James P. Bowers, PE
R. William Rudolph, Jr., PE

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February 3, 1994
SCI 447.036

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Ms. Jennifer Eberle
Alameda County Health Care Services Agency
80 Swan Way, Room 350
Oakland, California 94621

**Phase III Hydrocarbon Assessment**
**Groundwater Monitoring Plan**
**Connell Oldsmobile**
**3095 Broadway**
**Oakland, California**

Dear Ms. Eberle:

Enclosed please find a comprehensive report detailing our investigation on this site over the past year. This letter also transmits a request to modify the groundwater monitoring plan at the referenced site. Since October 1992, twelve wells have been monitored on a quarterly basis. During each event the following has been conducted (1) free product has been removed from wells MW-1, 6 and 14, and (2) groundwater level measurements and samples have been obtained from the remaining wells which did not contain free product. Based on our review of the monitoring data presented in our report dated January 13, 1994, we conclude that the gasoline plume has been well defined. As a result, we propose to reduce the frequency of monitoring in some of the wells.
We request that the quarterly sampling plan be revised to include sampling the wells at the plume boundary. The revised plan would include sampling of wells MW-3, 7, 11 and 13 on a quarterly basis and semi-annual sampling of the remaining wells. Groundwater level measurements will continue to be obtained in all wells during each event. In addition, free product will continue to be removed from wells MW-1, 6 and 14.

The next monitoring event will be conducted once the revision is approved by the ACHCSA.

■ Subsurface Consultants, Inc.

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 510-268-0461 • FAX 510-268-0137

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Jeriann N. Alexander

Jeriann N. Alexander
Project Manager
Civil Engineer 40469 (expires 3/31/95)

JNA:sld

cc: Mr. Jonathan Redding (w/o enclosure)
Fitzgerald, Abbott & Beardsley

cc: Mr. John Jang
Regional Water Quality Control Board

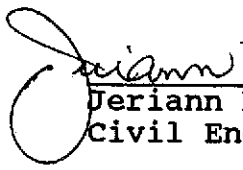
**PHASE III HYDROCARBON**
**CONTAMINATION ASSESSMENT**
**CONNELL OLDSMOBILE**
**3093 BROADWAY**
**OAKLAND, CALIFORNIA**
**SCI 447.036**

1-13-94

Prepared for:

Mr. Jonathan Redding
Fitzgerald, Abbott & Beardsley
1221 Broadway, 21st Floor
Oakland, California 94612-1837

By:



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January 13, 1994

# I INTRODUCTION

This report presents the results of the Phase III hydrocarbon contamination assessment conducted by Subsurface Consultants, Inc. (SCI) at the Connell Oldsmobile facility in Oakland, California. The facility is situated at the southwest corner of the intersection of Hawthorne Avenue and Broadway, as shown on the Site Plan, Plate 1.

On December 18, 1989, three underground fuel storage tanks which previously contained gasoline, diesel and waste oil were removed from the site. Elevated levels of oil and grease, diesel, gasoline, benzene, toluene, ethylbenzene and xylenes (BTEX) were encountered in soil samples from beneath the tanks. Soil excavated to remove the tanks was contaminated and was stockpiled on-site. The excavation was backfilled with imported material. Tank removal activities were summarized in a letter dated March 22, 1990.

SCI previously performed a Preliminary Contamination Assessment and Phase II Hydrocarbon Contamination Assessment at the site. These studies indicated that:

1. Soil and groundwater have been impacted by releases of gasoline and diesel,

2. Soil contamination exists near the previous tanks and near the groundwater surface downgradient of the tanks,

3. Free product was observed to be floating on the groundwater surface in areas up to 200 feet downgradient of the tank area, and

4. 1,2-DCA (believed to be a gasoline additive) was detected in groundwater within the fuel release area.

The results of the investigations were presented in reports dated December 7, 1990 and June 3, 1991.

SCI was retained in October 1992 to further evaluate the lateral extent of groundwater contamination. To date, SCI services have consisted of:

1. Exploring subsurface conditions with cone penetrometer testing (CPT) equipment at (17) locations,
2. Drilling six (6) test borings,
3. Completing three (3) of the borings as monitoring wells and two (2) of the borings as extraction wells,
4. Analyzing groundwater from the new wells and grab water samples from the CPT locations,
5. Performing a level survey to establish elevations for the new wells and CPT locations,
6. Evaluating aquifer characteristics by conducting two pump tests and performing geotechnical laboratory tests on selected soil samples,
7. Performing quarterly groundwater monitoring, and
8. Intermittently removing free product from selected wells.

## II FIELD INVESTIGATION

In October 1992, three (3) test borings (MW8, MW9 and MW10), were drilled using rotary wash drilling methods. Test Boring MW9 was completed as a 2-inch-diameter monitoring well. Test Borings MW8 and MW10 were completed as 6-inch-diameter extraction wells. In November 1992, three (3) additional test borings (MW11, MW12 and MW13), were drilled using truck mounted hollow stem auger

equipment. Test borings MW11 and MW13 were completed as 2-inch-diameter monitoring wells. Boring 12 was backfilled with grout upon completion of drilling. Well and boring locations are shown on Plate 1. A level survey was conducted to determine the top of casing elevation for each new well. The elevations were referenced to an arbitrary benchmark on the Broadway Medical Plaza property which has been used during all previous surveying tasks. All boring and well logs for the project are presented on Plates A1 through A13.

Subsurface conditions were further investigated by using cone penetrometer testing (CPT) equipment. In October 1992, VBI was retained to perform CPTs at the 17 locations shown on Plate 1. CPT data are presented in Appendix C.

Controlled pump tests were performed in each of the extraction wells. Groundwater was pumped from wells MW8 and MW10 at rates of about 0.8 and 6.5 gallons per minute, respectively. Groundwater levels in adjacent monitoring wells were periodically measured to determine the radius of influence. The results of the pump tests are presented on Plates A15 and A16.

Quality control and quality assurance protocols followed during field work, CPT studies, and pump tests, as well as a detailed discussion of field procedures are provided in Appendix A.

## III ANALYTICAL TESTING

Selected groundwater samples were analyzed by two separate laboratories for qualitative and quantitative assurance. Curtis & Tompkins, Ltd. (C&T) of Berkeley, California has performed the analytical testing during all previous phases of the study. Friedman & Bruya, Inc. of Seattle, Washington are environmental chemists who specialize in the identification and differentiation of specific petroleum products.

Groundwater samples from the wells and grab groundwater samples from the CPT holes and Boring 12 were analyzed for constituents previously detected. The testing program included the following:

1. Total volatile hydrocarbons (TVH),
2. Total extractable hydrocarbons (TEH),
3. Purgeable halocarbons, and
4. Benzene, toluene, ethylbenzene, xylenes (BTEX).

Summaries of the analytical test results are presented on Tables 1 and 2. Descriptions of the sample preparation and analytical test methods, analytical test reports and Chain-of-Custody records are presented in Appendix B.

# IV SITE CONDITIONS

## A. Regional Setting

The site was developed by cutting into the eastern flank of a minor structural uplift on the Oakland alluvial plain referred to as "Pill Hill." The groundsurface in the area slopes moderately down toward the east and southeast. The groundsurface continues to slope downward across Broadway and toward Glen Echo Creek, which drains in a southerly direction to Lake Merritt.

## B. Surface Conditions

The Connell Oldsmobile facility is situated on the south side of Hawthorne Avenue, between Broadway and Webster Street. The facility consists of a high one-story building with a slab-on-grade floor. Asphalt and concrete-paved accessways extend along the west and south sides of the structure; sidewalks extend along the north and east sides. The previous tanks were located beneath the sidewalk adjacent to the north side of the facility, as shown on Plate 1.

## C. Soil Conditions

Geologic mapping by Radbruck (1957) indicates that the site is underlain by the Temescal formation, an extensive quaternary age alluvial fan deposit comprising interbedded lenses of silt, sand, clay and gravel. Because of the random nature of alluvial fan deposition, the heterogeneous layers of the Temescal formation are irregular in thickness and laterally discontinuous. As encountered during past and current studies, the soils underlying the site range from silty clays to sandy gravels. The sand and gravel

deposits typically occur as lenses interfingered with the more prevalent silts and clays. Analysis of subsurface profiles provides little correlation between layers encountered within the various borings and CPT probes.

**D. Free Product**

Free floating gasoline has been observed on the groundwater surface in several wells (MW1, MW4, MW6 and MW10). The actual thickness of product on the water surface is difficult to measure due to capillary forces which can cause product to accumulate in wells. However, the average product thickness is about 1 inch in MW1 and MW6, and about 10 inches in MW4 and MW10.

Free product recovery has been performed on an intermittent basis at the site using a portable pump and by hand bailing. To date approximately 77.5 gallons of product have been removed from wells MW1, MW4 and MW6. Product recovery data are presented on Table 3.

**E. Hydrogeologic Conditions**

Groundwater levels have been measured periodically in the on-site wells beginning in 1990. The direction of groundwater flow is generally towards the east. Where coarse-grained soil deposits are coincident with the groundwater level, pathways of preferential groundwater flow are developed due to the higher hydraulic conductivity of these soils. The effect may account for the variable nature of the direction and gradient across the site. Our interpretation of the flow direction and gradient for the November 1993 sampling event are presented on Plate 2. Water level readings are summarized in Table 4.

Pump test results appear to substantiate that preferential flow exists within coarse-grained deposits. The effect of pumping from Well MW10, which has a well graded sandy gravel present at the groundwater surface, was observed up to 200 feet away in wells in which coarse-grained soils were also present at the groundwater surface. Pumping from Well MW8 which penetrates predominately fine grained soils did not effect water levels in adjacent wells.

## V CONCLUSIONS

Groundwater beneath the site has been impacted by releases from the previous underground storage tanks. Free gasoline product and significantly elevated concentrations of total volatile and extractable hydrocarbons, BTEX and 1,2-dichloroethane (DCA) have been detected in wells MW1, MW4, MW6, MW9 and MW10. Friedman and Bruya and Curtis & Tompkins, Ltd. review of the laboratory chromatographs indicate that the extractable hydrocarbons appear to represent heavier fractions of gasoline rather than a separate significant release of diesel fuel. In addition, Friedman & Bruya concluded that the DCA present within the water is associated with its common use as a gasoline additive.

The approximate extent of the free product and dissolved product plumes is presented on Plate 2. Well MW13 was positioned to evaluate the downgradient extent of the gasoline contaminant plume. The TEH chromatographs indicate the presence of diesel or motor oil weight hydrocarbons in this well. However, gasoline weight hydrocarbons nor BTXE were not detected. As such, it

appears that the plume associated with the gasoline release on the Connell site does not extend across Broadway. The groundwater monitoring data from March 1991 to November 1993 indicates that the free product and dissolved product plumes have not migrated measurable during the study period.

Well MW11 was positioned to evaluate the upgradient extent of the gasoline contaminant plume. The TEH chromatographs from this well detected low concentrations of heavier petroleum product such as diesel or motor oil. These same chromatographic features have not been observed in the other on-site wells. As a result, it appears that the well is being impacted by an upgradient source.

## V LIMITATIONS

This study was intended to provide a preliminary means of evaluating the risk of the property containing significant soil and groundwater contamination near the previous tanks. Contamination may exist in other areas not investigated by SCI.

The conclusions drawn from this study are an expression of our professional opinion, and do not constitute a warranty or guaranty, either expressed or implied. Additional investigative work, if undertaken, may modify the conclusions presented herein, as additional information is generated.

SCI has performed this study in accordance with generally accepted standards of care which exist in northern California at the time of this study. Please recognize that the definition and evaluation of environmental conditions is difficult and inexact.

Judgements leading to conclusions and recommendations are generally made with an incomplete knowledge of the subsurface and/or historic conditions applicable to the site. In addition, the conclusions made herein reflect site conditions at the time of the investigation. These conditions may change with time and as such the conclusion may also change.

The conclusions and opinions presented herein may also be affected by rapid changes in the field of environmental engineering and the laws governing hazardous waste. The reader is advised to consult with SCI prior to relying upon the information provided.

**List of Tables:**

Table 1. Summary of Contaminant Concentrations in Wells

Table 2. Summary of Contaminant Concentrations in CPT Holes

Table 3. Free Product Recovery

Table 4. Groundwater Elevation Data

Table 5. Summary of Contaminant Concentrations in Soil

**List of Attached Plates:**

| | |
|---|---|
| Plate 1 | Site Plan |
| Plate 2 | Groundwater Conditions |
| Plates A1 through A13 | Logs of Test Borings MW1 through MW11, 12 and MW13 |
| Plate A14 | Unified Soil Classification System |
| Plate A15 and A16 | Pump Test Drawdown Data |
| Plates B1 and B2 | Particle Size Analysis |

**Appendices:**

A Investigation Protocol

B Analytical Testing

C CPT Data

**Distribution:**

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JNA:RWR:sld

**Table 1.**

**SUMMARY OF CONTAMINANT CONCENTRATIONS IN GROUNDWATER FROM MONITORING WELLS**

| Well | Event Date | TVH ug/l | TEH ug/l | B ug/l | T ug/l | E ug/l | X ug/l | 1,2 DCA ug/l | Other Purgeable Halocarbons ug/l |
|---|---|---|---|---|---|---|---|---|---|
| MW-1 | Oct-90 | 620,000 | <500 | 33,000 | 50,000 | 7,900 | 41,000 | 2,900 | ND |
| | Oct-92 | 490,000 | - | 51,000 | 59,000 | 5,000 | 27,000 | 1,300 | - |
| | Nov-92 | 320,000 | 4,600 | 35,000 | 43,000 | 4,200 | 22,000 | 1,600 | ND |
| | Apr-93 | 270,000 | 25,000 | 50,000 | 58,000 | 4,600 | 25,000 | 1,800 | ND |
| MW-2 | Mar-91 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | ND | ND |
| | Nov-92 | <50 | <50 | <0.5 | 1.1 | <0.5 | 1.5 | <1 | ND |
| | Apr-93 | <50 | 870 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Jul-93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Nov-93 | <50 | 240 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| MW-3 | Mar-91 | <50 | <50 | <50 | 0.6 | <0.5 | <0.5 | ND | ND |
| | Nov-92 | 50 | 160 | <0.5 | 0.9 | <0.5 | 2 | <1 | ND |
| | Apr-93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Jul-93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Nov-93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| MW-4 | Mar-91 | 150,000 | <500 | 20,000 | 38,000 | 2,800 | 14,000 | 610 | ND |
| | Oct-92 | 230,000 | - | 15,000 | 32,000 | 2,500 | 14,000 | 430 | - |
| | Nov-92 | 210,000 | 1,600 | 14,000 | 31,000 | 2,500 | 14,000 | 500 | ND |
| MW-5 | Mar-91 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | ND | ND |
| | Nov-92 | <50 | 50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Apr-93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Jul-93 | <50 | 190 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Nov-93 | <50 | 170 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| MW-6 | Mar-91 | 80,000 | <50 | 12,000 | 13,000 | 1,100 | 5,400 | 1,400 | Dibromochloro-methane (160) |
| | Oct-92 | 19,000 | - | 3,200 | 1,400 | 200 | 560 | 840 | - |
| MW-7 | Mar-91 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | ND | ND |
| | Nov-92 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Apr-93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Jul-93 | <50 | 150 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Nov-93 | <50 | 200 | <0.5 | 1 | <0.5 | 1.7 | <1 | ND |

| Well | Event Date | TVH ug/l | TEH ug/l | B ug/l | T ug/l | E ug/l | X ug/l | 1,2 DCA ug/l | Other Purgeable Halocarbons ug/l |
|---|---|---|---|---|---|---|---|---|---|
| MW-8 | Oct-92 | 70 | - | 20 | 1 | 1 | 3 | 210 | - |
| | Nov-92 | <50 | 170 | <0.5 | <0.5 | <0.5 | <0.5 | 200 | ND |
| | Apr-93 | 490 | 100 | 15 | 45 | 5.1 | 73 | 210 | ND |
| | Jul-93 | 180 | 90 | 2.5 | 3 | <0.5 | 1.9 | 350 | ND |
| | Nov-93 | 310 | 170 | 23 | <0.5 | <0.5 | <0.5 | 240 | ND |
| MW-9 | Nov-92 | 19,000 | 320 | 180 | 590 | 23 | 2000 | 340 | Chloroform (15) |
| | Apr-93 | 2,300 | 920 | 48 | 4 | 0.6 | 13 | 600 | Chloroform (2) |
| | Jul-93 | 2,300 | 450 | 170 | 8.1 | 15 | <0.5 | 1100 | ND |
| | Nov-93 | 4,400 | 450 | 69 | 7.3 | 21 | 9.7 | 900 | ND |
| MW-10 | Oct-92 | 28,000 | - | 2,700 | 3,800 | 210 | 1,300 | 150 | - |
| | Nov-92 | 130,000 | 1,300 | 9,700 | 19,000 | 1,400 | 8,400 | 370 | ND |
| | Apr-93 | 63,000 | 5,000 | 6,300 | 14,000 | 1,100 | 7,500 | 70 | ND |
| | Jul-93 | 140,000 | 20,000 | 16,000 | 31,000 | 2,200 | 13,000 | 700 | ND |
| MW-11 | Nov-92 | <50 | 220 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Dec-92 | <50 | 140 | <0.1 | <0.1 | <0.1 | <0.1 | - | - |
| | Dec-92 | <50 | 120 | <0.5 | <0.5 | <0.5 | <0.5 | - | - |
| | Apr-93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Jul-93 | 160 | 150 | <0.5 | 1.8 | <0.5 | <0.5 | <1 | ND |
| | Nov-93 | 80 | 60 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| MW-13 | Nov-92 | <50 | 3,600 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Dec-92 | <50 | 210 | <0.1 | <0.1 | <0.1 | <0.1 | - | - |
| | Dec-92 | <50 | 100 | <0.5 | <0.5 | <0.5 | <0.5 | - | - |
| | Apr-93 | <50 | <50 | <0.5 | 0.9 | <0.5 | <0.5 | <1 | ND |
| | Jul-93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| | Nov-93 | <50 | 160 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |

ug/l = micrograms per liter = parts per billion = ppb
MW1 was initially referred to as Sample 5
ND = None detected, chemicals not present at concentrations above detection limits reported on laboratory test reports
TVH = Total Volatile Hydrocarbons
TEH = Total Extractable Hydrocarbons
BTEX = Benzene, Toulene, Ethylbenzene, Xylene
DCA = 1,2-dichloroethane
<0.5 = Chemical not present at a concentration in excess of detection limit shown
- = Test not requested

## Table 2.
## SUMMARY OF CONTAMINANT CONCENTRATIONS
## GRAB GROUNDWATER SAMPLES FROM BORING AND CPT HOLES

| | TVH ug/l | TEH ug/l | B ug/l | T ug/l | E ug/l | X ug/l | 1,2 DCA ug/l | Other Purgeable Halocarbons ug/l |
|---|---|---|---|---|---|---|---|---|
| B-12 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND |
| CPT 1 | 490 | - | 20 | 60 | 10 | 60 | 1 | - |
| CPT 3 | 50 | - | <0.4 | <0.4 | 3 | 3 | <4 | - |
| CPT 4 | 1,100 | - | 60 | 50 | 80 | 15 | 110 | - |
| CPT 5 | 600,000 | - | 2,300 | 53,000 | 8,000 | 43,000 | 730 | - |
| CPT 7 | 1,700,000 | - | 40,000 | 120,000 | 25,000 | 120,000 | 2,900 | - |
| CPT 9 | 2,100,000 | - | 49,000 | 140,000 | 28,000 | 145,000 | 620 | - |
| CPT 10 | 190,000 | - | 13,000 | 16,000 | 3,900 | 18,000 | 1,400 | - |
| CPT 11 | 2,000 | - | 200 | 50 | 30 | 70 | 11 | - |
| CPT 12 | 130,000 | - | 4,100 | 10,000 | 2,600 | 10,000 | 9 | - |

ug/l = micrograms per liter = parts per billion = ppb

ND = None detected, chemicals not present at concentrations above detection limits reported on laboratory test reports

TVH = Total Volatile Hydrocarbons

TEH = Total Extractable Hydrocarbons

BTEX = Benzene, Toulene, Ethylbenzene, Xylene

DCA = 1,2-dichloroethane

<50 = Chemical not present at a concentration in excess of detection limit shown

- = Test not requested

Table 3

FREE PRODUCT RECOVERY

| Well | Pumping Date | Product Removed (gallons) | Cumulative Product Removed (gallons) |
|---|---|---|---|
| 1 | 12/23/91 | 2.0 | 2.0 |
| | 12/26/91 | 0.5 | 2.5 |
| | 1/13/92 | 1.0 | 3.5 |
| | 2/28/92 | 2.0 | 5.5 |
| | 4/3/93 | 0.0 | 5.5 |
| | 11/9/93 | 0.5 | 6.0 |
| 4 | 12/23/91 | 2.5 | 2.5 |
| | 12/26/91 | 6.0 | 8.5 |
| | 1/10/92 | 5.0 | 13.5 |
| | 2/28/92 | 4.0 | 17.5 |
| | 3/11/92 | 3.5 | 21.0 |
| | 3/13/92 | 3.5 | 24.5 |
| | 3/17/92 | 2.25 | 26.75 |
| | 3/18/92 | 2.5 | 29.25 |
| | 3/19/92 | 1.5 | 30.75 |
| | 3/23/92 | 4.0 | 34.75 |
| | 3/24/92 | 1.5 | 36.25 |
| | 3/25/92 | 1.0 | 37.25 |
| | 3/26/92 | 1.0 | 38.25 |
| | 3/27/92 | 0.5 | 38.75 |
| | 3/31/92 | 0.5 | 39.25 |
| | 4/1/92 | 0.25 | 39.50 |
| | 4/2/92 | 0.130 | 39.63 |
| | 4/6/92 | 0.130 | 39.76 |
| | 4/10/92 | 0.25 | 40.01 |
| | 4/13/92 | 0.25 | 40.26 |
| | 4/20/92 | 0.130 | 40.39 |
| | 5/4/92 | 0.130 | 40.52 |
| | 5/18/92 | 0.130 | 40.65 |
| | 5/26/92 | 0.130 | 40.78 |
| | 6/1/92 | 0.06 | 40.84 |
| | 6/29/92 | 0.25 | 41.09 |
| | 7/29/92 | 1.11 | 42.20 |
| | 8/28/92 | 1.68 | 43.88 |
| | 4/3/93 | 0.130 | 44.01 |
| | 11/9/93 | 0.03 | 44.04 |

| Well | Pumping Date | Product Removed (gallons) | Cumulative Product Removed (gallons) |
|---|---|---|---|
| 6 | 12/23/91 | 7.5 | 7.5 |
| | 12/26/91 | 2.0 | 9.5 |
| | 1/10/92 | 1.0 | 10.5 |
| | 2/4/92 | 2.0 | 12.5 |
| | 2/28/92 | 3.0 | 15.5 |
| | 3/10/92 | 2.75 | 18.25 |
| | 3/12/92 | 2.0 | 20.25 |
| | 3/30/92 | 0.5 | 20.75 |
| | 4/10/92 | 0.25 | 21.00 |
| | 4/13/92 | 0.13 | 21.13 |
| | 4/20/92 | 0.13 | 21.26 |
| | 5/4/92 | 0.13 | 21.39 |
| | 5/8/92 | 0.06 | 21.45 |
| | 5/26/92 | 0.13 | 21.58 |
| | 6/1/92 | 0.06 | 21.64 |
| | 6/29/92 | 0.19 | 21.83 |
| | 7/29/92 | 0.60 | 22.43 |
| | 8/28/92 | 2.4 | 24.83 |
| | 4/3/93 | 1.75 | 26.58 |
| | 11/9/93 | 0.83 | 27.41 |

**Table 4**
**GROUNDWATER ELEVATION DATA**

| Well | TOC Elevation (feet) | Date | Groundwater Depth (feet) | Groundwater Elevation (feet) |
|---|---|---|---|---|
| MW-1 | 94.48 | 10/3/90 | 26.40 | 68.08 |
| | | 3/5/91 | 27.46 | 67.02 |
| | | 3/18/91 | 26.88 | 67.60 |
| | | 4/12/91 | 25.49 | 68.99 |
| | | 5/18/92 | 24.75 | 68.73 |
| | | 6/29/92 | 25.09 | 69.39 |
| | | 7/29/92 | 25.46 | 69.02 |
| | | 8/28/92 | 25.56 | 68.92 |
| | | 10/28/92 | 26.44 | 68.04 |
| | | 11/24/92 | 26.63 | 67.85 |
| | | 12/22/92 | 26.37 | 68.11 |
| | | 4/5/93 | 23.77 | 70.71 |
| | | 7/20/93 | 24.51 | 69.97 |
| | | 11/9/93 | 26.06 | 68.42 |
| MW-2 | 94.81 | 3/5/91 | 27.86 | 66.95 |
| | | 3/18/91 | 27.46 | 67.35 |
| | | 4/12/91 | 26.98 | 67.83 |
| | | 5/18/92 | 26.50 | 68.31 |
| | | 6/29/92 | 26.80 | 68.01 |
| | | 7/29/92 | 27.08 | 67.73 |
| | | 8/28/92 | 27.33 | 67.48 |
| | | 10/28/92 | 27.65 | 67.16 |
| | | 11/24/92 | 27.91 | 66.90 |
| | | 12/22/92 | 27.74 | 67.07 |
| | | 4/5/93 | 25.95 | 68.86 |
| | | 7/20/93 | 25.59 | 69.22 |
| | | 11/9/93 | 26.72 | 68.09 |
| MW-3 | 90.08 | 3/6/91 | 23.17 | 66.91 |
| | | 3/18/91 | 22.76 | 67.32 |
| | | 4/12/91 | 22.51 | 67.57 |
| | | 5/12/92 | 23.17 | 66.91 |
| | | 6/29/92 | 22.90 | 67.18 |
| | | 7/29/92 | 22.17 | 67.91 |
| | | 8/28/92 | 22.28 | 67.80 |
| | | 10/28/92 | 22.67 | 67.41 |
| | | 11/24/92 | 23.01 | 67.07 |
| | | 12/22/92 | 22.91 | 67.17 |
| | | 4/5/93 | 22.11 | 67.97 |
| | | 7/20/93 | 23.93 | 66.16 |
| | | 11/9/93 | 23.14 | 66.94 |

| | | | | |
|---|---|---|---|---|
| MW-4 | 88.84 | 3/5/91 | 23.79 | 65.05 |
| | | 3/18/91 | 22.30 | 66.54 |
| | | 4/12/91 | 21.85 | 66.99 |
| | | 5/18/92 | 21.33 | 67.51 |
| | | 6/29/92 | 21.38 | 67.46 |
| | | 7/29/92 | 21.69 | 67.15 |
| | | 8/28/92 | 21.35 | 67.49 |
| | | 10/28/92 | 22.48 | 66.36 |
| | | 11/24/92 | 22.60 | 66.24 |
| | | 12/22/92 | 22.47 | 66.37 |
| | | 4/3/93 | 20.11 | 68.73 |
| | | 7/20/93 | 20.48 | 68.36 |
| | | 11/9/93 | 21.71 | 67.13 |

| | | | | |
|---|---|---|---|---|
| MW-5 | 84.84 | 3/18/91 | 26.31 | 58.53 |
| | | 3/12/91 | 26.41 | 58.43 |
| | | 5/18/92 | 26.75 | 58.09 |
| | | 6/29/92 | 26.73 | 58.11 |
| | | 7/29/92 | 26.66 | 58.18 |
| | | 8/28/92 | 26.90 | 57.94 |
| | | 10/28/92 | 26.39 | 58.45 |
| | | 11/24/92 | 26.83 | 58.01 |
| | | 12/22/92 | 27.33 | 57.51 |
| | | 4/3/93 | 26.62 | 58.22 |
| | | 7/20/93 | 26.60 | 57.94 |
| | | 11/9/93 | 27.24 | 57.60 |

| | | | | |
|---|---|---|---|---|
| MW-6 | 85.62 | 3/18/91 | 25.82 | 59.80 |
| | | 4/12/91 | 27.23 | 58.39 |
| | | 5/18/92 | 25.50 | 60.12 |
| | | 6/29/92 | 25.59 | 60.03 |
| | | 7/29/92 | 26.90 | 58.72 |
| | | 8/28/92 | 25.09 | 60.53 |
| | | 10/28/92 | 25.02 | 60.60 |
| | | 11/24/92 | 28.87 | 56.75 |
| | | 7/20/93 | 26.17 | 59.45 |
| | | 11/9/93 | 27.51 | 58.11 |

| | | | | |
|---|---|---|---|---|
| MW-7 | 85.41 | 3/18/91 | 21.63 | 63.78 |
| | | 4/12/91 | 22.13 | 63.28 |
| | | 5/18/92 | 21.67 | 63.74 |
| | | 6/29/92 | 20.75 | 64.66 |
| | | 7/29/92 | 21.07 | 64.34 |
| | | 8/28/92 | 21.35 | 64.06 |
| | | 10/28/92 | 21.81 | 63.60 |
| | | 11/24/92 | 21.52 | 63.89 |
| | | 12/22/92 | obstructed | - |
| | | 4/3/93 | 20.08 | 65.33 |
| | | 7/20/93 | 19.59 | 65.82 |
| | | 11/9/93 | 20.65 | 64.76 |
| MW-8 | 85.50 | 10/28/92 | 27.70 | 57.80 |
| | | 11/24/92 | 27.62 | 57.88 |
| | | 12/22/92 | 27.40 | 58.10 |
| | | 4/3/93 | 26.64 | 58.86 |
| | | 7/20/93 | 26.60 | 58.90 |
| | | 11/9/93 | 27.18 | 58.32 |
| MW-9 | 90.37 | 10/28/92 | 23.37 | 67.00 |
| | | 11/24/92 | 23.51 | 66.86 |
| | | 12/22/92 | 23.31 | 67.06 |
| | | 4/3/93 | 21/14 | 69.23 |
| | | 7/20/93 | 21.54 | 68.83 |
| | | 11/9/93 | 27.53 | 67.84 |
| MW-10 | 88.60 | 10/28/92 | 21.55 | 67.05 |
| | | 11/24/92 | 21.86 | 66.74 |
| | | 12/22/92 | 21.68 | 66.92 |
| | | 4/3/93 | 19.14 | 69.46 |
| | | 7/20/93 | 19.79 | 68.81 |
| | | 11/9/93 | 20.83 | 67.77 |
| MW-11 | 102.06 | 11/24/92 | 33.65 | 68.41 |
| | | 12/22/92 | 33.37 | 69.23 |
| | | 4/5/93 | 31.03 | 71.03 |
| | | 7/20/93 | 31.90 | 70.70 |
| | | 11/9/93 | 32.60 | 69.46 |
| MW-13 | 84.06 | 11/24/92 | 26.05 | 58.26 |
| | | 12/22/92 | 25.08 | 58.98 |
| | | 4/5/93 | 24.64 | 59.42 |
| | | 7/20/93 | 24.29 | 59.77 |
| | | 11/9/93 | 24.23 | 59.83 |

Reference datum, abitrary benchmark established by Levine Fricke.
Groundwater depths are measured below TOC.

## Table 5. Summary of Contaminant Concentrations in Soil

| Sample | TVH (mg/kg) | TEH (mg/kg) | TOG (mg/kg) | B (ug/kg) | T (ug/kg) | E (ug/kg) | X (ug/kg) | Purgeable Halocarbons (ug/kg) |
|---|---|---|---|---|---|---|---|---|
| **Tank Pit** | | | | | | | | |
| 1 @ 12' | 31000 | ND | 710 | 190000 | 3000000 | 68000 | 2600000 | ND |
| 2 @ 12' | 490 | ND | 570 | 1400 | 2500 | 6100 | 23000 | ND |
| 3 @ 12' | 300 | 440 | 540 | ND | 720 | 4700 | 12000 | ND |
| 4 @ 12' | 630 | -- | -- | ND | ND | 17000 | 29000 | -- |
| 5 @ 1.0' | -- | -- | 160 | -- | -- | -- | -- | -- |
| 6 @ 5.5' | -- | -- | 440 | -- | -- | -- | -- | -- |
| 7 @ 1.0' | -- | -- | 460 | -- | -- | -- | -- | -- |
| 8 @ 1.0' | -- | -- | 540 | -- | -- | -- | -- | -- |
| 9 @ 5.5' | -- | -- | 1100 | -- | -- | -- | -- | -- |
| 10 @ 1.0' | -- | -- | 600 | -- | -- | -- | -- | -- |
| 11 @ 1.0' | -- | -- | 530 | -- | -- | -- | -- | -- |
| 12 @ 5.5' | -- | -- | 590 | -- | -- | -- | -- | -- |
| 13 @ 1.0' | -- | -- | 200 | -- | -- | -- | -- | -- |
| 14 @ 0.5' | -- | -- | 440 | -- | -- | -- | -- | -- |
| 15 @ 0.5' | -- | -- | 410 | -- | -- | -- | -- | -- |
| 16 @ 0.5' | -- | -- | 650 | -- | -- | -- | -- | -- |
| **Test Borings** | | | | | | | | |
| B1 @ 8.0' | 63 | ND | ND | 17 | ND | 100 | 1600 | -- |
| B1 @ 23.0' | 2700 | ND | ND | 16000 | 120000 | 50000 | 220000 | -- |
| B1 @ 33.0' | 4 | ND | ND | 110 | 200 | 52 | 290 | -- |
| B1 @ 43.0' | ND | ND | ND | 6.0 | 22 | 7 | 41 | -- |
| B2 @ 1.5' | -- | -- | ND | -- | -- | -- | -- | -- |
| B2 @ 3.0' | -- | -- | ND | -- | -- | -- | -- | -- |
| B2 @ 5.5' | -- | -- | ND | -- | -- | -- | -- | -- |
| B2 @ 10.5' | -- | -- | ND | -- | -- | -- | -- | -- |
| B2 @ 15.0' | ND | ND | ND | ND | ND | ND | 25 | -- |
| B2 @ 25.5' | ND | ND | ND | ND | 11 | ND | 29 | -- |

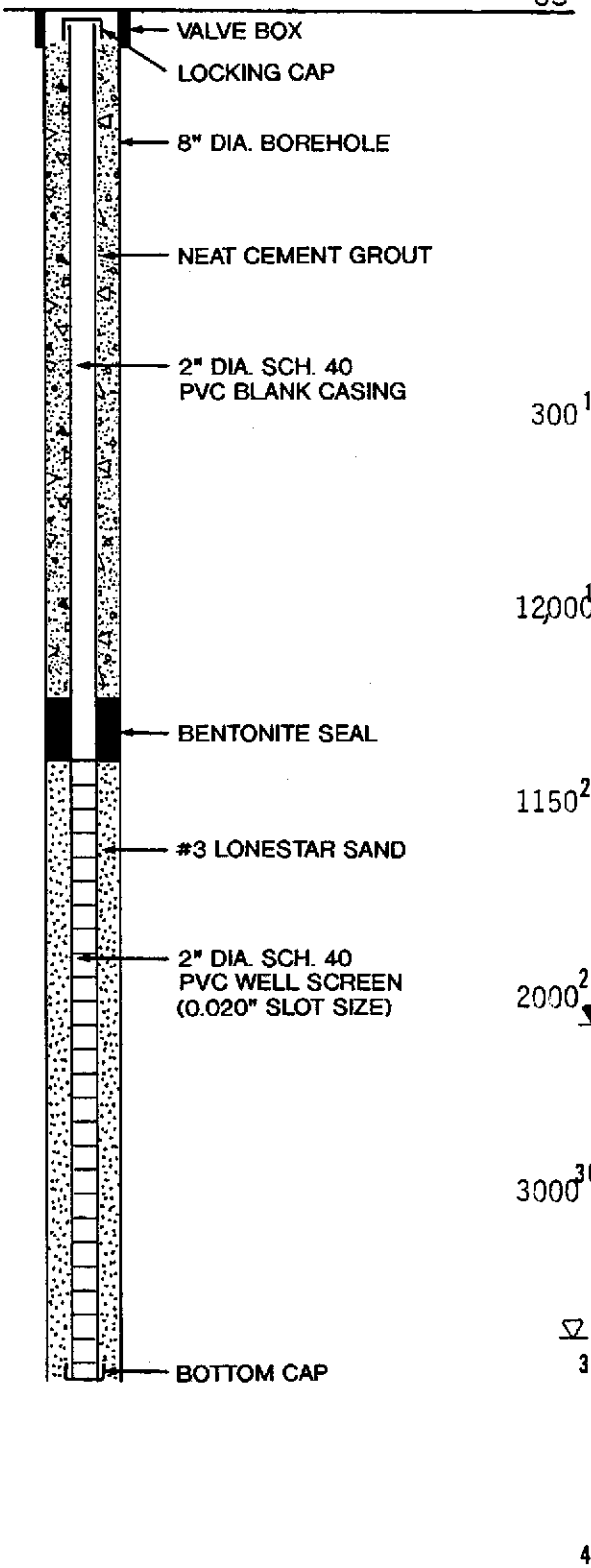
## Table 5. Summary of Contaminant Concentrations in Soil

| Sample | TVH (mg/kg)[1] | TEH (mg/kg) | TOG (mg/kg) | B (ug/kg)[2] | T (ug/kg) | E (ug/kg) | X (ug/kg) | Purgeable Halocarbons (ug/kg) |
|---|---|---|---|---|---|---|---|---|
| B3 @ 15.5' | ND | ND | ND | ND | 10 | ND | 25 | -- |
| B3 @ 25.5' | 8.8 | ND | ND | ND | 290 | 170 | 800 | -- |
| B3 @ 35.5' | ND | ND | ND | ND | 21 | 7.3 | 41 | -- |
| B4 @ 14.0' | 2.3 | ND | ND | 11 | 38 | 31 | 150 | -- |
| B4 @ 24.5' | 370 | ND | ND | 450 | 10000 | 770 | 30000 | -- |
| B4 @ 34.5' | ND | ND | ND | 6.1 | 29 | 6.7 | 37 | -- |
| **Well Borings** | | | | | | | | |
| MW1 @ 15.5' | 510 | 1100 | 610 | 640 | 6500 | 3400 | 14000 | ND |
| MW1 @ 30.5' | 5500 | ND | ND | 16300 | 170000 | 98000 | 520000 | ND |
| MW1 @ 34.5' | 2.0 | ND | ND | ND | 2200 | 15 | 79 | -- |
| MW3 @ 20.5 | ND | ND | ND | ND | ND | ND | ND | ND |
| MW4 @ 20.5 | 100 | ND | ND | 260 | 2500 | 1700 | 7300 | ND |
| MW4 @ 31.0 | 2.7 | ND | ND | 76 | 380 | 54 | 290 | ND |
| MW5 @ 20.0 | ND | ND | -- | ND | 6.9 | ND | ND | -- |
| MW6 @ 21.0 | 3.2 | ND | -- | 350 | 500 | 28 | 160 | -- |
| MW6 @ 30.5 | ND | ND | -- | ND | ND | ND | ND | -- |
| MW7 @ 20.5 | ND | ND | -- | ND | 17 | ND | ND | -- |

mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram
ND = None Detected, chemicals not present at concentrations above detection limits
-- = Test not performed

# LOG OF TEST BORING MW1

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 9/28/90
ELEVATION 94.48 feet




| OVM (ppm) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|
| | 0 | | | CONCRETE SLAB - 5" thick |
| | | | 15 | BLACK SILTY SAND (SM) medium dense, moist (fill) |
| | | | 18 | BROWN SILTY CLAY (CL) medium stiff, moist, with some sand |
| | 5 | | 19 | BROWN SILTY CLAY (CL) medium stiff, moist |
| | | | | RED BROWN CLAYEY SAND (SC) medium dense, moist |
| 300 | 10 | | 21 | color change to light gray |
| 12,000 | 15 | | 47* | very strong petroleum odor |
| | | | | BROWN SANDY SILT (ML) dense, moist |
| 1150 | 20 | | 31 | color change to gray below 23 feet |
| 2000 | 25 | | 36 | GROUNDWATER LEVEL APRIL 12, 1991 |
| 3000 | 30 | | 29* | |
| | 35 | | 31* | GROUNDWATER LEVEL DURING DRILLING |
| | 40 | | | |

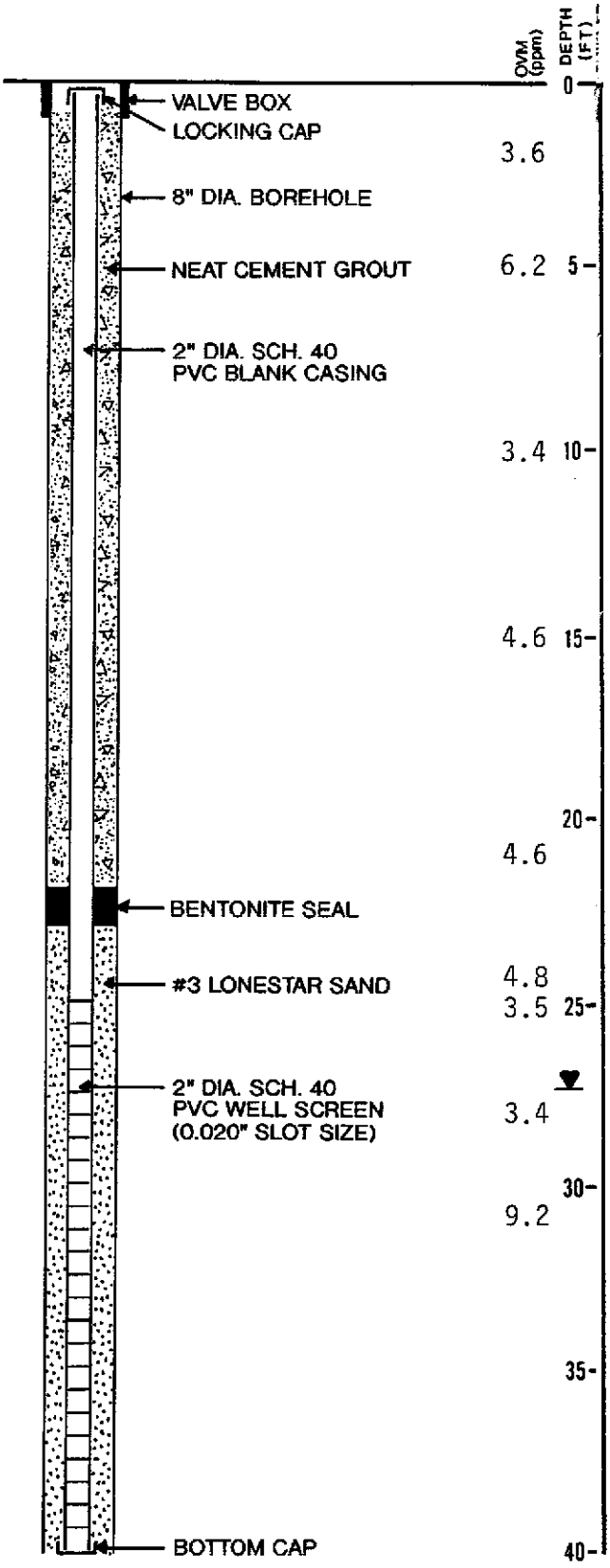
Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

JOB NUMBER 447.026 | DATE 10/17/90 | APPROVED

PLATE A1

# LOG OF TEST BORING
# MW2



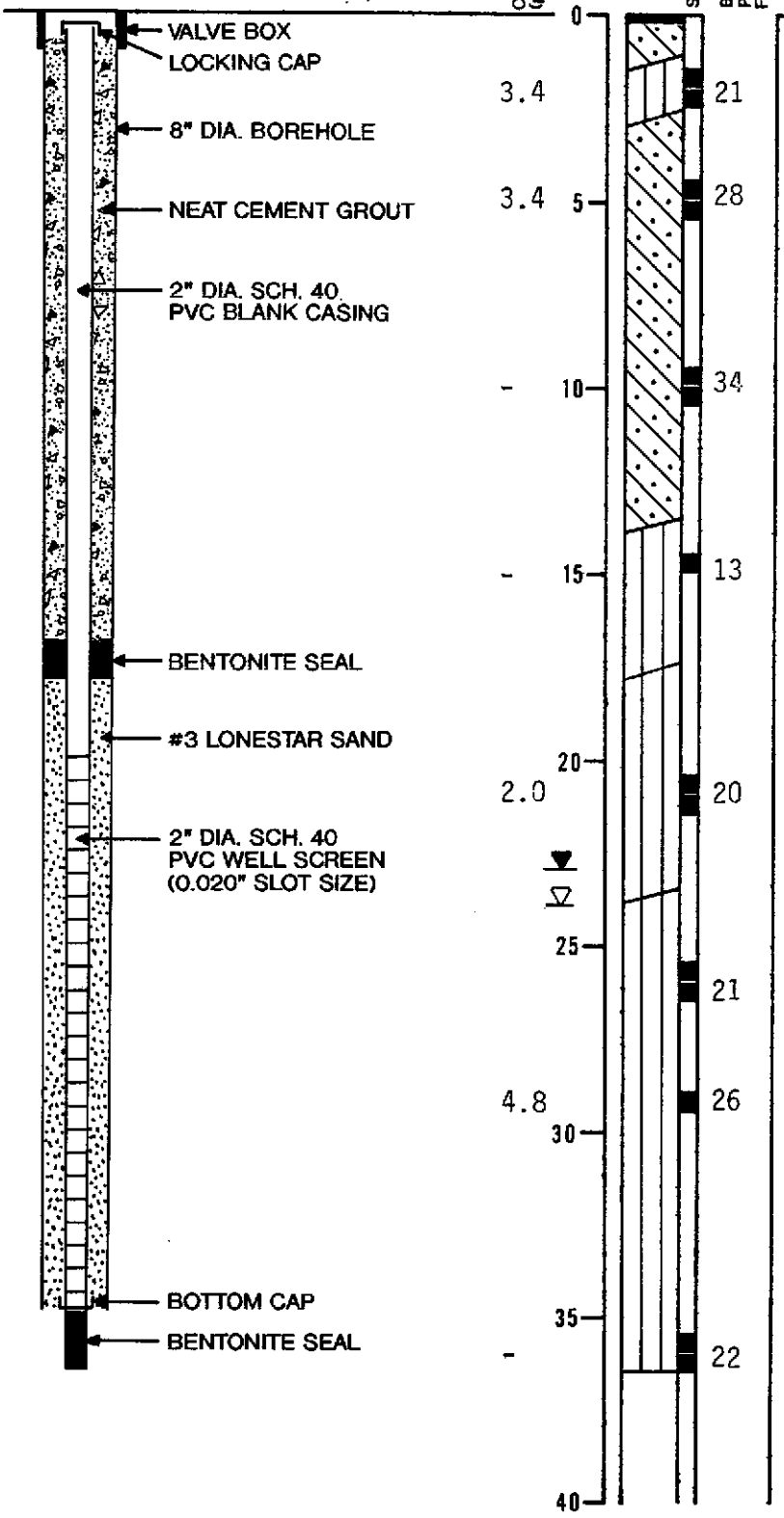

GROUNDWATER NOT ENCOUNTERED
DURING DRILLING

CONNELL OLDSMOBILE - OAKLAND, CA

| NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|
| 47.026 | 3/8/91 | | A2 |

# LOG OF TEST BORING MW3

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/25/91
ELEVATION 90.08 feet




| OVM (ppm) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|
| | 0 | | | ASPHALTIC CONCRETE - 3" thick |
| 3.4 | | | 21 | RED BROWN CLAYEY SAND (SC) medium dense, moist (fill) |
| 3.4 | 5 | | 28 | OLIVE GRAY SANDY SILT (ML) stiff, moist |
| | | | | RED BROWN CLAYEY SAND (SC) stiff, moist |
| | | | | color change to light brown at 7 feet |
| | 10 | | 34 | |
| | | | | color change to red brown at 12 feet |
| | 15 | | 13 | LIGHT GRAY BROWN CLAYEY SILT (ML) medium stiff, moist |
| | | | | LIGHT GRAY BROWN CLAYEY SANDY SILT (ML) stiff, moist |
| | 20 | | | |
| 2.0 | | | 20 | GROUNDWATER LEVEL APRIL 12, 1991 |
| | | | | GROUNDWATER LEVEL DURING DRILLING |
| | 25 | | | LIGHT GRAY CLAYEY SILT (ML) stiff, moist |
| | | | 21 | |
| 4.8 | | | 26 | |
| | 30 | | | |
| | 35 | | 22 | |
| | 40 | | | |

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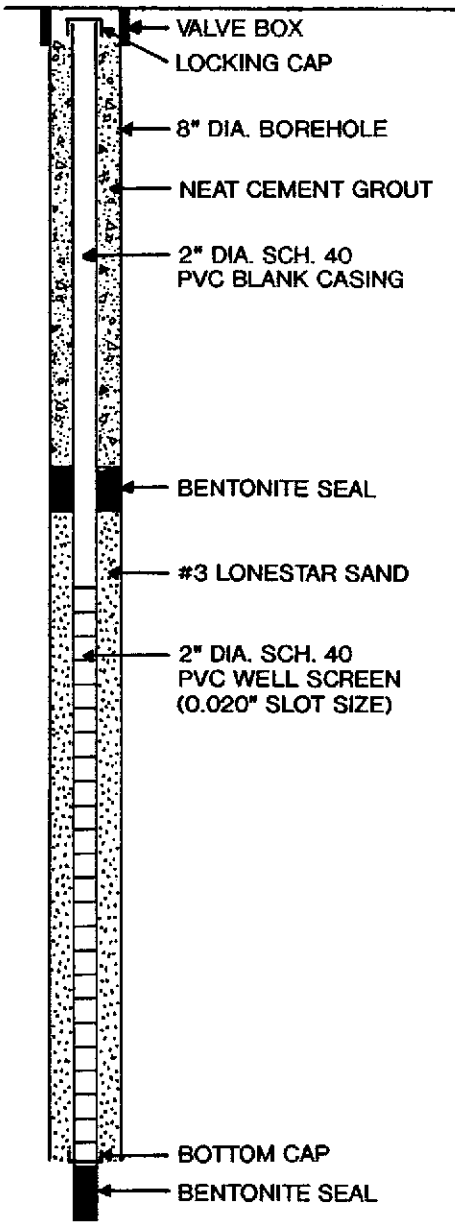
CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.026 | 3/8/91 | |

PLATE A3

# LOG OF TEST BORING MW4

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/26/91
ELEVATION 88.84 feet




| OVM (ppm) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|
| | 0 | | | ASPHALTIC CONCRETE - 3" thick<br>BASE ROCK - 6" thick |
| 14 | | | 10 | DARK GRAY CLAYEY SILT (ML)<br>medium stiff, moist |
| 3.4 | 5 | | 16 | MOTTLED BROWN SILTY CLAY (CL)<br>medium stiff, moist |
| 3.4 | 10 | | 64 | RED BROWN CLAYEY GRAVEL (GC)<br>very dense, moist, with cobbles to 2" diameter and sand |
| 220 | 15 | | 13 | LIGHT GRAY BROWN CLAYEY SILT (ML)<br>medium stiff, moist |
| 4500<br>10,000+ | 20 | | 18 | RED BROWN GRAVELLY SAND (SM-SP)<br>dense, moist, with some clayey sand lenses |
| | | | 44 | GROUNDWATER LEVEL APRIL 12, 1991<br>GROUNDWATER LEVEL DURING DRILLING |
| 4000<br>400 | 25 | | 26 | GRAY BROWN SILTY SAND (SM-SP)<br>medium dense, wet, fine grained |
| | 30 | | | GRAY BROWN CLAYEY SILT (ML)<br>stiff, moist |
| 6800 | | | 25 | |
| | 35 | | | |
| | 40 | | | |

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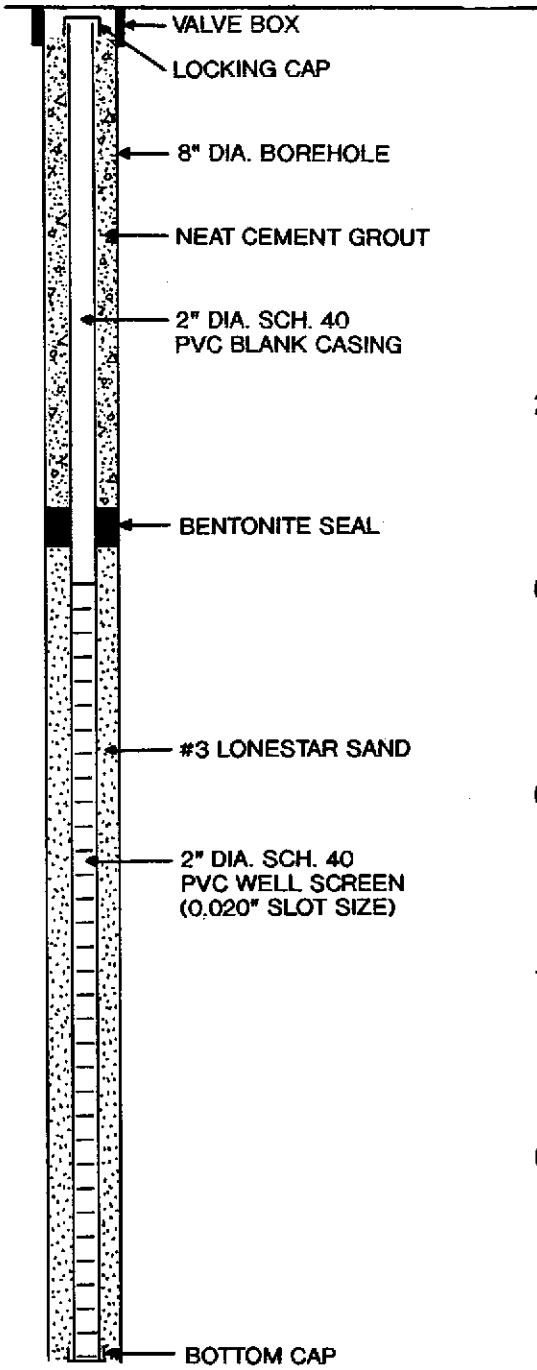
JOB NUMBER 447.026 | DATE 3/8/91 | APPROVED

PLATE A4

# LOG OF TEST BORING MW5

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 3/8/91
ELEVATION 84.84 feet




| OVM (ppm) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|
| | 0 | | | ASPHALTIC CONCRETE - 3" thick<br>BASE ROCK - 4" thick<br>MOTTLED GRAY BROWN SILTY CLAY (CL)<br>medium stiff, moist |
| | 5 | | | DARK GRAY CLAYEY SAND (SC)<br>medium dense, moist, with chert fragments<br>BROWN GRAVELLY CLAY (CL)<br>medium stiff to stiff, moist, with chert fragments |
| 2.0 | 10 | | 14 | BROWN SILTY CLAY (CL)<br>stiff, moist |
| | | | | GRAY BROWN CLAYEY SILT (ML)<br>stiff, moist |
| 6.0 | 15 | | 23 | |
| 6.2 | 20 | | 21 | |
| 7.6 | 25 | | 21 | increase in sand content below 24 feet and wet<br>GROUNDWATER LEVEL APRIL 12, 1991 |
| 6.2 | 30 | | 30 | |
| | 35 | | | GROUNDWATER LEVEL DURING DRILLING<br>BROWN GRAVELLY SAND (SW)<br>very dense, wet, medium grained<br>BROWN SILTY CLAY (CL)<br>stiff, moist |
| 7.6 | | | 30/5" | |
| | 40 | | | |

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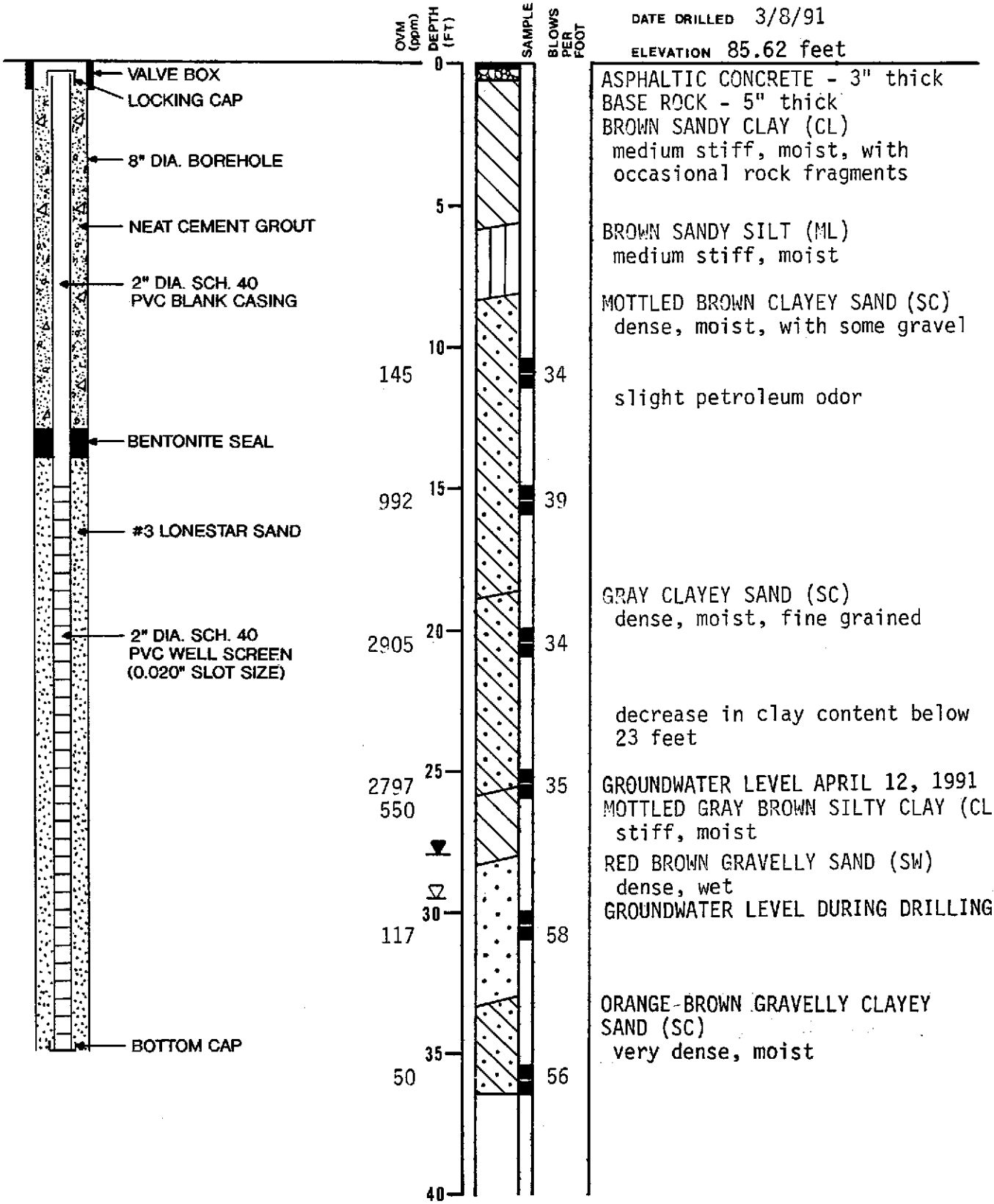
| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.026 | 3/13/91 | |

PLATE A5

# LOG OF TEST BORING MW6

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 3/8/91
ELEVATION 85.62 feet

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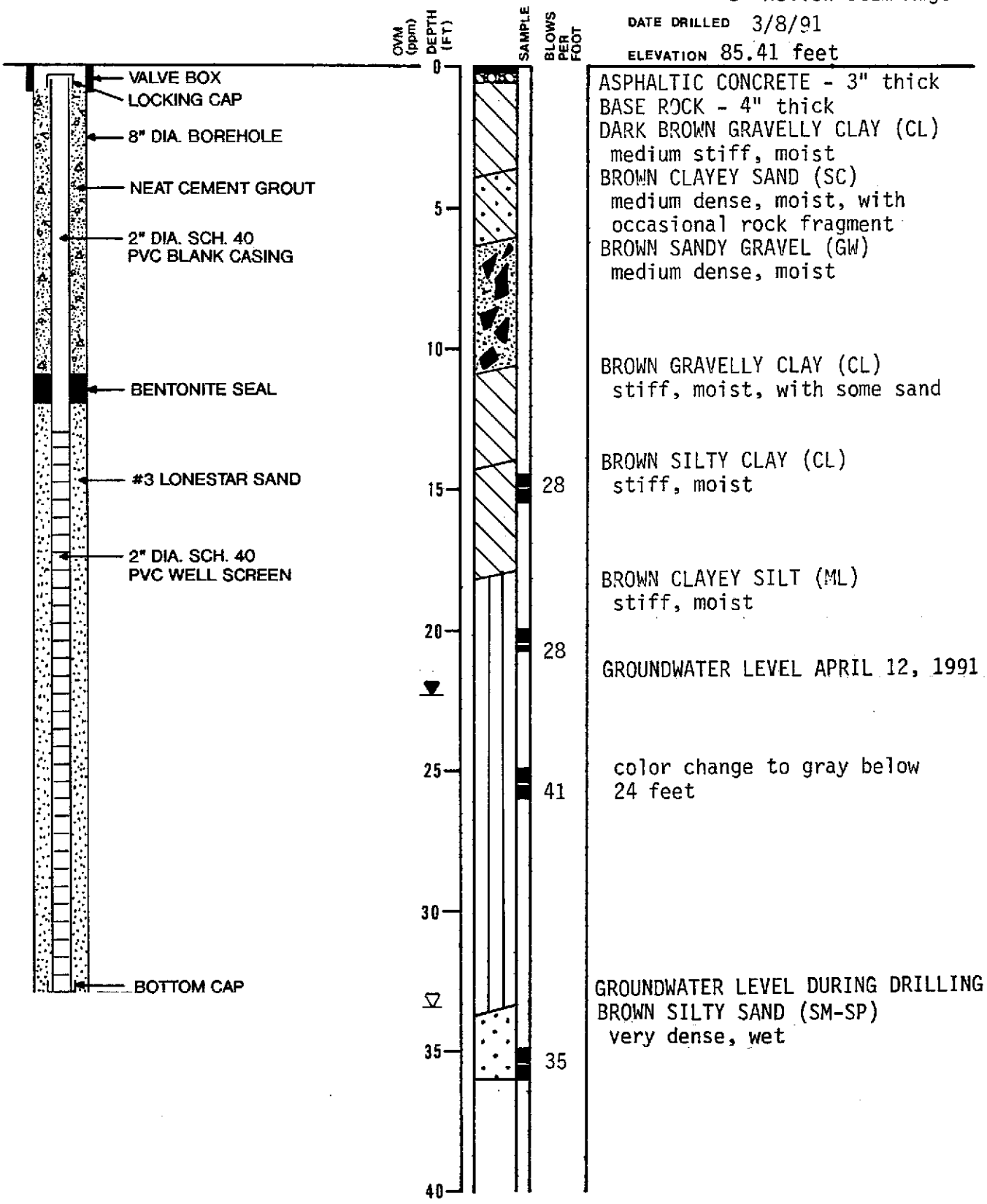
CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|
| 447.026 | 3/13/91 | | A6 |

# LOG OF TEST BORING MW7

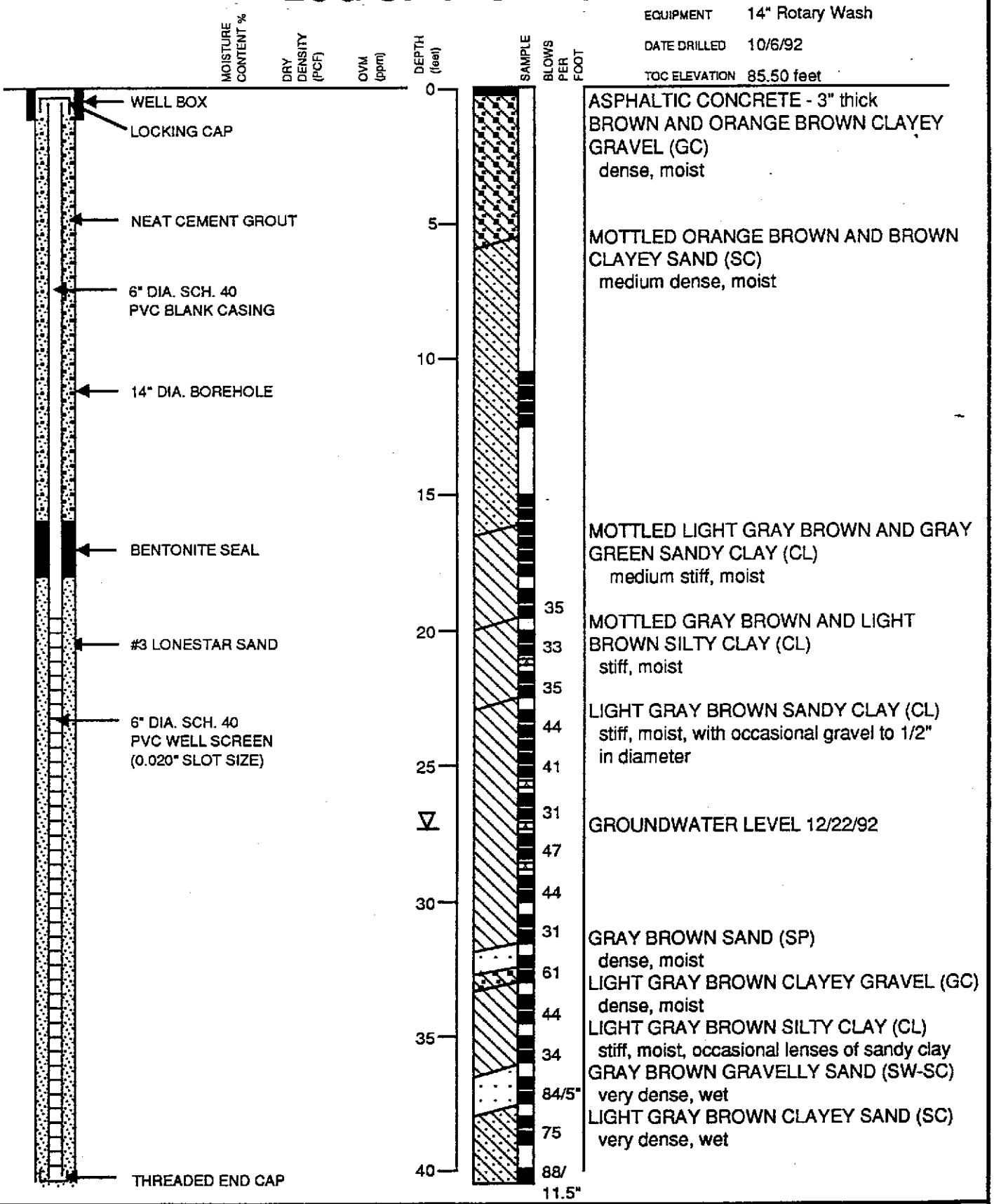
EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 3/8/91
ELEVATION 85.41 feet




| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | A7 |
| | 447.026 | 3/13/91 | | |

# LOG OF TEST BORING MW8

EQUIPMENT 14" Rotary Wash
DATE DRILLED 10/6/92
TOC ELEVATION 85.50 feet




Subsurface Consultants

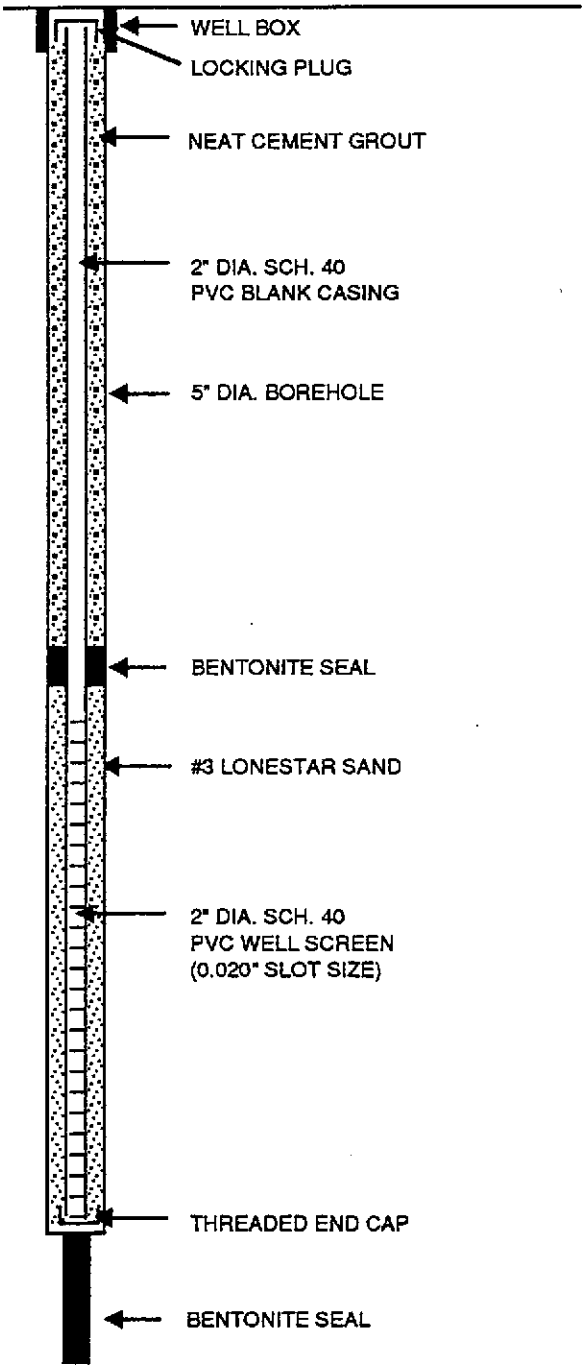
CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 12/4/92 | |

PLATE A8

# LOG OF TEST BORING MW9

EQUIPMENT 5" Rotary Wash
DATE DRILLED 10/6/92
TOC ELEVATION 90.37 feet




| DEPTH (feet) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|
| 0 | | | ASPHALTIC CONCRETE - 3" thick<br>DARK BROWN CLAYEY GRAVEL (GC)<br>dense, moist (fill) |
| | | | BROWN CLAYEY GRAVEL (GC)<br>dense, moist |
| 5 | | 21 | LIGHT BROWN SANDY CLAY (CL)<br>medium dense, moist |
| | | | MOTTLED ORANGE BROWN AND LIGHT BROWN CLAYEY SAND (SC)<br>dense, moist |
| 10 | | 59 | ORANGE BROWN CLAYEY GRAVEL (GC)<br>very dense, moist |
| | | 83/4" | |
| 15 | | | |
| | | 30 | MOTTLED ORANGE BROWN AND LIGHT GRAY BROWN SANDY CLAY (CL)<br>stiff, moist |
| 20 | | 18 | LIGHT GRAY BROWN SILTY CLAY (CL)<br>stiff, moist |
| ▽ | | 20 | GROUNDWATER LEVEL 12/22/92 |
| | | 22 | |
| 25 | | 21 | |
| | | 25 | MOTTLED ORANGE BROWN AND LIGHT BROWN CLAYEY SAND (SP-SM)<br>dense, moist, with occasional thin lenses of sandy clay |
| | | 39 | |
| 30 | | 25 | |
| | | 30 | LIGHT BROWN CLAYEY SAND (SC)<br>dense, moist |
| | | 40 | |
| 35 | | 34 | LIGHT BROWN SILTY CLAY (SCLC)<br>stiff, moist |
| 40 | | | |

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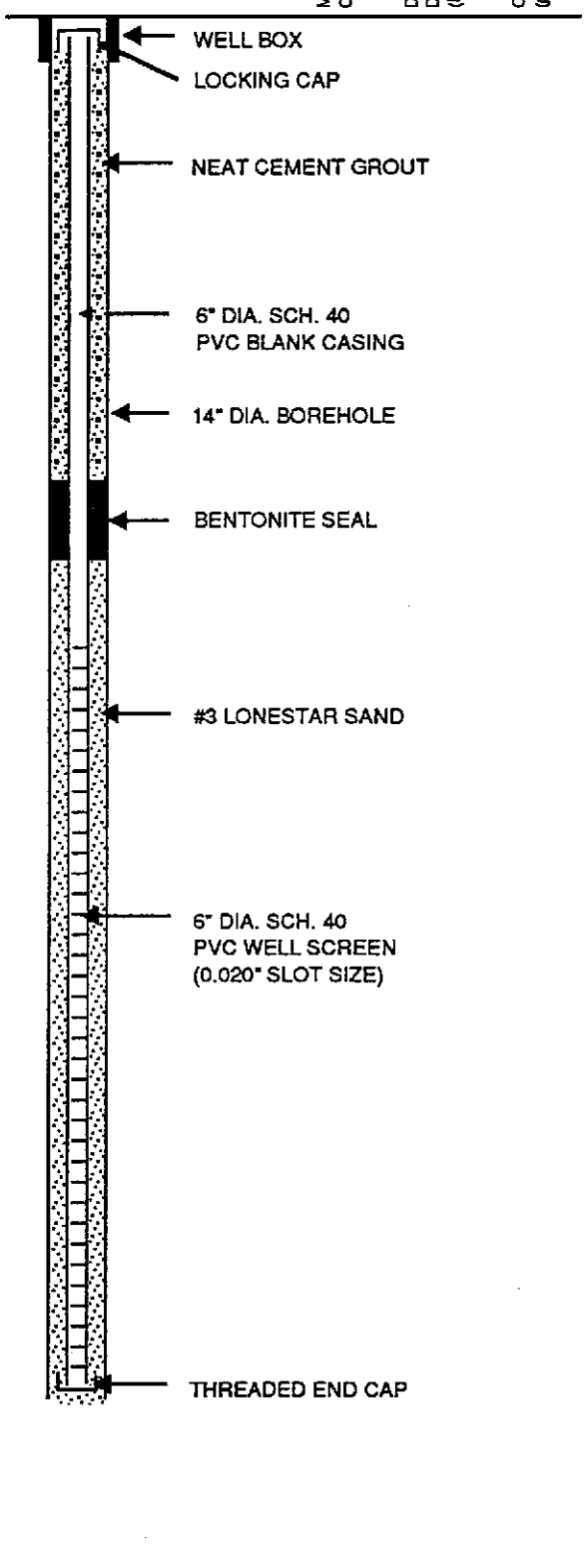
CONNELL OLDSMOBILE - OAKLAND, CA

