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TRANSMITTAL

TO: MR. LARRY SETO
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SERVICES AGENCY-HAZ MAT DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CALIFORNIA 94621

DATE: 9/24/91
PROJECT NUMBER 69036.03
SUBJECT: ARCO STATION 2035 AT
ALBANY, CALIFORNIA

FROM: JOEL COFFMAN
TITLE: PROJECT GEOLOGIST

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September 24, 1991

Mr. Larry Seto
Alameda County Health Care Services Agency
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Subject: Corrected Page 16 of Underground Gasoline-Storage Tank Removal and Replacement Report (RESNA/AGS September 11, 1991) at ARCO Station 2035, Albany California.

Dear Mr. Seto:

Enclosed is a corrected copy of page 16 of the above-referenced report. Please substitute this page in place of the one originally sent.

Sincerely,
RESNA

Joel Coffman
Project Geologist

Enc: Corrected Page 16

cc: Chuck Carmel, ARCO



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Working To Restore Nature

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UNDERGROUND GASOLINE-STORAGE TANK
REMOVAL AND REPLACEMENT

at

ARCO Station 2035
1001 San Pablo Avenue
Albany, California

69036.03

Report prepared for

ARCO Products Company
P.O. Box 5811
San Mateo, California

by

RESNA/Applied GeoSystems

Steve Strausz
Assistant Project Geologist

Joan E. Tiernan, Ph.D., P.E.
Engineering Manager



September 11, 1991

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION AND BACKGROUND	2
2.1 Site Description	2
2.2 Local and Regional Hydrogeology	3
2.3 Previous Work	3
3.0 FIELD WORK	5
3.1 New Tank Pit Soil Borings	5
3.1.1 Soil Sampling in Borings	5
3.2 Removal of Underground Tanks	6
3.2.1 Soil Sampling in Former Tank Pits	7
3.3 New Tank Pit Excavation and Backfilling Former Tank Pits	8
3.3.1 Soil Sampling in New Tank Pit	8
3.4 Product Line Removal	9
3.5 Soil Aeration	11
4.0 LABORATORY METHODS	11
4.1 Analytical Methods and Sample Summary	11
5.0 GEOLOGIC AND LABORATORY RESULTS	13
5.1 Geologic Results	13
5.2 Laboratory Results	13
6.0 CONCLUSIONS	14
7.0 DISTRIBUTION	16
8.0 LIMITATIONS	17
9.0 REFERENCES CITED	18

TABLES

TABLE 1:	LABORATORY ANALYSIS OF NEW TANK PIT SOIL SAMPLES
TABLE 2:	LABORATORY ANALYSIS OF FORMER GASOLINE TANK PIT SOIL SAMPLES
TABLE 3:	LABORATORY ANALYSIS OF PRODUCT LINE AND PRODUCT DISPENSER SOIL SAMPLES
TABLE 4:	LABORATORY ANALYSIS OF COMPOSITE SOIL SAMPLES OF STOCKPILED SOIL FOR DISPOSAL
TABLE 5:	LABORATORY ANALYSIS OF WATER "GRAB" SAMPLE FROM TANK T4 TANK PIT

PLATES

PLATE 1:	SITE VICINITY MAP
PLATE 2:	GENERALIZED SITE PLAN
PLATE 3:	SOIL SAMPLING
PLATE 4:	GEOLOGIC CROSS SECTION A-A'

TABLE OF CONTENTS
(Continued)

PLATE 5: AERATION SOIL STOCKPILE

APPENDIX A

FIELD PROTOCOL (3)

APPENDIX B

LOGS OF BORINGS
Soil Borings B-6 and B-7

APPENDIX C

CHAIN OF CUSTODY RECORDS
ANALYSIS REPORTS

APPENDIX D

MANIFESTS FOR TANKS
INVOICE FOR SOIL DISPOSAL



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REPORT
UNDERGROUND GASOLINE-STORAGE TANK
REMOVAL AND REPLACEMENT

at
ARCO Station 2035
1001 San Pablo Avenue
Albany, California

For ARCO Products Company

1.0 INTRODUCTION

At the request of ARCO Products Company (ARCO), RESNA/Applied GeoSystems (RESNA) conducted an environmental investigation related to the removal and replacement of four underground gasoline-storage tanks and soil aeration at the site of an operating ARCO AM/PM store and service station at 1001 San Pablo Avenue in Albany, California. This investigation was initiated as part of ARCO's planned tank replacement program.

This investigation included the following:

- o drilling of two soil borings and collecting soil samples for laboratory analysis in the proposed new tank pit location;
- o observing excavation and removal of four underground gasoline-storage tanks, and associated product lines;
- o sampling and analysis of the soil from the former tank pits and product-line trenches;

- o obtaining one "grab" sample of water collected in one of the former tank pits;
- o monitoring aeration of the soil from the former tank pits and former product-line trenches in compliance with Regulation 8, Rule 40;
- o observing excavation of a new tank pit;
- o sampling and analysis of soil from the new tank pit and stockpiled soil as required by Mr. Larry Seto of the Hazardous Materials Division of the Alameda County Health Care Services Department (ACHCSD);
- o observing disposal of aerated, stockpiled soil after analytical results showed that petroleum hydrocarbon concentrations had been reduced to acceptable levels.

This report presents the results of this work, together with a description of the field methods employed, the laboratory analyses, and other information related to gasoline-tank removal and replacement.

2.0 SITE DESCRIPTION AND BACKGROUND

2.1 Site Description

ARCO Station 2035 is an operating service station and AM/PM mini-market on the southeast corner of the intersection of San Pablo and Marin Avenues at 1001 San Pablo Avenue, Albany, California. The location of the site is shown on Plate 1, Site Vicinity Map. The site is a relatively flat, asphalt- and concrete-covered lot at an elevation of approximately 47 feet above mean sea level.

RESNA understands from information provided by ARCO that the former tanks at the site consisted of one steel 6,000-gallon underground supreme gasoline-storage tank (T1), two

steel 4,000-gallon underground regular gasoline-storage tanks (T2 and T3), and one fiberglass 10,000-gallon underground unleaded gasoline-storage tank (T4). The new tanks at the site consist of four fiberglass 10,000-gallon underground gasoline-storage tanks installed in a new location. Based on data supplied by ARCO, one 550-gallon waste-oil tank was removed from the site in 1977 during ARCO's conversion of the station to a mini-market. The approximate locations of the former gasoline-storage tanks, new gasoline storage tanks, former waste-oil tank, and other features at the site are shown on Plate 2, Generalized Site Plan.

2.2 Local and Regional Hydrogeology

ARCO Station 2035 is located within the East Bay Plain in the north-central portion of the Berkeley Alluvial Plain (Hickenbottom and Muir, 1988). The active Hayward Fault is approximately 2 miles east of the site. Helley *et al.* (1979) mapped the earth materials underlying the site area as older Quaternary alluvium deposits composed of a heterogeneous mixture of poorly consolidated to unconsolidated clay, silt, sand and gravel. The site is less than 1,200 feet north of the Codornices Creek and approximately 1 mile east of Fleming Point on the eastern shoreline of the San Francisco Bay. The direction of ground-water flow in the vicinity of the site is inferred to be to the west-southwest, based on regional and local topography and drainage patterns.

2.3 Previous Work

On August 9, 1989, RESNA performed a limited environmental site assessment to evaluate possible gasoline hydrocarbons in the soil in the vicinity of the four underground gasoline-storage tanks (1990). Five soil borings (B-1 through B-5) were drilled as shown on Plate 2.

Soils encountered in the borings consisted primarily of interbedded layers of silty to gravelly clay and silty to sandy gravel. Ground water was encountered in the borings at depths between 17 and 18 feet below ground surface, except in boring B-5 where ground water was not encountered to a the total depth of 20-1/2 feet below ground surface. A hydrocarbon sheen was noted on the surface of water samples obtained from borings B-1 and B-4. Laboratory analyses of selected soil samples from borings B-1 through B-5 reported concentrations of TPHg ranging from nondetectable (less than 1 parts per million [ppm]) to 2,400 ppm. AGS concluded that shallow soils near the four underground gasoline-storage tanks had been impacted by gasoline hydrocarbons, and shallow ground water beneath the site appeared to have been impacted by gasoline hydrocarbons.

On behalf of ARCO, RESNA submitted the Work Plan for Subsurface Investigations and Remediation, and Addendum One to Work Plan, dated April 29, 1991, to the Alameda County Health Care Services Agency (ACHCSA) and the California Regional Water Quality Control Board (RWQCB). The Work Plan summarizes previous work at the site and describes RESNA's approach, field methods, and project tasks recommended to perform subsurface investigations and remediation at the site. The addendum to work plan describes proposed work for performing a subsurface investigation at the site including: performing well research for nearby water wells and monitoring wells; records research; and installing four ground-water monitoring wells. The purpose of this work is to evaluate further the extent of gasoline hydrocarbons in the soil and investigate the possible impact of gasoline and waste-oil hydrocarbons in the ground water at the site.

3.0 FIELD WORK

Field work conducted on behalf of ARCO during this investigation included drilling two soil borings; collecting soil samples from the borings for analysis; removal of four gasoline underground storage tanks (USTs) and associated product lines; excavation of a new UST pit; aeration of the stockpiled soil; and collecting soil samples from the former and new tank pits, product-line excavations, and stockpiled soil for laboratory analysis. The field work was conducted according to the procedures described in Appendix A, Field Procedures, and in conformance with the RESNA Site Safety Plan (RESNA, June 24, 1991).

3.1 New Tank Pit Soil Borings

On June 27, 1991, RESNA personnel supervised the drilling of two borings (B-6 and B-7) to depths of 18 and 19-½ feet in the area of the proposed new tank pit as shown on Plate 3, Soil Samples. Ground water was first encountered at 17-½ feet in B-6 and 19-½ feet in B-7.

3.1.1 Soil Sampling in Borings

A RESNA geologist observed the drilling, and classified the soils according to the Unified Soil Classification System. Nine soil samples from borings B-6 and B-7 were submitted for laboratory analysis for TPHg and the gasoline constituents BTEX. The borings were backfilled to grade with a bentonite and neat cement grout upon completion of the work.

3.2 Removal of Underground Tanks

On July 1 through 3, 1991, a field geologist from RESNA was onsite to observe the excavation and removal of four underground gasoline-storage tanks T1 through T4, as shown on Plate 2, inspect their outer surfaces, collect soil samples from native soil beneath the ends of tanks T1 through T4, obtain a sample of water perched at the bottom of tank T4 tank pit, and observe the excavation of field-detected gasoline-impacted backfill soil from the tank excavations. Tank and product-line removal was performed by W. F. Lewis Construction, Inc., of Sacramento, California. The Albany Fire Department (AFD), ACHCSD, and the Bay Area Air Quality Management District (BAAQMD) were notified prior to tank removal. Mr. Larry Seto of the ACHCSD, and Mr. Frank Westphal of the AFD were present on July 3, 1991 to observe the removal of the tanks. Furthermore, Mr. Larry Seto was present to observe soil and water sampling in the former tank pits.

The RESNA field geologist noted that product-line plumbing above tanks T1, T2, and T3 consisted primarily of single-walled steel pipes and fittings. The product line plumbing and the former vapor vent lines above tank T4 consisted primarily of single-walled fiberglass pipes and fittings.

On July 3, 1991, three single-walled steel underground storage tanks T1, T2, and T3 measuring approximately 8 feet in diameter by 16 feet in length, and one single-walled fiberglass underground storage tank T4 measuring approximately 8 feet in diameter by 30 feet in length were uncovered and prepared for removal. Hydrocarbon vapors and oxygen were purged from the tanks by the addition of solid carbon dioxide (dry ice) into the tanks. Tanks T1 through T4 were then excavated and removed from the tank pit.

Examination of the three steel tanks after their removal indicated that tank T1 was slightly pitted and rusty, but had no visible through-going holes. Tank T2 was rusty and pitted along the bottom half of the tank, had a 2 inch long split along the seam at the eastern end of the tank, and had a 1 inch by 1-½ inch hole under the fill opening at the western end of the tank. Tank T3 was pitted and rusty throughout, and had holes up to ½-inch diameter throughout the lower half of the tank and especially in the southwest side and bottom. Examination of the fiberglass tank T4 indicated the tank was in good condition with no visible through-going holes. Tanks T1 through T4 were transported by Erickson, Inc., a licensed waste hauler, to a their licensed disposal facility in Richmond, California. Manifests documenting the disposal of tanks are included in Appendix D.

The backfill soil excavated from the tank pit above and around the steel tanks T1, T2, and T3 was predominately fine- to medium-grained imported sand. The backfill soil excavated from the tank pit above and around the fiberglass tank T4 was predominantly fine gravel (pea-gravel). Excavated soil was monitored with an organic vapor meter (OVM), field calibrated to a 100 ppm sample of isobutylene, as it was removed from the excavation. OVM readings during this monitoring indicated levels of hydrocarbons up to approximately 1,000 ppm equivalent units in the soil. Ground water was not encountered in the tank pits which were excavated to depths of approximately 12 feet; however, a small pool of possibly perched surface water was collected in a portion of the T4 tank pit.

3.2.1 Soil Sampling in Former Tank Pits

On July 3, 1991, soil samples were collected from native soil beneath the ends of each of tanks T1 through T4 at depths of 12 or 13 feet to evaluate the impact of gasoline hydrocarbons on the native soil beneath the former gasoline-storage tanks. The native soils

at the sample depths included clayey silt, clayey sand, gravelly clay and clayey gravel. On July 3, 1991 a "grab" sample of the water pooled in the T4 tank pit was obtained.

Approximately 350 cubic yards of backfill soil removed from the tank pit excavations was stockpiled onsite for subsequent aeration or disposal. The stockpiled soil was placed on and covered by plastic sheeting.

3.3 New Tank Pit Excavation and Backfilling Old Tank Pits

The new tank pit for four 10,000 gallon gasoline-storage tanks was excavated by W. F. Lewis Construction Inc. on July 8 through 10, 1991. A RESNA geologist was onsite on July 8 and July 10, 1991 to observe removal of approximately 450 cubic yards of soil from the excavation for transportation and disposal to West Contra Costa County Sanitary Landfill in Richmond, California, and to obtain soil samples from the sidewalls of the new tank pit excavation. A RESNA geologist was onsite with a Sequoia Analytical mobile laboratory on July 9, 1991, to obtain and analyze samples from approximately 350 cubic yards of soil removed from the new tank pit excavation for use in backfilling the former gasoline-storage tank pits, and to supervise backfilling of the former tank pits.

3.3.1 Soil Sampling in New Tank Pit

Soil sampling of sidewalls and of material to be used for backfilling the former tank pits was performed according to the instructions of Mr. Larry Seto of ACHCSD as told to Mr. Steve Strausz of RESNA on July 3, 1991. These instructions for obtaining soil samples from the new tank pit as recorded by Mr. Steve Strausz on July 3, 1991, included: (1) a single sample must be obtained and laboratory analyzed for TPHg and BTEX for every 20 cubic yards of

soil to be used in backfilling the former tank pits, and laboratory reported levels of TPHg must be nondetectable for soil to be used in backfilling; (2) a single soil sample must be obtained and laboratory analyzed for TPHg and BTEX for every 200 square feet of area of new tank pit sidewalls, for characterization of soils in the vicinity of the new tank pit. The locations and depths of soil samples obtained from the new gasoline-storage tank pit excavation are shown on Plate 3, Soil Sampling.

3.4 Product-Line Removal

The former product lines were excavated and removed on July 19, 1991. The ACHCSD, the AFD, and the BAAQMD were notified prior to performing this work. A RESNA geologist was onsite to observe removal of the product lines, supervise excavation of field-detected impacted soils from the area of the southwestern product dispenser and product lines, and obtain soil samples from the native soil beneath the former product dispensers and product lines. Mr. Larry Seto of ACHCSD was onsite to observe soil sampling of native soil beneath former product dispensers and product lines.

The RESNA geologist onsite noted that the soils near the surface in the area of the site nearest the former gasoline-storage tanks appeared to be uniformly impacted by gasoline hydrocarbons, based on OVM measurements of soil in that area of up to 500 ppm-equivalent units. The product dispensers and product lines did not appear to be the primary source of gasoline impacting these soils. No excavation was performed in this area beyond that required for removal of product and vapor/vent lines.

The RESNA geologist onsite noted that the shallow soil in the area of the product dispensers nearest the new tank pit appeared to be uniformly non-impacted by gasoline

hydrocarbons, with the exception of localized impacted soils in the area of the southernmost product dispensers. Based on these field observations, the RESNA geologist in consultation with Mr. Larry Seto of the ACHCSD directed the excavation of gasoline-hydrocarbon impacted soils from the vicinity of the southernmost product dispensers as shown on Plate 7, Product Line/Dispenser Sampling.

The former product lines consisted of single-walled fiberglass pipes and fittings, and appeared to be in good condition with no visible holes or loose fittings. The former product lines were originally installed from approximately ½-foot to 1 foot depth below the ground surface. Soil samples were obtained from the native soil beneath the product dispensers and the product lines as shown on Plate 3, Soil Sampling, and submitted for laboratory analysis of TPHg and BTEX.

