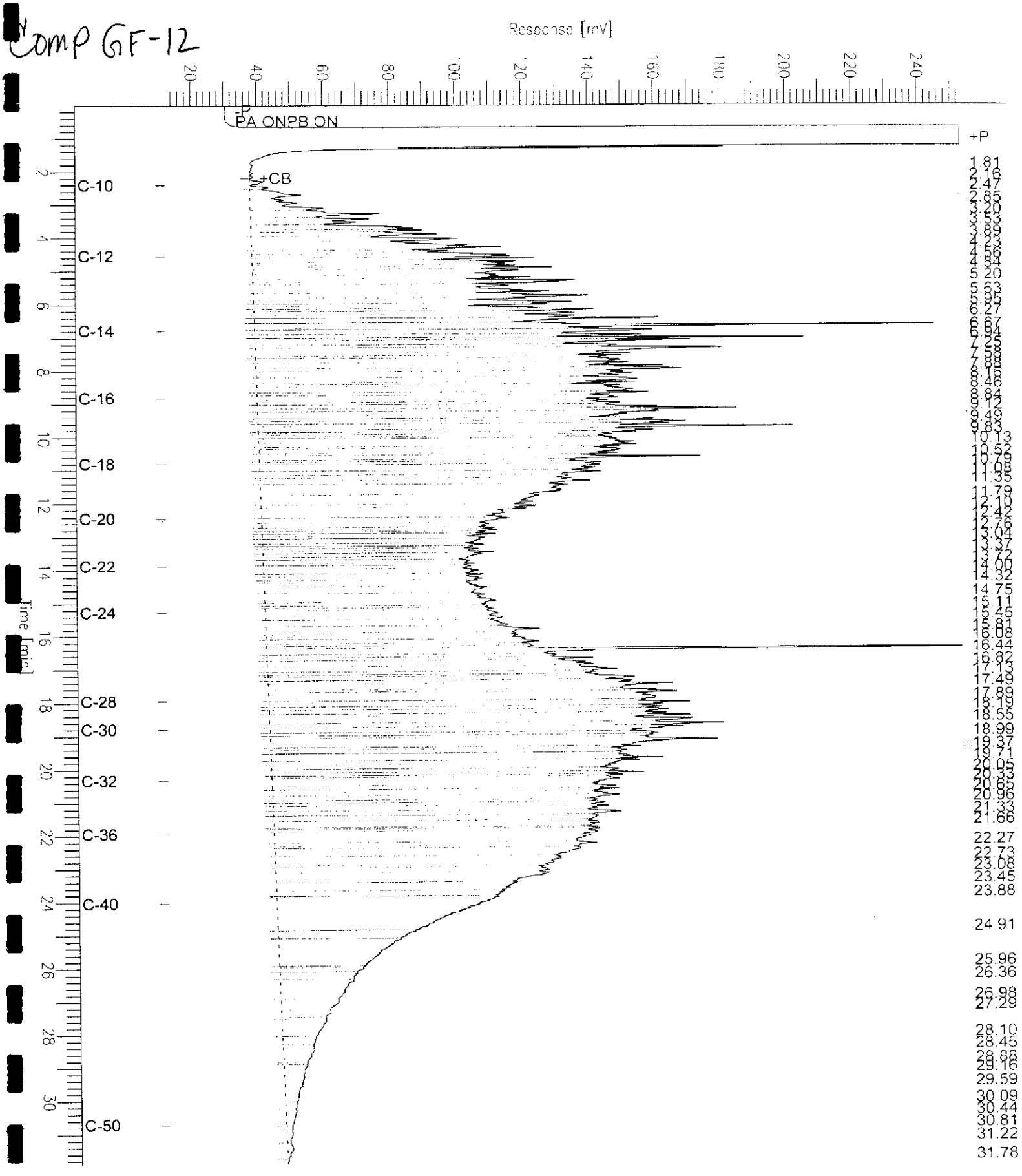


Chromatogram

Sample Name : 143827-010,53804
FileName : G:\GC13\CHB\049B033.RAW
Method : BTEH040.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 12 mV

Sample #: 53804 Page 1 of 1
Date : 02/21/2000 11:01 AM
Time of Injection: 02/19/2000 04:38 PM
Low Point : 12.18 mV High Point : 252.97 mV
Plot Scale: 240.8 mV

Comp GF-12

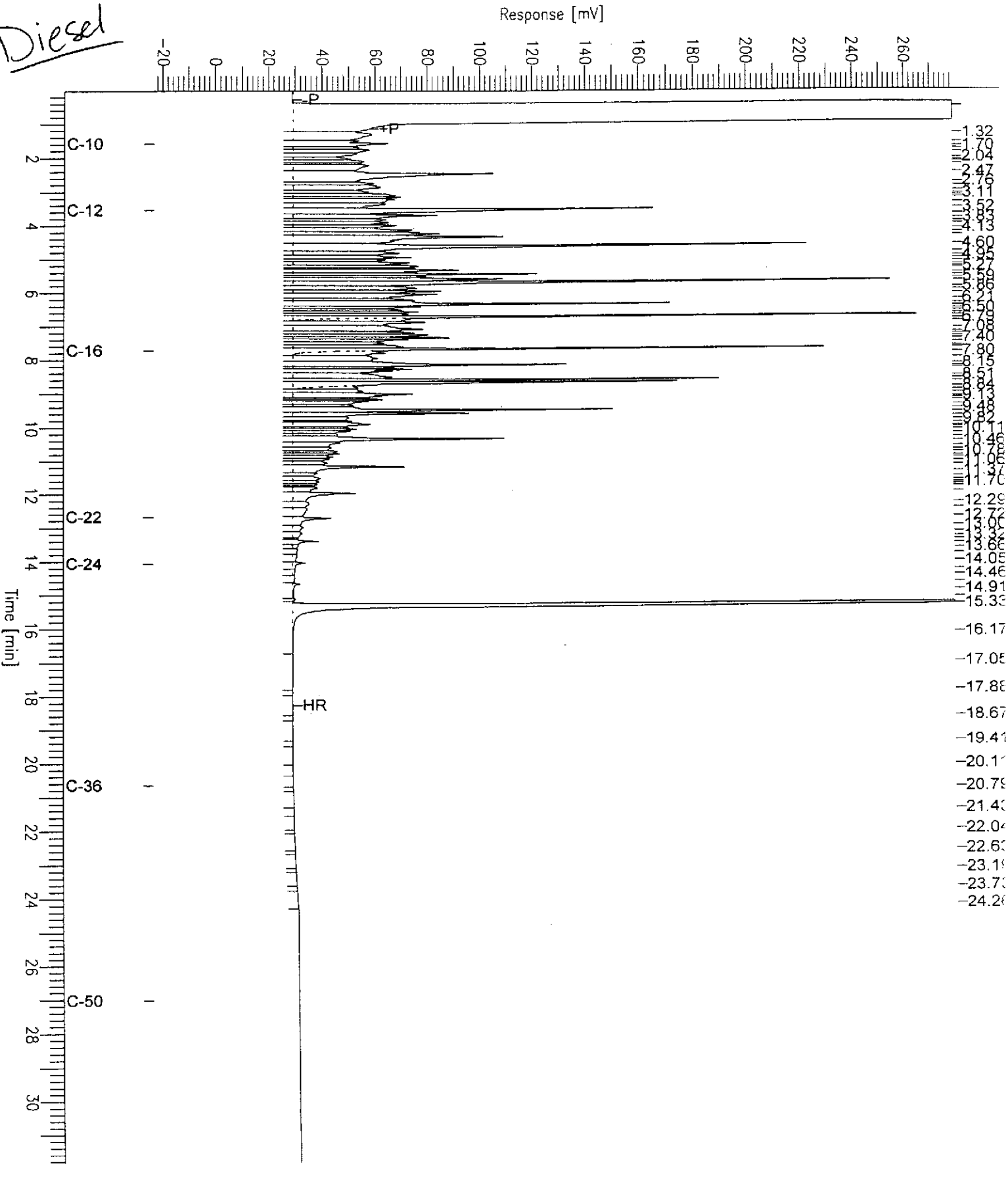


Chromatogram

Sample Name : ,ccv,00ws8795,dsl
FileName : G:\GC11\CHA\053A001.RAW
Method : ATEH048.MTH
Start Time : 0.01 min End Time : 31.85 min
Scale Factor: 0.0 Plot Offset: -23 mV

Sample #: 500mg/l
Date : 2/22/00 04:40 PM
Time of Injection: 2/22/00 03:50 PM
Low Point : -23.40 mV High Point : 278.93 mV
Plot Scale: 302.3 mV

Diesel



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons, GC/FID

Lab #:	143827	Location:	Former Pacific Dry Dock
Client:	Baseline Environmental	Prep:	SHAKER TABLE
Project#:	98379-09	Analysis:	EPA 8015M
Matrix:	Soil	Batch#:	53804
Units:	mg/Kg	Prepared:	02/15/00
Basis:	wet	Analyzed:	02/18/00
Diln Fac:	1.000		

Type: BS Lab ID: QC108019

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.50	40.28	81	67-121

Surrogate	%REC	Limits
Hexacosane	95	60-136

Type: BSD Lab ID: QC108020

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	49.50	37.03	75	67-121	8	27

Surrogate	%REC	Limits
Hexacosane	87	60-136

RPD= Relative Percent Difference

Polyaromatic Hydrocarbons by HPLC

Client:	Baseline Environmental	Analysis Method:	EPA 8310
Project#:	98379-09	Prep Method:	EPA 3550
Location:	Former Pacific Dry Dock		

Field ID:	COMP GF-11	Sampled:	02/08/00
Lab ID:	143827-005	Received:	02/08/00
Matrix:	Soil	Extracted:	02/10/00
Batch#:	53693	Analyzed:	02/14/00
Units:	ug/Kg		
Diln Fac:	10		

Analyte	Result	Reporting Limit
Naphthalene	ND	1700
Acenaphthylene	ND	3400
Acenaphthene	ND	340
Fluorene	ND	340
Phenanthrene	ND	170
Anthracene	ND	170
Fluoranthene	900	130
Pyrene	1100	68
Benzo(a)anthracene	550	33
Chrysene	560	33
Benzo(b)fluoranthene	870	68
Benzo(k)fluoranthene	320	33
Benzo(a)pyrene	550	33
Dibenz(a,h)anthracene	400	68
Benzo(g,h,i)perylene	700	68
Indeno(1,2,3-cd)pyrene	980	33

Surrogate	%Recovery	Recovery Limits
1-Methylnaphthalene (UV)	DO*	30-122
1-Methylnaphthalene (F)	DO*	32-132

* Values outside of QC limits
DO: Surrogate diluted out

Polyaromatic Hydrocarbons by HPLC

Client:	Baseline Environmental	Analysis Method:	EPA 8310
Project#:	98379-09	Prep Method:	EPA 3550
Location:	Former Pacific Dry Dock		

Field ID:	COMP GF-12	Sampled:	02/08/00
Lab ID:	143827-010	Received:	02/08/00
Matrix:	Soil	Extracted:	02/10/00
Batch#:	53693	Analyzed:	02/14/00
Units:	ug/Kg		
Diln Fac:	10		

Analyte	Result	Reporting Limit
Naphthalene	ND	1700
Acenaphthylene	ND	3400
Acenaphthene	ND	340
Fluorene	ND	340
Phenanthrene	ND	170
Anthracene	ND	170
Fluoranthene	190	130
Pyrene	200	68
Benzo(a)anthracene	110	33
Chrysene	120	33
Benzo(b)fluoranthene	150	68
Benzo(k)fluoranthene	50	33
Benzo(a)pyrene	110	33
Dibenz(a,h)anthracene	ND	68
Benzo(g,h,i)perylene	120	68
Indeno(1,2,3-cd)pyrene	190	33

Surrogate	%Recovery	Recovery Limits
1-Methylnaphthalene (UV)	DO*	30-122
1-Methylnaphthalene (F)	DO*	32-132

* Values outside of QC limits
DO: Surrogate diluted out

EPA 8310 PAHs by HPLC

Client: Baseline Environmental
Project#: 98379-09
Location: Former Pacific Dry Dock