JOB NUMBER 447.036 | DATE 12/4/92 | APPROVED

PLATE A9

# LOG OF TEST BORING MW10

EQUIPMENT 14" Rotary Wash
DATE DRILLED 10/6/92
TOC ELEVATION 88.60 feet




ASPHALTIC CONCRETE - 3" thick
DARK BROWN CLAYEY SAND (SC)
medium dense, moist
DARK BROWN SANDY CLAY (CL)
medium stiff, moist
LIGHT BROWN SANDY SILTY CLAY (CL)
medium stiff, moist

BROWN CLAYEY SANDY GRAVEL (GC)
medium dense, moist

BROWN SANDY CLAY (CL)
medium stiff, moist, with occasional gravel

LIGHT GRAY BROWN SILTY CLAY (CL)
medium stiff, moist, with thin lenses of clayey sand

GROUNDWATER LEVEL 12/22/92
BROWN SANDY GRAVEL (GW)
dense, wet

BROWN SILTY CLAY (CL)
medium stiff, moist

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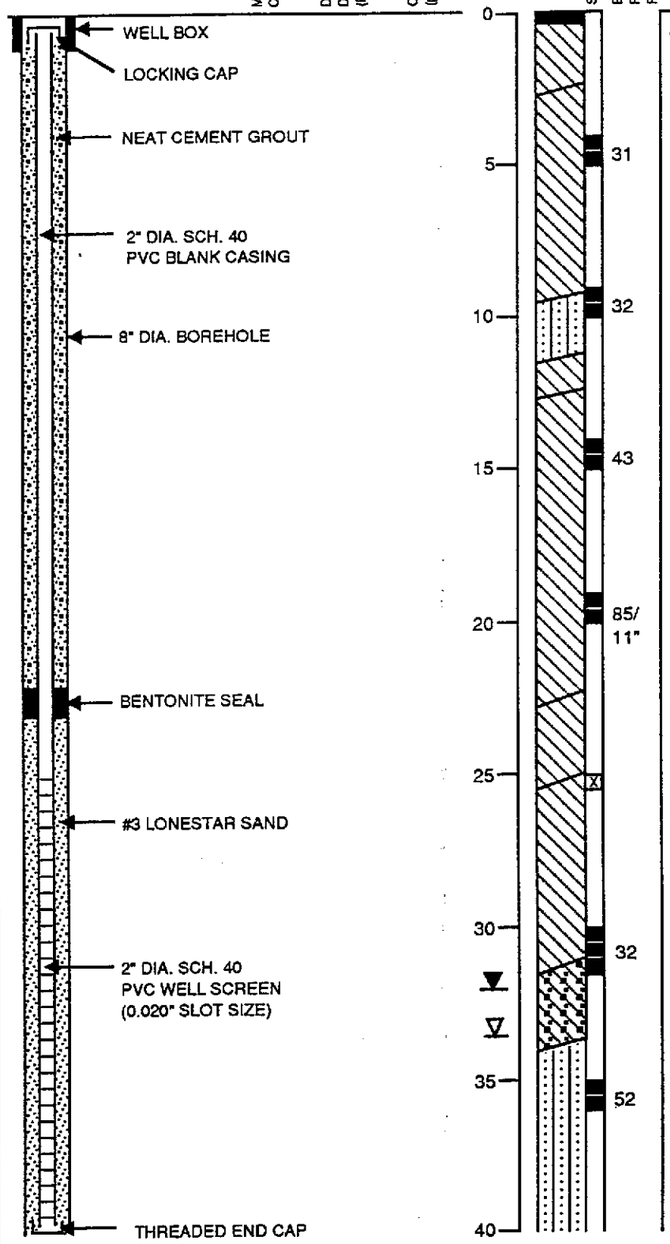
CONNELL OLDSMOBILE - OAKLAND, CA

JOB NUMBER 447.036
DATE 12/4/92
APPROVED

PLATE A10

# LOG OF TEST BORING MW11

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 10/6/92
TOC ELEVATION 102.60 feet




| MOISTURE CONTENT % | DRY DENSITY (PCF) | OVM (ppm) | DEPTH (feet) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALTIC CONCRETE - 4" thick |
| | | | | | | RED BROWN SANDY CLAY (CL) medium stiff, moist, with brick fragments (fill) |
| | | | | | | LIGHT BROWN SANDY CLAY (CL) medium stiff, moist |
| | | | 5 | | 31 | |
| | | | 10 | | 32 | LIGHT BROWN SILTY SAND (SM) medium dense, moist |
| | | | | | | LIGHT BROWN GRAVELLY CLAY (CL) medium stiff, moist |
| | | | | | | MOTTLED DARK BROWN AND LIGHT BROWN SILTY CLAY (CL) |
| | | | 15 | | 43 | stiff, moist, with occasional gravel |
| | | | 20 | | 85/ 11" | |
| | | | | | | BROWN SANDY CLAY (CL) medium stiff, moist |
| | | | 25 | | | LIGHT BROWN SANDY SILTY CLAY (CL) medium stiff, moist |
| | | | 30 | | 32 | |
| | | | | | | GRAY GREEN CLAYEY GRAVEL (GC) dense, moist |
| | | | | | | GROUNDWATER LEVEL DURING DRILLING |
| | | | | | | GROUNDWATER LEVEL 12/22/92 |
| | | | 35 | | 52 | ORANGE BROWN SILTY SAND (SM) dense, wet |
| | | | 40 | | | |
| | | | 45 | | | |
| | | | 50 | | | |
| | | | 55 | | | |
| | | | 60 | | | |
| | | | 65 | | | |
| | | | 70 | | | |
| | | | 75 | | | |
| | | | 80 | | | |
| | | | 40 | | 42 | BROWN GRAVELLY SAND (SC) dense, wet |

Subsurface Consultants

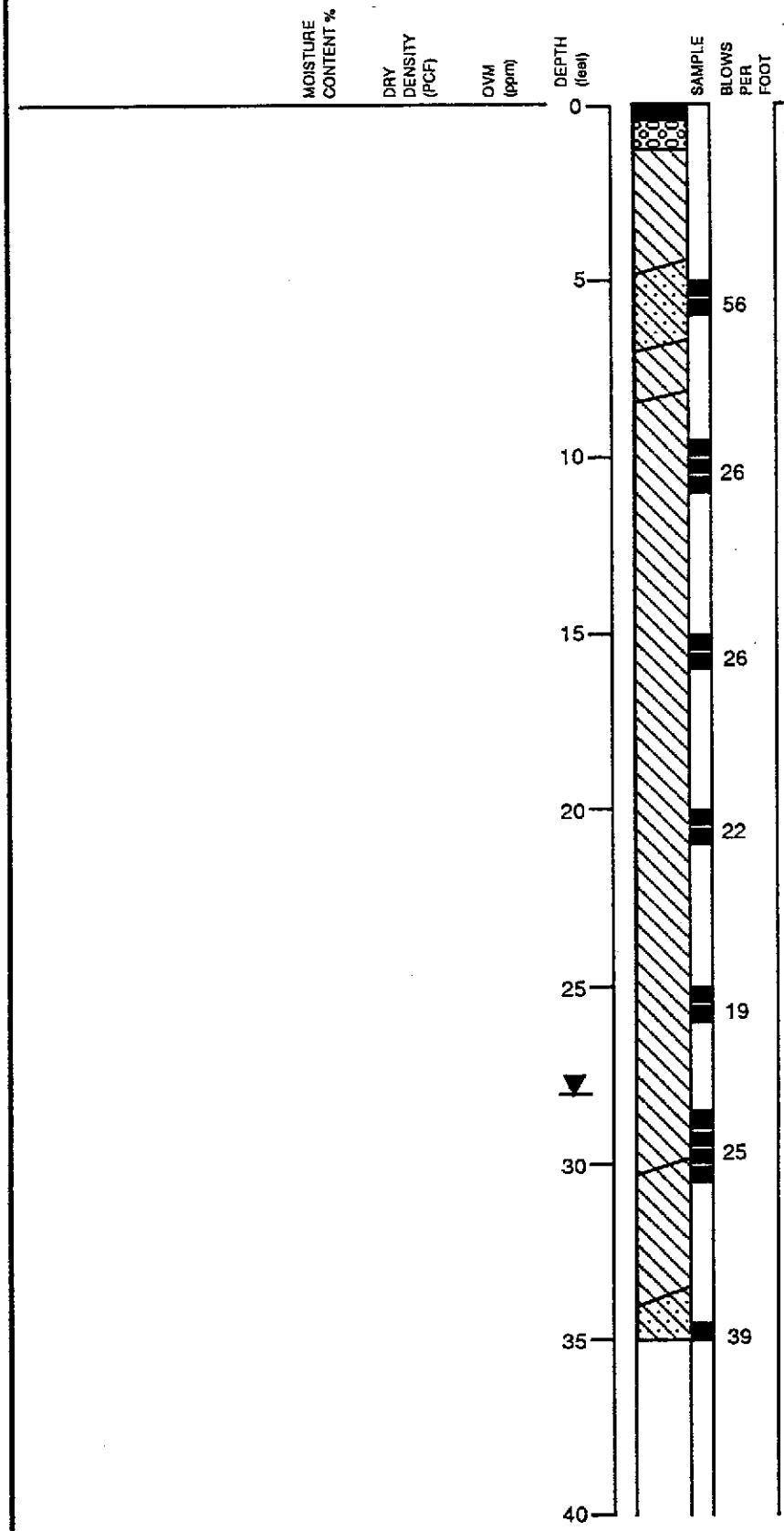
CONNELL OLDSMOBILE - OAKLAND, CA

JOB NUMBER 447.036 | DATE 12/4/92 | APPROVED

PLATE A11

# LOG OF TEST BORING 12

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 10/6/92
ELEVATION - -




ASPHALTIC CONCRETE - 5" thick
COBBLESTONE PAVEMENT - 13" thick
BROWN SANDY CLAY (CL)
medium stiff, moist, with occasional gravel

ORANGE BROWN CLAYEY SAND (SC)
dense, moist, with gravel and rock fragments

DARK BROWN SILTY CLAY (CL)
medium stiff, moist
LIGHT GRAY BROWN SILTY CLAY (CL)
medium stiff, moist, with occasional thin lenses of silt or sand

GROUNDWATER LEVEL DURING DRILLING

DARK GRAY SANDY SILTY CLAY (CL)
medium stiff, moist, with organic debris

BROWN CLAYEY SAND (SC)
dense, moist

Boring backfilled with cement grout

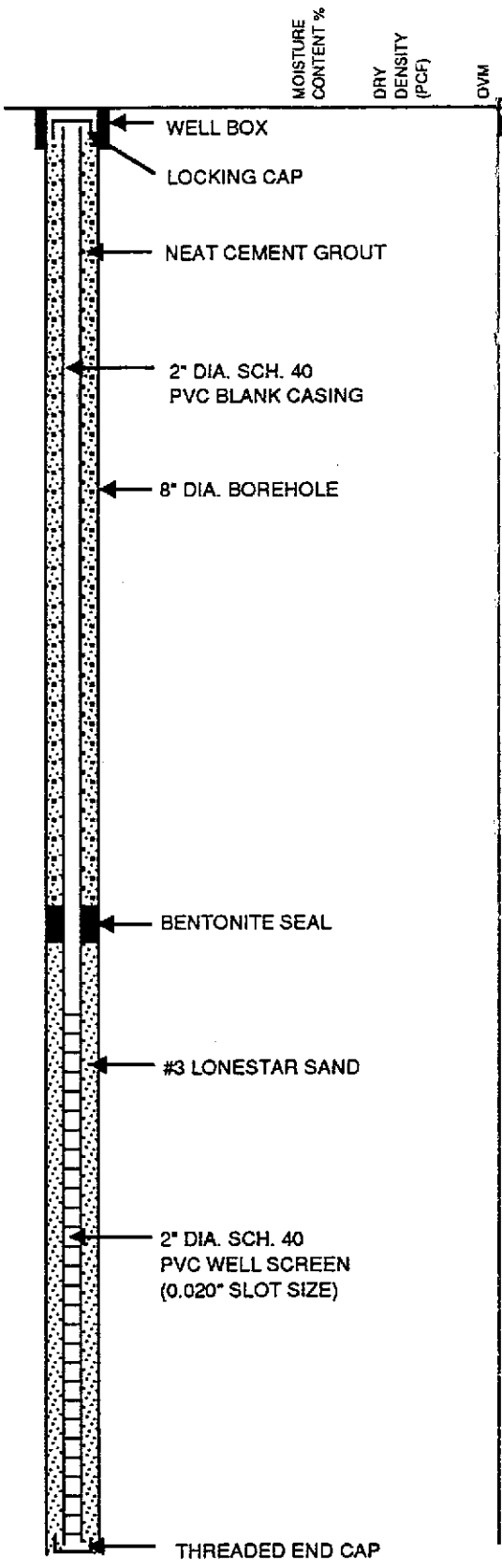
Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

JOB NUMBER 447.036
DATE 12/4/92
APPROVED

PLATE A12

# G OF TEST BORING MW13




58

BLUE GRAY CLAYEY SILT (ML/CL)
stiff, moist

CONNELL OLDSMOBILE - OAKLAND, CA

| NUMBER | DATE | APPROVED |
|---|---|---|
| 7.036 | 12/4/92 | |

PLATE
**A13**

| GENERAL SOIL CATEGORIES | | | SYMBOLS | TYPICAL SOIL TYPES |
|---|---|---|---|---|
| COARSE GRAINED SOILS<br>More than half is larger than No. 200 seive | GRAVEL<br>More than half coarse fraction is larger than No. 4 seive size | Clean Gravel with little or no fines | GW | Well Graded Gravel, Gravel-Sand Mixtures |
| | | | GP | Poorly Graded Gravel, Gravel-Sand Mixtures |
| | | Gravel with more than 12% fines | GM | Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures |
| | | | GC | Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures |
| | SAND<br>More than half coarse fraction is smaller than No. 4 seive size | Clean Sand with little or no fines | SW | Well Graded Sand, Gravelly Sand |
| | | | SP | Poorly Graded Sand, Gravelly Sand |
| | | Sand with more than 12% fines | SM | Silty Sand, Poorly Graded Sand-Silt Mixtures |
| | | | SC | Clayey Sand, Poorly Graded Sand-Clay Mixtures |
| FINE GRAINED SOILS<br>More than half is smaller than No. 200 seive | SILT AND CLAY<br>Liquid Limit Less than 50% | | ML | Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity |
| | | | CL | Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay |
| | | | OL | Organic Clay and Organic Silty Clay of Low Plasticity |
| | SILT AND CLAY<br>Liquid Limit Greater than 50% | | MH | Inorganic Silt, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silt |
| | | | CH | Inorganic Clay of High Plasticity, Fat Clay |
| | | | OH | Organic Clay of Medium to High Plasticity, Organic Silt |
| HIGHLY ORGANIC SOILS | | | PT | Peat and Other Highly Organic Soils |

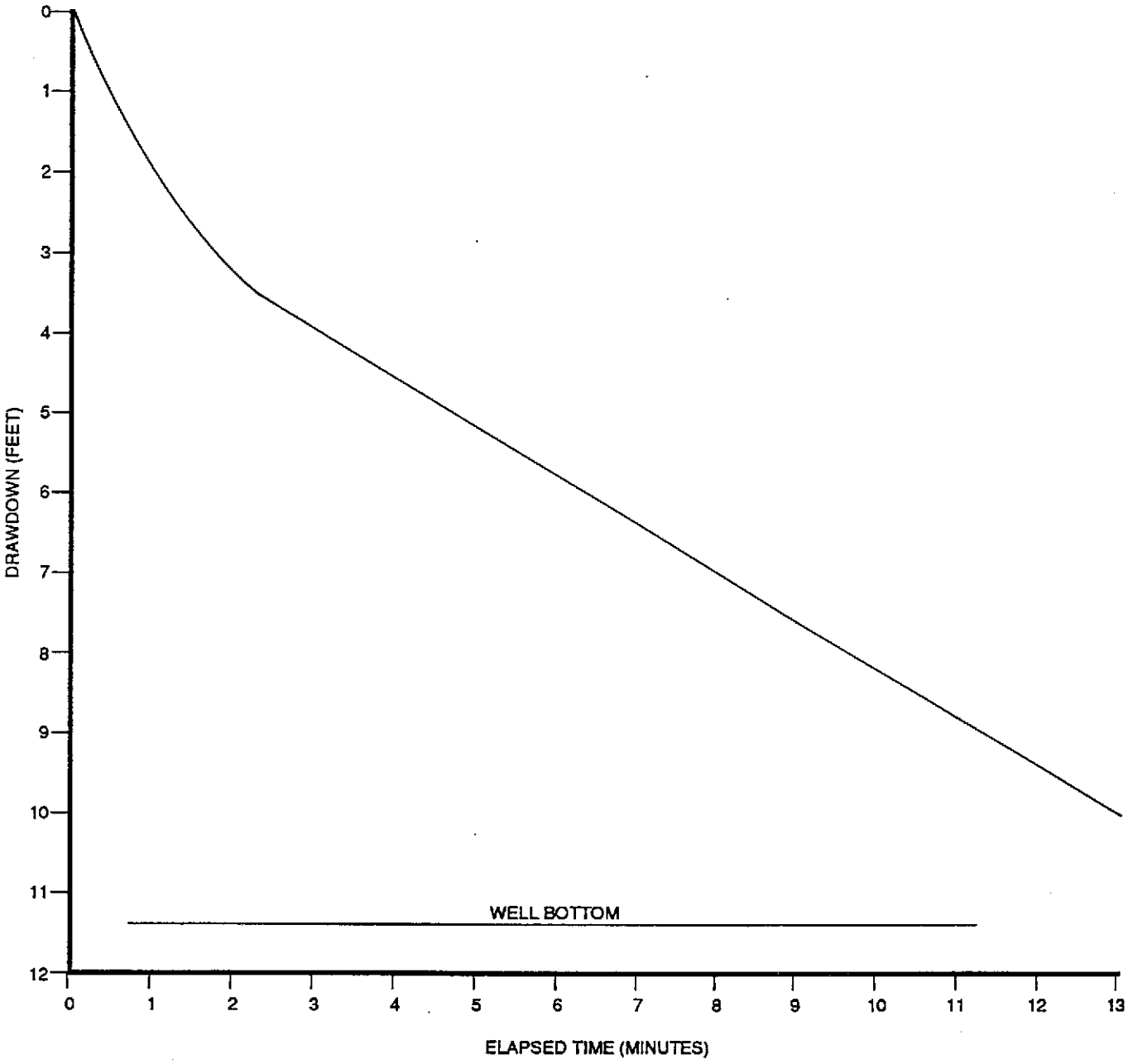
# UNIFIED SOIL CLASSIFICATION SYSTEM

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 12/4/92 | |

PLATE A14




WELL PUMPED BELOW PUMP INLET IN
13 MINUTES AT A FLOW RATE OF 0.8gpm.
TEST INDICATES LOW PERMEABILITY ($10^{-5}$ cm/s)
AQUIFER MATERIALS.

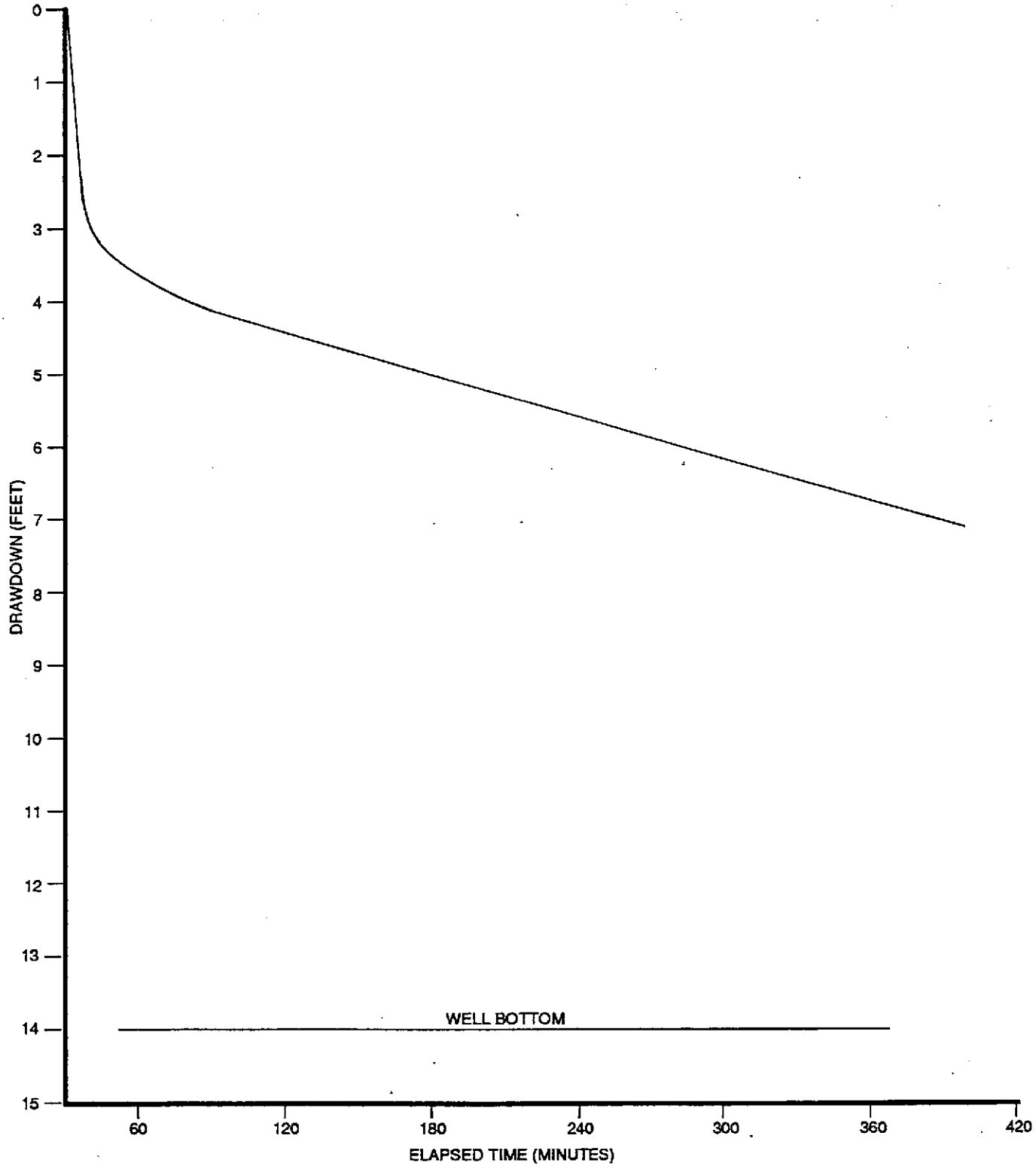
PUMP TEST - MW-8

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 11/1/93 | |

PLATE
A15




WELL DRAWDOWN 7 FEET IN 6 HOURS AT A FLOW RATE OF 6.5gpm.
TEST INDICATES MODERATELY PERMEABLE AQUIFER MATERIALS ($10^{-2}$ - $10^{-3}$ cm/s).

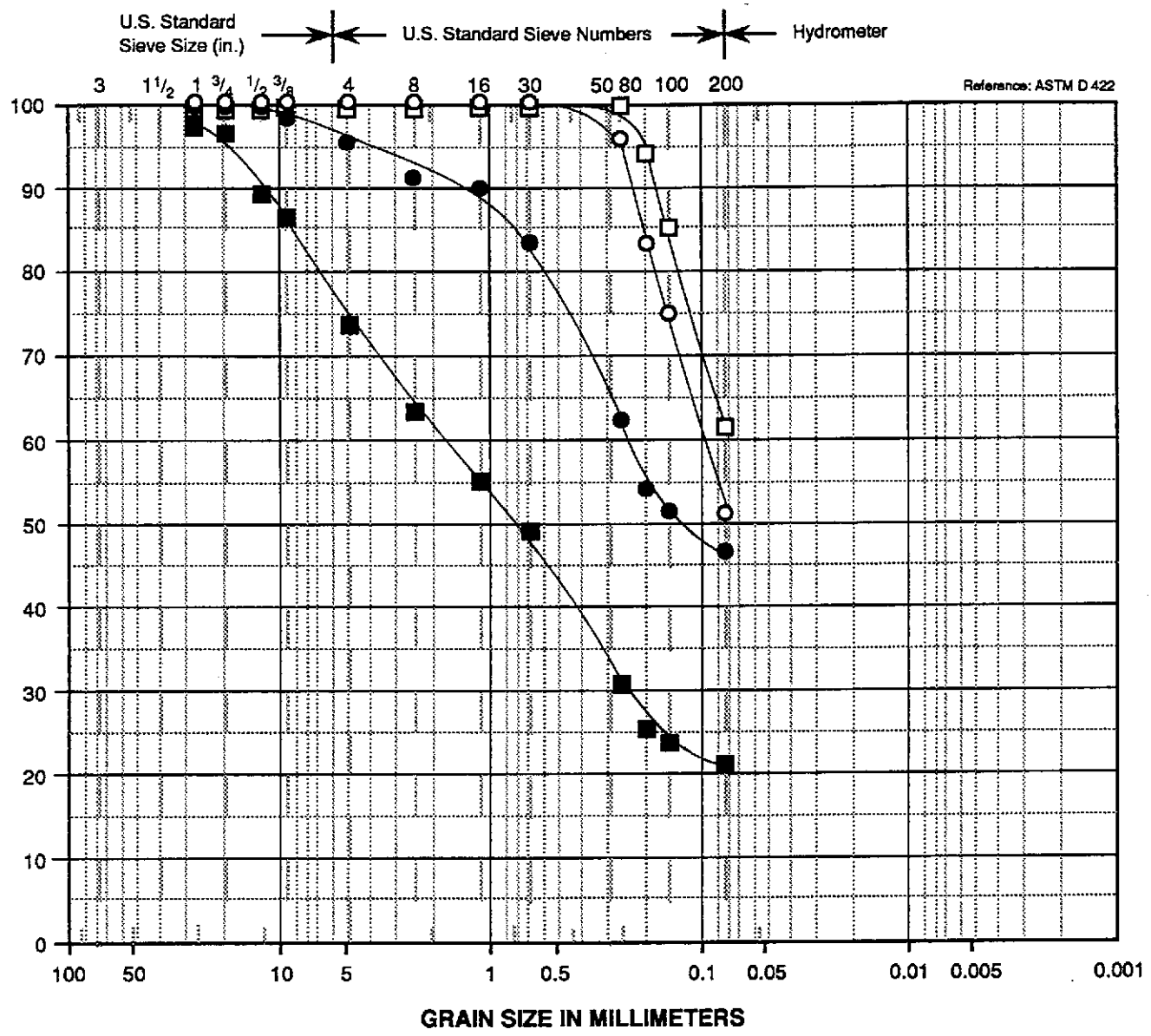
# PUMP TEST - MW-10

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 11/1/93 | |

PLATE
**A16**




| SYMBOL | SAMPLE SOURCE | CLASSIFICATION |
|---|---|---|
| ○ | Boring 8 @ 26.0 feet | LIGHT GRAY BROWN SANDY CLAY (CL) |
| ● | Boring 8 @ 32.0 feet | GRAY BROWN CLAYEY SAND (SP-SM) |
| □ | Boring 8 @ 34.0 feet | LIGHT GRAY BROWN SANDY CLAY (CL) |
| ■ | Boring 8 @ 37.0 feet | GRAY BROWN GRAVELLY SAND (SW-SC) |

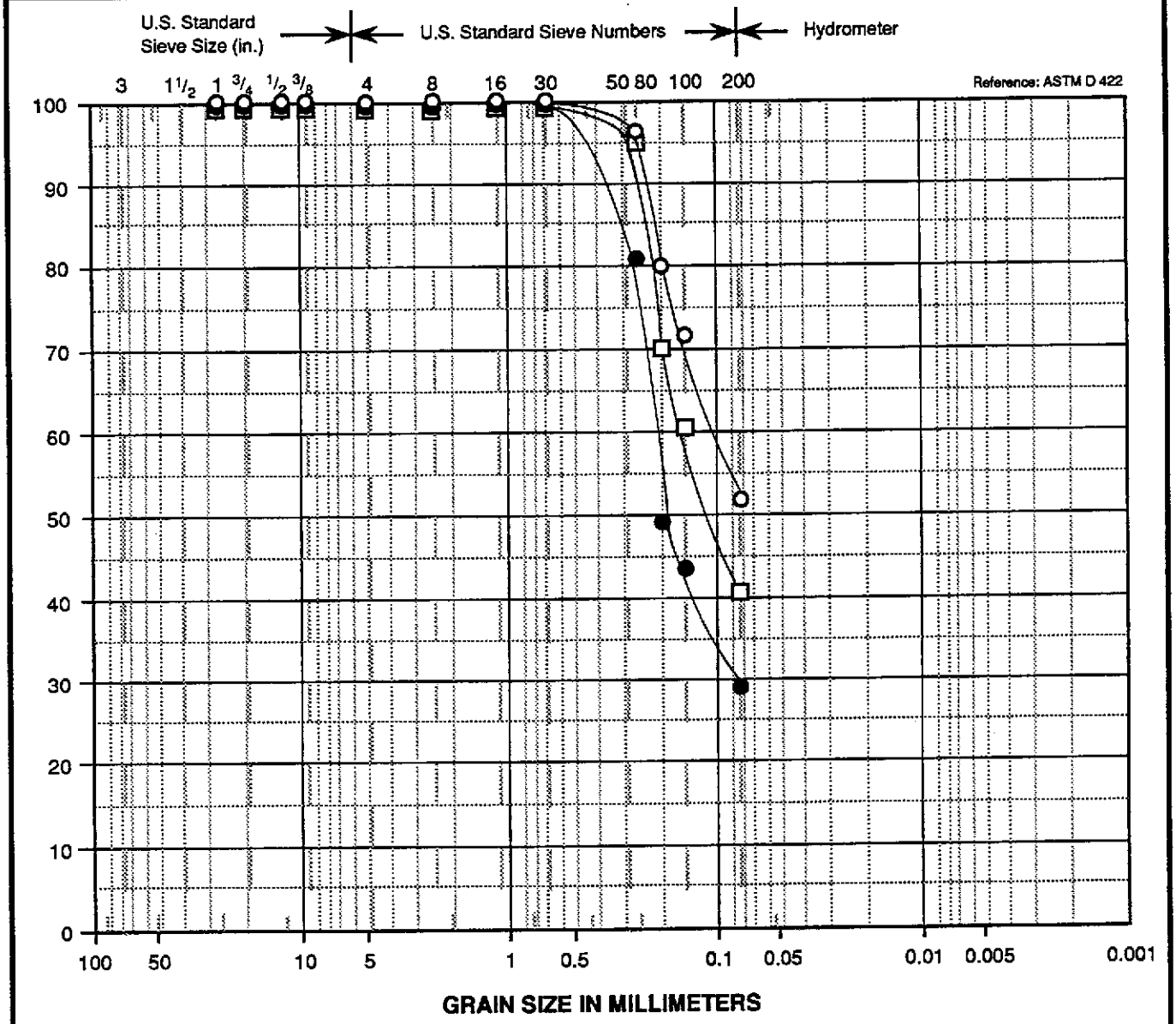
# PARTICLE SIZE ANALYSIS

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 12/21/92 | |

PLATE **B1**




| SYMBOL | SAMPLE SOURCE | CLASSIFICATION |
|---|---|---|
| ○ | Boring 9 @ 25.0 feet | LIGHT GRAY SANDY CLAY (CL) |
| ● | Boring 9 @ 28.0 feet | MOTTLED ORANGE BROWN CLAYEY SAND (SP-SM) |
| □ | Boring 9 @ 31.0 feet | LIGHT GRAY BROWN CLAYEY SAND (SP-SM ) |

## PARTICLE SIZE ANALYSIS

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 12/21/92 | |

PLATE **B2**

HAWTHORNE STREET

LF2

LF3

LF4

SIDEWALK

3093 BROADWAY

WEBSTER STREET

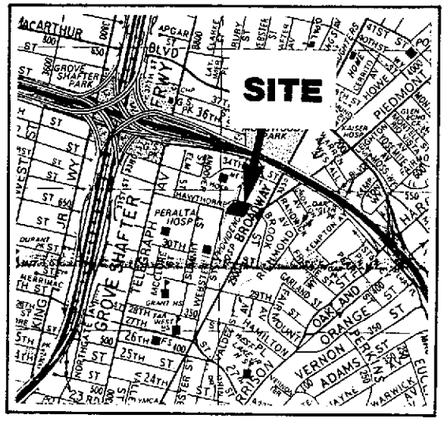
SIDEWALK

BROOK STREET

BROADWAY

SIDEWALK

SIDEWALK




VICINITY MAP

- SCI TEST BORING
- SCI MONITORING WELL
- EXTRACTION WELL
- LEVINE FRICKE MONITORING WELL
- CONE PENETRATION TEST (CPT)
- FENCE
- RETAINING WALL
- FORMER TANK LOCATION

N

APPROXIMATE SCALE (feet)

0 60 120

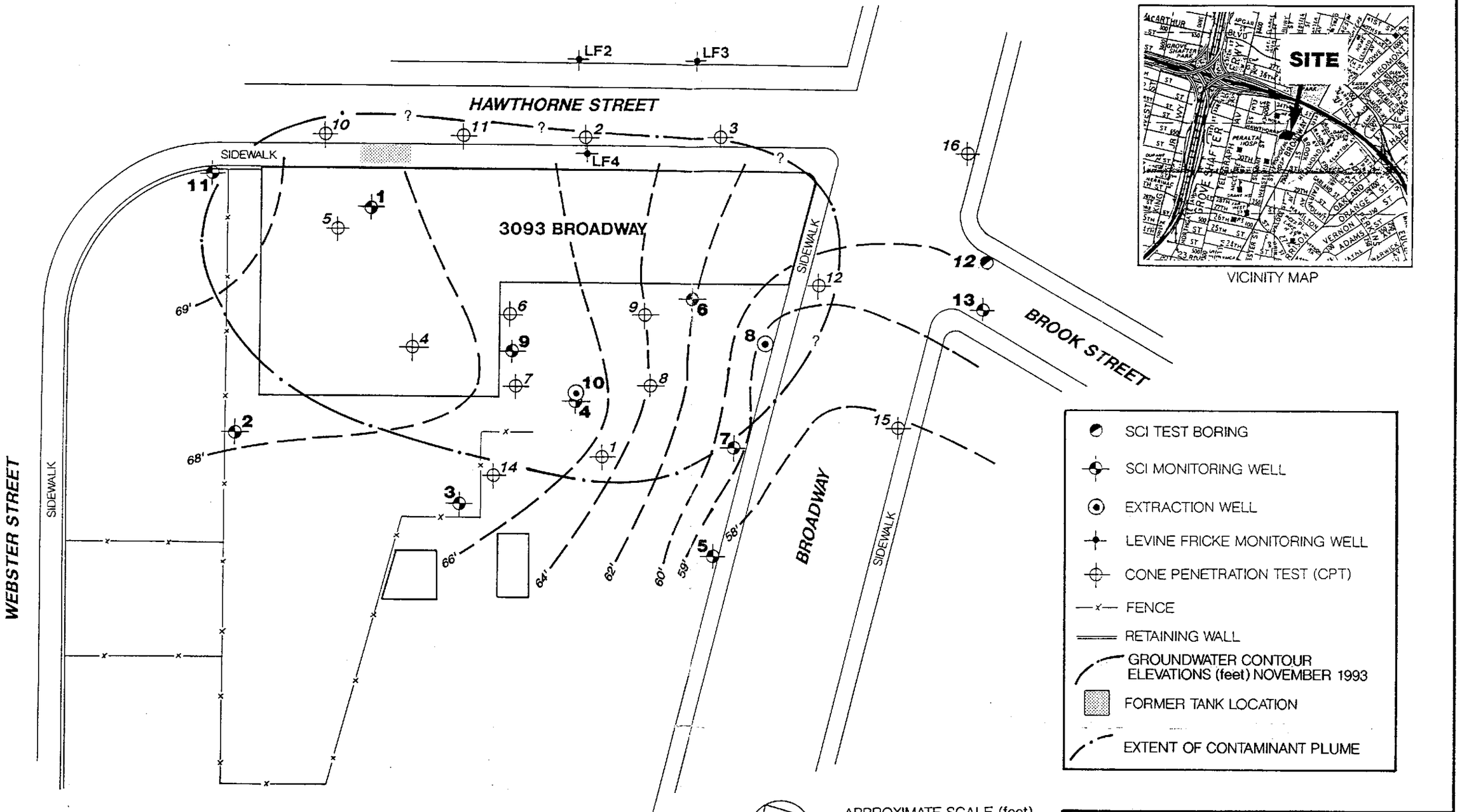
# SITE PLAN

Subsurface Consultants

CONNELL OLDSMOBILE – OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 11/13/92 | |

PLATE 1




# GROUNDWATER CONDITIONS

Subsurface Consultants

CONNELL OLDSMOBILE – OAKLAND, CA

| JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|
| 447.036 | 1/10/94 | | 2 |

# Appendix A

# Investigation Protocol

# APPENDIX A

## INVESTIGATION PROTOCOL

### A. Cone Penetrometer Testing

Cone penetrometer testing (CPT) equipment was used to better define subsurface lithology at the site. A 1-1/4-inch diameter pressure-sensitive probe (peizocone) was hydraulically pushed into the ground at 17 locations. Soil bearing resistance recorded by the probe tip (tip resistance) and soil shear resistance sensed along the probe sleeve (local friction) were recorded by an on board data acquisition system as the probe was pushed through the soil. Soil lithology was correlated to resistance parameters measured by the probe. CPT locations are shown on Plate 1 with the exceptions of CPT 13 which is now well MW10 and CPT 17 which is now Boring 12. The CPT data is presented in Appendix C.

A hydropunch sample was obtained from CPT 12. In addition, at selected CPT locations (1, 3, 4, 5, 7, 9, 10, 11) 1-inch diameter PVC casing was installed in the boreholes to facilitate the collection of a grab groundwater sample. The samples were obtained for visual observation to check for the presence of free floating product. The samples were then transmitted to Friedman & Bruya Inc. for gasoline, DCA and BTEX analysis.

### B. Test Borings

The test borings were drilled using either a truck-mounted drill rig equipped with 8-inch diameter hollow stem augers or a truck-mounted drill rig equipped with rotary wash equipment. Our field engineer/geologist observed drilling operations, prepared

detailed logs of the test borings and obtained undisturbed samples of the materials encountered. Test boring logs are presented on Plates A1 through A13. Soils are classified in accordance with the Unified Soil Classification System described on Plate A14.

A California Drive Sampler having an outside diameter of 2.5 inches and an inside diameter of 2.0 inches was used to obtain soil samples. The number of blows required to drive the sampler the final 12 inches of each 18-inch penetration were recorded and are presented on the test borings logs. Drilling and sampling equipment was thoroughly steam-cleaned prior to each use to reduce the likelihood of cross-contamination between samples and/or borings.

Soil samples were retained in 2.0-inch-diameter brass liners. Teflon sheeting was placed over the ends of the soil liners; the liners were subsequently capped and sealed with duct tape. The sealed liners were placed in ice-filled coolers and remained iced until delivery to the analytical laboratory. Chain-of-custody records accompanied the samples.

C. Groundwater Monitoring Wells

At the completion of drilling, monitoring wells were installed in several of the test borings. Well schematics are shown on the respective test boring logs. In general, the wells consist of 2-inch or 6-inch-diameter, Schedule 40 PVC pipe having flush-threaded joints. Piping was steam-cleaned prior to being placed in the borehole.

The lower 15 to 20 feet of each well consists of machine-slotted well screen having 0.02-inch slots. The remaining portion

of the wells consist of blank (solid) pipe. The wells were provided with a bottom cap and a locking top cap. The well screen is encased in a filter composed of Lonestar No. 3 washed sand. The filter sand was placed by carefully pouring it through the annulus between the borehole and the well casing. The filter extends from just below the bottom of the well to at least one foot above the top of the screened section. A one-foot thick bentonite pellet seal was placed above the sand filter. The bentonite pellets were hydrated using de-ionized water. The annulus above the seal was backfilled with cement grout. The grout mixture consists of Portland cement mixed with clean water. The monitoring wells were completed below grade and are protected by traffic-rated valve boxes.

The wells were developed at least 24 hours after the grout seal was placed to allow for proper set up. Initially, the depth to water was measured below the top of the well casing using an electric sounder. The 2-inch-diameter wells were developed by removing water with new disposable bailers. The 6-inch-diameter wells were developed with a 4-inch-diameter steel bailer. After the wells were allowed to recharge to within 80 percent of their initial level they were sampled with a precleaned bailer. Well development and purge water were placed in a depression created on top of the stockpiled soil and allowed to evaporate.

Groundwater samples were retained in chilled, pre-cleaned containers supplied by the analytical laboratory. Water samples were placed in ice-filled coolers and remained iced until delivery to the analytical laboratory. Chain-of-custody records accompanied the samples to the laboratory.

D. Pump Tests

Pump tests were conducted in extraction wells MW8 and MW10 to determine well characteristics and the hydraulic parameters of the aquifer. Well MW8 was pumped at a rate of about 0.8 gallons per minute (gpm) for a period of 13 minutes before it was pumped dry. No drawdown was measured in adjacent wells during the pumping. Based on the pump test data and our observations during well installation, it appears that this well penetrates only a narrow band of the sandy aquifer where the contaminated groundwater and free product is present. Drawdown data from MW8 is presented on Plate A15.

Groundwater was pumped from Well MW10 at a rate of 6.5 gpm for a period of about 8 hours. Total drawdown during pumping was 8.8 feet. Drawdown was measured in several on-site wells as tabulated below.

| Monitored Well | Distance to MW10 (feet) | Drawdown (feet) |
|---|---|---|
| MW1 | 170 | 0.00 |
| MW2 | 200 | 0.14 |
| MW3 | 100 | 0.04 |
| MW4 | 3 | 2.30 |
| MW7 | 105 | 0.00 |
| MW8 | 120 | 0.13 |
| MW9 | 60 | 1.11 |

Based on the drawdown data, Well MW10 influences wells which penetrate the permeable sandy aquifer which is situated at the groundwater surface. Drawdown data for MW10 is presented on Plate A15.

Approximately 3500 gallons of water were extracted during the pump tests. The extracted water was stored on-site in a Baker Tank.

# Appendix B

# Analytical Testing

## APPENDIX B

## ANALYTICAL TESTING

### A. Chemical Characterization

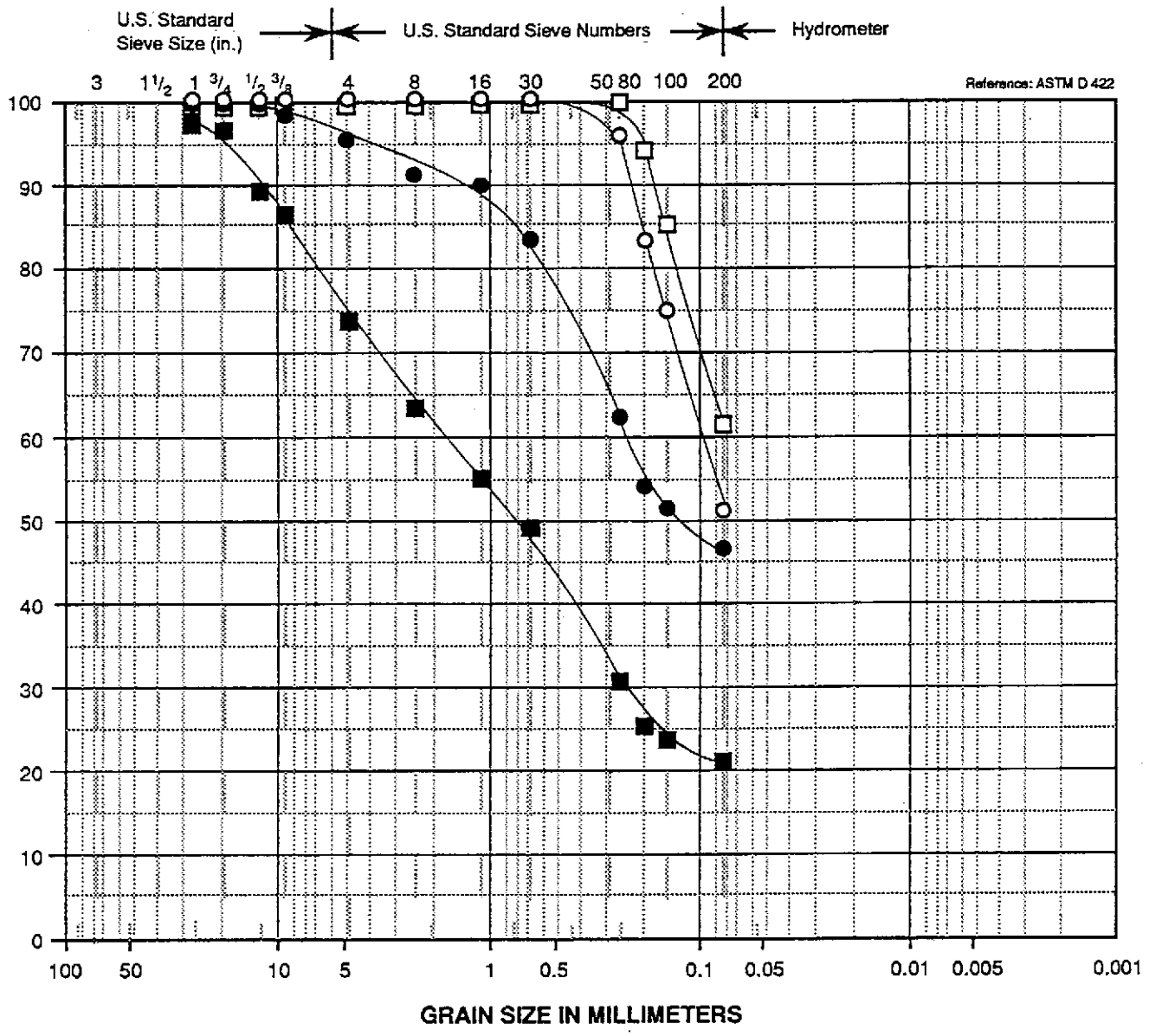
Analytical testing was provided by Curtis & Tompkins, Ltd., and Friedman and Bruya, Inc. The analytical tests were performed on individual samples. A summary of sample preparation and test methods are presented below.

| Test Analysis | Sample Preparation Method | Analysis Method |
|---|---|---|
| Total Volatile Hydrocarbons | EPA 5030 | EPA 8015 Mod. |
| Total Extractable Hydrocarbons | EPA 3550 | EPA 8015 Mod. |
| Purgeable Halocarbons | EPA 5030 | EPA 8010 |
| BTEX | EPA 5030 | EPA 8020 |

Analytical test reports and chain-of-custody documents are attached.

### B. Aquifer Characterization

In addition to the chemical analyses, grain size distribution tests were performed by SCI on selected samples from borings MW8 and MW9. The tests consisted of a mechanical sieve analysis performed in accordance with ASTM D-422. The results of the grain size distribution tests are presented on Plates B1 and B2.




| SYMBOL | SAMPLE SOURCE | CLASSIFICATION |
|---|---|---|
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| ● | Boring 8 @ 32.0 feet | GRAY BROWN CLAYEY SAND (SP-SM) |
| □ | Boring 8 @ 34.0 feet | LIGHT GRAY BROWN SANDY CLAY (CL) |
| ■ | Boring 8 @ 37.0 feet | GRAY BROWN GRAVELLY SAND (SW-SC) |

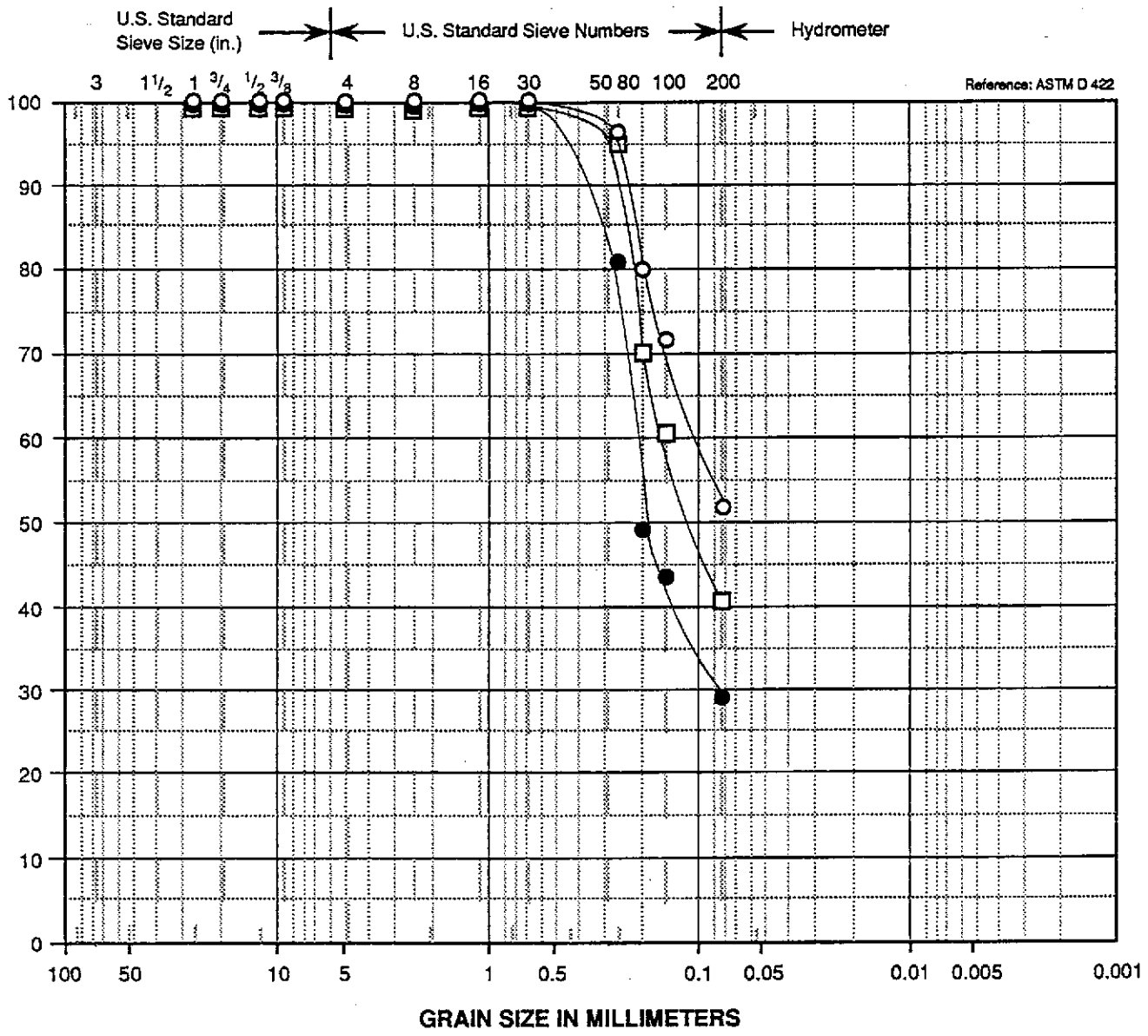
## PARTICLE SIZE ANALYSIS

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 12/21/92 | |

PLATE **B1**




| SYMBOL | SAMPLE SOURCE | CLASSIFICATION |
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| ○ | Boring 9 @ 25.0 feet | LIGHT GRAY SANDY CLAY (CL) |
| ● | Boring 9 @ 28.0 feet | MOTTLED ORANGE BROWN CLAYEY SAND (SP-SM) |
| □ | Boring 9 @ 31.0 feet | LIGHT GRAY BROWN CLAYEY SAND (SP-SM ) |

## PARTICLE SIZE ANALYSIS

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 12/21/92 | |

PLATE **B2**

# NOVEMBER/DECEMBER 1992 MONITORING EVENTS

# ANALYTICAL TEST RESULTS

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

DATE RECEIVED: 11/24/92
DATE REPORTED: 12/01/92

LABORATORY NUMBER: 109348

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 447.036

LOCATION: CONNELL OLDSMOBILE

RESULTS: SEE ATTACHED

Teresa K. Morrison
Reviewed by

Reviewed by

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109348
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE RECEIVED: 11/24/92
DATE ANALYZED: 12/01/92
DATE REPORTED: 12/01/92

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

| LAB ID | SAMPLE ID | TVH AS GASOLINE (ug/L) | BENZENE (ug/L) | TOLUENE (ug/L) | ETHYL BENZENE (ug/L) | TOTAL XYLENES (ug/L) |
|---|---|---|---|---|---|---|
| 109348-1 | MW-11 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 109348-2 | MW-13 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 2 |
| RECOVERY, % | 110 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109348
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE RECEIVED: 11/24/92
DATE EXTRACTED: 11/25/92
DATE ANALYZED: 11/27/92
DATE REPORTED: 12/01/92

## Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

| LAB ID | CLIENT ID | KEROSENE RANGE (ug/L) | DIESEL RANGE (ug/L) | REPORTING LIMIT* (ug/L) |
|---|---|---|---|---|
| 109348-1 | MW-11 | ** | 220 | 50 |
| 109348-2 | MW-13 | ND | 3,600 | 50 |

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

**Kerosene range not reported. Quantitated as diesel range.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 13 |
| RECOVERY, % | 60 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109348-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-11

DATE RECEIVED: 11/24/92
DATE ANALYZED: 11/26/92
DATE REPORTED: 12/01/92

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| 2-Chloroethylvinyl ether | ND | 2 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 125 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109348-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-13

DATE RECEIVED: 11/24/92
DATE ANALYZED: 11/26/92
DATE REPORTED: 12/01/92

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| 2-Chloroethylvinyl ether | ND | 2 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| Surrogate Recovery, % | 98 |
|---|---|

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109348-METHOD BLANK
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE ANALYZED: 11/26/92
DATE REPORTED: 12/01/92

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| 2-Chloroethylvinyl ether | ND | 2 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| Surrogate Recovery, % | 96 |
|---|---|

Curtis & Tompkins, Ltd.

# MS/MSD SUMMARY SHEET FOR EPA 8010

Laboratory Number: 109348
Client: Subsurface Consultants
Analysis date: 11/25/92 Spike file: 330e013
Sample type: Water Spike dup file: 330e014

## 8010 MS/MSD DATA (spiked at 20 ppb)

| SPIKE COMPOUNDS | READING | RECOVERY | STATUS | LIMITS |
|---|---|---|---|---|
| 1,1-Dichloroethene | 23.01 | 115 % | OK | 61 - 145 |
| Trichloroethene | 22.57 | 113 % | OK | 71 - 120 |
| Chlorobenzene | 20.46 | 102 % | OK | 75 - 130 |
| **SPIKE DUP COMPOUNDS** | | | | |
| 1,1-Dichloroethene | 23.98 | 120 % | OK | 61 - 145 |
| Trichloroethene | 22.37 | 112 % | OK | 71 - 120 |
| Chlorobenzene | 21.43 | 107 % | OK | 75 - 130 |
| **SURROGATES** | | | | |
| Bromobenzene (MS) | 94.85 | 95 % | OK | 75 - 125 |
| Bromobenzene (MSD) | 96.37 | 96 % | OK | 75 - 125 |

| MATRIX RESULTS | |
|---|---|
| 1,1-Dichloroethene | 0 |
| Trichloroethene | 0 |
| Chlorobenzene | 0 |

## RPD DATA

| 8010 COMPOUNDS | SPIKE | SPIKE DUP | RPD | STATUS | LIMITS |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 23.01 | 23.98 | 4 % | OK | <= 14 |
| Trichloroethene | 22.57 | 22.37 | 1 % | OK | <= 14 |
| Chlorobenzene | 2.00 | 21.43 | 5 % | OK | <= 13 |

# CHAIN OF CUSTODY FORM

PAGE 1 OF 1

PROJECT NAME: CONNELL OLDSMOBILE

JOB NUMBER: SCI 447.036 LAB: C&T

PROJECT CONTACT: J. ALEXANDER TURNAROUND: ~~[illegible]~~ VERBAL - By DEC 1

SAMPLED BY: _____ REQUESTED BY: F. ALEXANDER

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | SOIL | WASTE | AIR | - | - | CONTAINERS: VOA | LITER | PINT | TUBE | - | - | METHOD PRESERVED: HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | SAMPLING DATE: MONTH | DAY | YEAR | TIME | NOTES | ANALYSIS REQUESTED: BTEX / TPH | BOD | TPH | - | - | - | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 109345-1 | MW-11 | | | | | | | 4 | 1 | | | | | | | | | | | | | | | | X | X | X | | | | | | |
| 1 -2 | MW-13 | | | | | | | 4 | 1 | | | | | | | | | | | | | | | | X | X | X | | | | | | |

COMMENTS & NOTES:

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
|---|---|---|---|
| [signature] | | [signature] | 11/20/96 |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |

Subsurface Consultants, Inc.
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607
(510) 268-0461 · FAX: 510-268-0137

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

DATE RECEIVED: 11/30/92
DATE REPORTED: 12/07/92

LABORATORY NUMBER: 109374

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 447.036

LOCATION: CONNELL OLDSMOBILE

RESULTS: SEE ATTACHED

Reviewed by

Reviewed by

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 11/24,25/92
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/03/92
DATE REPORTED: 12/04/92

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

| LAB ID | SAMPLE ID | TVH AS GASOLINE (ug/L) | BENZENE (ug/L) | TOLUENE (ug/L) | ETHYL BENZENE (ug/L) | TOTAL XYLENES (ug/L) |
|---|---|---|---|---|---|---|
| 109374-1 | MW-1 | 320,000 | 35,000 | 43,000 | 4,200 | 22,000 |
| 109374-2 | MW-2 | ND(50) | ND(0.5) | 1.1 | ND(0.5) | 1.5 |
| 109374-3 | MW-3 | 50 | ND(0.5) | 0.9 | ND(0.5) | 2.0 |
| 109374-4 | MW-4 | 210,000 | 14,000 | 31,000 | 2,500 | 14,000 |
| 109374-5 | MW-5 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 109374-6 | MW-7 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 109374-7 | MW-8 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 109374-8 | MW-9 | 19,000 | 180 | 590 | 23 | 2,000 |
| 109374-9 | MW-10 | 130,000 | 9,700 | 19,000 | 1,400 | 8,400 |
| 109374-10 | B-12 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 7 |
| RECOVERY, % | 105 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 11/24,25/92
DATE RECEIVED: 11/30/92
DATE EXTRACTED: 12/03/92
DATE ANALYZED: 12/05,06/9
DATE REPORTED: 12/07/92

## Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

| LAB ID | CLIENT ID | KEROSENE RANGE (ug/L) | DIESEL RANGE (ug/L) | REPORTING LIMIT* (ug/L) |
|---|---|---|---|---|
| 109374-1 | MW-1 | ** | 4,600 | 50 |
| 109374-2 | MW-2 | ND | ND | 50 |
| 109374-3 | MW-3 | ND | 160 | 50 |
| 109374-4 | MW-4 | ** | 1,600 | 50 |
| 109374-5 | MW-5 | ND | 50 | 50 |
| 109374-6 | MW-7 | ND | ND | 50 |
| 109374-7 | MW-8 | ** | 170 | 50 |
| 109374-8 | MW-9 | ** | 320 | 50 |
| 109374-9 | MW-10 | ** | 1,300 | 50 |
| 109374-10 | B-12 | ND | ND | 50 |

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

**Kerosene range not reported. Quantitate as diesel range.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 1 |
| RECOVERY, % | 98 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-1

DATE SAMPLED: 11/24/92
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 400 |
| Bromomethane | ND | 400 |
| Vinyl chloride | ND | 400 |
| Chloroethane | ND | 400 |
| Methylene chloride | ND | 4,000 |
| Trichlorofluoromethane | ND | 200 |
| 1,1-Dichloroethene | ND | 200 |
| 1,1-Dichloroethane | ND | 200 |
| cis-1,2-Dichloroethene | ND | 200 |
| trans-1,2-Dichloroethene | ND | 200 |
| Chloroform | ND | 200 |
| Freon 113 | ND | 200 |
| 1,2-Dichloroethane | 1,600 | 200 |
| 1,1,1-Trichloroethane | ND | 200 |
| Carbon tetrachloride | ND | 200 |
| Bromodichloromethane | ND | 200 |
| 1,2-Dichloropropane | ND | 200 |
| cis-1,3-Dichloropropene | ND | 200 |
| Trichloroethene | ND | 200 |
| 1,1,2-Trichloroethane | ND | 200 |
| trans-1,3-Dichloropropene | ND | 200 |
| Dibromochloromethane | ND | 200 |
| 2-Chloroethylvinyl ether | ND | 400 |
| Bromoform | ND | 400 |
| Tetrachloroethene | ND | 200 |
| 1,1,2,2-Tetrachloroethane | ND | 200 |
| Chlorobenzene | ND | 200 |
| 1,3-Dichlorobenzene | ND | 200 |
| 1,4-Dichlorobenzene | ND | 200 |
| 1,2-Dichlorobenzene | ND | 200 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 101 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-2

DATE SAMPLED: 11/24/92
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| 2-Chloroethylvinyl ether | ND | 2 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| Surrogate Recovery, % | 102 |
|---|---|

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-3

DATE SAMPLED: 11/25/92
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| 2-Chloroethylvinyl ether | ND | 2 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 102 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-4
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-4

DATE SAMPLED: 11/24/92
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 400 |
| Bromomethane | ND | 400 |
| Vinyl chloride | ND | 400 |
| Chloroethane | ND | 400 |
| Methylene chloride | ND | 4,000 |
| Trichlorofluoromethane | ND | 200 |
| 1,1-Dichloroethene | ND | 200 |
| 1,1-Dichloroethane | ND | 200 |
| cis-1,2-Dichloroethene | ND | 200 |
| trans-1,2-Dichloroethene | ND | 200 |
| Chloroform | ND | 200 |
| Freon 113 | ND | 200 |
| 1,2-Dichloroethane | 500 | 200 |
| 1,1,1-Trichloroethane | ND | 200 |
| Carbon tetrachloride | ND | 200 |
| Bromodichloromethane | ND | 200 |
| 1,2-Dichloropropane | ND | 200 |
| cis-1,3-Dichloropropene | ND | 200 |
| Trichloroethene | ND | 200 |
| 1,1,2-Trichloroethane | ND | 200 |
| trans-1,3-Dichloropropene | ND | 200 |
| Dibromochloromethane | ND | 200 |
| 2-Chloroethylvinyl ether | ND | 400 |
| Bromoform | ND | 400 |
| Tetrachloroethene | ND | 200 |
| 1,1,2,2-Tetrachloroethane | ND | 200 |
| Chlorobenzene | ND | 200 |
| 1,3-Dichlorobenzene | ND | 200 |
| 1,4-Dichlorobenzene | ND | 200 |
| 1,2-Dichlorobenzene | ND | 200 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 100 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-5
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-5

DATE SAMPLED: 11/25/92
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| 2-Chloroethylvinyl ether | ND | 2 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 101 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-6
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-7

DATE SAMPLED: 11/24/92
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| 2-Chloroethylvinyl ether | ND | 2 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 101 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-7
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-8

DATE SAMPLED: 11/25/92
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | 200 | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| 2-Chloroethylvinyl ether | ND | 2 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 100 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-8
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-9

DATE SAMPLED: 11/24/921
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 8 |
| Bromomethane | ND | 8 |
| Vinyl chloride | ND | 8 |
| Chloroethane | ND | 8 |
| Methylene chloride | ND | 80 |
| Trichlorofluoromethane | ND | 4 |
| 1,1-Dichloroethene | ND | 4 |
| 1,1-Dichloroethane | ND | 4 |
| cis-1,2-Dichloroethene | ND | 4 |
| trans-1,2-Dichloroethene | ND | 4 |
| Chloroform | 15 | 4 |
| Freon 113 | ND | 4 |
| 1,2-Dichloroethane | 340 | 4 |
| 1,1,1-Trichloroethane | ND | 4 |
| Carbon tetrachloride | ND | 4 |
| Bromodichloromethane | ND | 4 |
| 1,2-Dichloropropane | ND | 4 |
| cis-1,3-Dichloropropene | ND | 4 |
| Trichloroethene | ND | 4 |
| 1,1,2-Trichloroethane | ND | 4 |
| trans-1,3-Dichloropropene | ND | 4 |
| Dibromochloromethane | ND | 4 |
| 2-Chloroethylvinyl ether | ND | 8 |
| Bromoform | ND | 8 |
| Tetrachloroethene | ND | 4 |
| 1,1,2,2-Tetrachloroethane | ND | 4 |
| Chlorobenzene | ND | 4 |
| 1,3-Dichlorobenzene | ND | 4 |
| 1,4-Dichlorobenzene | ND | 4 |
| 1,2-Dichlorobenzene | ND | 4 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 100 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-9
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-10

DATE SAMPLED: 11/24/92
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 40 |
| Bromomethane | ND | 40 |
| Vinyl chloride | ND | 40 |
| Chloroethane | ND | 40 |
| Methylene chloride | ND | 400 |
| Trichlorofluoromethane | ND | 20 |
| 1,1-Dichloroethene | ND | 20 |
| 1,1-Dichloroethane | ND | 20 |
| cis-1,2-Dichloroethene | ND | 20 |
| trans-1,2-Dichloroethene | ND | 20 |
| Chloroform | ND | 20 |
| Freon 113 | ND | 20 |
| 1,2-Dichloroethane | 370 | 20 |
| 1,1,1-Trichloroethane | ND | 20 |
| Carbon tetrachloride | ND | 20 |
| Bromodichloromethane | ND | 20 |
| 1,2-Dichloropropane | ND | 20 |
| cis-1,3-Dichloropropene | ND | 20 |
| Trichloroethene | ND | 20 |
| 1,1,2-Trichloroethane | ND | 20 |
| trans-1,3-Dichloropropene | ND | 20 |
| Dibromochloromethane | ND | 20 |
| 2-Chloroethylvinyl ether | ND | 40 |
| Bromoform | ND | 40 |
| Tetrachloroethene | ND | 20 |
| 1,1,2,2-Tetrachloroethane | ND | 20 |
| Chlorobenzene | ND | 20 |
| 1,3-Dichlorobenzene | ND | 20 |
| 1,4-Dichlorobenzene | ND | 20 |
| 1,2-Dichlorobenzene | ND | 20 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 100 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-10
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: B-12

DATE SAMPLED: 11/24/92
DATE RECEIVED: 11/30/92
DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| 2-Chloroethylvinyl ether | ND | 2 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 102 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109374-METHOD BLANK
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE ANALYZED: 12/02/92
DATE REPORTED: 12/04/92

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| 2-Chloroethylvinyl ether | ND | 2 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| Surrogate Recovery, % | 99 |
|---|---|

Curtis & Tompkins, Ltd.

# MS/MSD SUMMARY SHEET FOR EPA 8010

Laboratory Number: 109374
Client: Subsurface Consultants
Analysis date: 12/03/92 Spike file: 337w016
Sample type: Water Spike dup file: 337w017

8010 MS/MSD DATA (spiked at 20 ppb)

| SPIKE COMPOUNDS | READING | RECOVERY | STATUS | LIMITS |
|---|---|---|---|---|
| 1,1-Dichloroethene | 16.89 | 84 % | OK | 61 - 145 |
| Trichloroethene | 20.47 | 102 % | OK | 71 - 120 |
| Chlorobenzene | 20.28 | 101 % | OK | 75 - 130 |
| SPIKE DUP COMPOUNDS | | | | |
| 1,1-Dichloroethene | 16.99 | 85 % | OK | 61 - 145 |
| Trichloroethene | 20.55 | 103 % | OK | 71 - 120 |
| Chlorobenzene | 20.04 | 100 % | OK | 75 - 130 |
| SURROGATES | | | | |
| Bromobenzene (MS) | 99.05 | 99 % | OK | 75 - 125 |
| Bromobenzene (MSD) | 100.11 | 100 % | OK | 75 - 125 |

MATRIX RESULTS

| | |
|---|---|
| 1,1-Dichloroethene | 0 |
| Trichloroethene | 0 |
| Chlorobenzene | 0.074 |

RPD DATA

| 8010 COMPOUNDS | SPIKE | SPIKE DUP | RPD | STATUS | LIMITS |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 16.89 | 16.99 | 1 % | OK | <= 14 |
| Trichloroethene | 20.47 | 20.55 | 0 % | OK | <= 14 |
| Chlorobenzene | 2.00 | 20.04 | 1 % | OK | <= 13 |

# CHAIN OF CUSTODY FORM

PAGE 1 OF 2

PROJECT NAME: CONNELL OLDSMOBILE

JOB NUMBER: SCI 447.036 LAB: C&T

PROJECT CONTACT: S. ALEXANDER TURNAROUND: NORMAL

SAMPLED BY: E. CHANG REQUESTED BY: S. ALEXANDER

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | SOIL | WASTE | AIR | | | CONTAINERS: VOA | LITER | PINT | TUBE | | | METHOD PRESERVED: HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | SAMPLING DATE: MONTH | DAY | YEAR | TIME | NOTES | ANALYSIS REQUESTED: BTEX/TVH | BOIO | TEH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 109374-1 | MW-1 | | | | | | | 4 | 1 | | | | | | | | | | 12 | 14 | 92 | 1130 | | X | X | X |
| 2 | MW-2 | | | | | | | 4 | 1 | | | | | | | | | | 12 | 14 | 92 | 0930 | | X | X | X |
| 3 | MW-3 | | | | | | | 4 | 1 | | | | | | | | | | 12 | 15 | 92 | 1115 | | X | X | X |
| 4 | MW-4 | | | | | | | 4 | 1 | | | | | | | | | | 12 | 14 | 92 | 1200 | | X | X | X |
| 5 | MW-5 | | | | | | | 4 | 1 | | | | | | | | | | 12 | 15 | 92 | 0930 | | X | X | X |
| | ~~MW-6~~ | | | | | | | 4 | 1 | | | | | | | | | | | | | | | | | |
| 6 | MW-7 | | | | | | | 4 | 1 | | | | | | | | | | 12 | 14 | 92 | 1500 | | X | X | X |
| 7 | MW-8 | | | | | | | 4 | 1 | | | | | | | | | | 12 | 15 | 92 | 0830 | | X | X | X |
| 8 | MW-9 | | | | | | | 4 | 1 | | | | | | | | | | 12 | 14 | 92 | 1330 | | X | X | X |
| 9 | MW-10 | | | | | | | 4 | 1 | | | | | | | | | | 12 | 14 | 92 | 1000 | | X | X | X |
| | 10 ~~B-11~~ B-12 | | | | | | | 5 | 1 | | | | | | | | | | 12 | 14 | 92 | 0800 | | X | X | X |

COMMENTS & NOTES:

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
|---|---|---|---|
| [signature] | 12/14/92 1210 | | |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | [signature] 11/30/92 | 1210 |


Subsurface Consultants, Inc.