A RESNA geologist returned to the site on August 9, 1991 to determine the extent of gasoline impacted soil in the vicinity of the product line soil sample S-1-PL4. Measurements of organic vapors obtained with an OVM, in the vicinity of the former product lines and product dispensers near the location of soil sample S-0719-PL4, indicated ppm-equivalent units below 50. A second confirmation sample S-1½-PL4 was obtained from a depth of 1½ feet, just below the location of S-1-PL4.

Soil excavated during product line removal was stockpiled with soils removed from the former tank pit for subsequent aeration or disposal.

3.5 Soil Aeration

On July 9, 1991, a composite sample was obtained from the stockpiled backfill soil removed from the former tank pits, from a portion of the most highly gasoline-impacted soils as based on field measured OVM readings. Laboratory analysis of this sample reported a level of TPHg of 200 ppm. On July 15, 1991, RESNA notified the BAAQMD, the AFD, and the ACHCSD that passive aeration of approximately 350 cubic yards of soil in compliance with Regulation 8, Rule 4 of the BAAQMD (1986) would begin on July 17, 1991, at the site.

On July 17, 1991 the backfill soil stockpile was moved from the northwestern corner of the site to the area on the eastern side of the site, with approximately one third of the stockpile left uncovered to allow passive aeration. Laboratory analysis of seven confirmation composite samples obtained on July 22, 23, and 25, 1991, from approximately 50 cubic yard sections of the stockpiled soil reported TPHg from 31 to 81 ppm. Laboratory analysis results of composite soil samples from the aerated soil are included in Table 4. The entire stockpiled soils were covered with plastic sheeting on July 29, 1991. On August 1 and 2, 1991, the stockpiled soil was transported by Dillard Trucking, a licensed waste hauler from Byron, California, to Redwood Landfill Inc., a Class III Landfill in Novato, California. An invoice for hauling of soils is included in Appendix D.

4.0 LABORATORY METHODS

4.1 Analytical Methods and Sample Summary

Soil and ground-water "grab" samples were analyzed in Sequoia Analytical's Mobile Laboratory (State Hazardous Waste Testing Laboratory Certification No. 1229) onsite or

at Sequoia Analytical in Redwood City, California (State Hazardous Waste Testing Laboratory Certification No. 1210). The Chain of Custody Records and the laboratory Analysis Reports are attached in Appendix C.

Eight soil samples obtained from beneath the former USTs (T1 through T4) were analyzed for TPHg by modified EPA Method 5030/8015 and for the gasoline constituents BTEX by EPA Method 8020. One soil sample collected from beneath the southern end of tank T4 was also analyzed for total oil and grease (TOG) by EPA Standard Method 5520 E&F, and volatile organic compounds (VOCs) by EPA Method 8240. Two samples collected from beneath tank T3 were analyzed for organic lead by the California State LUFT (Leaking Underground Fuel Tank) Manual Method (December 1987).

One "grab" sample of water collected in the T4 tank pit was analyzed for TPHg and BTEX using EPA Methods 8015/602.

Thirty seven soil samples obtained from borings B-6 and B-7, and the excavation for the new tank pit were analyzed for TPHg by modified EPA Method 5030/8015 and for the gasoline constituents BTEX by EPA Method 8020.

Nineteen soil samples obtained from beneath the former product lines and product dispensers were analyzed for TPHg by modified EPA Method 5030/8015 and for the gasoline constituents BTEX by EPA Method 8020.

Nine composite soil samples from backfill soil removed from the former tank pits were analyzed for TPHg by modified EPA Method 5030/8015 and for the gasoline constituents BTEX by EPA Method 8020.

One composite sample obtained from the stockpiled soil removed from the former tank pits was analyzed for organic lead by the California State LUFT (Leaking Underground Fuel Tank) Manual Method (December 1987).

5.0 GEOLOGIC AND LABORATORY RESULTS

5.1 Geologic Results

A geologist observed the drilling of borings B-6 and B-7, and classified the soils according to the Unified Soil Classification System, which is briefly summarized on Plate B-1 in Appendix B, Logs of Borings. The boring logs are also presented in Appendix B in Plates B-2 and B-3. Earth materials encountered in borings B-6 and B-7 ranged from sandy clay to clayey gravel as shown on the Logs of Borings, Plates B1 and B2 in Appendix B. Organic vapor meter readings are shown on the boring logs in the column labeled PID (photoionization detector). Geologic cross section A-A' (Plate 4) shows the subsurface stratigraphy at the site. The location of the geologic cross section A-A' is shown on Plate 2. Ground water was encountered at a depth of about 18 feet.

5.2 Laboratory Results

The results of laboratory analyses of soil samples obtained from soil borings B-6 and B-7, and from soil samples obtained from the excavation for the new tank pit are summarized in Table 1, Laboratory Analyses of New Tank Pit Soil Samples; and TPHg results and sample locations in the excavation for the new tank pit are shown on Plate 3, Soil Sampling. In borings B-6 and B-7 in the new tank pit, TPHg and BTEX levels were reported nondetectable in all 9 samples (S-5½-B6 through S-18½-B-7). In the remaining 28 soil

samples (S-15-EWC through S-0709-NP18{11'}), TPHg was reported nondetectable, and BTEX was reported ranging from nondetectable to 0.056 ppm.

The results of laboratory analyses of soil samples obtained from the former tank excavation are reported in Table 2, Laboratory Analyses of Former Tank Pit Soil Samples; and the sample locations and results are shown on Plate 3. In these 8 soil samples, TPHg ranged from nondetectable to 65 ppm. BTEX ranged from nondetectable to 2.4 ppm. Organic Lead and TOG were nondetectable in the soil sample (S-13-T4S) obtained nearest the former waste-oil tank location.

The results of laboratory analyses of the 19 soil samples collected beneath the former product lines and dispensers are summarized on Table 3, Laboratory Analyses of Product Line/Dispenser Soil Samples; and sample locations and results are shown on Plate 3. Laboratory reported levels of TPHg ranged from nondetectable to 4,200 ppm (in sample S-1-PL4). Laboratory reported levels of TPHg for three samples exceeded 1,000 ppm. Laboratory reported TPHg levels for nine samples were nondetectable. Laboratory levels of BTEX ranged from nondetectable to 640 ppm (in S-1-PL4).

Results of laboratory analysis of composite soil samples collected from the stockpiles soil at the site are shown on Table 4, Laboratory Analyses of Stockpiled Soils. TPHg in these samples ranged from nondetectable to 200 ppm, and BTEX ranged from nondetectable to 7.8 ppm.

The results of laboratory analysis of the single "grab" sample are summarized in Table 5, Laboratory Analysis of Water "Grab" Sample. The results of laboratory analyses of soil

samples and the water "grab" sample are also shown on Plate 3. TPHg was reported at 190,000 parts per billion (ppb), and BTEX ranged from 4,100 ppb to 27,000 ppb.

6.0 CONCLUSIONS

Based on the results of this investigation, RESNA concludes:

- o the soils in the vicinity of the new gasoline-storage tank pit have not been significantly impacted by gasoline hydrocarbons, as suggested by nondetectable concentrations of TPHg reported in nine samples collected from borings B-6 and B-7 and in twenty-eight samples collected from the new tank pit (although low levels of BTEX were detected);
- o gasoline hydrocarbons over 100 ppm have not impacted the shallow soils (12 to 13 feet below grade) in the vicinity of the former gasoline-storage tanks, as indicated by results of laboratory analysis of soil samples collected from the bottom of the former tank pit; however through-going holes noted in tanks T2 and T3 suggest that leakage occurred from these tanks and has likely impacted soils at the site;
- o gasoline hydrocarbons over 1,000 ppm have impacted the shallow soils (one foot below grade) in the vicinity of the product dispensers adjacent to the former steel gasoline-storage tanks T1, T2, and T3, as indicated by laboratory results of samples collected from the service island area closest to Marin Avenue. The former product dispensers, and the former product lines in these areas are likely sources of gasoline hydrocarbons impacting shallow soils;
- o the product dispensers and product lines along San Pablo Avenue apparently have not significantly impacted the shallow soils at the site, as suggested by nondetectable concentrations of TPHg, with the exception of one sample collected at a depth of one foot from the northern portion of the service island (4,200 ppm). A soil sample collected from beneath this area at a depth of 1½ feet indicated the presence of 4.1 ppm TPHg; and

- o ground water may be impacted at the site as suggested by laboratory results of a "grab" water sample from one of the former tank pits of 190,000 ppb TPHg.

7.0 DISTRIBUTION

RESNA recommends that copies of this report be forwarded to:

Mr. Lester Feldman
California Regional Water Quality Control Board
San Francisco Region
2101 Webster Street, Suite 500
Oakland, California 94612

Mr. Larry Seto
Alameda County Health Services Department
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

8.0 LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time this investigation was performed. This investigation was conducted solely for the purpose of evaluating environmental conditions of the soil with respect to gasoline contamination related to the underground gasoline storage tanks and dispenser lines at the subject site. No soil engineering or geotechnical implications are stated or should be inferred. Evaluation of the geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional

- o ground water may be impacted at the site as suggested by laboratory results of a "grab" water sample from one of the former tank pits of 190 ppm TPHg.

190,000 786

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Mr. Larry Seto
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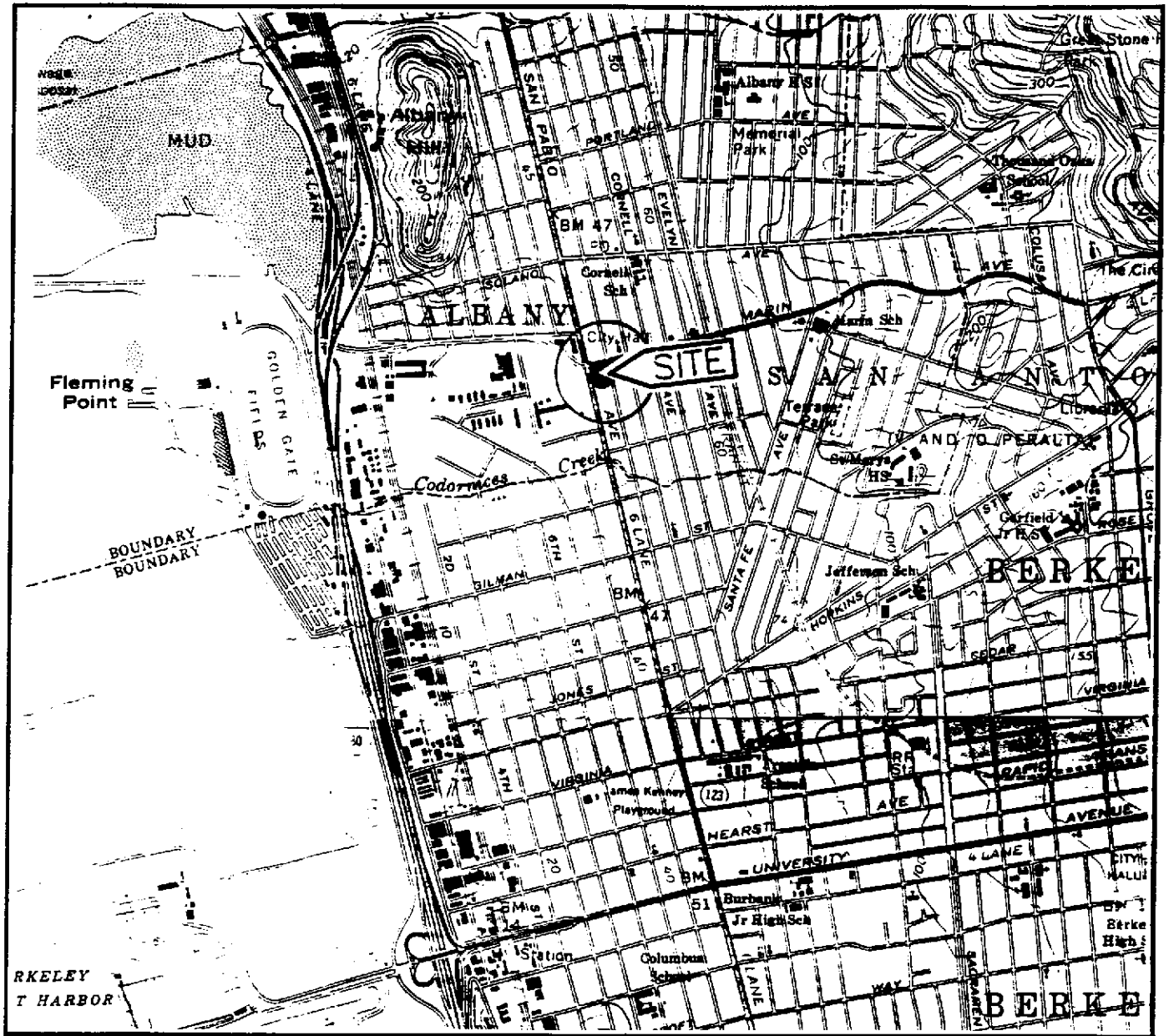
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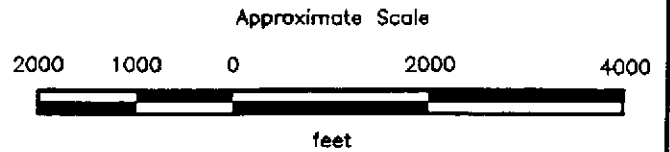
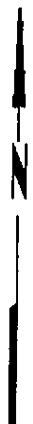
work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation.

9.0 REFERENCES CITED

- Applied GeoSystems. January 24, 1990. Limited Environmental Site Assessment at ARCO Station 2035. AGS 96036-1.
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- Hickenbottom, K. and K. Muir. 1988. Geohydrology and Groundwater-Quality Overview, East Bay Plain Area, Alameda County, California. Alameda County Flood Control and Water Conservation District 205(J) Report.
- RESNA/Applied GeoSystems. June 24, 1991. Site Safety Plan for the ARCO Service Station No.2035, 1001 San Pablo Avenue, Albany, California. AGS 69036.03S.
- RESNA/Applied GeoSystems. April 29, 1991. Work Plan for Subsurface Investigations and Remediation at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. AGS 69036.02.
- RESNA/Applied GeoSystems. April 29, 1991. Addendum One to Work Plan at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. AGS 69036.02



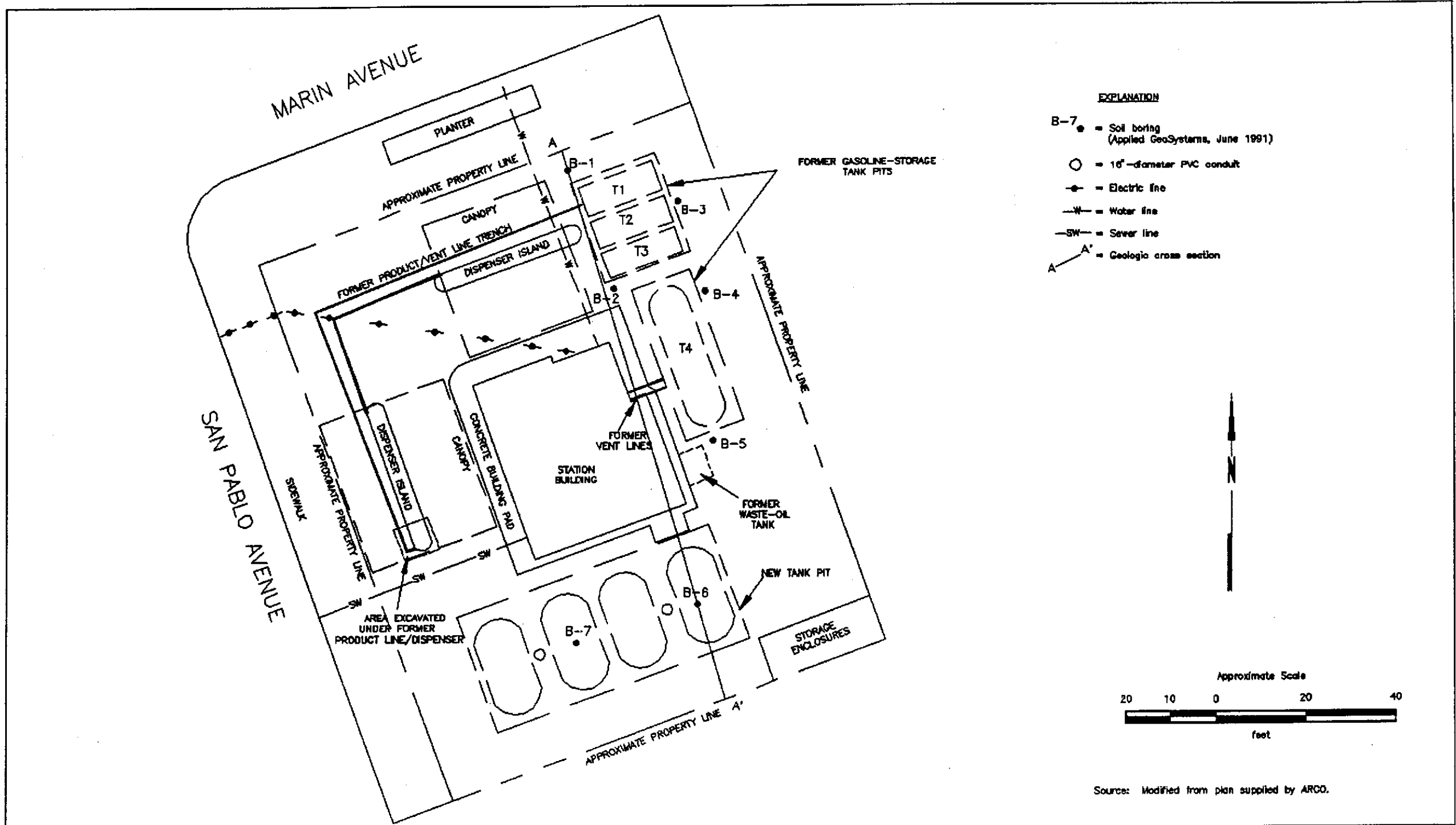
Source: U.S. Geological Survey
 7.5-Minute Quadrangles
 Richmond/Oakland West
 California
 Photorevised 1980