Analysis Method: EPA 8310
Prep Method: EPA 3550

METHOD BLANK

Matrix: Soil
Batch#: 53693
Units: ug/Kg
Diln Fac: 1

Prep Date: 02/10/00
Analysis Date: 02/14/00

MB Lab ID: QC107592

Analyte	Result	Reporting Limit
Naphthalene	ND	170
Acenaphthylene	ND	340
Acenaphthene	ND	34
Fluorene	ND	34
Phenanthrene	ND	17
Anthracene	ND	17
Fluoranthene	ND	13
Pyrene	ND	6.8
Benzo(a)anthracene	ND	3.3
Chrysene	ND	3.3
Benzo(b)fluoranthene	ND	6.8
Benzo(k)fluoranthene	ND	3.3
Benzo(a)pyrene	ND	3.3
Dibenz(a,h)anthracene	ND	6.8
Benzo(g,h,i)perylene	ND	6.8
Indeno(1,2,3-cd)pyrene	ND	3.3

Surrogate	%Rec	Recovery Limits
1-Methylnaphthalene (UV)	83	30-122
1-Methylnaphthalene (F)	84	32-132

EPA 8310 PAHs by HPLC

Client: Baseline Environmental
Project#: 98379-09
Location: Former Pacific Dry Dock

Analysis Method: EPA 8310
Prep Method: EPA 3550

LABORATORY CONTROL SAMPLE

Matrix: Soil
Batch#: 53693
Units: ug/Kg
Diln Fac: 1

Prep Date: 02/10/00
Analysis Date: 02/14/00

LCS Lab ID: QC107593

Analyte	Result	Spike Added	%Rec #	Limits
Naphthalene	242	333.3	73	38-130
Acenaphthylene	386	666.7	58	48-110
Acenaphthene	265	333.3	80	53-115
Fluorene	53	66.67	80	59-110
Phenanthrene	27	33.33	81	51-110
Anthracene	20	33.33	60	45-110
Benzo(k)fluoranthene	28	33.33	84	64-110
Indeno(1,2,3-cd)pyrene	31	33.33	93	49-110

Surrogate	%Rec	Limits
1-Methylnaphthalene (UV)	74	30-122
1-Methylnaphthalene (F)	74	32-132

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 8 outside limits

Curtis & Tompkins, Ltd.

Lead

Lab #:	143827	Location:	Former Pacific Dry Dock
Client:	Baseline Environmental	Prep:	METHOD
Project#:	98379-09	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	53737
Field ID:	COMP S-(1-4)	Sampled:	02/08/00
Matrix:	WET Leachate	Received:	02/08/00
Units:	ug/L	Prepared:	02/11/00
Diln Fac:	10.00	Analyzed:	02/22/00

Type	Lab ID	Result	RL
SAMPLE	143827-015	970	150
BLANK	QC107766	ND	150

ND = Not Detected
RL = Reporting Limit

Lead

Lab #:	143827	Location:	Former Pacific Dry Dock
Client:	Baseline Environmental	Prep:	METHOD
Project#:	98379-09	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	53737
Field ID:	COMP S-(1-4)	Sampled:	02/08/00
MSS Lab ID:	143827-015	Received:	02/08/00
Matrix:	WET Leachate	Prepared:	02/11/00
Units:	ug/L	Analyzed:	02/14/00

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac
BS	QC107767		2,000	1,980	99	78-120			1.000
BSD	QC107768		2,000	2,010	101	78-120	2	20	1.000
SDUP	QC107769			NA					
SSPIKE	QC107770	1,385	10,000	8,550	72	66-128			10.00

NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Quality Control Checklist
for Review of Laboratory Report

Job No.: 98379-09
Site: Port/Pacific Dry Dock Yard II
Laboratory: C&T
Laboratory Report No: 143827
Report Date: 2/29/00
BASELINE Review By: J. Kane

	Yes	No	NA
GENERAL QUESTIONS **(Describe "no" responses below in "comments" section. Contact the laboratory, as required, for further explanation or action on "no" responses; document discussion in comments section.)**			
1a. Does the report include a case narrative? *(A case narrative MUST be prepared by the lab for all analytical work requested by BASELINE)*	X		
1b. Is the number of pages for the lab report as indicated on the case narrative/lab transmittal consistent with the number of pages that are included in report?	X		
1c. Does the case narrative indicate which samples were analyzed by a subcontractor and the subcontractor's name?			X
1d. Does the case narrative summarize subsequent requests not shown on the chain-of-custody (e.g., additional analyses requested, release of "hold" samples)?			X
1e. Does the case narrative explain why requested analyses could not be performed by laboratory (e.g., insufficient sample)?			X
1f. Does the case narrative explain all problems with the QA/QC data as identified in the checklist (as applicable) ?	X		
2a. Is the laboratory report format consistent and legible throughout the report?	X		
2b. Are the sample and reported dates shown in the laboratory report correct?	X		
3a. Does the lab report include the original chain-of-custody form?	X		
3b. Were all samples appropriately analyzed as requested on the chain-of-custody form?	X		
4. Was the lab report signed and dated as being reviewed by the laboratory director, QA manager, or other appropriate personnel? (Some lab reports have signature spaces for each page). (This requirement also applies to any analyses subcontracted out by the laboratory)	X		
5a. Are preparation methods, cleanup methods (if applicable), and laboratory methods indicated for all analyses?	X		
5b. If additional analytes were requested as part of the reporting of the data for an analytical method, were these included in the lab report?			X
6. Are the units in the lab report provided for each analysis consistent throughout the report?	X		
7. Are the detection limits (DL) appropriate based on the intended use of the data? (e.g., DL below applicable MCLs for water quality issues?)	X see note		
8a. Are detection limits appropriate based on the analysis performed? (i.e., not elevated due to dilution effects)		X	
8b. If no, is an explanation provided by the laboratory?	X		

	Yes	No	NA
9a. Were the samples analyzed within the appropriate holding time? (generally 2 weeks for volatiles, and up to 6 months for total metals)	X		
9b. If no, was it flagged in the report?			X
10. If samples were composited prior to analysis, does the lab report indicate which samples were composited for each analysis?		X	
11a. Do the chromatograms confirm quantitative laboratory results? (petroleum hydrocarbons)	X		
11b. Is a standard chromatogram(s) included in the laboratory report?	X		
11c. Do the chromatograms confirm laboratory notes, if present (e.g., sample exhibits lighter hydrocarbon than standard)	X		
12. Are the results consistent with previous analytical results from the site? *(If no, contact the lab and request review/reanalysis of data, as appropriate)*	X		
13a. REVISED LAB REPORTS ONLY. Is the revised lab report or revised pages to a lab report signed and dated as being reviewed by the laboratory director, QA manager, or other appropriate personnel?			X
13b. REVISED LAB REPORTS ONLY. Does the case narrative indicate the date of revision and provide an explanation for the revision?			X
13c. REVISED LAB REPORTS ONLY. Does the revised lab report adequately address the problem(s) which triggered the need for a revision?			X
13d. REVISED LAB REPORTS ONLY. Are the data included in the revised report the same as data reported in the original report, except where the report was revised to correct incorrectly reported data?			X
QA/QC Questions Field/Laboratory Quality Control - Groundwater Analyses			
14. Are field blanks reported as "ND"? (groundwater samples) *A field blank is a sample of DI water which is prepared in the field using the same collection and handling procedures as the other samples collected, and used to demonstrate that the sampling procedure has not contaminated the sample.*			X
15. Are trip blanks reported as "ND"? (groundwater samples/volatile analyses) *A trip blank is a sample of contaminant-free matrix placed in an appropriate container by the lab and transported with the field samples collected. Provides information regarding positive interference introduced during sample transport, storage, preservation, and analysis. The sample is NOT opened in the field.*			X
16. Are duplicate sample results consistent with the original sample? (groundwater samples) *Field duplicates consist of two independent samples collected at the same sampling location during a single sampling event. Used to evaluate precision of the analytical data and sampling technique. (Differences between the duplicate and sample results may also be attributed to environmental variability).*			X

	Yes	No	NA
Batch Quality Control (Samples are batched together by matrix [soil, water] and analyses requested. A batch generally consists of 20 or fewer samples of the same matrix type, and is prepared using the same reagents, standards, procedures, and time frame as the samples. QC samples are run with each batch to assess performance of the entire measurement process.)			
17. Do the sample batch numbers and corresponding laboratory QA/QC batch numbers match?	X		
18a. Are method blanks (MB) for the analytical method(s) below the laboratory reporting limits? *Used to assess lab contamination and prevent false positive results. MBs should be "ND."*	X		
18b. If no, is an explanation provided in the case narrative to validate the data?			X
18c. Are analytes which may be considered laboratory contaminants reported below the laboratory reporting limit? *Common lab contaminants include acetone, methylene chloride, diethylhexyl phthalate, and di-n-octyl phthalate.*	JK SC		X
18d. If no, was the laboratory contacted to determine whether reported analyte could be a potential laboratory contaminant and was an explanation included in the case narrative?			X
19. Are laboratory control samples (LCS) and LCS duplicate (LCSD) [a.k.a., Blank Spike (BS) and BS duplicates (BSD)] within laboratory reporting limits? Limits should be provided on the report. *LCS is a reagent blank spike with a representative selection of target analyte(s) and prepared in the same manner as the samples analyzed. The LCS should be spiked with the same analytes as the matrix spike (below). The LCS is free from interferences from the sample matrix and demonstrates the ability of the lab instruments to recover the target analytes. Accuracy (recovery information) is generally reported as % spike recovery; precision (reproducibility of results) between the LCS and LCSD is generally reported as the relative percent difference (RPD). LCS/LCSD can be run in addition to or in lieu of, matrix QC data.*	X		
20a. Are the Matrix QC data (i.e., MS/MSD) within laboratory limits? Limits should be provided on the lab report. *The lab selects a sample from the batch and analyzes a spike and a spike duplicate of that sample. Matrix QC data is used to obtain precision and accuracy information and is reported in the same manner as LCS/LCSD. If the MS/MSD fails, the results may still be considered valid if the MB and either the LCS/LCSD or BS/BSD is within the lab's limits (failure is probably due to matrix interference).*	X	JK SC	
20b. If no, is the MB and either LCS/LCSD or BS/BSD within lab limits to validate the data?	X		

	Yes	No	NA
Sample Quality Control			
21a. Are the surrogate spikes reported within the lab's acceptable recovery limits? *A surrogate is a non-target analyte, which is similar in chemical structure to the analyte(s) being analyzed for, and which is not commonly found in environmental samples. A known concentration of the surrogate is spike into the sample or QA "sample" prior to extraction or sample preparation. Results are usually reported as % recovery of the spike. Failure to meet lab's limits for primary and secondary surrogates results in rebatching and reanalysis of the sample; failure of only the primary or the secondary surrogate may be acceptable under certain circumstances. Failure generally is due to coelution with the sample matrix.*		X	
21b. If no, is an explanation given in the case narrative to validate the data?	X		

Comments:
10. Samples composited for GF-11 & GF-12 not indicated in report. Comp. S-1 to -4 is indicated
21. 21b. For PAH analysis surrogates diluted out in analysis.
7. RL for Dibenz(a,k)anthracene is just above PRG (i.e. 68/62 ug/kg)
8a. RLs elevated due to dilution, explanation provided.

APPENDIX C

LANDFILL DISPOSAL DOCUMENTATION FOR SOIL STOCKPILE

PERFORMANCE EXCAVATORS, INC.
TRUCKING MANIFEST LOG
JOB 212 | 185

JOB NAME/NUMBER Port of Oak
DESTINATION OF MAT'L Altamont
WASTE PROFILE NO. 54849500

DATE 02/28/00
TRACKER Munoz

TRACKING INFO.			TRANSPORTER INFO.				WEIGHT INFO.			TIME INFO.		
LD #	MANIFEST #	TAG #	DRIVER NAME	HAULER TRUCK #	LICENSE #	TYPE OR # AXLE	TARE	TOTAL	NET	SITE ARR	DEP	RET
1	6412		Scott C.	10	5P44231			25.58		7:00	7:30	
2	6411		A. Westover	1022	9B62312			25.29		7:00	7:15	10:00
3	6410		C. Ames	55	6T59167	(Trailer)		24.13		7:00	7:20	10:05
4	6409		Jesse	1369	5D56507			22.51		7:00	7:50	10:05
5	6408		A. Westover	1022	9B62312			22.52			10:10	
6	6407		Jesse	1369	5D56507			19.99			10:25	
7												
8												
9												
10												

NON-HAZARDOUS SPECIAL WASTE MANIFEST 6407

Performance Excavators, Inc. - 000772

GENERATOR

Generator Name: Port of Oakland

Address: 530 Water Street, 2nd Floor

Oakland, CA 94607

Phone No.: 510 627 1314

Generating Location: BRODLY BOATYARD

Address: 321 EARHART RD

Oakland, CA

Phone No.: 415 273 7464 0

Lot/Waste Code: Profile #47495000

Description of Waste:
Class II Cover Soil
Profile # SAMPLING
Task # 99.CRE.08
Flag Color
County - Alameda

Quantity	Units	Containers No.	Type
0001822.50	T		T
17.99			

Type: B-Bulk, C-Carton, D-Drum, T-Truck, P-Pounds, Y-Yards, O-Other

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Jeffrey L. Rubin (PORT OF OAKLAND)

Generator Authorized Agent Name

Signature

Shipment Date: 022500

TRANSPORTER

Truck No.: 1369

Driver Name (Print): Jesse

Transporter Name: DenBeste Transportation, Inc.