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

DATE RECEIVED: 12/10/92
DATE REPORTED: 12/17/92

LABORATORY NUMBER: 109498

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 447.036

LOCATION: CONNELL OLDSMOBILE

RESULTS: SEE ATTACHED

Reviewed by

Reviewed by

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109498
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 12/08/92
DATE RECEIVED: 12/10/92
DATE EXTRACTED: 12/15/92
DATE ANALYZED: 12/15/92
DATE REPORTED: 12/17/92

## Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

| LAB ID | CLIENT ID | KEROSENE RANGE (ug/L) | DIESEL RANGE (ug/L) | REPORTING LIMIT* (ug/L) |
|---|---|---|---|---|
| 109498-1 | WELL 11 | ND | 120+ | 50 |
| 109498-2 | WELL 13 | ND | 100+ | 50 |

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

+ Pattern does not match standard.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 6 |
| RECOVERY, % | 90 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 109498
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 12/08/92
DATE RECEIVED: 12/10/92
DATE ANALYZED: 12/11-12/92
DATE REPORTED: 12/17/92

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

| LAB ID | SAMPLE ID | TVH AS GASOLINE (ug/L) | BENZENE (ug/L) | TOLUENE (ug/L) | ETHYL BENZENE (ug/L) | TOTAL XYLENES (ug/L) |
|---|---|---|---|---|---|---|
| 109498-1 | WELL 11 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 109498-2 | WELL 13 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 2 |
| RECOVERY, % | 133 |

# CHAIN OF CUSTODY FORM

PAGE 1 OF 1

PROJECT NAME: Connell Oldsmobile

JOB NUMBER: 447.036 LAB: Curtis & Tompkins

PROJECT CONTACT: Jeri Alexander TURNAROUND: Normal

SAMPLED BY: F. Velez REQUESTED BY: J. Alexander

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | MATRIX: SOIL | MATRIX: WASTE | MATRIX: AIR | CONTAINERS: VOA | CONTAINERS: LITER | CONTAINERS: PINT | CONTAINERS: TUBE | METHOD PRESERVED: HCL | METHOD PRESERVED: $H_2SO_4$ | METHOD PRESERVED: $HNO_3$ | METHOD PRESERVED: ICE | METHOD PRESERVED: NONE | SAMPLING DATE: MONTH | SAMPLING DATE: DAY | SAMPLING DATE: YEAR | SAMPLING DATE: TIME | NOTES | ANALYSIS REQUESTED: TVH + BTEX | ANALYSIS REQUESTED: TEH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 109498-001 | Well 11 | X | | | | 2 | | | | X | | | X | | 12 | 08 | 92 | 1500 | | X | |
| -001 | Well 11 | X | | | | | 1 | | | | | | X | | 12 | 08 | 92 | 1500 | | | X |
| -002 | Well 13 | X | | | | 2 | | | | X | | | X | | 12 | 08 | 92 | 1400 | | X | |
| -002 | Well 13 | X | | | | | 1 | | | | | | X | | 12 | 08 | 92 | 1400 | | | X |

COMMENTS & NOTES:

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
|---|---|---|---|
| J. Alexander | 12-10-92 12:15PM | Inga E. Winter | 12/10/92 1215 |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |


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CPTINTR1 version 3.04

written by JAMES GREIG

CPTINTR1 is a highly interactive program to provide basic interpretation of CONE PENETRATION TEST (CPT) data. It was written at the University of British Columbia, Vancouver Canada and is compatible with the data format of the Hogentogler & Co. Field Computer Systems. The interpretation methods used provide an estimate of the following soil parameters (appropriate references are given below):

1) Soil Behaviour Type: - Robertson and Campanella 1983

2) Equivalent Relative Density :

i) Ticino Sand - Bellotti et al. 1985
ii) Hokksund Sand - Bellotti et al. 1985
iii) Ottawa / Hilton Mines Sands - Schmertmann 1976
iv) All Sands (average) - Jamiolkowski et al. 1985

3) Angle of Internal Friction

i) Robertson and Campanella 1983
ii) Durgunoglu and Mitchell 1975
iii) Janbu and Senneset 1974 - Beta=+15,0, and -15 degrees

4) Equivalent SPT N value - Robertson et al. 1983

5) Corrected SPT N1 value - N1=Cn*N (where Cn=SIG^(-.7) and SIG is in Kg/cm^2)

6) Cyclic Stress Ratio (CSR) to cause liquefaction (M=7.5) - Seed et al. (1983)

7) Undrained Shear Strength (Su) - Su=(Qc-SIGV)/Nk where SIGV is the total overburden stress

TABULATED DATA is based on values averaged over a a specified depth range and thus the influence of extreme values may be subdued. The ENGINEER should be using the tabulated output ONLY AS A GUIDE for the interpretation of the PLOTTED CPT DATA. It is important that the engineer fully understand the limitations of the CPT test.

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IMPORTANT NOTE

It is believed that the calculations performed by the routine are done correctly and reliably. However, no resonsibility is assumed by either the University of British Columbia or the author for any errors that may occur with the use of this program. It is also left up to the engineer to decide which, if any, of the correlation techniques are applicable to the specific soil conditions.

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.....references

## REFERENCES


1) Bellotti, R., Crippa, V., Pedroni, S., Baldi, G., Fretti, C., Ostricati, D., Ghionna, V., Jamiolkowski, M., Pasqalini, E.,1985, "Laboratory Validation Of In-Situ Tests", Italian Geotechnical Society Jubilee Volume for the XI ICSMFE, San Francisco, Cal.

2) Durgunoglu, H.T. and Mitchell, J.K., 1975, "Static Penetration Resistance of Soils: I-Analysis", Proceedings of the ASCE Specialty Conference on In-Situ Measurement of Soil Properties, Raleigh, North Carolina, Vol. I.

3) Janbu, N. and Senneset, K., 1974,. "Effective Stress Interpretation of In Situ Static Penetratuion Tests", Proceedings of the European Symposium on Penetration Testing, Stockholm Sweden, Vol. 2.2.

4) Jamiolkowski, M., Ladd, C.C., Germaine, J.T., Lancellotta, R., 1985,"New Developments in Field and Laboratory Testing of Soils", State of the Art Adress for XIth ICSMFE, San Francisco.

5) Robertson, P.K. and Campanella, R.G., 1983, "Interpretation of Cone Penetration Tests - PART I (SAND)", Canadian Geotechnical Journal, Vol. 20, No. 4.

6) Robertson, P.K., Campanella, R.G., and Wightman, A., 1983, "SPT - CPT Correlations", Journal of the Geotechnical Division, ASCE, Vol. 109, Nov.

7) Schmertmann, J.H., 1976, "An updated Correlation between Relative Density, Dr and Fugro-type Electric Cone Bearing, qc" Department of Civil Engineering Report, University of Florida, July.

8) Seed, H.B., Idriss, I.M. and Arango, I., 1983, "Evaluation of Liquefaction Potential Using Field Performance Data", Journal of Geotechnical Engineering Division, ASCE, Vol. 109, No. 3, March 1983, pp. 458-482.

int

Operator :VIRGIL BAKER
On Site Loc:CPT-1
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-06-92 09:22
Cone Used :HO 322
Water table (meters) : 6.7

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 315.71 | 1.57 | 0.50 | 0.03 | gravelly sand to sand | >90 | UNDFD | >50 | UNDEFINED |
| 0.50 | 1.64 | 116.31 | 2.10 | 1.81 | 0.08 | silty sand to sandy silt | >90 | >48 | 37 | UNDEFINED |
| 0.75 | 2.46 | 42.21 | 0.86 | 2.03 | 0.13 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.80 |
| 1.00 | 3.28 | 25.41 | 0.39 | 1.52 | 0.19 | sandy silt to clayey silt | UNDFND | UNDFD | 10 | 1.68 |
| 1.25 | 4.10 | 29.49 | 0.71 | 2.42 | 0.24 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.95 |
| 1.50 | 4.92 | 46.40 | 1.65 | 3.55 | 0.29 | clayey silt to silty clay | UNDFND | UNDFD | 22 | 3.07 |
| 1.75 | 5.74 | 47.79 | 1.31 | 2.73 | 0.35 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.16 |
| 2.00 | 6.56 | 33.55 | 0.91 | 2.71 | 0.40 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.21 |
| 2.25 | 7.38 | 54.97 | 1.31 | 2.39 | 0.45 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.63 |
| 2.50 | 8.20 | 71.80 | 2.20 | 3.06 | 0.51 | sandy silt to clayey silt | UNDFND | UNDFD | 28 | 4.75 |
| 2.75 | 9.02 | 91.48 | 2.88 | 3.14 | 0.56 | sandy silt to clayey silt | UNDFND | UNDFD | 35 | 6.06 |
| 3.00 | 9.84 | 92.53 | 2.92 | 3.15 | 0.61 | sandy silt to clayey silt | UNDFND | UNDFD | 35 | 6.12 |
| 3.25 | 10.66 | 93.94 | 3.79 | 4.04 | 0.67 | clayey silt to silty clay | UNDFND | UNDFD | 45 | 6.21 |
| 3.50 | 11.48 | 108.31 | 4.42 | 4.08 | 0.72 | clayey silt to silty clay | UNDFND | UNDFD | >50 | 7.17 |
| 3.75 | 12.30 | 227.17 | 5.07 | 2.23 | 0.77 | silty sand to sandy silt | >90 | 44-46 | >50 | UNDEFINED |
| 4.00 | 13.12 | 132.64 | 2.30 | 1.73 | 0.83 | silty sand to sandy silt | 70-80 | 42-44 | 42 | UNDEFINED |
| 4.25 | 13.94 | 25.12 | 0.61 | 2.44 | 0.88 | clayey silt to silty clay | UNDFND | UNDFD | 12 | 1.61 |
| 4.50 | 14.76 | 32.62 | 0.76 | 2.34 | 0.93 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.11 |
| 4.75 | 15.58 | 32.59 | 0.88 | 2.70 | 0.99 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.10 |
| 5.00 | 16.40 | 37.67 | 1.03 | 2.73 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.44 |
| 5.25 | 17.22 | 62.17 | 1.81 | 2.92 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 24 | 4.07 |
| 5.50 | 18.04 | 52.87 | 1.15 | 2.17 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.44 |
| 5.75 | 18.86 | 44.52 | 0.86 | 1.93 | 1.20 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.88 |
| 6.00 | 19.69 | 40.93 | 0.84 | 2.06 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.64 |
| 6.25 | 20.51 | 43.28 | 1.28 | 2.95 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.79 |
| 6.50 | 21.33 | 50.07 | 1.35 | 2.69 | 1.36 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.24 |
| 6.75 | 22.15 | 52.32 | 1.27 | 2.44 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.39 |
| 7.00 | 22.97 | 44.66 | 1.01 | 2.25 | 1.45 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.87 |
| 7.25 | 23.79 | 40.94 | 0.98 | 2.40 | 1.48 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.62 |
| 7.50 | 24.61 | 29.74 | 0.70 | 2.37 | 1.50 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.87 |
| 7.75 | 25.43 | 31.99 | 0.98 | 3.08 | 1.53 | clayey silt to silty clay | UNDFND | UNDFD | 15 | 2.02 |
| 8.00 | 26.25 | 36.98 | 0.77 | 2.08 | 1.56 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.35 |
| 8.25 | 27.07 | 56.98 | 1.19 | 2.08 | 1.59 | sandy silt to clayey silt | UNDFND | UNDFD | 22 | 3.68 |
| 8.50 | 27.89 | 56.96 | 1.34 | 2.34 | 1.61 | sandy silt to clayey silt | UNDFND | UNDFD | 22 | 3.67 |
| 8.75 | 28.71 | 52.24 | 1.62 | 3.10 | 1.64 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.36 |
| 9.00 | 29.53 | 44.64 | 1.61 | 3.60 | 1.67 | clayey silt to silty clay | UNDFND | UNDFD | 21 | 2.85 |
| 9.25 | 30.35 | 44.91 | 1.20 | 2.67 | 1.70 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.86 |
| 9.50 | 31.17 | 41.42 | 1.07 | 2.58 | 1.72 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.62 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 41.82 | 1.10 | 2.64 | 1.75 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.65 |
| 10.00 | 32.81 | 38.75 | 0.92 | 2.36 | 1.78 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.44 |
| 10.25 | 33.63 | 42.47 | 1.10 | 2.58 | 1.81 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.68 |
| 10.50 | 34.45 | 49.99 | 1.30 | 2.61 | 1.84 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.18 |
| 10.75 | 35.27 | 54.29 | 1.14 | 2.10 | 1.86 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.46 |
| 11.00 | 36.09 | 67.19 | 1.18 | 1.76 | 1.89 | silty sand to sandy silt | 40-50 | 34-36 | 21 | UNDEFINED |
| 11.25 | 36.91 | 64.69 | 1.15 | 1.77 | 1.92 | silty sand to sandy silt | 40-50 | 34-36 | 21 | UNDEFINED |
| 11.50 | 37.73 | 52.46 | 0.89 | 1.69 | 1.95 | silty sand to sandy silt | <40 | 32-34 | 17 | UNDEFINED |
| 11.75 | 38.55 | 38.05 | 0.77 | 2.03 | 1.97 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.37 |
| 12.00 | 39.37 | 65.25 | 2.04 | 3.12 | 2.00 | sandy silt to clayey silt | UNDFND | UNDFD | 25 | 4.18 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-2
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-06-92 11:52
Cone Used :HO 322
Water table (meters) : 7.6

| DEPTH (meters) | (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 17.96 | 0.39 | 2.17 | 0.03 | clayey silt to silty clay | UNDFND | UNDFD | 9 | 1.19 |
| 0.50 | 1.64 | 12.13 | 0.25 | 2.09 | 0.08 | clayey silt to silty clay | UNDFND | UNDFD | 6 | .80 |
| 0.75 | 2.46 | 2.92 | 0.09 | 3.06 | 0.13 | clay | UNDFND | UNDFD | 3 | .18 |
| 1.00 | 3.28 | -2.15 | 0.09 | -4.08 | 0.19 | undefined | UNDFND | UNDFD | UDF | UNDEFINED |
| 1.25 | 4.10 | -2.08 | 0.09 | -4.12 | 0.24 | undefined | UNDFND | UNDFD | UDF | UNDEFINED |
| 1.50 | 4.92 | -2.04 | 0.08 | -4.09 | 0.29 | undefined | UNDFND | UNDFD | UDF | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-2
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-06-92 11:59
Cone Used :HO 322
Water table (meters) : 7.6

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 0.52 | 0.00 | 0.31 | 0.03 | undefined | UNDFND | UNDFD | UDF | UNDEFINED |
| 0.50 | 1.64 | 2.34 | 0.10 | 4.08 | 0.08 | clay | UNDFND | UNDFD | 2 | .15 |
| 0.75 | 2.46 | 4.27 | 0.14 | 3.21 | 0.13 | clay | UNDFND | UNDFD | 4 | .27 |
| 1.00 | 3.28 | 7.85 | 0.12 | 1.47 | 0.19 | clayey silt to silty clay | UNDFND | UNDFD | 4 | .51 |
| 1.25 | 4.10 | 8.65 | 0.39 | 4.55 | 0.24 | clay | UNDFND | UNDFD | 8 | .56 |
| 1.50 | 4.92 | 21.98 | 1.20 | 5.47 | 0.29 | clay | UNDFND | UNDFD | 21 | 1.44 |
| 1.75 | 5.74 | 112.80 | 3.53 | 3.13 | 0.35 | sandy silt to clayey silt | UNDFND | UNDFD | 43 | 7.49 |
| 2.00 | 6.56 | 94.92 | 2.38 | 2.50 | 0.40 | sandy silt to clayey silt | UNDFND | UNDFD | 36 | 6.30 |
| 2.25 | 7.38 | 117.72 | 3.07 | 2.60 | 0.45 | silty sand to sandy silt | 80-90 | 44-46 | 38 | UNDEFINED |
| 2.50 | 8.20 | 82.05 | 2.87 | 3.50 | 0.51 | sandy silt to clayey silt | UNDFND | UNDFD | 31 | 5.43 |
| 2.75 | 9.02 | 84.08 | 3.16 | 3.76 | 0.56 | clayey silt to silty clay | UNDFND | UNDFD | 40 | 5.56 |
| 3.00 | 9.84 | 89.89 | 3.29 | 3.66 | 0.61 | clayey silt to silty clay | UNDFND | UNDFD | 43 | 5.95 |
| 3.25 | 10.66 | 72.59 | 3.32 | 4.57 | 0.67 | clayey silt to silty clay | UNDFND | UNDFD | 35 | 4.79 |
| 3.50 | 11.48 | 201.34 | 5.37 | 2.67 | 0.72 | silty sand to sandy silt | >90 | 44-46 | >50 | UNDEFINED |
| 3.75 | 12.30 | 164.15 | 6.80 | 4.14 | 0.77 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 4.00 | 13.12 | 138.69 | 5.08 | 3.66 | 0.83 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.19 |
| 4.25 | 13.94 | 95.96 | 3.11 | 3.24 | 0.88 | sandy silt to clayey silt | UNDFND | UNDFD | 37 | 6.33 |
| 4.50 | 14.76 | 84.57 | 2.68 | 3.17 | 0.93 | sandy silt to clayey silt | UNDFND | UNDFD | 32 | 5.57 |
| 4.75 | 15.58 | 30.64 | 0.77 | 2.51 | 0.99 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 1.97 |
| 5.00 | 16.40 | 36.29 | 0.97 | 2.67 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.35 |
| 5.25 | 17.22 | 40.37 | 1.14 | 2.82 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.61 |
| 5.50 | 18.04 | 36.93 | 0.98 | 2.66 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.38 |
| 5.75 | 18.86 | 44.11 | 1.08 | 2.45 | 1.20 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.86 |
| 6.00 | 19.69 | 46.21 | 1.15 | 2.49 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 2.99 |
| 6.25 | 20.51 | 40.50 | 0.78 | 1.94 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.61 |
| 6.50 | 21.33 | 45.98 | 1.00 | 2.17 | 1.36 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 2.97 |
| 6.75 | 22.15 | 57.93 | 1.64 | 2.82 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | 22 | 3.76 |
| 7.00 | 22.97 | 76.72 | 2.33 | 3.03 | 1.47 | sandy silt to clayey silt | UNDFND | UNDFD | 29 | 5.01 |
| 7.25 | 23.79 | 73.31 | 2.03 | 2.77 | 1.52 | sandy silt to clayey silt | UNDFND | UNDFD | 28 | 4.78 |
| 7.50 | 24.61 | 46.81 | 0.96 | 2.05 | 1.57 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.01 |
| 7.75 | 25.43 | 68.90 | 1.62 | 2.35 | 1.62 | sandy silt to clayey silt | UNDFND | UNDFD | 26 | 4.48 |
| 8.00 | 26.25 | 76.50 | 1.48 | 1.93 | 1.65 | silty sand to sandy silt | 50-60 | 36-38 | 24 | UNDEFINED |
| 8.25 | 27.07 | 88.51 | 2.11 | 2.38 | 1.68 | silty sand to sandy silt | 50-60 | 36-38 | 28 | UNDEFINED |
| 8.50 | 27.89 | 53.38 | 1.03 | 1.93 | 1.71 | silty sand to sandy silt | 40-50 | 34-36 | 17 | UNDEFINED |
| 8.75 | 28.71 | 51.34 | 0.98 | 1.90 | 1.73 | silty sand to sandy silt | <40 | 34-36 | 16 | UNDEFINED |
| 9.00 | 29.53 | 51.29 | 1.04 | 2.03 | 1.76 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.29 |
| 9.25 | 30.35 | 50.09 | 0.88 | 1.77 | 1.79 | silty sand to sandy silt | <40 | 34-36 | 16 | UNDEFINED |
| 9.50 | 31.17 | 51.70 | 0.86 | 1.66 | 1.82 | silty sand to sandy silt | <40 | 34-36 | 17 | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 55.39 | 0.94 | 1.71 | 1.84 | silty sand to sandy silt | 40-50 | 34-36 | 18 | UNDEFINED |
| 10.00 | 32.81 | 57.09 | 1.06 | 1.86 | 1.87 | silty sand to sandy silt | 40-50 | 34-36 | 18 | UNDEFINED |
| 10.25 | 33.63 | 63.27 | 1.17 | 1.85 | 1.90 | silty sand to sandy silt | 40-50 | 34-36 | 20 | UNDEFINED |
| 10.50 | 34.45 | 61.47 | 1.26 | 2.05 | 1.93 | silty sand to sandy silt | 40-50 | 34-36 | 20 | UNDEFINED |
| 10.75 | 35.27 | 60.03 | 1.24 | 2.06 | 1.96 | silty sand to sandy silt | 40-50 | 34-36 | 19 | UNDEFINED |
| 11.00 | 36.09 | 51.60 | 1.46 | 2.83 | 1.98 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.28 |
| 11.25 | 36.91 | 39.43 | 0.92 | 2.34 | 2.01 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.47 |
| 11.50 | 37.73 | 21.32 | 0.49 | 2.29 | 2.04 | clayey silt to silty clay | UNDFND | UNDFD | 10 | 1.25 |
| 11.75 | 38.55 | 12.76 | 0.11 | 0.89 | 2.07 | sandy silt to clayey silt | UNDFND | UNDFD | 5 | .68 |
| 12.00 | 39.37 | 16.69 | 0.29 | 1.73 | 2.09 | clayey silt to silty clay | UNDFND | UNDFD | 8 | .94 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-3
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-06-92 12:44
Cone Used :HO 322
Water table (meters) : 8.2

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | -0.11 | 0.03 | -29.27 | 0.03 | undefined | UNDFND | UNDFD | UDF | UNDEFINED |
| 0.50 | 1.64 | 19.68 | 0.54 | 2.72 | 0.08 | clayey silt to silty clay | UNDFND | UNDFD | 9 | 1.30 |
| 0.75 | 2.46 | 33.17 | 1.52 | 4.58 | 0.13 | silty clay to clay | UNDFND | UNDFD | 21 | 2.20 |
| 1.00 | 3.28 | 58.73 | 1.91 | 3.25 | 0.19 | sandy silt to clayey silt | UNDFND | UNDFD | 23 | 3.90 |
| 1.25 | 4.10 | 152.74 | 4.78 | 3.13 | 0.24 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.16 |
| 1.50 | 4.92 | 123.71 | 3.98 | 3.21 | 0.29 | sandy silt to clayey silt | UNDFND | UNDFD | 47 | 8.22 |
| 1.75 | 5.74 | 97.83 | 3.15 | 3.22 | 0.35 | sandy silt to clayey silt | UNDFND | UNDFD | 37 | 6.49 |
| 2.00 | 6.56 | 127.66 | 3.22 | 2.52 | 0.40 | silty sand to sandy silt | 80-90 | 44-46 | 41 | UNDEFINED |
| 2.25 | 7.38 | 123.16 | 3.37 | 2.74 | 0.45 | sandy silt to clayey silt | UNDFND | UNDFD | 47 | 8.18 |
| 2.50 | 8.20 | 84.83 | 2.77 | 3.26 | 0.51 | sandy silt to clayey silt | UNDFND | UNDFD | 33 | 5.62 |
| 2.75 | 9.02 | 85.32 | 3.64 | 4.27 | 0.56 | clayey silt to silty clay | UNDFND | UNDFD | 41 | 5.65 |
| 3.00 | 9.84 | 70.76 | 3.24 | 4.58 | 0.61 | silty clay to clay | UNDFND | UNDFD | 45 | 4.67 |
| 3.25 | 10.66 | 23.66 | 1.01 | 4.28 | 0.67 | silty clay to clay | UNDFND | UNDFD | 15 | 1.53 |
| 3.50 | 11.48 | 59.45 | 2.20 | 3.69 | 0.72 | clayey silt to silty clay | UNDFND | UNDFD | 28 | 3.91 |
| 3.75 | 12.30 | 46.60 | 1.88 | 4.03 | 0.77 | clayey silt to silty clay | UNDFND | UNDFD | 22 | 3.05 |
| 4.00 | 13.12 | 41.91 | 1.68 | 4.01 | 0.83 | clayey silt to silty clay | UNDFND | UNDFD | 20 | 2.73 |
| 4.25 | 13.94 | 38.38 | 1.14 | 2.96 | 0.88 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.50 |
| 4.50 | 14.76 | 43.28 | 1.22 | 2.81 | 0.93 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.82 |
| 4.75 | 15.58 | 37.93 | 1.02 | 2.69 | 0.99 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.46 |
| 5.00 | 16.40 | 38.22 | 0.88 | 2.30 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.47 |
| 5.25 | 17.22 | 42.79 | 1.19 | 2.79 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.78 |
| 5.50 | 18.04 | 63.58 | 1.96 | 3.08 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 24 | 4.16 |
| 5.75 | 18.86 | 54.35 | 1.82 | 3.34 | 1.20 | clayey silt to silty clay | UNDFND | UNDFD | 26 | 3.54 |
| 6.00 | 19.69 | 47.59 | 1.36 | 2.86 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.08 |
| 6.25 | 20.51 | 63.64 | 2.09 | 3.28 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | 24 | 4.15 |
| 6.50 | 21.33 | 47.17 | 1.29 | 2.73 | 1.36 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.05 |
| 6.75 | 22.15 | 48.41 | 1.02 | 2.11 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.13 |
| 7.00 | 22.97 | 47.55 | 1.25 | 2.63 | 1.47 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.07 |
| 7.25 | 23.79 | 51.01 | 1.37 | 2.69 | 1.52 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.30 |
| 7.50 | 24.61 | 59.89 | 2.07 | 3.45 | 1.57 | clayey silt to silty clay | UNDFND | UNDFD | 29 | 3.88 |
| 7.75 | 25.43 | 56.16 | 1.89 | 3.37 | 1.63 | clayey silt to silty clay | UNDFND | UNDFD | 27 | 3.63 |
| 8.00 | 26.25 | 57.18 | 1.61 | 2.81 | 1.68 | sandy silt to clayey silt | UNDFND | UNDFD | 22 | 3.70 |
| 8.25 | 27.07 | 59.79 | 1.47 | 2.46 | 1.73 | sandy silt to clayey silt | UNDFND | UNDFD | 23 | 3.87 |
| 8.50 | 27.89 | 50.00 | 1.34 | 2.67 | 1.77 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.21 |
| 8.75 | 28.71 | 40.43 | 1.34 | 3.31 | 1.80 | clayey silt to silty clay | UNDFND | UNDFD | 19 | 2.57 |
| 9.00 | 29.53 | 33.51 | 1.14 | 3.40 | 1.82 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.10 |
| 9.25 | 30.35 | 32.39 | 0.79 | 2.44 | 1.85 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.03 |
| 9.50 | 31.17 | 27.45 | 0.71 | 2.59 | 1.88 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.69 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 47.37 | 1.12 | 2.37 | 1.91 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.02 |
| 10.00 | 32.81 | 61.41 | 1.50 | 2.44 | 1.93 | sandy silt to clayey silt | UNDFND | UNDFD | 24 | 3.95 |
| 10.25 | 33.63 | 50.44 | 1.20 | 2.37 | 1.96 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.21 |
| 10.50 | 34.45 | 50.06 | 1.03 | 2.05 | 1.99 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.19 |
| 10.75 | 35.27 | 49.88 | 1.11 | 2.22 | 2.02 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.17 |
| 11.00 | 36.09 | 56.09 | 1.22 | 2.17 | 2.04 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.58 |
| 11.25 | 36.91 | 55.32 | 1.23 | 2.22 | 2.07 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.53 |
| 11.50 | 37.73 | 67.09 | 1.45 | 2.16 | 2.10 | silty sand to sandy silt | 40-50 | 34-36 | 21 | UNDEFINED |
| 11.75 | 38.55 | 55.94 | 1.16 | 2.07 | 2.13 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.56 |
| 12.00 | 39.37 | 54.05 | 1.04 | 1.92 | 2.16 | silty sand to sandy silt | <40 | 32-34 | 17 | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-4
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-06-92 13:51
Cone Used :HO 322
Water table (meters) : 8.1

| DEPTH (meters) | (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 10.50 | 0.37 | 3.57 | 0.03 | clay | UNDFND | UNDFD | 10 | .69 |
| 0.50 | 1.64 | 63.00 | 1.19 | 1.89 | 0.08 | silty sand to sandy silt | 80-90 | >48 | 20 | UNDEFINED |
| 0.75 | 2.46 | 52.43 | 0.35 | 0.67 | 0.13 | sand to silty sand | 70-80 | 46-48 | 13 | UNDEFINED |
| 1.00 | 3.28 | 39.28 | 1.12 | 2.86 | 0.19 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.60 |
| 1.25 | 4.10 | 30.77 | 0.75 | 2.44 | 0.24 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.03 |
| 1.50 | 4.92 | 23.76 | 0.59 | 2.46 | 0.29 | clayey silt to silty clay | UNDFND | UNDFD | 11 | 1.56 |
| 1.75 | 5.74 | 43.25 | 1.43 | 3.31 | 0.35 | clayey silt to silty clay | UNDFND | UNDFD | 21 | 2.86 |
| 2.00 | 6.56 | 100.11 | 3.20 | 3.20 | 0.40 | sandy silt to clayey silt | UNDFND | UNDFD | 38 | 6.64 |
| 2.25 | 7.38 | 208.51 | 7.35 | 3.52 | 0.45 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 2.50 | 8.20 | 156.46 | 4.83 | 3.09 | 0.51 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.39 |
| 2.75 | 9.02 | 60.41 | 1.75 | 2.90 | 0.56 | sandy silt to clayey silt | UNDFND | UNDFD | 23 | 3.99 |
| 3.00 | 9.84 | 41.07 | 1.53 | 3.72 | 0.61 | clayey silt to silty clay | UNDFND | UNDFD | 20 | 2.69 |
| 3.25 | 10.66 | 43.57 | 1.51 | 3.47 | 0.67 | clayey silt to silty clay | UNDFND | UNDFD | 21 | 2.86 |
| 3.50 | 11.48 | 93.91 | 2.46 | 2.62 | 0.72 | sandy silt to clayey silt | UNDFND | UNDFD | 36 | 6.21 |
| 3.75 | 12.30 | 120.76 | 2.97 | 2.46 | 0.77 | silty sand to sandy silt | 70-80 | 42-44 | 39 | UNDEFINED |
| 4.00 | 13.12 | 123.24 | 3.04 | 2.47 | 0.83 | silty sand to sandy silt | 70-80 | 42-44 | 39 | UNDEFINED |
| 4.25 | 13.94 | 300.39 | 5.51 | 1.83 | 0.88 | sand to silty sand | >90 | 46-48 | >50 | UNDEFINED |
| 4.50 | 14.76 | 255.24 | 3.71 | 1.45 | 0.93 | sand to silty sand | >90 | 44-46 | >50 | UNDEFINED |
| 4.75 | 15.58 | 34.30 | 1.15 | 3.35 | 0.99 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.22 |
| 5.00 | 16.40 | 31.92 | 0.78 | 2.46 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.05 |
| 5.25 | 17.22 | 32.79 | 0.88 | 2.69 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.11 |
| 5.50 | 18.04 | 31.74 | 0.79 | 2.49 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.03 |
| 5.75 | 18.86 | 32.86 | 0.82 | 2.51 | 1.20 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.11 |
| 6.00 | 19.69 | 35.72 | 0.98 | 2.75 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.29 |
| 6.25 | 20.51 | 34.25 | 0.96 | 2.80 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.19 |
| 6.50 | 21.33 | 31.15 | 0.72 | 2.30 | 1.36 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 1.98 |
| 6.75 | 22.15 | 29.58 | 0.68 | 2.30 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.87 |
| 7.00 | 22.97 | 29.97 | 0.80 | 2.67 | 1.47 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.90 |
| 7.25 | 23.79 | 26.80 | 0.65 | 2.43 | 1.52 | sandy silt to clayey silt | UNDFND | UNDFD | 10 | 1.68 |
| 7.50 | 24.61 | 28.82 | 0.68 | 2.37 | 1.57 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.81 |
| 7.75 | 25.43 | 29.45 | 0.63 | 2.14 | 1.63 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.85 |
| 8.00 | 26.25 | 28.27 | 0.64 | 2.25 | 1.68 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.77 |
| 8.25 | 27.07 | 27.63 | 0.59 | 2.13 | 1.73 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.72 |
| 8.50 | 27.89 | 49.43 | 1.36 | 2.76 | 1.76 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.17 |
| 8.75 | 28.71 | 45.97 | 1.23 | 2.68 | 1.79 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 2.94 |
| 9.00 | 29.53 | 47.16 | 1.35 | 2.87 | 1.81 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.01 |
| 9.25 | 30.35 | 39.39 | 0.97 | 2.47 | 1.84 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.49 |
| 9.50 | 31.17 | 53.00 | 1.63 | 3.07 | 1.87 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.40 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 44.43 | 1.07 | 2.41 | 1.90 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.82 |
| 10.00 | 32.81 | 40.47 | 0.90 | 2.23 | 1.92 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.55 |
| 10.25 | 33.63 | 42.79 | 1.00 | 2.34 | 1.95 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.70 |
| 10.50 | 34.45 | 43.32 | 0.85 | 1.97 | 1.98 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.74 |
| 10.75 | 35.27 | 54.16 | 1.22 | 2.25 | 2.01 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.46 |
| 11.00 | 36.09 | 47.15 | 1.24 | 2.64 | 2.03 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 2.98 |
| 11.25 | 36.91 | 37.92 | 0.80 | 2.10 | 2.06 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.36 |
| 11.50 | 37.73 | 39.53 | 0.84 | 2.13 | 2.09 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.47 |
| 11.75 | 38.55 | 44.78 | 1.01 | 2.26 | 2.12 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.82 |
| 12.00 | 39.37 | 42.48 | 0.97 | 2.28 | 2.15 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.66 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-5
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-06-92 15:08
Cone Used :HO 322
Water table (meters) : 8.1

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 6.33 | 0.28 | 4.46 | 0.03 | clay | UNDFND | UNDFD | 6 | .42 |
| 0.50 | 1.64 | 48.88 | 2.51 | 5.13 | 0.08 | clay | UNDFND | UNDFD | 47 | 3.25 |
| 0.75 | 2.46 | 42.52 | 2.19 | 5.15 | 0.13 | clay | UNDFND | UNDFD | 41 | 2.82 |
| 1.00 | 3.28 | 59.96 | 2.73 | 4.55 | 0.19 | silty clay to clay | UNDFND | UNDFD | 38 | 3.98 |
| 1.25 | 4.10 | 83.91 | 3.25 | 3.87 | 0.24 | clayey silt to silty clay | UNDFND | UNDFD | 40 | 5.57 |
| 1.50 | 4.92 | 82.66 | 3.49 | 4.22 | 0.29 | clayey silt to silty clay | UNDFND | UNDFD | 40 | 5.49 |
| 1.75 | 5.74 | 94.63 | 3.72 | 3.93 | 0.35 | clayey silt to silty clay | UNDFND | UNDFD | 45 | 6.28 |
| 2.00 | 6.56 | 89.99 | 3.56 | 3.96 | 0.40 | clayey silt to silty clay | UNDFND | UNDFD | 43 | 5.97 |
| 2.25 | 7.38 | 92.83 | 3.94 | 4.24 | 0.45 | clayey silt to silty clay | UNDFND | UNDFD | 44 | 6.15 |
| 2.50 | 8.20 | 100.41 | 3.91 | 3.89 | 0.51 | clayey silt to silty clay | UNDFND | UNDFD | 48 | 6.66 |
| 2.75 | 9.02 | 130.57 | 2.86 | 2.19 | 0.56 | silty sand to sandy silt | 80-90 | 44-46 | 42 | UNDEFINED |
| 3.00 | 9.84 | 158.25 | 2.06 | 1.30 | 0.61 | sand to silty sand | 80-90 | 44-46 | 38 | UNDEFINED |
| 3.25 | 10.66 | 122.81 | 4.03 | 3.28 | 0.67 | sandy silt to clayey silt | UNDFND | UNDFD | 47 | 8.14 |
| 3.50 | 11.48 | 96.63 | 2.84 | 2.94 | 0.72 | sandy silt to clayey silt | UNDFND | UNDFD | 37 | 6.39 |
| 3.75 | 12.30 | 88.18 | 2.97 | 3.37 | 0.77 | sandy silt to clayey silt | UNDFND | UNDFD | 34 | 5.82 |
| 4.00 | 13.12 | 62.92 | 1.92 | 3.05 | 0.83 | sandy silt to clayey silt | UNDFND | UNDFD | 24 | 4.14 |
| 4.25 | 13.94 | 63.63 | 1.88 | 2.96 | 0.88 | sandy silt to clayey silt | UNDFND | UNDFD | 24 | 4.18 |
| 4.50 | 14.76 | 60.10 | 1.48 | 2.46 | 0.93 | sandy silt to clayey silt | UNDFND | UNDFD | 23 | 3.94 |
| 4.75 | 15.58 | 46.59 | 2.15 | 4.61 | 0.99 | silty clay to clay | UNDFND | UNDFD | 30 | 3.04 |
| 5.00 | 16.40 | 88.75 | 2.93 | 3.30 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 34 | 5.84 |
| 5.25 | 17.22 | 76.69 | 2.53 | 3.29 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 29 | 5.04 |
| 5.50 | 18.04 | 73.76 | 1.82 | 2.47 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 28 | 4.84 |
| 5.75 | 18.86 | 71.25 | 2.53 | 3.55 | 1.20 | clayey silt to silty clay | UNDFND | UNDFD | 34 | 4.67 |
| 6.00 | 19.69 | 104.24 | 2.34 | 2.24 | 1.25 | silty sand to sandy silt | 60-70 | 40-42 | 33 | UNDEFINED |
| 6.25 | 20.51 | 134.35 | 1.85 | 1.37 | 1.31 | sand to silty sand | 70-80 | 40-42 | 32 | UNDEFINED |
| 6.50 | 21.33 | 115.44 | 2.77 | 2.40 | 1.36 | silty sand to sandy silt | 60-70 | 40-42 | 37 | UNDEFINED |
| 6.75 | 22.15 | 146.06 | 3.95 | 2.71 | 1.41 | silty sand to sandy silt | 70-80 | 40-42 | 47 | UNDEFINED |
| 7.00 | 22.97 | 114.75 | 3.35 | 2.92 | 1.47 | sandy silt to clayey silt | UNDFND | UNDFD | 44 | 7.55 |
| 7.25 | 23.79 | 118.84 | 2.81 | 2.36 | 1.52 | silty sand to sandy silt | 60-70 | 38-40 | 38 | UNDEFINED |
| 7.50 | 24.61 | 100.27 | 2.87 | 2.86 | 1.57 | sandy silt to clayey silt | UNDFND | UNDFD | 38 | 6.58 |
| 7.75 | 25.43 | 105.08 | 3.15 | 3.00 | 1.63 | sandy silt to clayey silt | UNDFND | UNDFD | 40 | 6.89 |
| 8.00 | 26.25 | 181.63 | 4.87 | 2.68 | 1.68 | silty sand to sandy silt | 70-80 | 40-42 | >50 | UNDEFINED |
| 8.25 | 27.07 | 161.26 | 4.99 | 3.09 | 1.73 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.63 |
| 8.50 | 27.89 | 142.08 | 5.05 | 3.55 | 1.76 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.35 |
| 8.75 | 28.71 | 154.21 | 4.92 | 3.19 | 1.79 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.15 |
| 9.00 | 29.53 | 91.74 | 3.27 | 3.56 | 1.81 | sandy silt to clayey silt | UNDFND | UNDFD | 35 | 5.99 |
| 9.25 | 30.35 | 129.02 | 3.34 | 2.59 | 1.84 | silty sand to sandy silt | 60-70 | 38-40 | 41 | UNDEFINED |
| 9.50 | 31.17 | 98.41 | 3.11 | 3.16 | 1.87 | sandy silt to clayey silt | UNDFND | UNDFD | 38 | 6.42 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 61.17 | 1.48 | 2.41 | 1.90 | sandy silt to clayey silt | UNDFND | UNDFD | 23 | 3.94 |
| 10.00 | 32.81 | 43.06 | 0.78 | 1.82 | 1.92 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.73 |
| 10.25 | 33.63 | 42.42 | 0.77 | 1.83 | 1.95 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.68 |
| 10.50 | 34.45 | 45.34 | 0.74 | 1.64 | 1.98 | silty sand to sandy silt | <40 | 32-34 | 14 | UNDEFINED |
| 10.75 | 35.27 | 44.96 | 0.78 | 1.72 | 2.01 | silty sand to sandy silt | <40 | 32-34 | 14 | UNDEFINED |
| 11.00 | 36.09 | 40.84 | 0.75 | 1.83 | 2.03 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.56 |
| 11.25 | 36.91 | 38.09 | 0.72 | 1.89 | 2.06 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.38 |
| 11.50 | 37.73 | 42.60 | 0.79 | 1.85 | 2.09 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.67 |
| 11.75 | 38.55 | 47.06 | 1.02 | 2.16 | 2.12 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 2.97 |
| 12.00 | 39.37 | 34.54 | 0.92 | 2.68 | 2.15 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.13 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-6
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-06-92 16:20
Cone Used :HO 322
Water table (meters) : 7

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 294.98 | 2.02 | 0.69 | 0.03 | sand | >90 | UNDFD | >50 | UNDEFINED |
| 0.50 | 1.64 | 126.17 | 1.68 | 1.33 | 0.08 | sand to silty sand | >90 | >48 | 30 | UNDEFINED |
| 0.75 | 2.46 | 17.84 | 0.46 | 2.56 | 0.13 | clayey silt to silty clay | UNDFND | UNDFD | 9 | 1.18 |
| 1.00 | 3.28 | 15.08 | 0.33 | 2.20 | 0.19 | clayey silt to silty clay | UNDFND | UNDFD | 7 | .99 |
| 1.25 | 4.10 | 19.56 | 1.02 | 5.24 | 0.24 | clay | UNDFND | UNDFD | 19 | 1.28 |
| 1.50 | 4.92 | 23.82 | 1.69 | 7.10 | 0.29 | clay | UNDFND | UNDFD | 23 | 1.56 |
| 1.75 | 5.74 | 139.59 | 5.33 | 3.82 | 0.35 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 2.00 | 6.56 | 47.60 | 1.49 | 3.14 | 0.40 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.14 |
| 2.25 | 7.38 | 82.06 | 2.44 | 2.97 | 0.45 | sandy silt to clayey silt | UNDFND | UNDFD | 31 | 5.44 |
| 2.50 | 8.20 | 77.46 | 1.74 | 2.24 | 0.51 | silty sand to sandy silt | 60-70 | 42-44 | 25 | UNDEFINED |
| 2.75 | 9.02 | 56.60 | 1.33 | 2.35 | 0.56 | sandy silt to clayey silt | UNDFND | UNDFD | 22 | 3.73 |
| 3.00 | 9.84 | 84.33 | 3.35 | 3.97 | 0.61 | clayey silt to silty clay | UNDFND | UNDFD | 40 | 5.58 |
| 3.25 | 10.66 | 65.20 | 2.46 | 3.77 | 0.67 | clayey silt to silty clay | UNDFND | UNDFD | 31 | 4.30 |
| 3.50 | 11.48 | 46.19 | 0.83 | 1.81 | 0.72 | silty sand to sandy silt | 40-50 | 38-40 | 15 | UNDEFINED |
| 3.75 | 12.30 | 61.70 | 2.18 | 3.53 | 0.77 | clayey silt to silty clay | UNDFND | UNDFD | 30 | 4.06 |
| 4.00 | 13.12 | 137.17 | 4.68 | 3.41 | 0.83 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.09 |
| 4.25 | 13.94 | 123.82 | 2.84 | 2.29 | 0.88 | silty sand to sandy silt | 70-80 | 42-44 | 40 | UNDEFINED |
| 4.50 | 14.76 | 164.14 | 4.28 | 2.61 | 0.93 | silty sand to sandy silt | 80-90 | 42-44 | >50 | UNDEFINED |
| 4.75 | 15.58 | 67.36 | 2.31 | 3.43 | 0.99 | clayey silt to silty clay | UNDFND | UNDFD | 32 | 4.42 |
| 5.00 | 16.40 | 62.10 | 2.29 | 3.68 | 1.04 | clayey silt to silty clay | UNDFND | UNDFD | 30 | 4.07 |
| 5.25 | 17.22 | 89.53 | 3.04 | 3.40 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 34 | 5.89 |
| 5.50 | 18.04 | 92.97 | 3.26 | 3.51 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 36 | 6.12 |
| 5.75 | 18.86 | 98.14 | 3.55 | 3.61 | 1.20 | sandy silt to clayey silt | UNDFND | UNDFD | 38 | 6.46 |
| 6.00 | 19.69 | 113.36 | 4.18 | 3.69 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | 43 | 7.47 |
| 6.25 | 20.51 | 115.72 | 4.12 | 3.56 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | 44 | 7.62 |
| 6.50 | 21.33 | 133.34 | 4.94 | 3.71 | 1.36 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 8.79 |
| 6.75 | 22.15 | 133.62 | 4.76 | 3.56 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 8.81 |
| 7.00 | 22.97 | 120.52 | 4.86 | 4.03 | 1.47 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 7.25 | 23.79 | 134.06 | 5.24 | 3.91 | 1.51 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 7.50 | 24.61 | 96.21 | 3.81 | 3.96 | 1.53 | clayey silt to silty clay | UNDFND | UNDFD | 46 | 6.31 |
| 7.75 | 25.43 | 115.14 | 4.76 | 4.13 | 1.56 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 8.00 | 26.25 | 147.25 | 5.34 | 3.62 | 1.59 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.70 |
| 8.25 | 27.07 | 142.72 | 5.56 | 3.90 | 1.62 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 8.50 | 27.89 | 131.24 | 5.71 | 4.35 | 1.64 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 8.75 | 28.71 | 132.62 | 5.26 | 3.97 | 1.67 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 9.00 | 29.53 | 156.48 | 5.21 | 3.33 | 1.70 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.30 |
| 9.25 | 30.35 | 126.20 | 5.30 | 4.20 | 1.73 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 9.50 | 31.17 | 50.09 | 1.11 | 2.22 | 1.76 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.20 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER On Site Loc:CPT-6 Page No. 2

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 33.63 | 0.74 | 2.19 | 1.78 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.10 |
| 10.00 | 32.81 | 9.47 | 0.28 | 2.94 | 1.81 | silty clay to clay | UNDFND | UNDFD | 6 | .49 |
| 10.25 | 33.63 | 18.87 | 0.54 | 2.87 | 1.84 | clayey silt to silty clay | UNDFND | UNDFD | 9 | 1.11 |
| 10.50 | 34.45 | 37.05 | 0.97 | 2.61 | 1.87 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.32 |
| 10.75 | 35.27 | 56.06 | 1.42 | 2.53 | 1.89 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.58 |
| 11.00 | 36.09 | 49.61 | 1.54 | 3.10 | 1.92 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.15 |
| 11.25 | 36.91 | 64.57 | 1.85 | 2.86 | 1.95 | sandy silt to clayey silt | UNDFND | UNDFD | 25 | 4.14 |
| 11.50 | 37.73 | 48.03 | 1.30 | 2.71 | 1.98 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.04 |
| 11.75 | 38.55 | 79.94 | 2.90 | 3.62 | 2.01 | clayey silt to silty clay | UNDFND | UNDFD | 38 | 5.16 |
| 12.00 | 39.37 | 108.68 | 4.24 | 3.90 | 2.03 | clayey silt to silty clay | UNDFND | UNDFD | >50 | 7.07 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

1 int
0

perator :VIRGIL BAKER CPT Date :10-23-92 11:43
On Site Loc:CPT-16 Cone Used :HO 322
Job No. :447.026 Water table (meters) : 8.5
ot. Unit Wt. (avg) : 130 pcf

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 4.01 | 0.09 | 2.18 | 0.03 | clay | UNDFND | UNDFD | 4 | .26 |
| 0.50 | 1.64 | 89.30 | 1.73 | 1.94 | 0.08 | silty sand to sandy silt | >90 | >48 | 29 | UNDEFINED |
| 0.75 | 2.46 | 89.14 | 3.94 | 4.42 | 0.13 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 1.00 | 3.28 | 158.86 | 5.36 | 3.38 | 0.19 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.57 |
| 1.25 | 4.10 | 166.70 | 5.78 | 3.47 | 0.24 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 11.09 |
| 1.50 | 4.92 | 101.85 | 4.20 | 4.12 | 0.29 | clayey silt to silty clay | UNDFND | UNDFD | 49 | 6.77 |
| 1.75 | 5.74 | 127.93 | 3.59 | 2.80 | 0.35 | sandy silt to clayey silt | UNDFND | UNDFD | 49 | 8.50 |
| 2.00 | 6.56 | 86.19 | 2.72 | 3.15 | 0.40 | sandy silt to clayey silt | UNDFND | UNDFD | 33 | 5.71 |
| 2.25 | 7.38 | 22.58 | 0.69 | 3.06 | 0.45 | clayey silt to silty clay | UNDFND | UNDFD | 11 | 1.47 |
| 2.50 | 8.20 | 21.09 | 0.61 | 2.91 | 0.51 | clayey silt to silty clay | UNDFND | UNDFD | 10 | 1.37 |
| 2.75 | 9.02 | 21.17 | 0.67 | 3.15 | 0.56 | clayey silt to silty clay | UNDFND | UNDFD | 10 | 1.37 |
| 3.00 | 9.84 | 21.61 | 0.78 | 3.61 | 0.61 | silty clay to clay | UNDFND | UNDFD | 14 | 1.40 |
| 3.25 | 10.66 | 24.07 | 0.75 | 3.12 | 0.67 | clayey silt to silty clay | UNDFND | UNDFD | 12 | 1.56 |
| 3.50 | 11.48 | 26.55 | 0.82 | 3.11 | 0.72 | clayey silt to silty clay | UNDFND | UNDFD | 13 | 1.72 |
| 3.75 | 12.30 | 37.15 | 1.10 | 2.97 | 0.77 | clayey silt to silty clay | UNDFND | UNDFD | 18 | 2.42 |
| 4.00 | 13.12 | 34.35 | 1.22 | 3.55 | 0.83 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.23 |
| 4.25 | 13.94 | 31.06 | 0.83 | 2.67 | 0.88 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.01 |
| 4.50 | 14.76 | 27.49 | 0.64 | 2.33 | 0.93 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.77 |
| 4.75 | 15.58 | 28.21 | 0.61 | 2.16 | 0.99 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.81 |
| 5.00 | 16.40 | 32.79 | 0.65 | 1.99 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.11 |
| 5.25 | 17.22 | 35.85 | 0.77 | 2.13 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.31 |
| 5.50 | 18.04 | 37.93 | 0.87 | 2.29 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.45 |
| 5.75 | 18.86 | 33.54 | 0.75 | 2.25 | 1.20 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.15 |
| 6.00 | 19.69 | 56.01 | 2.29 | 4.09 | 1.25 | clayey silt to silty clay | UNDFND | UNDFD | 27 | 3.65 |
| 6.25 | 20.51 | 161.54 | 6.57 | 4.07 | 1.31 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 6.50 | 21.33 | 108.98 | 4.85 | 4.45 | 1.36 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 6.75 | 22.15 | 52.52 | 2.47 | 4.70 | 1.41 | silty clay to clay | UNDFND | UNDFD | 34 | 3.40 |
| 7.00 | 22.97 | 95.59 | 3.55 | 3.71 | 1.47 | clayey silt to silty clay | UNDFND | UNDFD | 46 | 6.27 |
| 7.25 | 23.79 | 44.27 | 1.11 | 2.51 | 1.52 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.85 |
| 7.50 | 24.61 | 36.29 | 0.71 | 1.95 | 1.57 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.31 |
| 7.75 | 25.43 | 42.08 | 0.79 | 1.88 | 1.63 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.69 |
| 8.00 | 26.25 | 36.55 | 0.87 | 2.39 | 1.68 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.32 |
| 8.25 | 27.07 | 29.90 | 0.71 | 2.39 | 1.73 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.87 |
| 8.50 | 27.89 | 32.74 | 0.79 | 2.41 | 1.79 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.06 |
| 8.75 | 28.71 | 31.17 | 0.82 | 2.64 | 1.83 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 1.95 |
| 9.00 | 29.53 | 30.16 | 0.99 | 3.28 | 1.85 | clayey silt to silty clay | UNDFND | UNDFD | 14 | 1.88 |
| 9.25 | 30.35 | 26.37 | 0.70 | 2.66 | 1.88 | clayey silt to silty clay | UNDFND | UNDFD | 13 | 1.62 |
| 9.50 | 31.17 | 34.98 | 0.88 | 2.51 | 1.91 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.19 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-7
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-06-92 16:55
Cone Used :HO 322
Water table (meters) : 7

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 188.06 | 2.00 | 1.06 | 0.03 | sand | >90 | >48 | 36 | UNDEFINED |
| 0.50 | 1.64 | 67.33 | 1.91 | 2.84 | 0.08 | sandy silt to clayey silt | UNDFND | UNDFD | 26 | 4.48 |
| 0.75 | 2.46 | 25.26 | 0.62 | 2.46 | 0.13 | clayey silt to silty clay | UNDFND | UNDFD | 12 | 1.67 |
| 1.00 | 3.28 | 18.91 | 0.44 | 2.33 | 0.19 | clayey silt to silty clay | UNDFND | UNDFD | 9 | 1.24 |
| 1.25 | 4.10 | 20.17 | 0.51 | 2.53 | 0.24 | clayey silt to silty clay | UNDFND | UNDFD | 10 | 1.32 |
| 1.50 | 4.92 | 14.54 | 0.50 | 3.42 | 0.29 | silty clay to clay | UNDFND | UNDFD | 9 | .95 |
| 1.75 | 5.74 | 17.46 | 0.65 | 3.74 | 0.35 | silty clay to clay | UNDFND | UNDFD | 11 | 1.14 |
| 2.00 | 6.56 | 21.72 | 0.75 | 3.45 | 0.40 | clayey silt to silty clay | UNDFND | UNDFD | 10 | 1.42 |
| 2.25 | 7.38 | 26.00 | 0.87 | 3.36 | 0.45 | clayey silt to silty clay | UNDFND | UNDFD | 12 | 1.70 |
| 2.50 | 8.20 | 67.76 | 2.74 | 4.04 | 0.51 | clayey silt to silty clay | UNDFND | UNDFD | 32 | 4.48 |
| 2.75 | 9.02 | 99.17 | 4.09 | 4.13 | 0.56 | clayey silt to silty clay | UNDFND | UNDFD | 47 | 6.57 |
| 3.00 | 9.84 | 73.96 | 3.05 | 4.12 | 0.61 | clayey silt to silty clay | UNDFND | UNDFD | 35 | 4.89 |
| 3.25 | 10.66 | 97.76 | 4.94 | 5.05 | 0.67 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 3.50 | 11.48 | 198.73 | 5.94 | 2.99 | 0.72 | silty sand to sandy silt | >90 | 44-46 | >50 | UNDEFINED |
| 3.75 | 12.30 | 174.24 | 5.95 | 3.42 | 0.77 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 11.56 |
| 4.00 | 13.12 | 88.48 | 3.40 | 3.84 | 0.83 | clayey silt to silty clay | UNDFND | UNDFD | 42 | 5.84 |
| 4.25 | 13.94 | 50.89 | 1.85 | 3.63 | 0.88 | clayey silt to silty clay | UNDFND | UNDFD | 24 | 3.33 |
| 4.50 | 14.76 | 32.19 | 0.97 | 3.01 | 0.93 | clayey silt to silty clay | UNDFND | UNDFD | 15 | 2.08 |
| 4.75 | 15.58 | 42.10 | 1.45 | 3.44 | 0.99 | clayey silt to silty clay | UNDFND | UNDFD | 20 | 2.74 |
| 5.00 | 16.40 | 44.39 | 1.59 | 3.59 | 1.04 | clayey silt to silty clay | UNDFND | UNDFD | 21 | 2.89 |
| 5.25 | 17.22 | 31.65 | 1.11 | 3.52 | 1.09 | clayey silt to silty clay | UNDFND | UNDFD | 15 | 2.03 |
| 5.50 | 18.04 | 26.70 | 0.63 | 2.35 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 10 | 1.70 |
| 5.75 | 18.86 | 29.42 | 0.69 | 2.36 | 1.20 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.88 |
| 6.00 | 19.69 | 32.39 | 0.87 | 2.68 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.07 |
| 6.25 | 20.51 | 33.06 | 0.96 | 2.91 | 1.31 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.11 |
| 6.50 | 21.33 | 35.95 | 1.11 | 3.10 | 1.36 | clayey silt to silty clay | UNDFND | UNDFD | 17 | 2.30 |
| 6.75 | 22.15 | 114.09 | 3.00 | 2.63 | 1.41 | silty sand to sandy silt | 60-70 | 40-42 | 36 | UNDEFINED |
| 7.00 | 22.97 | 157.87 | 2.85 | 1.80 | 1.47 | sand to silty sand | 70-80 | 40-42 | 38 | UNDEFINED |
| 7.25 | 23.79 | 182.57 | 4.34 | 2.38 | 1.51 | silty sand to sandy silt | 70-80 | 40-42 | >50 | UNDEFINED |
| 7.50 | 24.61 | 294.27 | 5.73 | 1.95 | 1.53 | sand to silty sand | >90 | 42-44 | >50 | UNDEFINED |
| 7.75 | 25.43 | 300.30 | 4.49 | 1.50 | 1.56 | sand to silty sand | >90 | 42-44 | >50 | UNDEFINED |
| 8.00 | 26.25 | 208.45 | 4.60 | 2.21 | 1.59 | silty sand to sandy silt | 80-90 | 42-44 | >50 | UNDEFINED |
| 8.25 | 27.07 | 222.88 | 2.48 | 1.11 | 1.62 | sand | 80-90 | 42-44 | 43 | UNDEFINED |
| 8.50 | 27.89 | 253.29 | 3.40 | 1.34 | 1.64 | sand | 80-90 | 42-44 | 49 | UNDEFINED |
| 8.75 | 28.71 | 155.45 | 4.68 | 3.01 | 1.67 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.24 |
| 9.00 | 29.53 | 165.22 | 3.34 | 2.02 | 1.70 | silty sand to sandy silt | 70-80 | 40-42 | >50 | UNDEFINED |
| 9.25 | 30.35 | 126.76 | 3.87 | 3.05 | 1.73 | sandy silt to clayey silt | UNDFND | UNDFD | 49 | 8.32 |
| 9.50 | 31.17 | 139.78 | 4.54 | 3.25 | 1.76 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.18 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 163.59 | 5.25 | 3.21 | 1.78 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.77 |
| 10.00 | 32.81 | 150.57 | 5.24 | 3.48 | 1.81 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.89 |
| 10.25 | 33.63 | 192.40 | 4.63 | 2.41 | 1.84 | silty sand to sandy silt | 70-80 | 40-42 | >50 | UNDEFINED |
| 10.50 | 34.45 | 152.47 | 4.67 | 3.07 | 1.87 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.01 |
| 10.75 | 35.27 | 179.67 | 4.03 | 2.24 | 1.89 | silty sand to sandy silt | 70-80 | 40-42 | >50 | UNDEFINED |
| 11.00 | 36.09 | 261.19 | 7.05 | 2.70 | 1.92 | silty sand to sandy silt | 80-90 | 42-44 | >50 | UNDEFINED |
| 11.25 | 36.91 | 185.27 | 7.33 | 3.96 | 1.95 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 11.50 | 37.73 | 170.77 | 6.36 | 3.72 | 1.98 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 11.75 | 38.55 | 182.59 | 7.07 | 3.87 | 2.01 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 12.00 | 39.37 | 84.79 | 3.26 | 3.85 | 2.03 | clayey silt to silty clay | UNDFND | UNDFD | 41 | 5.48 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-8
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-07-92 08:31
Cone Used :HO 322
Water table (meters) : 6.7

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 212.18 | 1.58 | 0.75 | 0.03 | sand | >90 | >48 | 41 | UNDEFINED |
| 0.50 | 1.64 | 40.77 | 0.91 | 2.23 | 0.08 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.71 |
| 0.75 | 2.46 | 10.61 | 0.16 | 1.50 | 0.13 | clayey silt to silty clay | UNDFND | UNDFD | 5 | .69 |
| 1.00 | 3.28 | 13.25 | 0.56 | 4.25 | 0.19 | clay | UNDFND | UNDFD | 13 | .87 |
| 1.25 | 4.10 | 17.58 | 0.85 | 4.84 | 0.24 | clay | UNDFND | UNDFD | 17 | 1.15 |
| 1.50 | 4.92 | 34.08 | 1.33 | 3.92 | 0.29 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.25 |
| 1.75 | 5.74 | 233.22 | 5.34 | 2.29 | 0.35 | silty sand to sandy silt | >90 | >48 | >50 | UNDEFINED |
| 2.00 | 6.56 | 286.09 | 4.52 | 1.58 | 0.40 | sand to silty sand | >90 | >48 | >50 | UNDEFINED |
| 2.25 | 7.38 | 167.83 | 4.04 | 2.40 | 0.45 | silty sand to sandy silt | >90 | 46-48 | >50 | UNDEFINED |
| 2.50 | 8.20 | 142.74 | 4.14 | 2.90 | 0.51 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.48 |
| 2.75 | 9.02 | 204.38 | 5.18 | 2.54 | 0.56 | silty sand to sandy silt | >90 | 46-48 | >50 | UNDEFINED |
| 3.00 | 9.84 | 179.62 | 5.09 | 2.83 | 0.61 | silty sand to sandy silt | >90 | 44-46 | >50 | UNDEFINED |
| 3.25 | 10.66 | 112.61 | 3.18 | 2.83 | 0.67 | sandy silt to clayey silt | UNDFND | UNDFD | 43 | 7.46 |
| 3.50 | 11.48 | 54.06 | 1.38 | 2.55 | 0.72 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.55 |
| 3.75 | 12.30 | 52.16 | 1.38 | 2.65 | 0.77 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.42 |
| 4.00 | 13.12 | 59.23 | 1.99 | 3.36 | 0.83 | clayey silt to silty clay | UNDFND | UNDFD | 28 | 3.89 |
| 4.25 | 13.94 | 31.07 | 0.87 | 2.81 | 0.88 | clayey silt to silty clay | UNDFND | UNDFD | 15 | 2.01 |
| 4.50 | 14.76 | 27.74 | 0.69 | 2.48 | 0.93 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.78 |
| 4.75 | 15.58 | 24.52 | 0.63 | 2.58 | 0.99 | clayey silt to silty clay | UNDFND | UNDFD | 12 | 1.56 |
| 5.00 | 16.40 | 28.53 | 0.68 | 2.38 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.83 |
| 5.25 | 17.22 | 28.99 | 0.73 | 2.53 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.86 |
| 5.50 | 18.04 | 26.99 | 0.59 | 2.18 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 10 | 1.72 |
| 5.75 | 18.86 | 32.33 | 0.79 | 2.45 | 1.20 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.07 |
| 6.00 | 19.69 | 30.98 | 0.93 | 2.99 | 1.25 | clayey silt to silty clay | UNDFND | UNDFD | 15 | 1.98 |
| 6.25 | 20.51 | 35.36 | 0.92 | 2.60 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.27 |
| 6.50 | 21.33 | 42.11 | 1.36 | 3.23 | 1.36 | clayey silt to silty clay | UNDFND | UNDFD | 20 | 2.71 |
| 6.75 | 22.15 | 49.81 | 1.43 | 2.87 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.22 |
| 7.00 | 22.97 | 38.18 | 1.21 | 3.17 | 1.45 | clayey silt to silty clay | UNDFND | UNDFD | 18 | 2.44 |
| 7.25 | 23.79 | 33.90 | 0.82 | 2.43 | 1.48 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.15 |
| 7.50 | 24.61 | 36.23 | 0.88 | 2.43 | 1.50 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.31 |
| 7.75 | 25.43 | 42.26 | 1.28 | 3.02 | 1.53 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.70 |
| 8.00 | 26.25 | 42.01 | 1.09 | 2.58 | 1.56 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.68 |
| 8.25 | 27.07 | 43.27 | 1.12 | 2.59 | 1.59 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.76 |
| 8.50 | 27.89 | 40.31 | 0.92 | 2.28 | 1.61 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.56 |
| 8.75 | 28.71 | 36.93 | 0.84 | 2.27 | 1.64 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.34 |
| 9.00 | 29.53 | 40.26 | 0.90 | 2.23 | 1.67 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.55 |
| 9.25 | 30.35 | 41.26 | 0.83 | 2.01 | 1.70 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.62 |
| 9.50 | 31.17 | 42.77 | 0.83 | 1.93 | 1.72 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.71 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 45.44 | 1.01 | 2.23 | 1.75 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.89 |
| 10.00 | 32.81 | 39.16 | 0.90 | 2.30 | 1.78 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.47 |
| 10.25 | 33.63 | 39.33 | 0.88 | 2.24 | 1.81 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.47 |
| 10.50 | 34.45 | 46.38 | 0.94 | 2.02 | 1.84 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 2.94 |
| 10.75 | 35.27 | 51.49 | 0.95 | 1.84 | 1.86 | silty sand to sandy silt | <40 | 34-36 | 16 | UNDEFINED |
| 11.00 | 36.09 | 52.21 | 1.10 | 2.10 | 1.89 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.32 |
| 11.25 | 36.91 | 51.60 | 1.03 | 1.99 | 1.92 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.28 |
| 11.50 | 37.73 | 45.03 | 0.90 | 1.99 | 1.95 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.84 |
| 11.75 | 38.55 | 41.50 | 0.69 | 1.67 | 1.97 | silty sand to sandy silt | <40 | 32-34 | 13 | UNDEFINED |
| 12.00 | 39.37 | 44.71 | 0.59 | 1.31 | 2.00 | silty sand to sandy silt | <40 | 32-34 | 14 | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-9
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-07-92 09:21
Cone Used :HO 322
Water table (meters) : 7.9

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 270.63 | 1.10 | 0.40 | 0.03 | gravelly sand to sand | >90 | UNDFD | 43 | UNDEFINED |
| 0.50 | 1.64 | 33.11 | 1.26 | 3.81 | 0.08 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.20 |
| 0.75 | 2.46 | 16.72 | 0.83 | 4.94 | 0.13 | clay | UNDFND | UNDFD | 16 | 1.10 |
| 1.00 | 3.28 | 37.54 | 1.76 | 4.68 | 0.19 | silty clay to clay | UNDFND | UNDFD | 24 | 2.49 |
| 1.25 | 4.10 | 86.50 | 3.35 | 3.88 | 0.24 | clayey silt to silty clay | UNDFND | UNDFD | 41 | 5.75 |
| 1.50 | 4.92 | 103.72 | 3.66 | 3.53 | 0.29 | sandy silt to clayey silt | UNDFND | UNDFD | 40 | 6.89 |
| 1.75 | 5.74 | 92.33 | 3.54 | 3.83 | 0.35 | clayey silt to silty clay | UNDFND | UNDFD | 44 | 6.13 |
| 2.00 | 6.56 | 73.72 | 2.44 | 3.31 | 0.40 | sandy silt to clayey silt | UNDFND | UNDFD | 28 | 4.88 |
| 2.25 | 7.38 | 214.82 | 4.88 | 2.27 | 0.45 | silty sand to sandy silt | >90 | 46-48 | >50 | UNDEFINED |
| 2.50 | 8.20 | 328.95 | 6.82 | 2.07 | 0.51 | sand to silty sand | >90 | >48 | >50 | UNDEFINED |
| 2.75 | 9.02 | 220.09 | 5.53 | 2.51 | 0.56 | silty sand to sandy silt | >90 | 46-48 | >50 | UNDEFINED |
| 3.00 | 9.84 | 117.89 | 4.35 | 3.69 | 0.61 | sandy silt to clayey silt | UNDFND | UNDFD | 45 | 7.81 |
| 3.25 | 10.66 | 99.30 | 3.75 | 3.78 | 0.67 | clayey silt to silty clay | UNDFND | UNDFD | 48 | 6.57 |
| 3.50 | 11.48 | 109.21 | 4.22 | 3.87 | 0.72 | clayey silt to silty clay | UNDFND | UNDFD | >50 | 7.23 |
| 3.75 | 12.30 | 95.70 | 3.49 | 3.64 | 0.77 | sandy silt to clayey silt | UNDFND | UNDFD | 37 | 6.32 |
| 4.00 | 13.12 | 63.72 | 2.48 | 3.89 | 0.83 | clayey silt to silty clay | UNDFND | UNDFD | 31 | 4.19 |
| 4.25 | 13.94 | 92.97 | 3.70 | 3.98 | 0.88 | clayey silt to silty clay | UNDFND | UNDFD | 45 | 6.14 |
| 4.50 | 14.76 | 106.69 | 4.08 | 3.82 | 0.93 | clayey silt to silty clay | UNDFND | UNDFD | >50 | 7.05 |
| 4.75 | 15.58 | 105.96 | 4.28 | 4.04 | 0.99 | clayey silt to silty clay | UNDFND | UNDFD | >50 | 6.99 |
| 5.00 | 16.40 | 110.70 | 4.29 | 3.88 | 1.04 | clayey silt to silty clay | UNDFND | UNDFD | >50 | 7.31 |
| 5.25 | 17.22 | 117.36 | 4.32 | 3.68 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 45 | 7.75 |
| 5.50 | 18.04 | 113.67 | 4.66 | 4.10 | 1.15 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 5.75 | 18.86 | 104.69 | 4.40 | 4.21 | 1.20 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 6.00 | 19.69 | 136.46 | 5.02 | 3.68 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.01 |
| 6.25 | 20.51 | 133.89 | 4.44 | 3.31 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 8.84 |
| 6.50 | 21.33 | 110.80 | 2.34 | 2.11 | 1.36 | silty sand to sandy silt | 60-70 | 40-42 | 35 | UNDEFINED |
| 6.75 | 22.15 | 137.77 | 4.09 | 2.97 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.09 |
| 7.00 | 22.97 | 71.37 | 2.49 | 3.49 | 1.47 | clayey silt to silty clay | UNDFND | UNDFD | 34 | 4.66 |
| 7.25 | 23.79 | 74.21 | 2.73 | 3.68 | 1.52 | clayey silt to silty clay | UNDFND | UNDFD | 36 | 4.84 |
| 7.50 | 24.61 | 77.20 | 2.33 | 3.02 | 1.57 | sandy silt to clayey silt | UNDFND | UNDFD | 30 | 5.04 |
| 7.75 | 25.43 | 57.98 | 1.68 | 2.90 | 1.63 | sandy silt to clayey silt | UNDFND | UNDFD | 22 | 3.75 |
| 8.00 | 26.25 | 36.96 | 0.84 | 2.26 | 1.68 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.35 |
| 8.25 | 27.07 | 44.76 | 1.17 | 2.61 | 1.71 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.86 |
| 8.50 | 27.89 | 87.63 | 3.15 | 3.59 | 1.74 | sandy silt to clayey silt | UNDFND | UNDFD | 34 | 5.72 |
| 8.75 | 28.71 | 81.43 | 2.73 | 3.35 | 1.76 | sandy silt to clayey silt | UNDFND | UNDFD | 31 | 5.30 |
| 9.00 | 29.53 | 108.08 | 4.30 | 3.98 | 1.79 | clayey silt to silty clay | UNDFND | UNDFD | >50 | 7.08 |
| 9.25 | 30.35 | 118.31 | 4.94 | 4.18 | 1.82 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 9.50 | 31.17 | 119.03 | 4.72 | 3.97 | 1.85 | undefined | UNDFND | UNDFD | UDF | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 78.46 | 2.53 | 3.23 | 1.88 | sandy silt to clayey silt | UNDFND | UNDFD | 30 | 5.09 |
| 10.00 | 32.81 | 72.71 | 2.17 | 2.99 | 1.90 | sandy silt to clayey silt | UNDFND | UNDFD | 28 | 4.70 |
| 10.25 | 33.63 | 143.09 | 4.77 | 3.34 | 1.93 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.39 |
| 10.50 | 34.45 | 105.87 | 3.63 | 3.43 | 1.96 | sandy silt to clayey silt | UNDFND | UNDFD | 41 | 6.91 |
| 10.75 | 35.27 | 138.46 | 5.45 | 3.94 | 1.99 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 11.00 | 36.09 | 134.85 | 5.90 | 4.38 | 2.01 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 11.25 | 36.91 | 126.97 | 5.65 | 4.45 | 2.04 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 11.50 | 37.73 | 48.48 | 1.44 | 2.96 | 2.07 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.07 |
| 11.75 | 38.55 | 58.89 | 1.97 | 3.35 | 2.10 | clayey silt to silty clay | UNDFND | UNDFD | 28 | 3.76 |
| 12.00 | 39.37 | 101.90 | 4.25 | 4.17 | 2.12 | clayey silt to silty clay | UNDFND | UNDFD | 49 | 6.62 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-10
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-07-92 10:22
Cone Used :HO 322
Water table (meters) : 9.1