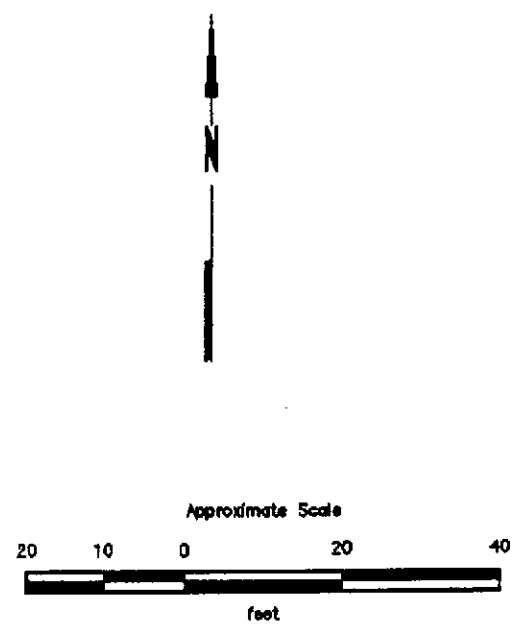
PROJECT 69036.03

SITE VICINITY MAP
ARCO Station 2035
1001 San Pablo Avenue
Albany, California

PLATE
1



- EXPLANATION**
- B-7 ● = Soil boring (Applied GeoSystems, June 1991)
 - = 10'-diameter PVC conduit
 - = Electric line
 - W— = Water line
 - SW— = Sewer line
 - A—A' = Geologic cross section



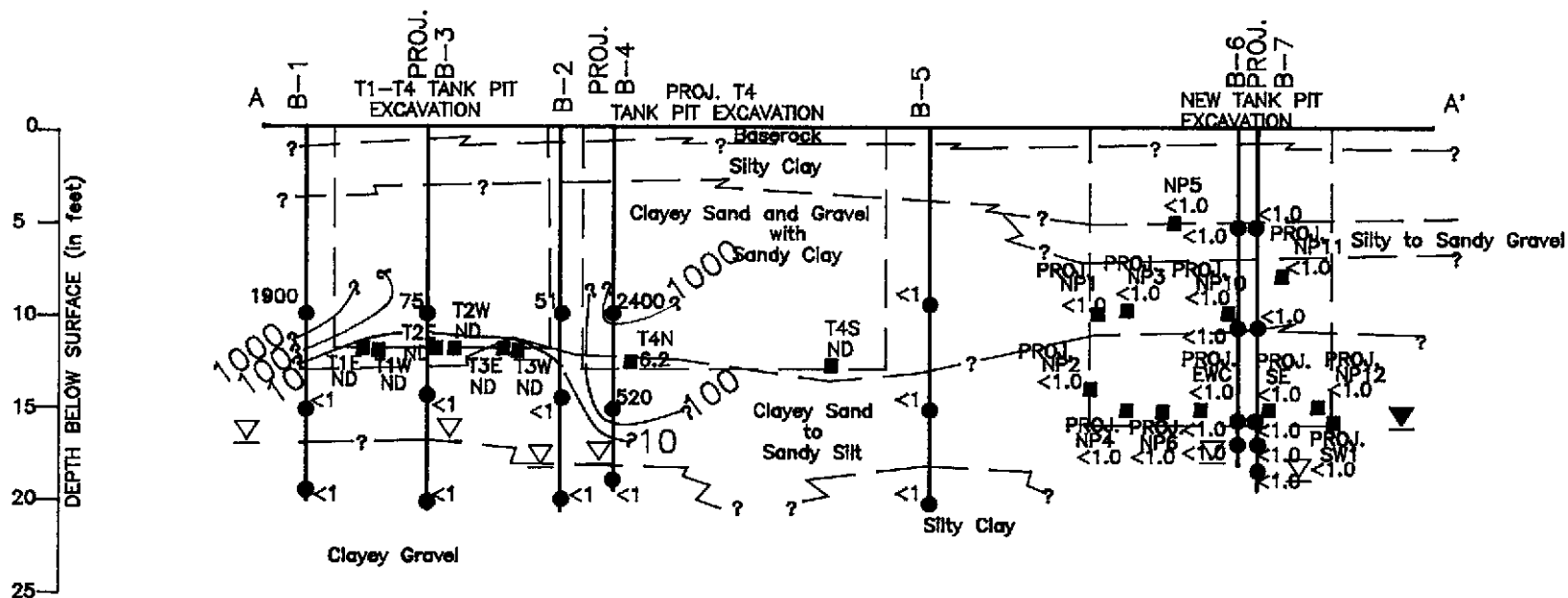
Source: Modified from plan supplied by ARCO.



PROJECT 69036.03

GENERALIZED SITE PLAN
ARCO Station 2035
1001 San Pablo Avenue
Albany, California

PLATE
2



EXPLANATION

- 1000 — = Line of equal concentration of TPHg in parts per million
- 75 ■ = Laboratory analyzed excavation soil sample showing concentration of TPHg in parts per million
- 2400 ● = Laboratory analyzed soil sample showing concentration of TPHg in parts per million
- = Boring
- ▽ = Initial water level in boring on 8/89, 6/91
- ▾ = Static water level in new tank pit on 7-10-91

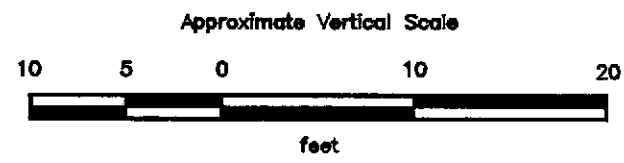
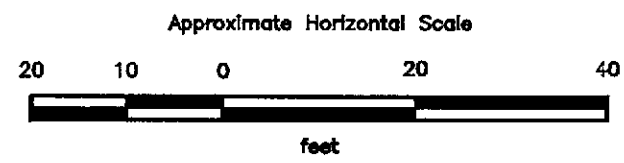
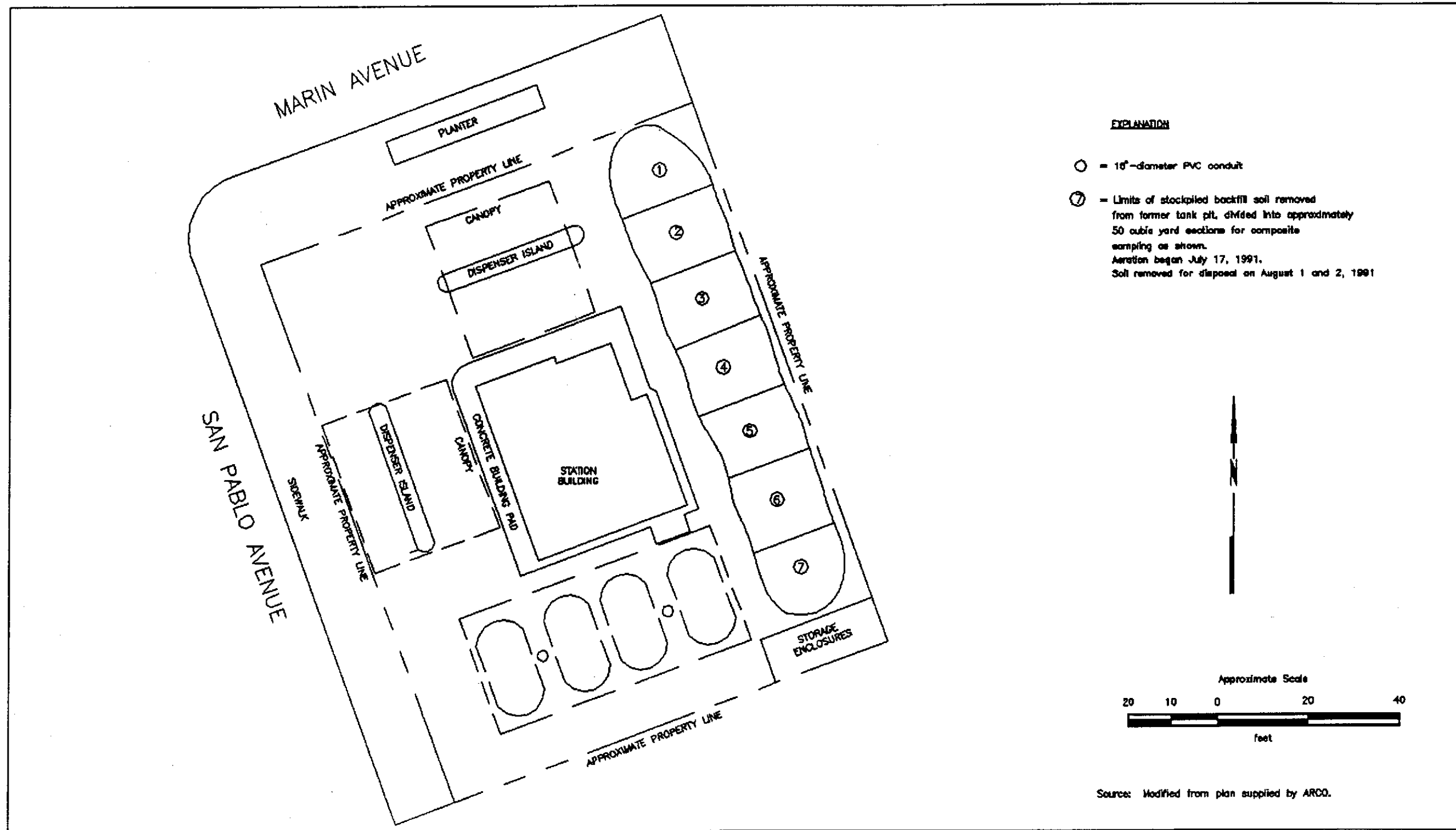


PLATE
4

GEOLOGIC CROSS SECTION A-A'
ARCO Station 2035
1001 San Pablo Avenue
Albany, California

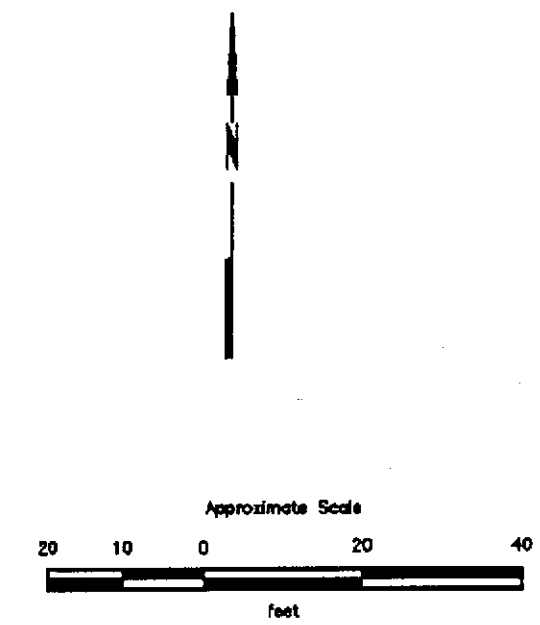


PROJECT 69036.03



EXPLANATION

- = 18"-diameter PVC conduit
- ⑦ = Limits of stockpiled backfill soil removed from former tank pit, divided into approximately 50 cubic yard sections for composite sampling as shown. Aeration began July 17, 1991. Soil removed for disposal on August 1 and 2, 1991



Source: Modified from plan supplied by ARCO.



PROJECT 69036.03

AERATION SOIL STOCKPILE (July 17 to August 2, 1991)
ARCO Station 2035
1001 San Pablo Avenue
Albany, California

PLATE
5

TABLE 1
 LABORATORY ANALYSIS OF NEW TANK PIT SOIL SAMPLES
 ARCO Station 2035
 Albany, California
 (Page 1 of 2)

Sample ID	B	T	E	X	TPHg
<u>June 25, 1991</u>					
S-5½-B6	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-10½-B6	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-15½-B6	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-17-B6	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-5½-B7	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-10½-B7	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-15½-B7	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-17-B7	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-18½-B7	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
<u>July 8, 1991</u>					
S-15-EWC	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-15-SE	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-16-SW1	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-15-SW	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-15-NWC	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-15-WWC	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-15-NWF	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-9-NWW	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-8-NW	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-15-NW	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
<u>July 9, 1991</u>					
S-0709-NP1(10')	0.025	0.027	0.0060	0.024	<1.0
S-0709-NP2(14')	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-0709-NP3(10')	<0.0050	0.0050	<0.0050	0.018	<1.0
S-0709-NP4(15')	0.0050	0.0050	<0.0050	<0.0050	<1.0
S-0709-NP5(5')	0.012	0.013	<0.0050	0.0080	<1.0
S-0709-NP6(15')	0.017	0.021	0.014	0.056	<1.0
S-0709-NP7(3')	0.0060	0.0060	<0.0050	<0.0050	<1.0
S-0709-NP8(14')	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-0709-NP9(9')	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-0709-NP10(10')	0.0090	0.0060	<0.0050	<0.0050	<1.0

See notes on page 2 of 2.

TABLE 1
 LABORATORY ANALYSIS OF NEW TANK PIT SOIL SAMPLES
 ARCO Station 2035
 Albany, California
 (Page 2 of 2)

Sample ID	B	T	E	X	TPHg
S-0709-NP11(8')	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-0709-NP12(14')	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-0709-NP13(2')	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
S-0709-NP14(6')	<0.0050	<0.0050	0.0050	0.0080	<1.0
S-0709-NP15(5')	<0.0060	<0.0050	<0.0050	0.0060	<1.0
S-0709-NP16(16')	<0.0050	<0.0050	0.0050	0.0080	<1.0
S-0709-NP17(10')	<0.0050	<0.0050	0.0050	0.0080	<1.0
S-0709-NP18(11')	<0.0050	<0.0050	0.0050	0.0080	<1.0

Results in parts per million (ppm).

<: Less than the indicated laboratory detection limit.

B: benzene, T: toluene, E: ethylbenzene, X: total xylenes

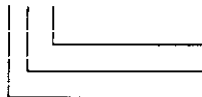
TPHg: Total petroleum hydrocarbons as gasoline

TPHg with BTEX distinction measured by EPA Methods 5030/8015/8020)

Sample Identification:

Soil Borings:

S-5½-B6



Boring number
 Depth of sample
 Soil sample

Excavation Samples:

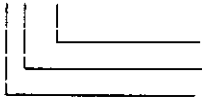
S-0709-NP1(10')



New tank pit consecutive number (sample depth)
 Date of sample
 Soil sample

Sidewall and Floor Samples:

S-15-EWC



Location identifier
 Depth of sample
 Soil sample

TABLE 2
 LABORATORY ANALYSIS OF FORMER GASOLINE TANK PIT SOIL SAMPLES
 ARCO Station 2035
 Albany, California

Sample ID	B	T	E	X	TPHg	TOG	VOC	Pb
<u>July 3, 1991</u>								
S-12-T1W	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	NA	NA	NA
S-12-T1E	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	NA	NA	NA
S-12-T2W	0.031	<0.0050	0.0080	<0.0050	<1.0	NA	NA	NA
S-12-T2E	0.019	<0.0050	<0.0050	<0.0050	<1.0	NA	NA	NA
S-12-T3W	1.2	2.4	1.0	3.8	48	NA	NA	<0.05
S-12-T3E	0.2	0.51	0.97	3.9	65	NA	NA	<0.05
S-13-T4N	0.45	0.039	0.18	0.33	6.2	NA	NA	NA
S-13-T4S	0.061 (0.160)	0.034	0.0080	0.15 (0.430)	<1.0	<30	ND	NA

Results in parts per million (ppm). NA: Not analyzed.