Phone No.: 800-838-1477

Address: 7705 Conde Lane

Windsor, CA 95492

Vehicle License No./State: SP56507

Vehicle Certification: CAD982513632

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature

Date: 022800

I hereby certify that the above named material was delivered without incident to the destination listed below.

Driver Signature

Date

DESTINATION

Site Name: Altamont Landfill

Phone No.: 925-449-6349

Address: 10840 Altamont Pass Road, Livermore, CA 94550

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent

Signature

Receipt Date

White - Destination Retain Green - Unloading Area Canary - Transporter Retain Pink - Generator Retain Gold - Contractor Copy

NON-HAZARDOUS SPECIAL WASTE MANIFEST 6408

Performance Excavators, Inc. - 000772

GENERATOR

Generator Name: Port of Oakland

Address: 530 Water Street, 2nd Floor

Oakland, CA 94607

Phone No.: 510 627 1134

Generating Location: Oyster Bay Yard

Address: 371 Burma Road

Oakland, CA

Phone No.: 415 257 4640

Lot/Waste Code: Profile #

Description of Waste | Quantity | Units | Containers No. | Containers Type | Type: D-Drum, C-Carton, B-Bag, T-Truck, P-Pounds, Y-Yards, O-Other

Description of Waste	Quantity	Units	Containers No.	Containers Type
Class II Cover Soil Profile # Task # Flag Color County - Alameda	1000	T	01	T

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Jeffrey L. Rubin — Agent on Behalf of Port of Oakland — Signature

Generator Authorized Agent Name

Shipment Date: 02/25/00

TRANSPORTER

Truck No.: 1022

Driver Name (Print): Al Westover

Transporter Name: DenBeste Transportation, Inc.

Phone No.: 800-838-1477

Address: 7705 Conde Lane

Windsor, CA 95492

Vehicle License No./State: 982612

Vehicle Certification: CAD982513632

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature — Date: 02/28/00

I hereby certify that the above named material was delivered without incident to the destination listed below.

Driver Signature — Date

DESTINATION

Site Name: Altamont Landfill

Phone No.: 925-449-6349

Address: 10840 Altamont Pass Road, Livermore, CA 94550

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent — Signature — Receipt Date

White - Destination Retain Green - Unloading Area Canary - Transporter Retain Pink - Generator Retain Gold - Contractor Copy

NON-HAZARDOUS SPECIAL WASTE MANIFEST 6412

Performance Excavators, Inc. - 000772

GENERATOR

Generator Name: Port of Oakland

Address: 530 Water Street, 2nd Floor

Oakland, CA 94607

Phone No.: 510 627 1134

Generating Location: [illegible]

Address: [illegible]

Oakland, CA

Phone No.: 415 2376400

Lot/Waste Code: P x o f 1 1 a #

Description of Waste	Quantity	Units	No.	Type Containers (T-Truck, B-Bag, D-Drum, C-Canon, P-Pounds, Y-Yards, O-Other)
Class II Cover Soil Profile # [illegible] Task # [illegible] Flag Color County - Alameda	00018	Y	01	T

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

[illegible] PORT OF OAKLAND

Generator Authorized Agent Name: [illegible] Signature: [illegible] Shipment Date: 042500

TRANSPORTER

Truck No.: 10

Driver Name (Print): SEAN C.

Transporter Name: DenBeste Transportation, Inc.

Phone No.: 800-838-1477

Address: 7705 Conde Lane

Windsor, CA 95492

Vehicle License No./State: SP44231

Vehicle Certification: CAD982513632

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature: [illegible] Date: 042500

I hereby certify that the above named material was delivered without incident to the destination listed below.

Driver Signature: Date:

DESTINATION

Site Name: Altamont Landfill

Phone No.: 925-449-6349

Address: 10840 Altamont Pass Road, Livermore, CA 94550

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent: Signature: Receipt Date:

White - Destination Retain Green - Unloading Area Canary - Transporter Retain Pink - Generator Retain Gold - Contractor Copy

NON-HAZARDOUS SPECIAL WASTE MANIFEST

6411

Performance Excavators, Inc. - 000772

GENERATOR

Generator Name: Port of Oakland

Generating Location: [illegible]

Address: 530 Water Street, 2nd Floor
Oakland, CA 94607

Address: 371 [illegible]
Oakland, CA

Phone No. 510 6271134

Phone No. 415 2574640

Lot/Waste Code: Profile# [illegible]

Description of Waste	Quantity	Units	Containers No.	Type
Class II Cover Soil Profile # [illegible] Task # [illegible] Flag Color County - Alameda	00018	Y	01	T

Type: D-Drum, C-Carton, B-Bag, T-Truck; Units: P-Pounds, Y-Yards, O-Other

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: Terry L. Ruso [illegible]

Signature: [signature]

Shipment Date: 022500

TRANSPORTER

Truck No. 1022

Driver Name (Print): AL WESTOVER

Transporter Name: DenBeste Transportation, Inc.

Phone No. 800-838-1477

Address: 7705 Conde Lane
Windsor, CA 95492

Vehicle License No./State: 9B26212

Vehicle Certification: CAD982513632

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature: [signature] Date: 022800

I hereby certify that the above named material was delivered without incident to the destination listed below.

Driver Signature: Date:

DESTINATION

Site Name: Altamont Landfill

Phone No. 925-449-6349

Address: 10840 Altamont Pass Road, Livermore, CA 94550

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent: Signature: Receipt Date:

White - Destination Retain Green - Unloading Area Canary - Transporter Retain Pink - Generator Retain Gold - Contractor Copy

NON-HAZARDOUS SPECIAL WASTE MANIFEST 6410

Performance Excavators, Inc. - 000772

GENERATOR

Generator Name: Port of Oakland
Generating Location: Berth T-25 Yard
Address: 530 Water Street, 2nd Floor
Address: 321 E. 1st Ave
Oakland, CA 94607
Oakland, CA
Phone No.: 510 627 1134
Phone No.: 415 2574640
Lot/Waste Code: Profile # C4249300
Container Type: D-Drum, C-Carton, B-Bag, T-Truck, P-Pounds, Y-Yards, O-Other

Description of Waste	Quantity	Units	No.	Container Type
Class II Cover Soil Profile # 21875 Task # 00 CK3 Flag Color County - Alameda	0012	Y	01	T

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Jeffrey L. Ruen — Agent on behalf of Port of Oakland — 022500
Generator Authorized Agent Name — Signature — Shipment Date

TRANSPORTER

Truck No.: 55
Driver Name (Print): Chuck Armes
Transporter Name: DanBeste Transportation, Inc.
Phone No.: 800-838-1477
Address: 7705 Conde Lane
Vehicle License No./State: 6TS9167 (Tractor)
Windsor, CA 95492
Vehicle Certification: CAD982513632

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature — Date: 022400

I hereby certify that the above named material was delivered without incident to the destination listed below.

Driver Signature — Date

DESTINATION

Site Name: Altamont Landfill
Phone No.: 925-449-6349
Address: 10840 Altamont Pass Road, Livermore, CA 94550

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent — Signature — Receipt Date

White - Destination Retain Green - Unloading Area Canary - Transporter Retain Pink - Generator Retain Gold - Contractor Copy

NON-HAZARDOUS SPECIAL WASTE MANIFEST 6409

Performance Excavators, Inc. - 000772

GENERATOR

Generator Name: Port of Oakland
Generating Location: [illegible handwriting]

Address: 530 Water Street, 2nd Floor
Oakland, CA 94607
Address: 21 [illegible handwriting]
Oakland, CA

Phone No. 510 6271134
Phone No. 415 2574640

Lot/Waste Code: Profile # [illegible]

Description of Waste:
Class II Cover Soil
Profile # [illegible]
Task # [illegible]
Flag Color
County - Alameda

Quantity	Units	No.	Type
0001[illegible]	Y	01	T

Containers Type: D-Drum, C-Carton, B-Bag, T-Truck, P-Pounds, Y-Yards, O-Other

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

(Agent on behalf of Port of Oakland)

Generator Authorized Agent Name: Terrence L. Rubin
Signature: [signature]
Shipment Date: 022500

TRANSPORTER

Truck No. 1369
Driver Name (Print): Jesse

Transporter Name: DenBeste Transportation, Inc.
Phone No. 800-838-1477

Address: 7705 Conde Lane
Windsor, CA 95492
Vehicle License No./State: SP56507
Vehicle Certification: CAD982513632

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature: [signature]
Date: 022500

I hereby certify that the above named material was delivered without incident to the destination listed below.

Driver Signature:
Date:

DESTINATION

Site Name: Altamont Landfill
Phone No. 925-449-6349

Address: 10840 Altamont Pass Road, Livermore, CA 94550

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent:
Signature:
Receipt Date:

White - Destination Retain Green - Unloading Area Canary - Transporter Retain Pink - Generator Retain Gold - Contractor Copy

Environmental Protection Agency

Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. Form designed for use on elite (12-pitch) typewriter.

See Instructions on back of page 6.

Department of Toxic Substances Con
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CA C00225717 | Manifest Document No. 99006 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
PORT OF OAKLAND
530 WATER STREET
OAKLAND, CA 94604-

4. Generator's Phone (510) 272-1134 Attn: MIKE WERNER

5. Transporter 1 Company Name
ALL WASTE TRANSPORTATION AND Remediation, INC

6. US EPA ID Number CAR000058800

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
BURLINGTON ENVIRONMENTAL, INC.
20245 77TH AV. SOUTH
KENT, WA 98032-

10. US EPA ID Number WAD981287767

H. Facility's Phone (253) 872-8030

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. NON-RCRA HAZARDOUS WASTE SOIL (Soil for Hydrocarbons)	001	DM	00800	P	State 35 EPA/Other NR
b. NON-RCRA HAZARDOUS WASTE LIQUID Purge water for Hydrocarbons	001	M	00450	P	State 347 EPA/Other NR
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
(a) PROFILE# PORTOAK-
(b) PROFILE# PORTOAK-
(c) PROFILE# PORTOAK-
(d) PROFILE# PORTOAK-

K. Handling Codes for Wastes Listed Above
a. b. c. d.

15. Special Handling Instructions and Additional Information
WEAR ALL APPROPIATE PERSONAL PROTECTIVE EQUIPMENT P.O.# 177167 JOB#8066-02
SITE ADDRESS: 721 E. BANCROFT OAKLAND CA TASK# 00-ERE-01
EMERGENCY PHONE : (800) 947-4701 EMERGENCY CONTACT : DAVID DELL'OSSO

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: JEFFREY L. RUBY Signature: [signature] Month 03 Day 28 Year 00

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: David DeLosso Signature: [signature] Month 03 Day 28 Year 00

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 hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Signature: Month Day Year

DO NOT WRITE BELOW THIS LINE.

GENERATOR

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

DTSC 8022A (1/99)
PA 8700-22

GREEN: GENERATOR SENDS THIS COPY TO DTSC WITHIN 30 DAYS
PINK: TSD Burlington Environmental, CA

APPENDIX D

WELL PERMIT AND SITE HEALTH AND SAFETY PLAN

ALAMEDA COUNTY PUBLIC WORKS AGENCY

Water Resources Section
399 Elmhurst St.
Hayward, CA 94544

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-5[illegible] ANDREAS GODFREY FAX (510) ~~670-5261~~ 782-1939
(510) 670-5248 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 321 Embaccadero
Oakland California

California Coordinates Source _____ ft. Accuracy ± ____ ft.
CCN _____ ft. CCE _____ ft.
APN _____

CLIENT
Name Port of Oakland
Address 530 Water Street 2nd Floor Phone _____
City Oakland California Zip 94607

APPLICANT
Name BASELINE Environmental Consulting Fax 510 420-1707
Address 5900 Hollis ST Suite D Phone 510 420-8686
City Emeryville CA Zip 94608

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	☑ Hollow Stem
Cable	☐	Other	☐		

Clear Heart Drilling
DRILLER'S LICENSE NO. 467904

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum Depth 15 ft.
Casing Diameter 2 in. Number 3
Surface Seal Depth 3 ft.