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 37.18 | 1.53 | 4.12 | 0.03 | silty clay to clay | UNDFND | UNDFD | 24 | 2.47 |
| 0.50 | 1.64 | 10.64 | 0.46 | 4.34 | 0.08 | clay | UNDFND | UNDFD | 10 | .70 |
| 0.75 | 2.46 | 28.55 | 1.26 | 4.40 | 0.13 | silty clay to clay | UNDFND | UNDFD | 18 | 1.89 |
| 1.00 | 3.28 | 25.86 | 1.28 | 4.96 | 0.19 | clay | UNDFND | UNDFD | 25 | 1.71 |
| 1.25 | 4.10 | 26.10 | 1.07 | 4.11 | 0.24 | silty clay to clay | UNDFND | UNDFD | 17 | 1.72 |
| 1.50 | 4.92 | 40.70 | 1.83 | 4.50 | 0.29 | silty clay to clay | UNDFND | UNDFD | 26 | 2.69 |
| 1.75 | 5.74 | 57.04 | 2.54 | 4.45 | 0.35 | silty clay to clay | UNDFND | UNDFD | 36 | 3.77 |
| 2.00 | 6.56 | 77.01 | 2.64 | 3.43 | 0.40 | sandy silt to clayey silt | UNDFND | UNDFD | 30 | 5.10 |
| 2.25 | 7.38 | 72.99 | 2.90 | 3.97 | 0.45 | clayey silt to silty clay | UNDFND | UNDFD | 35 | 4.83 |
| 2.50 | 8.20 | 58.50 | 1.86 | 3.17 | 0.51 | sandy silt to clayey silt | UNDFND | UNDFD | 22 | 3.86 |
| 2.75 | 9.02 | 64.83 | 2.57 | 3.97 | 0.56 | clayey silt to silty clay | UNDFND | UNDFD | 31 | 4.28 |
| 3.00 | 9.84 | 65.65 | 2.30 | 3.51 | 0.61 | clayey silt to silty clay | UNDFND | UNDFD | 31 | 4.33 |
| 3.25 | 10.66 | 142.05 | 2.56 | 1.80 | 0.67 | silty sand to sandy silt | 80-90 | 44-46 | 45 | UNDEFINED |
| 3.50 | 11.48 | 109.49 | 2.54 | 2.32 | 0.72 | silty sand to sandy silt | 70-80 | 42-44 | 35 | UNDEFINED |
| 3.75 | 12.30 | 69.03 | 2.60 | 3.77 | 0.77 | clayey silt to silty clay | UNDFND | UNDFD | 33 | 4.55 |
| 4.00 | 13.12 | 45.09 | 1.45 | 3.21 | 0.83 | clayey silt to silty clay | UNDFND | UNDFD | 22 | 2.95 |
| 4.25 | 13.94 | 89.54 | 3.47 | 3.87 | 0.88 | clayey silt to silty clay | UNDFND | UNDFD | 43 | 5.91 |
| 4.50 | 14.76 | 118.40 | 4.58 | 3.87 | 0.93 | clayey silt to silty clay | UNDFND | UNDFD | >50 | 7.83 |
| 4.75 | 15.58 | 63.95 | 2.59 | 4.05 | 0.99 | clayey silt to silty clay | UNDFND | UNDFD | 31 | 4.19 |
| 5.00 | 16.40 | 72.54 | 3.16 | 4.35 | 1.04 | clayey silt to silty clay | UNDFND | UNDFD | 35 | 4.76 |
| 5.25 | 17.22 | 139.92 | 4.58 | 3.27 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.25 |
| 5.50 | 18.04 | 68.82 | 3.07 | 4.47 | 1.15 | clayey silt to silty clay | UNDFND | UNDFD | 33 | 4.51 |
| 5.75 | 18.86 | 44.74 | 1.52 | 3.40 | 1.20 | clayey silt to silty clay | UNDFND | UNDFD | 21 | 2.90 |
| 6.00 | 19.69 | 68.08 | 2.79 | 4.10 | 1.25 | clayey silt to silty clay | UNDFND | UNDFD | 33 | 4.45 |
| 6.25 | 20.51 | 77.14 | 3.14 | 4.07 | 1.31 | clayey silt to silty clay | UNDFND | UNDFD | 37 | 5.05 |
| 6.50 | 21.33 | 70.24 | 2.71 | 3.86 | 1.36 | clayey silt to silty clay | UNDFND | UNDFD | 34 | 4.59 |
| 6.75 | 22.15 | 49.13 | 1.97 | 4.01 | 1.41 | clayey silt to silty clay | UNDFND | UNDFD | 24 | 3.18 |
| 7.00 | 22.97 | 75.42 | 2.53 | 3.35 | 1.47 | sandy silt to clayey silt | UNDFND | UNDFD | 29 | 4.93 |
| 7.25 | 23.79 | 78.55 | 2.41 | 3.07 | 1.52 | sandy silt to clayey silt | UNDFND | UNDFD | 30 | 5.13 |
| 7.50 | 24.61 | 41.84 | 1.11 | 2.66 | 1.57 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.68 |
| 7.75 | 25.43 | 36.40 | 0.85 | 2.34 | 1.63 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.31 |
| 8.00 | 26.25 | 35.57 | 0.80 | 2.25 | 1.68 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.25 |
| 8.25 | 27.07 | 38.18 | 0.95 | 2.50 | 1.73 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.43 |
| 8.50 | 27.89 | 45.01 | 1.23 | 2.74 | 1.79 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.88 |
| 8.75 | 28.71 | 36.40 | 0.81 | 2.22 | 1.84 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.30 |
| 9.00 | 29.53 | 40.49 | 0.93 | 2.29 | 1.89 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.57 |
| 9.25 | 30.35 | 38.28 | 0.76 | 1.98 | 1.94 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.42 |
| 9.50 | 31.17 | 46.98 | 1.09 | 2.33 | 1.97 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 2.99 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 38.70 | 0.90 | 2.33 | 2.00 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.44 |
| 10.00 | 32.81 | 38.16 | 0.95 | 2.49 | 2.03 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.40 |
| 10.25 | 33.63 | 42.04 | 0.88 | 2.09 | 2.05 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.65 |
| 10.50 | 34.45 | 48.66 | 1.12 | 2.30 | 2.08 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.09 |
| 10.75 | 35.27 | 52.93 | 1.53 | 2.90 | 2.11 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.37 |
| 11.00 | 36.09 | 43.20 | 1.04 | 2.41 | 2.14 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.72 |
| 11.25 | 36.91 | 44.65 | 1.01 | 2.27 | 2.16 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.81 |
| 11.50 | 37.73 | 43.30 | 0.86 | 1.99 | 2.19 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.72 |
| 11.75 | 38.55 | 45.07 | 0.92 | 2.04 | 2.22 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.83 |
| 12.00 | 39.37 | 43.59 | 0.81 | 1.86 | 2.25 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.73 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

1 [redacted] int
0 [redacted]

Operator :VIRGIL BAKER CPT Date :10-07-92 11:22
On Site Loc:CPT-11 Cone Used :HO 322
Job No. :447.026 Water table (meters) : 8.2
Tot. Unit Wt. (avg) : 130 pcf

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 180.39 | 1.79 | 0.99 | 0.03 | sand | >90 | >48 | 35 | UNDEFINED |
| 0.50 | 1.64 | 26.43 | 0.77 | 2.90 | 0.08 | clayey silt to silty clay | UNDFND | UNDFD | 13 | 1.75 |
| 0.75 | 2.46 | 12.38 | 0.38 | 3.07 | 0.13 | silty clay to clay | UNDFND | UNDFD | 8 | .81 |
| 1.00 | 3.28 | 12.82 | 0.43 | 3.33 | 0.19 | silty clay to clay | UNDFND | UNDFD | 8 | .84 |
| 1.25 | 4.10 | 28.63 | 1.14 | 3.97 | 0.24 | silty clay to clay | UNDFND | UNDFD | 18 | 1.89 |
| 1.50 | 4.92 | 37.54 | 1.71 | 4.57 | 0.29 | silty clay to clay | UNDFND | UNDFD | 24 | 2.48 |
| 1.75 | 5.74 | 42.17 | 1.87 | 4.43 | 0.35 | silty clay to clay | UNDFND | UNDFD | 27 | 2.78 |
| 2.00 | 6.56 | 46.90 | 1.94 | 4.13 | 0.40 | clayey silt to silty clay | UNDFND | UNDFD | 22 | 3.10 |
| 2.25 | 7.38 | 54.92 | 1.94 | 3.53 | 0.45 | clayey silt to silty clay | UNDFND | UNDFD | 26 | 3.63 |
| 2.50 | 8.20 | 230.31 | 5.49 | 2.39 | 0.51 | silty sand to sandy silt | >90 | 46-48 | >50 | UNDEFINED |
| 2.75 | 9.02 | 108.68 | 3.81 | 3.50 | 0.56 | sandy silt to clayey silt | UNDFND | UNDFD | 42 | 7.20 |
| 3.00 | 9.84 | 57.39 | 2.13 | 3.70 | 0.61 | clayey silt to silty clay | UNDFND | UNDFD | 27 | 3.78 |
| 3.25 | 10.66 | 78.30 | 3.28 | 4.19 | 0.67 | clayey silt to silty clay | UNDFND | UNDFD | 37 | 5.17 |
| 3.50 | 11.48 | 160.26 | 5.24 | 3.27 | 0.72 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.63 |
| 3.75 | 12.30 | 135.06 | 3.97 | 2.94 | 0.77 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 8.95 |
| 4.00 | 13.12 | 56.97 | 2.23 | 3.92 | 0.83 | clayey silt to silty clay | UNDFND | UNDFD | 27 | 3.74 |
| 4.25 | 13.94 | 58.53 | 2.35 | 4.02 | 0.88 | clayey silt to silty clay | UNDFND | UNDFD | 28 | 3.84 |
| 4.50 | 14.76 | 34.01 | 1.03 | 3.04 | 0.93 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.20 |
| 4.75 | 15.58 | 31.58 | 0.94 | 2.98 | 0.99 | clayey silt to silty clay | UNDFND | UNDFD | 15 | 2.03 |
| 5.00 | 16.40 | 33.78 | 0.99 | 2.94 | 1.04 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.18 |
| 5.25 | 17.22 | 34.06 | 0.95 | 2.78 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.19 |
| 5.50 | 18.04 | 28.66 | 0.81 | 2.82 | 1.15 | clayey silt to silty clay | UNDFND | UNDFD | 14 | 1.83 |
| 5.75 | 18.86 | 34.21 | 1.06 | 3.10 | 1.20 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.20 |
| 6.00 | 19.69 | 36.50 | 0.97 | 2.67 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.35 |
| 6.25 | 20.51 | 36.64 | 1.04 | 2.84 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.35 |
| 6.50 | 21.33 | 35.74 | 0.84 | 2.34 | 1.36 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.29 |
| 6.75 | 22.15 | 46.41 | 1.25 | 2.70 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.00 |
| 7.00 | 22.97 | 43.33 | 1.40 | 3.24 | 1.47 | clayey silt to silty clay | UNDFND | UNDFD | 21 | 2.79 |
| 7.25 | 23.79 | 50.12 | 1.25 | 2.50 | 1.52 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.24 |
| 7.50 | 24.61 | 54.86 | 1.27 | 2.32 | 1.57 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.55 |
| 7.75 | 25.43 | 42.86 | 0.89 | 2.07 | 1.63 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.74 |
| 8.00 | 26.25 | 38.37 | 0.75 | 1.96 | 1.68 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.44 |
| 8.25 | 27.07 | 61.17 | 1.75 | 2.87 | 1.73 | sandy silt to clayey silt | UNDFND | UNDFD | 23 | 3.96 |
| 8.50 | 27.89 | 49.22 | 1.33 | 2.71 | 1.77 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.16 |
| 8.75 | 28.71 | 38.22 | 0.82 | 2.14 | 1.80 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.42 |
| 9.00 | 29.53 | 31.86 | 1.10 | 3.47 | 1.82 | clayey silt to silty clay | UNDFND | UNDFD | 15 | 1.99 |
| 9.25 | 30.35 | 44.54 | 1.13 | 2.54 | 1.85 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.83 |
| 9.50 | 31.17 | 45.13 | 1.19 | 2.64 | 1.88 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.87 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 38.00 | 0.82 | 2.16 | 1.91 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.39 |
| 10.00 | 32.81 | 41.05 | 0.83 | 2.02 | 1.93 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.59 |
| 10.25 | 33.63 | 44.49 | 0.87 | 1.95 | 1.96 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.82 |
| 10.50 | 34.45 | 43.64 | 0.93 | 2.12 | 1.99 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.76 |
| 10.75 | 35.27 | 44.44 | 0.94 | 2.10 | 2.02 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.81 |
| 11.00 | 36.09 | 57.32 | 1.06 | 1.86 | 2.04 | silty sand to sandy silt | 40-50 | 34-36 | 18 | UNDEFINED |
| 11.25 | 36.91 | 54.54 | 0.98 | 1.80 | 2.07 | silty sand to sandy silt | <40 | 32-34 | 17 | UNDEFINED |
| 11.50 | 37.73 | 56.28 | 1.03 | 1.82 | 2.10 | silty sand to sandy silt | <40 | 32-34 | 18 | UNDEFINED |
| 11.75 | 38.55 | 52.63 | 1.04 | 1.97 | 2.13 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.34 |
| 12.00 | 39.37 | 46.28 | 0.86 | 1.85 | 2.16 | silty sand to sandy silt | <40 | 32-34 | 15 | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

1 [redacted] int
0 [redacted]

Operator :VIRGIL BAKER
On Site Loc:CPT-12
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-07-92 12:31
Cone Used :HO 322
Water table (meters) : 8.2

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 0.03 | 0.17 | 662.31 | 0.03 | undefined | UNDFND | UNDFD | UDF | UNDEFINED |
| 0.50 | 1.64 | 186.97 | 2.19 | 1.17 | 0.08 | sand | >90 | >48 | 36 | UNDEFINED |
| 0.75 | 2.46 | 163.52 | 2.02 | 1.24 | 0.13 | sand to silty sand | >90 | >48 | 39 | UNDEFINED |
| 1.00 | 3.28 | 114.21 | 1.62 | 1.42 | 0.19 | sand to silty sand | >90 | >48 | 27 | UNDEFINED |
| 1.25 | 4.10 | 36.38 | 1.38 | 3.78 | 0.24 | clayey silt to silty clay | UNDFND | UNDFD | 17 | 2.40 |
| 1.50 | 4.92 | 92.19 | 3.00 | 3.25 | 0.29 | sandy silt to clayey silt | UNDFND | UNDFD | 35 | 6.12 |
| 1.75 | 5.74 | 276.49 | 5.77 | 2.09 | 0.35 | sand to silty sand | >90 | >48 | >50 | UNDEFINED |
| 2.00 | 6.56 | 124.69 | 4.60 | 3.69 | 0.40 | sandy silt to clayey silt | UNDFND | UNDFD | 48 | 8.28 |
| 2.25 | 7.38 | 59.85 | 1.80 | 3.00 | 0.45 | sandy silt to clayey silt | UNDFND | UNDFD | 23 | 3.96 |
| 2.50 | 8.20 | 29.90 | 1.00 | 3.36 | 0.51 | clayey silt to silty clay | UNDFND | UNDFD | 14 | 1.95 |
| 2.75 | 9.02 | 32.51 | 1.14 | 3.51 | 0.56 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.13 |
| 3.00 | 9.84 | 22.49 | 1.08 | 4.80 | 0.61 | clay | UNDFND | UNDFD | 22 | 1.45 |
| 3.25 | 10.66 | 40.85 | 1.50 | 3.68 | 0.67 | clayey silt to silty clay | UNDFND | UNDFD | 20 | 2.67 |
| 3.50 | 11.48 | 38.14 | 1.44 | 3.77 | 0.72 | clayey silt to silty clay | UNDFND | UNDFD | 18 | 2.49 |
| 3.75 | 12.30 | 41.13 | 1.66 | 4.04 | 0.77 | clayey silt to silty clay | UNDFND | UNDFD | 20 | 2.69 |
| 4.00 | 13.12 | 56.95 | 2.21 | 3.89 | 0.83 | clayey silt to silty clay | UNDFND | UNDFD | 27 | 3.74 |
| 4.25 | 13.94 | 35.86 | 1.08 | 3.00 | 0.88 | clayey silt to silty clay | UNDFND | UNDFD | 17 | 2.33 |
| 4.50 | 14.76 | 38.95 | 1.02 | 2.62 | 0.93 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.53 |
| 4.75 | 15.58 | 48.75 | 1.30 | 2.67 | 0.99 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.18 |
| 5.00 | 16.40 | 46.44 | 1.27 | 2.74 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.02 |
| 5.25 | 17.22 | 52.46 | 1.41 | 2.68 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.42 |
| 5.50 | 18.04 | 52.32 | 1.53 | 2.93 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.41 |
| 5.75 | 18.86 | 49.31 | 1.48 | 2.99 | 1.20 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.20 |
| 6.00 | 19.69 | 147.45 | 1.86 | 1.26 | 1.25 | sand to silty sand | 70-80 | 40-42 | 35 | UNDEFINED |
| 6.25 | 20.51 | 225.30 | 1.96 | 0.87 | 1.31 | sand | 80-90 | 42-44 | 43 | UNDEFINED |
| 6.50 | 21.33 | 251.95 | 2.16 | 0.86 | 1.36 | sand | 80-90 | 42-44 | 48 | UNDEFINED |
| 6.75 | 22.15 | 214.01 | 2.07 | 0.97 | 1.41 | sand | 80-90 | 42-44 | 41 | UNDEFINED |
| 7.00 | 22.97 | 220.43 | 1.83 | 0.83 | 1.47 | sand | 80-90 | 42-44 | 42 | UNDEFINED |
| 7.25 | 23.79 | 237.29 | 2.39 | 1.01 | 1.52 | sand | 80-90 | 42-44 | 45 | UNDEFINED |
| 7.50 | 24.61 | 259.88 | 2.89 | 1.11 | 1.57 | sand | 80-90 | 42-44 | 50 | UNDEFINED |
| 7.75 | 25.43 | 231.15 | 3.59 | 1.55 | 1.63 | sand to silty sand | 80-90 | 42-44 | >50 | UNDEFINED |
| 8.00 | 26.25 | 231.24 | 3.67 | 1.59 | 1.68 | sand to silty sand | 80-90 | 42-44 | >50 | UNDEFINED |
| 8.25 | 27.07 | 275.49 | 4.14 | 1.50 | 1.73 | sand to silty sand | 80-90 | 42-44 | >50 | UNDEFINED |
| 8.50 | 27.89 | 299.10 | 3.86 | 1.29 | 1.77 | sand | 80-90 | 42-44 | >50 | UNDEFINED |
| 8.75 | 28.71 | 292.19 | 4.31 | 1.48 | 1.80 | sand to silty sand | 80-90 | 42-44 | >50 | UNDEFINED |
| 9.00 | 29.53 | 341.27 | 6.71 | 1.97 | 1.82 | sand to silty sand | >90 | 42-44 | >50 | UNDEFINED |
| 9.25 | 30.35 | 201.71 | 6.16 | 3.05 | 1.85 | silty sand to sandy silt | 70-80 | 40-42 | >50 | UNDEFINED |
| 9.50 | 31.17 | 197.96 | 4.55 | 2.30 | 1.88 | silty sand to sandy silt | 70-80 | 40-42 | >50 | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 152.88 | 5.94 | 3.88 | 1.91 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 10.00 | 32.81 | 64.13 | 2.17 | 3.38 | 1.93 | clayey silt to silty clay | UNDFND | UNDFD | 31 | 4.13 |
| 10.25 | 33.63 | 34.26 | 1.14 | 3.32 | 1.96 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.14 |
| 10.50 | 34.45 | 40.43 | 1.32 | 3.27 | 1.99 | clayey silt to silty clay | UNDFND | UNDFD | 19 | 2.54 |
| 10.75 | 35.27 | 91.36 | 3.55 | 3.88 | 2.02 | clayey silt to silty clay | UNDFND | UNDFD | 44 | 5.94 |
| 11.00 | 36.09 | 99.47 | 3.29 | 3.30 | 2.04 | sandy silt to clayey silt | UNDFND | UNDFD | 38 | 6.47 |
| 11.25 | 36.91 | 118.36 | 4.54 | 3.84 | 2.07 | sandy silt to clayey silt | UNDFND | UNDFD | 45 | 7.73 |
| 11.50 | 37.73 | 51.86 | 1.55 | 2.99 | 2.10 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.29 |
| 11.75 | 38.55 | 54.80 | 2.06 | 3.75 | 2.13 | clayey silt to silty clay | UNDFND | UNDFD | 26 | 3.48 |
| 12.00 | 39.37 | 128.40 | 4.68 | 3.65 | 2.16 | sandy silt to clayey silt | UNDFND | UNDFD | 49 | 8.39 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :CARL G. MORGAN
On Site Loc:CPT-13
Job No. :447.036
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-07-92 14:27
Cone Used :347TC
Water table (meters) : 6.7

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 279.62 | 2.45 | 0.88 | 0.03 | sand | >90 | UNDFD | >50 | UNDEFINED |
| 0.50 | 1.64 | 59.23 | 1.56 | 2.63 | 0.08 | sandy silt to clayey silt | UNDFND | UNDFD | 23 | 3.94 |
| 0.75 | 2.46 | 16.33 | 0.17 | 1.07 | 0.13 | sandy silt to clayey silt | UNDFND | UNDFD | 6 | 1.07 |
| 1.00 | 3.28 | 12.93 | 0.19 | 1.48 | 0.19 | clayey silt to silty clay | UNDFND | UNDFD | 6 | .84 |
| 1.25 | 4.10 | 19.40 | 0.31 | 1.62 | 0.24 | sandy silt to clayey silt | UNDFND | UNDFD | 7 | 1.27 |
| 1.50 | 4.92 | 21.16 | 0.33 | 1.54 | 0.29 | sandy silt to clayey silt | UNDFND | UNDFD | 8 | 1.39 |
| 1.75 | 5.74 | 29.96 | 0.49 | 1.64 | 0.35 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.97 |
| 2.00 | 6.56 | 36.22 | 0.86 | 2.39 | 0.40 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.38 |
| 2.25 | 7.38 | 38.20 | 1.00 | 2.62 | 0.45 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.51 |
| 2.50 | 8.20 | 48.21 | 1.83 | 3.80 | 0.51 | clayey silt to silty clay | UNDFND | UNDFD | 23 | 3.18 |
| 2.75 | 9.02 | 152.09 | 6.81 | 4.48 | 0.56 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 3.00 | 9.84 | 172.28 | 5.96 | 3.46 | 0.61 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 11.44 |
| 3.25 | 10.66 | 149.08 | 5.79 | 3.88 | 0.67 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 3.50 | 11.48 | 39.08 | 1.43 | 3.67 | 0.72 | clayey silt to silty clay | UNDFND | UNDFD | 19 | 2.55 |
| 3.75 | 12.30 | 106.24 | 3.61 | 3.40 | 0.77 | sandy silt to clayey silt | UNDFND | UNDFD | 41 | 7.03 |
| 4.00 | 13.12 | 106.79 | 3.66 | 3.42 | 0.83 | sandy silt to clayey silt | UNDFND | UNDFD | 41 | 7.06 |
| 4.25 | 13.94 | 30.03 | 0.61 | 2.05 | 0.88 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 1.94 |
| 4.50 | 14.76 | 27.85 | 0.55 | 1.96 | 0.93 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.79 |
| 4.75 | 15.58 | 28.97 | 0.63 | 2.16 | 0.99 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.86 |
| 5.00 | 16.40 | 31.00 | 0.67 | 2.16 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 1.99 |
| 5.25 | 17.22 | 35.21 | 0.82 | 2.33 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.27 |
| 5.50 | 18.04 | 52.00 | 1.45 | 2.80 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.39 |
| 5.75 | 18.86 | 37.26 | 1.20 | 3.21 | 1.20 | clayey silt to silty clay | UNDFND | UNDFD | 18 | 2.40 |
| 6.00 | 19.69 | 34.70 | 0.76 | 2.20 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.22 |
| 6.25 | 20.51 | 37.00 | 0.84 | 2.28 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.37 |
| 6.50 | 21.33 | 32.56 | 0.63 | 1.93 | 1.36 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.08 |
| 6.75 | 22.15 | 36.15 | 0.81 | 2.24 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.31 |
| 7.00 | 22.97 | 56.68 | 1.38 | 2.43 | 1.45 | sandy silt to clayey silt | UNDFND | UNDFD | 22 | 3.68 |
| 7.25 | 23.79 | 159.41 | 2.56 | 1.61 | 1.48 | sand to silty sand | 70-80 | 40-42 | 38 | UNDEFINED |
| 7.50 | 24.61 | 176.88 | 2.68 | 1.52 | 1.50 | sand to silty sand | 70-80 | 40-42 | 42 | UNDEFINED |
| 7.75 | 25.43 | 187.33 | 1.82 | 0.97 | 1.53 | sand | 70-80 | 40-42 | 36 | UNDEFINED |
| 8.00 | 26.25 | 148.38 | 2.50 | 1.68 | 1.56 | sand to silty sand | 70-80 | 40-42 | 36 | UNDEFINED |
| 8.25 | 27.07 | 182.91 | 2.09 | 1.14 | 1.59 | sand | 70-80 | 40-42 | 35 | UNDEFINED |
| 8.50 | 27.89 | 202.17 | 2.11 | 1.04 | 1.61 | sand | 70-80 | 40-42 | 39 | UNDEFINED |
| 8.75 | 28.71 | 241.32 | 1.74 | 0.72 | 1.64 | sand | 80-90 | 42-44 | 46 | UNDEFINED |
| 9.00 | 29.53 | 243.75 | 1.90 | 0.78 | 1.67 | sand | 80-90 | 42-44 | 47 | UNDEFINED |
| 9.25 | 30.35 | 171.28 | 1.80 | 1.05 | 1.70 | sand | 70-80 | 40-42 | 33 | UNDEFINED |
| 9.50 | 31.17 | 52.26 | 1.06 | 2.03 | 1.72 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.35 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 44.95 | 0.83 | 1.85 | 1.75 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.85 |
| 10.00 | 32.81 | 41.84 | 0.97 | 2.32 | 1.78 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.64 |
| 10.25 | 33.63 | 42.21 | 0.99 | 2.34 | 1.81 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.67 |
| 10.50 | 34.45 | 43.99 | 0.95 | 2.17 | 1.84 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.78 |
| 10.75 | 35.27 | 49.90 | 0.90 | 1.81 | 1.86 | silty sand to sandy silt | <40 | 32-34 | 16 | UNDEFINED |
| 11.00 | 36.09 | 52.21 | 0.82 | 1.58 | 1.89 | silty sand to sandy silt | <40 | 34-36 | 17 | UNDEFINED |
| 11.25 | 36.91 | 55.00 | 0.93 | 1.68 | 1.92 | silty sand to sandy silt | 40-50 | 34-36 | 18 | UNDEFINED |
| 11.50 | 37.73 | 47.31 | 1.04 | 2.20 | 1.95 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 2.99 |
| 11.75 | 38.55 | 67.39 | 2.72 | 4.03 | 1.97 | clayey silt to silty clay | UNDFND | UNDFD | 32 | 4.32 |
| 12.00 | 39.37 | 98.91 | 4.50 | 4.55 | 2.00 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 12.25 | 40.19 | 71.85 | -6550.39 | -9116.75 | 2.03 | undefined | UNDFND | UNDFD | UDF | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :CARL G. MORGAN
On Site Loc:CPT 14
Job No. :447.036
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-07-92 15:54
Cone Used :347TC
Water table (meters) : 7

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 189.63 | 1.28 | 0.67 | 0.03 | sand | >90 | >48 | 36 | UNDEFINED |
| 0.50 | 1.64 | 38.72 | 1.25 | 3.23 | 0.08 | clayey silt to silty clay | UNDFND | UNDFD | 19 | 2.57 |
| 0.75 | 2.46 | 33.58 | 1.05 | 3.12 | 0.13 | clayey silt to silty clay | UNDFND | UNDFD | 16 | 2.23 |
| 1.00 | 3.28 | 15.89 | 0.43 | 2.71 | 0.19 | clayey silt to silty clay | UNDFND | UNDFD | 8 | 1.04 |
| 1.25 | 4.10 | 17.23 | 0.50 | 2.89 | 0.24 | clayey silt to silty clay | UNDFND | UNDFD | 8 | 1.13 |
| 1.50 | 4.92 | 16.45 | 0.51 | 3.09 | 0.29 | clayey silt to silty clay | UNDFND | UNDFD | 8 | 1.07 |
| 1.75 | 5.74 | 20.27 | 0.74 | 3.64 | 0.35 | silty clay to clay | UNDFND | UNDFD | 13 | 1.32 |
| 2.00 | 6.56 | 13.92 | 0.38 | 2.74 | 0.40 | clayey silt to silty clay | UNDFND | UNDFD | 7 | .90 |
| 2.25 | 7.38 | 17.78 | 0.38 | 2.16 | 0.45 | clayey silt to silty clay | UNDFND | UNDFD | 9 | 1.15 |
| 2.50 | 8.20 | 49.49 | 1.45 | 2.94 | 0.51 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.26 |
| 2.75 | 9.02 | 93.08 | 3.08 | 3.30 | 0.56 | sandy silt to clayey silt | UNDFND | UNDFD | 36 | 6.16 |
| 3.00 | 9.84 | 140.96 | 4.55 | 3.23 | 0.61 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.35 |
| 3.25 | 10.66 | 155.90 | 5.38 | 3.45 | 0.67 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 10.35 |
| 3.50 | 11.48 | 137.97 | 5.11 | 3.70 | 0.72 | sandy silt to clayey silt | UNDFND | UNDFD | >50 | 9.15 |
| 3.75 | 12.30 | 33.71 | 1.55 | 4.60 | 0.77 | silty clay to clay | UNDFND | UNDFD | 22 | 2.19 |
| 4.00 | 13.12 | 23.92 | 0.73 | 3.04 | 0.83 | clayey silt to silty clay | UNDFND | UNDFD | 11 | 1.53 |
| 4.25 | 13.94 | 24.00 | 0.67 | 2.80 | 0.88 | clayey silt to silty clay | UNDFND | UNDFD | 11 | 1.54 |
| 4.50 | 14.76 | 28.69 | 0.69 | 2.40 | 0.93 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.85 |
| 4.75 | 15.58 | 27.88 | 0.67 | 2.39 | 0.99 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.79 |
| 5.00 | 16.40 | 26.19 | 0.57 | 2.16 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 10 | 1.67 |
| 5.25 | 17.22 | 33.39 | 0.75 | 2.24 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.15 |
| 5.50 | 18.04 | 29.94 | 0.67 | 2.23 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.91 |
| 5.75 | 18.86 | 28.59 | 0.64 | 2.23 | 1.20 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.82 |
| 6.00 | 19.69 | 30.87 | 0.78 | 2.52 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 1.97 |
| 6.25 | 20.51 | 36.99 | 0.77 | 2.08 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.37 |
| 6.50 | 21.33 | 52.16 | 1.30 | 2.49 | 1.36 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.38 |
| 6.75 | 22.15 | 68.33 | 1.66 | 2.43 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | 26 | 4.46 |
| 7.00 | 22.97 | 49.21 | 1.04 | 2.11 | 1.47 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.18 |
| 7.25 | 23.79 | 46.43 | 0.81 | 1.75 | 1.51 | silty sand to sandy silt | <40 | 34-36 | 15 | UNDEFINED |
| 7.50 | 24.61 | 40.93 | 0.76 | 1.86 | 1.53 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.62 |
| 7.75 | 25.43 | 37.28 | 0.70 | 1.88 | 1.56 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.37 |
| 8.00 | 26.25 | 33.40 | 0.68 | 2.02 | 1.59 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.11 |
| 8.25 | 27.07 | 35.53 | 0.66 | 1.87 | 1.62 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.25 |
| 8.50 | 27.89 | 34.36 | 0.76 | 2.21 | 1.64 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.17 |
| 8.75 | 28.71 | 45.08 | 0.95 | 2.10 | 1.67 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.88 |
| 9.00 | 29.53 | 57.74 | 1.46 | 2.52 | 1.70 | sandy silt to clayey silt | UNDFND | UNDFD | 22 | 3.72 |
| 9.25 | 30.35 | 71.05 | 2.16 | 3.03 | 1.73 | sandy silt to clayey silt | UNDFND | UNDFD | 27 | 4.60 |
| 9.50 | 31.17 | 64.84 | 2.05 | 3.15 | 1.76 | sandy silt to clayey silt | UNDFND | UNDFD | 25 | 4.18 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 47.20 | 1.61 | 3.42 | 1.78 | clayey silt to silty clay | UNDFND | UNDFD | 23 | 3.01 |
| 10.00 | 32.81 | 42.54 | 1.21 | 2.84 | 1.81 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.69 |
| 10.25 | 33.63 | 44.78 | 1.23 | 2.74 | 1.84 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.84 |
| 10.50 | 34.45 | 37.37 | 1.14 | 3.04 | 1.87 | clayey silt to silty clay | UNDFND | UNDFD | 18 | 2.34 |
| 10.75 | 35.27 | 35.24 | 1.17 | 3.32 | 1.89 | clayey silt to silty clay | UNDFND | UNDFD | 17 | 2.19 |
| 11.00 | 36.09 | 39.95 | 1.07 | 2.68 | 1.92 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.50 |
| 11.25 | 36.91 | 39.15 | 0.84 | 2.15 | 1.95 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.45 |
| 11.50 | 37.73 | 50.20 | 1.10 | 2.19 | 1.98 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.18 |
| 11.75 | 38.55 | 52.50 | 1.14 | 2.18 | 2.01 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.33 |
| 12.00 | 39.37 | 88.45 | 1.76 | 1.99 | 2.03 | silty sand to sandy silt | 50-60 | 36-38 | 28 | UNDEFINED |
| 12.25 | 40.19 | 116.50 | -13105.98 | -11249.96 | 2.06 | undefined | UNDFND | UNDFD | UDF | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

int

Operator :VIRGIL BAKER
On Site Loc:CPT-15
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-23-92 08:38
Cone Used :HO 322
Water table (meters) : 8.5

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 15.53 | 0.27 | 1.75 | 0.03 | clayey silt to silty clay | UNDFND | UNDFD | 7 | 1.03 |
| 0.50 | 1.64 | 24.93 | 0.85 | 3.39 | 0.08 | clayey silt to silty clay | UNDFND | UNDFD | 12 | 1.65 |
| 0.75 | 2.46 | 95.77 | 1.99 | 2.08 | 0.13 | silty sand to sandy silt | >90 | >48 | 31 | UNDEFINED |
| 1.00 | 3.28 | 75.09 | 1.91 | 2.54 | 0.19 | sandy silt to clayey silt | UNDFND | UNDFD | 29 | 4.99 |
| 1.25 | 4.10 | 281.64 | 6.42 | 2.28 | 0.24 | silty sand to sandy silt | >90 | >48 | >50 | UNDEFINED |
| 1.50 | 4.92 | 343.02 | 6.95 | 2.03 | 0.29 | sand to silty sand | >90 | >48 | >50 | UNDEFINED |
| 1.75 | 5.74 | 291.44 | 7.86 | 2.70 | 0.35 | silty sand to sandy silt | >90 | >48 | >50 | UNDEFINED |
| 2.00 | 6.56 | 265.01 | 6.15 | 2.32 | 0.40 | silty sand to sandy silt | >90 | >48 | >50 | UNDEFINED |
| 2.25 | 7.38 | 61.46 | 2.03 | 3.30 | 0.45 | sandy silt to clayey silt | UNDFND | UNDFD | 24 | 4.06 |
| 2.50 | 8.20 | 43.24 | 0.97 | 2.25 | 0.51 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.84 |
| 2.75 | 9.02 | 39.04 | 0.97 | 2.47 | 0.56 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.56 |
| 3.00 | 9.84 | 49.90 | 1.58 | 3.16 | 0.61 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.28 |
| 3.25 | 10.66 | 56.68 | 1.92 | 3.38 | 0.67 | clayey silt to silty clay | UNDFND | UNDFD | 27 | 3.73 |
| 3.50 | 11.48 | 81.29 | 2.44 | 3.01 | 0.72 | sandy silt to clayey silt | UNDFND | UNDFD | 31 | 5.37 |
| 3.75 | 12.30 | 68.77 | 2.72 | 3.96 | 0.77 | clayey silt to silty clay | UNDFND | UNDFD | 33 | 4.53 |
| 4.00 | 13.12 | 82.86 | 2.55 | 3.08 | 0.83 | sandy silt to clayey silt | UNDFND | UNDFD | 32 | 5.46 |
| 4.25 | 13.94 | 57.86 | 2.17 | 3.75 | 0.88 | clayey silt to silty clay | UNDFND | UNDFD | 28 | 3.79 |
| 4.50 | 14.76 | 48.48 | 1.76 | 3.62 | 0.93 | clayey silt to silty clay | UNDFND | UNDFD | 23 | 3.17 |
| 4.75 | 15.58 | 38.71 | 1.24 | 3.21 | 0.99 | clayey silt to silty clay | UNDFND | UNDFD | 19 | 2.51 |
| 5.00 | 16.40 | 31.09 | 0.84 | 2.70 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.00 |
| 5.25 | 17.22 | 27.06 | 0.69 | 2.54 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 10 | 1.73 |
| 5.50 | 18.04 | 25.31 | 0.68 | 2.70 | 1.15 | clayey silt to silty clay | UNDFND | UNDFD | 12 | 1.61 |
| 5.75 | 18.86 | 25.30 | 0.72 | 2.84 | 1.20 | clayey silt to silty clay | UNDFND | UNDFD | 12 | 1.60 |
| 6.00 | 19.69 | 25.76 | 0.70 | 2.73 | 1.25 | clayey silt to silty clay | UNDFND | UNDFD | 12 | 1.63 |
| 6.25 | 20.51 | 27.02 | 0.81 | 2.99 | 1.31 | clayey silt to silty clay | UNDFND | UNDFD | 13 | 1.71 |
| 6.50 | 21.33 | 30.70 | 0.85 | 2.78 | 1.36 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 1.95 |
| 6.75 | 22.15 | 31.34 | 0.89 | 2.85 | 1.41 | clayey silt to silty clay | UNDFND | UNDFD | 15 | 1.99 |
| 7.00 | 22.97 | 33.85 | 0.95 | 2.81 | 1.47 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.15 |
| 7.25 | 23.79 | 30.44 | 0.80 | 2.64 | 1.52 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 1.92 |
| 7.50 | 24.61 | 29.07 | 0.71 | 2.43 | 1.57 | sandy silt to clayey silt | UNDFND | UNDFD | 11 | 1.83 |
| 7.75 | 25.43 | 42.57 | 1.12 | 2.62 | 1.63 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.72 |
| 8.00 | 26.25 | 51.78 | 1.22 | 2.35 | 1.68 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.34 |
| 8.25 | 27.07 | 44.31 | 0.91 | 2.06 | 1.73 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.83 |
| 8.50 | 27.89 | 36.30 | 0.64 | 1.76 | 1.79 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.30 |
| 8.75 | 28.71 | 35.94 | 0.60 | 1.68 | 1.83 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.27 |
| 9.00 | 29.53 | 32.83 | 0.49 | 1.48 | 1.85 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.06 |
| 9.25 | 30.35 | 25.08 | 0.37 | 1.49 | 1.88 | sandy silt to clayey silt | UNDFND | UNDFD | 10 | 1.54 |
| 9.50 | 31.17 | 40.66 | 0.85 | 2.10 | 1.91 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.57 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 39.26 | 0.68 | 1.72 | 1.94 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.48 |
| 10.00 | 32.81 | 31.38 | 0.48 | 1.54 | 1.96 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 1.95 |
| 10.25 | 33.63 | 48.80 | 1.31 | 2.69 | 1.99 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.10 |
| 10.50 | 34.45 | 41.05 | 0.90 | 2.20 | 2.02 | sandy silt to clayey silt | UNDFND | UNDFD | 16 | 2.58 |
| 10.75 | 35.27 | 45.21 | 1.18 | 2.62 | 2.05 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.86 |
| 11.00 | 36.09 | 88.58 | 3.09 | 3.48 | 2.08 | sandy silt to clayey silt | UNDFND | UNDFD | 34 | 5.75 |
| 11.25 | 36.91 | 208.04 | 3.64 | 1.75 | 2.10 | sand to silty sand | 70-80 | 40-42 | 50 | UNDEFINED |
| 11.50 | 37.73 | 246.93 | 4.63 | 1.88 | 2.13 | sand to silty sand | 80-90 | 40-42 | >50 | UNDEFINED |
| 11.75 | 38.55 | 222.24 | 5.96 | 2.68 | 2.16 | silty sand to sandy silt | 70-80 | 40-42 | >50 | UNDEFINED |
| 12.00 | 39.37 | 162.84 | 5.99 | 3.68 | 2.19 | sand to clayey sand (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 12.25 | 40.19 | 62.38 | 1.75 | 2.80 | 2.21 | sandy silt to clayey silt | UNDFND | UNDFD | 24 | 3.98 |
| 12.50 | 41.01 | 124.23 | 3.36 | 2.70 | 2.24 | silty sand to sandy silt | 60-70 | 38-40 | 40 | UNDEFINED |
| 12.75 | 41.83 | 61.00 | 1.03 | 1.69 | 2.27 | silty sand to sandy silt | 40-50 | 32-34 | 19 | UNDEFINED |
| 13.00 | 42.65 | 65.29 | 1.54 | 2.36 | 2.30 | sandy silt to clayey silt | UNDFND | UNDFD | 25 | 4.17 |
| 13.25 | 43.47 | 58.28 | 1.21 | 2.07 | 2.32 | sandy silt to clayey silt | UNDFND | UNDFD | 22 | 3.69 |
| 13.50 | 44.29 | 56.23 | 1.03 | 1.84 | 2.35 | silty sand to sandy silt | <40 | 32-34 | 18 | UNDEFINED |
| 13.75 | 45.11 | 50.02 | 1.03 | 2.06 | 2.38 | sandy silt to clayey silt | UNDFND | UNDFD | 19 | 3.14 |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.75 | 31.99 | 53.70 | 1.26 | 2.34 | 1.94 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.44 |
| 10.00 | 32.81 | 59.19 | 1.22 | 2.06 | 1.96 | silty sand to sandy silt | 40-50 | 34-36 | 19 | UNDEFINED |
| 10.25 | 33.63 | 58.73 | 1.00 | 1.70 | 1.99 | silty sand to sandy silt | 40-50 | 34-36 | 19 | UNDEFINED |
| 10.50 | 34.45 | 50.82 | 0.91 | 1.80 | 2.02 | silty sand to sandy silt | <40 | 32-34 | 16 | UNDEFINED |
| 10.75 | 35.27 | 46.86 | 0.94 | 2.01 | 2.05 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 2.97 |
| 11.00 | 36.09 | 54.85 | 1.26 | 2.30 | 2.08 | sandy silt to clayey silt | UNDFND | UNDFD | 21 | 3.50 |
| 11.25 | 36.91 | 193.90 | -6546.90 | -3376.43 | 2.10 | undefined | UNDFND | UNDFD | UDF | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

1
0 int

Operator :VIRGIL BAKER
On Site Loc:CPT-17
Job No. :447.026
Tot. Unit Wt. (avg) : 130 pcf

CPT Date :10-23-92 12:30
Cone Used :HO 322
Water table (meters) : 7.9

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.25 | 0.82 | 176.54 | 3.82 | 2.17 | 0.03 | silty sand to sandy silt | >90 | >48 | >50 | UNDEFINED |
| 0.50 | 1.64 | 81.42 | 3.15 | 3.87 | 0.08 | clayey silt to silty clay | UNDFND | UNDFD | 39 | 5.42 |
| 0.75 | 2.46 | 71.65 | 2.97 | 4.14 | 0.13 | clayey silt to silty clay | UNDFND | UNDFD | 34 | 4.76 |
| 1.00 | 3.28 | 137.99 | 5.82 | 4.22 | 0.19 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |
| 1.25 | 4.10 | 61.93 | 2.88 | 4.65 | 0.24 | silty clay to clay | UNDFND | UNDFD | 40 | 4.11 |
| 1.50 | 4.92 | 57.52 | 2.55 | 4.44 | 0.29 | silty clay to clay | UNDFND | UNDFD | 37 | 3.81 |
| 1.75 | 5.74 | 31.64 | 1.38 | 4.38 | 0.35 | silty clay to clay | UNDFND | UNDFD | 20 | 2.08 |
| 2.00 | 6.56 | 58.38 | 2.22 | 3.80 | 0.40 | clayey silt to silty clay | UNDFND | UNDFD | 28 | 3.86 |
| 2.25 | 7.38 | 72.43 | 2.59 | 3.58 | 0.45 | clayey silt to silty clay | UNDFND | UNDFD | 35 | 4.79 |
| 2.50 | 8.20 | 32.14 | 1.06 | 3.29 | 0.51 | clayey silt to silty clay | UNDFND | UNDFD | 15 | 2.10 |
| 2.75 | 9.02 | 45.06 | 1.27 | 2.82 | 0.56 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.96 |
| 3.00 | 9.84 | 43.56 | 1.26 | 2.90 | 0.61 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.86 |
| 3.25 | 10.66 | 32.63 | 0.80 | 2.45 | 0.67 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.13 |
| 3.50 | 11.48 | 32.60 | 0.88 | 2.71 | 0.72 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 2.12 |
| 3.75 | 12.30 | 76.04 | 2.40 | 3.16 | 0.77 | sandy silt to clayey silt | UNDFND | UNDFD | 29 | 5.01 |
| 4.00 | 13.12 | 53.31 | 1.35 | 2.53 | 0.83 | sandy silt to clayey silt | UNDFND | UNDFD | 20 | 3.49 |
| 4.25 | 13.94 | 43.33 | 0.94 | 2.17 | 0.88 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.83 |
| 4.50 | 14.76 | 46.20 | 1.06 | 2.29 | 0.93 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.01 |
| 4.75 | 15.58 | 46.36 | 1.28 | 2.77 | 0.99 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.02 |
| 5.00 | 16.40 | 39.15 | 0.99 | 2.53 | 1.04 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.54 |
| 5.25 | 17.22 | 47.97 | 1.28 | 2.68 | 1.09 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.12 |
| 5.50 | 18.04 | 46.85 | 1.09 | 2.33 | 1.15 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.04 |
| 5.75 | 18.86 | 35.44 | 0.72 | 2.04 | 1.20 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.28 |
| 6.00 | 19.69 | 35.43 | 0.95 | 2.69 | 1.25 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.27 |
| 6.25 | 20.51 | 30.75 | 0.60 | 1.95 | 1.31 | sandy silt to clayey silt | UNDFND | UNDFD | 12 | 1.96 |
| 6.50 | 21.33 | 33.64 | 0.64 | 1.90 | 1.36 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.15 |
| 6.75 | 22.15 | 33.65 | 0.66 | 1.95 | 1.41 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.14 |
| 7.00 | 22.97 | 37.55 | 0.78 | 2.07 | 1.47 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.40 |
| 7.25 | 23.79 | 34.70 | 0.62 | 1.78 | 1.52 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.21 |
| 7.50 | 24.61 | 35.95 | 0.82 | 2.29 | 1.57 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.29 |
| 7.75 | 25.43 | 47.46 | 1.01 | 2.12 | 1.63 | sandy silt to clayey silt | UNDFND | UNDFD | 18 | 3.05 |
| 8.00 | 26.25 | 39.23 | 1.00 | 2.54 | 1.68 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.50 |
| 8.25 | 27.07 | 34.89 | 0.58 | 1.68 | 1.71 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.21 |
| 8.50 | 27.89 | 34.30 | 0.70 | 2.04 | 1.74 | sandy silt to clayey silt | UNDFND | UNDFD | 13 | 2.16 |
| 8.75 | 28.71 | 43.90 | 1.09 | 2.48 | 1.76 | sandy silt to clayey silt | UNDFND | UNDFD | 17 | 2.80 |
| 9.00 | 29.53 | 40.45 | 0.90 | 2.22 | 1.79 | sandy silt to clayey silt | UNDFND | UNDFD | 15 | 2.57 |
| 9.25 | 30.35 | 37.70 | 0.77 | 2.03 | 1.82 | sandy silt to clayey silt | UNDFND | UNDFD | 14 | 2.38 |
| 9.50 | 31.17 | 212.68 | 9.07 | 4.26 | 1.85 | very stiff fine grained (*) | UNDFND | UNDFD | >50 | UNDEFINED |

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

| DEPTH (meters) | DEPTH (feet) | Qc (avg) (tsf) | Fs (avg) (tsf) | Rf (avg) (%) | SIGV' (tsf) | SOIL BEHAVIOUR TYPE | Eq - Dr (%) | PHI deg. | SPT N | Su tsf |
|---|---|---|---|---|---|---|---|---|---|---|

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

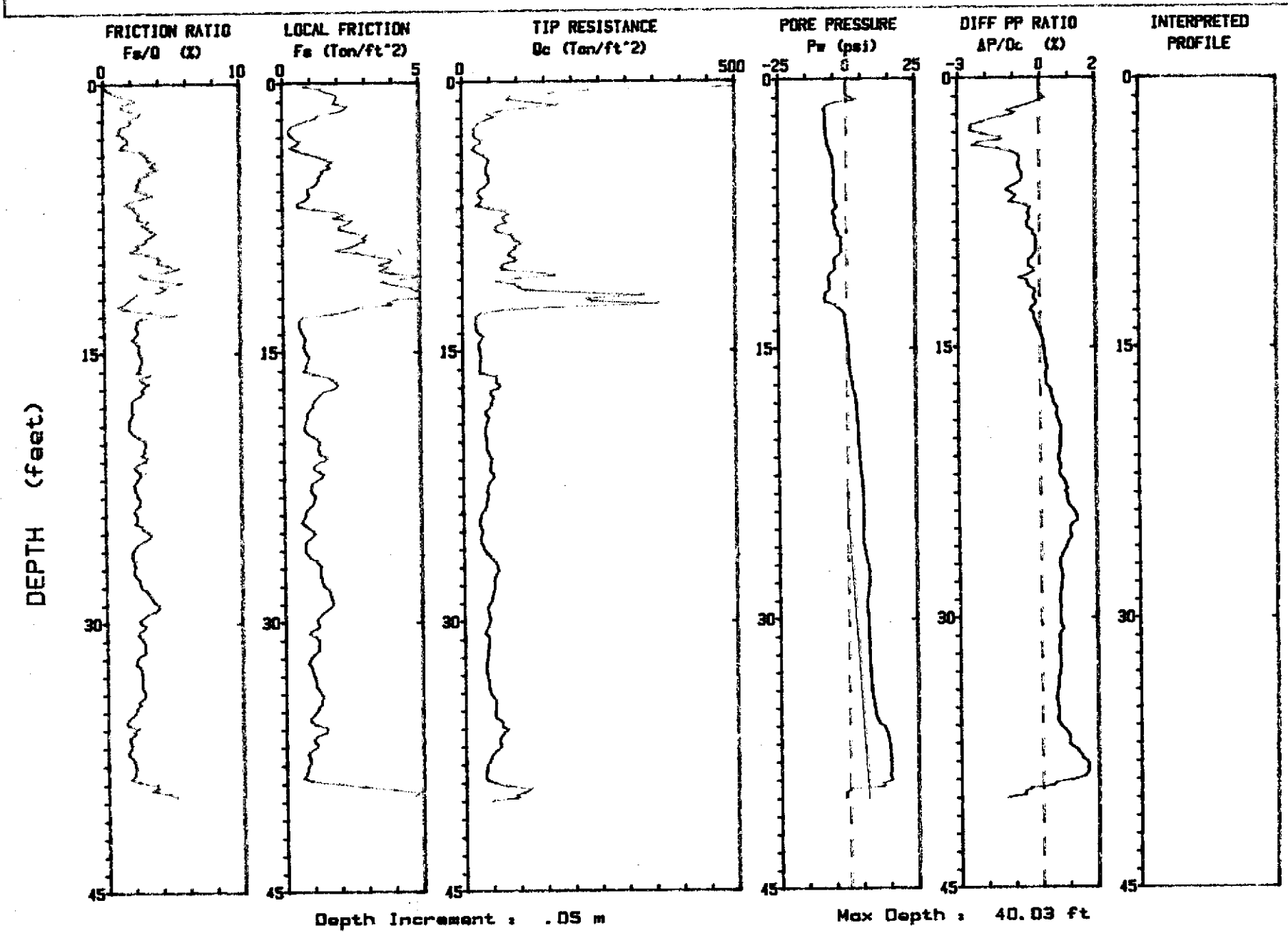
**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.04) ****

V B I

Operator : VIRGIL BAKER
Location : CPT-1

CPT Date : 10-06-92 09:22
Cone Used : HO 322

Sounding : 922396 Pg 1 / 1
Job No. : 447.026



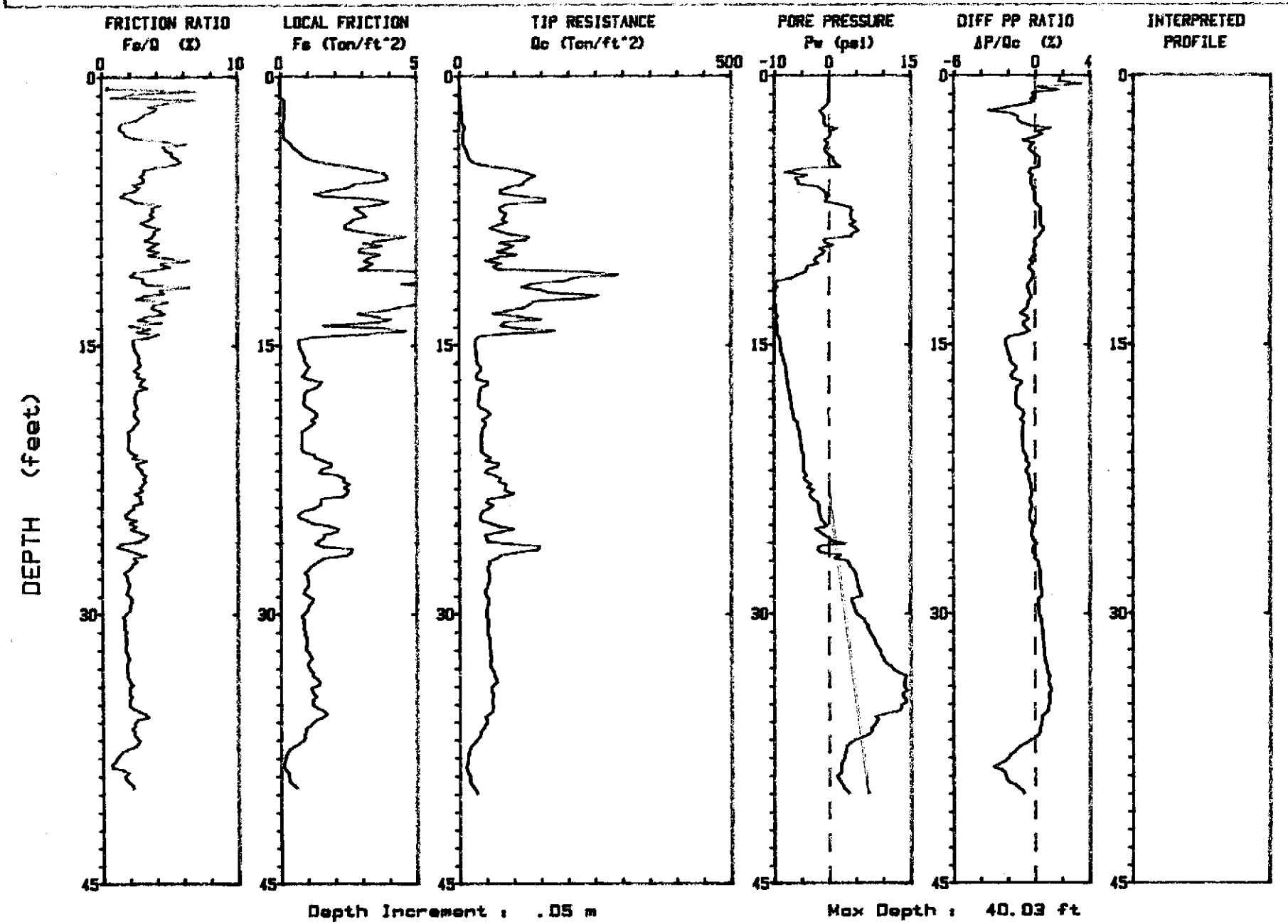

Depth Increment : .05 m

Max Depth : 40.03 ft

V B I

Operator : VIRGIL BAKER | CPT Date : 10-06-92 11:59 | Sounding : 922398 Pg 1 / 1

Location : CPT-2 | Cone Used : HO 322 | Job No. : 447.026



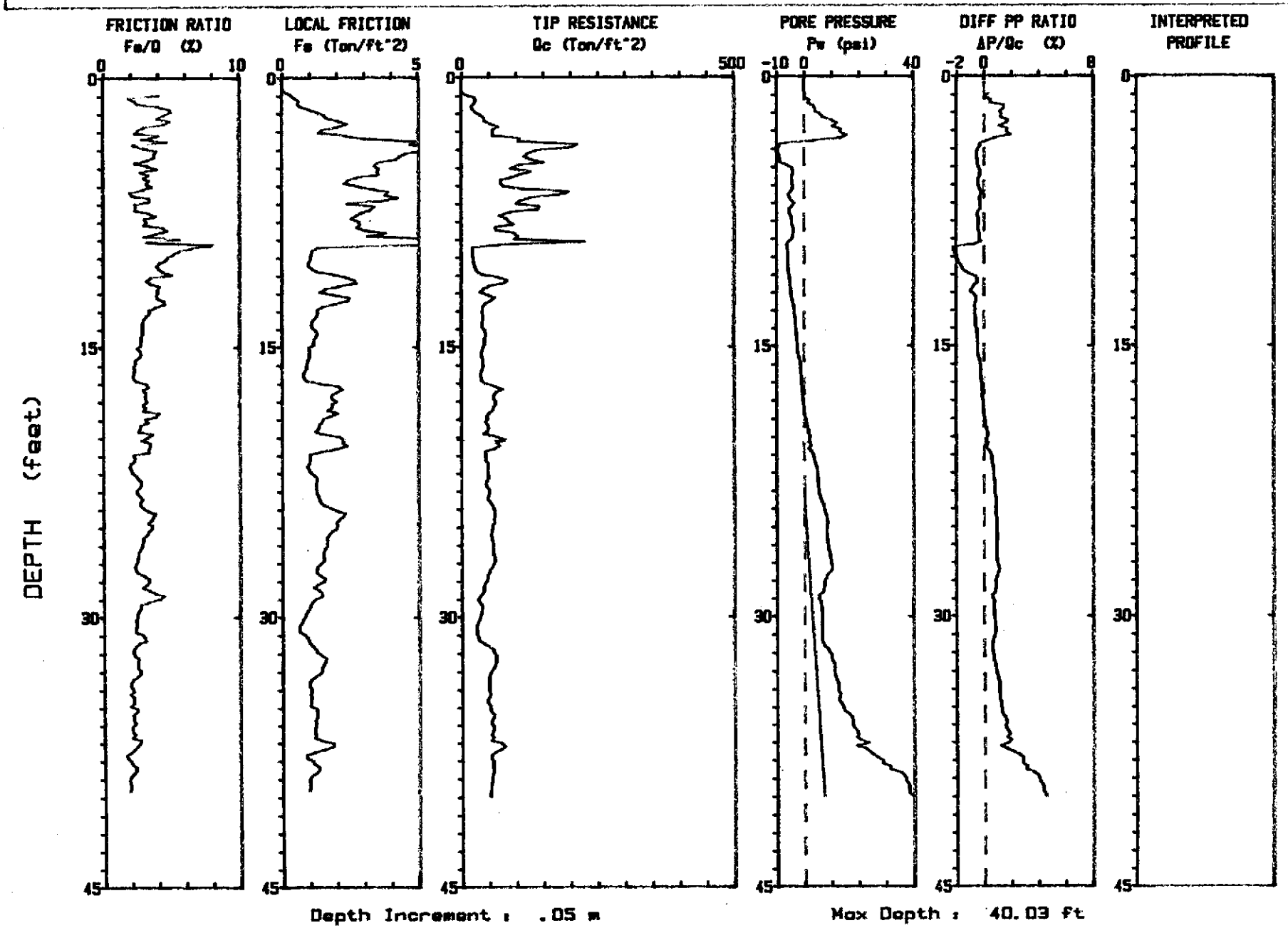

Depth Increment : .05 m

Max Depth : 40.03 ft

V B I

Operator : VIRGIL BAKER | CPT Date : 10-06-92 12:44 | Sounding : 92Z388 Pg 1 / 1

Location : CPT-3 | Cone Used : HO 322 | Job No. : 447.026

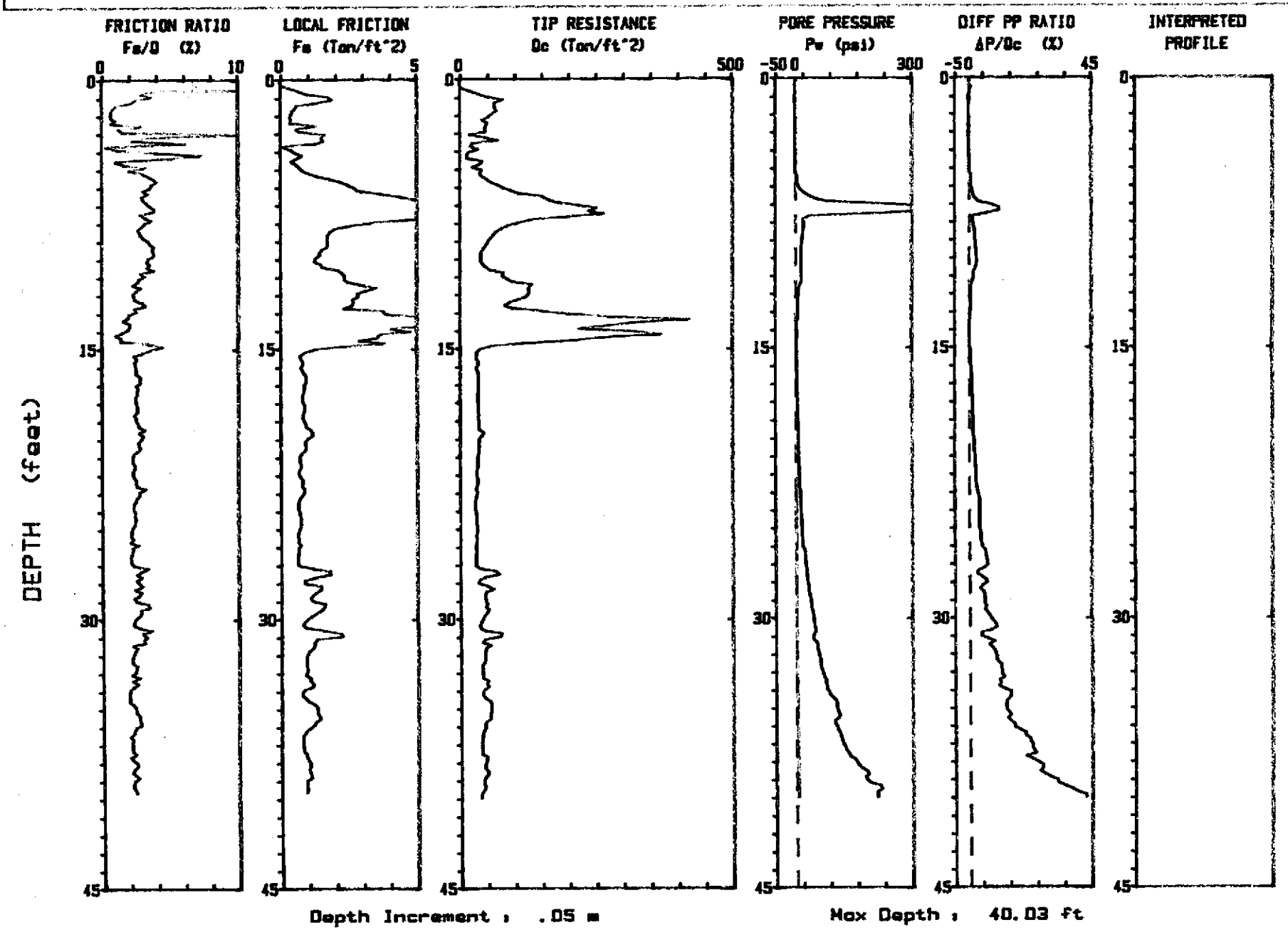


V B I

Operator : VIRGIL BAKER
Location : CPT-4

CPT Date : 10-06-92 13:51
Cone Used : HO 322

Sounding : 92Z400 Pg 1 / 1
Job No. : 447.026



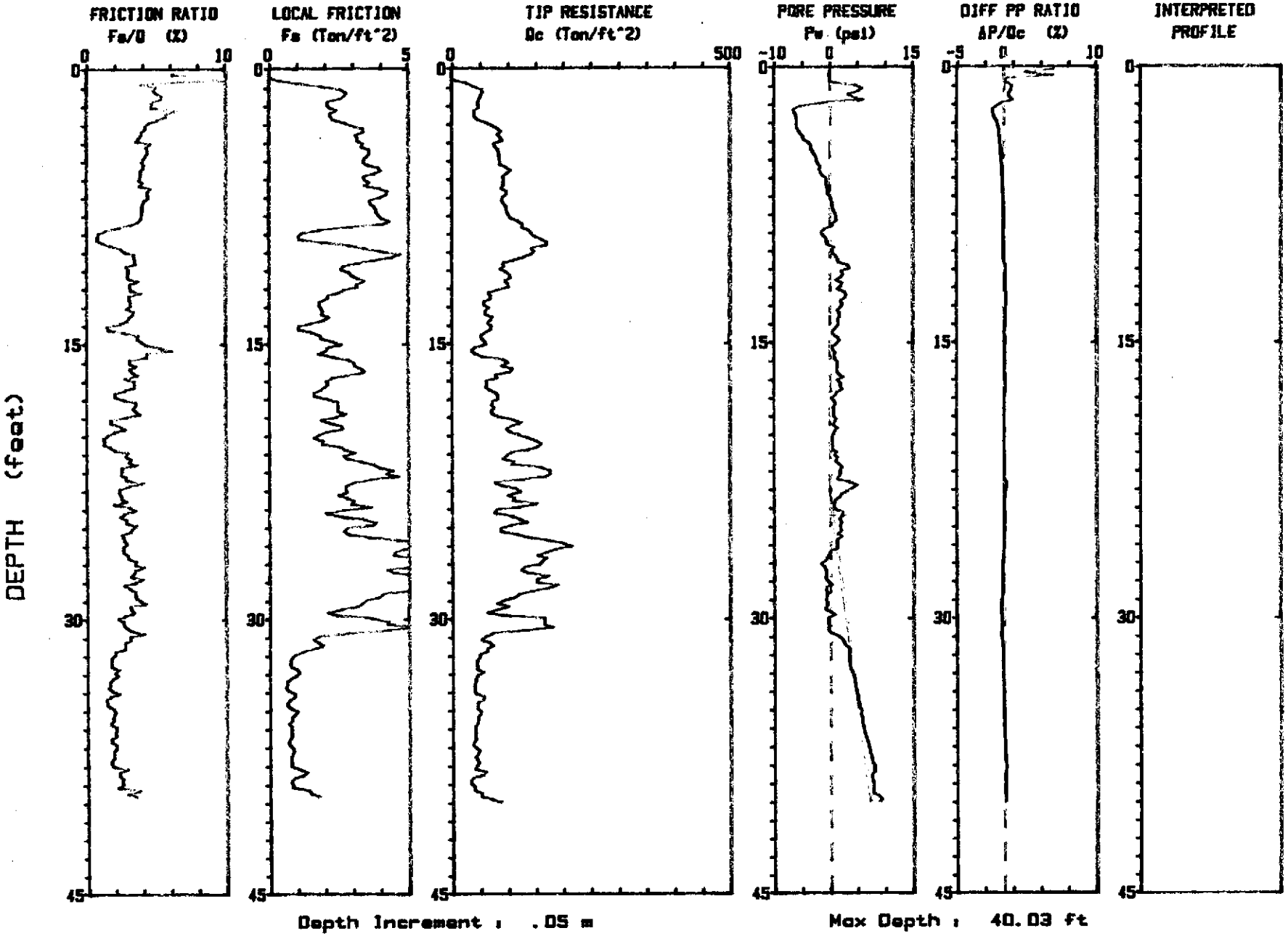

Depth Increment : .05 m

Max Depth : 40.03 ft

V B I

Operator : VIRGIL BAKER | CPT Date : 10-06-92 15:08 | Sounding : 92Z401 Pg 1 / 1

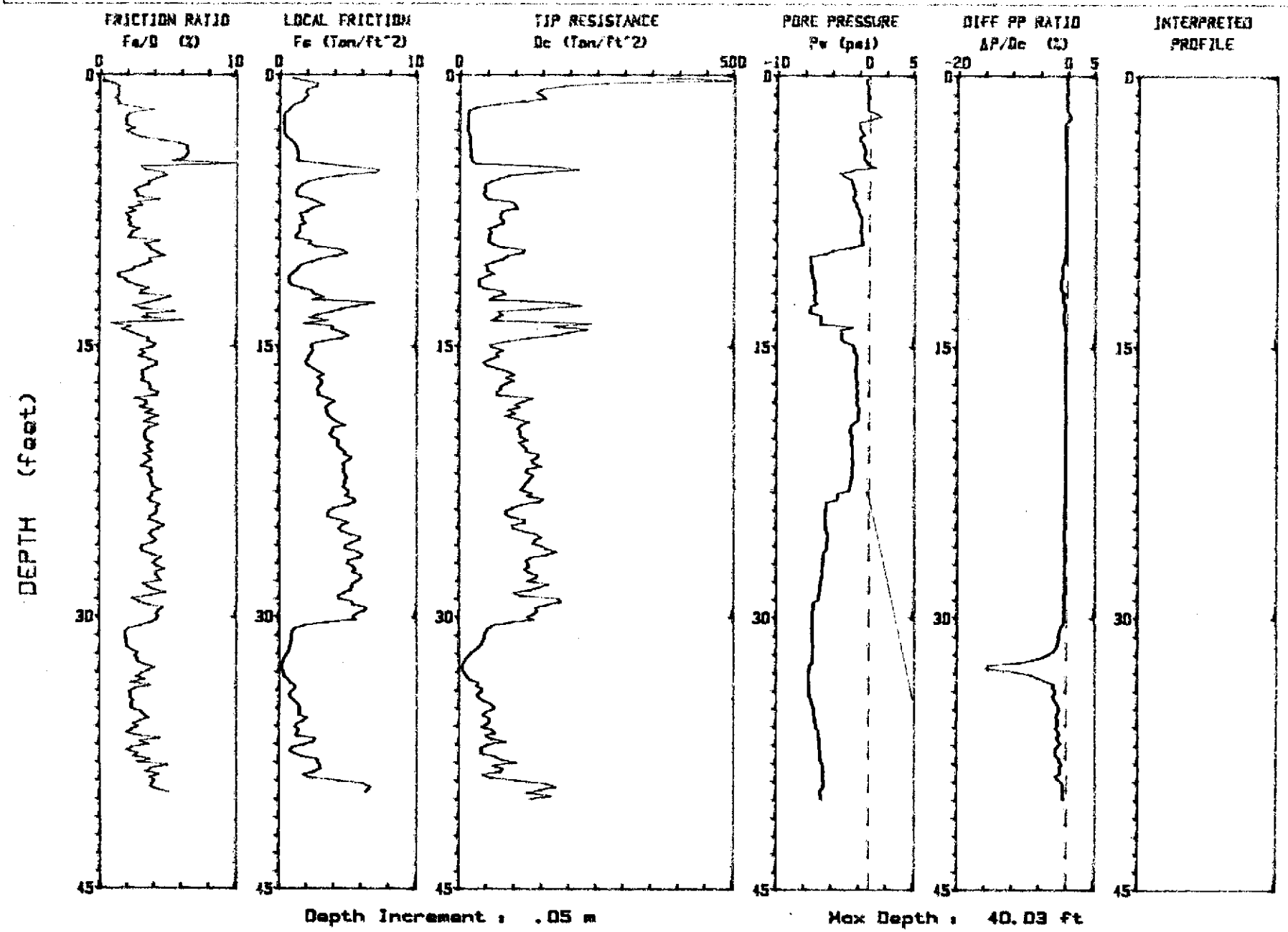
Location : CPT-5 | Cone Used : HO 322 | Job No. : 447.026