<: Less than the indicated laboratory detection limit

ND: Less than laboratory limit for each compound, except benzene and total xylenes

(): Indicates results measured by EPA Method 8240

B: benzene, T: toluene, E: ethylbenzene, X: total xylenes

TPHg: Total petroleum hydrocarbons as gasoline

(TPHg with BTEX distinction measured by EPA Methods 5030/8015/8020)

TOG: Total oil and grease (measured by Standard Method 5520 E and F)

VOC: Volatile organic compounds (measured by EPA Method 8240)

Pb: Organic lead (measured by California LUFT Manual Method, 12/87)

Sample Identification:

S-12-T1W



Tank number and locator
 Depth of sample
 Soil sample

TABLE 3
 LABORATORY ANALYSIS OF PRODUCT-LINE
 AND PRODUCT-DISPENSER SOIL SAMPLES
 ARCO Station 2035
 Albany, California

Sample ID	B	T	E	X	TPHg
<u>July 19, 1991</u>					
S-2½-PL1	<0.005	<0.005	<0.005	<0.005	<1.0
S-2½-PL2	<0.005	<0.005	<0.005	<0.005	<1.0
S-1-PL3	0.005	0.02	0.016	0.12	1.7
S-1-PL4	36	320	100	640	4,200
S-1-PL5	<0.005	<0.005	<0.005	<0.005	<1.0
S-1-PL6	<0.005	<0.005	<0.005	<0.005	<1.0
S-1-PL7	0.10	0.37	0.16	1.2	11
S-1-PL8	3.6	28	29	200	1,900
S-1-PL9	0.2	0.78	0.36	3.1	110
S-1-PL10	0.09	0.43	0.72	2.8	84
S-2½-PD1	<0.005	<0.005	<0.005	<0.005	<1.0
S-2½-PD2	<0.005	<0.005	<0.005	<0.005	<1.0
S-1-PD3	<0.005	<0.005	<0.005	<0.005	<1.0
S-1-PD4	<0.005	<0.005	<0.005	12	330
S-1-PD5	<0.005	<0.005	<0.005	<0.005	<1.0
S-1-PD6	0.13	0.28	0.48	3.8	87
S-1-PD7	0.35	2.1	1.1	47	1,000
S-1-PD8	<0.005	<0.005	<0.005	<0.005	<1.0
<u>August 9, 1991</u>					
S-1½-PL4	0.21	0.040	0.15	0.12	4.1

Results in parts per million (ppm).

<: Less than the laboratory detection limit.

B: benzene, T: toluene, E: ethylbenzene, X: total xylenes

BTEX: Measured by EPA Method .

TPHg: Total petroleum hydrocarbons as gasoline (measured by EPA Method).

Sample Identification:

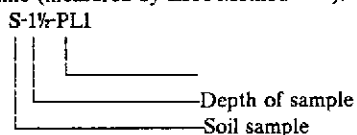


TABLE 4
 LABORATORY ANALYSIS OF COMPOSITE SOIL SAMPLES
 ARCO Station 2035
 Albany, California

Sample ID	B	T	E	X	TPHg	Pb
<u>July 7, 1991</u>						
S-0709-SP(A-D)	0.16	0.76	0.051	7.8	200	NA
<u>July 22, 1991</u>						
S-0722-1(a-d)	<0.0050	<0.0050	<0.0050	<0.0050	78	NA
S-0722-2(a-d)	0.05	0.1	0.05	0.34	81	NA
<u>July 23, 1991</u>						
S-0723-3(a-d)	0.032	0.035	0.045	0.17	130	NA
S-0723-4(a-d)	<0.0050	<0.0050	<0.0050	0.054	31	<0.05
<u>July 25, 1991</u>						
S-0725-3(a-d)	0.0080	0.0080	0.011	0.049	31	NA
S-0725-5(a-d)	<0.0050	0.0070	<0.0050	0.010	47	NA
S-0725-6(a-d)	0.0080	0.018	0.029	0.10	49	NA
S-0725-7(a-d)	0.013	0.018	0.032	0.22	65	NA

Results in parts per million (ppm). NA: Not analyzed.
 B: benzene, T: toluene, E: ethylbenzene, X: total xylenes
 BTEX: Measured by EPA Method
 TPHg: Total petroleum hydrocarbons as gasoline (measured by EPA Method).
 Pb: Organic lead (measured by California LUFT Manual, 12/87).

Sample Identification:

TABLE 5
LABORATORY ANALYSIS OF WATER "GRAB" SAMPLE FROM T4 TANK PIT
ARCO Station 2035
Albany, California

Sample ID	B	T	E	X	TPHg
"Grab"	27,000	41,000	4,100	28,000	190,000

Results in parts per billion (ppb).

<: Less than the laboratory detection limit.

B: benzene, T: toluene, E: ethylbenzene, X: total xylenes

TPHg: Total petroleum hydrocarbons as gasoline

(TPHg with BTEX distinction measured by EPA Methods 5030/8015/8020)

APPENDIX A

Field Protocol

FIELD PROTOCOL

The following presents Applied GeoSystems' protocol for a typical site investigation involving gasoline hydrocarbon-impacted soil and/or ground water.

Site Safety Plan

The Site Safety Plan (Applied GeoSystems 60009-1S, March 22, 1990) describes the safety requirements for the evaluation of gasoline hydrocarbons in soil, ground-water, and the vadose-zone at the site. The site Safety Plan is applicable to personnel of Applied GeoSystems and its subcontractors. Applied GeoSystems personnel and subcontractors of Applied GeoSystems scheduled to perform the work at the site are briefed on the contents of the Site Safety Plan before work begins. A copy of the Site Safety Plan is available for reference by appropriate parties during the work. A site Safety Officer is assigned to the project.

Soil Borings

The borings are drilled by a truck-mounted drill rig equipped with 8- or 10-inch-diameter, hollow-stem augers. The augers are steam-cleaned prior to drilling each boring to minimize the possibility of cross-contamination. After drilling the borings, monitoring wells are constructed in the borings, or neat-cement grout with bentonite is used to backfill the borings to the ground surface.

Drill Cuttings

Drill cuttings subjectively evaluated as containing hydrocarbons at levels greater than 100 parts per million (ppm) are separated from those subjectively evaluated as containing hydrocarbons at levels less than 100 ppm. Evaluation is based either on subjective evidence of soil discoloration, or on measurements made using a field calibrated OVM. Readings are taken by placing a soil sample into a ziplock-type plastic bag and allowing volatilization to occur. The intake probe of the OVM is then inserted into the headspace created in the plastic bag immediately after opening it. The drill cuttings from the borings are placed in labeled 55-gallon drums approved by the Department of Transportation, or on plastic at the site, and covered with plastic. The cuttings remain the responsibility of the client.

Soil Sampling in Borings

Soil samples are collected at no greater than 5-foot intervals from the ground surface to the total depth of the borings. The soil samples are collected by advancing the boring to a point immediately above the sampling depth, and then driving a California-modified, split-spoon sampler containing brass sleeves through the hollow center of the auger into the soil. The sampler and brass sleeves are laboratory-cleaned, steam-cleaned, or washed thoroughly with Alconox® and water, prior to each use. The sampler is driven with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows to drive the sampler each successive six inches are counted and recorded to evaluate the relative consistency of the soil.

The samples selected for laboratory analysis are removed from the sampler and quickly sealed in their brass sleeves with aluminum foil, plastic caps, and aluminized duct tape. The samples are then labeled, promptly placed in iced storage, and delivered to a laboratory certified by the State of California to perform the analyses requested.

One of the samples in brass sleeves not selected for laboratory analysis at each sampling interval is tested in the field using an OVM that is field calibrated at the beginning of each day it is used. This testing is performed by inserting the intake probe of the OVM into the headspace in the plastic bag containing the soil sample as described in the Drill Cuttings section above. The OVM readings are presented in Logs of Borings included in the project report.

Logging of Borings

A geologist is present to log the soil cuttings and samples using the Unified Soil Classification System. Samples not selected for chemical analysis, and the soil in the sampler shoe, are extruded in the field for inspection. Logs include texture, color, moisture, plasticity, consistency, blow counts, and any other characteristics noted. Logs also include subjective evidence for the presence of hydrocarbons, such as soil staining, noticeable or obvious product odor, and OVM readings.

Soil Excavation

Permits are acquired prior to the commencement of work at the site. Excavated soil is evaluated using a field calibrated (using isobutylene) Thermo-Environmental Instruments Model 580 Organic Vapor Meter (OVM). This evaluation is done upon arrival of the soil at the ground surface in the excavator bucket by removing the top portion of soil from the

bucket, and then placing the intake probe of the OVM against the surface of the soil in the bucket. Field instruments such as the OVM are useful for measuring relative concentrations of vapor content, but cannot be used to measure levels of hydrocarbons with the accuracy of laboratory analysis. Samples are taken from the soil in the bucket by driving laboratory-cleaned brass sleeves into the soil. The samples are sealed in the sleeves using aluminum foil, plastic caps, and aluminized duct tape; labeled; and promptly placed in iced storage. If field subjective analyses suggest the presence of hydrocarbons in the soil, additional excavation and soil sampling is performed, using similar methods. If ground water is encountered in the excavation, ground water samples are collected from the excavation using a clean Teflon® bailer. The excavation is backfilled or fenced prior to departure from the site.

Sampling of Stockpiled Soil

One composite soil sample is collected for each 50 cubic yards of stockpiled soil, and for each individual stockpile composed of less than 50 cubic yards. Composite soil samples are obtained by first evaluating relatively high, average, and low areas of hydrocarbon concentration by digging approximately one to two feet into the stockpile and placing the intake probe of a field calibrated OVM against the surface of the soil; and then collecting one sample from the "high" reading area, and three samples from the "average" areas. Samples are collected by removing the top one to two feet of soil, then driving laboratory-cleaned brass sleeves into the soil. The samples are sealed in the sleeves using aluminum foil, plastic caps, and aluminized duct tape; labeled; and promptly placed in iced storage for transport to the laboratory, where compositing is performed.


APPENDIX B


LOGS OF BORINGS


Soil Borings B-6 and B-7


UNIFIED SOIL CLASSIFICATION SYSTEM


MAJOR DIVISION	LTR	DESCRIPTION	MAJOR DIVISION	LTR	DESCRIPTION		
COARSE- GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	FINE- GRAINED SOILS	SILTS AND CLAYS LL<50	ML	Inorganic Silts and very fine sands, rock flour, Silty or Clayey fine Sands, or Clayey Silts with slight plasticity.	
		GP			CL		Inorganic Clays of low to medium plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays.
		GM			OL		
		GC					
	SAND AND SANDY SOILS	SW		SILTS AND CLAYS LL>50	MH	Inorganic Silts, micaceous or diatomaceous fine Sandy or Silty Soils, Elastic Silts.	
		SP			CH		Inorganic Clays of high plasticity, fat Clays.
		SM			OH		
		SC					
				HIGHLY ORGANIC SOILS	PT	Peat and other highly Organic Soils.	


- | | |
|---|---|
|  Depth through which sampler is driven


 Relatively undisturbed sample


 No sample recovered


 Static water level observed in well/boring


 Initial water level observed in boring


S-10 Sample number |  Sand pack

 Bentonite

 Neat cement

 Caved native soil

 Blank PVC

 Machine-slotted PVC

P.I.D. Photoionization detector |
|---|---|

BLOWS REPRESENT THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH EACH 6 INCHES OF AN 18-INCH PENETRATION.

DASHED LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDARIES ONLY. ACTUAL BOUNDARIES MAY BE GRADUAL LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.



**UNIFIED SOIL CLASSIFICATION SYSTEM PLATE
AND SYMBOL KEY
ARCO Station 2035
1001 San Pablo Avenue
Albany, California**

B1

PROJECT 69036.03

Depth of boring: 18 feet Diameter of boring: 8 inches Date drilled: 6-25-91
 Well depth: NA Material type: NA Casing diameter: NA
 Screen interval: NA Slot size: NA
 Drilling Company: Exceltech Driller: Gene & Richard
 Method Used: Hollow-Stem Auger Field Geologist: Joel Coffman
 Signature of Registered Professional: _____
 Registration No.: _____ State: _____

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt.	
				SM	Silty sand, brown, dry, loose: fill.	▽▽▽▽
2				CL	Sandy clay, green-brown, dry to damp, medium plasticity, soft.	▽▽▽▽
4						▽▽▽▽
6	S-5.5	14 23 30	0		Brown, low plasticity, stiff.	▽▽▽▽
8						▽▽▽▽
10	S-10.5	11 12 22	0		Color change to green-brown.	▽▽▽▽
12						▽▽▽▽
14						▽▽▽▽
16	S-15.5	12 15 33	0			▽▽▽▽
18	S-17	30 48 50	0	SC ▽	Clayey sand, brown, moist, medium dense. Wet.	▽▽▽▽
					Total Depth = 18 feet.	
20						



PROJECT: 69036.03

LOG OF BORING B-6
 ARCO Station 2035
 1001 San Pablo Avenue
 Albany, California

PLATE
 B2

Depth of boring: 19-1/2 feet Diameter of boring: 8 inches Date drilled: 6-25-91
 Well depth: NA Material type: NA Casing diameter: NA
 Screen interval: NA Slot size: NA
 Drilling Company: Exceltech Driller: Gene & Richard
 Method Used: Hollow-Stem Auger Field Geologist: Joel Coffman

Signature of Registered Professional: _____
 Registration No.: _____ State: _____

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt	
				SM	Silty sand, brown, dry, loose: fill.	▽▽▽▽
2				CL	Sandy clay, dark brown, dry, medium plasticity, medium plasticity, soft.	▽▽▽▽
4					Old concrete slab, possible part of old foundation.	▽▽▽▽
6	S-5.5	30 40 30	0	CL	Sandy clay, brown, dry to damp, low plasticity, very stiff.	▽▽▽▽
10	S-10.5	22 22 30	6.8	GC	Clayey gravel, brown-gray, damp, dense.	▽▽▽▽
12				SC	Clayey sand, brown, damp, dense.	▽▽▽▽
16	S-15.5	11 11 18 20	0	CL	Sandy clay, brown-olive, damp, low to medium plasticity, stiff.	▽▽▽▽
18	S-17	24 25 25	1.7			▽▽▽▽
18.5	S-18.5	40 50	0	SC	Clayey sand, brown, damp, dense.	▽▽▽▽
20					Total Depth = 18 feet.	



PROJECT: 69036.03

LOG OF BORING B-7
 ARCO Station 2035
 1001 San Pablo Avenue
 Albany, California

PLATE
 B3

APPENDIX C

Chain of Custody Records

Laboratory Data Sheets

ARCO Products Company

Division of AtlanticRichfieldCompany

Task Order No. **2035-91-1**

Chain of Custody

ARCO Facility no. 2035	City (Facility) Albany, Ca.	Project manager (Consultant) JOEL COFFMAN	Laboratory name Sequoia
ARCO engineer Chuck Carvel	Telephone no. (ARCO) (415) 571-2469	Telephone no. (Consultant) (408) 264-7723	Contract number 69036.03
Consultant name Besna / Applied Coe Systems	Address (Consultant) 3315 Almaden Pkwy. #34 San Jose, CA		Method of shipment Sequoia Courier

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH Gas EPA M602/8020/8015	TPH Modified 8015 Gas Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	Semi Metals VOA <input type="checkbox"/> VOA <input type="checkbox"/>	CAN Metals EPA 601/87000 TLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./DHS <input type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/>	SAN JOSE BRATON	
			Soil	Water	Other	Ice	Acid															
✓ S5 1/2 B6	✓		X			X		6-25-91		X												
✓ S10 1/2 B6	✓									X												
✓ S15 1/2 B6	✓									X												
✓ S17 B6	✓									X												
✓ S5 1/2 B7	✓									X												
✓ S10 1/2 B7	✓									X												
✓ S15 1/2 B7	✓									X												
✓ S17 B7	✓									X												
✓ S18 1/2 B7	✓		X			X		6-25-91		X												

Special detection Limit/reporting

Special QA/QC

Remarks
TPHg and BTEX

Lab number

Turnaround time
 Priority Rush 1 Business Day
 Rush 2 Business Days
 Expedited 5 Business Days
 Standard 10 Business Days

Condition of sample:	Temperature received:
Relinquished by sampler Joel Coffman	Date 6-25-91 Time 4pm
Relinquished by Kevin Van Sambrook	Date 25 JUNE 91 Time 5²⁰pm
Relinquished by	Date Time

Received by Kevin Van Sambrook	Date 6/25 Time 5:45
Received by K. Waller	Date 6/25 Time 5:45



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APPLIED GEOSYSTEMS
SAN JOSE BRANCH

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Project: ARCO #2035, Albany

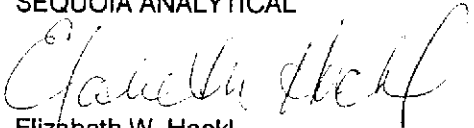
Enclosed are the results from 9 soil samples received at Sequoia Analytical on June 25, 1991. The requested analyses are listed below:

SAMPLE #	PLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1063624	Soil, S-5½ B6	6/25/91	EPA 5030/8015/8020
1063625	Soil, S-10½ B6	6/25/91	EPA 5030/8015/8020
1063626	Soil, S-15½ B6	6/25/91	EPA 5030/8015/8020
1063627	Soil, S-17 B6	6/25/91	EPA 5030/8015/8020
1063628	Soil, S-5½ B7	6/25/91	EPA 5030/8015/8020
1063629	Soil, S-10½ B7	6/25/91	EPA 5030/8015/8020
1063630	Soil, S-15½ B7	6/25/91	EPA 5030/8015/8020
1063631	Soil, S-17 B7	6/25/91	EPA 5030/8015/8020
1063632	Soil, S-18½ B7	6/25/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager



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Applied GeoSystems	Client Project ID: ARCO #2035, Albany	Sampled: Jun 25, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil	Received: Jun 25, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: 6/25-26/91
Attention: Joel Coffman	First Sample #: 106-3624	Reported: Jun 27, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
106-3624	S-5½ B6	N.D.	N.D.	N.D.	N.D.	N.D.
106-3625	S-10½ B6	N.D.	N.D.	N.D.	N.D.	N.D.
106-3626	S-15½ B6	N.D.	N.D.	N.D.	N.D.	N.D.
106-3627	S-17 B6	N.D.	N.D.	N.D.	N.D.	N.D.
106-3628	S-5½ B7	N.D.	N.D.	N.D.	N.D.	N.D.
106-3629	S-10½ B7	N.D.	N.D.	N.D.	N.D.	N.D.
106-3630	S-15½ B7	N.D.	N.D.	N.D.	N.D.	N.D.
106-3631	S-17 B7	N.D.	N.D.	N.D.	N.D.	N.D.
106-3632	S-18½ B7	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	1.0	0.0050	0.0050	0.0050	0.0050
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard. Analytes reported as N.D. were not present above the stated limit of detection.