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

ESTIMATED STARTING DATE 3-1-00
ESTIMATED COMPLETION DATE 3-1-00

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

APPLICANT'S SIGNATURE Matthew K Scott DATE 2-8-00
CH# 577

FOR OFFICE USE

PERMIT NUMBER W00-0860
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 work the original Department of Water Resources Water Well Drillers Report ~~or equivalent for well projects, or drilling logs and location sketch for geotechnical projects~~.
(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 with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

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

F. WELL DESTRUCTION
See attached.

G. SPECIAL CONDITIONS

APPROVED Frank L. Cobb DATE 2-25-00

FAXED 2-27-00

SITE HEALTH & SAFETY PLAN

PROJECT/CLIENT INFORMATION

Project No:	Project Manager:	Site Health and Safety Manager:	Field Activities Date:
98379-09	Yane Nordhav	Bill Scott	1 March 2000

Client: Port of Oakland
530 Water Street
Oakland, California

Contact Person: Doug Herman Phone: (510) 272-1100 (general number)

Site Address:
Pacific Dry Dock Yard II
321 Embarcadero
Oakland, California

Subcontractor: Clearheart Drilling

PROJECT DESCRIPTION: Three groundwater monitoring wells will be installed at the site. Soil samples will be collected during groundwater monitoring well installation. The wells will be developed prior to sampling. Soil and groundwater samples will be submitted to the Port's contract laboratory under chain-of-custody procedures for analysis, in accordance with the scope of work. Soil cuttings, rinsate and purge water generated during drilling and decontamination activities will be stored on-site in labeled and sealed drums; the drums will be profiled prior to off-site disposal/recycling. No confined space entry or site excavation activities requiring a permit are anticipated as part of this scope of work.

Two diesel underground storage tanks were removed from the site in 1998. Waste oil was removed from the tanks prior to tank removal. Total petroleum hydrocarbons as diesel, motor oil, and oil and grease were identified in soil at up to 2,8000, 3,1000, and 650 mg/kg, respectively, and in groundwater samples collected at the site (91 mg/L, --, and 56 mg/L, respectively). Semi-volatile organic compounds were reported up to 30.56 mg/kg in soil samples collected at the site, and in groundwater samples up to 8.06 mg/L. Total petroleum hydrocarbons as gasoline were reported above laboratory reporting limits in soil and groundwater (8.9 mg/kg and 1 mg/L, respectively). Ethylbenzene, xylenes, and MTBE were also reported above the laboratory reporting limits in groundwater samples (0.0013, 0.0005, and 0.0038 mg/L, respectively). Chlorobenzene, 1,4-dichlorobenzene and 1,2-dichlorobenzene were reported slightly above laboratory reporting limits in soil samples collected, and were above reporting limits for groundwater samples (0.032, 0.0089, and 0.0055 mg/L). Chromium, lead, nickel, and zinc were also reported above laboratory reporting limits in soil and groundwater samples collected at the site.

The site is not currently active and consists of asphalt or concrete paved surfaces. No potable water or power is available on-site. Subsurface conditions encountered during the previous investigation included fill materials (gravel, sand, silt, clay) resting on top of Bay Mud at approximately 15 to 20 feet bgs. Groundwater was encountered at approximately 2-5 feet bgs.

The site is accessible by Embarcadero Street. The topography of the site is flat, and approximately 5 to 8 feet above mean sea level.

KEY PERSONNEL AND RESPONSIBILITIES: Yane Nordhav is the Project Manager and Principal-in-charge. Other BASELINE personnel include: William Scott, R.G., C.E.G., Field Geologist, and Amos Sanders, Staff Geologist. The subcontractor will work under the direction of BASELINE personnel during monitoring well installation/sampling activities. Yane Nordhav shall be: 1) present by telephone during on-site work, 2) have overall responsibility for preparation, implementation, and modifications to this Plan, and 3) designate a BASELINE Site Health and Safety Manager to carry out the requirements of this Plan during sampling activities. The responsibilities of William Scott, the designated BASELINE Site Health and Safety Manager/Project Supervisor include, 1) being present at all times during on-site work, 2) enforcing this Site Health and Safety Plan, 3) stopping field operations if personnel safety and health may be jeopardized, 4) requesting site evacuation, if necessary, 5) conducting and evaluating or supervising the collection/evaluation of air monitoring data for the purpose of making decisions regarding the safety of on-site personnel, 6) designating other qualified personnel to work under the direction of the Site Health and Safety Manager, for purpose of implementing this Plan, 7) overseeing the effectiveness of decontamination procedures and changing these procedures if they are found not to be effective, 8) overseeing completion of the sampling activities, as described above, and 9) supervising the work of subconsultants. Amos Sanders will participate in soil/groundwater sampling and health and safety plan implementation activities, as necessary. The subcontractor will perform drilling activities and monitoring well installation, under the direction of BASELINE personnel.

TRAINING REQUIREMENTS: All on-site workers with potential soil contact (or entering into the warm or hot zone) must be 40-hour trained in accordance with the OSHA Hazwoper standard (including annual refresher training, supervisor training, and 3-days of supervised field experience), must be medically surveilled, and have received annual respirator training and fit testing in accordance with the requirements of the company's health and safety plan. Proof of subcontractor training shall be provided, if requested. All visitors to the site must be 40-hour trained. The Site Health and Safety Manager will inquire whether each visitor is trained.

A copy of this site-specific health and safety plan will be provided at the site, and will be reviewed by the Site Health and Safety Manager or designated personnel prior to the start of work at the site, as part of a tail-gate safety meeting. This site-specific Plan applies to all BASELINE employees engaged in hazardous materials activities on-site. This Plan, or an equally protective plan, shall be adopted by the subcontractor, and regulatory agency personnel (if present), as a supplement to their existing health and safety programs. All on-site personnel will be asked to sign a consent form included in this Plan, prior to each day of field work, indicating that they have read the Plan, have participated in the tail-gate safety meeting, meet the training requirements, and agree to all Plan conditions. Should other employers elect to adopt this Plan, BASELINE shall be held harmless and indemnified against any claims associated with this Plan. If a separate Plan is developed by a subcontractor, if must be submitted for review by BASELINE employees at or prior to the commencement of field activities, and the subcontractor must designate a Site Safety Manager to monitor the plan's implementation. The sucontractor's Site Safety Manager, will be subordinate to the BASELINE Site Health and Safety Manager.

This Site Health and Safety Plan is intended to act as an extension of BASELINE's in-house Health and Safety Program, including Medical Surveillance Program, Hazard Communication Program, Hearing Conservation Program, Respiratory Protection Program, Personal Protective Equipment Program, Injury and Illness Prevention Program, Emergency Action Plan, and Fire Prevention Plan. BASELINE employees receive initial and annual training in these programs.

CHEMICAL HAZARDS

Chemical	Description	Health and Safety Standards	Persons Exposed* and Potential Routes of Exposure	Symptoms of Acute Exposure
MTBE (methyl tert butyl ether)	Aromatic HC	REL/TLV = 40 ppm OT = 0.053 ppm	Inhalation, dermal, eyes, ingestion	See symptoms for xylene and ethylbenzene below
Xylenes	Aromatic HC, flammable, aromatic odor LEL = 2.2% UEL = 7.0%	PEL=100 ppm REL/TLV = 100 ppm STEL = 150 ppm C = 300 ppm IDLH = 1000 ppm OT = <1 ppm	Inhalation, dermal, eyes, ingestion	Headache, dizziness, minor skin irritation, eye and respiratory irritation, excitement, drowsiness, staggering gait, nausea, vomiting, uncoordination
Ethylbenzene	Aromatic HC, flammable, aromatic odor LEL = 0.8% UEL = 6.7%	PEL = 100 ppm REL/TLV = 100 ppm STEL = 125 ppm IDLH = 2000 ppm OT = 2.3 ppm	Inhalation, dermal, eyes, ingestion	Headache, dizziness, minor skin irritation, irritation or burns, eyes and respiratory irritation
Gasoline	Hydrocarbon, carcinogen (engine exhaust), flammable LEL = 1.4% UEL = 7.6%	PEL = 300 ppm REL/TLV = 300 ppm STEL = 500 ppm OT = 0.3 ppm	Inhalation, dermal, eyes, ingestion	Eye and skin irritation, headache, fatigue, dermatitis, blurred vision, dizziness, slurred speech, confusion, convulsions
Diesel (also motor oil and oil and grease)	Combustible liquid, may contain carcinogenic middle distillates LEL = 0.7% UEL = 5.0%	No PEL	Skin, ingestion, eyes	Minor eye/skin irritation
Polynuclear aromatic hydrocarbons (PNAs) (examples of two PNAs are listed below)	Semi-volatile, black or dark brown residues, some are carcinogens	Varies, depending on chemical	Varies, depending on chemical	Varies, depending on chemical
Benzo(a)pyrene	Carcinogen, reproductive toxin, combustible (aka coal tar pitch volatiles) LEL = NA UEL = NA	PEL = 0.2 mg/m^3 REL/TLV = 0.2 mg/m^3 IDLH = 700 mg/m^3	Inhalation, eyes, skin, ingestion	Dermatitis, bronchitis

Chemical	Description	Health and Safety Standards	Persons Exposed* and Potential Routes of Exposure	Symptoms of Acute Exposure
Naphthalene	Colorless to brown solid with a moth-ball odor, combustible LEL = 0.9% UEL = 5.9%	PEL = 10 ppm REL/TLV = 10 ppm STEL = 15 ppm IDLH = 500 ppm OT = 0.015 ppm	Inhalation, dermal, eyes, ingestion	Eye irritation, headache, confusion, excitement, malaise, profuse sweating, dermatitis, blood in urine, jaundice, bladder irritation, optical problems
Chlorobenzene	Flammable liquid, organic	PEL = 10 ppm (46 mg/m^3) REL/TLV = 10 ppm IDLH = 2400 ppm OT = 0.741 ppm	Eyes, skin, respiratory system, ingestion	Eye, skin, and respiratory irritation, drowsiness, CNS depression, injury to liver, lung and kidneys
1,4-Dichlorobenzene	Colorless or white crystalline solid with a mothball-like odor LEL = 2.5 % UEL = NA	PEL = 75 ppm (450 mg/m^3) REL/TLV = 10 ppm C = 200 ppm STEL = 110 ppm (675 mg/m^3) IDLH = 1000 ppm OT = 0.741 ppm	Eyes, skin, ingestion, inhalation	Eye irritation, runny nose, headache, nausea, vomiting, headache, difficulty breathing, and other effects
1,2-Dichlorobenzene	Colorless to pale-yellow liquid with a pleasant aromatic odor	PEL = 25 ppm (150 mg/m^3) REL/TLV = 25 ppm C = 50 ppm IDLH = 1000 ppm OT = <1 ppm	Eyes, skin, ingestion, inhalation	Eye and nose irritation, skin blisters, kidney damage
Chromium	Hexavalent form: carcinogen, non combustible solid, blue-white to steel gray, odorless LEL = NA UEL = NA	PEL = 0.05 mg/m^3 REL/TLV = 0.05 mg/m^3 C = 0.1 mg/m^3 IDLH = 30 mg/m^3	Inhalation, eyes, ingestion	Eyes, skin and respiratory irritation, lung fibrosis
Lead	Carcinogen, reproductive toxin, soft gray solid LEL = NA UEL = NA	PEL = 0.05 mg/m^3 REL/TLV = 0.05 mg/m^3 IDLH = 700 mg/m^3	Inhalation, eyes, ingestion	Weakness, lassitude, insomnia, abdominal pain, constipation, anemia, tremor, eye irritation
Nickel	Odorless solid, lustrous, silvery LEL = NA UEL = NA	PEL = 1 mg/m^3 TLV = 1.5 mg/m^3	Skin, inhalation, ingestion	Skin dermatitis, asthma, difficulty breathing
Zinc	Odorless solid LEL = NA UEL = NA	PEL = 5 mg/m^3 TLV = 10 mg/m^3 STEL = 10 mg/m^3	Not available	Not available

* Contractor and samplers.