V B I

Operator : VIRGIL BAKER | CPT Date : 10-06-92 16:20 | Sounding : 92Z402 Pg 1 / 1

Location : CPT-6 | Cone Used : HD 322 | Job No. : 447.026



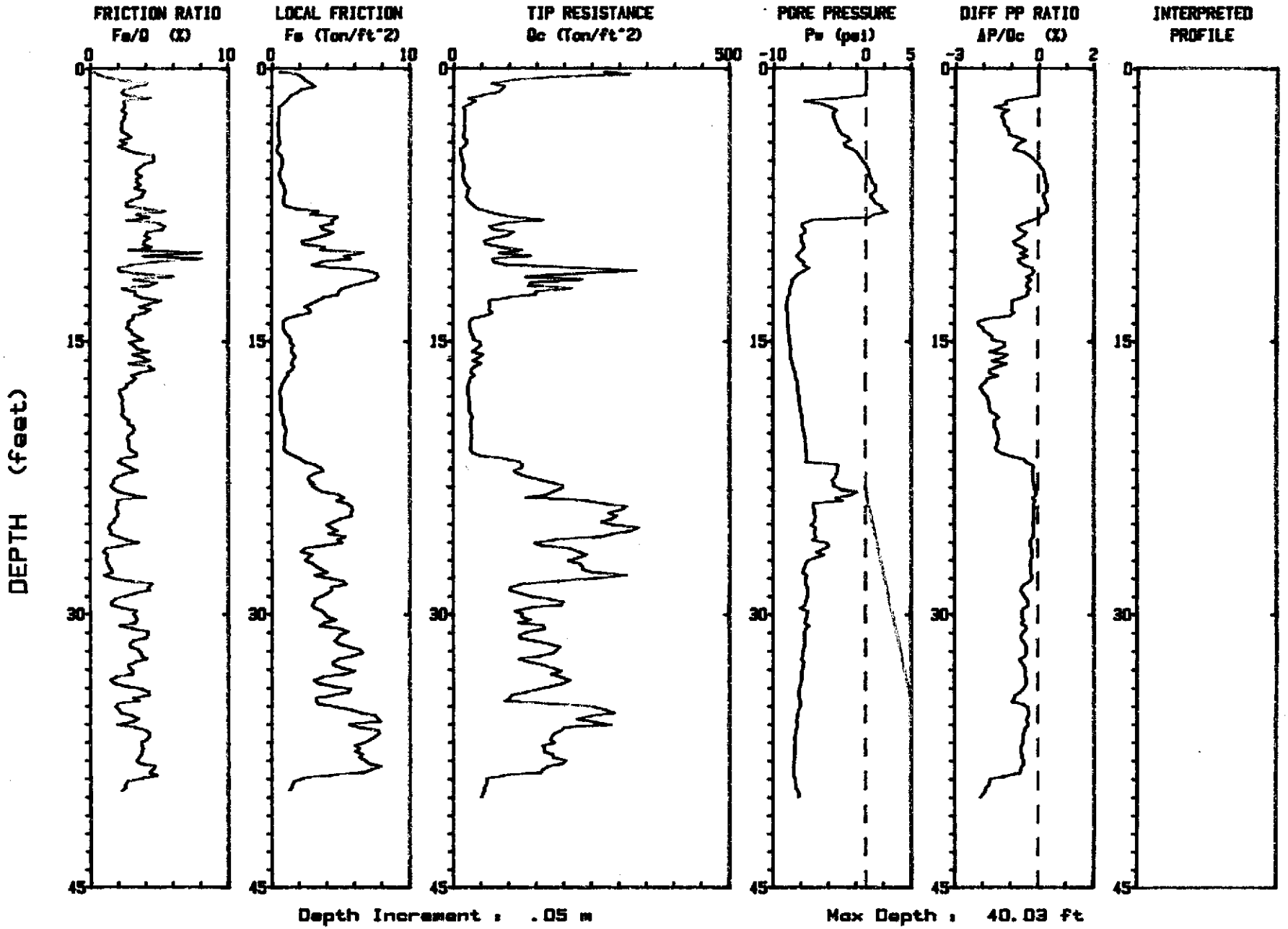

Depth Increment : .05 m

Max Depth : 40.03 ft

V B I

Operator : VIRGIL BAKER | CPT Date : 10-06-92 16:55 | Sounding : 92Z403 Pg 1 / 1

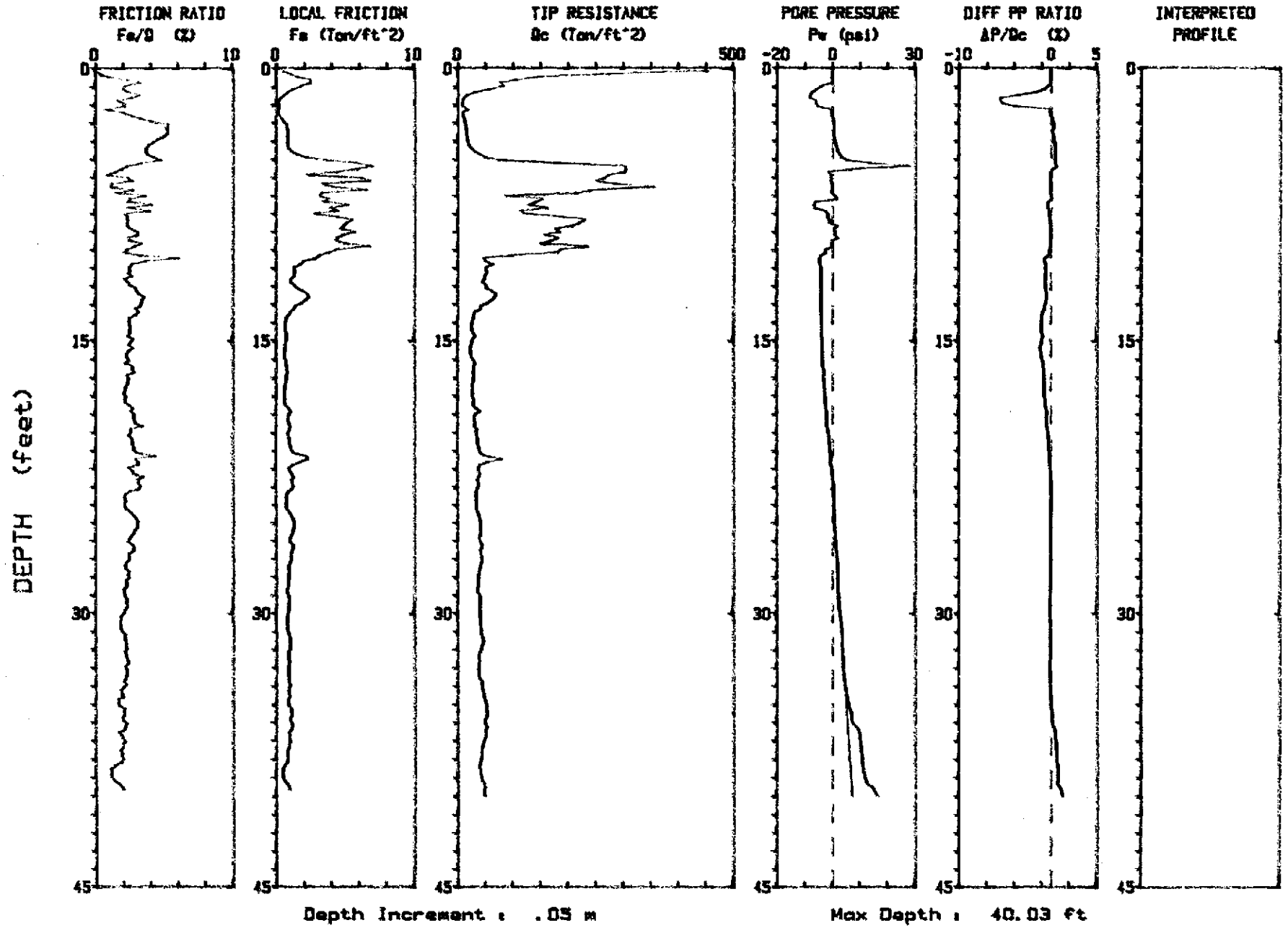
Location : CPT-7 | Cone Used : HD 322 | Job No. : 447.026



V B I

Operator : VIRGIL BAKER  CPT Date : 10-07-92 08:31  Sounding : 92Z405 Pg 1 / 1

Location : CPT-8  Cone Used : HD 322  Job No. : 447.026

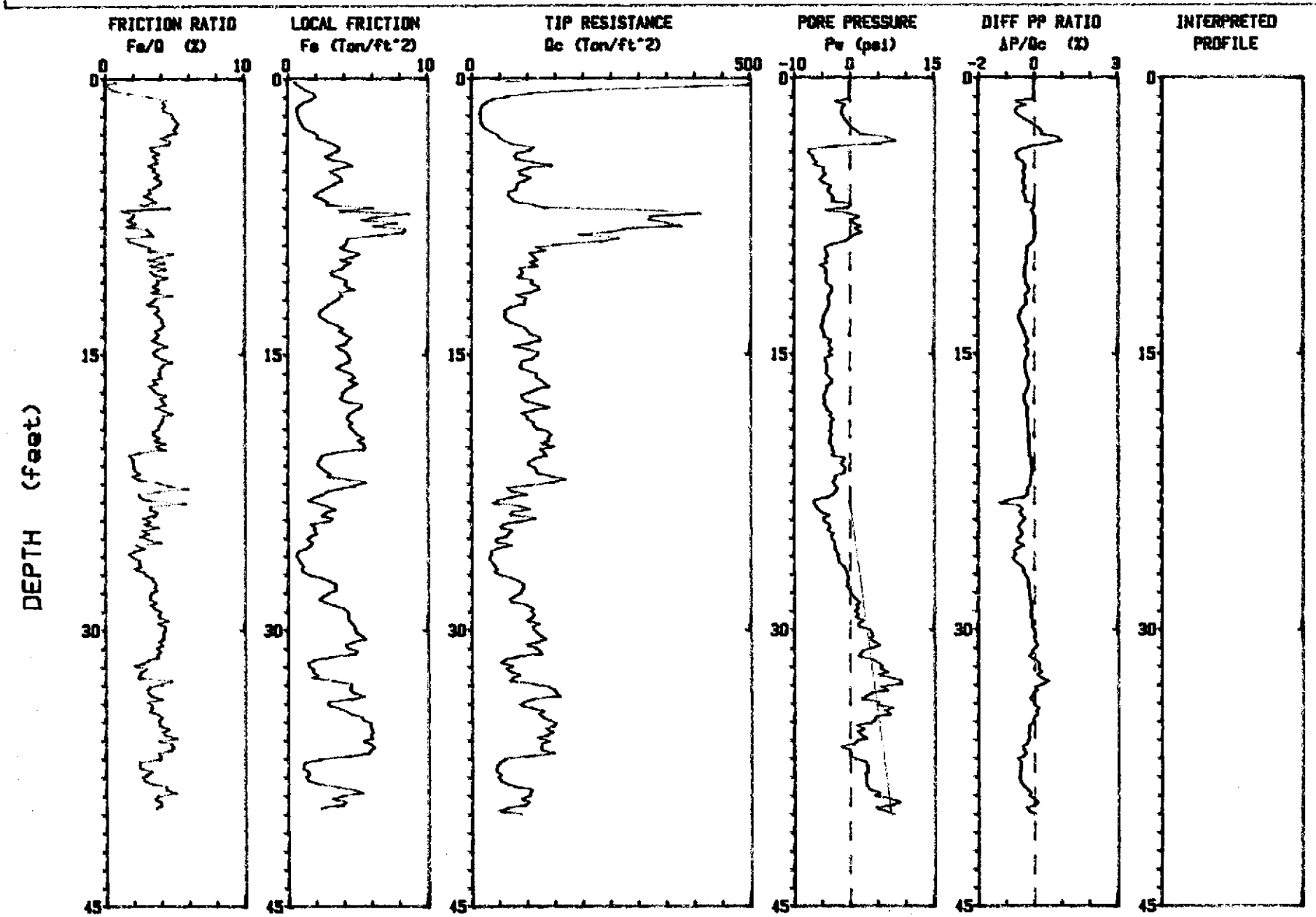



Depth Increment : .05 m  Max Depth : 40.03 ft

V B I

Operator : VIRGIL BAKER  CPT Date : 10-07-92 09:21  Sounding : 922406  Pg 1 / 1

Location : CPT-9  Cone Used : HO 322  Job No. : 447.026

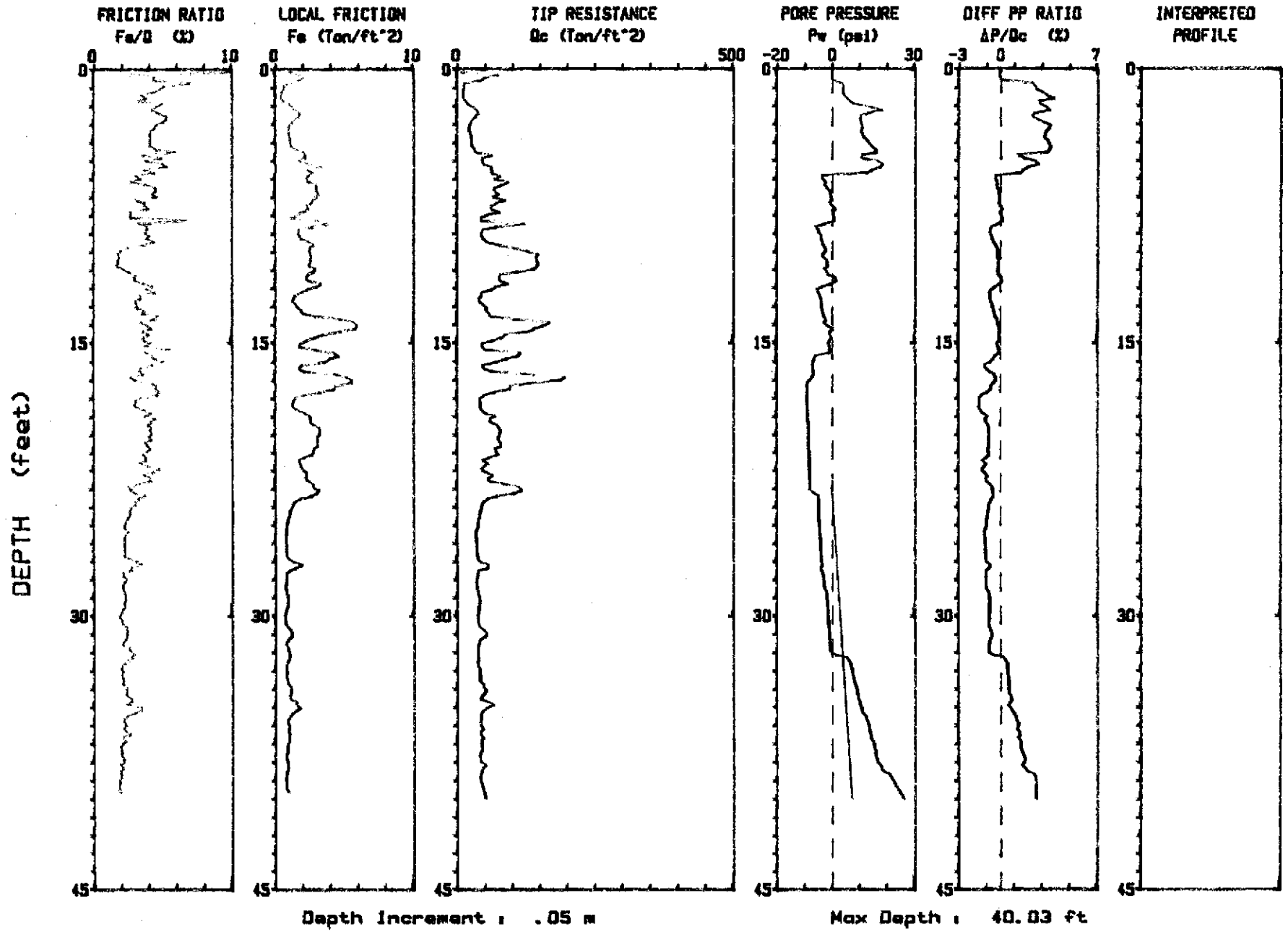



Depth Increment : .05 m  Max Depth : 40.03 ft

V B I

Operator : VIRGIL BAKER | CPT Date : 10-07-92 10:22 | Sounding : 92Z407 Pg 1 / 1

Location : CPT-10 | Cone Used : HO 322 | Job No. : 447.026



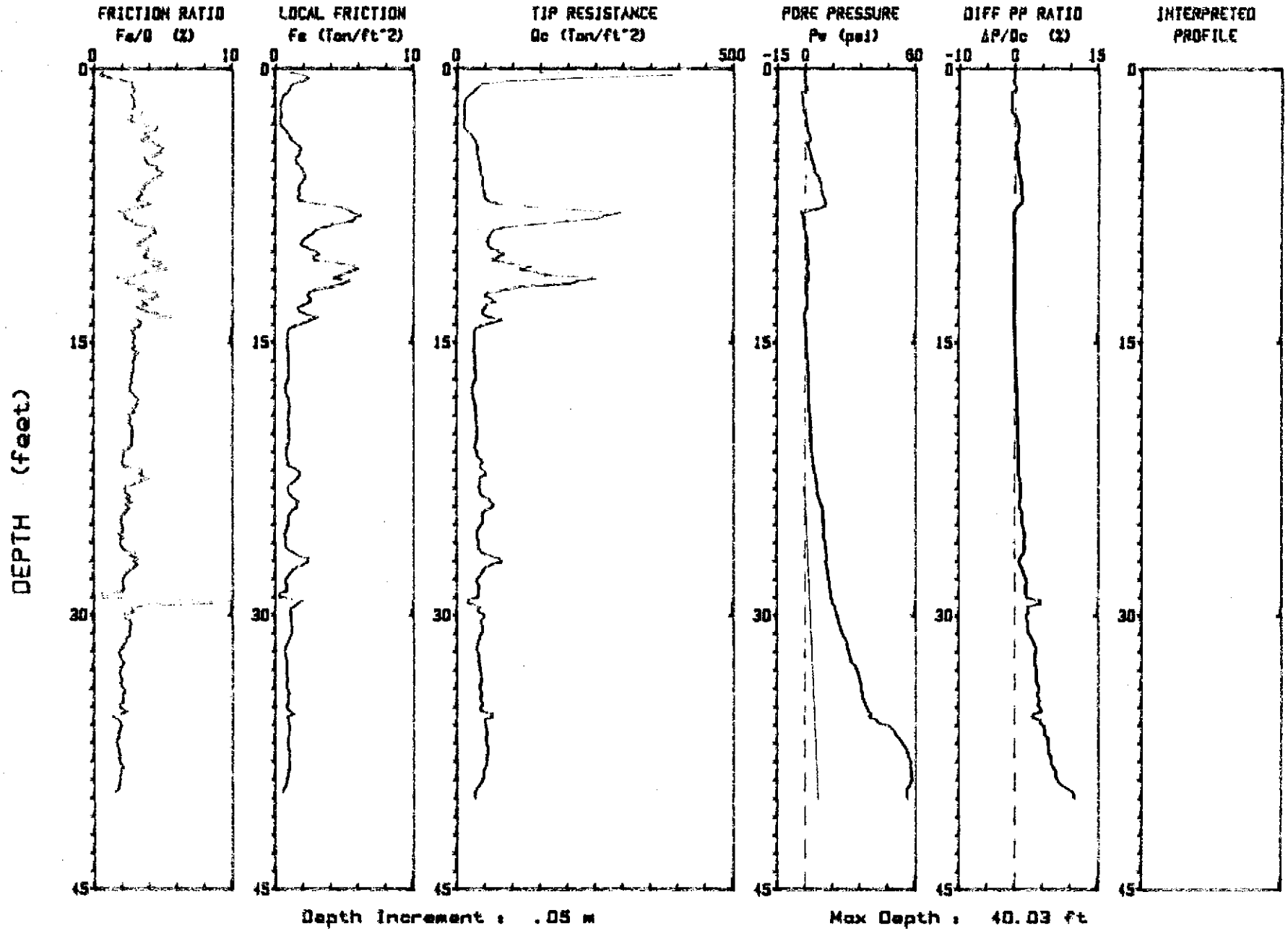

Depth Increment : .05 m

Max Depth : 40.03 ft

V B I

Operator : VIRGIL BAKER  CPT Date : 10-07-92 11:22  Sounding : 927408 Pg 1 / 1

Location : CPT-11  Cone Used : HO 322  Job No. : 447.026

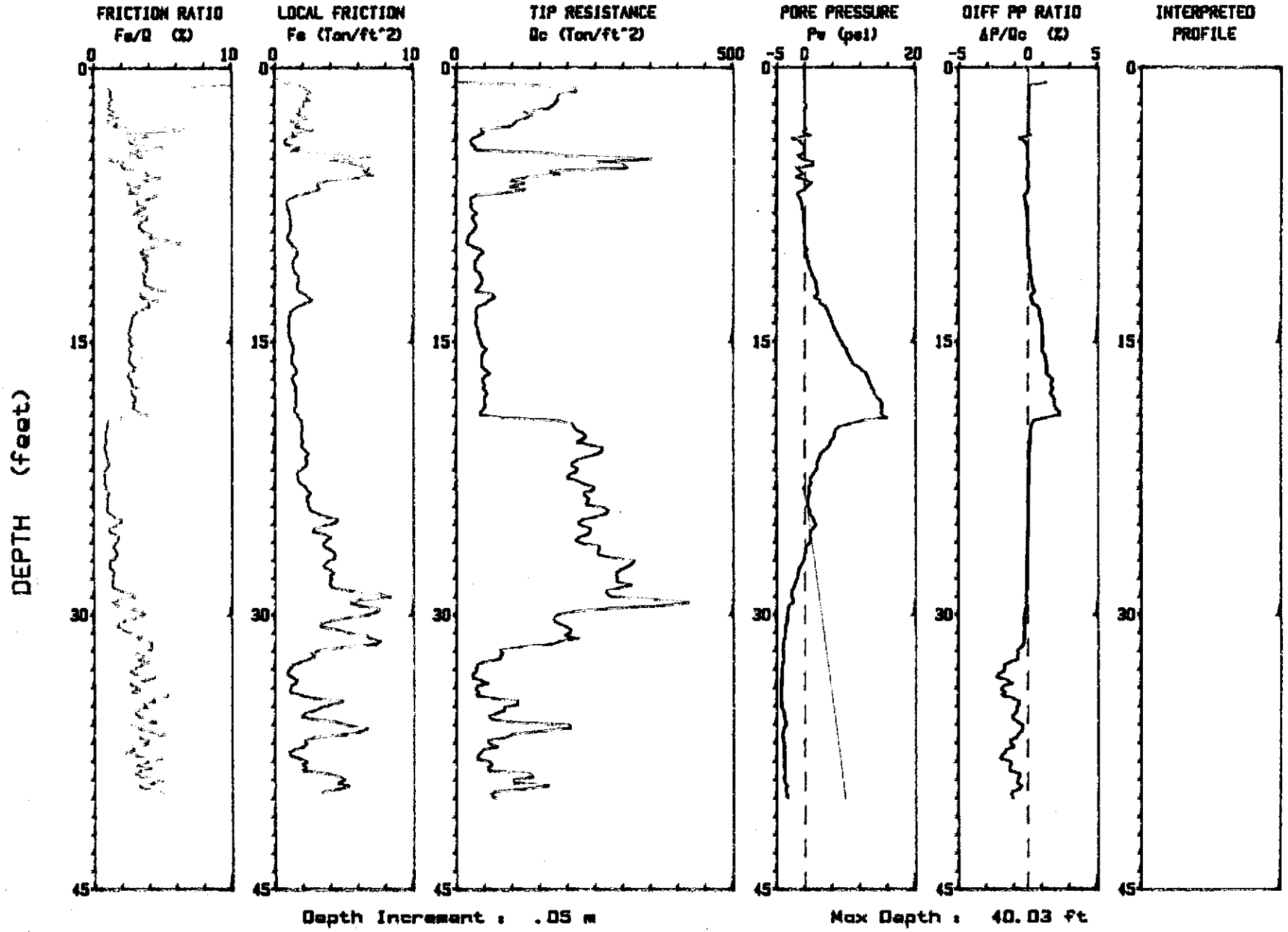



Depth Increment : .05 m  Max Depth : 40.03 ft

V B I

Operator : VIRGIL BAKER | CPT Date : 10-07-92 12:31 | Sounding : 92Z409 Pg 1 / 1

Location : CPT-12 | Cone Used : HO 322 | Job No. : 447.026



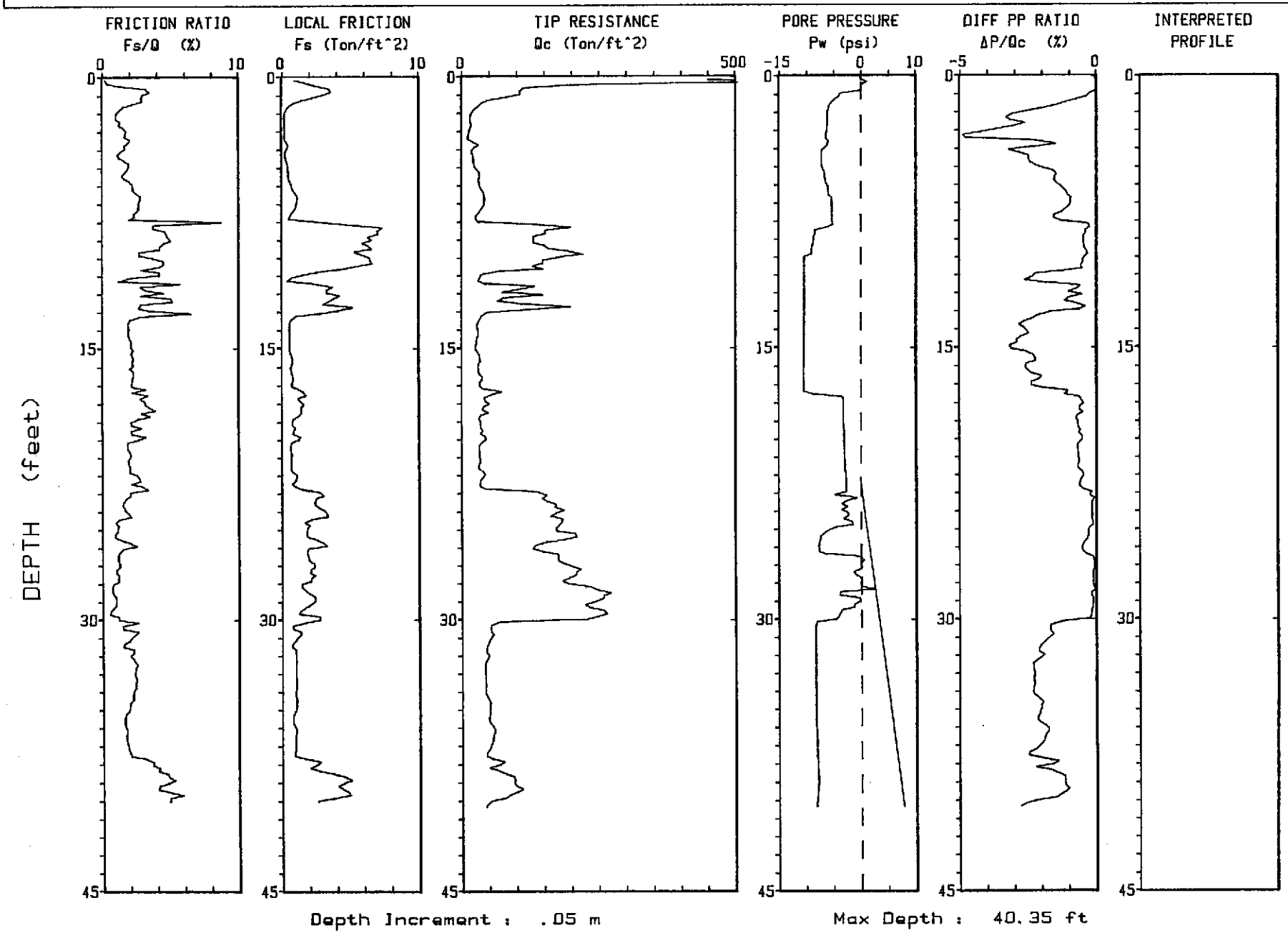

Depth Increment : .05 m

Max Depth : 40.03 ft

V B I

Operator : CARL G. MORGAN  CPT Date : 10-07-92 14:27  Sounding : 920640  Pg 1 / 1

Location : CPT-13  Cone Used : 347TC  Job No. : 447.036

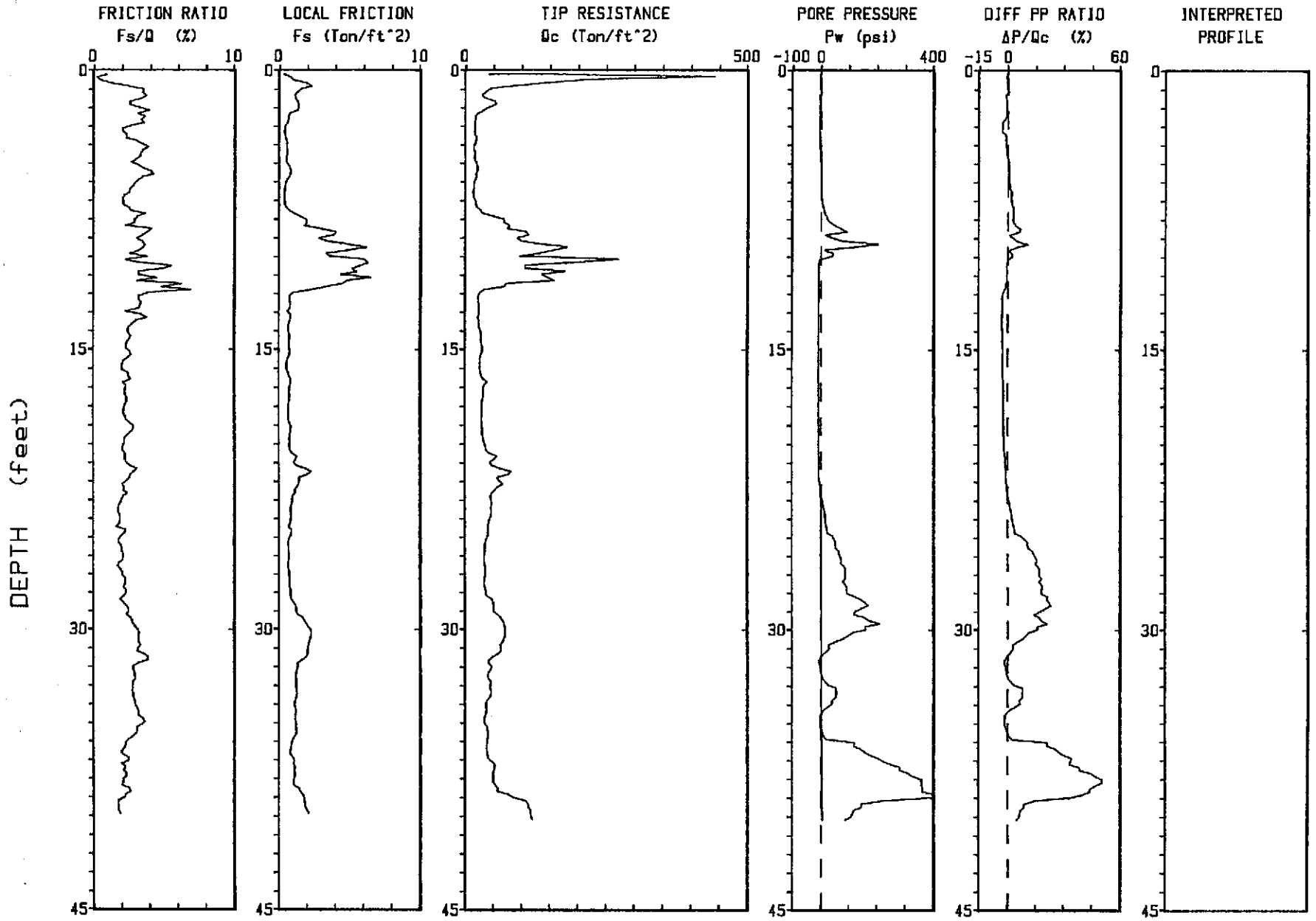



Depth Increment : .05 m  Max Depth : 40.35 ft

V B I

Operator : CARL G. MORGAN  CPT Date : 10-07-92 15:54  Sounding : 920641  Pg 1 / 1

Location : CPT 14  Cone Used : 347TC  Job No. : 447.036

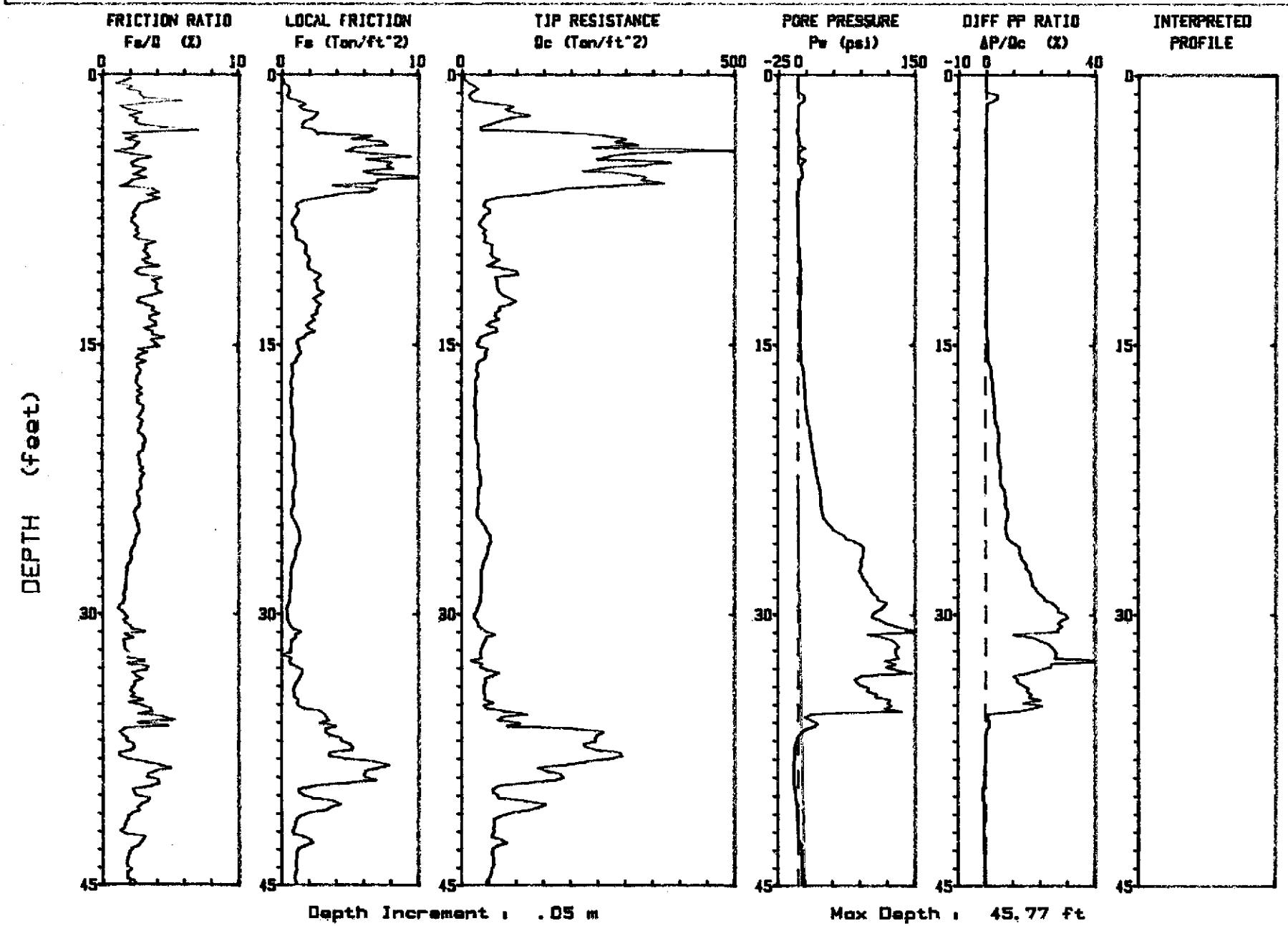



Depth Increment : .05 m  Max Depth : 40.19 ft

V B I

Operator : VIRGIL BAKER | CPT Date : 10-23-92 08:38 | Sounding : 92Z433 Pg 1 / 2

Location : CPT-15 | Cone Used : HO 322 | Job No. : 447.026



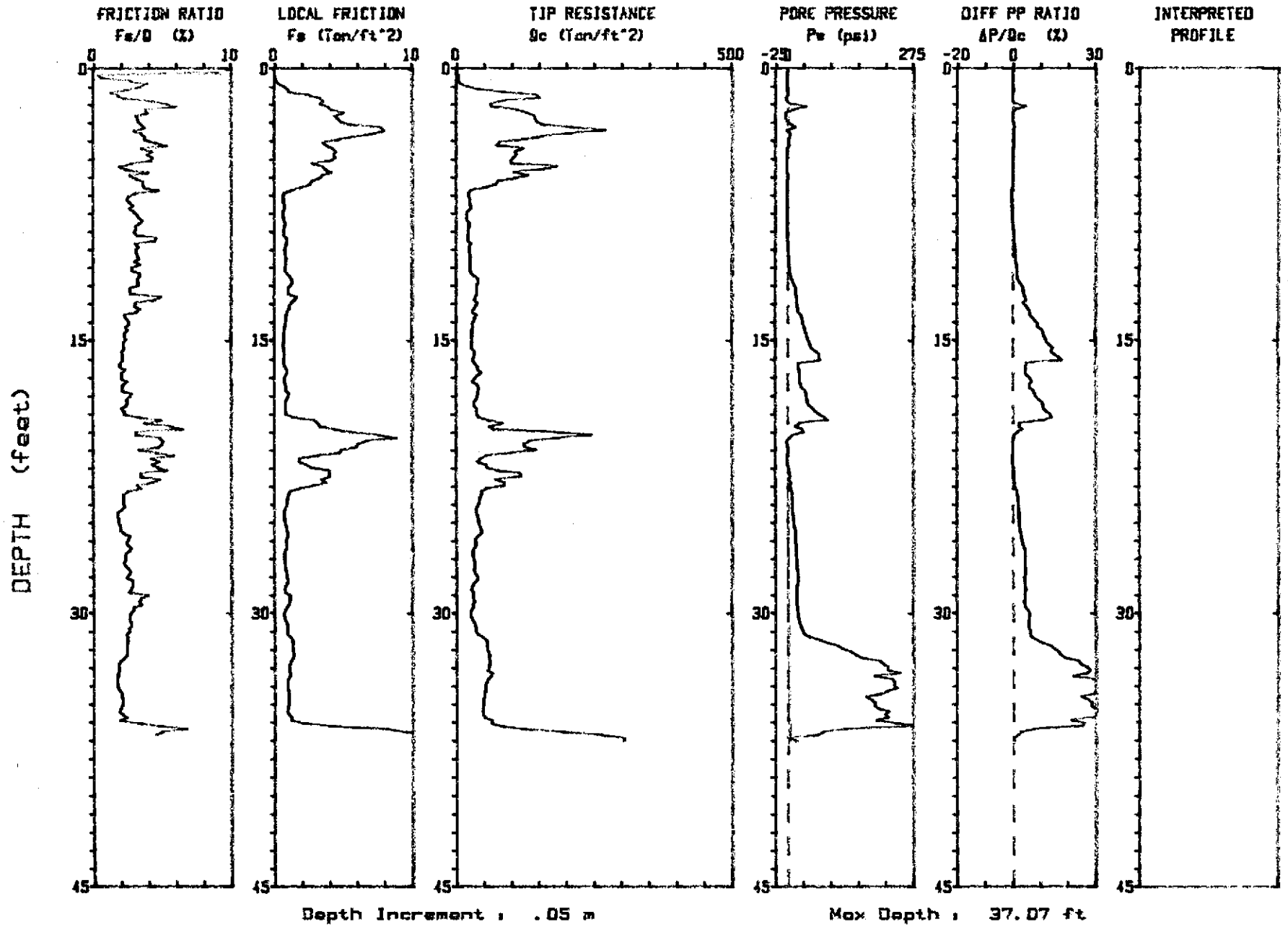

Depth Increment : .05 m

Max Depth : 45.77 ft

V B I

Operator : VIRGIL BAKER  CPT Date : 10-23-92 11:43  Sounding : 927434  Pg 1 / 1

Location : CPT-16  Cone Used : HD 322  Job No. : 447.026

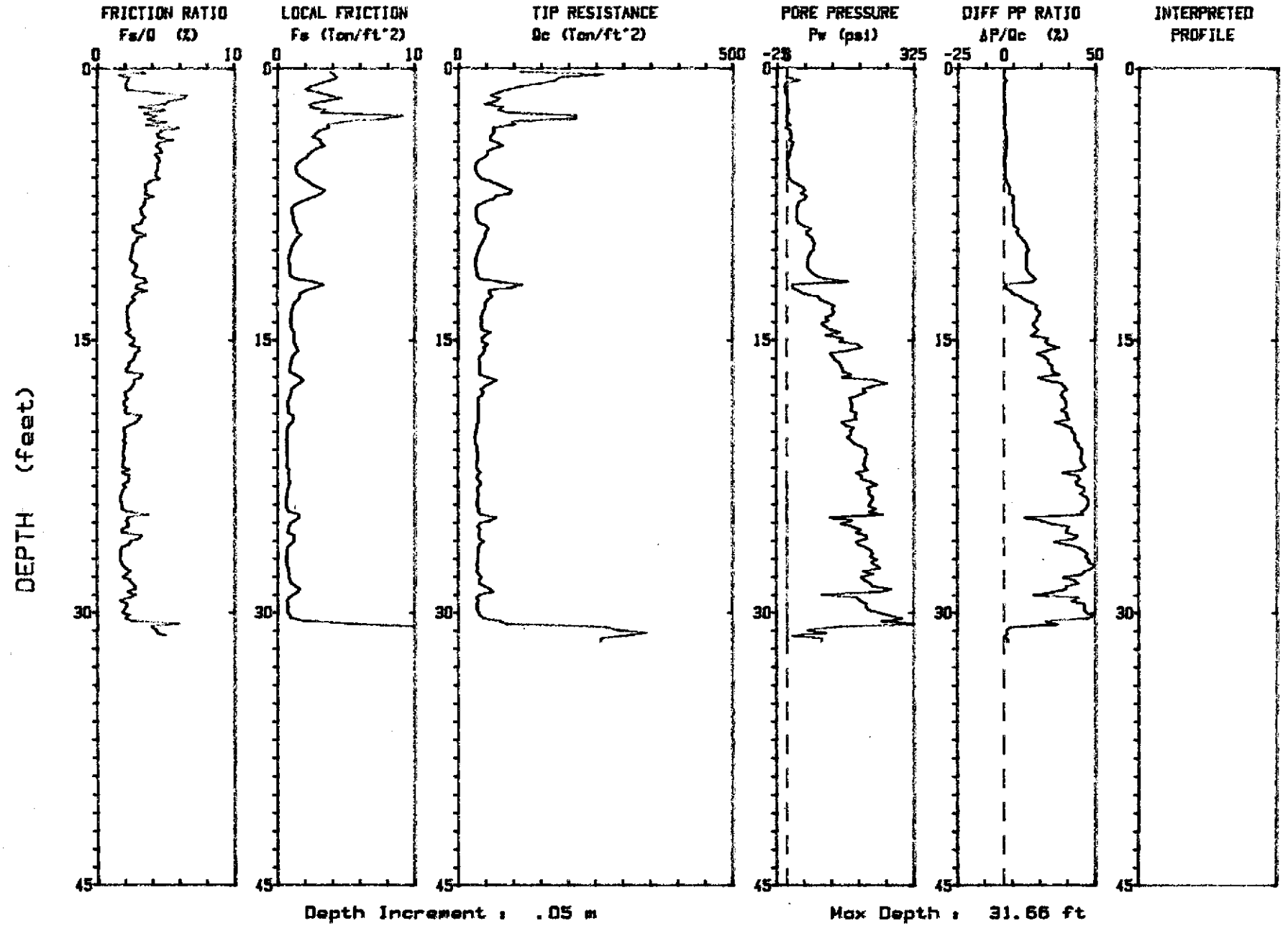



Depth Increment : .05 m  Max Depth : 37.07 ft

V B I

Operator : VIRGIL BAKER  CPT Date : 10-23-92 12:30  Sounding : 92Z435  Pg 1 / 1

Location : CPT-17  Cone Used : HD 322  Job No. : 447.026




Depth Increment : .05 m  Max Depth : 31.66 ft

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Andrew John Friedman
James E. Bruya, Ph.D.
(206) 285-8282

3008-B 16th Avenue West
Seattle, WA 98119
FAX: (206) 283-5044

December 11, 1992

Jeriann Alexander, Project Leader
Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, CA 94607

Dear Ms Alexander:

Enclosed are the amended results of the analyses of the samples submitted on October 16, 1992 from Project 447.036, Connell Oldsmobile. The report has been amended to include the results for 1,2-Dichloroethane and to meet your required detection limits for gasoline.

We are sorry for any inconvenience that this may have caused you. If you have any questions regarding this material, or if you just want to discuss any aspect of your projects, please do not hesitate to contact me.

Sincerely,

Kelly K. Greenhaw
Chemist

KKG/dp

Enclosures

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

**AMENDED 12/11/92**

Date of Report: October 29, 1992
Date Submitted: October 16, 1992
Project: 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, GASOLINE AND 1,2-DICHLOROETHANE USING EPA METHODS 8010, 8020 and 8015**
**Results Reported as mg/L (ppm)**

| Sample # | MW1 | MW4 | MW6 | MW8 |
|---|---|---|---|---|
| Analyte: | | | | |
| Benzene | 51 | 15 | 3.2 | 0.02 |
| Toluene | 59 | 32 | 1.4 | 0.001 |
| Ethylbenzene | 5 | 2.5 | 0.20 | 0.001 |
| Total Xylenes | 27 | 14 | 0.56 | 0.003 |
| 1,2-Dichloroethane | 1.3 | 0.43 | 0.84 | 0.21 |
| Gasoline | 490 | 230 | 19 | 0.07 |
| Internal Standard (% Recovery) | 95% | 100% | 99% | 94% |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

**AMENDED 12/11/92**

Date of Report: October 29, 1992
Date Submitted: October 16, 1992
Project: 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, GASOLINE AND 1,2-DICHLOROETHANE USING EPA METHODS 8010, 8020 and 8015 Results Reported as mg/L (ppm)**

| Sample # | MW10 | CPT3 | CPT4 | CPT5 |
|---|---|---|---|---|
| Analyte: | | | | |
| Benzene | 2.7 | <0.0004 | 0.06 | 2.3 |
| Toluene | 3.8 | <0.0004 | 0.05 | 53 |
| Ethylbenzene | 0.21 | 0.003 | 0.08 | 8 |
| Total Xylenes | 1.3 | 0.003 | 0.15 | 43 |
| 1,2-Dichloroethane | 0.15 | <0.004 | 0.11 | 0.73 |
| Gasoline | 28 | 0.05 | 1.1 | 600 |
| Internal Standard (% Recovery) | 100% | 100% | 110% | 110% |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

**AMENDED 12/11/92**

Date of Report: October 29, 1992
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**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, GASOLINE AND 1,2-DICHLOROETHANE USING EPA METHODS 8010, 8020 and 8015 Results Reported as mg/L (ppm)**

| Sample # | CPT7 | CPT9 | CPT10 | CPT11 |
|---|---|---|---|---|
| Analyte: | | | | |
| Benzene | 40 | 49 | 13 | 0.20 |
| Toluene | 120**ve** | 140**ve** | 16 | 0.05 |
| Ethylbenzene | 25 | 28 | 3.9 | 0.03 |
| Total Xylenes | 120 | 145 | 18 | 0.07 |
| 1,2-Dichloroethane | 2.9 | 0.62 | 1.4 | 0.011 |
| Gasoline | 1,700**ve** | 2,100**ve** | 190 | 2.0 |
| Internal Standard (% Recovery) | 150%**vo, ip** | 130% | 88% | 83% |

**ve** - The value reported exceeded the calibration range established for the sample.

**ip** - Interferences were present which prevented the identification and quantitation of the analyte at the established detection limit.

**vo** - Value reported fell outside the control limits established for this analyte.

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

**AMENDED 12/11/92**

Date of Report: October 29, 1992
Date Submitted: October 16, 1992
Project: 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, GASOLINE AND 1,2-DICHLOROETHANE USING EPA METHODS 8010, 8020 and 8015 Results Reported as mg/L (ppm)**

| Sample # | CPT12 | CPT1 |
|---|---|---|
| Analyte: | | |
| Benzene | 4.1 | 0.02 |
| Toluene | 10 | 0.06 |
| Ethylbenzene | 2.6 | 0.01 |
| Total Xylenes | 10 | 0.06 |
| 1,2-Dichloroethane | 0.009 | 0.001 |
| Gasoline | 130 | 0.49 |
| Internal Standard (% Recovery) | 120% | 90% |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

**AMENDED 12/11/92**

Date of Report: October 29, 1992
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**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, GASOLINE AND 1,2-DICHLOROETHANE USING EPA METHODS 8010, 8020 and 8015**
**Results Reported as mg/L (ppm)**
**Quality Assurance**

| Sample # | Method Blank | MW1 (Duplicate) | CPT3 (Duplicate) | CPT7 (Duplicate) | CPT11 (Duplicate) |
|---|---|---|---|---|---|
| Analyte: | | | | | |
| Benzene | <0.0001 | 51 | 0.002 | 50 | **a** |
| Toluene | <0.0001 | 60 | 0.003 | 170**ve** | **a** |
| Ethylbenzene | <0.0001 | 5.2 | 0.003 | 39 | **a** |
| Total Xylenes | <0.0002 | 27 | 0.003 | 190 | **a** |
| 1,2-Dichloroethane | <0.001 | 1.5 | **a** | **a** | 0.009 |
| Gasoline | <0.05 | 500 | 0.05 | 2,500**ve** | **a** |
| Internal Standard (% Recovery) | 100% | 99% | 100% | 180**vo,ip** | **a** |

**ve** - The value reported exceeded the calibration range established for the sample.

**vo** - Value reported fell outside the control limits established for this analyte.

**ip** - Interferences were present which prevented the identification and quantitation of the analyte at the established detection limit.

**a** - The sample was not analyzed for this analyte.

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

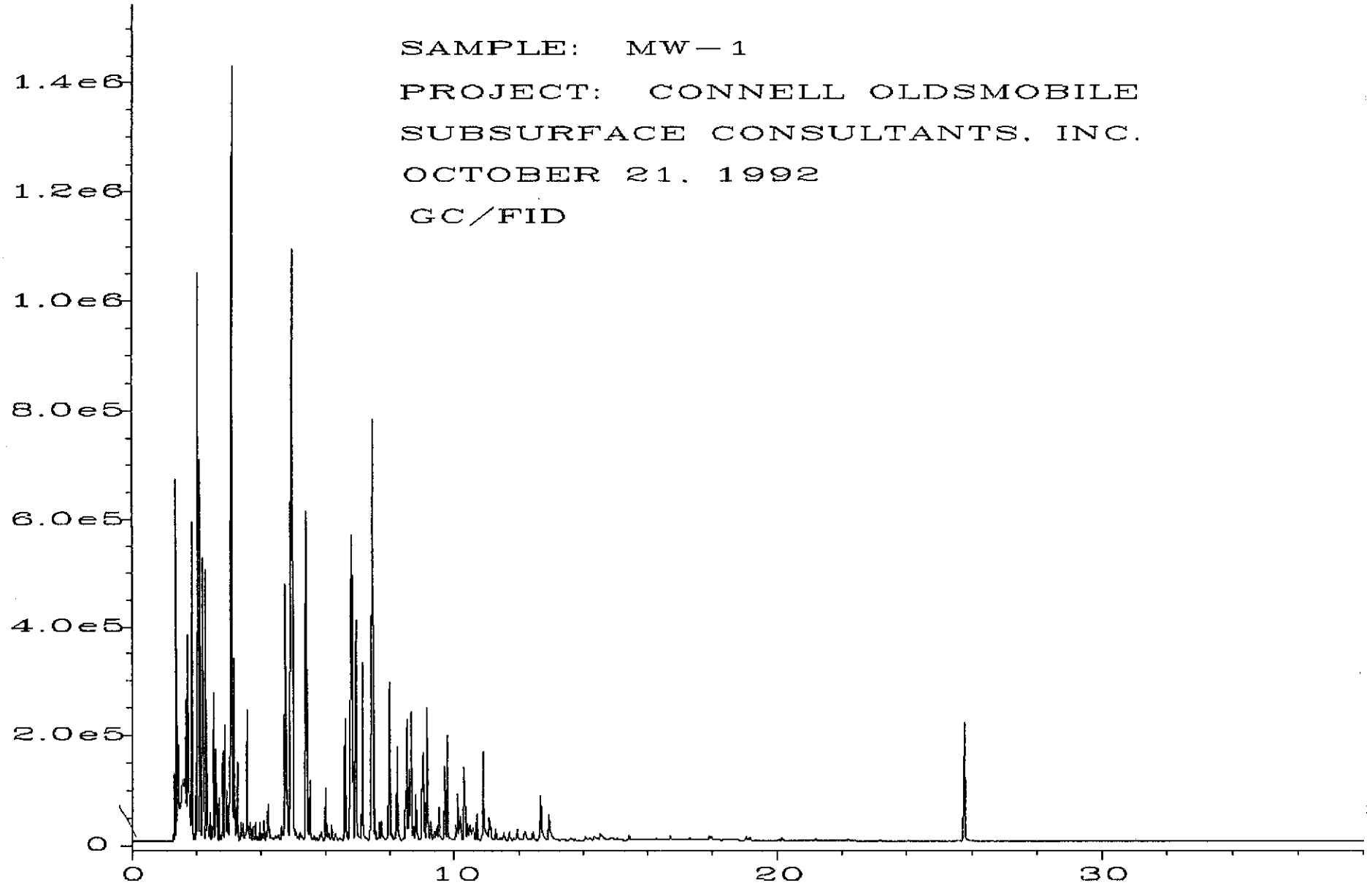
**AMENDED 12/11/92**

Date of Report: October 29, 1992
Date Submitted: October 16, 1992
Project: 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, GASOLINE AND 1,2-DICHLOROETHANE USING EPA METHODS 8010, 8020 and 8015**
**Results Reported as mg/L (ppm)**
**Quality Assurance**

| Sample # | Tap Water Matrix Spike % Recovery | Tap Water Matrix Spike Duplicate % Recovery | Spike Level |
|---|---|---|---|
| Analyte: | | | |
| Benzene | 110% | 110% | 0.1 |
| Toluene | 110% | 110% | 0.1 |
| Ethylbenzene | 96% | 110% | 0.1 |
| Total Xylenes | 110% | 110% | 0.2 |
| 1,2-Dichloroethane | **na** | **na** | **na** |
| Gasoline | 110% | 100% | 1 |
| Internal Standard (% Recovery) | 110% | 110% | |

**na** - The analyte indicated was not added to the matrix spike sample.

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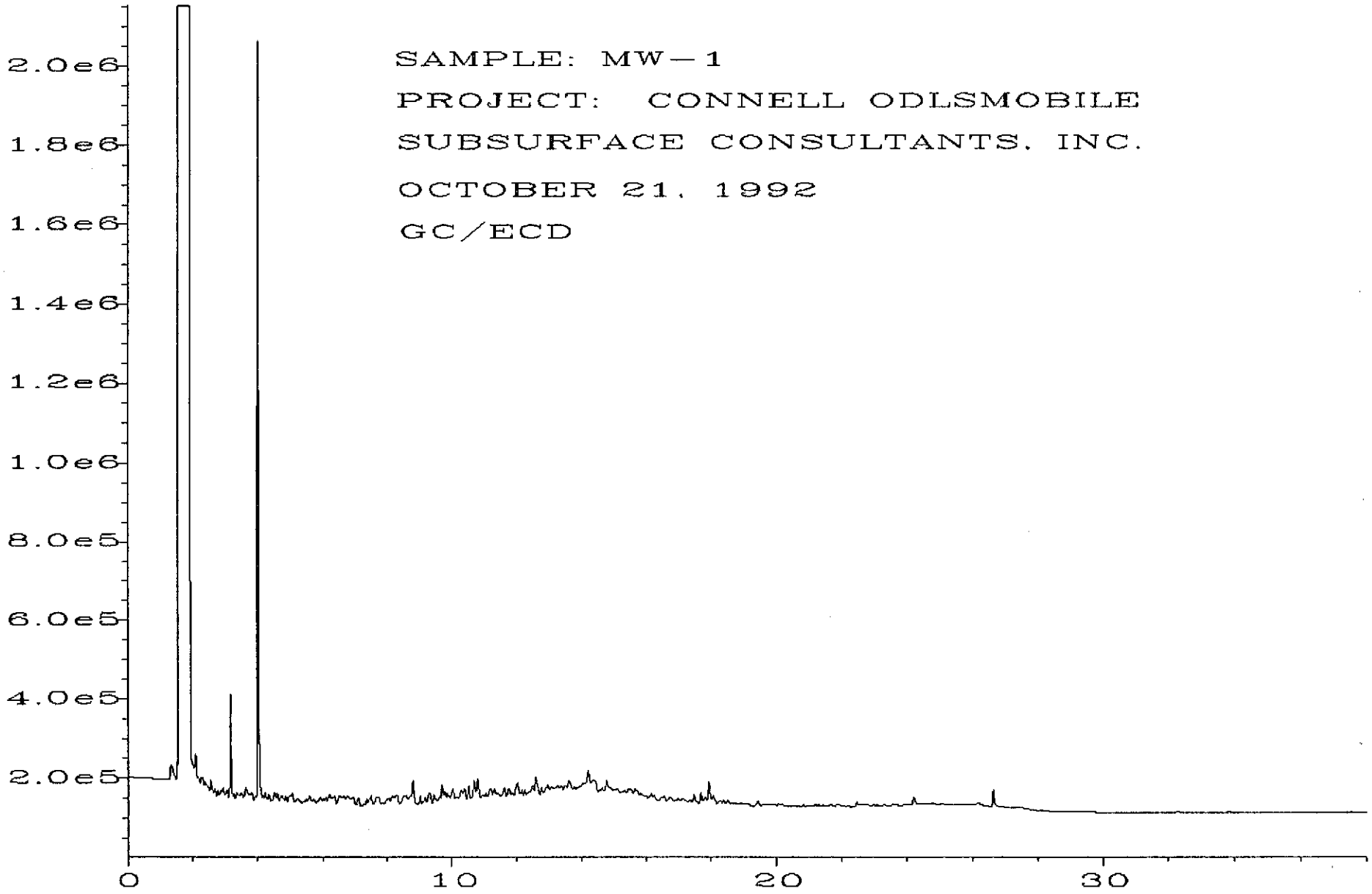


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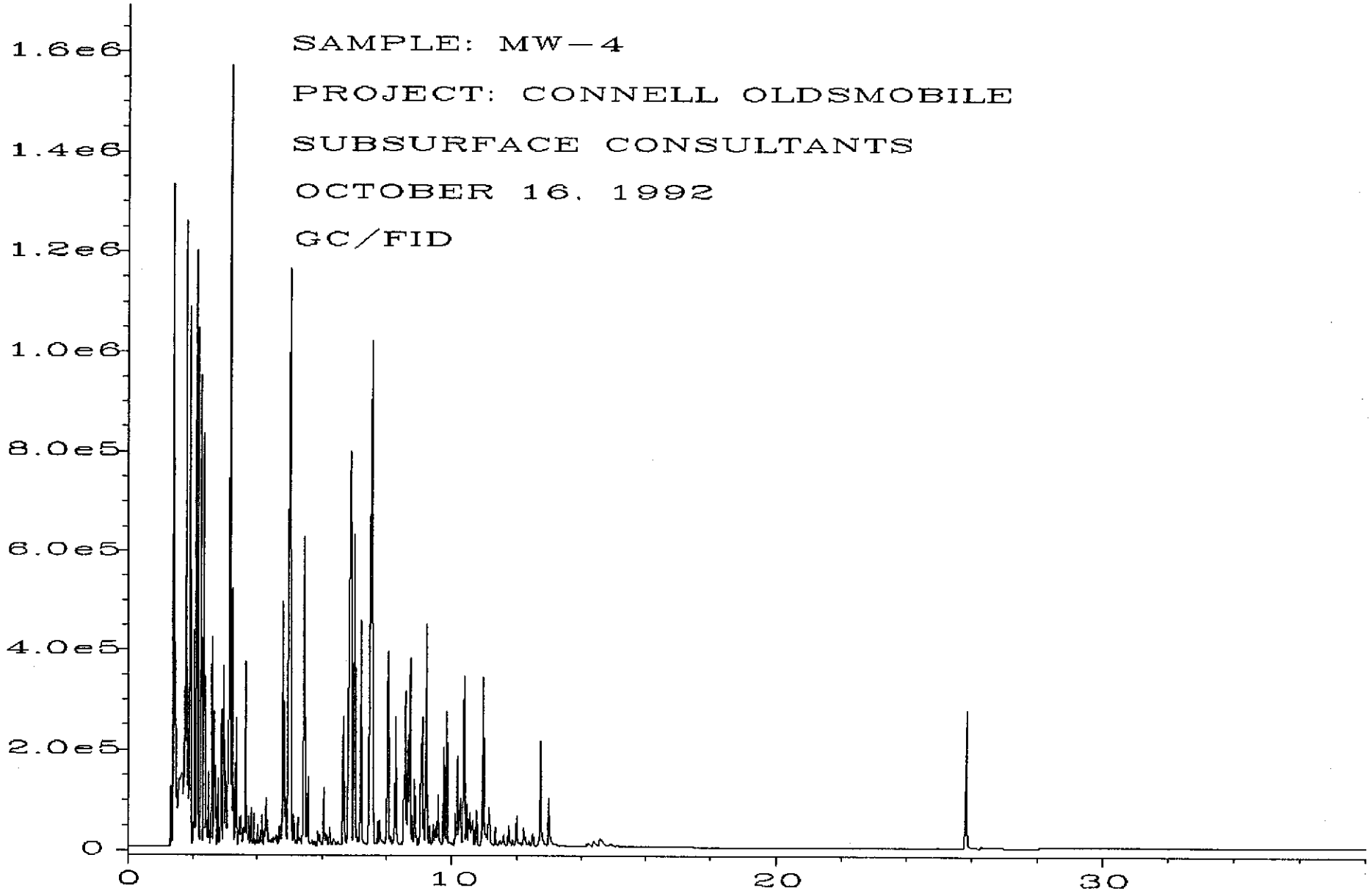


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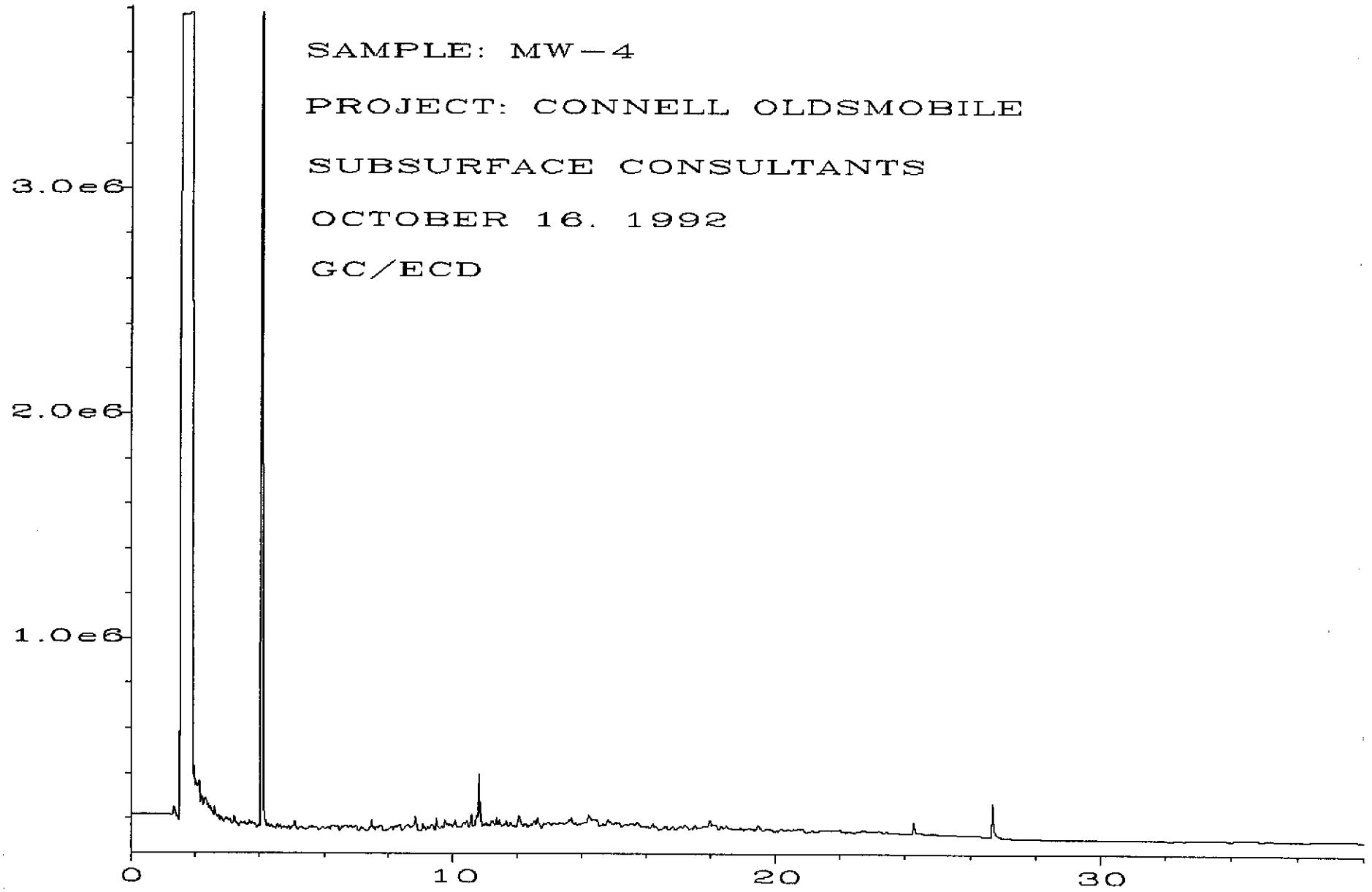
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PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS
OCTOBER 16. 1992
GC/ECD
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1.0e6
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20
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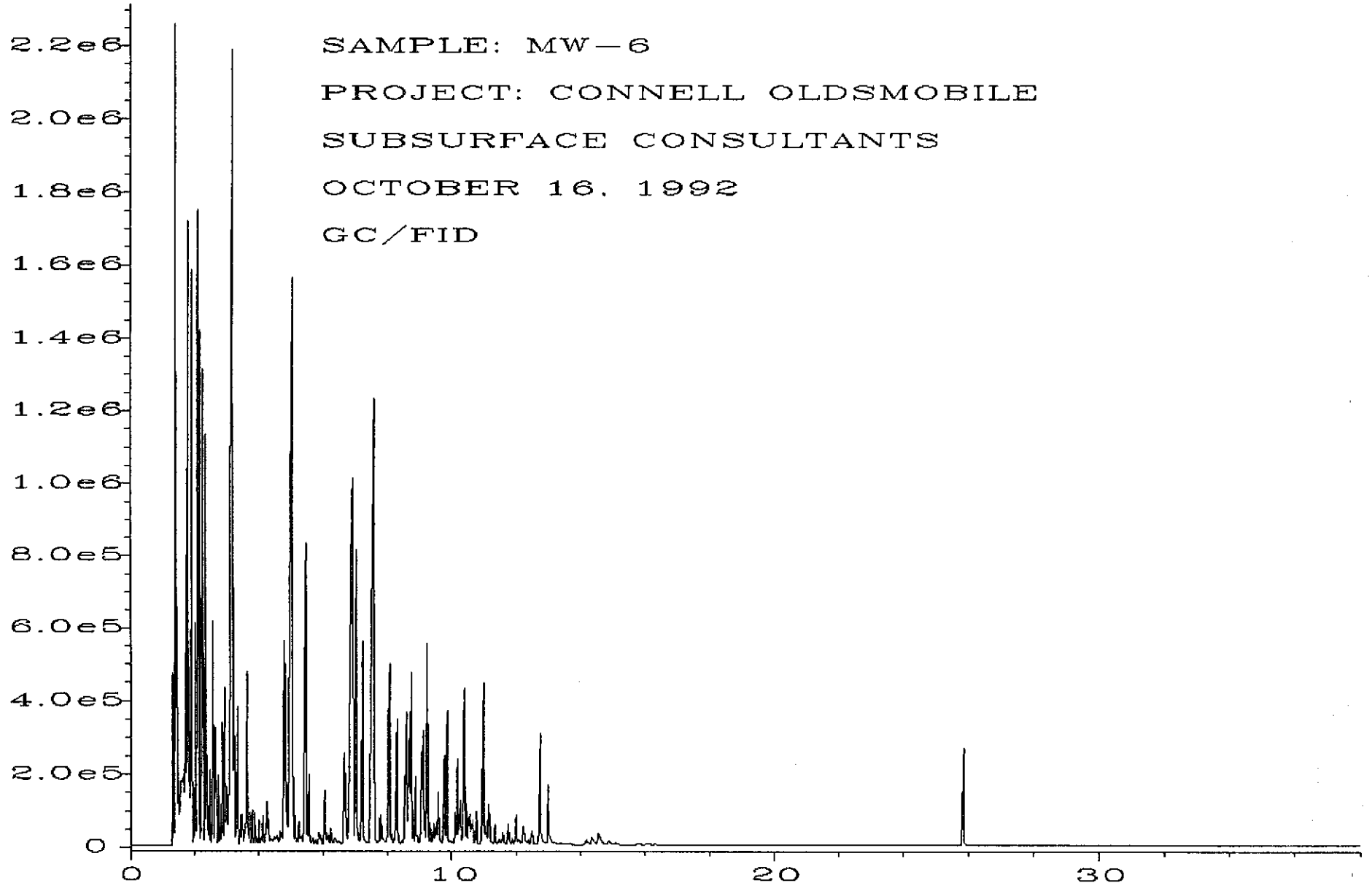