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Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager



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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Dave Higgins

Client Project ID: ARCO #2035, Albany

QC Sample Group: 1063624-3627, 3630-3632

Reported: Jun 27, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
---------	---------	---------	---------------	---------

Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	C. Donohue	C. Donohue	C. Donohue	C. Donohue
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jun 25, 1991	Jun 25, 1991	Jun 25, 1991	Jun 25, 1991
QC Sample #:	GBLK 062591	GBLK 062591	GBLK 062591	GBLK 062591

Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	91	90	91	270
Matrix Spike % Recovery:	91	90	91	90
Conc. Matrix Spike Dup.:	94	93	92	270
Matrix Spike Duplicate % Recovery:	94	93	92	90
Relative % Difference:	3.2	3.3	1.1	0.0

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% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager



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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Dave Higgins

Client Project ID: ARCO #2035, Albany

QC Sample Group: 1063628-3629

Reported: Jun 27, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
---------	---------	---------	---------------	---------

Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	S. Gill	S. Gill	S. Gill	S. Gill
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jun 26, 1991	Jun 26, 1991	Jun 26, 1991	Jun 26, 1991
QC Sample #:	GBLK 062591	GBLK 062591	GBLK 062591	GBLK 062591

Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	89	89	89	270
Matrix Spike % Recovery:	89	89	89	90
Conc. Matrix Spike Dup.:	88	87	87	250
Matrix Spike Duplicate % Recovery:	88	87	87	83
Relative % Difference:	1.1	2.3	2.3	7.7

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Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

ARCO Facility no. 2035 City (Facility) Albany Project manager (Consultant) Joel Coffman
 ARCO engineer Chuck Carmel Telephone no. (ARCO) Telephone no. (Consultant) 408-264-7723 Fax no. (Consultant) 408-264-2435
 Consultant name Applied GeoSystems Address (Consultant) 3315 Almaden Ex. #34 San Jose, CA 95118

Laboratory name
 Contract number 07073

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TC/TP Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	CAM Metals EPA 601/07000 TTLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./DHS <input type="checkbox"/> Lead EPA <input type="checkbox"/> 7420/7421 <input type="checkbox"/>	
			Soil	Water	Other	Ice	Acid														
S-0709 NP1			X			X		7-9-91	800	X											
S-0709 NP2			X			X			0845	X											
S-0709 NP3			X			X			0910	X											
S-0709 NP4			X			X			0950	X											
S-0709 NP5			X			X			1015	X											
S-0709 NP6			X			X			1030	X											
S-0709 NP7			X			X			1050	X											
S-0709 NP8			X			X			1120	X											
S-0709 NP9			X			X			1150	X											
S-0709 NP10			X			X			1305	X											
S-0709 NP11			X			X			1340	X											
S-0709 NP12			X			X			1400	X											
S-0709 NP13			X			X			1430	X											
S-0709 NP14			X			X			1500	X											
S-0709 NP15			X			X			1600	X											
S-0709 NP16			X			X			1620	X											

Method of shipment
 Mobile laboratory on site

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time
 Priority Rush 1 Business Day
 Rush 2 Business Days
 Expedited 5 Business Days
 Standard 10 Business Days

Mobile lab same day

Condition of sample: Temperature received: Ambient
 Relinquished by sampler *[Signature]* Date 7/9/91 Time Received by *[Signature]*
 Relinquished by Date Time Received by
 Relinquished by Date Time Received by laboratory *[Signature]* Date 7-9-91 Time 18:00

ARCO Facility no. **2035** City (Facility) **Albany, CA** Project manager (Consultant) **Joel Coffman**
 ARCO engineer **Chuck Carmel** Telephone no. (ARCO) Telephone no. (Consultant) **408-264-7723** Fax no. (Consultant) **408-264-2435**
 Consultant name **Applied GeoSystems** Address (Consultant) **3315 Almaden Ex. #34 San Jose, CA 95118**

Laboratory name
Contract number **07073**

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 524/8240	EPA 605/8270	TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	Semi-Metals EPA 6010/7000 TLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./OHS Lead EPA 7-420/7421 <input type="checkbox"/>	
			Soil	Water	Other	Ice	Acid														
S-0709 SPA	} COMPOSITE		X			X	7-9-91	1545													
S-0709 SPb			X			X	↓	1545													
S-0709 SPc			X			X	↓	1545		X											
S-0709 SPd			X			X	↓	1545													

Method of shipment
Mobile laboratory on site

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time
 Priority Rush 1 Business Day
 Rush 2 Business Days
 Expedited 5 Business Days
 Standard 10 Business Days

Method not done day

Condition of sample: Temperature received: **Ambient**

Relinquished by sampler: *[Signature]* Date **7/9/91** Time **1600** Received by: *[Signature]*

Relinquished by: Date Time Received by:

Relinquished by: Date Time Received by laboratory: *[Signature]* Date **7-9-91** Time **18:00**



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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Project: ARCO Station 2035, Albany

Enclosed are the results from 17 soil samples received at the Sequoia Analytical Mobile Lab on July 9, 1991. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1079697	Soil, S-0709-NP1	7/9/91	EPA 5030/8015/8020
1079698	Soil, S-0709-NP2	7/9/91	EPA 5030/8015/8020
1079699	Soil, S-0709-NP3	7/9/91	EPA 5030/8015/8020
1079700	Soil, S-0709-NP4	7/9/91	EPA 5030/8015/8020
1079701	Soil, S-0709-NP5	7/9/91	EPA 5030/8015/8020
1079702	Soil, S-0709-NP6	7/9/91	EPA 5030/8015/8020
1079703	Soil, S-0709-NP7	7/9/91	EPA 5030/8015/8020
1079704	Soil, S-0709-NP8	7/9/91	EPA 5030/8015/8020
1079705	Soil, S-0709-NP9	7/9/91	EPA 5030/8015/8020
1079706	Soil, S-0709-NP10	7/9/91	EPA 5030/8015/8020
1079707	Soil, S-0709-NP11	7/9/91	EPA 5030/8015/8020
1079708	Soil, S-0709-NP12	7/9/91	EPA 5030/8015/8020
1079709	Soil, S-0709-NP13	7/9/91	EPA 5030/8015/8020
1079710	Soil, S-0709-NP14	7/9/91	EPA 5030/8015/8020
1079711	Soil, S-0709-SP (A-D)	7/9/91	EPA 5030/8015/8020
1079712	Soil, S-0709-NP15	7/9/91	EPA 5030/8015/8020
1079713	Soil, S-0709-NP16	7/9/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager



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Applied GeoSystems	Client Project ID: ARCO Station 2035, Albany	Sampled: Jul 9, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil	Received: Jul 9, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: Jul 9, 1991
Attention: Joel Coffman	First Sample #: 107-9697	Reported: Jul 10, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons		Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
		mg/kg (ppm)	Benzene mg/kg (ppm)			
107-9697	S-0709-NP1	N.D.	0.025	0.027	0.0060	0.024
107-9698	S-0709-NP2	N.D.	N.D.	N.D.	N.D.	N.D.
107-9699	S-0709-NP3	N.D.	N.D.	0.0050	N.D.	0.018
107-9700	S-0709-NP4	N.D.	0.0050	0.0050	N.D.	N.D.
107-9701	S-0709-NP5	N.D.	0.012	0.013	N.D.	0.0080
107-9702	S-0709-NP6	N.D.	0.017	0.021	0.014	0.056
107-9703	S-0709-NP7	N.D.	0.0060	0.0060	N.D.	N.D.
107-9704	S-0709-NP8	N.D.	N.D.	N.D.	N.D.	N.D.
107-9705	S-0709-NP9	N.D.	N.D.	N.D.	N.D.	N.D.
107-9706	S-0709-NP10	N.D.	0.0090	0.0060	N.D.	N.D.

Detection Limits:	1.0	0.0050	0.0050	0.0050	0.0050
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard. Analytes reported as N.D. were not present above the stated limit of detection.

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Elizabeth W. Hackl
 Elizabeth W. Hackl
 Project Manager



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Applied GeoSystems	Client Project ID: ARCO Station 2035, Albany	Sampled: Jul 9, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil	Received: Jul 9, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: Jul 9, 1991
Attention: Joel Coffman	First Sample #: 107-9707	Reported: Jul 10, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P.	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl	Xylenes mg/kg (ppm)
		Hydrocarbons mg/kg (ppm)			Benzene mg/kg (ppm)	
107-9707	S-0709-NP11	N.D.	N.D.	N.D.	N.D.	N.D.
107-9708	S-0709-NP12	N.D.	N.D.	N.D.	N.D.	N.D.
107-9709	S-0709-NP13	N.D.	N.D.	N.D.	N.D.	N.D.
107-9710	S-0709-NP14	N.D.	N.D.	N.D.	0.0050	0.0080
107-9711	S-0709-SP (A-D)	200	0.16	0.76	0.051	7.8
107-9712	S-0709-NP15	N.D.	N.D.	N.D.	N.D.	0.0060
107-9713	S-0709-NP16	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	1.0	0.0050	0.0050	0.0050	0.0050
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

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Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager



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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO Station 2035, Albany

QC Sample Group: 1079697-1079713

Reported: Jul 10, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Ethyl			
	Benzene	Toluene	Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	S. Chieffo	S. Chieffo	S. Chieffo	S. Chieffo
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 9, 1991	Jul 9, 1991	Jul 9, 1991	Jul 9, 1991
QC Sample #:	BLK 070991	BLK 070991	BLK 070991	BLK 070991
Sample Conc.:	28	33	6.1	32
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	110	110	100	310
Matrix Spike % Recovery:	82	77	94	93
Conc. Matrix Spike Dup.:	100	100	98	300
Matrix Spike Duplicate % Recovery:	72	67	92	89
Relative % Difference:	9.5	9.5	2.0	3.3

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

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Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



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APPLIED GEOSYSTEMS
SAN JOSE BRANCH

Applied GeoSystems	Client Project ID: ARCO 2035, Albany, 69036.03	Sampled: Jul 9, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil	Received: Jul 9, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: Jul 10, 1991
Attention: Joel Coffman	First Sample #: 107-1229	Reported: Jul 11, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons			Ethyl Benzene	Xylenes
		mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	mg/kg (ppm)	mg/kg (ppm)
107-1229	S-0709, NP17	N.D.	N.D.	N.D.	N.D.	N.D.
107-1230	S-0709, NP18	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	1.0	0.0050	0.0050	0.0050	0.0050
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard. Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

Please Note:
Amended report on 8/7/91



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 107-1229

Reported: Jul 11, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
	Method:	EPA 8020	EPA 8020	EPA 8020
Analyst:	S. Gill	S. Gill	S. Gill	S. Gill
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 10, 1991	Jul 10, 1991	Jul 10, 1991	Jul 10, 1991
QC Sample #:	GBLK 070991	GBLK 070991	GBLK 070991	GBLK 070991
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	96	97	97	280
Matrix Spike % Recovery:	96	97	97	93
Conc. Matrix Spike Dup.:	94	94	94	280
Matrix Spike Duplicate % Recovery:	94	94	94	93
Relative % Difference:	2.1	3.1	3.1	0.0

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Project: ARCO 2035, Albany

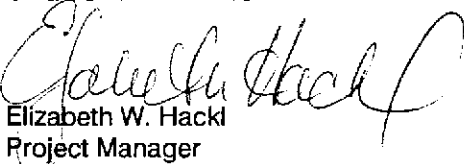
Enclosed are the results from 10 soil samples received at Sequoia Analytical on July 12, 1991. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1072126	Soil, S-15-EWC	7/8/91	EPA 5030/8015/8020
1072127	Soil, S-15-SE	7/8/91	EPA 5030/8015/8020
1072128	Soil, S-16-SW1	7/8/91	EPA 5030/8015/8020
1072129	Soil, S-15-SW	7/8/91	EPA 5030/8015/8020
1072130	Soil, S-15-NWC	7/8/91	EPA 5030/8015/8020
1072131	Soil, S-15-WWC	7/8/91	EPA 5030/8015/8020
1072132	Soil, S-15-NWF	7/8/91	EPA 5030/8015/8020
1072133	Soil, S-9-NWW	7/8/91	EPA 5030/8015/8020
1072134	Soil, S-8-NW	7/8/91	EPA 5030/8015/8020
1072135	Soil, S-15-NW	7/8/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager



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Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 8, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil	Received: Jul 12, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: Jul 16, 1991
Attention: Joel Coffman	First Sample #: 107-2126	Reported: Jul 24, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P.	Benzene	Toluene	Ethyl	Xylenes
		Hydrocarbons			Benzene	
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
107-2126	S-15-EWC	N.D.	N.D.	N.D.	N.D.	N.D.
107-2127	S-15-SE	N.D.	N.D.	N.D.	N.D.	N.D.
107-2128	S-16-SW1	N.D.	N.D.	N.D.	N.D.	N.D.
107-2129	S-15-SW	N.D.	N.D.	N.D.	N.D.	N.D.
107-2130	S-15-NWC	N.D.	N.D.	N.D.	N.D.	N.D.
107-2131	S-15-WWC	N.D.	N.D.	N.D.	N.D.	N.D.
107-2132	S-15-NWF	N.D.	N.D.	N.D.	N.D.	N.D.
107-2133	S-9-NWW	N.D.	N.D.	N.D.	N.D.	N.D.
107-2134	S-8-NW	N.D.	N.D.	N.D.	N.D.	N.D.
107-2135	S-15-NW	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	1.0	0.0050	0.0050	0.0050	0.0050
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Elizabeth W. Hack
Project Manager

1072126.APG <1>



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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1072126-35

Reported: Jul 24, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
---------	---------	---------	-------------------	---------

Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	S. Gill	S. Gill	S. Gill	S. Gill
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 16, 1991	Jul 16, 1991	Jul 16, 1991	Jul 16, 1991
QC Sample #:	GBLK071691	GBLK071691	GBLK071691	GBLK071691
	MS/MSD	MS/MSD	MS/MSD	MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	92	92	93	270
Matrix Spike % Recovery:	92	92	93	90
Conc. Matrix Spike Dup.:	92	91	92	270
Matrix Spike Duplicate % Recovery:	92	91	92	90
Relative % Difference:	0.0	1.1	1.1	0.0

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

1072126.APG <2>



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1072126-35

Reported: Jul 24, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	S. Gill	S. Gill	S. Gill	S. Gill
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 16, 1991	Jul 16, 1991	Jul 16, 1991	Jul 16, 1991
QC Sample #:	GBLK071691 MS/MSD	GBLK071691 MS/MSD	GBLK071691 MS/MSD	GBLK071691 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	96	94	95	280
Matrix Spike % Recovery:	96	94	95	93
Conc. Matrix Spike Dup.:	93	92	92	270
Matrix Spike Duplicate % Recovery:	93	92	92	90
Relative % Difference:	3.2	2.2	3.2	3.6

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Steve Strausz

Project: ARCO 2035, Albany

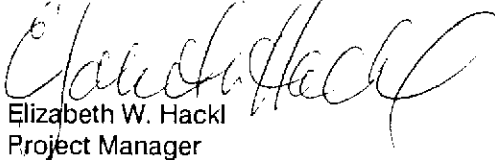
Enclosed are the results from 8 soil samples, 1 water samples, 0 other samples received at Sequoia Analytical on July 3, 1991. The requested analyses are listed below:

1070898	Soil, S-12-T1W	7/3/91	EPA 5030/8015/8020
1070899	Soil, S-12-T1E	7/3/91	EPA 5030/8015/8020
1070900	Soil, S-12-T2W	7/3/91	EPA 5030/8015/8020
1070901	Soil, S-12-T2E	7/3/91	EPA 5030/8015/8020
1070902	Soil, S-12-T3W	7/3/91	EPA 5030/8015/8020
1070903	Soil, S-12-T3E	7/3/91	EPA 5030/8015/8020
1070904	Soil, S-13-T4N	7/3/91	EPA 5030/8015/8020
1070905	Soil, S-13-T4S	7/3/91	EPA 5030/8015/8020 EPA 8240 SM 5520 E&F (Gravimetric)
1070906	Water	7/3/91	EPA 5030/ 8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL



Elizabeth W. Hackl
Project Manager



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Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 3, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil	Received: Jul 3, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: Jul 8, 1991
Attention: Steve Strausz	First Sample #: 107-0898	Reported: Jul 9, 1991

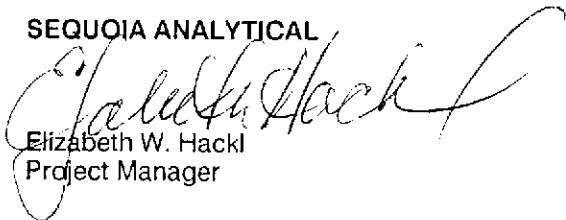
TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
107-0898	S-12-T1W	N.D.	N.D.	N.D.	N.D.	N.D.
107-0899	S-12-T1E	N.D.	N.D.	N.D.	N.D.	N.D.
107-0900	S-12-T2W	N.D.	0.031	N.D.	0.0080	N.D.
107-0901	S-12-T2E	N.D.	0.019	N.D.	N.D.	N.D.
107-0902	S-12-T3W	48	1.2	2.4	1.0	3.8
107-0903	S-12-T3E	65	0.20	0.51	0.97	3.9
107-0904	S-13-T4N	6.2	0.45	0.039	0.18	0.33
107-0905	S-13-T4S	N.D.	0.061	0.034	0.0080	0.15

Detection Limits:	1.0	0.0050	0.0050	0.0050	0.0050
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL



Elizabeth W. Hackl
Project Manager



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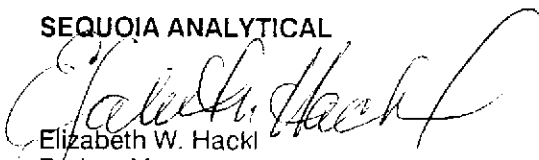
Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 3, 1991
3315 Almaden Expressway, Ste 34	Sample Descript.: Water	Received: Jul 3, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/ 8015/8020	Analyzed: Jul 8, 1991
Attention: Steve Strausz	Lab Number: 107-0906	Reported: Jul 9, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTEX DISTINCTION (EPA 8015/8020)

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Low to Medium Boiling Point Hydrocarbons.....	30	190,000
Benzene.....	0.30	27,000
Toluene.....	0.30	41,000
Ethyl Benzene.....	0.30	4,100
Xylenes.....	0.30	28,000

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard. Analytes reported as N.D. were not present above the stated limit of detection.