Notes: Health and safety standards refer to airborne concentrations to which nearly all workers may be repeatedly exposed daily without harmful effects. The concentrations are time-weighted averages for a normal 8-hour work period.
IDLH = Immediately dangerous to life and health; a condition from which one cannot escape within 30 without permanent damage or death.
LEL = Lower explosive limit.
NA = Not available or Not applicable.
PEL = Permissible exposure limit. Time-weighted average concentrations for a normal 8-hour work period for a 40-hour work week; PELs are enforced by OSHA.
REL = Recommended exposure limit. Time-weighted average concentrations for up to a 10-hour day during a 40-hour work week. RELs are recommended by NIOSH, but are not regulatorily enforceable.
C = Ceiling limit. A limit that must not be exceeded during any part of a work day.

STEL = Short term exposure limit. A 15-minute time weighted average exposure that is not to be exceeded at any time during a work day even if the 8-hour time-weighted average is below the PEL; regulated by OSHA.
TLV = Threshold limit value, American Conference of Government Industrial Hygienists. See also PEL.
UEL = Upper explosive limit.
-- = None.

PHYSICAL HAZARDS:

Fire and explosion, heavy equipment, heat/cold stress, over and underground utilities, tripping and falling hazards, and noise. Concrete coring and drilling safety requirements are the responsibility of the operator. BASELINE employees will follow standard operating procedures for soil and groundwater sampling, monitoring well installations, and quality assurance/control as found in BASELINE's Quality Assurance Program Plan. The coring and drilling contractor shall be responsible for complying with all OSHA requirements and accepted industry practices for protection of employee health and safety. The coring and drilling contractor shall ensure that all equipment is in good working order prior to starting work and shall ensure that proper housekeeping is maintained around the work area at all times.

BASELINE employees shall observe the following precautions:

1) Watch for slippery ground;
2) All unattended boreholes must be adequately covered;
3) Wear safety hard hats and safety footwear (and other personal protective equipment);
4) Prevent strain injuries by using small sample shipping containers and/or material handling aids. Use portable table for opening split spoon samplers; and
5) Avoid heat/cold stress by taking regular work breaks, liquids intake, and appropriate attire, as needed.
6) Maximize distance from the rig and do not take readings at the rig during drive sampling; and
7) Watch for heavy equipment during sampling activities.

PERSONAL PROTECTIVE EQUIPMENT REQUIRED: Standard Operating Procedures (SOPs) shall be implemented to minimize exposure to hazardous materials potentially occurring at the Site. However, it is anticipated that SOPs cannot completely prevent exposures to all hazardous materials at the site. Potential hazards include inhalation and dermal contact with contaminated materials during sampling events. Ingestion of hazardous materials is assumed to be negligible if personal hygiene measures discussed below are implemented. Hard hats, respirators equipped with high efficiency filters and/or organic vapor cartridges (use to be designated by Site Health and Safety Manager), nitrile gloves, safety goggles (use to be designated by Site Health and Safety Manager), rubber or steel-toed boots, water supply for washing, decontamination, and for drinking, disposable overalls (non-coated), first-aid kit, noise protection (ear plugs), and fire extinguisher. Rain gear may also be warranted. No contact lenses at the site. On-site workers must be trained, as provided by their employer, in PPE use, care, proper fitting (including respirator fit-testing), donning and doffing, and limitations on at least an annual basis. All PPE must be properly maintained and stored to ensure it is in good working condition at the time of use. All PPE must be inspected prior to and following use (BASELINE's PPE Program is included in BASELINE's Health and Safety Program).

The rationale for selection of the PPE above is based on the known and/or suspected hazardous materials at the site, the anticipated amount of contact with potentially contaminated materials as part of site-specific tasks, and PPE performance characteristics. The need for respiratory protection shall be selected based on the results of the air monitoring (See Air Monitoring Strategy below). On-site personnel shall be required to don respiratory protection (Level C) if deemed necessary by the designated Site Health and Safety Manger. The need for Level B PPE (respiratory protection) is not anticipated at the site. In the event that Level B respiratory protection is warranted, on-site personnel will be asked to leave the area immediately by the Site Health and Safety Manager and the Manger will notify the BASELINE Project Manager to determine future site actions. If PPE is deemed to be ineffective by the Site Health and Safety Manager, the Manager or his/her designee shall take immediate action to mitigate the problem(s).

AIR MONITORING STRATEGY (INCLUDING ACTION LEVELS): Before field work begins, collect background readings using PID and combustible gas indicator/four gas meter. Monitor soil borings and breathing zone using the using the combustible gas indicator and PID to ensure that Permissible Exposure Levels (PELs), Action Levels, or other appropriate limits are not exceeded, or have the potential to be exceeded. If PELs, Action Levels, or other exposure levels are exceeded (or have the potential to do so), personnel will be instructed by the Site Health and Safety Manager to wear appropriate respiratory protection to reduce potential exposure below the applicable exposure limits. In addition, personnel will be asked to don respirator with HEPA filters and goggles if dusty conditions.

Level C respiratory protection shall be deemed to be warranted if organic compounds measured using the PID are 1 to 10 ppm above background levels (for more than 1 minute). Direct reading tubes may be used to characterize vapors. Level B respiratory protection shall be deemed to be warranted in excess of 10 ppm above the background concentrations or ten times the exposure limit for other contaminants (for half-face respirators). If >20% LEL in the boring, stop work to air out boring until <20% LEL. In addition, if methane is detected or suspected at any concentration, stop drilling, remove any ignition sources, vacate the area and ventilate to prevent flammable mixtures from forming. Only resume drilling after air monitoring indicates that methane is not detected (Methane can be detected using a CGI, but not a PID). The results of air monitoring shall be related to on-site workers. Air monitoring equipment shall be maintained and calibrated in accordance with the manufacturer's specifications and BASELINE's Quality Assurance Program Plan. No IDLH or oxygen deficient conditions are expected at the site.

SITE CONTROL MEASURES: Sampling personnel will define and demarcate exclusion, decontamination, and clean zones for each boring location. Maintain the use of the buddy system during sampling events; site communications will take place verbally. No eating and drinking permitted in exclusion zone. Workers may go through partial decontamination (wash gloves, hands and arms) to consume fluids in the warm zone. Avoid skin and eye contact with soil to maximum extent possible. Personal hygiene is imperative to prevent prolonged skin contact with site soils and dusts. Hand-digging may be performed where utilities are suspected (even though not identified through USA). USA will provide utility clearance. Dispose of decontamination equipment and personal protective gear in on-site containers. Place all cutting, rinsate, and decontamination water in drums, secure, and label.

In the event of a minor (incidental) release of hazardous material, the spill will be immediately cleaned up by on-site BASELINE personnel and the spill cleanup materials placed in labeled drums for off-site disposal. Salvage drums and bentonite shall be provided by the drilling contractor to assist in spills cleanup. In the event of a larger than incidental (major) spill, follow the emergency procedures below.

DECONTAMINATION PROCEDURES (PERSONAL AND EQUIPMENT): All personal and equipment decontamination procedures shall be implemented prior to leaving the site. Decontamination of sampling and drilling equipment shall also be required prior to sampling and between sampling locations to avoid cross-contamination, as will decontamination or replace of gloves at a new sampling location. Decontaminate boots, non-disposable PPE, and sampling equipment on-site using TSP (or Alcanox) with water, rinse with water, and then finally rinse with DI water. Drilling equipment will be decontaminated using a high pressure washer, with the rinsate water contained and drummed.

Dispose of disposable PPE and sampling equipment in labeled containers/bags and leave on-site for disposal as municipal waste. Antiseptic (alcohol) towelettes will be used for cleaning respirators and washing hands and arms. Decontamination procedures shall be monitored by the Site Health and Safety Manager to determine their effectiveness. If decontamination procedures are found to be ineffective, the Site Health and Safety Manager shall take appropriate action to immediately correct any deficiencies.

All personnel should shower as soon as possible after leaving the site.

OTHER: Illumination is not expected to be required, as all work will be performed during daylight hours. The location of the nearest restroom will be identified prior to beginning field work. Drinking water will be provided by BASELINE for use on-site.

All drums used for sampling activities must meet DOT, OSHA, and U.S EPA regulations for the wastes they contain. Site operations will be organized to minimize the amount of drum movement. Before moving drums, inform all immediate workers of the potential hazards associated with the contents of the drums and containers being moved or handled. Inspect the integrity of the drums and containers prior to moving them. Immediately label all drums used to contain waste materials. Drums that cannot be moved without rupture, leaking, or spillage shall be emptied into a sound container (supplied by the drilling contractor). Workers not involved in opening drums or containers shall remain at a safe distance from drums and containers being opened. If flammable atmospheres are possible, non-sparking tools shall be used to open drums and containers. In addition, handling equipment used to transfer drums and containers shall be selected, positioned, and operated to minimize sources of ignition related to the equipment from igniting vapors released from ruptured drums or containers. Standing on drums shall not be permitted at any time.

If any deficiencies in this Site Health and Safety Plan are identified by the Site Health and Safety Manager, they shall be immediately corrected. On-site workers, identifying any deficiencies in this Plan shall immediately notify the Site Health and Safety Manager of such deficiencies.

EMERGENCY PROCEDURES: A cellular phone is maintained by BASELINE personnel. In the event of a major emergency (fire, major spill, medical, explosion), use the cellular phone to contact 911, Yane Nordhav (510) 420-8686, and the client (phone number listed above), and other emergency numbers listed below, as applicable. The Site Health and Safety Manager shall verbally request evacuation of site personnel (personnel must first go through decon prior to evacuation) to outside the affected area, and direct emergency responders to the emergency. The Site Health and Safety Manager shall account for all personnel following evacuation. Any injured personnel shall be brought to the decon area prior to evacuation, and shall be assisted in decontamination, according to the procedures above, unless the transport or decontamination may potentially cause further injury, where transport and decon shall be requested by paramedics. Rescue and medical duties shall be provided by off-site emergency responders (e.g., paramedics, fire fighters); however first aid/CPR may be administered by trained personnel prior to the time that off-site emergency responders arrive at the site.

Other emergency notifications may be required, for example, Office of Emergency Services [(800) 852-7550], Alameda County Department of Environmental Health [(510) 567-6700], or the local Office of Emergency Services [(510) 238-3938]. Coordinate with Port personnel in contacting the emergency numbers listed above. All notifications shall be documented.

Following the emergency, the Site Health and Safety Manager shall be responsible for preparing a post-incident critique, for the purpose of identifying the cause of the emergency, response initiated, and need for additional training, procedures, or equipment. The Site Health and Safety Manager and Project Manager shall take corrective action to prevent reoccurrence of the emergency.

Hospital/Clinic Name and Address:	Hospital Phone:	Paramedic/Fire & Police Dept. Phone:
Summit Medical Center	(510) 835-4500	
34th & Webster, Oakland	(510) 869-6600	911

Prepared by:	Date:	Reviewed/Approved by:	Date:
Julie Pettijohn	2/29/00		2/29/00

Read by/Date:

Rick Schneider	Clear Heart	3-1-00
Kenny George	Clear Heart	3-1-00
Ames Sanders	Baseline Env. Con.	3-1-00
William K Sato	BASELINE	3-1-00
		/

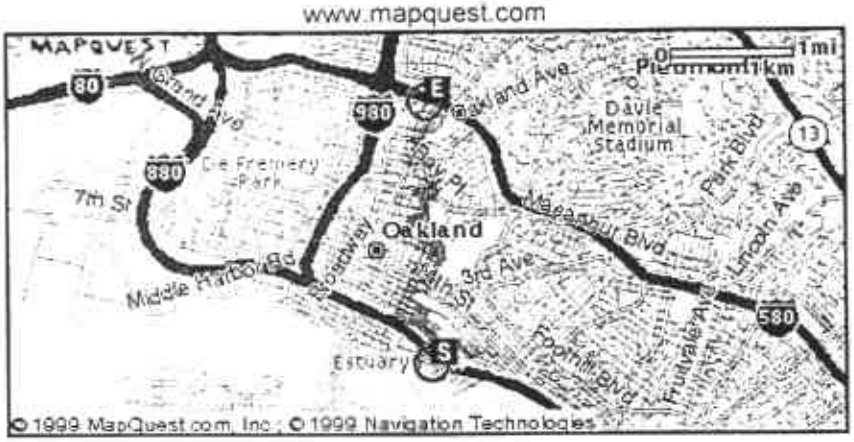
Base map from *The Thomas Guide, 1995 Alameda County Street Guide and Directory*. Reproduced with permission from Thomas Bros. Maps.