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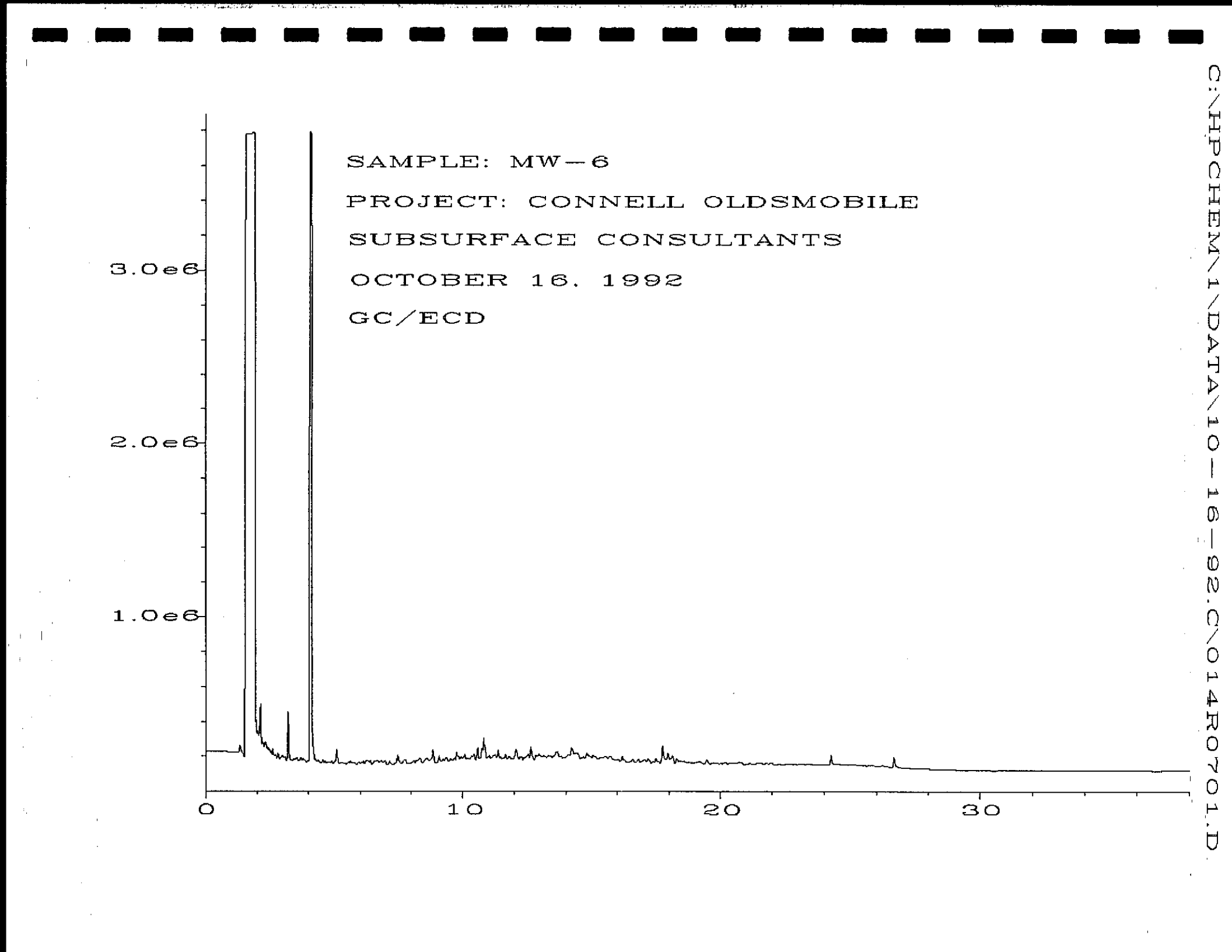
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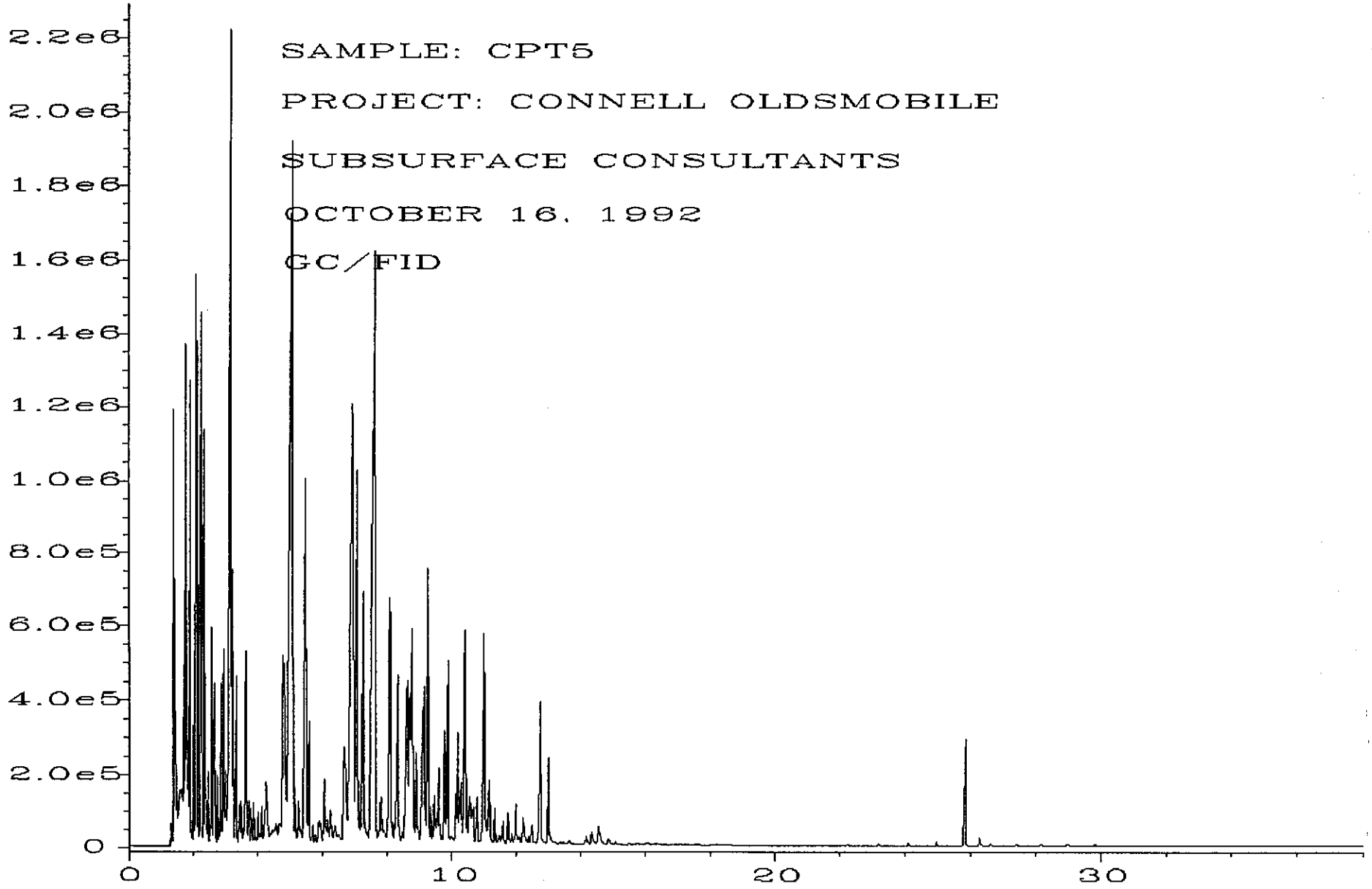
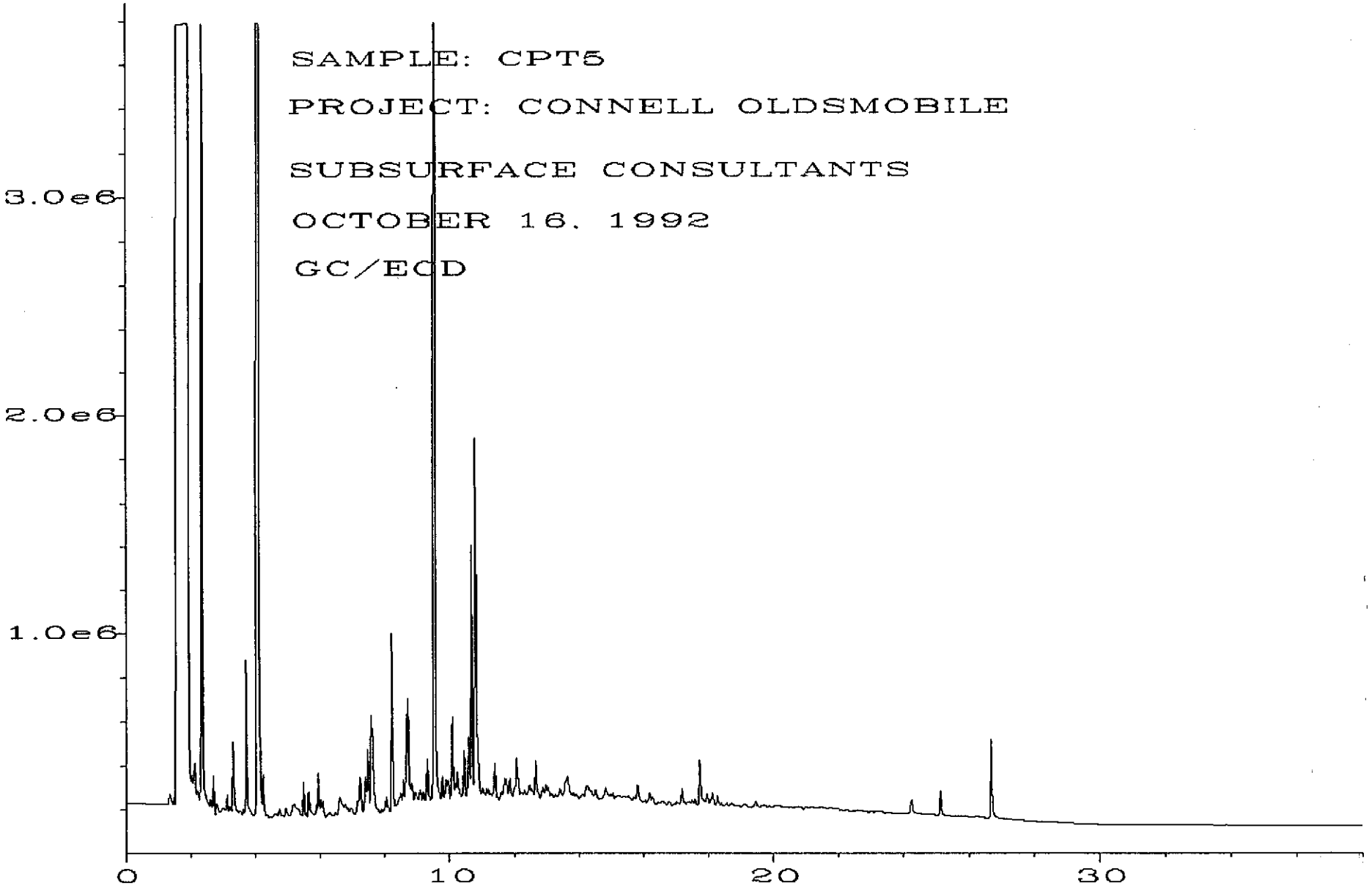
PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS
OCTOBER 16, 1992
GC/ECD
3.0e6
2.0e6
1.0e6
0
10
20
30
C:\HPCHEM\1\DATA\10-16-92.C\014R0701.D


SAMPLE: CPT5
PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS
OCTOBER 16, 1992
GC/FID
2.2e6
2.0e6
1.8e6
1.6e6
1.4e6
1.2e6
1.0e6
8.0e5
6.0e5
4.0e5
2.0e5
0
0
10
20
30
C:\HPCHEM\1\DATA\10-16-92.C\015F0701.D

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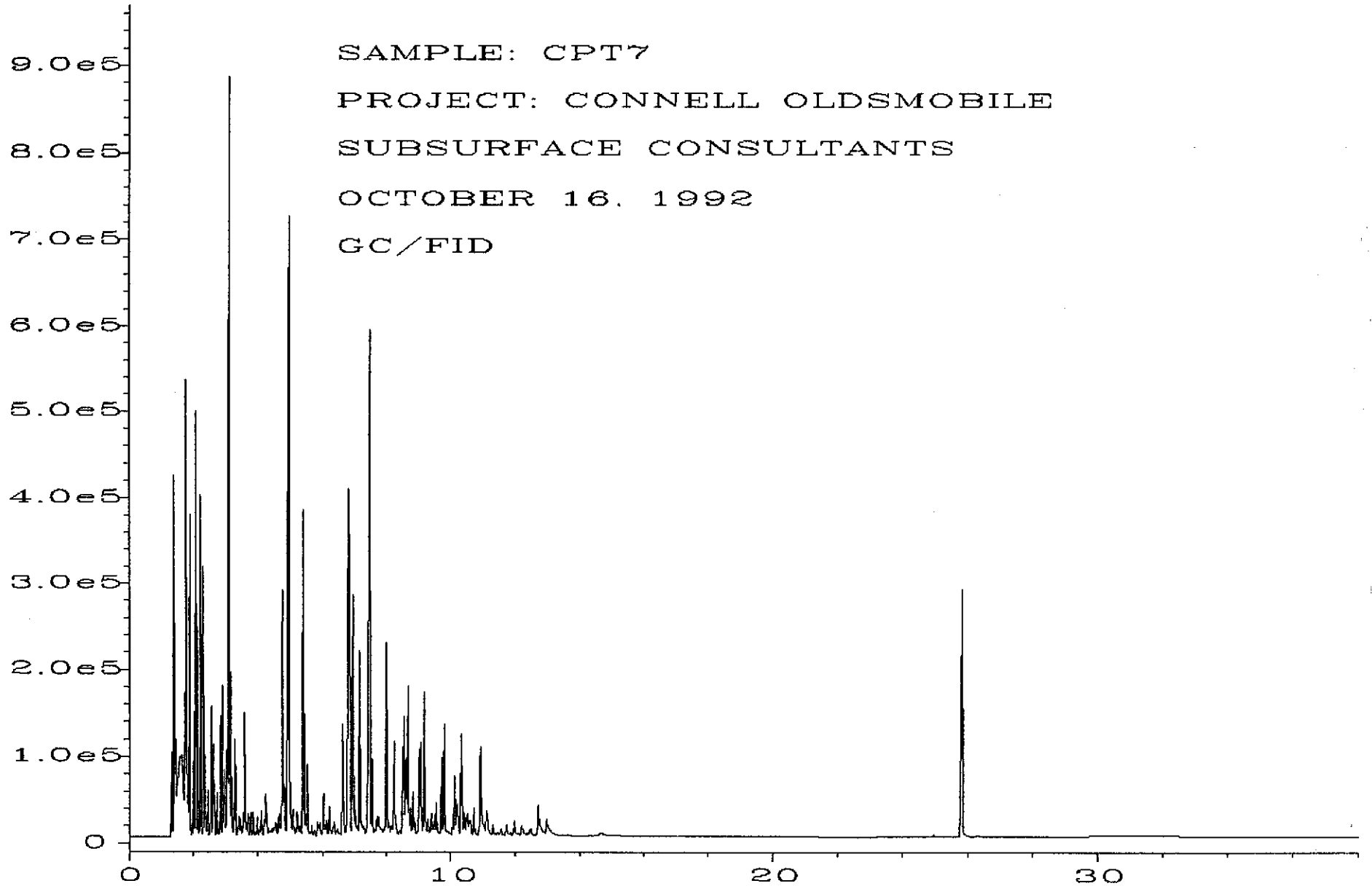
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PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS
OCTOBER 16, 1992
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7.0e5
6.0e5
5.0e5
4.0e5
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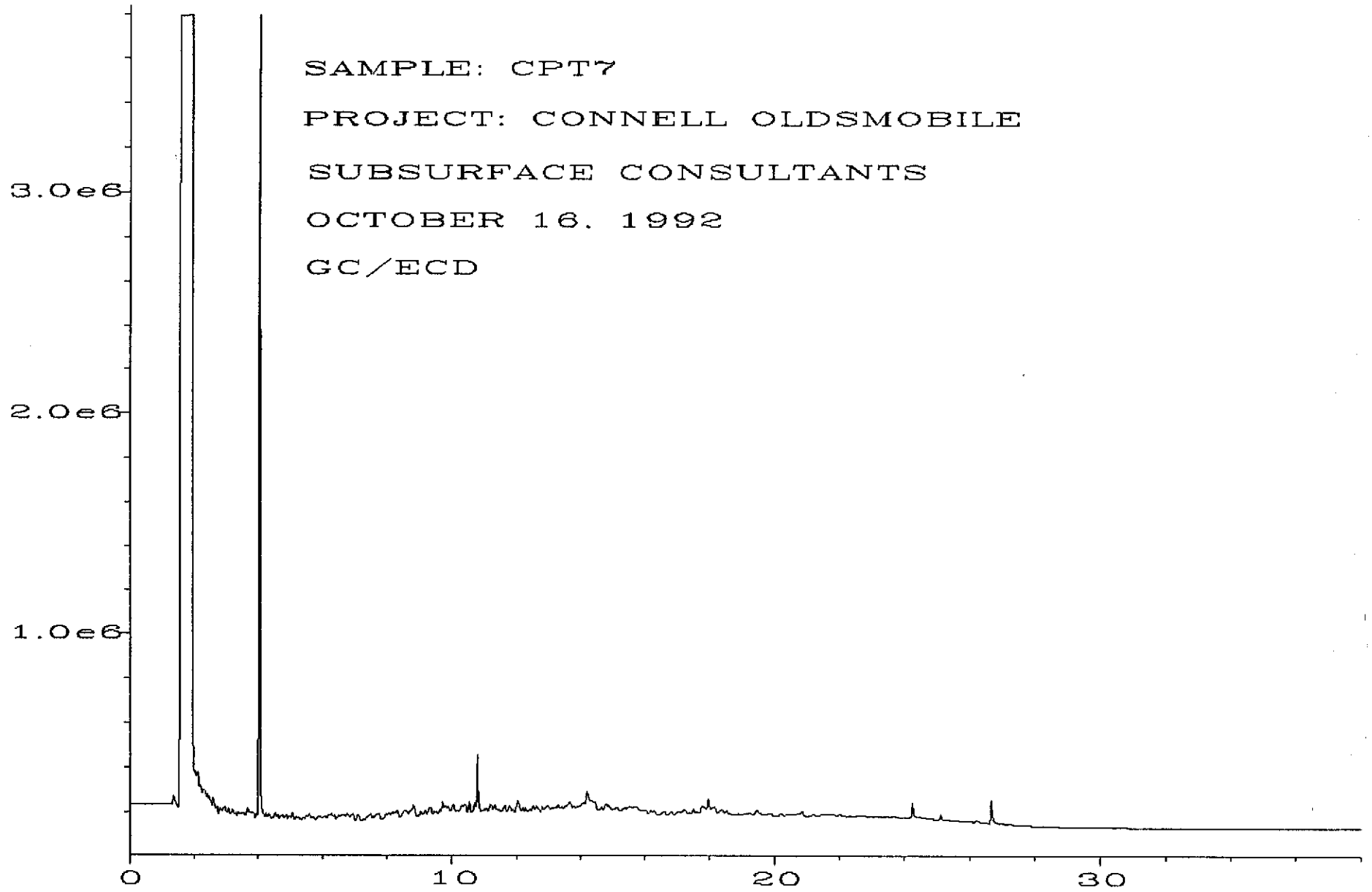
1.0e5
0
0
10
20
30
C:\HPCHEM\1\DATA\10-16-92.C\016F0701.D

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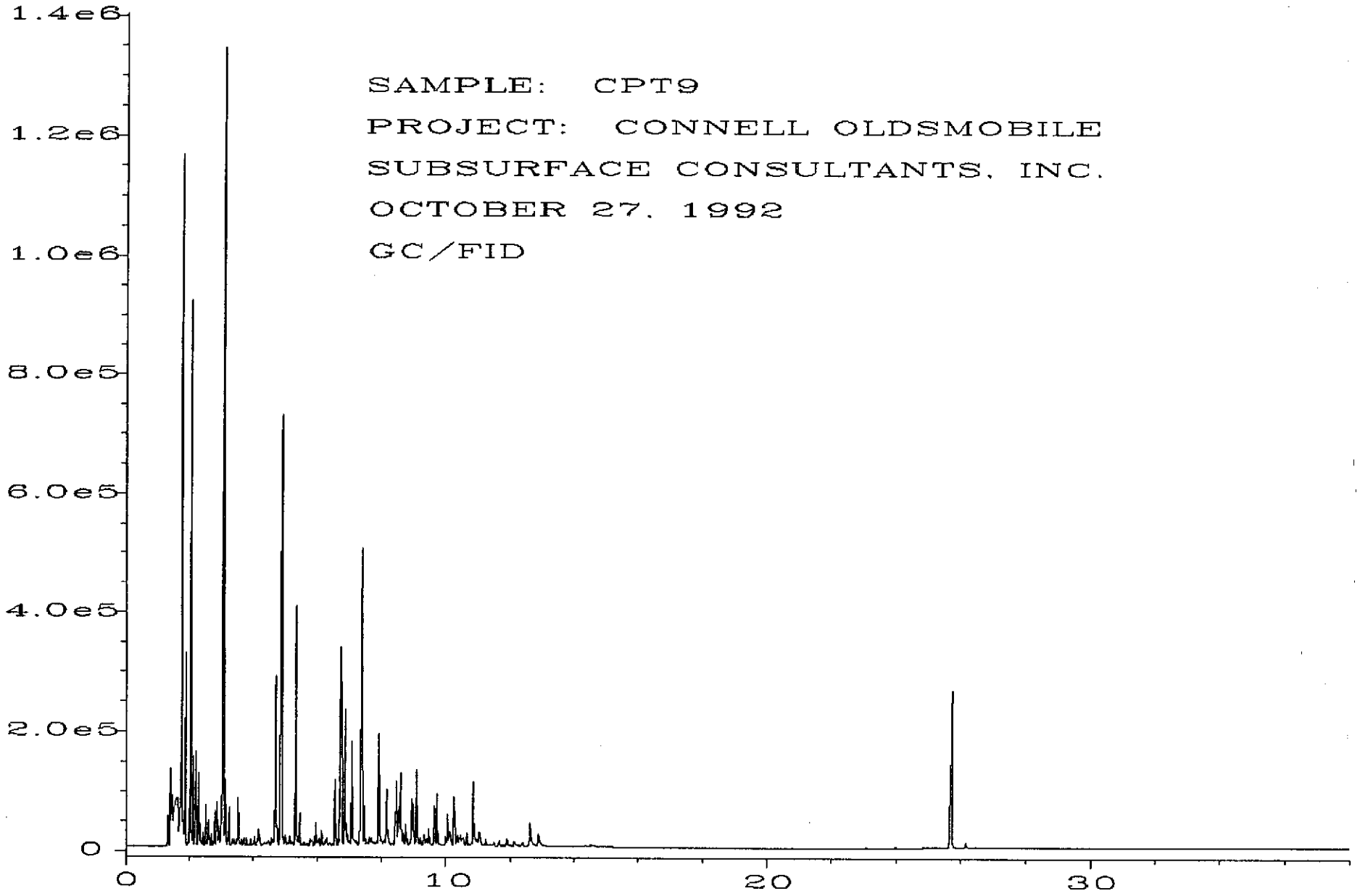
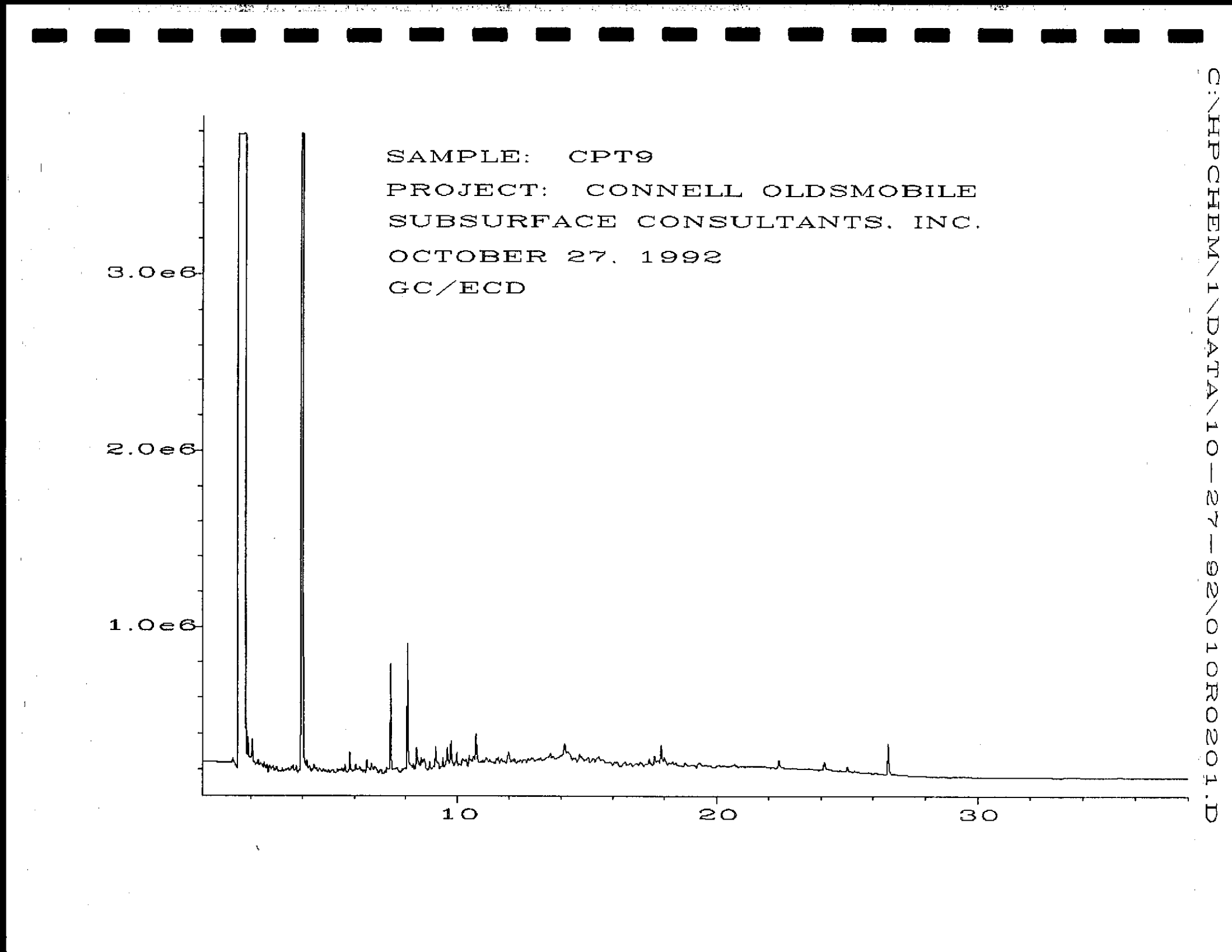

1.4e6
1.2e6
1.0e6
8.0e5
6.0e5
4.0e5
2.0e5
0
0
10
20
30
SAMPLE: CPT9
PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS, INC.
OCTOBER 27, 1992
GC/FID
C:\HPCHEM\1\DATA\10-27-92\010F0201.D


SAMPLE: CPT9
PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS, INC.
OCTOBER 27, 1992
GC/ECD
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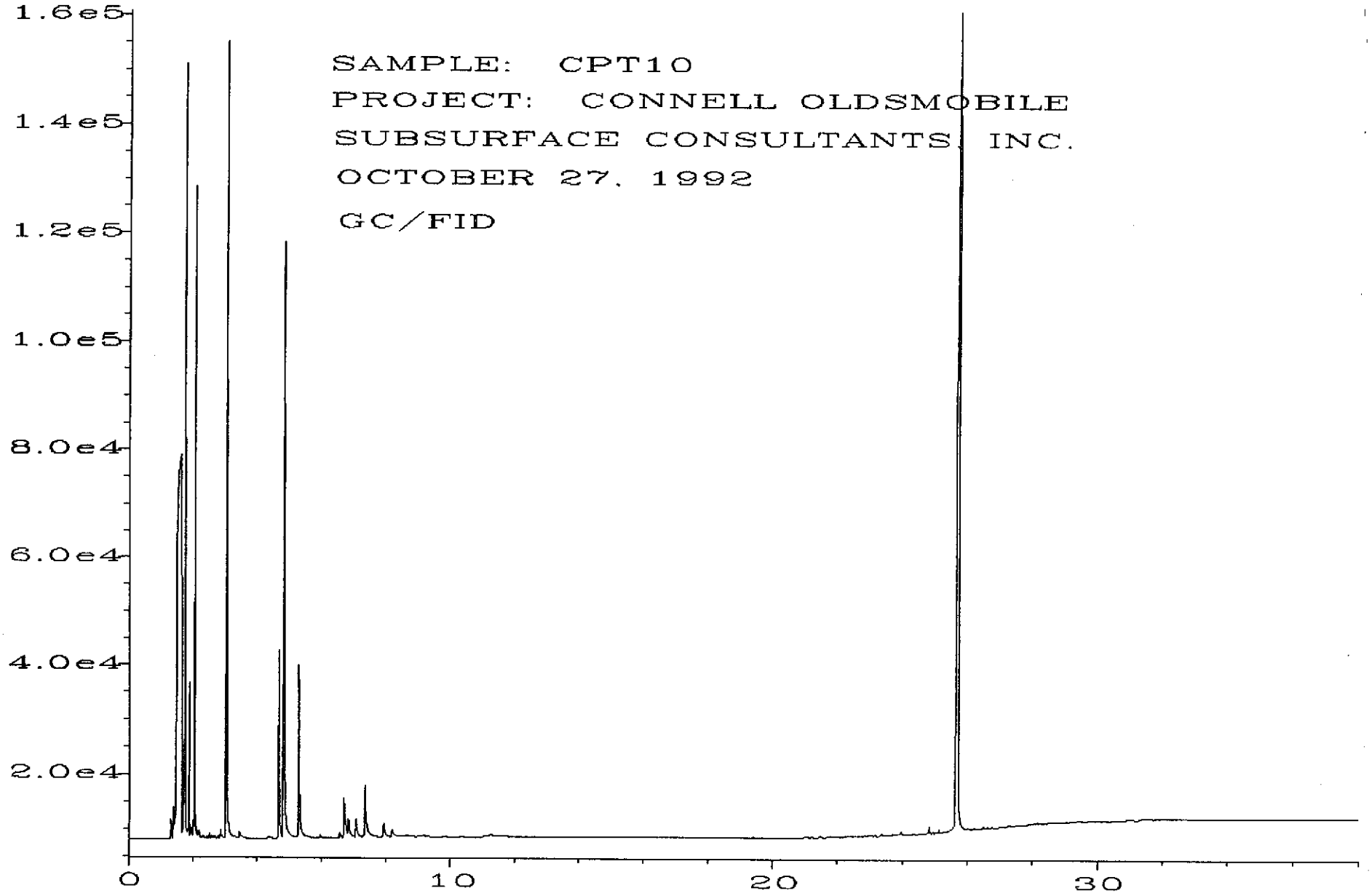
2.0e6
1.0e6
10
20
30
C:\HPCHEM\1\DATA\10-27-92\010R0201.D


SAMPLE: CPT10
PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS, INC.
OCTOBER 27, 1992
GC/FID
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1.4e5
1.2e5
1.0e5
8.0e4
6.0e4
4.0e4
2.0e4
0
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20
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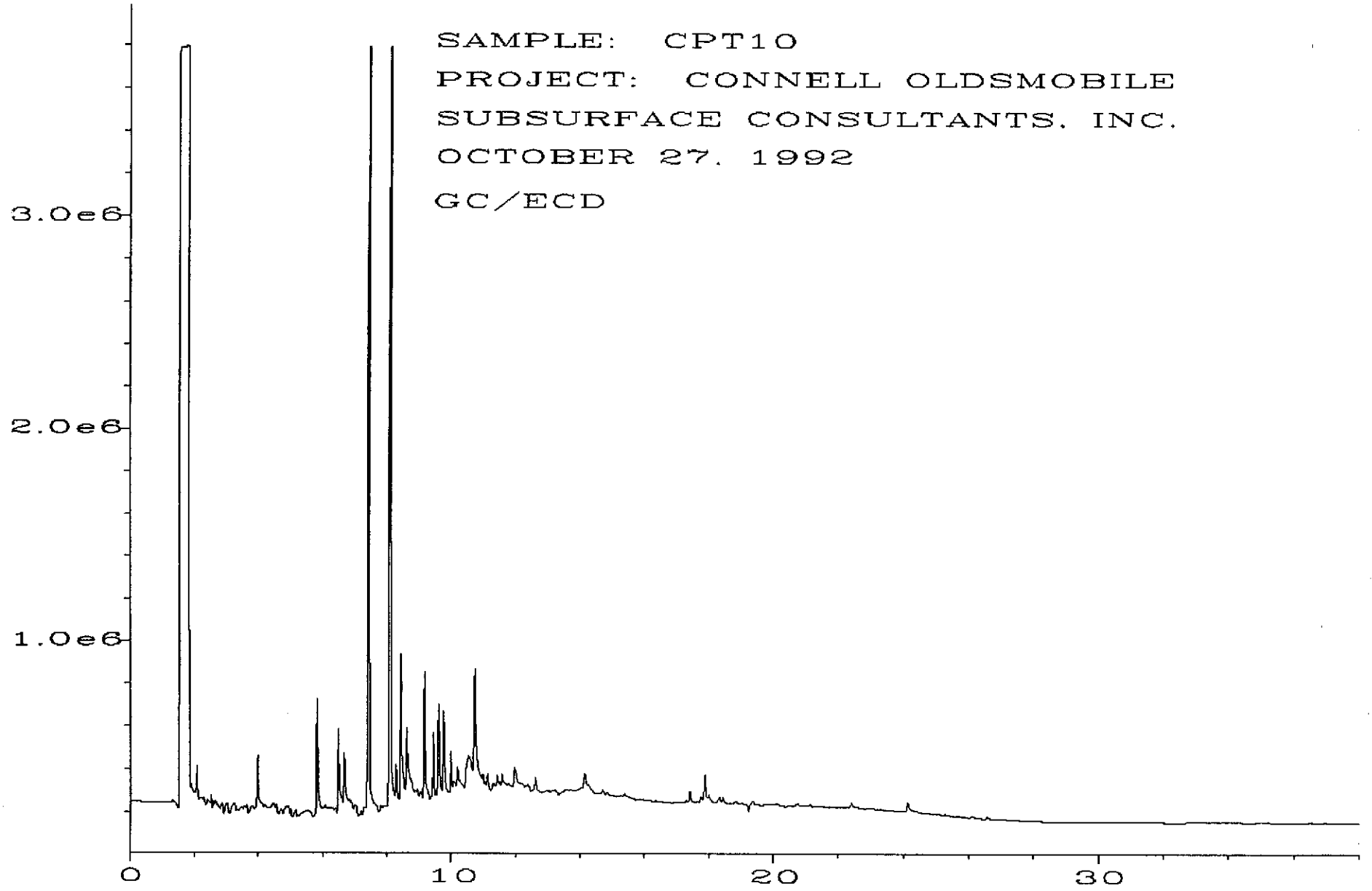
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SUBSURFACE CONSULTANTS, INC.
OCTOBER 27, 1992
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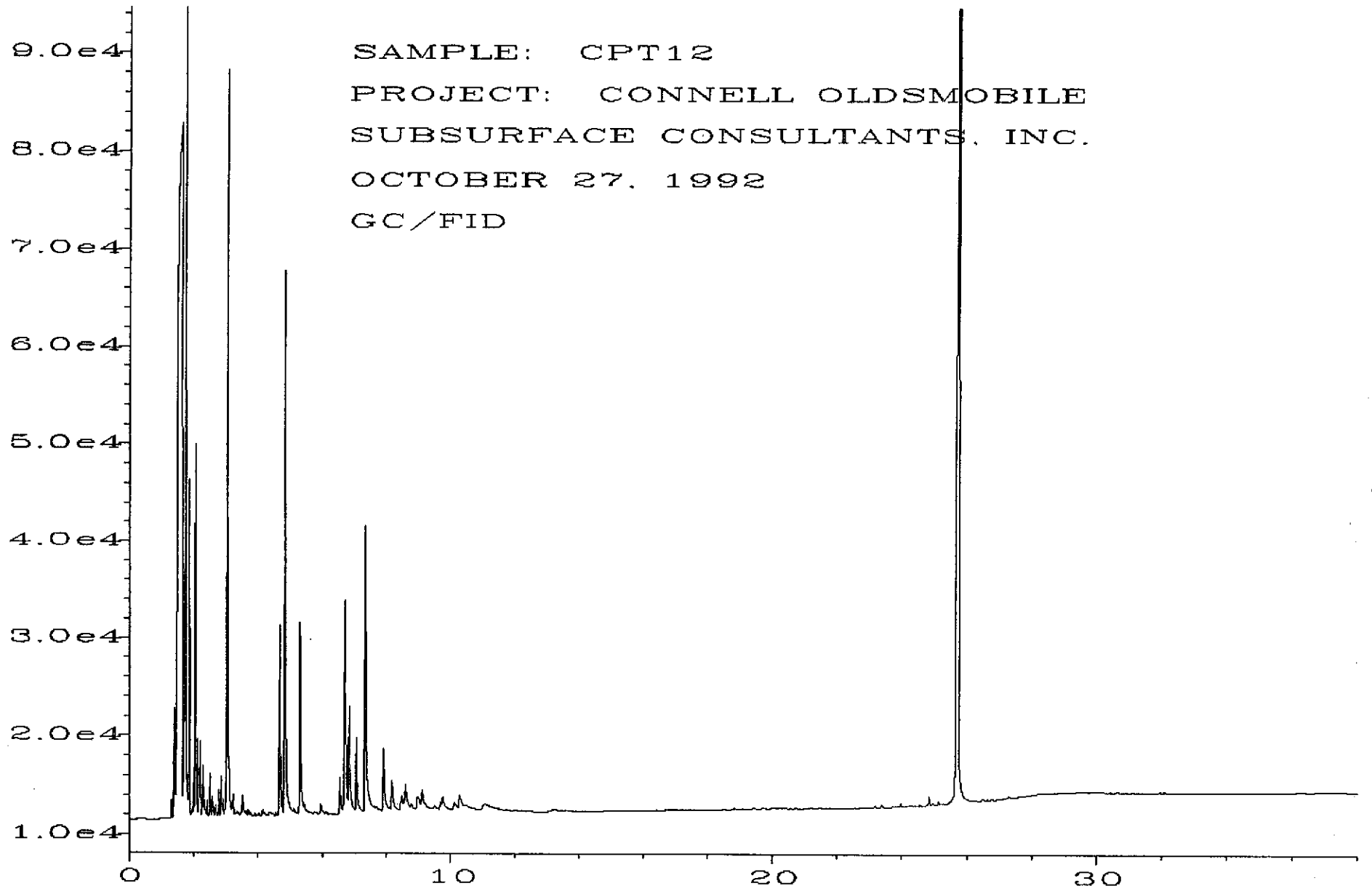
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PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS, INC.
OCTOBER 27, 1992
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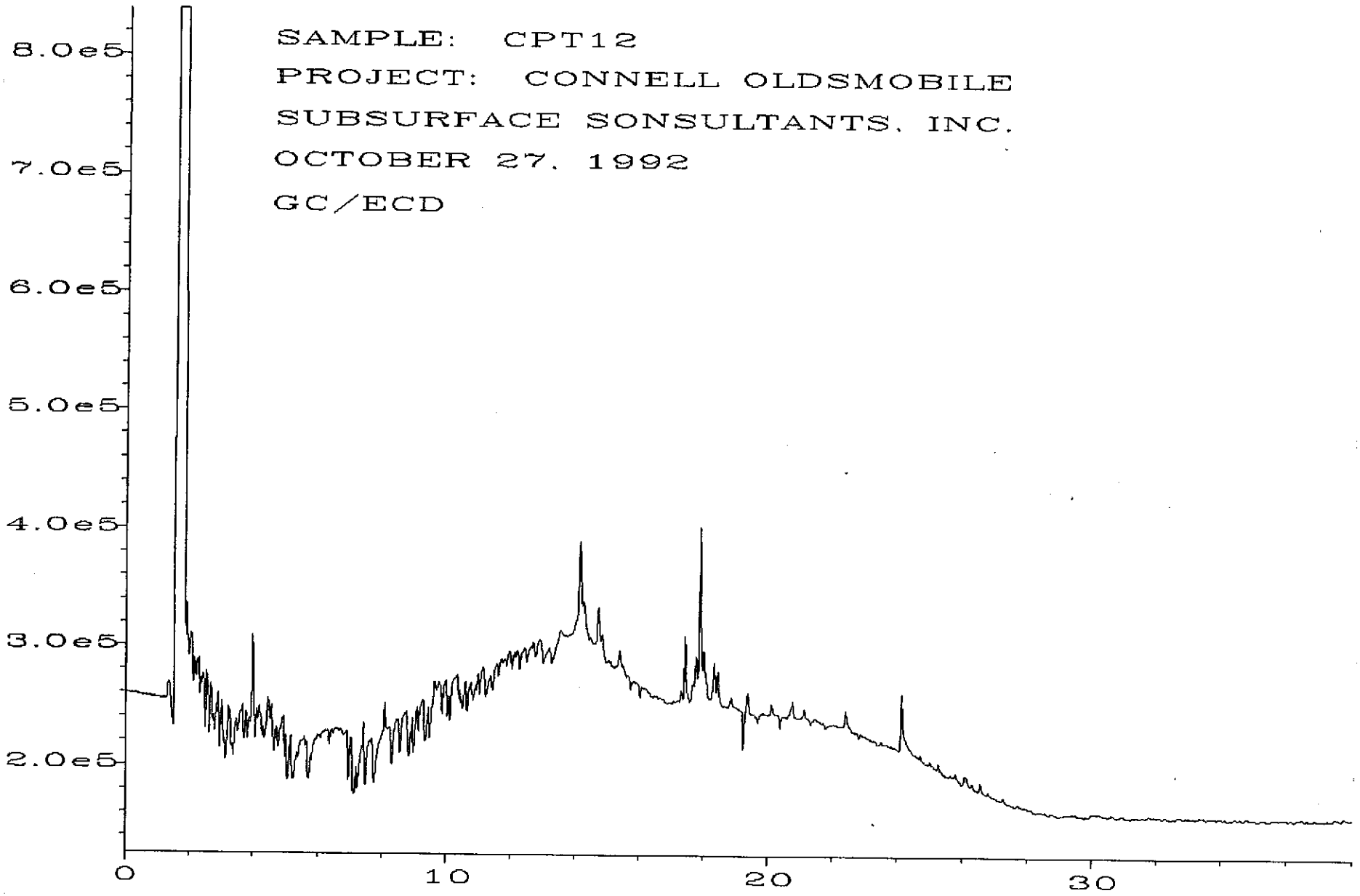
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PROJECT: CONNELL OLDSMOBILE
SUBSURFACE SONSULTANTS, INC.
OCTOBER 27, 1992
GC/ECD
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7.0e5
6.0e5
5.0e5
4.0e5
3.0e5
2.0e5
0
10
20
30
C:\HPCHEM\1\DATA\10-27-92\012R0201.D

# CHAIN OF CUSTODY FORM



PROJECT NAME: Cornell Oldsmobile

JOB NUMBER: 447.036 LAB: Friedman & Bruya, Inc.

PROJECT CONTACT: Jeriann Alexander TURNAROUND: Normal

SAMPLED BY: E. Chang REQUESTED BY: JA

| LABORATORY ID NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | SOIL | WASTE | AIR | | | CONTAINERS: VOA | LITER | PINT | TUBE | | | METHOD PRESERVED: HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | SAMPLING DATE: MONTH | DAY | YEAR | TIME | NOTES | ANALYSIS REQUESTED: BTEX + CHC 8021/8020 | 8010 | DCA | | HTF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34147-48 | MW8 | X | | | | | | 2 | | | | | | X | | | X | | 10 | 12 | 92 | | | X | X | | | |
| 34149-50 | MW10 | X | | | | | | 2 | | | | | | X | | | X | | 10 | 12 | 92 | | | X | X | | | |
| 34151 | CPT1 | X | | | | | | 1 | | | | | | X | | | X | | 10 | 12 | 92 | | | X | X | | | |
| 34152-53 | CPT3 | X | | | | | | 2 | | | | | | X | | | X | | 10 | 12 | 92 | | | X | X | | | |
| 34154 | CPT4 | X | | | | | | 1 | | | | | | X | | | X | | 10 | 12 | 92 | | | X | X | | | |

COMMENTS & NOTES:

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
|---|---|---|---|
| Jeriann Alexander | 10/15/92 7:30 | L. Arches | 10/16/92 10:00am |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |


Subsurface Consultants, Inc.

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607

(510) 268-0461 · FAX: 510-268-0137


(510) 268-0461 · FAX: 510-268-0137

10 A
10.16.92
10:00AM

# CHAIN OF CUSTODY FORM

PAGE 4 OF 4

PROJECT NAME: Cornell Oldsmobile

JOB NUMBER: 447.036 LAB: Friedman & Bruya, Inc.

PROJECT CONTACT: Jeriann Alexander TURNAROUND: Normal

SAMPLED BY: E. Chang REQUESTED BY: JA

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | SOIL | WASTE | AIR | Product | CONTAINERS: VOA | LITER | PINT | TUBE | | | METHOD PRESERVED: HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | SAMPLING DATE: MONTH | DAY | YEAR | TIME | NOTES | ANALYSIS REQUESTED: 8015/8020 | DCA | | HFF | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 341663-64 | CPT 10 | X | | | | | 2 | | | | | | X | | | X | | 10 | 12 | 92 | Composited in lab; analysis ASAP | | X | X | | X | | | if available | |
| 341665-66 | CPT 11 | X | | | | | 2 | | | | | | X | | | X | | 10 | 12 | 92 | Composited in lab; analysis ASAP | | X | X | | | | | | |
| 341667-68 | CPT 12 | X | | | | | 2 | | | | | | X | | | X | | 10 | 07 | 92 | Composited in lab; analysis ASAP | | X | X | | X | | | if available | |

COMMENTS & NOTES:

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
|---|---|---|---|
| Jeriann Alexander | 10/15/92 2:30 | [signature] | 10/16/92 10:00AM |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |


Subsurface Consultants, Inc.

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607

(510) 268-0461 • FAX: 510-268-0137

10-12-92 10:00 AM

# CHAIN OF CUSTODY FORM



PROJECT NAME: Cornell Oldsmobile

JOB NUMBER: 447.036 LAB: Friedman & Bruya, Inc.

PROJECT CONTACT: Jeriann Alexander TURNAROUND: Normal

SAMPLED BY: E. Chang REQUESTED BY: JA

| LABORATORY ID NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | SOIL | WASTE | AIR | Product | CONTAINERS: VOA | LITER | PINT | TUBE | | | METHOD PRESERVED: HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | SAMPLING DATE: MONTH | DAY | YEAR | TIME | NOTES | ANALYSIS REQUESTED: 8015/8020 - BTEX + Gas | 8010 - DCA | HFF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34138 (9) | MW1 | X | | | | | 2 | | | | | | X | | | X | | 10 | 09 | 92 | | Combined for Analysis | X | X | |
| 34140 | MW1 | | | | | X | 1 | | | | | | X | | | X | | 10 | 09 | 92 | | | | | X |
| 34142 (3) | MW4 | X | | | | | 2 | | | | | | X | | | X | | 10 | 09 | 92 | | | X | X | |
| 34141 | MW4 | | | | | X | 1 | | | | | | X | | | X | | 10 | 10 | 92 | | | | | X |
| 34144 (5) | MW6 | X | | | | | 2 | | | | | | X | | | X | | 10 | 12 | 92 | | | X | X | |
| 34146 | MW6 | | | | | X | 1 | | | | | | X | | | X | | 10 | 12 | 92 | | | | | X |

COMMENTS & NOTES:

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
|---|---|---|---|
| Jeriann Alexander | 10/9/92 2:30 | L. Arcos | 10-10-92 10:00am |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |

Subsurface Consultants, Inc.
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607
(510) 268-0461 · FAX: 510-268-0137

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: December 4, 1992
Date Submitted: December 3, 1992
Project: SCI 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, GASOLINE AND 1,2-DICHLOROETHANE USING EPA METHODS 8010, 8020 and 8015**
**Results Reported as µg/L (ppb)**

| Sample # | MW-11 | MW-13 |
|---|---|---|
| Analyte: | | |
| Gasoline | <50 | <50 |
| 1,2-Dichloroethane | <1 | <1 |
| Benzene | <0.1 | <0.1 |
| Toluene | <0.1 | <0.1 |
| Ethylbenzene | <0.1 | <0.1 |
| *m,p*-Xylenes | <0.1 | <0.1 |
| *o*-Xylene | <0.1 | <0.1 |
| Internal Standard (% Recovery) | 97% | 96% |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: December 4, 1992
Date Submitted: December 3, 1992
Project: SCI 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, GASOLINE AND 1,2-DICHLOROETHANE USING EPA METHODS 8010, 8020 and 8015**
**Results Reported as µg/L (ppb)**
Quality Assurance

| Sample # | Method Blank | MW-13 (Duplicate) |
|---|---|---|
| Analyte: | | |
| Gasoline | <50 | <50 |
| 1,2-Dichloroethane | <1 | <1 |
| Benzene | <0.1 | <0.1 |
| Toluene | <0.1 | <0.1 |
| Ethylbenzene | <0.1 | <0.1 |
| *m,p*-Xylenes | <0.1 | <0.1 |
| *o*-Xylene | <0.1 | <0.1 |
| Internal Standard (% Recovery) | 110% | 100% |

FRIEDMAN & BRUYA, INC.

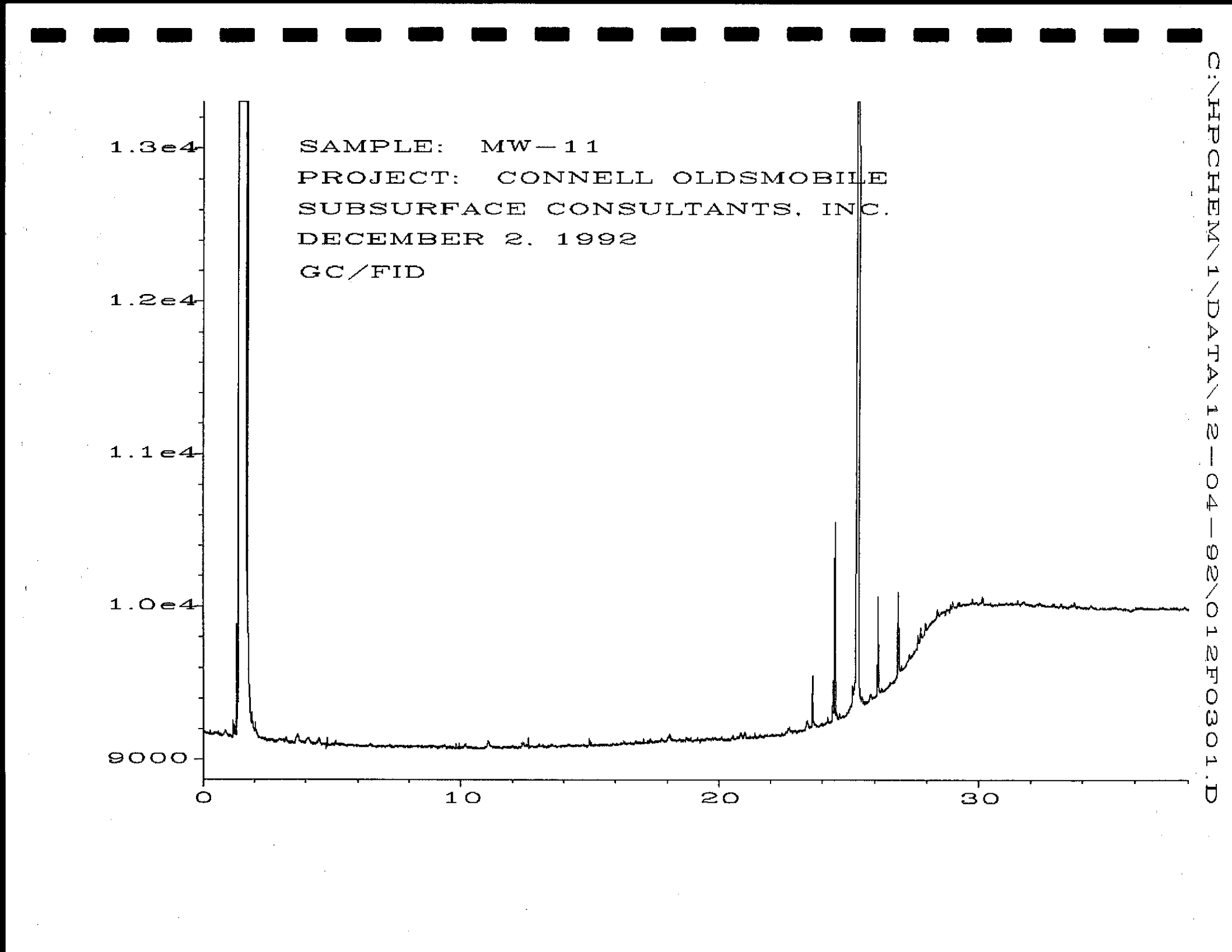
ENVIRONMENTAL CHEMISTS

Date of Report: December 4, 1992
Date Submitted: December 3, 1992
Project: SCI 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, GASOLINE AND 1,2-DICHLOROETHANE USING EPA METHODS 8010, 8020 and 8015**
**Results Reported as µg/L (ppb)**
Quality Assurance

| Sample # | Tap Water Matrix Spike % Recovery | Tap Water Matrix Spike Duplicate % Recovery | Spike Level (ppb) |
|---|---|---|---|
| Analyte: | | | |
| Gasoline | **na** | **na** | **na** |
| 1,2-Dichloroethane | **na** | **na** | **na** |
| Benzene | 95% | 87% | 1,000 |
| Toluene | 96% | 97% | 1,000 |
| Ethylbenzene | 100% | 100% | 1,000 |
| *m,p*-Xylenes | 91% | 92% | 1,000 |
| *o*-Xylene | 99% | 99% | 1,000 |
| Internal Standard (% Recovery) | 100% | 100% | |

**na** - The analyte indicated was not added to the matrix spike sample.


SAMPLE: MW-11
PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS, INC.
DECEMBER 2, 1992
GC/FID
1.3e4
1.2e4
1.1e4
1.0e4
9000
0
10
20
30
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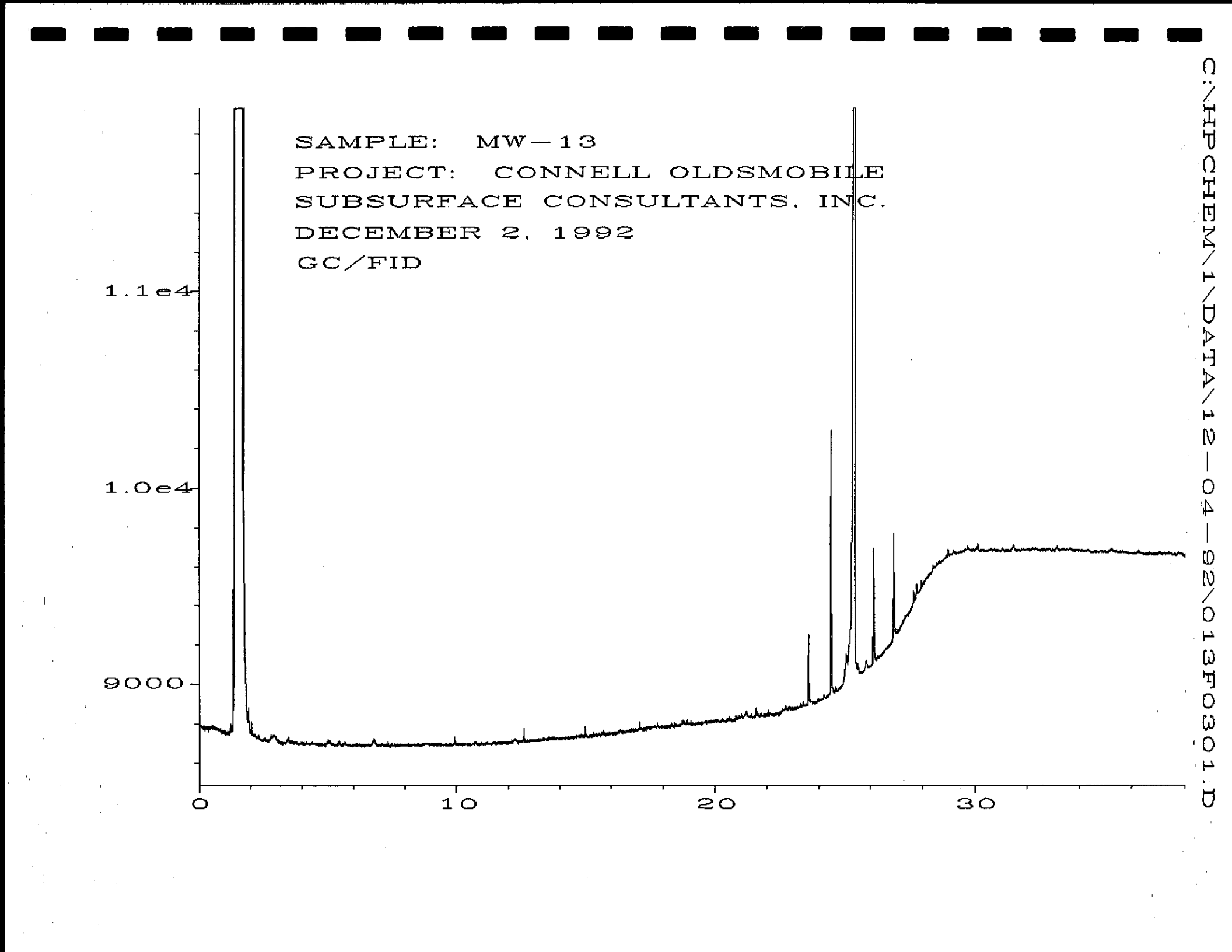

SAMPLE: MW-13
PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS, INC.
DECEMBER 2, 1992
GC/FID
1.1e4
1.0e4
9000
0
10
20
30
C:\HPCHEM\1\DATA\12-04-92\013F0301.D

# CHAIN OF CUSTODY FORM

PAGE 1 OF 1

PROJECT NAME: CONNELL OLDSMOBILE

JOB NUMBER: SCF 447.036 LAB: F&B

PROJECT CONTACT: J. ALEXANDER TURNAROUND: NORMAL

SAMPLED BY: E. CHANG REQUESTED BY: J. ALEXANDER

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | SOIL | WASTE | AIR | | | CONTAINERS: VOA | LITER | PINT | TUBE | | | METHOD PRESERVED: HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | SAMPLING DATE: MONTH | DAY | YEAR | TIME | NOTES | ANALYSIS REQUESTED: BTEX / FUEL GAS | 8010 DCA | HFE (LIE AS LS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35452-53 | MW-11 | | | | | | | 2 | | | | | | | | | | | 11 | 24 | 92 | 0830 | X | X | X | |
| 35454-57 | MW-13 | | | | | | | 4 | | | | | | | | | | | 11 | 24 | 92 | 0900 | | X | X | |

COMMENTS & NOTES:

MW 11 : 2 SAMPLES BROKE DURING TRANSIT

CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
|---|---|---|---|
| Erin Chang | 12/1/92 10:05 | | 12/1/0010 |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |

Subsurface Consultants, Inc.
171 12TH STREET, SUITE 201 OAKLAND, CALIFORNIA 94607

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: December 21, 1992
Date Submitted: December 10, 1992
Project: 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND GASOLINE USING EPA METHODS 5030 COUPLED TO 8020 and 8015**
**Results Reported as ng/mL (ppb)**

| Sample # | Well 11 | Well 13 |
|---|---|---|
| Analyte: | | |
| Benzene | <0.1 | <0.1 |
| Toluene | <0.1 | <0.1 |
| Ethylbenzene | <0.1 | <0.1 |
| Total Xylenes | <0.2 | <0.2 |
| Gasoline | <50 | <50 |
| Internal Standard (% Recovery) | 95% | 95% |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: December 21, 1992
Date Submitted: December 10, 1992
Project: 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND GASOLINE USING EPA METHODS 5030 COUPLED TO 8020 and 8015**
**Results Reported as ng/mL (ppb)**
**Quality Assurance**

| Sample # | Method Blank | Well 11 (Duplicate) |
|---|---|---|
| Analyte: | | |
| Benzene | <0.1 | <0.2 |
| Toluene | <0.1 | <0.2 |
| Ethylbenzene | <0.1 | <0.2 |
| Total Xylenes | <0.2 | <0.4 |
| Gasoline | <50 | <100 |
| Internal Standard (% Recovery) | 110% | 95% |

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

Date of Report: December 21, 1992
Date Submitted: December 10, 1992
Project: 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND GASOLINE USING EPA METHODS 5030 COUPLED TO 8020 and 8015**
**Results Reported as ng/mL (ppb)**
**Quality Assurance**

| Sample # | Tap Water Matrix Spike % Recovery | Tap Water Matrix Spike Duplicate % Recovery | Spike Level |
|---|---|---|---|
| Analyte: | | | |
| Benzene | 100% | 97% | 100 |
| Toluene | 100% | 96% | 100 |
| Ethylbenzene | 100% | 100% | 100 |
| Total Xylenes | 110% | 110% | 200 |
| Gasoline | 110% | 91% | 100 |
| Internal Standard (% Recovery) | 100% | 100% | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: December 21, 1992
Date Submitted: December 10, 1992
Project: 447.036, Connell Oldsmobile

**RESULTS OF ANALYSES OF THE WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL BY GC/FID (MODIFIED 8015) Results Reported as µg/L (ppb)**

| Sample # | Diesel (ppb) | Internal Standard (% Recovery) |
|---|---|---|
| Well 11 | 140 | 150% |
| Well 13 | 210 | 150% |
| Quality Assurance | | |
| Method Blank | <50 | 81% |
| Tap Water (Matrix Spike) Percent Recovery | 76% | 55% |
| Tap Water (Matrix Spike Duplicate) Percent Recovery | 110% | 68% |
| Spike Level | 5,000 | |

# CHAIN OF CUSTODY FORM

PAGE 1 OF 1

PROJECT NAME: Connell Oldsmobile - 3093 Broadway Oakland

JOB NUMBER: 442.036 LAB: Friedman & Bruya

PROJECT CONTACT: Jeri Alexander TURNAROUND: Normal

SAMPLED BY: F. Velez REQUESTED BY: J. Alexander

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX | | | | | | CONTAINERS | | | | | | METHOD PRESERVED | | | | | SAMPLING DATE | | | | | | | | | | NOTES | ANALYSIS REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WATER | SOIL | WASTE | AIR | | | VOA | LITER | PINT | TUBE | | | HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | MONTH | | DAY | | YEAR | | TIME | | | | | | Gas + BTEX Luft DL | | HFF Gas + diesel | | | | | | | |
| 35740-41 | Well 11 | X | | | | | | 2 | | | | | | X | | | X | | 1 | 2 | 0 | 8 | 9 | 2 | 1 | 5 | 0 | 0 | | X | | | | | | | | | | |
| 35742 | Well 11 | X | | | | | | | 1 | | | | | | | | X | | 1 | 2 | 0 | 8 | 9 | 2 | 1 | 5 | 0 | 0 | | | | (X) | Consumed in Analysis | | | | | | | |
| 35743-44 | Well 13 | X | | | | | | 2 | | | | | | X | | | X | | 1 | 2 | 0 | 8 | 9 | 2 | 1 | 4 | 0 | 0 | | X | | | | | | | | | | |
| 35745 | Well 13 | X | | | | | | | 1 | | | | | | | | X | | 1 | 2 | 0 | 8 | 9 | 2 | 1 | 4 | 0 | 0 | | | | (X) | Error | | | | | | | |

COMMENTS & NOTES:

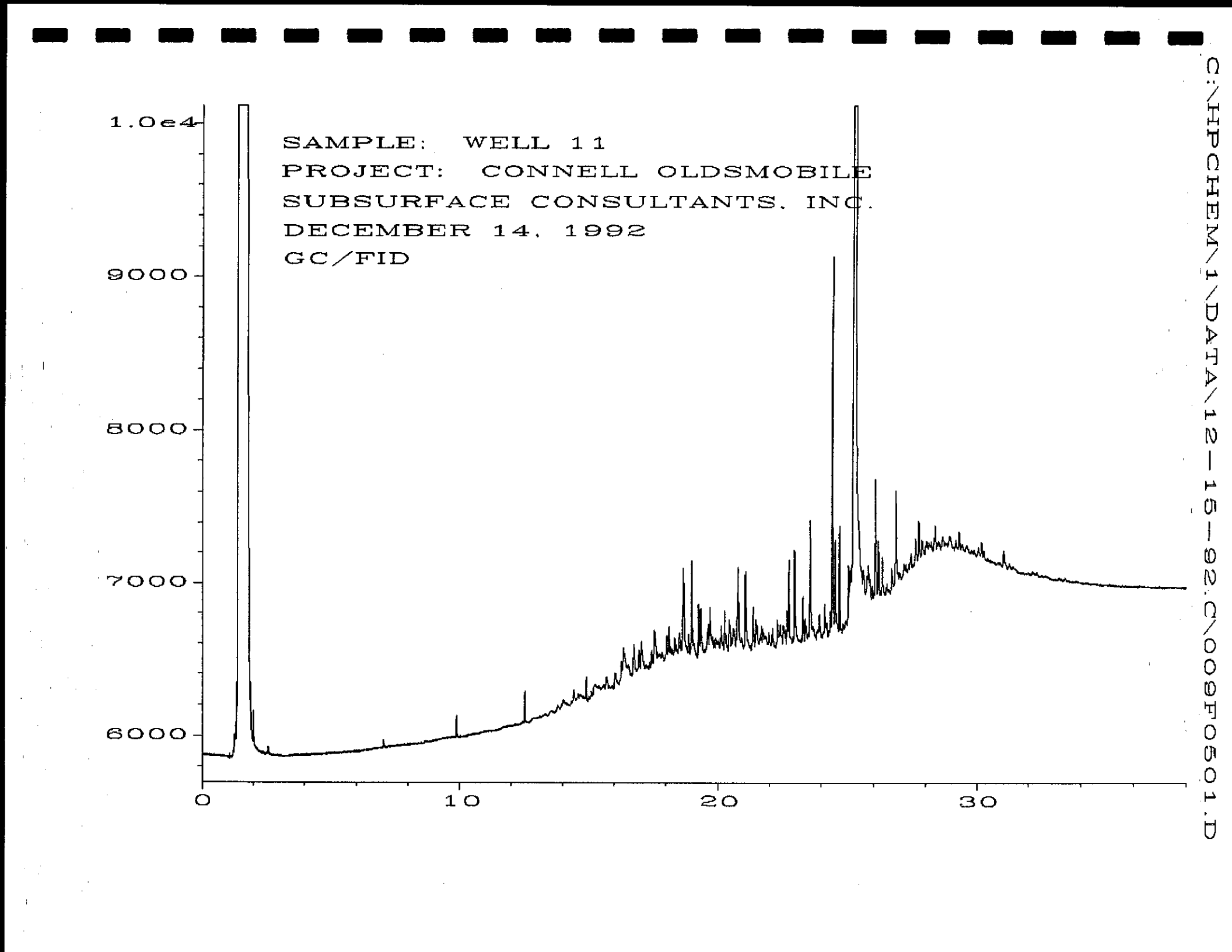
## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
|---|---|---|---|
| Jessica Alexander | 12-9-92 1:00 PM | [signature] | 12:09 12:00 pm |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |
| RELEASED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) | DATE/TIME |
| | | | |


Subsurface Consultants, Inc.