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Elizabeth W. Hackl
Project Manager



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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Steve Strausz

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1070898-0905

Reported: Jul 9, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
		EPA	EPA	EPA
Method:	8015 / 8020	8015 / 8020	8015 / 8020	8015 / 8020
Analyst:	S. Gill	S. Gill	S. Gill	S. Gill
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 8, 1991	Jul 8, 1991	Jul 8, 1991	Jul 8, 1991
QC Sample #:	GBLK 070891	GBLK 070891	GBLK 070891	GBLK 070891
Instrument I.D.:	GCHP-6	GCHP-6	GCHP-6	GCHP-6
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	94	92	93	270
Matrix Spike % Recovery:	94	92	93	90
Conc. Matrix Spike Dup.:	89	87	88	260
Matrix Spike Duplicate % Recovery:	89	87	88	87
Relative % Difference:	5.5	5.6	5.5	3.8

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Steve Strausz

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1070898-0905

Reported: Jul 9, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
	Method:	EPA 8015 / 8020	EPA 8015 / 8020	EPA 8015 / 8020
Analyst:	G. Meyer	G. Meyer	G. Meyer	G. Meyer
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 8, 1991	Jul 8, 1991	Jul 8, 1991	Jul 8, 1991
QC Sample #:	GBLK 070891	GBLK 070891	GBLK 070891	GBLK 070891
Instrument I.D.:	GCPE-2	GCPE-2	GCPE-2	GCPE-2
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	90	89	89	270
Matrix Spike % Recovery:	90	89	89	90
Conc. Matrix Spike Dup.:	87	86	85	250
Matrix Spike Duplicate % Recovery:	87	86	85	83
Relative % Difference:	3.4	3.4	4.6	7.7

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Steve Strausz

Client Project ID: ARCO 2035, Albany

QC Sample Group: 107-0906

Reported: Jul 9, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
		EPA	EPA	EPA
Method:	8015 / 8020	8015 / 8020	8015 / 8020	8015 / 8020
Analyst:	L. Laikhtman	L. Laikhtman	L. Laikhtman	L. Laikhtman
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 8, 1991	Jul 8, 1991	Jul 8, 1991	Jul 8, 1991
QC Sample #:	GBLK 070891	GBLK 070891	GBLK 070891	GBLK 070891
Instrument I.D.:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	98	98	96	290
Matrix Spike % Recovery:	98	98	96	97
Conc. Matrix Spike Dup.:	98	97	96	290
Matrix Spike Duplicate % Recovery:	98	97	96	97
Relative % Difference:	0.0	1.0	0.0	0.0

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



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Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 3, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil	Received: Jul 3, 1991
San Jose, CA 95118	Analysis Method: SM 5520 E&F (Gravimetric)	Extracted: Jul 8, 1991
Attention: Steve Strausz	First Sample #: 107-0905	Analyzed: Jul 8, 1991
		Reported: Jul 9, 1991

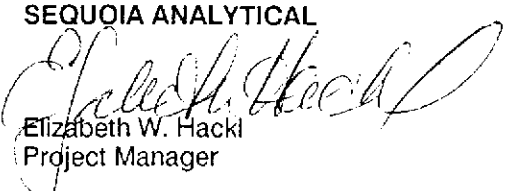
TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
107-0905	S-13-T4S	N.D.

Detection Limits: 30

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager



SEQUOIA ANALYTICAL

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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Steve Strausz

Client Project ID: ARCO 2035, Albany

QC Sample Group: 107-0905

Reported: Jul 9, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Total Oil & Grease
---------	-----------------------

Method: SM 5520 E:F
 Analyst: V. Nunzir
 Reporting Units: mg
 Date Analyzed: Jul 8, 1991
 QC Sample #: BLK 070891

Sample Conc.: N.D.

Spike Conc.
Added: 100

Conc. Matrix
Spike: 84

Matrix Spike
% Recovery: 84

Conc. Matrix
Spike Dup.: 83

Matrix Spike
Duplicate
% Recovery: 83

Relative
% Difference: 1.2

SEQUOIA ANALYTICAL

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

Elizabeth W. Hackl
 Elizabeth W. Hackl
 Project Manager



SEQUOIA ANALYTICAL

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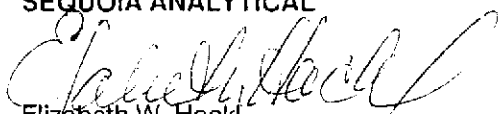
Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 3, 1991
3315 Almaden Expressway, Ste 34	Sample Descript: Soil, S-13-T4S	Received: Jul 3, 1991
San Jose, CA 95118	Analysis Method: EPA 8240	Analyzed: Jul 8, 1991
Attention: Steve Strausz	Lab Number: 107-0905	Reported: Jul 9, 1991

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone.....	500	N.D.
Benzene.....	100	160
Bromodichloromethane.....	100	N.D.
Bromoform.....	100	N.D.
Bromomethane.....	100	N.D.
2-Butanone.....	500	N.D.
Carbon disulfide.....	100	N.D.
Carbon tetrachloride.....	100	N.D.
Chlorobenzene.....	100	N.D.
Chloroethane.....	100	N.D.
2-Chloroethyl vinyl ether.....	500	N.D.
Chloroform.....	100	N.D.
Chloromethane.....	100	N.D.
Dibromochloromethane.....	100	N.D.
1,1-Dichloroethane.....	100	N.D.
1,2-Dichloroethane.....	100	N.D.
1,1-Dichloroethene.....	100	N.D.
cis-1,2-Dichloroethene.....	100	N.D.
trans-1,2-Dichloroethene.....	100	N.D.
1,2-Dichloropropane.....	100	N.D.
cis-1,3-Dichloropropene.....	100	N.D.
trans-1,3-Dichloropropene.....	100	N.D.
Ethylbenzene.....	100	N.D.
2-Hexanone.....	500	N.D.
Methylene chloride.....	100	N.D.
4-Methyl-2-pentanone.....	500	N.D.
Styrene.....	100	N.D.
1,1,2,2-Tetrachloroethane.....	100	N.D.
Tetrachloroethene.....	100	N.D.
Toluene.....	100	N.D.
1,1,1-Trichloroethane.....	100	N.D.
1,1,2-Trichloroethane.....	100	N.D.
Trichloroethene.....	100	N.D.
Trichlorofluoromethane.....	100	N.D.
Vinyl acetate.....	100	N.D.
Vinyl chloride.....	100	N.D.
Total Xylenes.....	100	430

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager



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Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Q.C. Sample Dates
3315 Almaden Expressway, Ste 34	Method (units): EPA 8240 ($\mu\text{g/L}$ purged)	
San Jose, CA 95118	Analyst(s): L. Saunders	Analyzed: Jul 8, 1991
Attention: Steve Strausz	QC Sample #: BLK 070891	Reported: Jul 9, 1991

QUALITY CONTROL DATA REPORT

Analyte	Sample Conc.	Spike Conc. Added	Conc. Matrix Spike	Matrix Spike % Recovery	Conc. Matrix Spike Duplicate	Matrix Spike % Recovery	Relative % Difference
1,1-Dichloroethene	N.D.	50	43	86	44	88	2.3
Trichloroethene	N.D.	50	43	86	47	94	8.9
Benzene	N.D.	50	46	92	47	94	2.2
Toluene	N.D.	50	45	90	45	90	0.0
Chlorobenzene	N.D.	50	44	88	48	96	8.7

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

ARCO Products Company

Division of AtlanticRichfieldCompany

Task Order No.

2035-91-1

Chain of Custody

ARCO Facility no. 2035 City (Facility) Albany Project manager (Consultant) [blank]
 ARCO engineer Chuck Carmel Telephone no. (ARCO) 415-571-2469 Telephone no. (Consultant) 408-264-7723 Fax no. 408-264-2435
 Consultant name Steve Strausz, Applied GeoSystems Address (Consultant) 3315 Alameda Pkwy #34, San Jose, CA 95118

Laboratory name Sequoia
 Contract number [blank]

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 802/EPA 8020	BTEX/TPH EPA 1602/16020/16015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input checked="" type="checkbox"/>	Oil and Grease 5320 413.1 <input type="checkbox"/> 413.2 <input checked="" type="checkbox"/>	TPH EPA 418.1/SMS03E	EPA 601/610	EPA 624/6240	EPA 625/6270	TCMP Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/> Sem. <input type="checkbox"/>	CAM Metals EPA 6010/7000	TLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./IDHS <input checked="" type="checkbox"/>	Lead EPA 7420/7421 <input type="checkbox"/>	Method of shipment		
			Soil	Water	Other	Ice	Acid																		
✓ S-12-T4N			X			X		7-3-91	1230		X							10708	99				Lab Courier		
✓ S-12-T1E			X			X			1240		X							99				see remarks	Special detection Limit/reporting		
✓ S-12-T2W			X			X			1250		X								900						
✓ S-12-T2E			X			X			1305		X								01						
✓ S-12-T3W			X			X			1245		X								02						
✓ S-12-T3E			X			X			1300		X								03						
✓ S-12-T4N			X			X			1330		X								04						
✓ S-12-T4S			X			X			1340		X	X	✓				X		05						Special QA/QC
✓ S-14-TP grab			X			X	X	1430		X			note: caution, gasoline sheen on sample.					99					Remarks Please analyze 2 soil samples with highest TPHs for organic lead		

Condition of sample: Relinquished by sampler Steve Strausz Date 7/5/91 Time 1505
 Relinquished by [blank] Date [blank] Time [blank]
 Relinquished by [blank] Date [blank] Time [blank]

Temperature received: Received by T. Callahan Prime 355 Date 7/3 Time 1450
 Received by [blank] Date [blank] Time [blank]
 Received by laboratory [blank] Date [blank] Time [blank]

Lab number [blank]
 Turnaround time: Priority Rush 1 Business Day
 Rush 2 Business Days
 Expedited 5 Business Days
 Standard 10 Business Days

Distribution: White copy -- Laboratory; Canary copy -- ARCO Environmental Engineering; Pink copy -- Consultant

6 9036.03



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APPLIED GEOSYSTEMS
SAN JOSE BRANCH

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Steve Strausz

Project: ARCO 2035, Albany

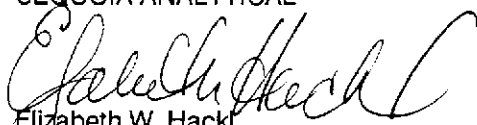
Enclosed are the results from 2 soil samples received at Sequoia Analytical on July 3, 1991. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1070902	Soil, S-12-T3W	7/3/91	California LUFT Manual, 12/87
1070903	Soil, S-12-T3E	7/3/91	California LUFT Manual, 12/87

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager



SEQUOIA ANALYTICAL

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Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 3, 1991
3315 Almaden Expressway, Ste 34	Sample Descript: Soil	Received: Jul 3, 1991
San Jose, CA 95118	Analysis Method: California LUFT Manual, 12/87	Analyzed: Jul 9, 1991
Attention: Steve Strausz	First Sample #: 107-0902	Reported: Jul 16, 1991

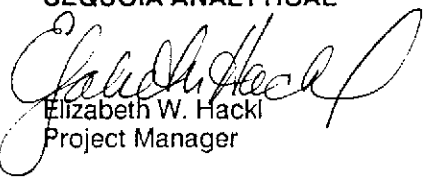
ORGANIC LEAD

Sample Number	Sample Description	Sample Results mg/kg (ppm)
107-0902	S-12-T3W	N.D.
107-0903	S-12-T3E	N.D.

Detection Limits: 0.050

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager

1070902.APG <1>



SEQUOIA ANALYTICAL

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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Steve Strausz

Client Project ID: ARCO 2035, Albany

Q.C. Sample Group: 107-0902

Reported: Jul 16, 1991

QUALITY CONTROL DATA REPORT

ANALYTE

Organic Lead

Method: LUFT
Analyst: V. Patel
Reporting Units: mg/kg
Date Analyzed: Jul 9, 1991
QC Sample #: 107-0902

Sample Conc.: N.D.

Spike Conc.
Added: 0.50

Conc. Matrix
Spike: 0.48

Matrix Spike
% Recovery: 96

Conc. Matrix
Spike Dup.: 0.47

Matrix Spike
Duplicate
% Recovery: 94

Relative
% Difference: 2.1

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. **2035-91-1**

Chain of Custody

ARCO Facility no. **2035** City (Facility) **Albany, CA** Project manager (Consultant) **Joel Coffman**
 ARCO engineer **Chuck Carmel** Telephone no. (ARCO) Telephone no. (Consultant) **(408) 264-7723** Fax no. (Consultant) **408 264-2435**
 Consultant name **Applied GeoSystems** Address (Consultant) **3315 Almaden Ex. #34, San Jose, CA 95118**

Laboratory name **SEQUOIA**
 Contract number **07-073**
 Method of shipment **JAL COURIER**

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 802	BTEX/TPH EPA 8620/820/8015	TPH Modified 8015 Gas Diesel	Oil and Grease 413.1 413.2	TPH EPA 418.1/SIMS03E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals VOA VOA	Semi Metals VOA VOA	CAM Metals EPA 601/7000	TLC STLC	Lead Org. IDHS	Lead EPA 7420/7421			
			Soil	Water	Other	Ice	Acid																			
S-2 1/2-PL1			X			X		7-19-91	1410	X																
S-2 1/2-PL2			X			X		SS	1415	X																
S-1-PL3			X			X			0940	X																
S-1-PL4			X			X			1005	X																
S-1-PL5			X			X			1010	X																
S-1-PL6			X			X			1020	X																
S-1-PL7			X			X			1030	X																
S-1-PL8			X			X			1100	X																
S-1-PL9			X			X			1110?	X																
S-1-PL10			X			X			1116	X																
S-2 1/2-PD1			X			X			1400	X																
S-2 1/2-PD2			X			X			1405	X																
S-1-PD3			X			X			0935	X																
S-1-PD4			X			X			1000	X																
S-1-PD5			X			X		SS	1025	X																

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days

Sample: **good** Temperature received: **cool**

Sampler: **Sullivan**

Date/Time Received by: **7/23/91 10:55 AM Alan Sullivan**

Date/Time Received by: **7/23/91 100 PM [Signature]**

Date/Time Received by laboratory: **7/23 1:00**

ARCO Products Company

Division of AtlanticRichfieldCompany

Task Order No. **2035-91-1**

Chain of Custody

ARCO Facility no. **2035** City (Facility) **Albany, CA** Project manager (Consultant) **Joel Coffman**
ARCO engineer **Chuck Carmel** Telephone no. (ARCO) Telephone no. **408 264-7723** (Consultant) Fax no. **408** (Consultant)
Consultant name **Applied GeoSystems** Address (Consultant) **3315 Almaden Ex. #34, San Jose, CA**