Background Thomas Bros. Guide 1995	Site Location Pacific Dry Dock Yard II 321 Embarcadero Street, Oakland, CA	1 FIGURE
SCA Project No. F-3070	*Work Plan by SCA Environmental, Inc.*	
Drafted: RC Reviewed: AWH	*4 Embarcadero Center, Suite 480, San Francisco, CA 94111*	

HOSPITAL ROUTE

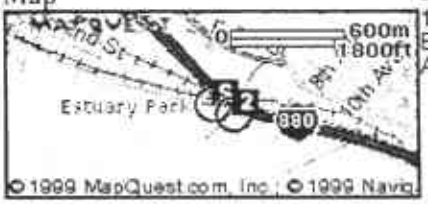
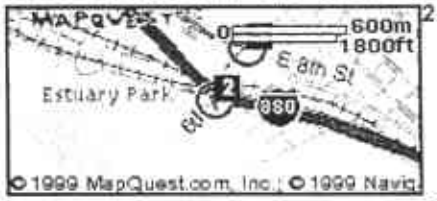
MAPQUEST

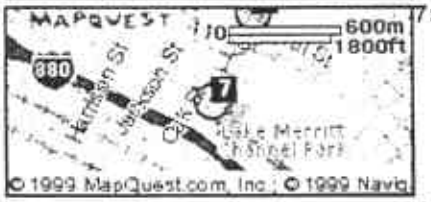
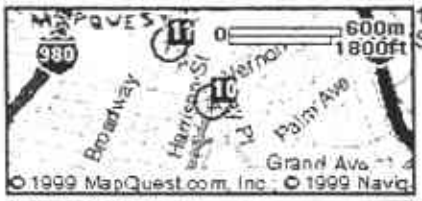
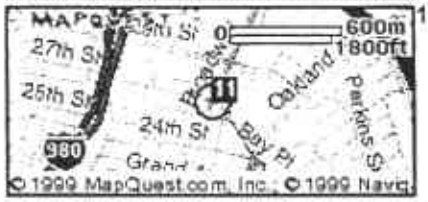
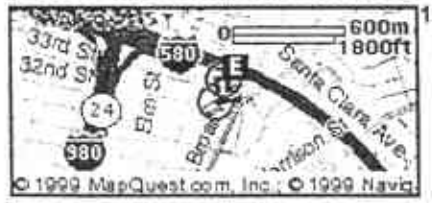
www.mapquest.com



Door to Door Directions

From:	321 Embarcadero Street Oakland CA
To:	34th And Webster Oakland CA

Map	Direction	Distance
	1: Start out going East on EMBARCADERO E towards 5TH AVE by turning left.	0.1 miles (0.1 km)
	2: Turn LEFT onto 5TH AVE.	0.2 miles (0.3 km)
	3: Turn LEFT onto E 8TH ST.	0.1 miles (0.2 km)
	4: E 8TH ST becomes 7TH ST.	0.3 miles (0.5 km)
	5: Turn RIGHT onto FALLON ST.	0.1 miles (0.1 km)
	6: Turn LEFT onto 8TH ST.	0.1 miles (0.1 km)

	7: Turn RIGHT onto OAK ST.	0.3 miles (0.5 km)
	8: OAK ST becomes LAKESIDE DR.	0.6 miles (1.0 km)
	9: LAKESIDE DR becomes HARRISON ST.	0.3 miles (0.4 km)
	10: Turn SLIGHT LEFT onto 27TH ST.	0.2 miles (0.4 km)
	11: Turn RIGHT onto BROADWAY.	0.4 miles (0.6 km)
	12: Turn LEFT onto HAWTHORNE AVE.	0.1 miles (0.1 km)
	13: Turn RIGHT onto WEBSTER ST.	0.1 miles (0.1 km)
Total Distance:	2.8 miles (4.6 km)	
Estimated Time:	8 minutes	

Calculate New Directions

Emergency Room is located at 34th + Webster

APPENDIX E

WELL CONSTRUCTION DETAILS, DRILLING LOGS, AND WELL DEVELOPMENT

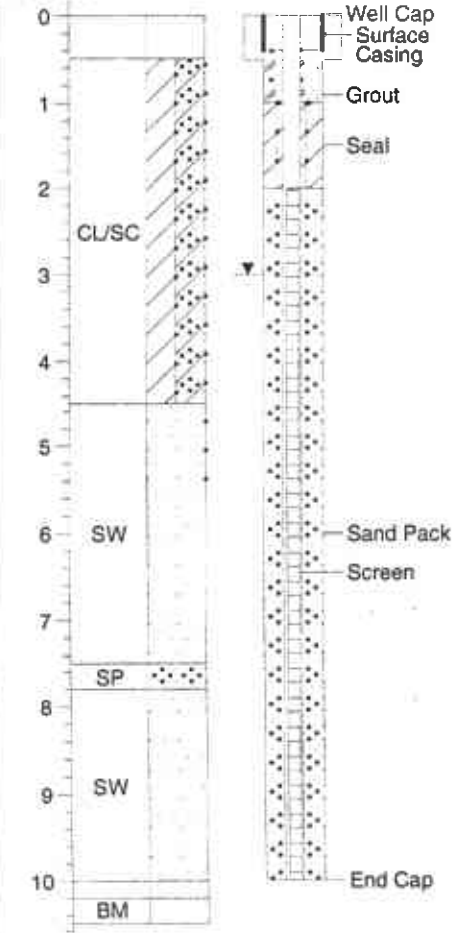
BASELINE

WELL CONSTRUCTION LOG MW-1

5900 Hollis Street, Suite D
Emeryville, California 94608
(510) 420-8686 voice
(510) 420-1707 fax

Project Number	: 98379-15	Driller	: Clearheart
Project Name	: Pacific Dry Dock Yard II	Drill Rig	: Deep rock
Location	: 321 Embarcadero, Oakland	Auger/Bits	: Hollow stem, cont. flight
Personnel	: WKS	Drilling Fluid	: None
Date	: 3/1/00		

Well: MW-1
TOC Elev.: 6.43 feet



Depth	Material
0-1.0	Cement, neat (grout)
1.0-2.0	Bentonite chips (seal)
2.0-10.0	Lonestar #2/12 (sand pack)

Well Construction Information

Boring diameter	: 8 inches
Surface completion	: Christy box
Ground surface elevation	: 7.05 feet
Screen	: 0.01-inch slot
Casing diameter	: 2 inches

WELL DEVELOPMENT

Development date: 3/2/00
Development method: Penstaltic and double diaphragm pump and surge block

13:05 5.0 gal - very turbid
13:10 Measured recharge rate
Surge blocked well
13:20 Resumed pumping
13:23 10.0 gal - turbid
13:27 15.0 gal - turbid
Surge blocked well; changed to double diaphragm pump
13:25 18.0 gal - slightly turbid
13:40 20.0 gal
13:55 22.0 gal - clear to slightly turbid
14:12 25.0 gal - clear

Signature:

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BASELINE

DRILL LOG NO.: MW-1

5900 Hollis Street, Suite D
Emeryville, California 94608
(510) 420-8686 voice
(510) 420-1707 fax

Location	: Pacific Dry Dock Yard II	Boring no.	: MW-1
Driller	: Clearheart	Project no.	: 98379-15
Method	: Hollow stem	Date	: 3/1/00
Logger	: WKS, AS	Casing size	: 2 inches
Datum	: 7.05 feet	Bore size	: 8 inches

Water Levels
▼ Water level observed during drilling
▽ Water level measured with dual-interface probe

Depth in feet	Water Levels	Samples	USCS	GRAPHIC	PID (ppm)	DESCRIPTION	NOTES
0						Concrete slab	
1						Reddish brown, sandy CLAY/clayey SAND with gravel, medium to very fine grained, 1/3- to 3/4-inch diameter angular to subrounded clasts, low to moderate plasticity, very moist (Fill)	
2			CL/SC		0		4-5-4 12-inch recovery
3	▼						
4							4-5-4 No recovery
5						Becoming greenish gray Greenish gray SAND with clay, some gravel, fine to very fine grained, 1/3- to 3/4-inch subrounded clasts, wet (Fill)	
6			SW				
7					0		2-3-3 12-inch recovery
			SP			SAND lenses one to two inches thick, fine grained	
8						Greenish gray SAND with clay, some gravel, fine to very fine grained, 1/3- to 3/4-inch subrounded clasts, wet (Fill)	
9			SW		0		
10							

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BASELINE

DRILL LOG NO.: MW-1

5900 Hollis Street, Suite D
Emeryville, California 94608
(510) 420-8686 voice
(510) 420-1707 fax

Location	: Pacific Dry Dock Yard II	Boring no.	: MW-1
Driller	: Clearheart	Project no.	: 98379-15
Method	: Hollow stem	Date	: 3/1/00
Logger	: WKS, AS	Casing size	: 2 inches
Datum	: 7.05 feet	Bore size	: 8 inches

Water Levels

▼ Water level observed during drilling

▽ Water level measured with dual-interface probe

Depth in feet	Water Levels	Samples	USCS	GRAPHIC	PID (ppm)	DESCRIPTION	NOTES
10			SW		0	Black silty CLAY, high plasticity, abundant peat, wet (Bay Mud)	Visible sheen, some odor SPT 1-1-1 Full recovery
11			BM				

Total depth = 11.5 feet
Total boring depth = 10.0 feet

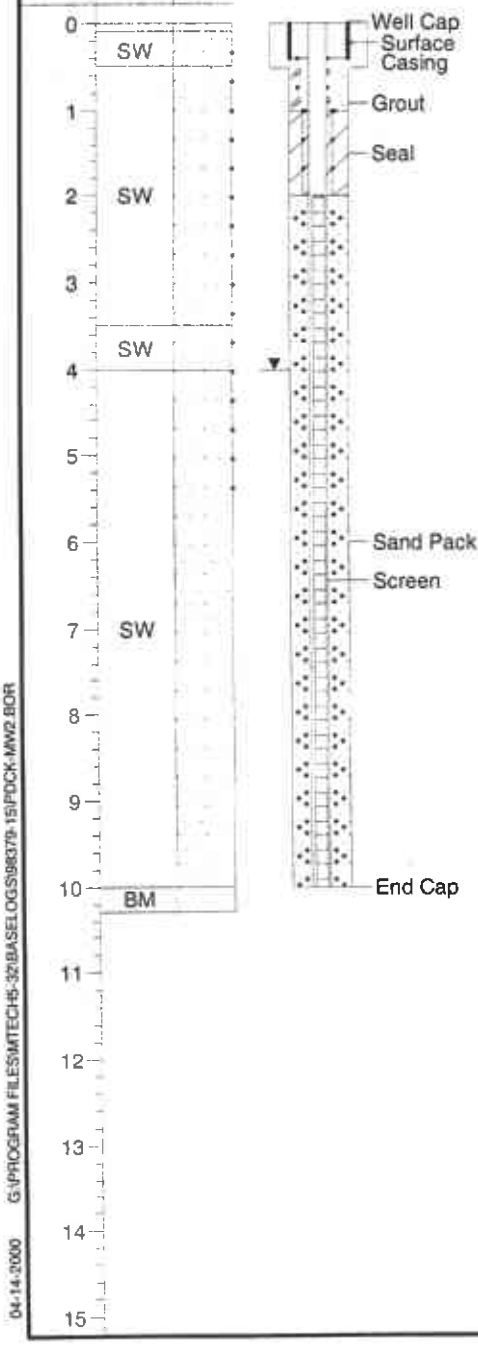
12 13 14 15 16 17 18 19 20

BASELINE

WELL CONSTRUCTION LOG MW-2

5900 Hollis Street, Suite D
Emeryville, California 94608
(510) 420-8686 voice
(510) 420-1707 fax

Project Number	: 98379-15	Driller	: Clearheart
Project Name	: Pacific Dry Dock Yard II	Drill Rig	: Deep rock
Location	: 321 Embarcadero, Oakland	Auger/Bits	: Hollow stem, cont. flight
Personnel	: WKS	Drilling Fluid	: None
Date	: 3/1/00		