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607

(510) 268-0461 · FAX: 510-268-0137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PROJECT: CONNELL OLDSMOBILE
SUBSURFACE CONSULTANTS, INC.
DECEMBER 14, 1992
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8000
7000
6000
0
10
20
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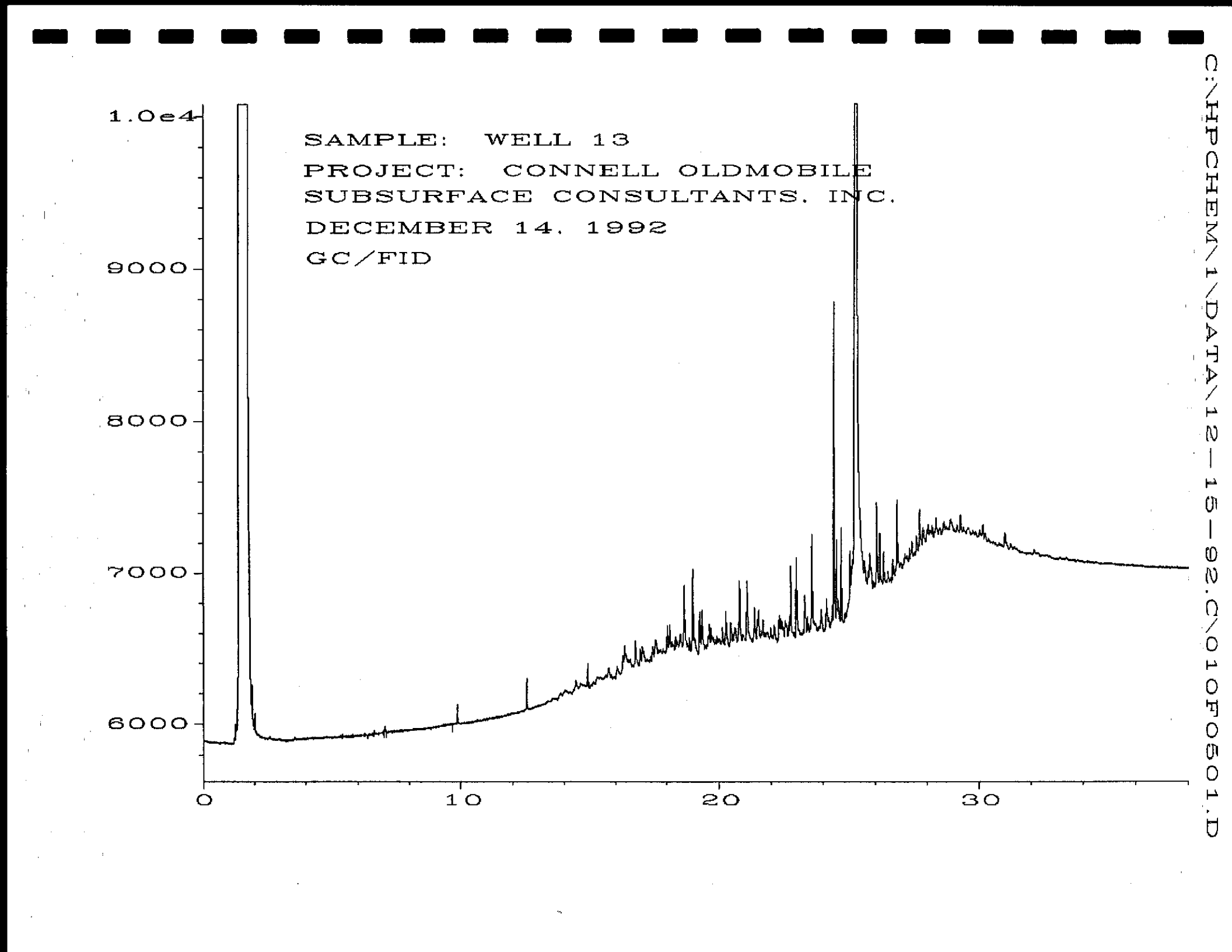
SAMPLE: WELL 13
PROJECT: CONNELL OLDMOBILE
SUBSURFACE CONSULTANTS, INC.
DECEMBER 14, 1992
GC/FID
1.0e4
9000
8000
7000
6000
0
10
20
30
C:\HPCHEM\1\DATA\12-15-92.C\010F0501.D

# WELL DEVELOPMENT FORM

Project Name: CONNELL OLDSMOBILE  Well Number: 9

Job No.: 447.036  Well Casing Diameter: 2 inches

Developed By: J. BERMUDEZ  Date: 10/12/92

TOC Elevation: _____  Weather: SUNNY

Depth to Casing Bottom (below TOC) _____ feet

Depth to Groundwater (below TOC) 22.85 feet

Feet of Water in Well _____ feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) _____ gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Development Method _____

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 2 | 7.38 | 22.0 | 40 x10 | 0 | WATER MURKY |
| 3 | 7.60 | 22.2 | 40 x10 | 0 | " |
| 4 | 7.36 | 20.6 | 40 x10 | 0 | " |
| 6 | 7.38 | 22.1 | 40 x10 | 0 | " |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Gallons Removed 6 gallons

Depth to Groundwater After Development (below TOC) DRY feet

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND , CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 10/12/92 | |

PLATE

# WELL DEVELOPMENT FORM

UPGRADIENT ALLEY

Project Name: CONNELL OLDSMOBILE  Well Number: 11

Job No.: 447.036  Well Casing Diameter: 2 inches

Developed By: Q. CHANG  Date: 11/23/92

TOC Elevation: _____  Weather: OVERCAST, COOL

Depth to Casing Bottom (below TOC) 40 feet

Depth to Groundwater (below TOC) 32.95' feet

Feet of Water in Well 7.05' feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 1.15 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Development Method Bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 5.0 | 6.67 | 65.3 | $1.74 \cdot 10^3$ | | MOD. TURBID |
| 10.0 | 4.75 | 68.7 | $1.65 \cdot 10^3$ | | NO ODOR |
| 15.0 | 4.80 | 66.3 | $1.58 \cdot 10^3$ | | " |
| 20.0 | 4.49 | 66.3 | $1.65 \cdot 10^3$ | | ▽ |
| 25.0 | 4.45 | 65.0 | $1.57 \cdot 10^3$ | | STILL TURBID |
| | | | | | NO ODOR |
| | | | | | |
| | | | | | |
| | | | | | |

Total Gallons Removed 25.0 gallons

Depth to Groundwater After Development (below TOC) 33.62' feet

▽ in 12 = 25.16' 11/23/92  5 VOAs & 1 l bottle

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 10/23/92 | | |

# WELL DEVELOPMENT FORM

Project Name: CONNELL OLDSMOBILE
Well Number: 13 BROOK ST
Job No.: 447.036
Well Casing Diameter: 2 inches
Developed By: JOSÉ BERMUDEZ
Date: 11/23/92
TOC Elevation:
Weather: OVERCAST, COOL

Depth to Casing Bottom (below TOC) 40' feet
Depth to Groundwater (below TOC) 25.44 feet
Feet of Water in Well 14.56 feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 2.37 gallons
Depth Measurement Method Tape & Paste / Electronic Sounder / Other
Development Method Bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 5 | 7.29 | 19.5 | 100 X 10 | 0 | NO ODOR WATER Turbu |
| 10 | 7.30 | 19.4 | 110 X 10 | .5 | " |
| 15 | 7.34 | 19.5 | 115 X 10 | .5 | " |
| 20 | 7.38 | 19.4 | 100 X 10 | .5 | " |
| 25 | 7.43 | 19.5 | 95 X 10 | 0 | " |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Gallons Removed 25 gallons
Depth to Groundwater After Development (below TOC) 35.71 -0.05 feet

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 10/23/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW1
Job No.: 447.036
Well Casing Diameter: 2" inch
Sampled By: E. CHANG
Date: 11/24/92
TOC Elevation: 94.48
Weather: OVERCAST

Depth to Casing Bottom (below TOC) 35.5 feet
Depth to Groundwater (below TOC) 26.63' feet
Feet of Water in Well 8.87 feet
Depth to Groundwater When 80% Recovered 28.40 feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 1.45 gallons
Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other
Free Product PRESENT
Purge Method BAILER

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 4.0 | 5.08 | 61.6 | $1.66 \cdot 10^3$ | | LOTS OF PRODUCT |
| 6.0 | 4.20 | 62.6 | 1.61 | | STINKY LOW |
| 8.0 | 4.69 | 60.8 | 1.46 | | TURBIDITY |
| | | | | | |
| | | | | | |

Total Gallons Purged 9.0 (DRY) gallons
Depth to Groundwater Before Sampling (below TOC) 27.74 feet
Sampling Method BAILER
Containers Used 4 (40 ml) 1 (liter) (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW2

Job No.: 447.036
Well Casing Diameter: 2 inch

Sampled By: EC
Date: 11/24/92

TOC Elevation: 94.81
Weather: Different

Depth to Casing Bottom (below TOC) 40.0 feet

Depth to Groundwater (below TOC) 27.91 feet

Feet of Water in Well 12.09 feet

Depth to Groundwater When 80% Recovered 30.32 feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 1.97 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product None

Purge Method Bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 5.0 | 7.08 | 61.3 | $8.08 \cdot 10^2$ | | CLEAR / LOW TURBIDITY |
| 7.0 | 5.48 | 64.1 | 8.05 | | |
| 8.0 | 5.42 | 63.3 | 8.04 | | |
| 9.0 | 5.28 | 63.3 | 7.73 | | |
| 10.5 | 5.17 | 63.0 | 8.39 | | |

Total Gallons Purged 10.0 gallons

Depth to Groundwater Before Sampling (below TOC) 30.23 feet

Sampling Method Bailer

Containers Used 4 (40 ml) 1 (liter) (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW 3
Job No.: 447.036
Well Casing Diameter: 2" inch
Sampled By: K CHANG
Date: 11/25/92
TOC Elevation: 90.03
Weather: CLOUDY WINDY

Depth to Casing Bottom (below TOC) 36.5 feet
Depth to Groundwater (below TOC) 23.01 feet
Feet of Water in Well 13.49 feet
Depth to Groundwater When 80% Recovered 25.71 feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 2.20 gallons
Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other
Free Product NONE
Purge Method BAILER

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 3.0 | 6.0 | 64.9 | $1.15 \cdot 10^3$ | | MOD. TURBID |
| 6.0 | 4.32 | 65.0 | 1.18 | | NO ODOR |
| 8.0 | 4.60 | 63.2 | 1.18 | | |
| 9.5 | 4.76 | 63.4 | 1.32 | | |
| | | | | | |

Total Gallons Purged 10.0 gallons
Depth to Groundwater Before Sampling (below TOC) 26.86 feet
Sampling Method BAILER
Containers Used 4 (40 ml) 2 (liter) (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW 4
Job No.: 447.036
Well Casing Diameter: 2" inch
Sampled By: J. Bermudez
Date: 11/24/92
TOC Elevation: 88.84
Weather: [illegible]

Depth to Casing Bottom (below TOC) 31.5 feet
Depth to Groundwater (below TOC) 22.60' feet
Feet of Water in Well 8.90 feet
Depth to Groundwater When 80% Recovered 24.38 feet
Casing Volume (feet of water x Casing DIA ² x 0.0408) 1.45 gallons
Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other
Free Product PRESENT
Purge Method BAILER

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 2 | 6.89 | 20.3 | 50 x10 | | (GAS) WATER SHEEN |
| 5 | 6.90 | 19.9 | 50 x10 | | " |
| 7 | 6.89 | 19.8 | 50 x10 | | " |
| | | | | | |
| | | | | | |

Total Gallons Purged 10 gallons
Depth to Groundwater Before Sampling (below TOC) 22.63 feet
Sampling Method BAILER
Containers Used 4 (40 ml) 1 (liter) (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW-5
Job No.: 447.036
Well Casing Diameter: 2 inch
Sampled By: J. Bermudez
Date: 11/25/92
TOC Elevation: 84.84
Weather: OVER CAST

Depth to Casing Bottom (below TOC) 36.5 feet
Depth to Groundwater (below TOC) 26.83' feet
Feet of Water in Well 9.67 feet
Depth to Groundwater When 80% Recovered 28.76 feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) _____ gallons
Depth Measurement Method Tape & Paste / Electronic Sounder / Other
Free Product NONE
Purge Method BAILER

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 3 | 6.79 | 19.6 | 70 X10 | | NO ODOR WATER TO BURLAP |
| 5 | 6.83 | 19.8 | 70 X10 | | " |
| 7 | 6.89 | 19.9 | 60 X10 | | " |
| 10 | 6.87 | 20.0 | 60 X10 | | " |
| | | | | | |

Total Gallons Purged 10 gallons
Depth to Groundwater Before Sampling (below TOC) 28.50 feet
Sampling Method BAILER
Containers Used 4 (40 ml) / 1 (liter) / 0 (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW-6

Job No.: 447.036
Well Casing Diameter: 2" inch

Sampled By: E CHANG
Date: 12/2/92

TOC Elevation: 85.62
Weather: CLEAR

Depth to Casing Bottom (below TOC) 36.5 feet

Depth to Groundwater (below TOC) 28.87' feet

Feet of Water in Well 7.63 feet

Depth to Groundwater When 80% Recovered 30.40 feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 1.24 gallons

Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other

Free Product PRESENT

Purge Method N/A

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Gallons Purged 0 - unable to bail water (obstruction) gallons

Depth to Groundwater Before Sampling (below TOC) 28.87' feet

Sampling Method 1" Ø BAILER

Containers Used 4 (40 ml) / (liter) / (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW7
Job No.: 447.036
Well Casing Diameter: 2" inch
Sampled By: E CHANG
Date: 11/24/92
TOC Elevation: 85.41
Weather: OVERCAST

Depth to Casing Bottom (below TOC) 33.5 feet
Depth to Groundwater (below TOC) 21.52' feet
Feet of Water in Well 11.98 feet
Depth to Groundwater When 80% Recovered 25.92 feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 1.96 gallons
Depth Measurement Method Tape & Paste / Electronic Sounder / Other
Free Product NONE
Purge Method BAILER

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 3 | 6.91 | 19.4 | 80 x10 | | W. ODOR WATER TURBID |
| 5 | 6.87 | 19.5 | 80 x10 | | " |
| 7 | 6.92 | 19.6 | 75 x10 | | " |
| 10 | 6.87 | 18.9 | 86 x10 | | " |
| | | | | | " |

Total Gallons Purged 10 gallons
Depth to Groundwater Before Sampling (below TOC) 25.93 feet
Sampling Method BAILER
Containers Used 4 (40 ml) 1 (liter) (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW8
Job No.: 447.036
Well Casing Diameter: 8" inch
Sampled By: J. BERMUDEZ
Date: 11/25/92
TOC Elevation: _____
Weather: OVER CAST

Depth to Casing Bottom (below TOC) _____ feet
Depth to Groundwater (below TOC) 27.62' feet
Feet of Water in Well _____ feet
Depth to Groundwater When 80% Recovered _____ feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) _____ gallons
Depth Measurement Method. Tape & Paste / Electronic Sounder / Other
Free Product _____
Purge Method _____

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 2 | 6.85 | 20.0 | 100 x10 | | |
| 4 | 6.84 | 20.2 | 120 x10 | | |
| 6 | 6.86 | 20.1 | 120 x10 | | |
| | | | | | |
| | | | | | |

Total Gallons Purged 6 gallons
Depth to Groundwater Before Sampling (below TOC) 28.91 feet
Sampling Method _____
Containers Used 4 (40 ml) / 1 (liter) / _____ (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW9

Job No.: 447.036
Well Casing Diameter: 2" inch

Sampled By: EL
Date: 11/24/92

TOC Elevation: _____
Weather: _____

Depth to Casing Bottom (below TOC) _____ feet

Depth to Groundwater (below TOC) 23.51' feet

Feet of Water in Well _____ feet

Depth to Groundwater When 80% Recovered _____ feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) _____ gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product _____

Purge Method _____

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 2.5 | 6.93 | 19.4 | 80 x10 | | DRY |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Gallons Purged 2.5 (DRY) gallons

Depth to Groundwater Before Sampling (below TOC) 23.82 feet

Sampling Method _____

Containers Used 4 (40 ml) / (liter) / (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW-10
Job No.: 447.036
Well Casing Diameter: 8" inch
Sampled By: J. Barnhoder
Date: 11/24/92
TOC Elevation: _____
Weather: OVER CAST

Depth to Casing Bottom (below TOC) _____ feet
Depth to Groundwater (below TOC) 21.86' (FOOT) feet
Feet of Water in Well _____ feet
Depth to Groundwater When 80% Recovered _____ feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) _____ gallons
Depth Measurement Method Tape & Paste / Electronic Sounder / Other
Free Product _____
Purge Method _____

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 2 | 6.58 | 20.4 | 100 x10 | 0 | ODOR GAS WATER semi CLEAR |
| 4 | 6.52 | 20.4 | 110 x10 | | " |
| 7 | 6.54 | 20.1 | 110 x10 | | " |
| 10 | 6.59 | 20.2 | 110 x10 | | " |
| | | | | | |

Total Gallons Purged 10 gallons
Depth to Groundwater Before Sampling (below TOC) 21.90 feet
Sampling Method _____
Containers Used 4 (40 ml) 1 (liter) _____ (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: 11
Job No.: 447.036
Well Casing Diameter: 0.2 inch
Sampled By: J. BERMUDEZ
Date: 11/24/92
TOC Elevation: 102.06
Weather: OVER CAST

Depth to Casing Bottom (below TOC) 40 feet
Depth to Groundwater (below TOC) 33.65' feet
Feet of Water in Well 6.35 feet
Depth to Groundwater When 80% Recovered 34.92 feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 1.04 gallons
Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other
Free Product NONE
Purge Method N/A

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Gallons Purged 0 gallons
Depth to Groundwater Before Sampling (below TOC) 33.65 feet
Sampling Method BAILER
Containers Used 8 (40 ml) / 1 (liter) / ____ (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: 13
Job No.: 447.036
Well Casing Diameter: 2 inch
Sampled By: J. BERMUDEZ
Date: 11/24/92
TOC Elevation: 84.06
Weather: OVER CAST

Depth to Casing Bottom (below TOC) 40.0 feet
Depth to Groundwater (below TOC) 26.05 feet
Feet of Water in Well 13.95 feet
Depth to Groundwater When 80% Recovered 28.84 feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 2.27 gallons
Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other
Free Product NONE
Purge Method N/A

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Gallons Purged 2.0 gallons
Depth to Groundwater Before Sampling (below TOC) 26.05 feet
Sampling Method BAILER
Containers Used 8 (40 ml) / 1 (liter) / ____ (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 11/24/92 | | |

## WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE Well Number: 13

Job No.: 447.096 Well Casing Diameter: 2 inch

Sampled By: FV Date: 12/8/92

TOC Elevation: _____ Weather: cloudy - raining

-0.05 in water level

Depth to Casing Bottom (below TOC) 40' feet

Depth to Groundwater (below TOC) 25.20' feet

Feet of Water in Well 14.80' feet

Depth to Groundwater When 80% Recovered 28.16' feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 2.42 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product none

Purge Method Disposible bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 2 | 5.01 | 60.9 | 1.11 x 1000 | | semi clear |
| 4 | 4.44 | 64.5 | 1.08 x 1000 | | " |
| 6 | 4.39 | 64.5 | 1.03 x 1000 | | " |
| 8 | 4.34 | 64.8 | 0.98 x 1000 | | " |
| 10 | 4.31 | 64.3 | 0.96 x 1000 | | " |

Total Gallons Purged 10 gallons

Depth to Groundwater Before Sampling (below TOC) 28.50 feet

Sampling Method Disposible bailer

Containers Used 4 (40 ml) 2 (liter) _____ (pint)

Subsurface Consultants

JOB NUMBER DATE APPROVED PLATE

# WELL SAMPLING FORM

Project Name: Connell Oils — Well Number: 11

Job No.: 447036 — Well Casing Diameter: 2 inch

Sampled By: — Date: 12/8/92

TOC Elevation: — Weather: Cloudy - raining

Depth to Casing Bottom (below TOC) 40' feet

Depth to Groundwater (below TOC) 33.63' feet

Feet of Water in Well 6.37 feet

Depth to Groundwater When 80% Recovered 34.9 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 1.04 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product None

Purge Method Disposable bailer

- 0.05 in water levels

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp °F (°C) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 2 | 4.13 | 63.9 | 1.95 X1000 | | Brown - murky |
| 4 | 4.13 | 65.1 | 1.92 X1000 | | " |
| 6 | 4.12 | 65.2 | 1.95 X1000 | | " |
| 8 | 4.13 | 65.3 | 1.93 X1000 | | " |
| 10 | 4.16 | 65.3 | 1.92 X1000 | | " |

Total Gallons Purged 10 gallons

Depth to Groundwater Before Sampling (below TOC) 33.65 feet

Sampling Method Disposable bailer

Containers Used 4 (40 ml) 2 (liter) ____ (pint)

| Subsurface Consultants | JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|---|

# APRIL 1993 MONITORING EVENT

# ANALYTICAL TEST RESULTS

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 04/07/93
DATE REPORTED: 04/15/93

LABORATORY NUMBER: 110565

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 447.036

LOCATION: CONNELL OLDSMOBILE

RESULTS: SEE ATTACHED

Reviewed by

Reviewed by

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 04/02,05/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/10/93
DATE REPORTED: 04/15/93

## Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

| LAB ID | SAMPLE ID | TVH AS GASOLINE (ug/L) | BENZENE (ug/L) | TOLUENE (ug/L) | ETHYL BENZENE (ug/L) | TOTAL XYLENES (ug/L) |
|---|---|---|---|---|---|---|
| 110565-1 | MW-5 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 110565-2 | MW-7 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 110565-4 | MW-2 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 110565-5 | MW-3 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 110565-6 | MW-9 | 2,300 | 48 | 4.0 | 0.6* | 13* |
| 110565-9 | MW-13 | ND(50) | ND(0.5) | 0.9 | ND(0.5) | ND(0.5) |
| 110565-10 | TANK | 350 | 4.5* | 1.3 | ND(0.5) | ND(0.5) |

* Presence of this compound confirmed by second column; however, the confirmation concentration differed from the reported result by more than a factor of two.

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 6 |
| RECOVERY, % | 103 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 04/02,05/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/12-13/93
DATE REPORTED: 04/15/93

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

| LAB ID | SAMPLE ID | TVH AS GASOLINE (ug/L) | BENZENE (ug/L) | TOLUENE (ug/L) | ETHYL BENZENE (ug/L) | TOTAL XYLENES (ug/L) |
|---|---|---|---|---|---|---|
| 110565-3 | MW-1 | 270,000 | 50,000 | 58,000 | 4,600 | 25,000 |
| 110565-7 | MW-10 | 63,000 | 6,300 | 14,000 | 1,100 | 7,500 |
| 110565-8 | MW-11 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 7 |
| RECOVERY, % | 91 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 04/02,05/93
DATE RECEIVED: 04/07/93
DATE EXTRACTED: 04/09/93
DATE ANALYZED: 04/10,12/93
DATE REPORTED: 04/15/93

## Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

| LAB ID | CLIENT ID | KEROSENE RANGE (ug/L) | DIESEL RANGE (ug/L) | REPORTING LIMIT* (ug/L) |
|---|---|---|---|---|
| 110565-1 | MW-5 | ND | ND | 50 |
| 110565-2 | MW-7 | ND | ND | 50 |
| 110565-3 | MW-1 | 25,000 | *** | 500 |
| 110565-4 | MW-2 | ** | 870 | 50 |
| 110565-5 | MW-3 | ND | ND | 50 |
| 110565-6 | MW-9 | 920 | *** | 50 |
| 110565-7 | MW-10 | 5,000 | *** | 50 |
| 110565-8 | MW-11 | ND | ND | 50 |
| 110565-9 | MW-13 | ND | ND | 50 |
| 110565-10 | TANK | ** | 630 | 50 |

** Kerosene range not reported due to overlap of hydrocarbon ranges.

*** Diesel range not reported due to overlap of hydrocarbon ranges.

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 1 |
| RECOVERY, % | 103 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-1

DATE SAMPLED: 04/02/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/13/93
DATE REPORTED: 04/15/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 200 |
| Bromomethane | ND | 200 |
| Vinyl chloride | ND | 200 |
| Chloroethane | ND | 200 |
| Methylene chloride | ND | 2,000 |
| Trichlorofluoromethane | ND | 100 |
| 1,1-Dichloroethene | ND | 100 |
| 1,1-Dichloroethane | ND | 100 |
| cis-1,2-Dichloroethene | ND | 100 |
| trans-1,2-Dichloroethene | ND | 100 |
| Chloroform | ND | 100 |
| Freon 113 | ND | 100 |
| 1,2-Dichloroethane | 1,800 | 100 |
| 1,1,1-Trichloroethane | ND | 100 |
| Carbon tetrachloride | ND | 100 |
| Bromodichloromethane | ND | 100 |
| 1,2-Dichloropropane | ND | 100 |
| cis-1,3-Dichloropropene | ND | 100 |
| Trichloroethene | ND | 100 |
| 1,1,2-Trichloroethane | ND | 100 |
| trans-1,3-Dichloropropene | ND | 100 |
| Dibromochloromethane | ND | 100 |
| Bromoform | ND | 200 |
| Tetrachloroethene | ND | 100 |
| 1,1,2,2-Tetrachloroethane | ND | 100 |
| Chlorobenzene | ND | 100 |
| 1,3-Dichlorobenzene | ND | 100 |
| 1,4-Dichlorobenzene | ND | 100 |
| 1,2-Dichlorobenzene | ND | 100 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 108 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565-4
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-2

DATE SAMPLED: 04/02/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/10/93
DATE REPORTED: 04/15/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 110 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565-5
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-3

DATE SAMPLED: 04/02/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/10/93
DATE REPORTED: 04/15/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 113 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-5

DATE SAMPLED: 04/02/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/10/93
DATE REPORTED: 04/15/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 116 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-7

DATE SAMPLED: 04/02/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/10/93
DATE REPORTED: 04/15/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 107 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565-6
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-9

DATE SAMPLED: 04/02/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/10/93
DATE REPORTED: 04/15/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | 2 | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | 600* | 8 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.
* Re-run at a dilution of 1:8 on 04/14/93

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 104 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565-7
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-10

DATE SAMPLED: 04/02/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/13/93
DATE REPORTED: 04/15/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 100 |
| Bromomethane | ND | 100 |
| Vinyl chloride | ND | 100 |
| Chloroethane | ND | 100 |
| Methylene chloride | ND | 1,000 |
| Trichlorofluoromethane | ND | 50 |
| 1,1-Dichloroethene | ND | 50 |
| 1,1-Dichloroethane | ND | 50 |
| cis-1,2-Dichloroethene | ND | 50 |
| trans-1,2-Dichloroethene | ND | 50 |
| Chloroform | ND | 50 |
| Freon 113 | ND | 50 |
| 1,2-Dichloroethane | 70 | 50 |
| 1,1,1-Trichloroethane | ND | 50 |
| Carbon tetrachloride | ND | 50 |
| Bromodichloromethane | ND | 50 |
| 1,2-Dichloropropane | ND | 50 |
| cis-1,3-Dichloropropene | ND | 50 |
| Trichloroethene | ND | 50 |
| 1,1,2-Trichloroethane | ND | 50 |
| trans-1,3-Dichloropropene | ND | 50 |
| Dibromochloromethane | ND | 50 |
| Bromoform | ND | 100 |
| Tetrachloroethene | ND | 50 |
| 1,1,2,2-Tetrachloroethane | ND | 50 |
| Chlorobenzene | ND | 50 |
| 1,3-Dichlorobenzene | ND | 50 |
| 1,4-Dichlorobenzene | ND | 50 |
| 1,2-Dichlorobenzene | ND | 50 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 105 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565-8
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-11

DATE SAMPLED: 04/02/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/10/93
DATE REPORTED: 04/15/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 109 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565-9
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-13

DATE SAMPLED: 04/02/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/10/93
DATE REPORTED: 04/15/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 110 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565-10
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: TANK

DATE SAMPLED: 04/02/93
DATE RECEIVED: 04/07/93
DATE ANALYZED: 04/13/93
DATE REPORTED: 04/15/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | 4 | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 102 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: METHOD BLANK

DATE ANALYZED: 04/10/93
DATE REPORTED: 04/15/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 109 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110565
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: METHOD BLANK

DATE ANALYZED: 04/13/93
DATE REPORTED: 04/15/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 116 |

Curtis & Tompkins, Ltd

Curtis & Tompkins, Ltd.

8010 MS/MSD Report

Matrix Sample Number: 110518-009
Matrix Sample File: 099W011.raw
Matrix: WATER
Batch No: 99 931458 931459 931441

Date Analyzed: 09-APR-93
Spike File: 099W012.raw
Spike Dup File: 099W013.raw
Analyst: NCI

| | Instrdg | SpikeAmt | % Rec | Limits |
|---|---|---|---|---|
| MS RESULTS | | | | |
| 1,1-Dichloroethene | 16.134 | 20 | 81 % | 61-145% |
| Trichloroethene | 22.517 | 20 | 104 % | 71-120% |
| Chlorobenzene | 18.013 | 20 | 89 % | 75-130% |
| Surrogate Recovery | | | | |
| Bromobenzene | 102.707 | 100 | 103 % | 75-125% |
| MSD RESULTS | | | | |
| 1,1-Dichloroethene | 18.609 | 20 | 93 % | 61-145% |
| Trichloroethene | 25.46 | 20 | 119 % | 71-120% |
| Chlorobenzene | 19.393 | 20 | 96 % | 75-130% |
| Surrogate Recovery | | | | |
| Bromobenzene | 104.437 | 100 | 104 % | 75-125% |
| MATRIX RESULTS | | | | |
| 1,1-Dichloroethene | 0 | | | |
| Trichloroethene | 1.648 | | | |
| Chlorobenzene | .267 | | | |
| RPD DATA | | | | |
| 1,1-Dichloroethene | 14 % | | | < 14% |
| Trichloroethene | 12 % | | | < 14% |
| Chlorobenzene | 7 % | | | < 13% |

Column: Rtx 502.2
Limits based on 3/90 SOW CLP

Results within Specifications - PASS

Curtis & Tompkins, Ltd

Curtis & Tompkins, Ltd.

# 8010/8020 Laboratory Control Sample Report

Date Analyzed: 09-APR-93
Matrix: WATER
Batch No: 99 931435

LCS Datafile: 099W005.raw
Operator: NCI
GC ID: GC12

## EPA METHOD 8010: HALOGENATED VOLATILE ORGANICS

| | Instrdg | SpikeAmt | % Rec | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 12.213 | 20 | 61 % | 61-145% |
| Chlorobenzene | 15.177 | 20 | 76 % | 75-130% |
| Trichloroethene | 16.458 | 20 | 82 % | 71-120% |
| Surrogate Recovery | | | | |
| Bromobenzene | 110.254 | 100 | 110 % | 75-125% |

## EPA METHOD 8020: AROMATIC VOLATILE ORGANICS

| | | | | |
|---|---|---|---|---|
| Benzene | 15.114 | 20 | 76 % | 76-127% |
| Toluene | 15.127 | 20 | 76 % | 76-125% |
| Chlorobenzene | 16.499 | 20 | 82 % | 75-130% |
| Surrogate Recovery | | | | |
| Bromobenzene | 100.701 | 100 | 101 % | 75-125% |

Column: Rtx 502.2
Limits based on 3/90 SOW

Results within Specifications - PASS

Curtis & Tompkins, Ltd

Curtis & Tompkins, Ltd.

8010 MS/MSD Report

Matrix Sample Number: 110565-009
Matrix Sample File: 102W017.raw
Matrix: WATER
Batch No: 102 931492 931493 931490

Date Analyzed: 13-APR-93
Spike File: 102W019.raw
Spike Dup File: 102W020.raw
Analyst: CK

| | Instrdg | SpikeAmt | % Rec | Limits |
|---|---|---|---|---|
| MS RESULTS | | | | |
| 1,1-Dichloroethene | 14.521 | 20 | 73 % | 61-145% |
| Trichloroethene | 19.257 | 20 | 96 % | 71-120% |
| Chlorobenzene | 16.47 | 20 | 82 % | 75-130% |
| Surrogate Recovery | | | | |
| Bromobenzene | 104.917 | 100 | 105 % | 75-125% |
| MSD RESULTS | | | | |
| 1,1-Dichloroethene | 15.933 | 20 | 80 % | 61-145% |
| Trichloroethene | 18.812 | 20 | 94 % | 71-120% |
| Chlorobenzene | 18.025 | 20 | 90 % | 75-130% |
| Surrogate Recovery | | | | |
| Bromobenzene | 104.226 | 100 | 104 % | 75-125% |
| MATRIX RESULTS | | | | |
| 1,1-Dichloroethene | 0 | | | |
| Trichloroethene | 0 | | | |
| Chlorobenzene | 0 | | | |
| RPD DATA | | | | |
| 1,1-Dichloroethene | 9 % | | | < 14% |
| Trichloroethene | 2 % | | | < 14% |
| Chlorobenzene | 9 % | | | < 13% |

Column: Rtx 502.2
Limits based on 3/90 SOW CLP

Results within Specifications - PASS

Curtis & Tompkins, Ltd

Curtis & Tompkins, Ltd.

# 8010/8020 Laboratory Control Sample Report

Date Analyzed: 12-APR-93
Matrix: WATER
Batch No: 102 931476

LCS Datafile: 102W004.raw
Operator: CK
GC ID: GC12

## EPA METHOD 8010: HALOGENATED VOLATILE ORGANICS

| | Instrdg | SpikeAmt | % Rec | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 17.162 | 20 | 86 % | 61-145% |
| Chlorobenzene | 16.591 | 20 | 83 % | 75-130% |
| Trichloroethene | 19.729 | 20 | 99 % | 71-120% |
| Surrogate Recovery | | | | |
| Bromobenzene | 105.409 | 100 | 105 % | 75-125% |

## EPA METHOD 8020: AROMATIC VOLATILE ORGANICS

| | | | | |
|---|---|---|---|---|
| Toluene | 18.893 | 20 | 94 % | 76-125% |
| Benzene | 18.412 | 20 | 92 % | 76-127% |
| Chlorobenzene | 19.288 | 20 | 96 % | 75-130% |
| Surrogate Recovery | | | | |
| Bromobenzene | 100.381 | 100 | 100 % | 75-125% |

Column: Rtx 502.2
Limits based on 3/90 SOW

Results within Specifications - PASS

# CHAIN OF CUSTODY FORM

PAGE ____ OF ____

PROJECT NAME: CONNELL

JOB NUMBER: SCI 447.026 LAB: C&T

PROJECT CONTACT: J. ALEXANDER TURNAROUND: NORMAL

SAMPLED BY: E. CHANG / C. PEARSON / D. ALEXANDER REQUESTED BY: J. ALEXANDER

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | SOIL | WASTE | AIR | CONTAINERS: VOA | LITER | PINT | TUBE | METHOD PRESERVED: HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | SAMPLING DATE: MONTH | DAY | YEAR | TIME | NOTES | ANALYSIS REQUESTED: TVH / BTEX | TEH | EPA 8010 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 110565 -1 | MW-5 | X | | | | 3 | 1 | | | | | | | | 04 | 02 | 93 | 1230 | | X | X | X |
| -2 | MW-7 | X | | | | 3 | 1 | | | | | | | | | | | 1310 | | X | X | X |
| -3 | MW-1 | X | | | | 3 | 1 | | | | | | | | 04 | 05 | 93 | 1130 | 1 | X | X | X |
| -4 | MW-2 | X | | | | 3 | 1 | | | | | | | | | | | 1220 | | X | X | X |
| -5 | MW-3 | X | | | | 3 | 1 | | | | | | | | | | | 1310 | | X | X | X |
| -6 | MW-9 | X | | | | 3 | 1 | | | | | | | | | | | 1300 | | X | X | X |
| -7 | MW-10 | X | | | | 3 | 1 | | | | | | | | | | | 1100 | | X | X | X |
| -8 | MW-11 | X | | | | 3 | 1 | | | | | | | | | | | 1220 | | X | X | X |
| ↓ -9 | MW-13 | X | | | | 3 | 1 | | | | | | | | | | | 1450 | | X | X | X |

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
|---|---|---|---|
| Carolyn Hall | 4/7/93 1405 | Jaya E. Winter | 4/7/93 1600 |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |

COMMENTS & NOTES:

(1) SMALL BUBBLES ON SIDE OF CONTAINER

MW-7 4/5/93 = MW-9 4/5/93

ARSENIC 4/8/93 WINTER


Subsurface Consultants, Inc.

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607

(510) 268-0461 • FAX: 510-268-0137

# CHAIN OF CUSTODY FORM

PAGE ____ OF ____

PROJECT NAME: CONNELL

JOB NUMBER: SCI 447.036 LAB: C&T

PROJECT CONTACT: J. ALEXANDER TURNAROUND: NORMAL

SAMPLED BY: E. CHANG / C. PEARSON / D. ALEXANDER REQUESTED BY: J. ALEXANDER

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX | | | | | | CONTAINERS | | | | | | METHOD PRESERVED | | | | | SAMPLING DATE | | | | | | | | NOTES | ANALYSIS REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WATER | SOIL | WASTE | AIR | | | VOA | LITER | PINT | TUBE | | | HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | MONTH | | DAY | | YEAR | | TIME | | | TVH / BTEX | TEH | EPA 8010 | | | | | | | | |
| 116565 -10 | TANK | X | | | | | | 6 | 2 | | | | | | | | | | 0 | 4 | 0 | 2 | 9 | 3 | 1 | 3 | 0 | 0 | | X | X | X | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
|---|---|---|---|
| Carolyn Hall | 4/7/93 1405 | Jay E. Winslow | 4/7/93 1600 |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |

COMMENTS & NOTES:


Subsurface Consultants, Inc.

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607

(510) 268-0461 • FAX: 510-268-0137

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 04/08/93
DATE REPORTED: 04/21/93

LABORATORY NUMBER: 110561

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 447.036

LOCATION: CONNELL OLDSMOBILE

RESULTS: SEE ATTACHED

Teresa K. Morrison
Reviewed by

Reviewed by

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110561
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 04/08/93
DATE RECEIVED: 04/08/93
DATE ANALYZED: 04/10/93
DATE REPORTED: 04/21/93

## Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

| LAB ID | SAMPLE ID | TVH AS GASOLINE (ug/L) | BENZENE (ug/L) | TOLUENE (ug/L) | ETHYL BENZENE (ug/L) | TOTAL XYLENES (ug/L) |
|---|---|---|---|---|---|---|
| 110561-1 | MW-8 | 490 | 15 | 45 | 5.1 | 73 |

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 6 |
| RECOVERY, % | 103 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110561
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 04/08/93
DATE RECEIVED: 04/08/93
DATE EXTRACTED: 04/09/93
DATE ANALYZED: 04/10/93
DATE REPORTED: 04/21/93

## Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

| LAB ID | CLIENT ID | KEROSENE RANGE (ug/L) | DIESEL RANGE (ug/L) | REPORTING LIMIT* (ug/L) |
|---|---|---|---|---|
| 110561-1 | MW-8 | 100+ | ND | 50 |

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

+ Pattern does not match standard.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 1 |
| RECOVERY, % | 103 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110561-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-8

DATE SAMPLED: 04/08/93
DATE RECEIVED: 04/08/93
DATE ANALYZED: 04/17/93
DATE REPORTED: 04/21/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 4 |
| Bromomethane | ND | 4 |
| Vinyl chloride | ND | 4 |
| Chloroethane | ND | 4 |
| Methylene chloride | ND | 40 |
| Trichlorofluoromethane | ND | 2 |
| 1,1-Dichloroethene | ND | 2 |
| 1,1-Dichloroethane | ND | 2 |
| cis-1,2-Dichloroethene | ND | 2 |
| trans-1,2-Dichloroethene | ND | 2 |
| Chloroform | ND | 2 |
| Freon 113 | ND | 2 |
| 1,2-Dichloroethane | 210 | 2 |
| 1,1,1-Trichloroethane | ND | 2 |
| Carbon tetrachloride | ND | 2 |
| Bromodichloromethane | ND | 2 |
| 1,2-Dichloropropane | ND | 2 |
| cis-1,3-Dichloropropene | ND | 2 |
| Trichloroethene | ND | 2 |
| 1,1,2-Trichloroethane | ND | 2 |
| trans-1,3-Dichloropropene | ND | 2 |
| Dibromochloromethane | ND | 2 |
| Bromoform | ND | 4 |
| Tetrachloroethene | ND | 2 |
| 1,1,2,2-Tetrachloroethane | ND | 2 |
| Chlorobenzene | ND | 2 |
| 1,3-Dichlorobenzene | ND | 2 |
| 1,4-Dichlorobenzene | ND | 2 |
| 1,2-Dichlorobenzene | ND | 2 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 86 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 110561
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: METHOD BLANK

DATE ANALYZED: 04/16/93
DATE REPORTED: 04/21/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 86 |

Curtis & Tompkins, Ltd

Curtis & Tompkins, Ltd.

# 8010/8020 Laboratory Control Sample Report

Date Analyzed: 16-APR-93
Matrix: WATER
Batch No: 105 931609

LCS Datafile: 105W021.raw
Operator: CK
GC ID: GC12

## EPA METHOD 8010: HALOGENATED VOLATILE ORGANICS

| | Instrdg | SpikeAmt | % Rec | Limits |
|---|---|---|---|---|
| Chlorobenzene | 24.239 | 20 | 121 % | 75-130% |
| Trichloroethene | 23.612 | 20 | 118 % | 71-120% |
| 1,1-Dichloroethene | 24.189 | 20 | 121 % | 61-145% |
| Surrogate Recovery | | | | |
| Bromobenzene | 89.984 | 100 | 90 % | 75-125% |

## EPA METHOD 8020: AROMATIC VOLATILE ORGANICS

| | | | | |
|---|---|---|---|---|
| Chlorobenzene | 25.641 | 20 | 128 % | 75-130% |
| Toluene | 24.249 | 20 | 121 % | 76-125% |
| Benzene | 24.84 | 20 | 124 % | 76-127% |
| Surrogate Recovery | | | | |
| Bromobenzene | 99.803 | 100 | 100 % | 75-125% |

Column: Rtx 502.2
Limits based on 3/90 SOW

Results within Specifications - PASS

# CHAIN OF CUSTODY FORM

PAGE ____ OF ____

PROJECT NAME: CONNELL

JOB NUMBER: 197.036 LAB: CET

PROJECT CONTACT: J. ALEXANDER TURNAROUND: NORMAL

SAMPLED BY: E. CHANG REQUESTED BY: J. ALEXANDER

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX | | | | | | CONTAINERS | | | | | | METHOD PRESERVED | | | | | SAMPLING DATE | | | | | | | | NOTES | ANALYSIS REQUESTED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WATER | SOIL | WASTE | AIR | | | VOA | LITER | PINT | TUBE | | | HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | MONTH | | DAY | | YEAR | | TIME | | | | TPH (GAS) | TEH | 8010 | | | | | | | |
| 10561-1 | MW-8 | X | | | | | | 3 | 1 | | | | | X | | | X | | 0 | 4 | 0 | 8 | 9 | 3 | | | | | X | X | X | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
|---|---|---|---|
| Eric B Chang | 4/8/93 11:20 | [signature] | 4/8/93 11:20 |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |

COMMENTS & NOTES:


Subsurface Consultants, Inc.

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607

(510) 268-0461 • FAX: 510-268-0137

# WELL SAMPLING FORM

Project Name: Conoco

Well Number: 2

Job No.: 447.03G

Well Casing Diameter: 2 inch

Sampled By: CK

Date: 4.5.93

TOC Elevation: _____

Weather: Sunny

Depth to Casing Bottom (below TOC) _____ feet

Depth to Groundwater (below TOC) 25.62 feet

Feet of Water in Well 11 feet

Depth to Groundwater When 80% Recovered _____ feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 7.34 gallons

Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other

Free Product NONE

Purge Method BAILER

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 2 | 7.11 | 70.6 | 1241 | | |
| 4 | 6.51 | 71.6 | 1,40 | | |
| 6 | 6.46 | 70.4 | 1,41 | | |
| 7 | 6.49 | 70.8 | 1,37 | | |
| | | | | | |

Total Gallons Purged 7.5 gallons

Depth to Groundwater Before Sampling (below TOC) 29 feet

Sampling Method BAILER

Containers Used 3 (40 ml) / 1 (liter) / _____ (pint)

Subsurface Consultants

JOB NUMBER | DATE | APPROVED

PLATE

# WELL SAMPLING FORM

Project Name: CONNELL | Well Number: MW-1

Job No.: 447.036 | Well Casing Diameter: 2 inch

Sampled By: E CHANG / C. PEACOCK | Date: 4/5/93

TOC Elevation: | Weather: CLEAR/WARM

Depth to Casing Bottom (below TOC) 35.5 feet

Depth to Groundwater (below TOC) ~~26~~ 25.69 feet

Feet of Water in Well 11.81 feet

Depth to Groundwater When 80% Recovered 26.05 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 1.92 (3x = 5.8) gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product NONE - BUT CLEAR SHEEN

Purge Method BAILER

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 3.5 | 6.52 | 66.4 | $1305 \cdot 10^2$ | | CLEAR / STRONG ODOR |
| 5.0 | 6.60 | 67.0 | $9.09 \cdot 10^2$ | | |
| 6.0 | 6.56 | 66.3 | 8.75 | | |
| | | | | | |
| | | | | | |

Total Gallons Purged 6.5 gallons

Depth to Groundwater Before Sampling (below TOC) 26.05 feet

Sampling Method BAILER

Containers Used 3 (40 ml) / 1 (liter) / — (pint)

Subsurface Consultants

JOB NUMBER | DATE | APPROVED | PLATE

# WELL SAMPLING FORM

Project Name: Conoco | Well Number: MW-3

Job No.: 102,030 | Well Casing Diameter: _____ inch

Sampled By: CP | Date: 4.5.03

TOC Elevation: _____ | Weather: Sunny

Depth to Casing Bottom (below TOC) ~~40~~ 36.5 feet

Depth to Groundwater (below TOC) 21.45 feet

Feet of Water in Well ~~14.55~~ 15.05 feet

Depth to Groundwater When 80% Recovered 3' feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 2.5 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product None

Purge Method BAILER

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 6.5 | 72.6 | 8.22 x 100 | | |
| 2.5 | 5.9 | 69 | 8.27 | | |
| 5 | 6.0 | 69.6 | 8.66 | | |
| 7.0 | 7.25 | 68.4 | 8.85 | | |
| | | | | | |

Total Gallons Purged 7.5 gallons

Depth to Groundwater Before Sampling (below TOC) _____ feet

Sampling Method BAILER

Containers Used _____ 40 ml _____ liter _____ pint

Subsurface Consultants

JOB NUMBER | DATE | APPROVED

PLATE

# WELL SAMPLING FORM

Project Name: Tonnell  Well Number: MW 5

Job No.: 352-32  Well Casing Diameter: 2" inch

Sampled By: [illegible]  Date: 7/2/03

TOC Elevation: _____  Weather: _____

Depth to Casing Bottom (below TOC) 36.5 feet

Depth to Groundwater (below TOC) 26' 7½" = 36.62 feet

Feet of Water in Well 9.87 feet

Depth to Groundwater When 80% Recovered 25.6 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 1.61 (3x) = 4.8 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product None

Purge Method Bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 3.0 | 7.3 | 23.5° | 75.10 micros | | Low Turbidity |
| 4.0 | 7.1 | 22.0 | 450 | | |
| 5.0 | 6.6 | 22.0 | 700 | | |
| | | | | | |
| | | | | | |

Total Gallons Purged 5.0 gallons

Depth to Groundwater Before Sampling (below TOC) 28'6" - 13¼" feet

Sampling Method Bailer

Containers Used 3 (40 ml) 2 (liter) _____ (pint)

Subsurface Consultants

JOB NUMBER | DATE | APPROVED

PLATE

# WELL SAMPLING FORM

Project Name: Arwell  Well Number: 7

Job No.: 447.036  Well Casing Diameter: 2" inch

Sampled By: EChavez  Date: 4/2/95

TOC Elevation: _____  Weather: Clear, Warm

Depth to Casing Bottom (below TOC) 33.5' feet

Depth to Groundwater (below TOC) 20' 1" = 20.08 feet

Feet of Water in Well 13.42 feet

Depth to Groundwater When 80% Recovered 22.77 feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 3.27 (3x = 10gal) gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product _____

Purge Method _____

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 5.0 | 7.8 | 25.0 | 80.10 micrmhos | | CLEAR 0-3 gal |
| 7.0 | 7.3 | 25.0 | 80.10 | | More Turbid 3- gal |
| 9.5 | 7.0 | 26.2 | 80.10 | | |
| | | | | | |
| | | | | | |

Total Gallons Purged 10.0 gallons

Depth to Groundwater Before Sampling (below TOC) 23.18" feet

Sampling Method _____

Containers Used _____ 40 ml  _____ liter  _____ pint

Subsurface Consultants

JOB NUMBER  DATE  APPROVED

PLATE

# WELL SAMPLING FORM

Project Name: Council  Well Number: MW 8

Job No.: 442.036  Well Casing Diameter: 6 inch

Sampled By: CP  Date: 4-5-93

TOC Elevation: _____  Weather: _____

Depth to Casing Bottom (below TOC) ≤10 feet

Depth to Groundwater (below TOC) 26'10 ½" = 26.87 feet

Feet of Water in Well 13.13 feet

Depth to Groundwater When 80% Recovered 29.50 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 34.3 (3x = 103) gallons

Depth Measurement Method Tape & Paste / (Electronic Sounder) Other

Free Product NONE

Purge Method ~~BAILER~~ SUBMERSIBLE PUMP

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 6.5 | 24.7 | 1191 10 | | |
| 5 | 6.9 | 25.3 | " | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Gallons Purged _____ gallons

Depth to Groundwater Before Sampling (below TOC) _____ feet

Sampling Method BAILER

Containers Used _____ 40 ml  _____ liter  _____ pint

CP she will return Mon to finish purging

Subsurface Consultants

JOB NUMBER  DATE  APPROVED  PLATE

# WELL SAMPLING FORM

Project Name: Conrail  Well Number: MW 8

Job No.: 205 997.064  Well Casing Diameter: 8 inch

Sampled By: RChaney  Date: 4/6/93

TOC Elevation: _____  Weather: _____

Depth to Casing Bottom (below TOC) 40' feet

Depth to Groundwater (below TOC) 26' 7 3/4" = 26.64 (4/6/93) feet

Feet of Water in Well 13.36 feet

Depth to Groundwater When 80% Recovered 29.32 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 3 x 5.5 = (3 x 165) gallons

Depth Measurement Method 4/6/93 Tape & Paste / Electronic Sounder / Other

Free Product None

Purge Method Submersible pump

## FIELD MEASUREMENTS

91 on 4/6/93

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 100 ½ (55) | 7.35 | 69.3 | 1.66 · 10² | | 1, Dark / Odor |
| 109 ½ | 7.33 | 69.4 | 1.11 · 10² | | 1' |
| 119 ½ (55) | 6.88 | 68.3 | 1.11 | | 1 |
| | | | | | |
| | | | | | |

Total Gallons Purged 110 gallons

Depth to Groundwater Before Sampling (below TOC) 29.80 (Stabilized / No change over 15 min) feet

Sampling Method Bailer

Containers Used 3 (40 ml) | 1 (liter) | _____ (pint)

| Subsurface Consultants | JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|---|

# WELL SAMPLING FORM

Project Name: Conwell  Well Number: MW-9

Job No.: 1353.036  Well Casing Diameter: 2 inch

Sampled By: B. CHANG  Date: tblw (4/5/90)

TOC Elevation: _____  Weather: _____

Depth to Casing Bottom (below TOC) 40' (Assumed) feet

Depth to Groundwater (below TOC) 21 3/4" = 21.14  21.00' feet

Feet of Water in Well 18.85 feet

Depth to Groundwater When 80% Recovered 24.92 feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 3.0 (3x) = 9.2 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product NONE

Purge Method BAILER

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 2 | 6.6 | 23.5 | 850 | | murky |
| 4 | 6.8 | 23.0 | 900 | | " |
| 6 | 6.7 | ~~66.4~~ | ~~141.4~~ 1402 | | ↓ |
| 8 | 6.62 | 694 | 135 | | |
| 10 | 6.7 | 69.5 | 137 | | |

Total Gallons Purged 10 gallons

Depth to Groundwater Before Sampling (below TOC) 22.02 feet

Sampling Method Bailer

Containers Used 3 (40 ml) | 1 (liter) | _____ (pint)

| Subsurface Consultants | JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|---|

# WELL SAMPLING FORM

Project Name: CONNELL  Well Number: 10

Job No.: 441.076  Well Casing Diameter: 8 inch

Sampled By: E. JIANG ICP  Date: 4/2/13 (1/4/13)

TOC Elevation: _____  Weather: NICE, SUNNY

Depth to Casing Bottom (below TOC) 40.0 (ASSUMED) feet

Depth to Groundwater (below TOC) 19' 4 7/8" = 19.41 (19.34) feet

Feet of Water in Well 20.59 feet

Depth to Groundwater When 80% Recovered 25.74 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 54 (3x=162) gallons

Depth Measurement Method (Tape & Paste) / Electronic Sounder / Other

Free Product NONE

Purge Method SUBMERSIBLE PUMP @ APPX 6 gpm

## FIELD MEASUREMENTS

| | Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|---|
| 147 | 4 x 2/3 (55) | 7.03 | 79.5°F | $13.6 \cdot 10^2$ | | CLEAR |
| 165 | 4 x 2/3 (55) + 1/2 (55) | 6.91 | 72.6°F | $11.9 \cdot 10^2$ | | |
| 174 | 4 x 2/3 (55) + 1/2 (55) | 6.85 | 69.8 | $11.32 \cdot 10^2$ | | |
| 183 | 5 x 2/3 (55) | 6.85 | 69.3 | $11.14 \cdot 10^2$ | | |
| | | | | | | |

Total Gallons Purged 183 gallons

Depth to Groundwater Before Sampling (below TOC) 19.9' feet

Sampling Method BAILER

Containers Used 3 (40 ml) / 1 (liter) / — (pint)

Subsurface Consultants

JOB NUMBER  DATE  APPROVED  PLATE

# WELL SAMPLING FORM

Project Name: Connell  Well Number: MW-1

Job No.: 4C47036  Well Casing Diameter: 2 inch

Sampled By: E. CHANG  Date: 4/5/93

TOC Elevation: _____  Weather: _____

Depth to Casing Bottom (below TOC) 40 feet

Depth to Groundwater (below TOC) 31.025 feet

Feet of Water in Well 8.975 feet

Depth to Groundwater When 80% Recovered 32.82 (Not measured on 4/5/93) feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 1.46 (3x = 4.5) gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product NONE

Purge Method _____

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 3.5 | 6.91 | 21.5 | 99 .10 umhos | | TURBD NO ODOR |
| 3.5 | 7.5 | 21.75 | 95 .10 | | 1 |
| 4.5 | 7.1 | 22.0 | 145 .10 " | | " |
| | | | | | |
| | | | | | |

Total Gallons Purged 5.0 gallons

Depth to Groundwater Before Sampling (below TOC) 31.01 ? feet

Sampling Method Bailer

Containers Used 3 (40 ml) 1 (liter) _____ (pint)

| Subsurface Consultants | JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|---|
| | | | | |

# WELL SAMPLING FORM

Project Name: Connell | Well Number: MW 13

Job No.: 447,036 | Well Casing Diameter: 2 inch

Sampled By: E. CHANG / C. PEARSON | Date: 4/5/93

TOC Elevation: _____ | Weather: Sunny

Depth to Casing Bottom (below TOC) 40' feet

Depth to Groundwater (below TOC) 31.325 feet

Feet of Water in Well 8.77 feet

Depth to Groundwater When 80% Recovered 32.98 feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 1.43 (3x = 4.5) gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product None

Purge Method BAILER

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°c) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 2.5 | 7.15 | 67.1 | 5.55x100 | | |
| 3.5 | 7.1 | 64.7 | 6.33 | | |
| 4.5 | 6.45 | 63.5 | 6.82 | | |
| | | | | | |
| | | | | | |

Total Gallons Purged 4.5 gallons

Depth to Groundwater Before Sampling (below TOC) 25.97 feet

Sampling Method BAILER

Containers Used 3 (40 ml) 1 (liter) _____ (pint)

Subsurface Consultants

JOB NUMBER | DATE | APPROVED | PLATE

# JULY 1993 MONITORING EVENT

# ANALYTICAL TEST RESULTS

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

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

Prepared for:

Subsurface Consultants
171 12th Street
Suite 201
Oakland, CA 94608

Date: 03-AUG-93
Lab Job Number: 111668
Project ID: 447.036
Location: Connell Oldsmobile

Reviewed by: _____

Reviewed by: _____

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/27/93
DATE REPORTED: 08/03/93

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

| LAB ID | SAMPLE ID | TVH AS GASOLINE (ug/L) | BENZENE (ug/L) | TOLUENE (ug/L) | ETHYL BENZENE (ug/L) | TOTAL XYLENES (ug/L) |
|---|---|---|---|---|---|---|
| 111668-1 | MW-2 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 111668-2 | MW-3 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 111668-3 | MW-5 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 111668-4 | MW-7 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 2 |
| RECOVERY, % | 96 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/28/93
DATE REPORTED: 08/03/93

## Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

| LAB ID | SAMPLE ID | TVH AS GASOLINE (ug/L) | BENZENE (ug/L) | TOLUENE (ug/L) | ETHYL BENZENE (ug/L) | TOTAL XYLENES (ug/L) |
|---|---|---|---|---|---|---|
| 111668-5 | MW-8 | 180 | 2.5 | 3.0 | ND(0.5) | 1.9 |
| 111668-6 | MW-9 | 2,300 | 170 | 8.1 | 15 | ND(0.5) |
| 111668-7 | MW-10 | 140,000 | 16,000 | 31,000 | 2,200 | 13,000 |
| 111668-8 | MW-11 | 160 | ND(0.5) | 1.8 | ND(0.5) | ND(0.5) |
| 111668-9 | MW-13 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 2 |
| RECOVERY, % | 99 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE EXTRACTED: 07/26/93
DATE ANALYZED: 07/27,28/93
DATE REPORTED: 08/03/93

## Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

| LAB ID | CLIENT ID | KEROSENE RANGE (ug/L) | DIESEL RANGE (ug/L) | REPORTING LIMIT* (ug/L) |
|---|---|---|---|---|
| 111668-1 | MW-2 | ND | ND | 50 |
| 111668-2 | MW-3 | ND | ND | 50 |
| 111668-3 | MW-5 | ND | 190 | 50 |
| 111668-4 | MW-7 | ND | 150 | 50 |
| 111668-5 | MW-8 | ** | 90 | 50 |
| 111668-6 | MW-9 | 450 | *** | 50 |
| 111668-7 | MW-10 | 20,000 | *** | 500 |
| 111668-8 | MW-11 | ND | 150 | 50 |
| 111668-9 | MW-13 | ND | ND | 50 |

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

** Kerosene range not reported due to overlap of hydrocarbon ranges.

*** Diesel range not reported due to overlap of hydrocarbon ranges.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 6 |
| RECOVERY, % | 105 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-2

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/28/93
DATE REPORTED: 08/03/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 119 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-3

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/28/93
DATE REPORTED: 08/03/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 123 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-5

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/28/93
DATE REPORTED: 08/03/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 121 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-4
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-7

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/28/93
DATE REPORTED: 08/03/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 120 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-5
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-8

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/28/93
DATE REPORTED: 08/03/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 10 |
| Bromomethane | ND | 10 |
| Vinyl chloride | ND | 10 |
| Chloroethane | ND | 10 |
| Methylene chloride | ND | 100 |
| Trichlorofluoromethane | ND | 5 |
| 1,1-Dichloroethene | ND | 5 |
| 1,1-Dichloroethane | ND | 5 |
| cis-1,2-Dichloroethene | ND | 5 |
| trans-1,2-Dichloroethene | ND | 5 |
| Chloroform | ND | 5 |
| Freon 113 | ND | 5 |
| 1,2-Dichloroethane | 350 | 5 |
| 1,1,1-Trichloroethane | ND | 5 |
| Carbon tetrachloride | ND | 5 |
| Bromodichloromethane | ND | 5 |
| 1,2-Dichloropropane | ND | 5 |
| cis-1,3-Dichloropropene | ND | 5 |
| Trichloroethene | ND | 5 |
| 1,1,2-Trichloroethane | ND | 5 |
| trans-1,3-Dichloropropene | ND | 5 |
| Dibromochloromethane | ND | 5 |
| Bromoform | ND | 10 |
| Tetrachloroethene | ND | 5 |
| 1,1,2,2-Tetrachloroethane | ND | 5 |
| Chlorobenzene | ND | 5 |
| 1,3-Dichlorobenzene | ND | 5 |
| 1,4-Dichlorobenzene | ND | 5 |
| 1,2-Dichlorobenzene | ND | 5 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 124 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-6
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-9

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/30/93
DATE REPORTED: 08/03/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 8 |
| Bromomethane | ND | 8 |
| Vinyl chloride | ND | 8 |
| Chloroethane | ND | 8 |
| Methylene chloride | ND | 80 |
| Trichlorofluoromethane | ND | 4 |
| 1,1-Dichloroethene | ND | 4 |
| 1,1-Dichloroethane | ND | 4 |
| cis-1,2-Dichloroethene | ND | 4 |
| trans-1,2-Dichloroethene | ND | 4 |
| Chloroform | ND | 4 |
| Freon 113 | ND | 4 |
| 1,2-Dichloroethane | 1,100 | 4 |
| 1,1,1-Trichloroethane | ND | 4 |
| Carbon tetrachloride | ND | 4 |
| Bromodichloromethane | ND | 4 |
| 1,2-Dichloropropane | ND | 4 |
| cis-1,3-Dichloropropene | ND | 4 |
| Trichloroethene | ND | 4 |
| 1,1,2-Trichloroethane | ND | 4 |
| trans-1,3-Dichloropropene | ND | 4 |
| Dibromochloromethane | ND | 4 |
| Bromoform | ND | 8 |
| Tetrachloroethene | ND | 4 |
| 1,1,2,2-Tetrachloroethane | ND | 4 |
| Chlorobenzene | ND | 4 |
| 1,3-Dichlorobenzene | ND | 4 |
| 1,4-Dichlorobenzene | ND | 4 |
| 1,2-Dichlorobenzene | ND | 4 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 119 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-7
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-10

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/28/93
DATE REPORTED: 08/03/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 10 |
| Bromomethane | ND | 10 |
| Vinyl chloride | ND | 10 |
| Chloroethane | ND | 10 |
| Methylene chloride | ND | 100 |
| Trichlorofluoromethane | ND | 5 |
| 1,1-Dichloroethene | ND | 5 |
| 1,1-Dichloroethane | ND | 5 |
| cis-1,2-Dichloroethene | ND | 5 |
| trans-1,2-Dichloroethene | ND | 5 |
| Chloroform | ND | 5 |
| Freon 113 | ND | 5 |
| 1,2-Dichloroethane | 700 * | 5 |
| 1,1,1-Trichloroethane | ND | 5 |
| Carbon tetrachloride | ND | 5 |
| Bromodichloromethane | ND | 5 |
| 1,2-Dichloropropane | ND | 5 |
| cis-1,3-Dichloropropene | ND | 5 |
| Trichloroethene | ND | 5 |
| 1,1,2-Trichloroethane | ND | 5 |
| trans-1,3-Dichloropropene | ND | 5 |
| Dibromochloromethane | ND | 5 |
| Bromoform | ND | 10 |
| Tetrachloroethene | ND | 5 |
| 1,1,2,2-Tetrachloroethane | ND | 5 |
| Chlorobenzene | ND | 5 |
| 1,3-Dichlorobenzene | ND | 5 |
| 1,4-Dichlorobenzene | ND | 5 |
| 1,2-Dichlorobenzene | ND | 5 |

* Analyzed at a 1:100 Dilution 7/30/93

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 115 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-8
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-11

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/29/93
DATE REPORTED: 08/03/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 116 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-9
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW-13

DATE SAMPLED: 07/21/93
DATE RECEIVED: 07/22/93
DATE ANALYZED: 07/28/93
DATE REPORTED: 08/03/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 124 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-METHOD BLANK
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE ANALYZED: 07/27/93
DATE REPORTED: 08/03/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 119 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 111668-METHOD BLANK
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE ANALYZED: 07/29/93
DATE REPORTED: 08/03/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 115 |

Curtis & Tompkins, Ltd.

# LABORATORY CONTROL SAMPLE SUMMARY SHEET FOR EPA 8010

Laboratory Number: 111668
Analysis date: 07/27/93
Sample type: Soil

LCS file: 207e024

*LCS SPIKE DATA (spiked at 20 ppb)*

| 8010 COMPOUNDS | READING | RECOVERY | STATUS | LIMITS |
|---|---|---|---|---|
| 1,1-Dichloroethene | 20.20 | 101 % | OK | 59 - 172 |
| Chlorobenzene | 19.10 | 96 % | OK | 60 - 133 |
| Trichloroethene | 20.70 | 104 % | OK | 62 - 137 |
| SURROGATES | | | | |
| Bromobenzene | 110.40 | 110 % | OK | 75 - 125 |

Curtis & Tompkins, Ltd.

# MS/MSD SUMMARY SHEET FOR EPA 8010

Laboratory Number: 111668
Client: Subsurface Consultants
Analysis date: 07/29/93 Spike file: 210e005
Sample type: Soil Spike dup file: 210e006

## 8010 MS/MSD DATA (spiked at 20 ppb)

| SPIKE COMPOUNDS | READING | RECOVERY | STATUS | LIMITS |
|---|---|---|---|---|
| 1,1-Dichloroethene | 28.20 | 141 % | OK | 59 - 172 |
| Trichloroethene | 22.70 | 114 % | OK | 62 - 137 |
| Chlorobenzene | 19.90 | 100 % | OK | 60 - 133 |
| **SPIKE DUP COMPOUNDS** | | | | |
| 1,1-Dichloroethene | 23.80 | 119 % | OK | 59 - 172 |
| Trichloroethene | 24.70 | 124 % | OK | 62 - 137 |
| Chlorobenzene | 21.50 | 108 % | OK | 60 - 133 |
| **SURROGATES** | | | | |
| Bromobenzene (MS) | 110.70 | 111 % | OK | 59 - 172 |
| Bromobenzene (MSD) | 113.70 | 114 % | OK | 59 - 172 |

| MATRIX RESULTS | |
|---|---|
| 1,1-Dichloroethene | 0 |
| Trichloroethene | 0 |
| Chlorobenzene | 0 |

## RPD DATA

| 8010 COMPOUNDS | SPIKE | SPIKE DUP | RPD | STATUS | LIMITS |
|---|---|---|---|---|---|
| 1,1-Dichloroethe | 28.20 | 23.80 | 17 % | OK | <= 22 |
| Trichloroethene | 22.70 | 24.70 | 8 % | OK | <= 24 |
| Chlorobenzene | 2.00 | 21.50 | 8 % | OK | <= 21 |

# CHAIN OF CUSTODY FORM



PROJECT NAME: Connell Oldsmobile

JOB NUMBER: 447.036 LAB: Curtis & Tompkins

PROJECT CONTACT: Jessi Arrendo / John Wolfe TURNAROUND: Normal

SAMPLED BY: John Wolfe REQUESTED BY: John Wolfe

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | MATRIX: SOIL | MATRIX: WASTE | MATRIX: AIR | CONTAINERS: VOA | CONTAINERS: LITER | CONTAINERS: PINT | CONTAINERS: TUBE | METHOD PRESERVED: HCL | METHOD PRESERVED: $H_2SO_4$ | METHOD PRESERVED: $HNO_3$ | METHOD PRESERVED: ICE | METHOD PRESERVED: NONE | SAMPLING DATE: MONTH | DAY | YEAR | TIME | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 111668 -1 | MW-2 | X | | | | | 1 | | | | | | | | 7 | 21 | 93 | 0900 TPH 0900 BTEX | |
| -2 | MW-3 | X | | | | | | | | | | | | | | | | | |
| -3 | MW-5 | X | | | | | | | | | | | | | | | | | |
| -4 | MW-7 | X | | | | | | | | | | | | | | | | | |
| -5 | MW-8 | X | | | | | | | | | | | | | | | | | |
| -6 | MW-9 | X | | | | | | | | | | | | | | | | | |
| -7 | MW-10 | X | | | | | | | | | | | | | | | | | |
| -8 | MW-11 | X | | | | | | | | | | | | | | | | | |
| -9 | MW-13 | X | | | | | | | | | | | | | | | 1600 | | |

ANALYSIS REQUESTED: TVH & BTEX 8015/8020; TEH 8015 mod; Purgeable Halocarbons 8010

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE / TIME | RELEASED BY: (Signature) | DATE / TIME |
|---|---|---|---|
| M. Meyer Choi | 7/12 4:00 | Nora Duca | 7/12/93 4:00 |
| RELEASED BY: (Signature) | DATE / TIME | RELEASED BY: (Signature) | DATE / TIME |
| RELEASED BY: (Signature) | DATE / TIME | RELEASED BY: (Signature) | DATE / TIME |
| RELEASED BY: (Signature) | DATE / TIME | RELEASED BY: (Signature) | DATE / TIME |

COMMENTS & NOTES:

Subsurface Consultants, Inc.
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607
(510) 268-0461 • FAX: 510-268-0137

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW-2
Job No.: 447.036
Well Casing Diameter: 2 inch
Sampled By: John Wolfe
Date: 7/21/93
TOC Elevation:
Weather: Sunny c 70°-80° F

Depth to Casing Bottom (below TOC) 40' feet
Depth to Groundwater (below TOC) 25.59' feet
Feet of Water in Well 14.41' feet
Depth to Groundwater When 80% Recovered 28.47 feet
Casing Volume (feet of water x Casing DIA ² x 0.0408) 2.35 x3 = 7.06 gallons
Depth Measurement Method (Tape & Paste) / Electronic Sounder / Other
Free Product None
Purge Method Teflon bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 7.14 | 72.2 | .63 | | strong |
| 2 | 6.92 | 71.0 | .62 | | ↓ |
| 4 | 6.75 | 71.0 | .63 | | ↓ |
| 6 | 6.70 | 70.8 | .65 | | slightly turbid |
| 7 | 6.68 | 70.7 | .66 | | ↓ |

Total Gallons Purged 7.5 gallons
Depth to Groundwater Before Sampling (below TOC) 26.2 feet
Sampling Method Teflon bailer
Containers Used 4 (40 ml) 1 (liter) (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 7/20/93 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE  Well Number: MW-3

Job No.: 447.036  Well Casing Diameter: 2 inch

Sampled By: John Wolfe  Date: 7/21/93

TOC Elevation: _____  Weather: Sunny 75°

Depth to Casing Bottom (below TOC) 36.5' feet

Depth to Groundwater (below TOC) 23.92' feet

Feet of Water in Well 12.58 feet

Depth to Groundwater When 80% Recovered 26.44 feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 2.05 x 3 = 6.15 gallons

Depth Measurement Method (Tape & Paste) / Electronic Sounder / Other

Free Product none observed

Purge Method Flow bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 7.25 | 74.7 | 1.32 | | |
| 2 | 7.16 | 70.7 | .88 | | |
| 4 | 7.46 | 69.7 | .87 | | |
| 6 | 7.50 | 69.3 | .90 | | |
| 7 | 7.52 | 69.1 | .90 | | |

Total Gallons Purged 7 gallons

Depth to Groundwater Before Sampling (below TOC) 24.65 feet

Sampling Method Teflon bailer

Containers Used 4 (40 ml) 1 (liter) _____ (pint)

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 7/20/93 | |

PLATE

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW-5

Job No.: 447.036
Well Casing Diameter: 2 inch

Sampled By: John Wolfe
Date: 7/21/93

TOC Elevation: _____
Weather: Sunny 80°

Depth to Casing Bottom (below TOC) 36.5 feet

Depth to Groundwater (below TOC) 26.9 feet

Feet of Water in Well 9.6 feet

Depth to Groundwater When 80% Recovered 29.92 feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 1.56 x 3 = 4.7 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product none observed

Purge Method Teflon bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 6.79 | 71.3 | .79 | | |
| 1 | 6.76 | 70.0 | .76 | | |
| 2 | 6.65 | 69.7 | .76 | | |
| 3 | 6.60 | 69.7 | .76 | | |
| 4 | 6.50 | 69.7 | .77 | | |
| 5 | 6.60 | 69.8 | .77 | | |

Total Gallons Purged 5 gallons

Depth to Groundwater Before Sampling (below TOC) 29.40 feet

Sampling Method Teflon bailer

Containers Used 4 (40 ml) 1 (liter) _____ (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 7/20/93 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE  Well Number: MW-7

Job No.: 447.036  Well Casing Diameter: 2 inch

Sampled By: John Wolfe  Date: 7/21/93

TOC Elevation: _____  Weather: Sunny 78°

Depth to Casing Bottom (below TOC) 33.5 feet

Depth to Groundwater (below TOC) 19.59 feet

Feet of Water in Well 13.91 feet

Depth to Groundwater When 80% Recovered 22.37 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 2.27 x 3 = 6.8 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product none observed

Purge Method _____

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 7.04 | 69.9 | .70 | | Slightly Turbid |
| 2 | 6.99 | 68.6 | .73 | | |
| 4 | 6.88 | 67.8 | .74 | | |
| 6 | 6.85 | 67.7 | .75 | | |
| 6.5 | 6.84 | 67.7 | .76 | | |

Total Gallons Purged 7 gallons

Depth to Groundwater Before Sampling (below TOC) 20.05 feet

Sampling Method Teflon bailer

Containers Used 4 (40 ml) 1 (liter) _____ (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 7/20/93 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW-8

Job No.: 447.036
Well Casing Diameter: 2 & 6 inch

Sampled By: John Wolfe
Date: 7/21/93

TOC Elevation:
Weather: Sunny 80°

Depth to Casing Bottom (below TOC) 40 feet

Depth to Groundwater (below TOC) 26.60 feet

Feet of Water in Well 13.40 feet

Depth to Groundwater When 80% Recovered 29.28 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 19.68 x 3 = 59 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product non observed

Purge Method 4-inch-dia submersible pump

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 6.63 | 77.2 | 1.19 | | Slight odor |
| 5 | 6.66 | 76.1 | 1.11 | | Turbid |
| 10 | 6.70 | 75.5 | 1.10 | | |
| 15 | 6.72 | 75.0 | 1.10 | | |
| 20 | 6.72 | 74.8 | 1.08 | | |

Total Gallons Purged 70 gallons

Depth to Groundwater Before Sampling (below TOC) 30.25 feet

Sampling Method Teflon bailer

Containers Used 4 (40 ml) 1 (liter) (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 7/20/93 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE  Well Number: MW-8 cont

Job No.: 447.036  Well Casing Diameter: _____ inch

Sampled By: _____  Date: _____

TOC Elevation: _____  Weather: _____

Depth to Casing Bottom (below TOC) _____ feet

Depth to Groundwater (below TOC) _____ feet

Feet of Water in Well _____ feet

Depth to Groundwater When 80% Recovered _____ feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) _____ gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product _____

Purge Method _____

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 25 | 6.72 | 74.6 | 1.08 | | |
| 30 | 6.62 | 74.4 | 1.10 | | |
| 35 | 6.60 | 74.5 | 1.15 | | |
| 40 | 6.65 | 74.3 | 1.18 | | |
| 45 | 6.64 | 74.2 | 1.17 | | |

Total Gallons Purged _____ gallons

Depth to Groundwater Before Sampling (below TOC) _____ feet

Sampling Method _____

Containers Used _____ 40 ml  _____ liter  _____ pint

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 7/20/93 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE  Well Number: MW-8 cont

Job No.: 447.036  Well Casing Diameter: _____ inch

Sampled By: _____  Date: _____

TOC Elevation: _____  Weather: _____

Depth to Casing Bottom (below TOC) _____ feet

Depth to Groundwater (below TOC) _____ feet

Feet of Water in Well _____ feet

Depth to Groundwater When 80% Recovered _____ feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) _____ gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product _____

Purge Method _____

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 50 | 6.62 | 73.8 | 1.18 | | |
| 55 | 6.60 | 73.6 | 1.19 | | |
| 60 | 6.58 | 73.4 | 1.19 | | |
| 65 | 6.56 | 73.6 | 1.19 | | |
| 70 | 6.58 | 73.8 | 1.20 | | |

Total Gallons Purged _____ gallons

Depth to Groundwater Before Sampling (below TOC) _____ feet

Sampling Method _____

Containers Used _____ 40 ml  _____ liter  _____ pint

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.036 | 7/20/93 | |

PLATE

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW-9
Job No.: 447.036
Well Casing Diameter: 2 inch
Sampled By: John Wolfe
Date: 7/21/93
TOC Elevation:
Weather: Sunny 78°

Depth to Casing Bottom (below TOC) 32 feet
Depth to Groundwater (below TOC) 21.54' feet
Feet of Water in Well 10.46 feet
Depth to Groundwater When 80% Recovered 23.63 feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 1.7 x 3 = 5.1 gallons
Depth Measurement Method (Tape & Paste) / Electronic Sounder / Other
Free Product none observed
Purge Method Teflon bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 6.75 | 69.0 | 1.87 | | Slow recovery Strong odor |
| 2 | 6.40 | 68.9 | 94 | | v. Turbid |
| 2½ | 6.50 | 69.2 | 88 | | |
| 3 | 6.60 | 68.0 | 86 | | Wait 1 hour for recover |
| 5 | 6.58 | 68.2 | 85 | | |

Total Gallons Purged 5 gallons
Depth to Groundwater Before Sampling (below TOC) 28.75 feet
Sampling Method Teflon bailer
Containers Used 4 (40 ml) 1 (liter) (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 7/20/93 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW-10

Job No.: 447.036
Well Casing Diameter: 6 inch

Sampled By: John Wolfe
Date: 7/21/93

TOC Elevation: _____
Weather: Sunny 78°

Depth to Casing Bottom (below TOC) 36' feet

Depth to Groundwater (below TOC) 19.79 feet

Feet of Water in Well 16.21 feet

Depth to Groundwater When 80% Recovered 23.02 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 23.8 x 3 = 71.42 gallons

Depth Measurement Method (Tape & Paste) / Electronic Sounder / Other

Free Product none observed

Purge Method 4-inch-diameter submersible pump

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 7.20 | 68.0 | 1.11 | | Strong odor |
| 15 | 6.62 | 67.7 | .98 | | Turbid |
| 20 | 6.41 | 67.4 | .99 | | |
| 30 | 6.35 | 67.4 | 1.01 | | Cleans up |
| 40 | 6.33 | 67.5 | .98 | | |

Total Gallons Purged _____ gallons

Depth to Groundwater Before Sampling (below TOC) 20.08 feet

Sampling Method _____

Containers Used _____ 40 ml _____ liter _____ pint

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 7/20/93 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE  Well Number: _____

Job No.: 447.036  Well Casing Diameter: _____ inch

Sampled By: _____  Date: _____

TOC Elevation: _____  Weather: _____

Depth to Casing Bottom (below TOC) _____ feet

Depth to Groundwater (below TOC) _____ feet

Feet of Water in Well _____ feet

Depth to Groundwater When 80% Recovered _____ feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) _____ gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product _____

Purge Method _____

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 45 | 6.38 | 67.4 | .98 | | |
| 50 | 6.41 | 67.3 | .98 | | |
| 55 | 6.45 | 67.2 | .97 | | |
| 60 | 6.48 | 67.2 | .97 | | |
| 65 | 6.50 | 67.0 | .98 | | slightly turbid |

Total Gallons Purged _____ gallons

Depth to Groundwater Before Sampling (below TOC) _____ feet

Sampling Method _____

Containers Used _____ 40 ml  _____ liter  _____ pint

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 7/20/93 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE
Well Number: MW-11
Job No.: 447.036
Well Casing Diameter: 2" inch
Sampled By: John Wolfe
Date: 7/21/93
TOC Elevation:
Weather:

Depth to Casing Bottom (below TOC) 40 ? feet
Depth to Groundwater (below TOC) 31.9 feet
Feet of Water in Well 8.10 feet
Depth to Groundwater When 80% Recovered 33.52 feet
Casing Volume (feet of water x Casing DIA ² x 0.0408) gallons
Depth Measurement Method (Tape & Paste) / Electronic Sounder / Other
Free Product none observed
Purge Method Teflon bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 5.03 | 76.8 | 1.06 | | Extreme Turbid |
| 2 | 4.90 | 74.0 | 1.09 | | |
| 4 | 4.99 | 69.5 | 1.10 | | $H_2SO_4$ odor |
| 6 | 4.96 | 69.6 | 1.12 | | |
| 8 | 5.31 | 68.5 | 1.13 | | |
| 10 | 5.35 | 68.4 | 1.13 | | |

Total Gallons Purged 10 gallons
Depth to Groundwater Before Sampling (below TOC) 32.68 feet
Sampling Method Teflon bailer
Containers Used 4 (40 ml) 1 (liter) (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 7/20/93 | | |

# WELL SAMPLING FORM

Project Name: CONNELL OLDSMOBILE  Well Number: MW-13

Job No.: 447.036  Well Casing Diameter: 2 inch

Sampled By: John Wolfe  Date: 7/21/93

TOC Elevation: _____  Weather: Sunny 81°

Depth to Casing Bottom (below TOC) 40 feet

Depth to Groundwater (below TOC) 24.29 feet

Feet of Water in Well 15.71 feet

Depth to Groundwater When 80% Recovered 27.43 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) 2.56 x 3 = 7.68 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product none observed

Purge Method Teflon bailer

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 0 | 6.83 | 70.7 | .66 | | clear |
| 2 | 7.70 | 70.2 | .64 | | |
| 4 | 5.94 | 69.2 | .68 | | |
| 6 | 6.92 | 69.0 | .68 | | slightly turbid |
| 8 | 6.90 | 68.9 | .69 | | |

Total Gallons Purged 8 gallons

Depth to Groundwater Before Sampling (below TOC) _____ feet

Sampling Method Teflon bailer

Containers Used 4 (40 ml) 1 (liter) _____ (pint)

| Subsurface Consultants | CONNELL OLDSMOBILE - OAKLAND, CA | | | PLATE |
|---|---|---|---|---|
| | JOB NUMBER | DATE | APPROVED | |
| | 447.036 | 7/20/93 | | |

# NOVEMBER 1993 MONITORING EVENT

# ANALYTICAL TEST RESULTS

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

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

Prepared for:

Subsurface Consultants
171 12th Street
Suite 201
Oakland, CA 94608

Date: 23-NOV-93
Lab Job Number: 113211
Project ID: 447.036
Location: Connell Oldsmobile

Reviewed by: _____

Reviewed by: _____

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 11/10/93
DATE RECEIVED: 11/15/93
DATE EXTRACTED: 11/17/93
DATE ANALYZED: 11/19,20/93
DATE REPORTED: 11/23/93

## Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

| LAB ID | CLIENT ID | KEROSENE RANGE (ug/L) | DIESEL RANGE (ug/L) | REPORTING LIMIT* (ug/L) |
|---|---|---|---|---|
| 113211-1 | MW2 | ** | 240 | 50 + |
| 113211-2 | MW3 | ND | ND | 50 |
| 113211-3 | MW5 | ** | 170 | 50 + |
| 113211-4 | MW7 | ND | 200 | 50 + |
| 113211-5 | MW8 | ** | 170 | 50 |
| 113211-6 | MW9 | 450 | *** | 50 |
| 113211-7 | MW11 | ND | 60 | 50 |
| 113211-8 | MW13 | ** | 160 | 50 + |
| 113211-METHOD BLANK | | ** | 160 | 50 |

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

** Kerosene range not reported due to overlap of hydrocarbon ranges.

*** Diesel range not reported due to overlap of hydrocarbon ranges.

+ Laboratory contamination may contribute to diesel quantitation.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | 12 |
| RECOVERY, % | 81 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE SAMPLED: 11/10/93
DATE RECEIVED: 11/15/93
DATE ANALYZED: 11/19/93
DATE REPORTED: 11/23/93

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

| LAB ID | SAMPLE ID | TVH AS GASOLINE (ug/L) | BENZENE (ug/L) | TOLUENE (ug/L) | ETHYL BENZENE (ug/L) | TOTAL XYLENES (ug/L) |
|---|---|---|---|---|---|---|
| 113211-1 | MW2 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 113211-2 | MW3 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 113211-3 | MW5 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 113211-4 | MW7 | ND(50) | ND(0.5) | 1.0 | ND(0.5) | 1.7 |
| 113211-5 | MW8 | 310 | 23 | ND(0.5) | ND(0.5) | ND(0.5) |
| 113211-6 | MW9 | 4400 | 69* | 7.3* | 21 | 9.7* |
| 113211-7 | MW11 | 80 | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |
| 113211-8 | MW13 | ND(50) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) |

* Presence of this compound confirmed by second column; however, the confirmation concentration differed from the reported result by more than a factor of two.