Laboratory name
Contract number
Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 802/EPA 8020	BTEX/TPH EPA 802/8020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM508E	EPA 607/8010	EPA 624/8240	EPA 625/8270	Semi Metals TCLP <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	CAM Metals EPA 60107000 TTL <input type="checkbox"/> STL <input type="checkbox"/>	Lead Org./DHS Lead EPA 7420/7421 <input type="checkbox"/>	Special detection Limit/reporting		
			Soil	Water	Other	Ice	Acid															Special QA/QC	Remarks
S-1-PD6	✓		X			X	7-19-91	1040		X												1073965	
S-1-PD7	✓		X			X	7-19-91	1104		X													1073966
S-1-PD8	✓		X			X	7-19-91	1110		X													1073967

Special detection Limit/reporting
Special QA/QC
Remarks
Lab number
Turnaround time

Priority Rush
1 Business Day
Rush
2 Business Days
Expedited
5 Business Days
Standard
10 Business Days

Sample: **1**
Sampler: **Joel Coffman**
Date: **7/23/91** Time: **10:55am**
Date: **7/23/91** Time: **1:00pm**
Received by: **Joel Coffman**
Received by: **Joel Coffman**

Temperature received:
Received by laboratory: **Joel Coffman** Date: **7/23** Time: **1:00**



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APPLIED GEOSYSTEMS
SAN JOSE BRANCH

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Project: ARCO 2035, Albany

Enclosed are the results from 18 soil samples received at Sequoia Analytical on July 23, 1991. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1073950	Soil, S-2½-PL1	7/19/91	EPA 5030/8015/8020
1073951	Soil, S-2½-PL2	7/19/91	EPA 5030/8015/8020
1073952	Soil, S-1-PL3	7/19/91	EPA 5030/8015/8020
1073953	Soil, S-1-PL4	7/19/91	EPA 5030/8015/8020
1073954	Soil, S-1-PL5	7/19/91	EPA 5030/8015/8020
1073955	Soil, S-1-PL6	7/19/91	EPA 5030/8015/8020
1073956	Soil, S-1-PL7	7/19/91	EPA 5030/8015/8020
1073957	Soil, S-1-PL8	7/19/91	EPA 5030/8015/8020
1073958	Soil, S-1-PL9	7/19/91	EPA 5030/8015/8020
1073959	Soil, S-1-PL10	7/19/91	EPA 5030/8015/8020
1073960	Soil, S-2½-PD1	7/19/91	EPA 5030/8015/8020
1073961	Soil, S-2½-PD2	7/19/91	EPA 5030/8015/8020
1073962	Soil, S-1-PD3	7/19/91	EPA 5030/8015/8020
1073963	Soil, S-1-PD4	7/19/91	EPA 5030/8015/8020
1073964	Soil, S-1-PD5	7/19/91	EPA 5030/8015/8020
1073965	Soil, S-1-PD6	7/19/91	EPA 5030/8015/8020
1073966	Soil, S-1-PD7	7/19/91	EPA 5030/8015/8020



SEQUOIA ANALYTICAL

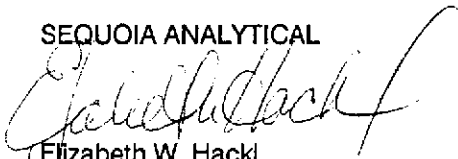
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1073967	Soil, S-1-PD8	7/19/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 19, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil	Received: Jul 23, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: 7/31 - 8/1/91
Attention: Joel Coffman	First Sample #: 107-3950	Reported: Aug 2, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P.	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl	Xylenes mg/kg (ppm)
		Hydrocarbons mg/kg (ppm)			Benzene mg/kg (ppm)	
107-3950	S-2½-PL1	N.D.	N.D.	N.D.	N.D.	N.D.
107-3951	S-2½-PL2	N.D.	N.D.	N.D.	N.D.	N.D.
107-3952	S-1-PL3	1.7	0.0050	0.020	0.016	0.12
107-3953	S-1-PL4	4,200	36	320	100	640
107-3954	S-1-PL5	N.D.	N.D.	N.D.	N.D.	N.D.
107-3955	S-1-PL6	N.D.	N.D.	N.D.	N.D.	N.D.
107-3956	S-1-PL7	11	0.10	0.37	0.16	1.2
107-3957	S-1-PL8	1,900	3.6	28	29	200
107-3958	S-1-PL9	110	0.20	0.78	0.36	3.1
107-3959	S-1-PL10	84	0.090	0.43	0.72	2.8

Detection Limits:	1.0	0.0050	0.0050	0.0050	0.0050
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager

1073950.APG <1>



SEQUOIA ANALYTICAL

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(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 19, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil	Received: Jul 23, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: 7/31 - 8/2/91
Attention: Joel Coffman	First Sample #: 107-3960	Reported: Aug 2, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P.	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
		Hydrocarbons mg/kg (ppm)				
107-3960	S-2½-PD1	N.D.	N.D.	N.D.	N.D.	N.D.
107-3961	S-2½-PD2	N.D.	N.D.	N.D.	N.D.	N.D.
107-3962	S-1-PD3	N.D.	N.D.	N.D.	N.D.	N.D.
107-3964	S-1-PD5	N.D.	N.D.	N.D.	N.D.	N.D.
107-3965	S-1-PD6	87	0.13	0.28	0.48	3.8
107-3966	S-1-PD7	1,000	0.35	2.1	1.1	47
107-3967	S-1-PD8	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	1.0	0.0050	0.0050	0.0050	0.0050
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager

1073950.APG <2>



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 19, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil	Received: Jul 23, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: 7/31 - 8/2/91
Attention: Joel Coffman	First Sample #: 107-3963	Reported: Aug 2, 1991

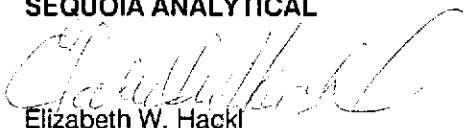
TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P.	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl	Xylenes mg/kg (ppm)
		Hydrocarbons mg/kg (ppm)			Benzene mg/kg (ppm)	
107-3963	S-1-PD4	330	N.D.	N.D.	N.D.	12

Detection Limits:	100	0.50	0.50	0.50	0.50
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard. Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
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Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1073950-52, 54

Reported: Aug 2, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	S. Gill	S. Gill	S. Gill	S. Gill
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991
QC Sample #:	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	200	200	200	600
Conc. Matrix Spike:	210	210	200	620
Matrix Spike % Recovery:	110	110	100	100
Conc. Matrix Spike Dup.:	200	200	190	580
Matrix Spike Duplicate % Recovery:	100	100	95	97
Relative % Difference:	4.9	4.9	5.1	6.7

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 107-3953

Reported: Aug 2, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	C. Donohue	C. Donohue	C. Donohue	C. Donohue
Reporting Units:	µg/kg	µg/kg	µg/kg	µg/kg
Date Analyzed:	Aug 1, 1991	Aug 1, 1991	Aug 1, 1991	Aug 1, 1991
QC Sample #:	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	200	200	200	600
Conc. Matrix Spike:	180	180	180	550
Matrix Spike % Recovery:	90	90	90	92
Conc. Matrix Spike Dup.:	190	190	190	560
Matrix Spike Duplicate % Recovery:	95	95	95	93
Relative % Difference:	5.4	5.4	5.4	1.8

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1073955-57

Reported: Aug 2, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	G. Meyer	G. Meyer	G. Meyer	G. Meyer
Reporting Units:	µg/kg	µg/kg	µg/kg	µg/kg
Date Analyzed:	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991
QC Sample #:	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	200	200	200	600
Conc. Matrix Spike:	180	180	190	550
Matrix Spike % Recovery:	90	90	95	92
Conc. Matrix Spike Dup.:	190	190	200	590
Matrix Spike Duplicate % Recovery:	95	95	100	98
Relative % Difference:	5.4	5.4	5.1	7.0

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 107-3958

Reported: Aug 2, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	C. Donohue	C. Donohue	C. Donohue	C. Donohue
Reporting Units:	µg/kg	µg/kg	µg/kg	µg/kg
Date Analyzed:	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991
QC Sample #:	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	200	200	200	600
Conc. Matrix Spike:	200	200	200	590
Matrix Spike % Recovery:	100	100	100	98
Conc. Matrix Spike Dup.:	190	190	180	550
Matrix Spike Duplicate % Recovery:	95	95	90	93
Relative % Difference:	5.1	5.1	11	7.0

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1073959-61, 64

Reported: Aug 2, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	S. Gill	S. Gill	S. Gill	S. Gill
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Aug 1, 1991	Aug 1, 1991	Aug 1, 1991	Aug 1, 1991
QC Sample #:	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	200	200	200	600
Conc. Matrix Spike:	190	190	190	570
Matrix Spike % Recovery:	95	95	95	95
Conc. Matrix Spike Dup.:	190	180	170	540
Matrix Spike Duplicate % Recovery:	95	90	85	90
Relative % Difference:	0.0	5.4	11	5.4

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1073962-63, 65-66

Reported: Aug 2, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
---------	---------	---------	-------------------	---------

Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	S. Gill	S. Gill	S. Gill	S. Gill
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991
QC Sample #:	GBLK073091 MS/MSD	GBLK073091 MS/MSD	GBLK073091 MS/MSD	GBLK073091 MS/MSD

Sample Conc.: N.D. N.D. N.D. N.D.

Spike Conc. Added: 200 200 200 600

Conc. Matrix Spike: 180 180 180 550

Matrix Spike % Recovery: 90 90 90 92

Conc. Matrix Spike Dup.: 180 180 180 540

Matrix Spike Duplicate % Recovery: 90 90 90 90

Relative % Difference: 0.0 0.0 0.0 1.8

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

1073950.APG <9>



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 107-3967

Reported: Aug 2, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	L. Gonzalez	L. Gonzalez	L. Gonzalez	L. Gonzalez
Reporting Units:	µg/kg	µg/kg	µg/kg	µg/kg
Date Analyzed:	Aug 2, 1991	Aug 2, 1991	Aug 2, 1991	Aug 2, 1991
QC Sample #:	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	200	200	200	600
Conc. Matrix Spike:	180	180	180	540
Matrix Spike % Recovery:	90	90	90	90
Conc. Matrix Spike Dup.:	190	190	190	570
Matrix Spike Duplicate % Recovery:	95	95	95	95
Relative % Difference:	5.4	5.4	5.4	5.4

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

ARCO Products Company 
 Division of AtlanticRichfieldCompany

Task Order No. 2035-91-1

Chain of Custody

ARCO Facility no. <u>2035</u>	City (Facility) <u>Albany, CA</u>	Project manager (Consultant) <u>Joel Coffman</u>	Laboratory name
ARCO engineer <u>Chuck Carmel</u>	Telephone no. 264 <u>408</u> (ARCO)	Telephone no. <u>264-7723</u> (Consultant)	Contract number
Consultant name <u>RESNA</u>		Address (Consultant) <u>3315 Almaden Expy #34, San Jose, CA 95112</u>	

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/6020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM500E	EPA 601/6010	EPA 624/6240	EPA 625/6270	TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	Semi Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	CAN Metals EPA 601/7000 TTLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./DHS <input type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/>	Method of shipment	Special detection Limit/reporting	Special QA/QC	Remarks		
			Soil	Water	Other	Ice	Acid																				
<u>S-1 1/2-PLA</u>			<input checked="" type="checkbox"/>					<u>8-9-91</u>	<u>1300</u>	<input checked="" type="checkbox"/>												<u>108</u>	<u>369</u>				

Condition of sample: <u>good</u>				Temperature received: <u>cool</u>			
Relinquished by sample <u>[Signature]</u>	Date <u>8-9-91</u>	Time <u>1430</u>	Received by <u>[Signature]</u>		Date <u>8-9</u>	Time <u>1430</u>	Priority Rush 1 Business Day <input type="checkbox"/>
Relinquished by	Date	Time	Received by		Date	Time	Rush 2 Business Days <input checked="" type="checkbox"/>
Relinquished by	Date	Time	Received by laboratory		Date	Time	Expedited 5 Business Days <input type="checkbox"/>
							Standard 10 Business Days <input type="checkbox"/>

ARCO Facility no. **2035**

City (Facility)

Albany, CA

Project manager (Consultant)

Joel Coffman

RECEIVED

Laboratory name

ARCO engineer

Chuck Carmel

Telephone no. (ARCO)

Telephone no. (Consultant)

4163 264-7723

Fax no. (Consultant)

408 416 249 412 249 415

Contract number

07073

Consultant name

RESNA

Address (Consultant)

3315 Almaden Expy #34, San Jose, CA

APPLIED EQUIPMENT SYSTEMS

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 602/EPA 8020	BTEX/TPH EPA 1163/8020/8015	TPH Modified 8015 Gas Diesel	Oil and Grease 413.1 413.2	TPH EPA 418./ISM503E	EPA 801/8010	EPA 824/8240	EPA 825/8270	Semi Metals VOA VOA	CAN METALS EPA 821/07000	Lead Org./DHS	Lead EPA 7420/7421
			Soil	Water	Other	Ice	Acid														
S-1 1/2-PL4			X			X		8-9-91	1300	X											

Method of shipment
Consultant Delivery

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time

- Priority Rush 1 Business Day
- Rush 2 Business Days
- Expedited 5 Business Days
- Standard 10 Business Days

Condition of sample: **good**

Temperature received: **cool**

Relinquished by sample: **Handwritten Signature**

Date: **8-9-91** Time: **1430**

Received by: **Handwritten Signature** **8-9 1430**

Relinquished by:

Date: Time:

Received by:

Relinquished by:

Date: Time:

Received by laboratory: **Handwritten Signature** Date: **8-9** Time: **1430**



SEQUOIA ANALYTICAL

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AUG 14 1991

APPLIED GEOSYSTEMS
SAN JOSE BRANCH

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95112
Attention: Joel Coffman

Project: ARCO 2035, Albany

Enclosed are the results from 1 soil samples received at Sequoia Analytical on August 9, 1991. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1081369	Soil, S-1½-PL4	8/9/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID: ARCO 2035, Albany	Sampled: Aug 9, 1991
3315 Almaden Expwy., Suite 34	Matrix Descript: Soil	Received: Aug 9, 1991
San Jose, CA 95112	Analysis Method: EPA 5030/8015/8020	Analyzed: Aug 9, 1991
Attention: Joel Coffman	First Sample #: 108-1369	Reported: Aug 13, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P.	Ethyl			
		Hydrocarbons	Benzene	Toluene	Benzene	Xylenes
		mg/kg (ppm)	mg/kg (ppm)	mg/kg (ppm)	mg/kg (ppm)	mg/kg (ppm)
108-1369	S-1½-PL4	4.1	0.21	0.040	0.15	0.12

Detection Limits:

1.0

0.0050

0.0050

0.0050

0.0050

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager

1081369.RRR <1>



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95112
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 108-1369

Reported: Aug 13, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	B. Cox	B. Cox	B. Cox	B. Cox
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Aug 9, 1991	Aug 9, 1991	Aug 9, 1991	Aug 9, 1991
QC Sample #:	GBLK080991 MS/MSD	GBLK080991 MS/MSD	GBLK080991 MS/MSD	GBLK080991 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	200	200	200	600
Conc. Matrix Spike:	180	170	170	510
Matrix Spike % Recovery:	90	85	85	85
Conc. Matrix Spike Dup.:	180	170	170	520
Matrix Spike Duplicate % Recovery:	90	85	85	87
Relative % Difference:	0.0	0.0	0.0	1.9

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

1081369.RRR <2>

ARCO Facility no. 2035	City (Facility) Albany, CA	Project manager (Consultant) Joel Coftman	Laboratory name
ARCO engineer Chuck Carmel	Telephone no. (ARCO)	Telephone no. (Consultant) 408 264-7723	Contract number 07073
Consultant name Applied GeoSystems		Fax no. (Consultant) 408 264-2435	Method of shipment Sequoia Courier
Address (Consultant) 3315 Almaden Ex. #34, San Jose, CA, 95118			Special detection Limit/reporting

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA 1632/8020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/>	Semi Metals <input type="checkbox"/> VOA <input type="checkbox"/>	CMM Metals EPA 6010/7000 TTL <input type="checkbox"/> STL <input type="checkbox"/>	Lead Org./DHS Lead EPA 7420/7421 <input type="checkbox"/>	Remarks	
			Soil	Water	Other	Ice	Acid																
S-0722-1a		composite																					
S-0722-1b			X			X	7-22-91	1500			X												
S-0722-1c																							
S-0722-2a		composite																					
S-0722-2b			X			X	7-22-91	1515			X												
S-0722-2c																							
S-0722-2d																							

Condition of sample:				Temperature received: Cool			
Relinquished by sampler <i>[Signature]</i>		Date 7/23/91	Time 10:53 AM	Received by <i>[Signature]</i>			
Relinquished by <i>[Signature]</i>		Date 7/23/91	Time 1:00 PM	Received by <i>[Signature]</i>			
Relinquished by		Date	Time	Received by laboratory		Date 7/23/91	Time 1:00

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Project: ARCO 2035, Albany

Enclosed are the results from 2 soil samples received at Sequoia Analytical on July 23, 1991. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1073608	Soil, composite, S-0722-1 (a-d)	7/22/91	EPA 5030/8015/8020
1073609	Soil, composite, S-0722-2 (a-d)	7/22/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 22, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil, composite	Received: Jul 23, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: Jul 23, 1991
Attention: Joel Coffman	First Sample #: 107-3608	Reported: Jul 24, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
107-3608	S-0722-1 (a-d)	78	N.D.	N.D.	N.D.	N.D.
107-3609	S-0722-2 (a-d)	81	0.050	0.10	0.050	0.34