Depth	Material
0-1.0	Cement, neat (grout)
1.0-2.0	Bentonite chips (seal)
2.0-10.0	Lonestar #2/12 (sand pack)

Well Construction Information

Boring diameter	: 8 inches
Surface completion	: Christy box
Ground surface elevation	: 8.21 feet
Screen	: 0.01-inch slot
Casing diameter	: 2 inches

WELL DEVELOPMENT

Development date: 3/2/00
Development method: Peristaltic pump and surge block

11:27 1.0 gal - very turbid
11:29 3.0 gal - slightly turbid
Measured recharge rate
Surge blocked well - turbid
11:40 5.0 gal - slightly turbid
11:45 Changed to peri pump
12:05 7.0 gal - very slightly turbid
12:10 8.0 gal - clear

Signature:

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BASELINE

DRILL LOG NO.: MW-2

5900 Hollis Street, Suite D
Emeryville, California 94608
(510) 420-8686 voice
(510) 420-1707 fax

Location	: Pacific Dry Dock Yard II	Boring no.	: MW-2
Driller	: Clearheart	Project no.	: 98379-15
Method	: Hollow stem	Date	: 3/1/00
Logger	: WKS, AS	Casing size	: 2 inches
Datum	: 8.21 feet	Bore size	: 8 inches

Water Levels
▼ Water level observed during drilling
▽ Water level measured with dual-interface probe

Depth in feet	Water Levels	Samples	USCS	GRAPHIC	PID (ppm)	DESCRIPTION	NOTES
0						Asphalt	
			SW			Brown, SAND with gravel, fine to medium grained, 1/3- to 1-inch diameter subrounded to angular clasts, dry to moist (Base Rock)	
1					0	Yellowish brown SAND, trace of gravel and clay, fine to coarse grained, 1/3- to 1/2-inch subangular to angular ine to fine grained, moist (Fill)	4-5-7 14-inch recovery
2			SW				3-3-4
3					0		5-10
			SW			SAND with gravel, very fine to medium grained, 1/3- to 1-inch diameter subangular to angular clasts, moist (Fill)	Hit something hard (possible concrete slab)
4	▼					Dark gray SAND, very fine to fine grained, wet (Fill)	Refusal, moved drilling 4 feet north
5							
6							
7			SW				
8							
9							
10							

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BASELINE

DRILL LOG NO.: MW-2

5900 Hollis Street, Suite D
Emeryville, California 94608
(510) 420-8686 voice
(510) 420-1707 fax

Location	: Pacific Dry Dock Yard II	Boring no.	: MW-2
Driller	: Clearheart	Project no.	: 98379-15
Method	: Hollow stem	Date	: 3/1/00
Logger	: WKS, AS	Casing size	: 2 inches
Datum	: 8.21 feet	Bore size	: 8 inches

Water Levels
▼ Water level observed during drilling
▽ Water level measured with dual-interface probe

Depth in feet	Water Levels	Samples	USCS	GRAPHIC	PID (ppm)	DESCRIPTION	NOTES
10–11			BM		0	Greenish gray to black silty CLAY, high plasticity, pieces of grass and peat, wet, Bay muds	SPT 1-1-1 Sheen in soil

Total boring depth = 10.0 feet
Total depth = 11.5 feet

12 13 14 15 16 17 18 19 20

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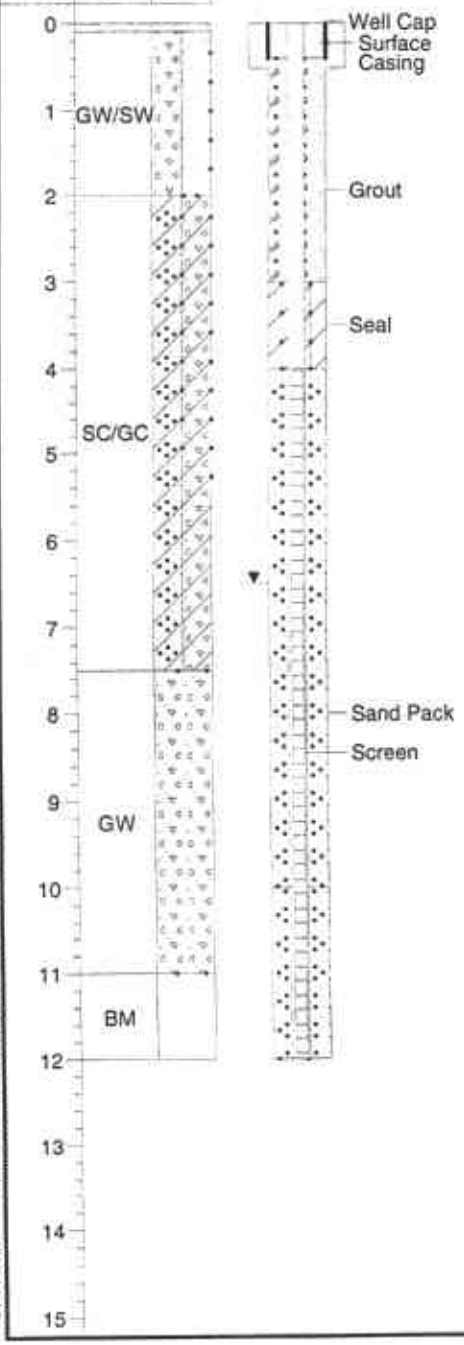
BASELINE

WELL CONSTRUCTION LOG MW-3

5900 Hollis Street, Suite D
Emeryville, California 94608
(510) 420-8686 voice
(510) 420-1707 fax

Project Number	: 98379-15	Driller	: Clearheart
Project Name	: Pacific Dry Dock Yard II	Drill Rig	: Deep rock
Location	: 321 Embarcadero, Oakland	Auger/Bits	: Hollow stem, cont. flight
Personnel	: WKS	Drilling Fluid	: None
Date	: 3/1/00		

Well: MW-3
TOC Elev.: 6.49



Depth	Material
0-1.0	Cement, neat (grout)
1.0-2.0	Bentonite chips (seal)
2.0-10.0	Lonestar #2/12 (sand pack)

Well Construction Information

Boring diameter	: 8 inches
Surface completion	: Christy box
Ground surface elevation	: 7.07 feet
Screen	: 0.01-inch slot
Casing diameter	: 2 inches

WELL DEVELOPMENT

Development date: 3/2/00
Development method: Peristaltic pump and surge block

Diaphragm pump to remove sediment
9:45 1.0 gal - turbid
9:50 5.0 gal - turbid
9:55 Surge blocked well
10:15 10.0 gal - turbid
Decreased pump rate
10:30 15.0 gal - slightly turbid
10:39 17.0 gal - slightly to very slightly turbid
10:45 18.0 gal - very slightly turbid to clear
10:50 19.0 gal - clear

Signature:

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BASELINE

DRILL LOG NO.: MW-3

5900 Hollis Street, Suite D
Emeryville, California 94608
(510) 420-8686 voice
(510) 420-1707 fax

Location	: Pacific Dry Dock Yard II	Boring no.	: MW-3
Driller	: Clearheart	Project no.	: 98379-15
Method	: Hollow stem	Date	: 3/1/00
Logger	: WKS, AS	Casing size	: 2 inches
Datum	: 7.07 feet	Bore size	: 8 inches

Water Levels
▼ Water level observed during drilling
▽ Water level measured with dual-interface probe

Depth in feet	Water Levels	Samples	USCS	GRAPHIC	PID (ppm)	DESCRIPTION	NOTES
0						Asphalt	
1			GW/SW			Brown SAND with gravel/GRAVEL with sand, fine to medium grained, 1/3- to 1-inch diameter subrounded to angular clasts, moist (Base Rock)	
2						Yellowish brown clayey SAND with gravel/clayey GRAVEL with sand, medium to coarse grained sand, 1/3- to >2-inch diameter subrounded to angular clasts, moist (Fill)	
3					0	Decreasing clay content	4-5-7 4-inch recovery Will move after completion of boring to attempt to collect sample at 3.0 feet (6-inch recovery on second attempt)
4			SC/GC				
5					0		11-12-17 4-inch recovery Will move after completion of boring to attempt to collect sample at 5.0 feet (6-inch recovery on second attempt)
6	▼					Increasing clay content	
7							
8			GW			Yellowish brown GRAVEL with sand, 1/3- to 1/2-inch diameter subangular to angular clasts, fine to coarse grained sand, very wet (Fill)	
9							STP
10							

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BASELINE

DRILL LOG NO.: MW-3

5900 Hollis Street, Suite D
Emeryville, California 94608
(510) 420-8686 voice
(510) 420-1707 fax

Location	: Pacific Dry Dock Yard II	Boring no.	: MW-3
Driller	: Clearheart	Project no.	: 98379-15
Method	: Hollow stem	Date	: 3/1/00
Logger	: WKS, AS	Casing size	: 2 inches
Datum	: 7.07 feet	Bore size	: 8 inches

Water Levels
▼ Water level observed during drilling
▽ Water level measured with dual-interface probe

Depth in feet	Water Levels	Samples	USCS	GRAPHIC	PID (ppm)	DESCRIPTION	NOTES
10			GW			Lenses of fine grained sand at interface, shell fragments and grass pieces	
11			BM		0	Greenish gray silty CLAY, high plasticity, wet, Bay mud	SPT 3-3-5 Full recovery
12							
13						Total depth = 12.0 feet Total boring depth = 12.5 feet	
14							
15							
16							
17							
18							
19							
20							

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WELL DEVELOPMENT

Project no.:	98379-15	Well no.:	MW-1	Date:	03/02/2000
Project name:	Pacific Dry Dock Yard II	Depth of well from TOC (feet):	10.03		
Location:	321 Embarcadero	Well diameter (inches):	2.00		
	Oakland, California	Screened interval from TOC (feet)	2-10		
Recorded by:	WKS	TOC elevation (feet):	6.43		
Weather:	Rain	Water level from TOC (feet):	2.21	Time:	13:00
Precip in past		Product level from TOC (feet):	None	Time:	13:00
5 days (inch):	≈ 1.0	Water level measurement:	Dual interface probe		

FIELD MEASUREMENTS

Time	Gallons Removed	Appearance	NTU	Recharge: Time	Water Level (feet)
13:05	5.0	Very turbid	--	13:13:14	5.0
13:10	Measured recharge rate		--	13:13:39	4.0
	Surge blocked well		--	13:14:10	3.0
13:20	Resumed pumping		--		
13:23	10.0	Turbid	--		
13:27	15.0	Turbid	--		
	Surge blocked well;		--		
	changed pump				
13:25	18.0	Slightly turbid	234		
13:40	20.0		--		
13:55	22.0	Clear to slightly turbid	56.8		
14:12	25.0	Clear	11.9		

Comments:

Total gallons removed	25	Average recharge rate (ft/min)	2.1
Development method	Surge block and pump	Purged water disposal	Drum stored at site
		Number of drums	1/2
Decontamination method	TSP and water, DI rinse	Rinsate disposal	Drum stored at site

98379-15.dev.XLS (3/6/00)

WELL DEVELOPMENT

Project no.:	98379-15	Well no.:	MW-2	Date:	03/02/2000
Project name:	Pacific Dry Dock Yard II	Depth of well from TOC (feet):	10.01		
Location:	321 Embarcadero	Well diameter (inches):	2.00		
	Oakland, California	Screened interval from TOC (feet):	2-12		
Recorded by:	WKS	TOC elevation (feet):	7.73		
Weather:	Rain	Water level from TOC (feet):	3.54	Time:	11:24
Precip in past		Product level from TOC (feet):	None	Time:	11:24
5 days (inch):	≈ 1.0	Water level measurement:	Dual interface probe		

FIELD MEASUREMENTS

Time	Gallons Removed	Appearance	NTU	Recharge: Time	Water Level (feet)
11:27	1.0	Very turbid	--	11:30:20	7.0
11:29	3.0	Slightly turbid	--	11:31:41	6.5
	Measured recharge rate		--	11:33:18	6.0
	Surge blocked well	Turbid		11:34:35	5.5
11:40	5.0	Slightly turbid	--	11:36:00	5.0
11:45	Chaned to		--	11:39:22	4.5
	peri pump				
12:05	7.0	Very slightly turbid	61.2		
12:10	8.0	Clear	10.21		

Comments:

Total gallons removed	8.0	Average recharge rate (ft/min)	0.28
Development method	Surge block and pump	Purged water disposal	Drum stored at site
		Number of drums	1/2
Decontamination method	TSP and water, DI rinse	Rinsate disposal	Drum stored at site