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

| | |
|---|---|
| RPD, % | <1 |
| RECOVERY, % | 106 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW2

DATE SAMPLED: 11/10/93
DATE RECEIVED: 11/15/93
DATE ANALYZED: 11/20/93
DATE REPORTED: 11/23/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 97 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW3

DATE SAMPLED: 11/10/93
DATE RECEIVED: 11/15/93
DATE ANALYZED: 11/20/93
DATE REPORTED: 11/23/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 103 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW5

DATE SAMPLED: 11/09/93
DATE RECEIVED: 11/15/93
DATE ANALYZED: 11/20/93
DATE REPORTED: 11/23/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 99 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211-4
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW7

DATE SAMPLED: 11/09/93
DATE RECEIVED: 11/15/93
DATE ANALYZED: 11/20/93
DATE REPORTED: 11/23/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 103 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211-5
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW8

DATE SAMPLED: 11/11/93
DATE RECEIVED: 11/15/93
DATE ANALYZED: 11/20/93
DATE REPORTED: 11/23/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 10 |
| Bromomethane | ND | 10 |
| Vinyl chloride | ND | 10 |
| Chloroethane | ND | 10 |
| Methylene chloride | ND | 100 |
| Trichlorofluoromethane | ND | 5 |
| 1,1-Dichloroethene | ND | 5 |
| 1,1-Dichloroethane | ND | 5 |
| cis-1,2-Dichloroethene | ND | 5 |
| trans-1,2-Dichloroethene | ND | 5 |
| Chloroform | ND | 5 |
| Freon 113 | ND | 5 |
| 1,2-Dichloroethane | 240 | 5 |
| 1,1,1-Trichloroethane | ND | 5 |
| Carbon tetrachloride | ND | 5 |
| Bromodichloromethane | ND | 5 |
| 1,2-Dichloropropane | ND | 5 |
| cis-1,3-Dichloropropene | ND | 5 |
| Trichloroethene | ND | 5 |
| 1,1,2-Trichloroethane | ND | 5 |
| trans-1,3-Dichloropropene | ND | 5 |
| Dibromochloromethane | ND | 5 |
| Bromoform | ND | 10 |
| Tetrachloroethene | ND | 5 |
| 1,1,2,2-Tetrachloroethane | ND | 5 |
| Chlorobenzene | ND | 5 |
| 1,3-Dichlorobenzene | ND | 5 |
| 1,4-Dichlorobenzene | ND | 5 |
| 1,2-Dichlorobenzene | ND | 5 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 103 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211-6
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW9

DATE SAMPLED: 11/10/93
DATE RECEIVED: 11/15/93
DATE ANALYZED: 11/20/93
DATE REPORTED: 11/23/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 30 |
| Bromomethane | ND | 30 |
| Vinyl chloride | ND | 30 |
| Chloroethane | ND | 30 |
| Methylene chloride | ND | 300 |
| Trichlorofluoromethane | ND | 20 |
| 1,1-Dichloroethene | ND | 20 |
| 1,1-Dichloroethane | ND | 20 |
| cis-1,2-Dichloroethene | ND | 20 |
| trans-1,2-Dichloroethene | ND | 20 |
| Chloroform | ND | 20 |
| Freon 113 | ND | 20 |
| 1,2-Dichloroethane | 900 | 20 |
| 1,1,1-Trichloroethane | ND | 20 |
| Carbon tetrachloride | ND | 20 |
| Bromodichloromethane | ND | 20 |
| 1,2-Dichloropropane | ND | 20 |
| cis-1,3-Dichloropropene | ND | 20 |
| Trichloroethene | ND | 20 |
| 1,1,2-Trichloroethane | ND | 20 |
| trans-1,3-Dichloropropene | ND | 20 |
| Dibromochloromethane | ND | 20 |
| Bromoform | ND | 30 |
| Tetrachloroethene | ND | 20 |
| 1,1,2,2-Tetrachloroethane | ND | 20 |
| Chlorobenzene | ND | 20 |
| 1,3-Dichlorobenzene | ND | 20 |
| 1,4-Dichlorobenzene | ND | 20 |
| 1,2-Dichlorobenzene | ND | 20 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 104 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211-7
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW11

DATE SAMPLED: 11/10/93
DATE RECEIVED: 11/15/93
DATE ANALYZED: 11/20/93
DATE REPORTED: 11/23/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 104 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211-8
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE
SAMPLE ID: MW13

DATE SAMPLED: 11/10/93
DATE RECEIVED: 11/15/93
DATE ANALYZED: 11/20/93
DATE REPORTED: 11/23/93

## EPA 8010
## Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 107 |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 113211-METHOD BLANK
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 447.036
LOCATION: CONNELL OLDSMOBILE

DATE ANALYZED: 11/20/93
DATE REPORTED: 11/23/93

EPA 8010
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| Chloromethane | ND | 2 |
| Bromomethane | ND | 2 |
| Vinyl chloride | ND | 2 |
| Chloroethane | ND | 2 |
| Methylene chloride | ND | 20 |
| Trichlorofluoromethane | ND | 1 |
| 1,1-Dichloroethene | ND | 1 |
| 1,1-Dichloroethane | ND | 1 |
| cis-1,2-Dichloroethene | ND | 1 |
| trans-1,2-Dichloroethene | ND | 1 |
| Chloroform | ND | 1 |
| Freon 113 | ND | 1 |
| 1,2-Dichloroethane | ND | 1 |
| 1,1,1-Trichloroethane | ND | 1 |
| Carbon tetrachloride | ND | 1 |
| Bromodichloromethane | ND | 1 |
| 1,2-Dichloropropane | ND | 1 |
| cis-1,3-Dichloropropene | ND | 1 |
| Trichloroethene | ND | 1 |
| 1,1,2-Trichloroethane | ND | 1 |
| trans-1,3-Dichloropropene | ND | 1 |
| Dibromochloromethane | ND | 1 |
| Bromoform | ND | 2 |
| Tetrachloroethene | ND | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 1 |
| Chlorobenzene | ND | 1 |
| 1,3-Dichlorobenzene | ND | 1 |
| 1,4-Dichlorobenzene | ND | 1 |
| 1,2-Dichlorobenzene | ND | 1 |

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

| | |
|---|---|
| Surrogate Recovery, % | 94 |

Curtis & Tompkins, Ltd.

# MS/MSD SUMMARY SHEET FOR EPA 8010

Laboratory Number: 113211
Client: Subsurface Consultants
Analysis date: 11/19/93 Spike file: 319w102
Sample type: Water Spike dup file: 319w103

## 8010 MS/MSD DATA (spiked at 20 ppb)

| SPIKE COMPOUNDS | READING | RECOVERY | STATUS | LIMITS |
|---|---|---|---|---|
| 1,1-Dichloroethene | 20.14 | 100 % | OK | 61 - 145 |
| Trichloroethene | 75.89 | 96 % | OK | 71 - 120 |
| Chlorobenzene | 22.07 | 110 % | OK | 75 - 130 |
| **SPIKE DUP COMPOUNDS** | | | | |
| 1,1-Dichloroethene | 19.94 | 99 % | OK | 61 - 145 |
| Trichloroethene | 79.11 | 112 % | OK | 71 - 120 |
| Chlorobenzene | 21.52 | 108 % | OK | 75 - 130 |
| **SURROGATES** | | | | |
| Bromobenzene (MS) | 99.62 | 100 % | OK | 75 - 125 |
| Bromobenzene (MSD) | 94.20 | 94 % | OK | 75 - 125 |

| MATRIX RESULTS | |
|---|---|
| 1,1-Dichloroethene | 0.0838 |
| Trichloroethene | 56.7138 |
| Chlorobenzene | 0 |

## RPD DATA

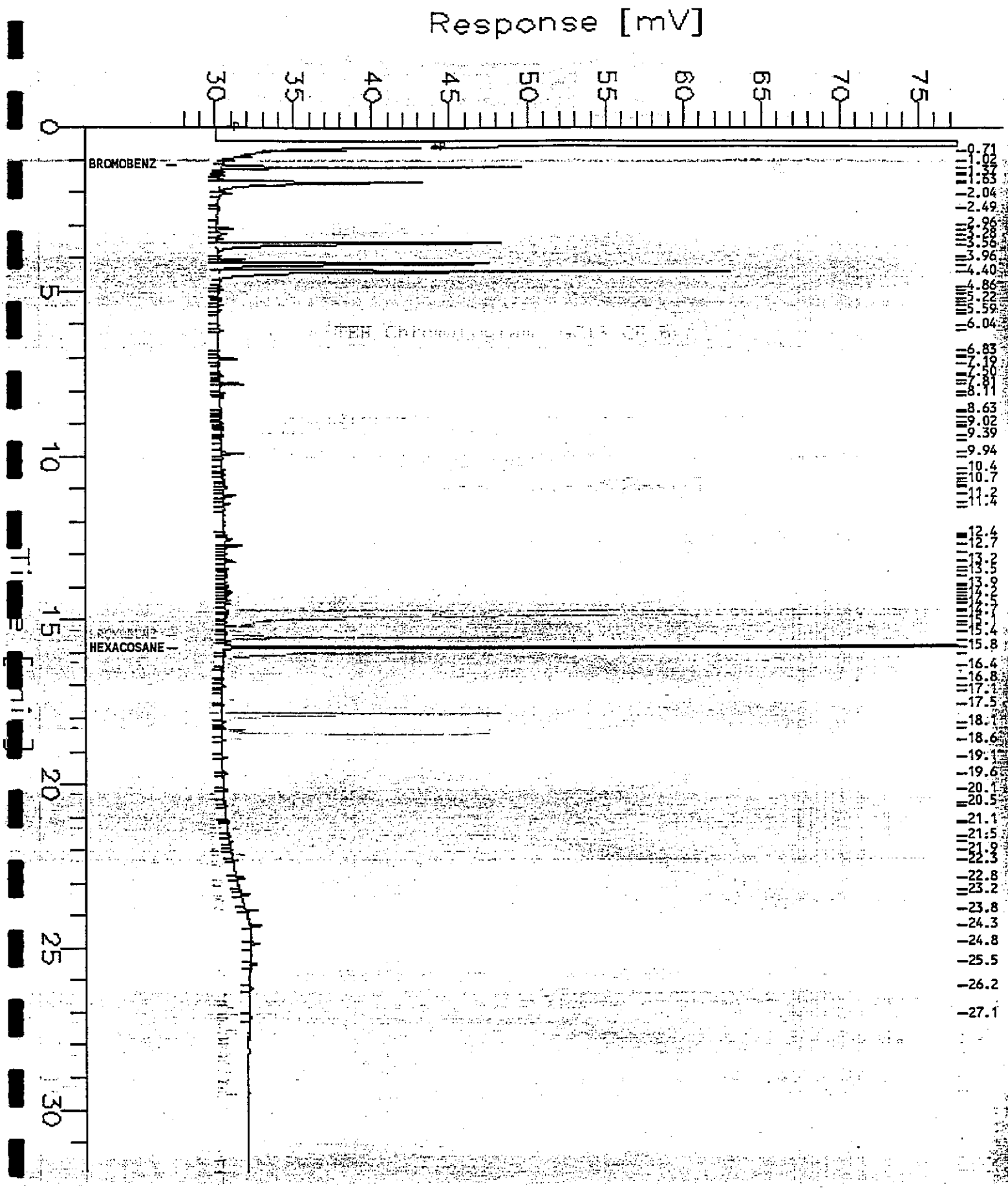
| 8010 COMPOUNDS | SPIKE | SPIKE DUP | RPD | STATUS | LIMITS |
|---|---|---|---|---|---|
| 1,1-Dichloroethe | 20.14 | 19.94 | 1 % | OK | <= 14 |
| Trichloroethene | 75.89 | 79.11 | 4 % | OK | <= 14 |
| Chlorobenzene | 22.07 | 21.52 | 3 % | OK | <= 13 |

Method blank

# TEH Chromatogram GC13 CH B

Source Name : MB QC52772 1000:5
FileName : g:\gc13\chb\323B005.raw
Method : TEH.ins
Start Time : 0.00 min End Time : 31.92 min
Scale Factor: -1 Plot Offset: 28 mV

Sample #: 11512 Page 1 of 1
Date : 11/19/93 8:58 PM
Time of Injection: 11/19/93 8:21 PM
Low Point : 27.52 mV High Point : 77.52 mV
Plot Scale: 50 mV



MW 5

# TEH Chromatogram GC13 CH B

Sample Name : 113211-008 1000:5
FileName : g:\gc13\chb\3238016.raw
Method : TEH.ins
Start Time : 0.00 min
Scale Factor: -1

End Time : 31.92 min
Plot Offset: 31 mV

Sample #: 11512
Date : 11/20/93 4:59 AM
Time of Injection: 11/20/93 4:21 AM
Low Point : 30.47 mV
Plot Scale: 50 mV



Response [mV]

BROMOBENZ

HEXACOSANE

HEXACOSANE

Time [min]

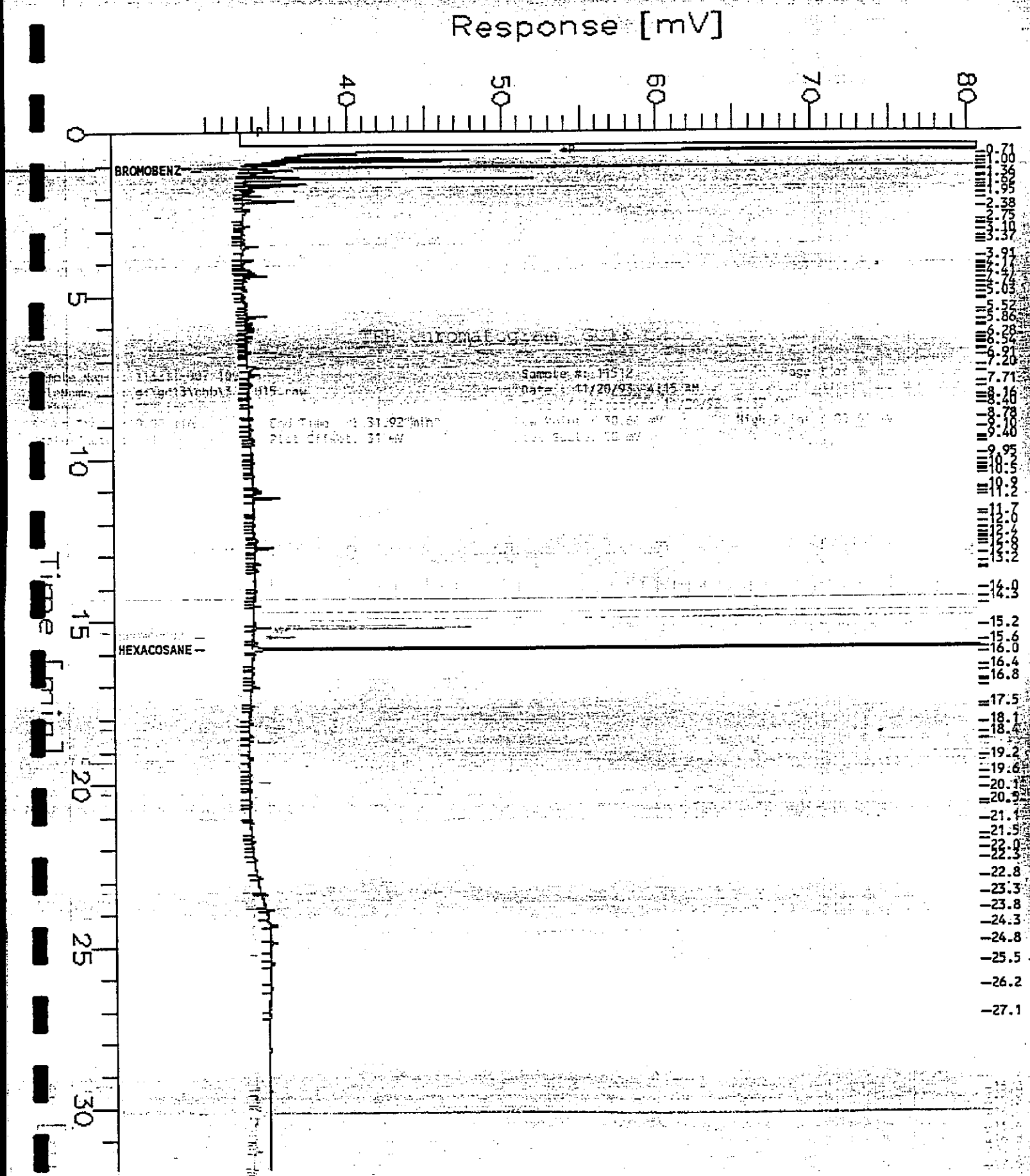
MW11

# TEH Chromatogram GC13 CH B

Sample Name : 113211-007 1000:5
FileName : g:\gc13\chb\323B015.raw
Method : TEH.ins
Start Time : 0.00 min End Time : 31.92 min
Scale Factor: -1 Plot Offset: 31 mV

Sample #: 11512
Date : 11/20/93 4:15 AM
Time of Injection: 11/20/93 3:37 AM
Low Point : 30.66 mV High Point : 80.66 mV
Plot Scale: 50 mV





MW 4

# TEH Chromatogram GC13 CH B

Sample Name : 113211-006 1000:5
FileName : g:\gc13\chb\323B014.raw
Method : TEH.ins
Start Time : 0.00 min End Time : 31.92 min
Sample Factor : 1 Plot Offset: 31 mV

Sample #: 11512 Page 1 of 1
Date : 11/20/93 3:29 AM
Time of Injection: 11/20/93 2:53 AM
Low Point : 30.66 mV High Point : 80.66 mV
Plot Scale: 50 mV

Response [mV]

BROMOBENZ

HEXACOSANE

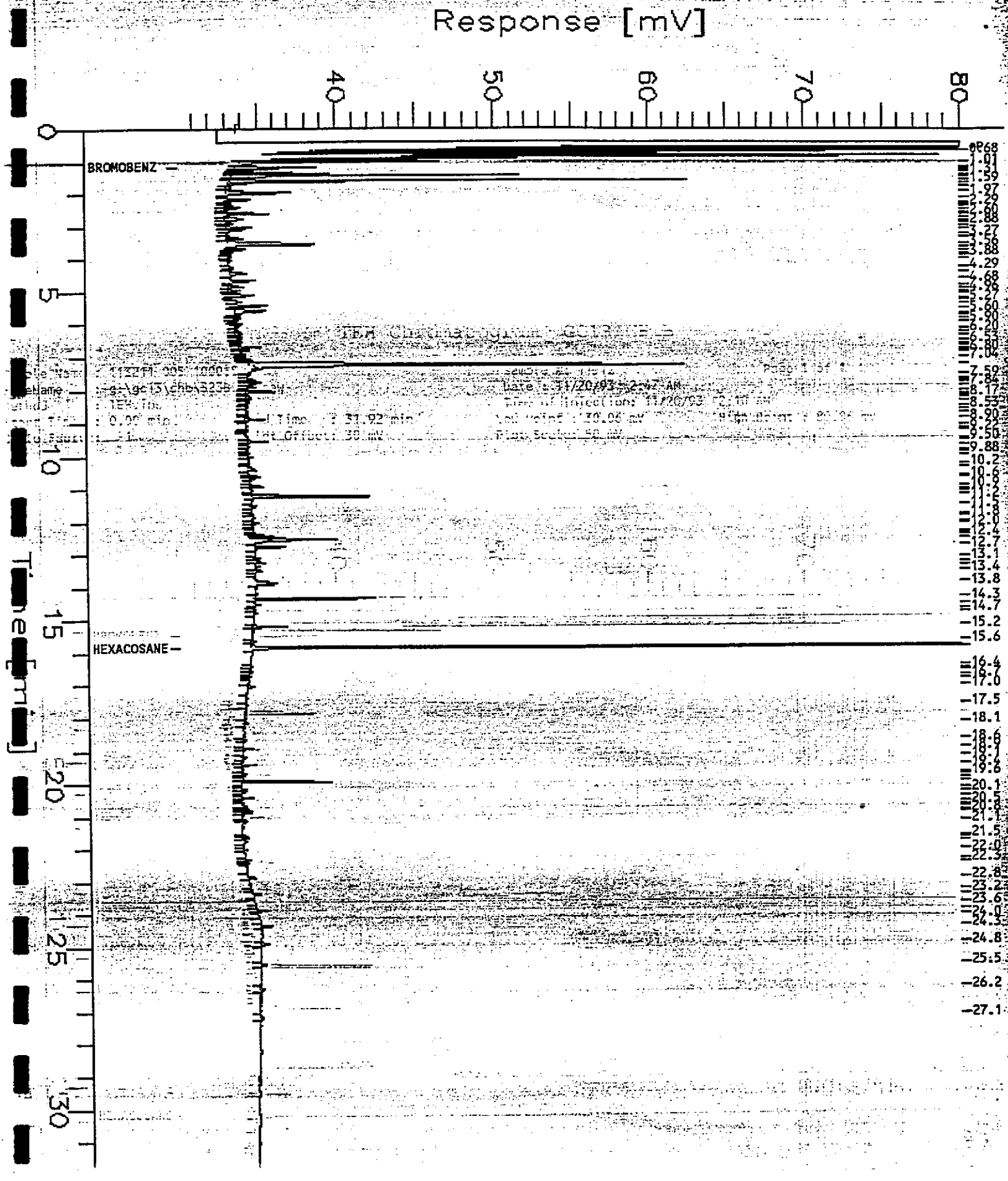
Time [min]

MW 8

# TEH Chromatogram GC13 CH B

Sample Name : 113211-005 1000:5
FileName : g:\gc13\chb\3238013.raw
Method : TEH.ins
Start Time : 0.00 min End Time : 31.92 min
Scale Factor: -1 Plot Offset: 30 mV

Sample #: 11512 Page 1 of 1
Date : 11/20/93 2:47 AM
Time of Injection: 11/20/93 2:10 AM
Low Point : 30.06 mV High Point : 80.06 mV
Plot Scale: 50 mV



MLO 7

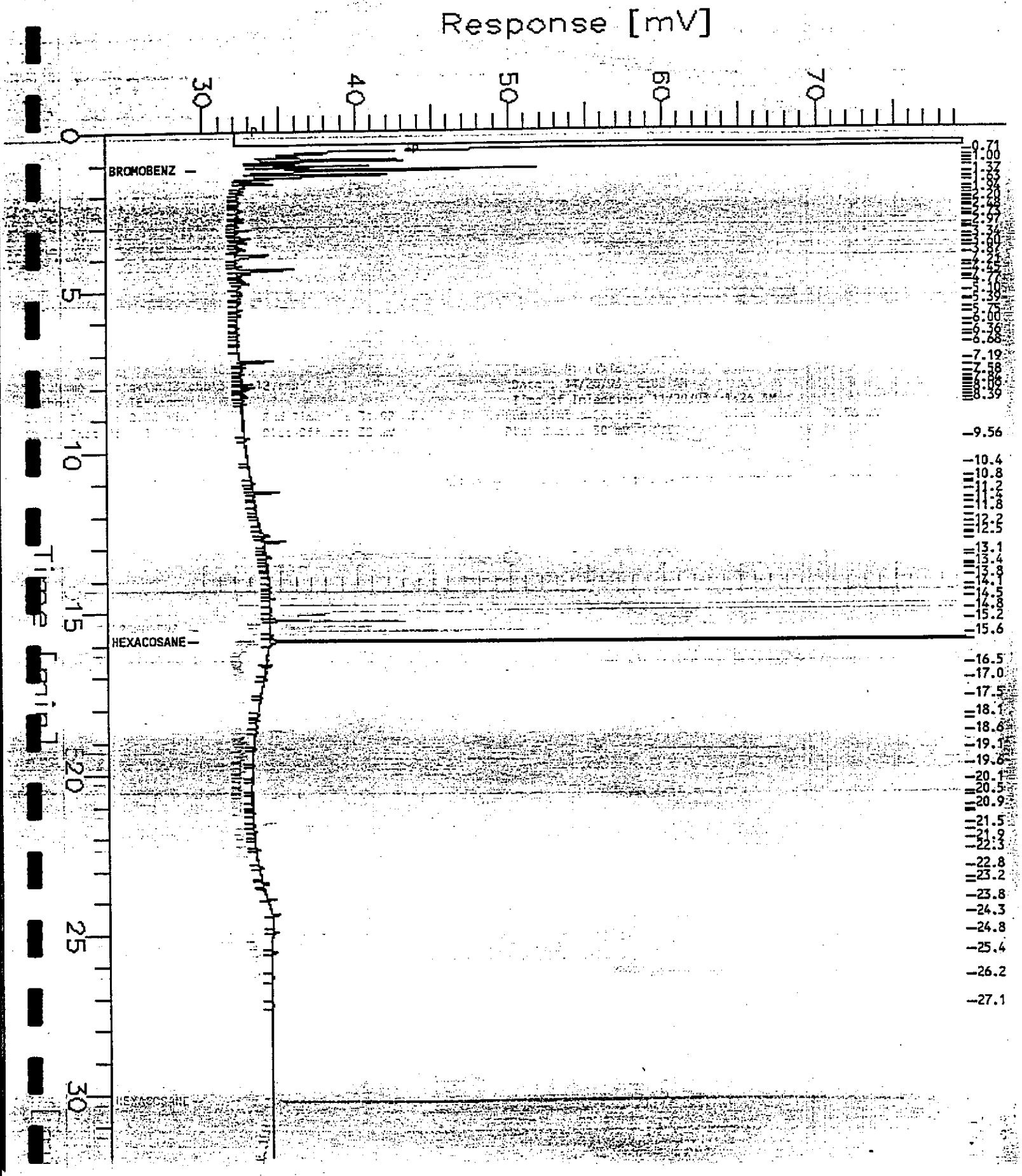
TEH Chromatogram GC13 CH B

Sample Name : 113211-004 1000:5
FileName : g:\gc13\chb\3238012.raw
Method : TEH.ins
Start Time : 0.00 min
Sample Factor: -1

End Time : 31.92 min
Plot Offset: 30 mV

Sample #: 11512
Date : 11/20/93 2:02 AM
Time of Injection: 11/20/93 1:26 AM
Low Point : 29.56 mV
Plot Scale: 50 mV



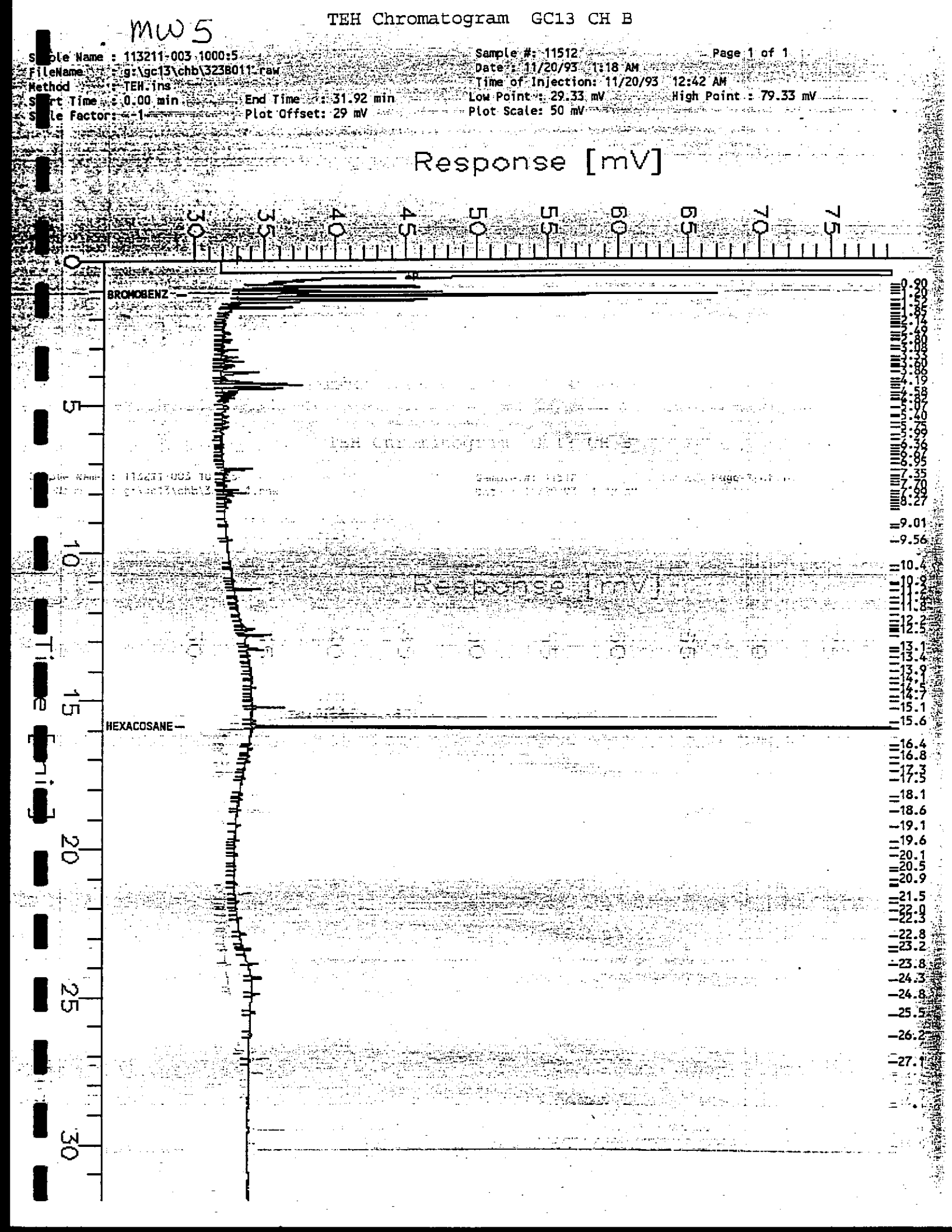


mw 5

# TEH Chromatogram GC13 CH B

Sample Name : 113211-003 1000:5
FileName : g:\gc13\chb\3238011.raw
Method : TEH.ins
Start Time : 0.00 min End Time : 31.92 min
Scale Factor: 1 Plot Offset: 29 mV

Sample #: 11512 Page 1 of 1
Date : 11/20/93 1:18 AM
Time of Injection: 11/20/93 12:42 AM
Low Point : 29.33 mV High Point : 79.33 mV
Plot Scale: 50 mV



mw 3

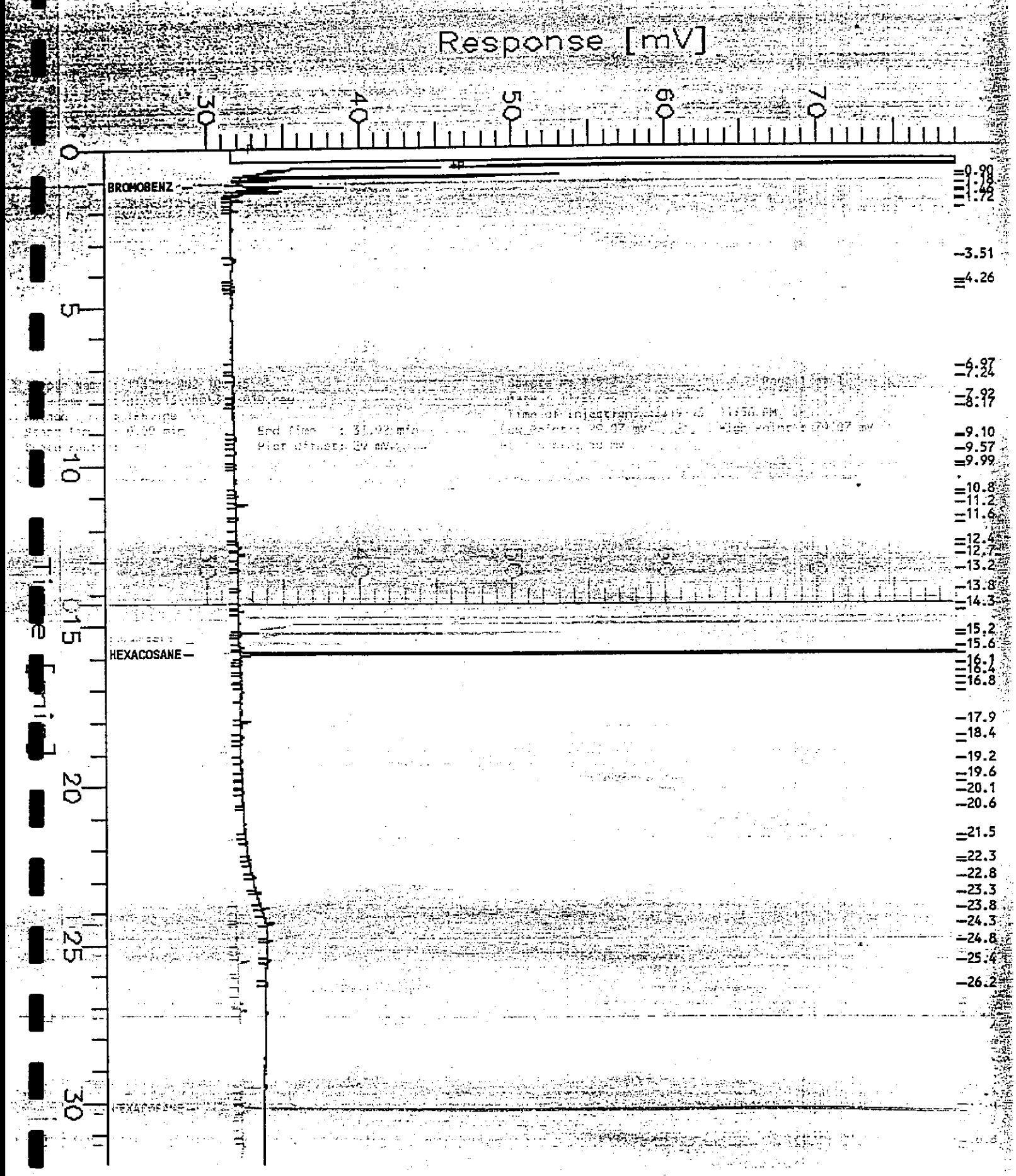
# TEH Chromatogram GC13 CH B

Sample Name : 113211-002 1000:5
FileName : g:\gc13\chb\3238010.raw
Method : TEH.ins
Start Time : 0.00 min
Scale Factor: -1

End Time : 31.92 min
Plot Offset: 29 mV

Sample #: 11512
Date : 11/20/93 12:33 AM
Time of Injection: 11/19/93 11:58 PM
Low Point : 29.07 mV
Plot Scale: 50 mV



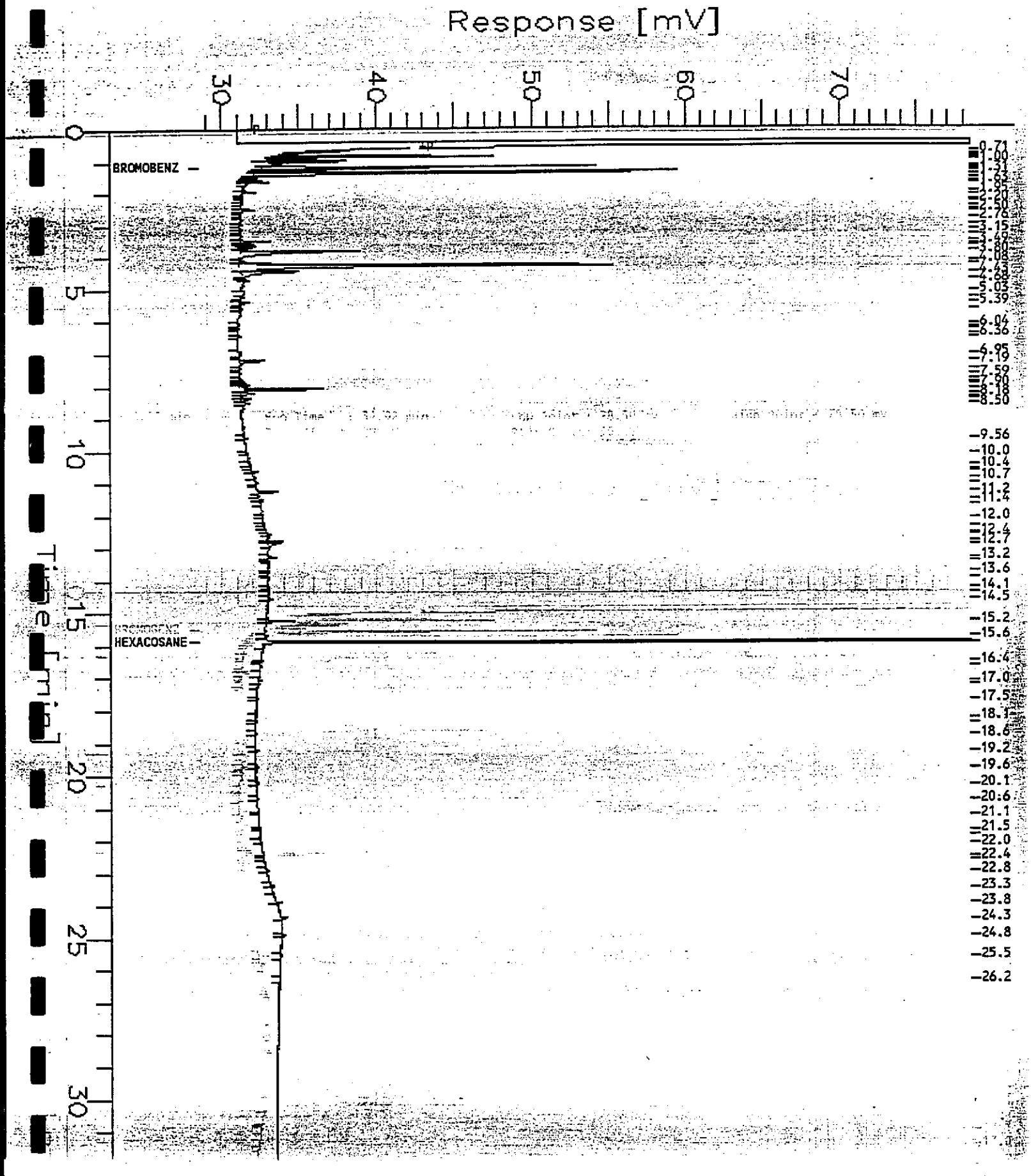


mw 2

# TEH Chromatogram GC13 CH B

Sample Name : 113211-001 1000:5
FileName : g:\gc13\chb\3238009.raw
Method : TEH.ins
Start Time : 0.00 min End Time : 31.92 min
Scale Factor: -1 Plot Offset: 29 mV

Sample #: 11512 Page 1 of 1
Date : 11/19/93 11:50 PM
Time of Injection: 11/19/93 11:14 PM
Low Point : 28.50 mV High Point : 78.50 mV
Plot Scale: 50 mV



# CHAIN OF CUSTODY FORM

PAGE ____ OF ____

PROJECT NAME: Connell Cosmobile

JOB NUMBER: SCI 447.036 LAB: CAT

PROJECT CONTACT: Jeff Alexander TURNAROUND: Normal

SAMPLED BY: E. Chang REQUESTED BY: J. Alexander

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | SOIL | WASTE | AIR | | | CONTAINERS: VOA | LITER | PINT | TUBE | | | METHOD PRESERVED: HCL (3 VOA) | $H_2SO_4$ | $HNO_3$ | ICE | NONE | SAMPLING DATE: MONTH | DAY | YEAR | TIME | NOTES | ANALYSIS REQUESTED: TVH + BTXE | TEH | EPA 8010 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 113211-1 | MW2 | X | | | | | | 4 | 1 | | | | | X | | | X | | 12 | 10 | 93 | 1030 | | X | X | X | | | | | | | | |
| -2 | MW3 | | | | | | | 4 | 1 | | | | | | | | | | 11 | 10 | 93 | 1140 | | | | | | | | | | | |
| -3 | MW5 | | | | | | | 4 | 1 | | | | | | | | | | 10 | 9 | 93 | 1410 | | | | | | | | | | | |
| -4 | MW7 | | | | | | | 4 | 1 | | | | | | | | | | 10 | 9 | 93 | 1520 | | | | | | | | | | | |
| -5 | MW8 | | | | | | | 4 | 1 | | | | | | | | | | 11 | 9 | 93 | 1315 | | | | | | | | | | | |
| -6 | MW9 | | | | | | | 4 | 1 | | | | | | | | | | 10 | 9 | 93 | 0820 | | | | | | | | | | | |
| | MW10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -7 | MW11 | | | | | | | 4 | 1 | | | | | | | | | | 10 | 9 | 93 | 1245 | | | | | | | | | | | |
| -8 | MW13 | | | | | | | 4 | 1 | | | | | | | | | | 10 | 9 | 93 | 1350 | | | | | | | | | | | |

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
|---|---|---|---|
| Eric B Chang | 11/15/93 14:50 | Lorraine Arabo | 11/18 2:25 |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |

COMMENTS & NOTES:


Subsurface Consultants, Inc.

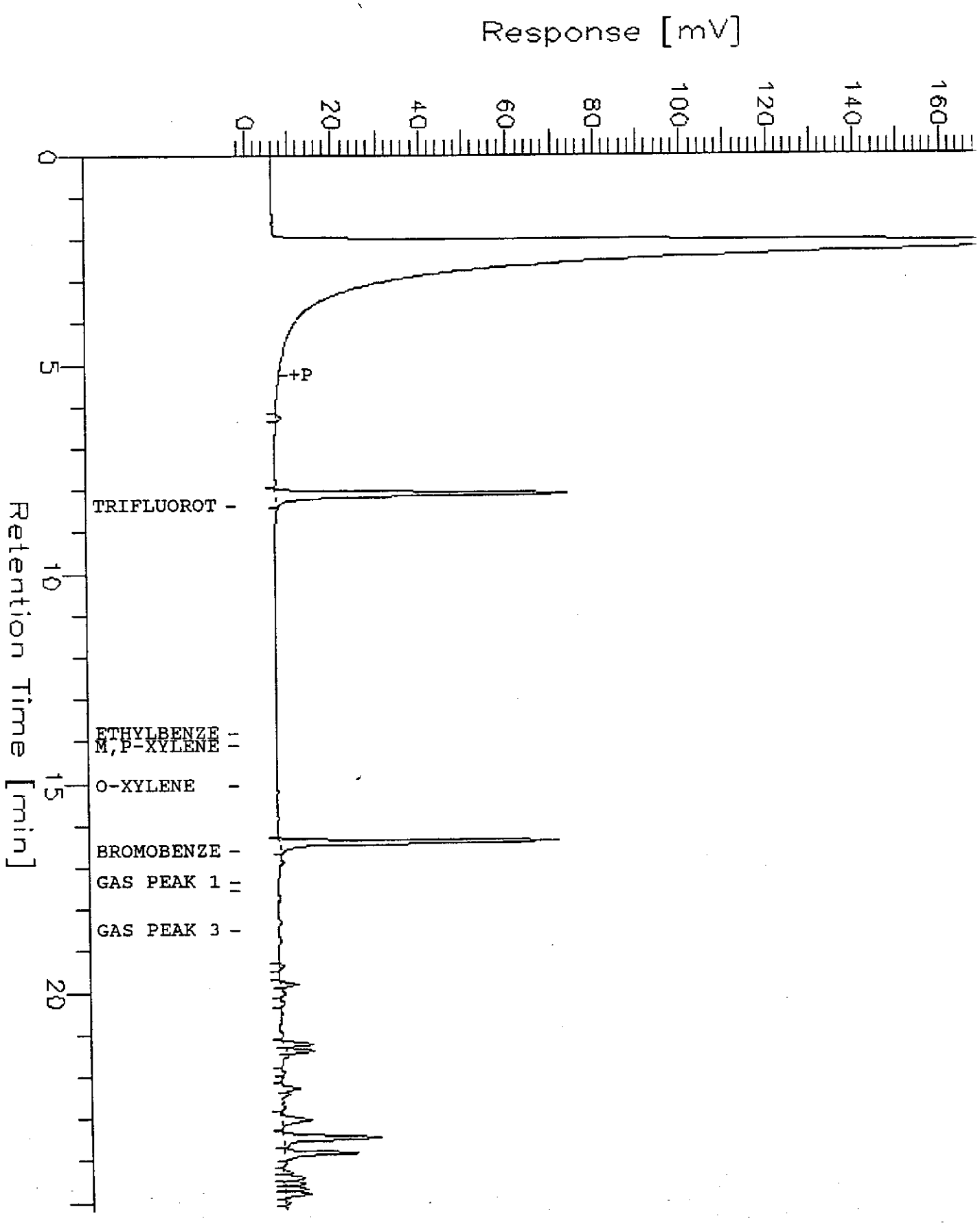
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607

(510) 268-0461 • FAX: 510-268-0137

5 117251-1

TVH - GC-07

FileName : F:\GC07\123F028.raw
Start Time : 0.00 min
Scale Factor: -1
End Time : 25.20 min
Plot Offset: -3 mV
Date : 5/3/92 3:59 PM
Low Point : -2.53 mV
Plot Scale: 175 mV
Page 1 of 1
High Point : 172.47 mV

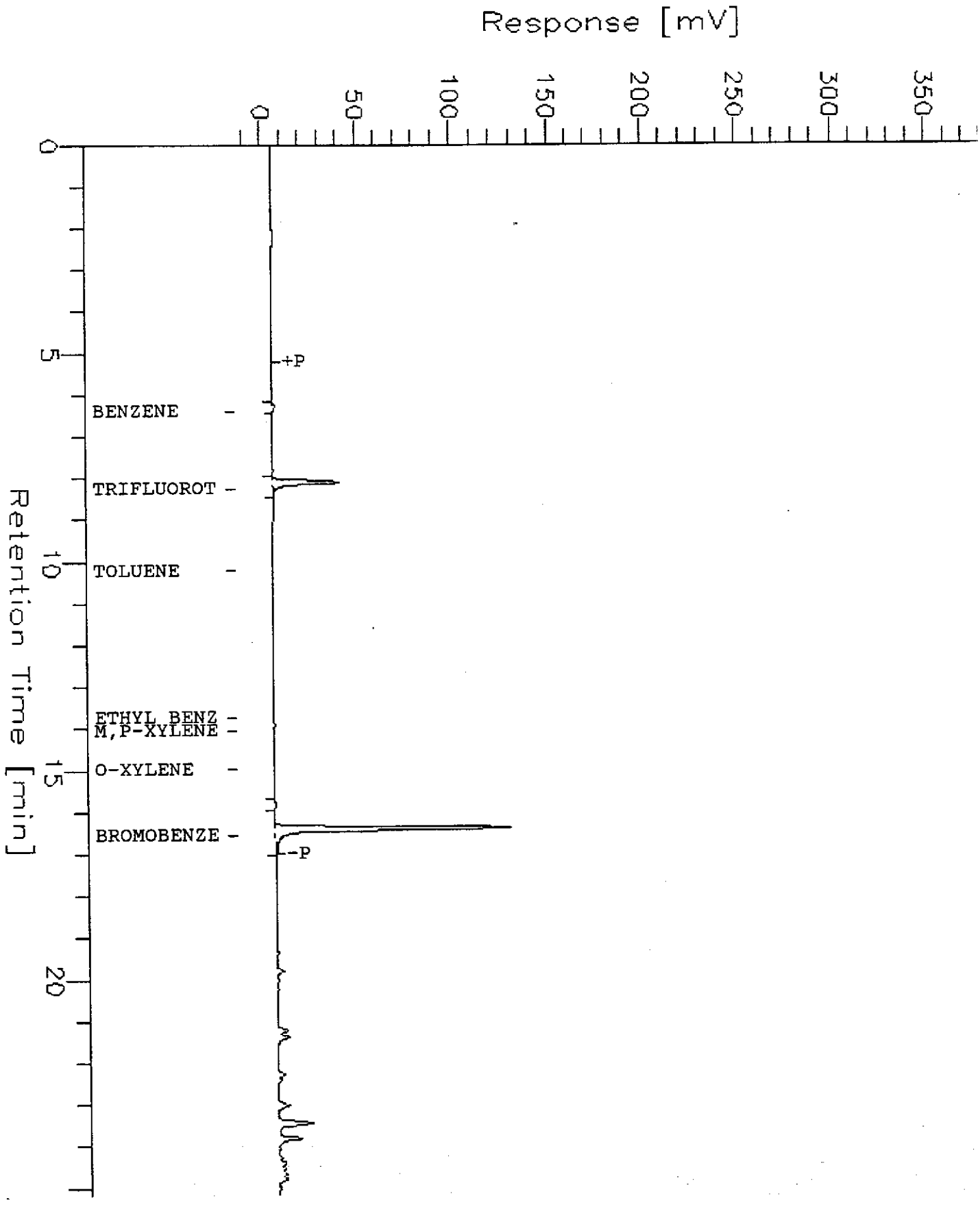


10725 1-001 BTXE - GC-07

FileName : F:\GC07\123P028.raw
Start Time : 0.00 min
End Time : 25.20 min
Scale Factor: -1
Plot Offset: -14 mV

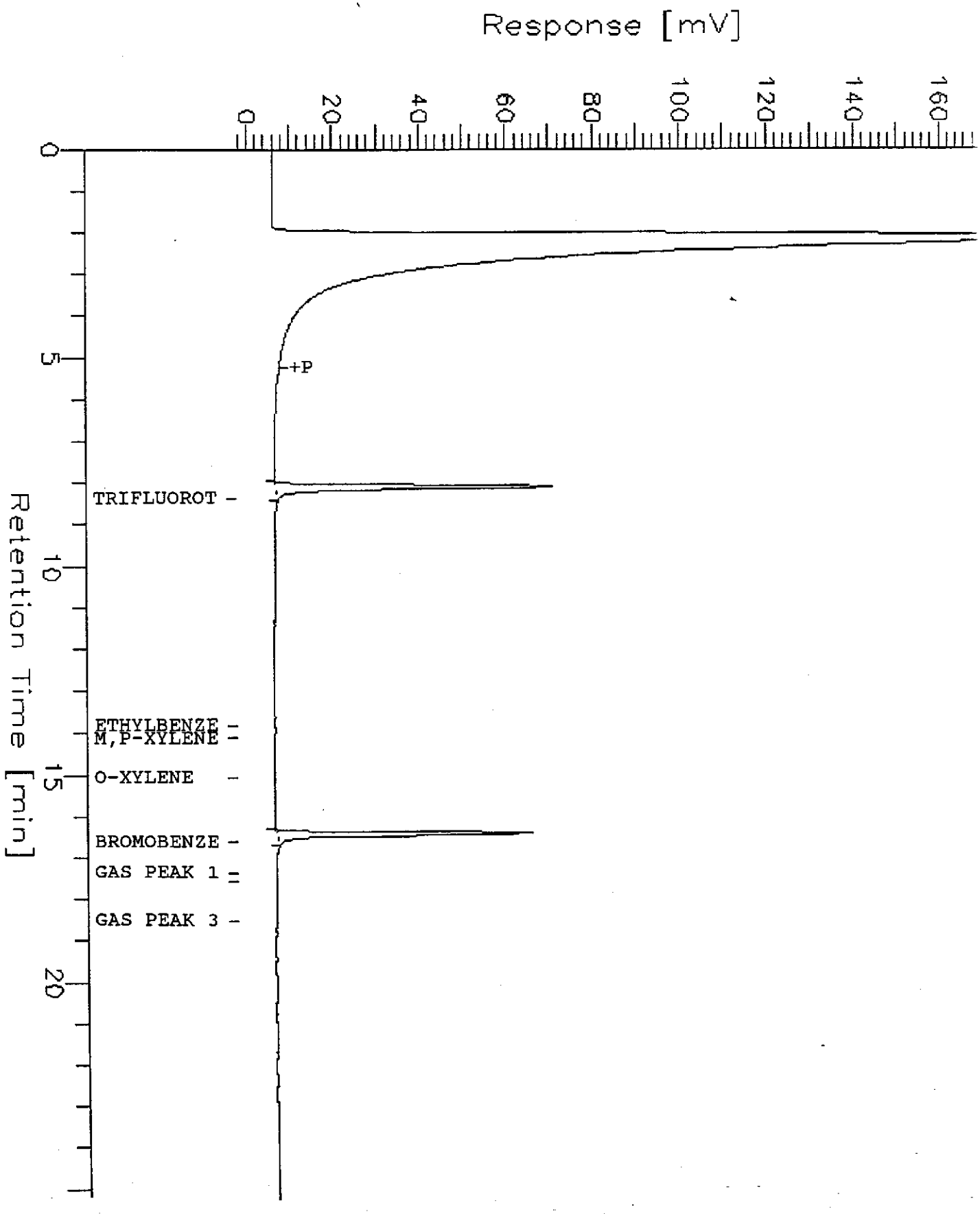
Date : 5/3/92 4:00 PM
Low Point : -14.02 mV
Plot Scale: 400 mV


High Point : 385.98 mV



9 107251-2 TVH - GC-07

FileName : F:\GC07\123F029.raw
Start Time : 0.00 min
Scale Factor: -1
End Time : 25.20 min
Plot Offset: -3 mV
Date : 5/3/92 4:40 PM
Low Point : -2.50 mV
Plot Scale: 175 mV
Page 1 of 1
High Point : 172.50 mV

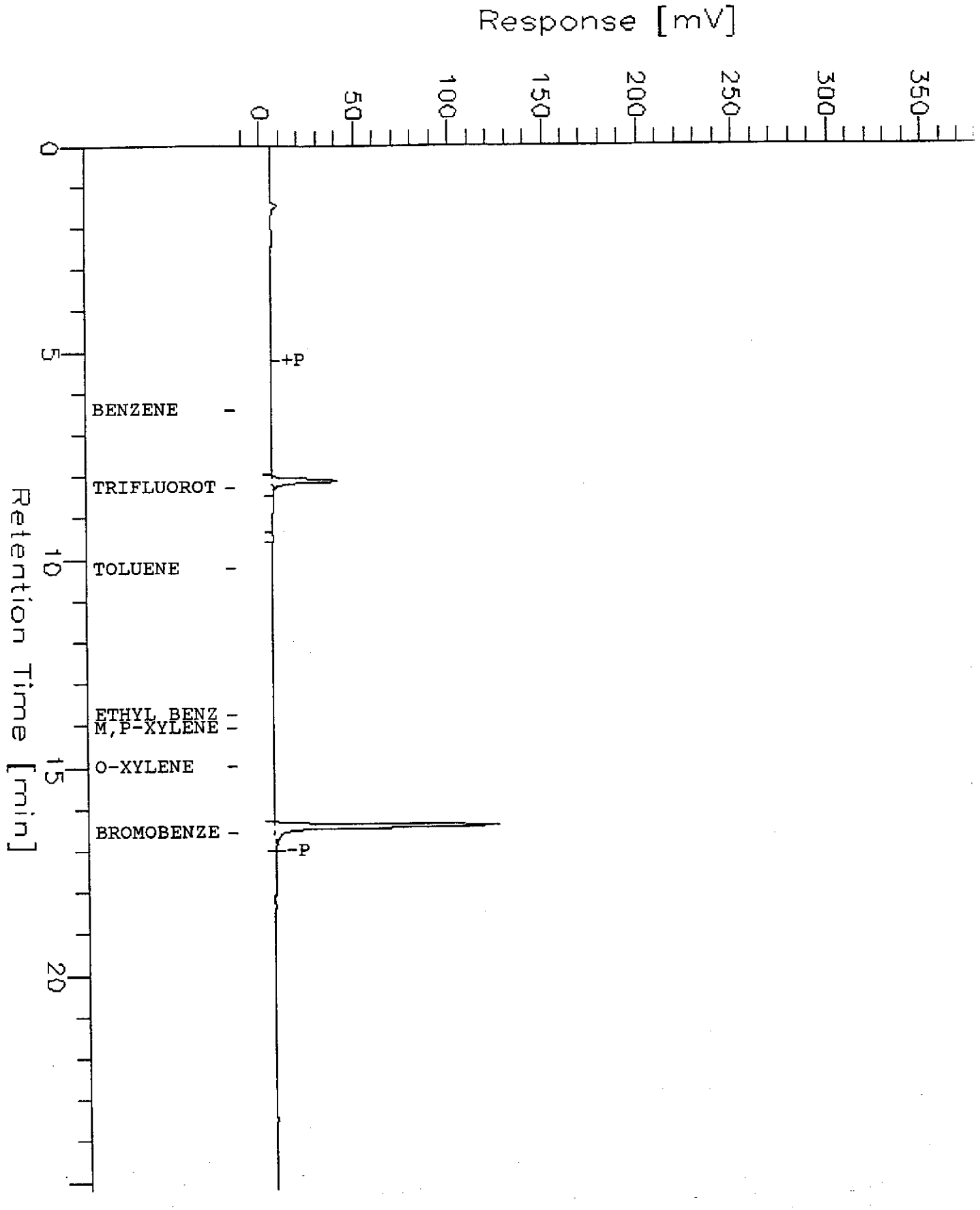


9 107251-2 BTXE - GC-07

FileName : F:\GC07\123P029.raw
Start Time : 0.00 min End Time : 25.20 min
Scale Factor: -1 Plot Offset: -14 mV

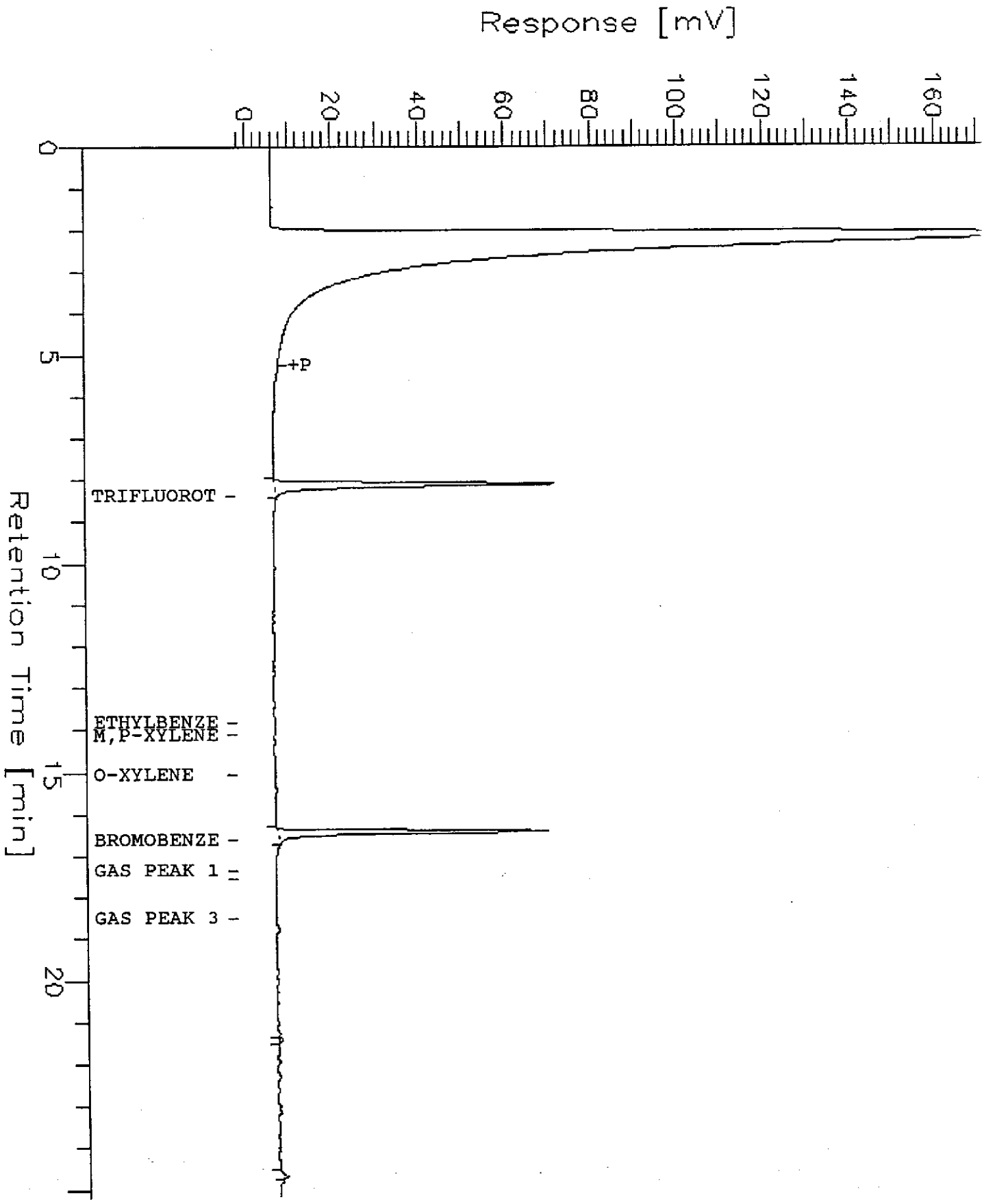
Date : 5/3/92 4:41 PM
Low Point : -14.02 mV
Plot Scale: 400 mV


High Point : 385.98 mV



10 107251-3 TVH - GC-07

FileName : F:\GC07\123F030.raw
Start Time : 0.00 min
Scale Factor: -1
End Time : 25.20 min
Plot Offset: -3 mV
Date : 5/3/92 5:22 PM
Low Point : -2.49 mV
Plot Scale: 175 mV
Page 1 of 1
High Point : 172.51 mV

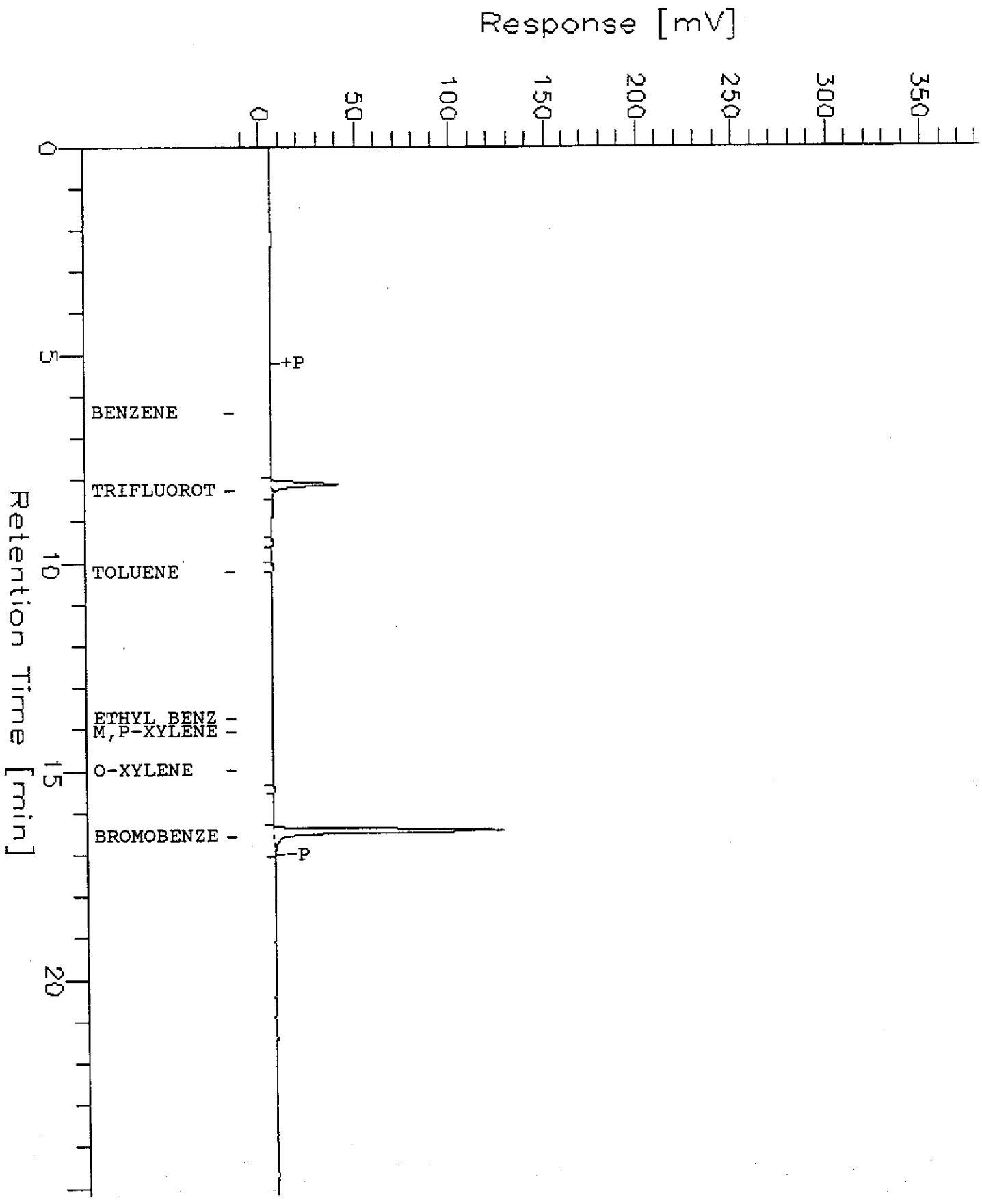


10 1072513 BTXE - GC-07

FileName : F:\GC07\123P030.raw
Start Time : 0.00 min End Time : 25.20 min
Scale Factor: -1 Plot Offset: -14 mV

Date : 5/3/92 5:23 PM
Low Point : -14.02 mV
Plot Scale: 400 mV


High Point : 385.98 mV

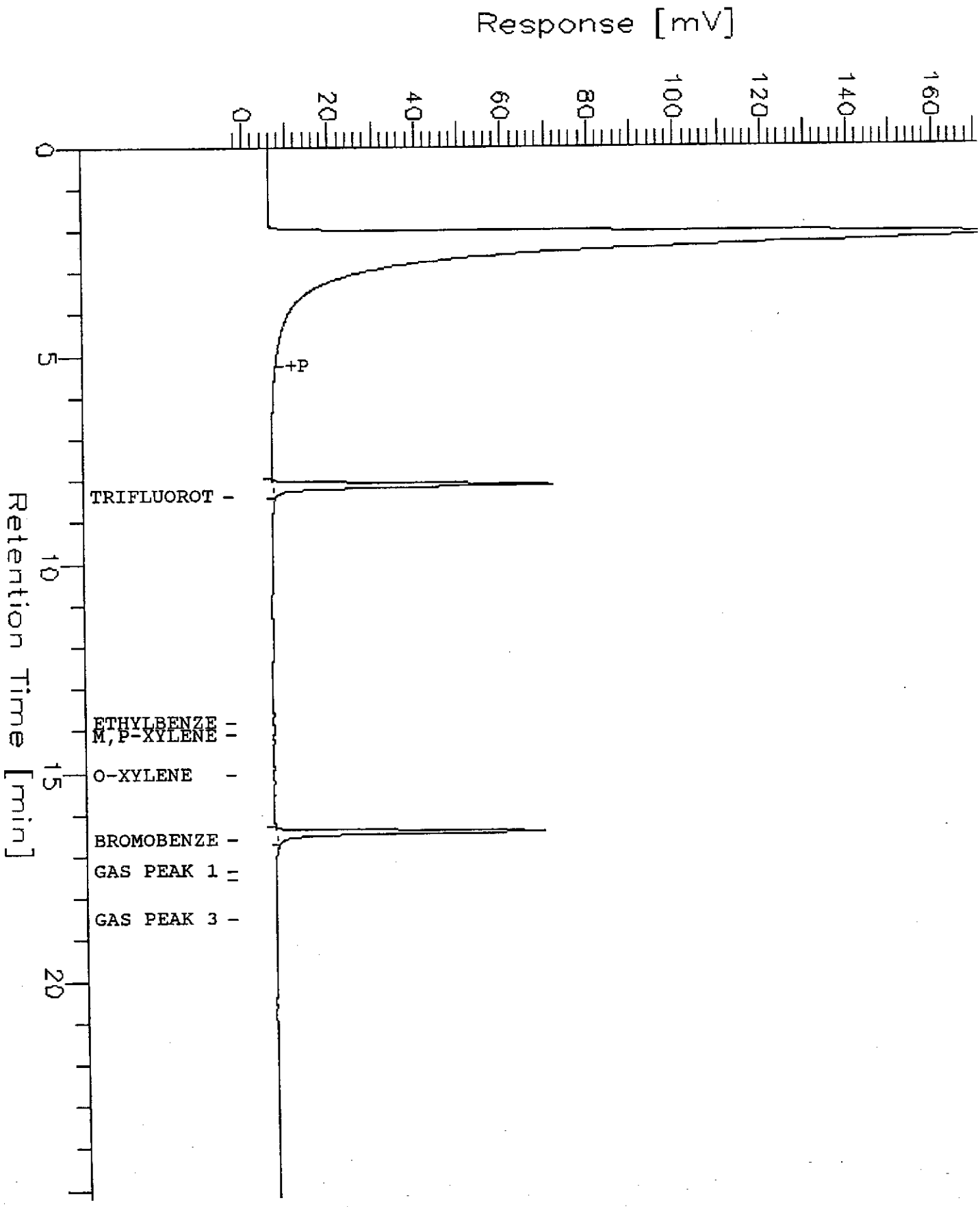


12 112751-4 TVH - GC-07

FileName : F:\GC07\123F031.raw
Start Time : 0.00 min End Time : 25.20 min
Scale Factor: -1 Plot Offset: -3 mV

Date : 5/3/92 6:04 PM
Low Point : -2.54 mV
Plot Scale: 175 mV


High Point : 172.46 mV



12 112751-4

BTXE - GC-07

FileName : F:\GC07\123P031.raw
Start Time : 0.00 min
End Time : 25.20 min
Scale Factor: -1
Plot Offset: -14 mV

Date : 5/3/92 6:05 PM
Low Point : -14.03 mV
Plot Scale: 400 mV


High Point : 385.97 mV