Detection Limits:	10	0.050	0.050	0.050	0.050
--------------------------	-----------	--------------	--------------	--------------	--------------

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager

1073608.APG <1>



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1073608-09

Reported: Jul 24, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	L. Laikhtman	L. Laikhtman	L. Laikhtman	L. Laikhtman
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 23, 1991	Jul 23, 1991	Jul 23, 1991	Jul 23, 1991
QC Sample #:	GBLK072391	GBLK072391	GBLK072391	GBLK072391
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	100	99	98	300
Matrix Spike % Recovery:	100	99	98	100
Conc. Matrix Spike Dup.:	100	100	99	300
Matrix Spike Duplicate % Recovery:	100	100	99	100
Relative % Difference:	0.0	1.0	1.0	0.0

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

ARCO Facility no. 2035
ARCQ engineer Chuck Carme

City (Facility) Albany, CA
Telephone no. (ARCO)

Project manager (Consultant) Joel Coffman
Telephone no. (Consultant) 408 264-7723
Fax no. (Consultant) 408 264-2345

Laboratory name SEQUOIA
Contract number 07-073

Consultant name RESNA/APPLIED GeoSystems

Address (Consultant) 3315 Almaden Ex #34, San Jose, CA 95118

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA 1631/8020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM609E	EPA 801/8010	EPA 824/8240	EPA 825/8270	TCLP Metals: <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/> Semi	CAM Metals EPA 6010/7000 TTL <input type="checkbox"/> STL <input type="checkbox"/>	Lead Org./DHS <input type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/>	
			Soil	Water	Other	Ice	Acid														
5-0725 3a	compart																				
5-0725- 3b		X			X		7-25-91	1105	X												
5-0725 3c																					
5-0725 3d																					
5-0725 5a	compart		X																		
5-0725- 5b		X			X		7-25-91	1130	X												
5-0725- 5c																					
5-0725- 5d																					
5-0725 6a	compart		X																		
5-0725 6b		X			X		7-25-91	1145	X												
5-0725 6c																					
5-0725- 6d																					

1074199

1074200

1074201

Method of shipment
A.G.
Courier

Special detection
Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time

- Priority Rush 1 Business Day
- Rush 2 Business Days
- Expedited 5 Business Days
- Standard 10 Business Days

Condition of sample: good

Temperature received: cool

Relinquished by sample: [Signature]
Date: 7/26/91 Time: 1335

Received by: [Signature]

Relinquished by: [Signature]
Date: [Blank] Time: [Blank]

Received by: [Signature]

Relinquished by: [Signature]
Date: [Blank] Time: [Blank]

Received by laboratory: [Signature]
Date: 7-25 Time: 1335



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
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JUL 28 1991

APPLIED GEOSYSTEMS
SAN JOSE BRANCH

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Project: ARCO 2035, Albany


Enclosed are the results from 2 soil samples received at Sequoia Analytical on July 24, 1991. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1073898	Soil, composite, S-0723-3 (a-d)	7/23/91	EPA 5030/8015/8020
1073899	Soil, composite, S-0723-4 (a-d)	7/23/91	California LUFT Manual, 12/87 EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL


Elizabeth W. Hackt
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 25, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil, composite	Received: Jul 25, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: Jul 25, 1991
Attention: Joel Coffman	First Sample #: 107-4199 A-D	Reported: Jul 26, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P.	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl	Xylenes mg/kg (ppm)
		Hydrocarbons mg/kg (ppm)			Benzene mg/kg (ppm)	
107-4199	S-0725-91/3	31	0.0080	0.0080	0.011	0.049
107-4200	S-0725-91/5	47	N.D.	0.0070	N.D.	0.010
107-4201	S-0725-91/6	49	0.0080	0.018	0.029	0.10
107-4202	S-0725-91/7	65	0.013	0.018	0.032	0.22

Detection Limits:	1.0	0.0050	0.0050	0.0050	0.0050
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1074199-202

Reported: Jul 26, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	D. Dreblow	D. Dreblow	D. Dreblow	D. Dreblow
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 25, 1991	Jul 25, 1991	Jul 25, 1991	Jul 25, 1991
QC Sample #:	GBLK072591 MS/MSD	GBLK072591 MS/MSD	GBLK072591 MS/MSD	GBLK072591 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	100	100	91	300
Matrix Spike % Recovery:	100	100	91	100
Conc. Matrix Spike Dup.:	90	90	89	270
Matrix Spike Duplicate % Recovery:	90	90	89	90
Relative % Difference:	11	11	2.2	11

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

1074199.APG <2>

ARCO Products Company

Division of AtlanticRichfieldCompany

Task Order No. **2035-91-1**

Chain of Custody

ARCO Facility no. **2035** City (Facility) **Albany, CA** Project manager (Consultant) **Joel Coffman**
 ARCO engineer **Chuck Carmel** Telephone no. (ARCO) **408 264-7723** Telephone no. (Consultant) **408 264-2433** Fax no. (Consultant) **408 264-2433**
 Consultant name **RESNA/APPLIED Geosystems** Address (Consultant) **3315 Almaden Ex. #34 San Jose, CA 95118**

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 4132 <input type="checkbox"/>	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/6240	EPA 625/6270	TCIP Merlis <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	CAM Metals EPA 601/7000 TLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./DHS <input checked="" type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/>	Method of shipment	Special detection Limit/reporting	Special QA/QC	Remarks		
			Soil	Water	Other	Ice	Acid																			
5-0723-3a	Composite						7-23-91	1410		X																
5-0723-3b		X			X		1073	898																		
5-0723-3c																										
5-0723-3d																										
5-0723-4a	Composite						1073	899																		
5-0723-4b		X			X		7-23-91	1500		X											X					
5-0723-4c																										
5-0723-4d																										

Condition of sample: _____ Temperature received: _____

Relinquished by sampler *Steve Strang* Date **7-24-91** Time **2:35 AM** Received by *Joe Jencks*

Relinquished by *Joe Jencks* Date **7-24-91** Time **3:50 PM** Received by _____

Relinquished by _____ Date _____ Time _____ Received by laboratory *Patriz* Date **7/24** Time **3:50**

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RECEIVED

JUL 29 1991

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

APPLIED GEOSYSTEMS
SAN JOSE BRANCH

Project: ARCO 2035, Albany

Enclosed are the results from 4 soil samples received at Sequoia Analytical on July 25, 1991. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1074199	Soil, composite, S-0725-91/3	7/25/91	EPA 5030/8015/8020
1074200	Soil, composite, S-0725-91/5	7/25/91	EPA 5030/8015/8020
1074201	Soil, composite, S-0725-91/6	7/25/91	EPA 5030/8015/8020
1074202	Soil, composite, S-0725-91/7	7/25/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 23, 1991
3315 Almaden Expressway, Ste 34	Sample Descript: Soil, composite	Received: Jul 24, 1991
San Jose, CA 95118	Analysis Method: California LUFT Manual, 12/87	Analyzed: Jul 25, 1991
Attention: Joel Coffman	First Sample #: 107-3899	Reported: Jul 26, 1991


ORGANIC LEAD

Sample Number	Sample Description	Sample Results mg/kg (ppm)
107-3899	S-0723-4 (a-d)	N.D.

Detection Limits: 0.050

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager

1073899.APG <1>



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 107-3899

Reported: Jul 26, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Organic Lead
----------------	--------------

Method: LUFT
 Analyst: K. Anderson
 Reporting Units: mg/kg
 Date Analyzed: Jul 25, 1991
 QC Sample #: 107-3899

Sample Conc.: N.D.

Spike Conc. Added: 0.50

Conc. Matrix Spike: 0.32

Matrix Spike % Recovery: 64

Conc. Matrix Spike Dup.: 0.33

Matrix Spike Duplicate % Recovery: 66

Relative % Difference: 3.1

SEQUOIA ANALYTICAL

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

Elizabeth W. Hackl
 Elizabeth W. Hackl
 Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems	Client Project ID: ARCO 2035, Albany	Sampled: Jul 23, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript: Soil, composite	Received: Jul 24, 1991
San Jose, CA 95118	Analysis Method: EPA 5030/8015/8020	Analyzed: Jul 24, 1991
Attention: Joel Coffman	First Sample #: 107-3898 A-D	Reported: Jul 26, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
107-3898	S-0723-3 (a-d)	130	0.032	0.035	0.045	0.17
107-3899	S-0723-4 (a-d)	31	N.D.	N.D.	N.D.	0.054

Detection Limits:	1.0	0.0050	0.0050	0.0050	0.0050
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Elizabeth W. Hackl
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 1073898-99

Reported: Jul 26, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl- benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	L. Gonzales	L. Gonzales	L. Gonzales	L. Gonzales
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 24, 1991	Jul 24, 1991	Jul 24, 1991	Jul 24, 1991
QC Sample #:	GBLK072491	GBLK072491	GBLK072491	GBLK072491
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	93	93	90	270
Matrix Spike % Recovery:	93	93	90	90
Conc. Matrix Spike Dup.:	84	84	81	240
Matrix Spike Duplicate % Recovery:	84	84	81	80
Relative % Difference:	10	10	11	12

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Elizabeth W. Hackl
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

1073899.APG <4>

APPENDIX D
MANIFESTS FOR TANKS
INVOICE FOR SOIL DISPOSAL

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

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. CA L0000028626	Manifest Document No. 131855	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address ARCO PRODUCTS CO. PO Box 5811 SAN MATEO CA 94		4. Generator's Phone ()		A. State Manifest Document Number 90573885		
5. Transporter 1 Company Name ERICKSON TRUCKING		6. US EPA ID Number CA D0009466392		C. State Transporter's ID 205167		
7. Transporter 2 Company Name		8. US EPA ID Number		D. Transporter's Phone 415 235-1392		
9. Designated Facility Name and Site Address Erickson, Inc. 255 Parr Blvd. Richmond, Ca. 94801		10. US EPA ID Number CA D0009466392		G. State Facility's ID CA D0009466392		
				H. Facility's Phone (415) 235-1393		
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	15. Waste No.
a. Waste Empty Storage Tank			CM			State 312
NON-RCRA Hazardous Waste Solid.		2	7	8000	P	EPA/Other NONE
b.						State
c.						EPA/Other
d.						State
						EPA/Other
J. Additional Descriptions for Materials Listed Above Qty. 2 Empty Storage Tank (s) #6550, 6551 Tank (s) have been inerted with 15 lbs. Dry Ice per 1000 Gal. Capacity.		K. Handling Codes for Wastes Listed Above				
		a.		b.		
		c.		d.		
15. Special Handling Instructions and Additional Information Keep away from sources of ignition. Always wear hardhats when working around U.S.T.'s 24 Hr. Contact Name <u>WIFE WEINIG CORP</u> & Phone <u>916 372-2755</u> <u>WALTER WEINIG</u>						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment: OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.						
Printed/Typed Name WIFE WEINIG CORP INC		Signature <i>Walter Weinig</i>		Month Day Year 07 03 91		
17. Transporter 1 Acknowledgement of Receipt of Materials						
Printed/Typed Name DAN BAILEY		Signature <i>Dan Bailey</i>		Month Day Year 07 03 91		
18. Transporter 2 Acknowledgement of Receipt of Materials						
Printed/Typed Name		Signature		Month Day Year		
19. Discrepancy Indication Space						
20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.						
Printed/Typed Name DANIEL S. CARROLL		Signature <i>Daniel S Carroll</i>		Month Day Year 07 03 91		

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

Do Not Write Below This Line

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

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

UNIFORM HAZARDOUS WASTE MANIFEST		Generator's US EPA ID No: BAK 000028626	Manifest Document No. 31900	2. Page of	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address ARCO Products Company P.O. 5811 San Mateo CA 94402			A. State Manifest Document Number 90573900		
4. Generator's Phone () Albany, CA			B. State Generator's ID		
5. Transporter 1 Company Name Erickson Trucking Inc.		6. US EPA ID Number CA D009466392		C. State Transporter's ID 205/69	
7. Transporter 2 Company Name		8. US EPA ID Number		D. Transporter's Phone (415) 235-1393	
9. Designated Facility Name and Site Address Erickson, Inc. 255 Parr Blvd. Richmond, Ca. 94801		10. US EPA ID Number CA D009466392		E. State Transporter's ID	
				F. Transporter's Phone	
				G. State Facility's ID CA D009466392 DSC	
				H. Facility's Phone (415) 235-1393	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) Waste Empty Storage Tank		12. Containers No. Type 002 CM	13. Total Quantity 8599	14. Unit Wt/Vol TP	L. Waste No. State 512
					EPA/Other NONE
b. NON-RCRA Hazardous Waste Solid.					State
c.					EPA/Other
d.					State
					EPA/Other
J. Additional Descriptions for Materials Listed Above Qty. 2 Empty Storage Tank (s) #2518-6519 Tank (s) have been inerted with 15 lbs. Dry Ice per 1000 Gal. Capacity.			K. Handling Codes for Wastes Listed Above a. 01		
15. Special Handling Instructions and Additional Information Keep away from sources of ignition. Always wear hardhats when working around U.S.T.'s 24 Hr. Contact Name <u>K. [unclear]</u> & Phone <u>(415) 235-1393</u>			b.		
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.			c.		
Printed/Typed Name K. [unclear]			Signature <i>[Signature]</i>		Month Day Year 07 03 91
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name PAUL L ROTE			Signature <i>[Signature]</i>		Month Day Year 07 03 91
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name			Signature		Month Day Year
19. Discrepancy Indication Space					
20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19. Printed/Typed Name DANIEL S. CARROLL					
Signature <i>[Signature]</i>			Month Day Year 10 17 03 91		

GENERATOR

TRANSPORTER

FACILITY

REC'D AUG 16 1991

DILLARD TRUCKING, INC.
P.O. BOX 218

PAGE: 01

BYRON
(415) 634-6850

CA 94514

DATE: 08/07/91

INVOICE NO: 01169

ACCOUNT NO: 00001

ARCO PRODUCTS
P.O. BOX 5811
SAN MATEO

CA 94402

JOB#: 0001/74 07-045/2035-91-1BHM
FROM: ARCO #2035/ALBANY
TO: REDWOOD LANDFILL/NOV
COMDTY: BS-BULK SOIL

DATE	FREIGHT BILL	WEIGHT	TAG	TRK	MANIFEST #	DESCRIPTION	UNITS	RATE	AMOUNT
07/01/91	15572	-00	8091				5.000 Hrs	64.1600	320.80 ✓
07/01/91	15572B	-00	ADL CHG			BRIDGE TOLL			7.25 ✓
08/01/91	16380	-00	8065				7.500 Hrs	64.1600	481.20 ✓
08/01/91	16380B	-00	ADL CHG			BRIDGE TOLL			15.50 ✓
08/01/91	16640	-00	8058				6.250 Hrs	64.1600	401.00 ✓
08/01/91	16640B	-00	ADL CHG			BRIDGE TOLL			14.50 ✓
08/01/91	17022	-00	8086				5.250 Hrs	64.1600	336.84 ✓
08/01/91	17022B	-00	ADL CHG			BRIDGE TOLL			7.25 ✓
08/01/91	18431	-00	8102	35			7.500 Hrs	64.1600	481.20 ✓
08/01/91	18431B	-00	ADL CHG			BRIDGE TOLL			7.25 ✓
08/01/91	18646	-00	8101	82			8.000 Hrs	64.1600	513.28 ✓
08/01/91	18714	-00	8085				4.750 Hrs	64.1600	304.76 ✓
08/01/91	18714B	-00	ADL CHG			BRIDGE TOLL			7.25 ✓
08/01/91	19267	-00	8082				6.000 Hrs	64.1600	384.96 ✓
08/01/91	20455	-00	8113				8.500 Hrs	64.1600	545.36 ✓
08/01/91	20455	-01	8062						14.50 ✓
08/01/91	20455B	-00	ADL CHG			BRIDGE TOLL			545.36 ✓
08/01/91	20529	-00	8111				8.500 Hrs	64.1600	16.50 ✓
08/01/91	20529B	-00	ADL CHG			BRIDGE TOLL			433.08 ✓
08/01/91	20601	-00	8097	21			6.750 Hrs	64.1600	7.25 ✓
08/01/91	20601B	-00	ADL CHG			BRIDGE TOLL			497.24 ✓
08/02/91	16381	-00	8207/8240/60				7.750 Hrs	64.1600	16.50 ✓
08/02/91	16381B	-00	ADL CHG			BRIDGE TOLL			
SUBTOTL TRANSPORT							81.750 Hrs		5,245.08
SUBTOTL							15.000 Lds		5,358.83

ACCT COST CENTER FAC. # TYPE
 CAPITALIZED FOR SOIL DISPOSAL DURING
 TRUCK JOB AT #2035 ~~8/23~~ #
 Approved: *[Signature]* 8/26/91
 K. A. Christie

Verified to Contract Terms
[Signature] *[Signature]*
 Date Initials

PLEASE PAY THIS AMOUNT 5,358.83 ✓