98379-15.dev.XLS (3/6/00)

WELL DEVELOPMENT

Project no.:	98379-15	Well no.:	MW-3	Date:	03/02/2000
Project name:	Pacific Dry Dock Yard II	Depth of well from TOC (feet):	11.05		
Location:	321 Embarcadero	Well diameter (inches):	2.00		
	Oakland, California	Screened interval from TOC (feet):	4-11		
Recorded by:	WKS	TOC elevation (feet):	6.49		
Weather:	Rain	Water level from TOC (feet):	4.51	Time:	9:30
Precip in past		Product level from TOC (feet):	None	Time:	9:30
5 days (inch):	≈ 1.0	Water level measurement:	Dual interface probe		

FIELD MEASUREMENTS

Time	Gallons Removed	Appearance	NTU	**Recharge:** Time	Water Level (feet)
Diaphragm pump to remove sediment				Too fast to measure	
9:45	1.0	Turbid	--		
9:50	5.0	Turbid	--		
9:55	Surge block well		--		
10:15	10.0	Turbid	--		
	Decreased pump rate		--		
10:30	15.0	Slightly turbid	534		
10:39	17.0	Slightly to very slightly turbid	302		
10:45	18.0	Very slightly turbid to clear	61.4		
10:50	19.0	Clear	34.1		

Comments:

Total gallons removed	19.0	Average recharge rate (ft/min)	Too fast to measure
Development method	Surge block and pump	Purged water disposal	Drum stored at site
		Number of drums	1/2
Decontamination method	TSP and water, DI rinse	Rinsate disposal	Drum stored at site

98379-15.dev.XLS (3/6/00)

BATES & BAILEY
LAND SURVEYORS, INC.
15 Shattuck Square • Berkeley, CA • 94704
Telephone 510-843-2007
Fax: 510-843-2704

Letter of Transmittal

TO: Bill Scott
Baseline Environmental Consulting
5900 Hollis St., Suite D
Emeryville, CA 94608

DATE: 4-6-2000 JOB #: 15081
ATTENTION:
RE: Pacific Dry Dock Site

WE ARE SENDING YOU

XX Attached Under Separate Cover

2 Prints Diskette Duplicate Tracing(s) Copy of Letter

THESE ARE TRANSMITTED as checked below:

For approval XX For your use As requested

REMARKS

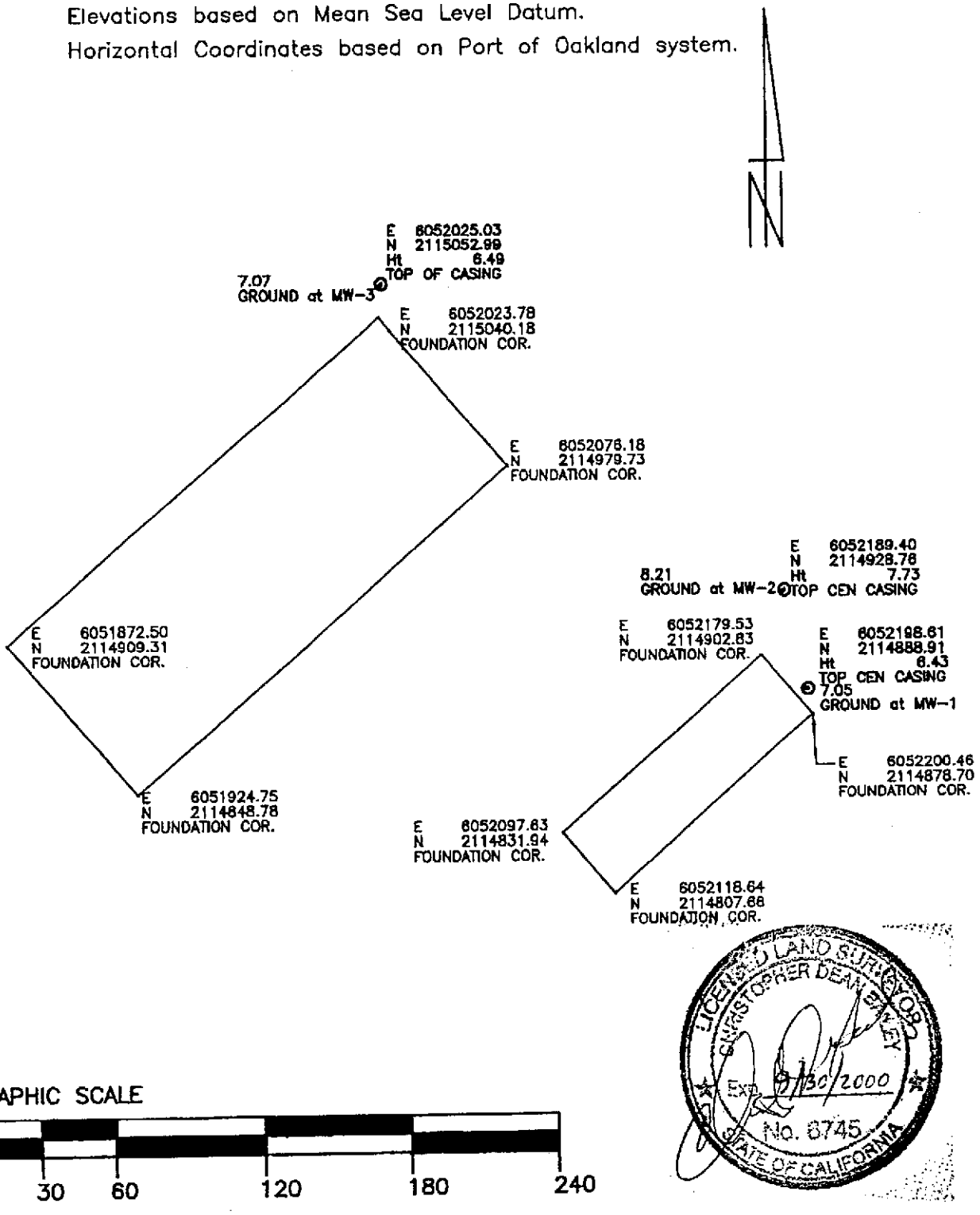
Bill, here are 2 copies of the sketch. Call me if you want me to pass this info along to Gil Hayes at the Port of Oakland.

Signed:
Christopher D. Bailey

NOTES:

Elevations based on Mean Sea Level Datum.

Horizontal Coordinates based on Port of Oakland system.



For: BASELINE ENVIRONMENTAL	Scale: AS SHOWN	Job #: 15081	BATES AND BAILEY
Survey of: Wells at Pacific Dry Dock Area	Date: 4-6-2000		LAND SURVEYORS
			15 SHATTUCK SQ., BERKELEY, CA 94704 (510) 843-2007

APPENDIX F

GROUNDWATER SAMPLING FORMS

GROUNDWATER SAMPLING

Project no.:	98379-15	Well no.:	MW-1	Date:	03/06/2000
Project name:	Pacific Dry Dock Yard II	Depth of well from TOC (feet):	10.03		
Location:	321 Embarcadero	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	2-10		
Recorded by:	WKS/AS	TOC elevation (feet):	6.43		
Weather:	Cloudy	Water level from TOC (feet):	2.15	Time:	14:30
Precip in past		Product level from TOC (feet):	None	Time:	14:30
5 days (inch):	=0.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(10.03 ft) - (2.15 ft)] × (0.083 ft)² × 3.14 × 7.48 =

(Well depth — Water level — Well radius)

1.30 gallons in one well volume
3.80 gallons in 3 well volumes
4.25 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:					
Before Purging:	14:08	16.4	7.00/10.01	1,000	10.00
After Purging:	15:45	16.3	7.3/10.31	964	10.40

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance	NTU
15:28	14.0	7.61	10,740	2.00	Clear	2.10
15:32	14.0	7.58	10,750	2.50	Clear	6.00
15:34	14.0	7.57	11,430	3.00	Clear	12.00
15:37	13.9	7.61	11,950	3.75	Clear	13.40
15:43	13.9	7.59	12,430	4.25	Clear	11.50

D.O. reading prior to sampling:	70 mg/L	Time:	15:43
Appearance of sample:	Clear / 11.5 NTU	Time:	15:45
Duplicate/blank number:	--	Time:	--
Purge method:	Peristaltic pump and disposable polyethylene tubing		
Sampling equipment:	Peristaltic pump	VOC attachment:	NA
Sample containers:	2-liter amber glass, 2-4 ml VOAs, 1-liter poly		
Sample analyses:	TPHd, TPHmo, BTEX, Cd, Cr, Pb, Ni, Zn	Laboratory:	Sequoia Analytical
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	Drum on site

GW-NEW.XLS (3/13/96)

GROUNDWATER SAMPLING

Project no.:	98379-15	Well no.:	MW-2	Date:	03/06/2000
Project name:	Pacific Dry Dock Yard II	Depth of well from TOC (feet):	10.01		
Location:	321 Embarcadero	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	2-10		
Recorded by:	WKS/AS	TOC elevation (feet):	7.73		
Weather:	Cloudy	Water level from TOC (feet):	3.63	Time:	14:28
Precip in past		Product level from TOC (feet):	None	Time:	14:38
5 days (inch):	≈0.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(10.01 ft) - (3.63 ft)] × (0.083 ft)² × 3.14 × 7.48 =
Well depth Water level Well radius

1.0 gallons in one well volume
3.0 gallons in 3 well volumes
3.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:					
Before Purging:	14:08	16.4	7.00/10.01	1,000	10.00
After Purging:	15:45	16.3	7.3/10.31	964	10.40

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance	NTU
14:55	15.3	7.42	14,490	0.5	Clear	2.23
14:59	14.9	7.46	13,870	1.5	Clear	1.42
15:02	15.0	7.46	14,030	2.0	Clear	1.62
15:05	15.0	7.52	14,220	2.5	Clear	3.13
15:10	15.3	7.56	14,260	3.0	Clear	1.96

D.O. reading prior to sampling:	1.0 mg/L	Time:	15:10
Appearance of sample:	Clear / 1.62 NTU	Time:	15:10
Duplicate/blank number:	--	Time:	--
Purge method:	Peristaltic pump and disposable polyethylene tubing		
Sampling equipment:	Peristaltic pump	VOC attachment:	NA
Sample containers:	2-liter amber glass, 2-40 ml VOAs, 1-liter poly		
Sample analyses:	TPHd, TPHmo, BTEX, Cd, Cr, Pb, Ni, Zn	Laboratory:	Sequoia Analytical
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	Drum on site

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GROUNDWATER SAMPLING

Project no.:	98379-15	Well no.:	MW-3	Date:	03/06/2000
Project name:	Pacific Dry Dock Yard II	Depth of well from TOC (feet):	11.05		
Location:	321 Embarcadero	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	4-11		
Recorded by:	WKS/AS	TOC elevation (feet):	6.49		
Weather:	Cloudy	Water level from TOC (feet):	3.85	Time:	14:05
Precip in past		Product level from TOC (feet):	None	Time:	14:05
5 days (inch):	≈0.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(11.05 ft) - (3.85 ft)] × (0.083 ft)² × 3.14 × 7.48 =
Well depth Water level Well radius

1.20 gallons in one well volume
3.50 gallons in 3 well volumes
3.75 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:					
Before Purging:	14:08	16.4	7.00/10.01	1,000	10.00
After Purging:	15:45	16.3	7.3/10.31	964	10.40

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance	NTU
14:22	16.4	7.48	2,658	0.75	Clear	2.48
14:25	15.6	7.58	2,422	2.00	Clear	2.14
14:31	15.5	7.52	2,292	3.00	Clear	2.75
14:37	15.5	7.48	2,194	3.75	Clear	2.41

D.O. reading prior to sampling:	1.60 mg/L	Time:	14:37
Appearance of sample:	Clear / 2.41 NTU	Time:	14:40
Duplicate/blank number:	--	Time:	--
Purge method:	Peristaltic pump and disposable polyethylene tubing		
Sampling equipment:	Peristaltic pump	VOC attachment:	NA
Sample containers:	2-liter amber glass, 2-4 ml VOAs, 1-liter poly		
Sample analyses:	TPHd, TPHmo, BTEX, Cd, Cr, Pb, Ni, Zn	Laboratory:	Sequoia Analytical
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	Drum on site

GW-NEW.XLS (3/13/96)