TC 8380-10
November 1, 1992

Hayward Maintenance Station Remediation of Soil Contamination and Dry Well Installation

Prepared for
Office of the State Architect
400 P Street, 5th Floor
Sacramento, California

Prepared by
Tetra Tech Inc.
Pasadena, California

reviewed 12/15/92 SDS

SITE REMEDIATION REPORT
SOIL EXCAVATION AND CONSTRUCTION OF DRY WELLS

for

OFFICE OF THE STATE ARCHITECT
CALTRANS - HAYWARD MAINTENANCE STATION
21195 CENTER STREET
CASTRO VALLEY, CALIFORNIA

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November 1, 1992

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1.0 INTRODUCTION

On behalf of the Office of the State Architect, Tetra Tech, Inc. has completed corrective measures of identified petroleum-contaminated soil at the Caltrans-Hayward Maintenance Station in the City of Castro Valley, California. The work has been conducted in response to, and in accordance with, Alameda County Department of Environmental Health tank closure requirements.

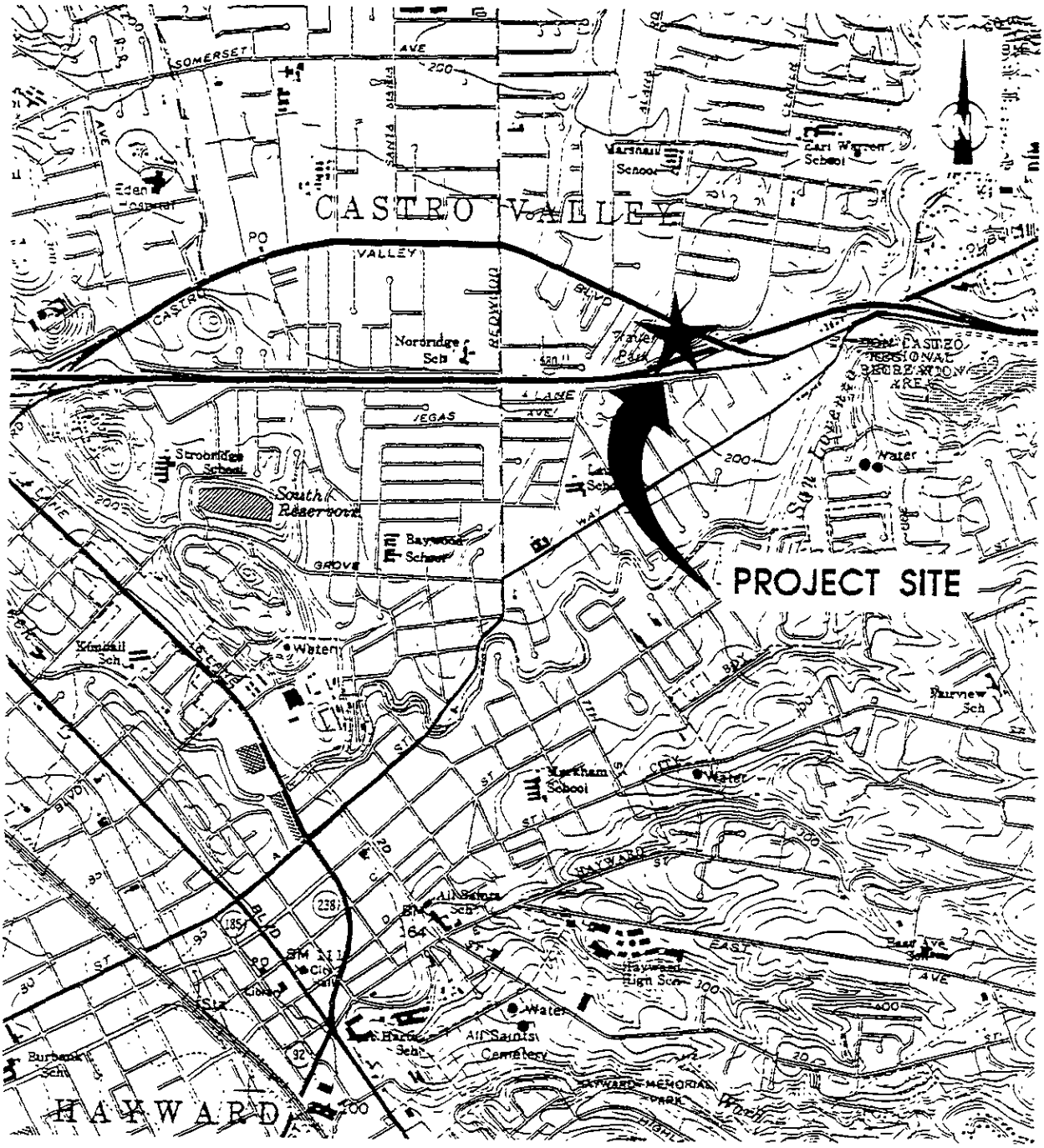
The corrective measures consisted of the excavation and off-site disposal and treatment of approximately 400 tons of petroleum-contaminated soil, coupled with the design and construction of three dry monitoring wells for long-term monitoring of groundwater. The work was conducted in response to soil contamination that was detected during routine soil sampling following removal of two underground storage tanks at the facility. Gasoline and diesel fuel contamination was detected in the soil around and beneath the former underground tanks and dispenser island.

The following report describes the methods employed to comply with regulatory requirements for tank closure and soil remediation. Supporting documentation, such as permits, manifests and laboratory results are enclosed as Appendices B through E.

2.0 SITE BACKGROUND

2.1 SITE LOCATION AND DESCRIPTION

The project site is the Caltrans-Hayward Maintenance Station, located at 21195 Center Street in the City of Castro Valley, California. A site location map showing the location of the site with respect to major roads and intersections is shown in Figure 1. The site is currently managed by the State of California as a dispatching office and vehicle-maintenance facility. Both of the underground fuel tanks at the facility have been removed. The majority of the site is paved with asphalt.



HAYWARD MAINT. STATION
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FIGURE 1 PROJECT SITE LOCATION

3.0 PREVIOUS SITE ACTIVITIES

3.1 UNDERGROUND TANK REMOVAL

Based on records provided by the Office of the State Architect (OSA), a 260 gallon diesel underground storage tank (UST) and a 1,000 gallon gasoline UST were removed from the Hayward Maintenance Station in January 1989. Following removal of the two tanks, three soil samples were collected from the excavation floor for laboratory analysis. Analytical results indicated the presence of petroleum hydrocarbons in subsurface soils adjacent to both tanks. The detected concentrations ranged from 1.7 parts per million (*ppm*) in samples collected beneath the gasoline UST to 2,100 ppm in samples collected beneath the diesel UST. Based on the detected hydrocarbon concentrations, the Alameda County Department of Environmental Health - Hazardous Materials Program (*ACDEH*) required a site assessment to delineate the extent of contamination.

3.2 GEO/RESOURCE PRELIMINARY SITE ASSESSMENT

In January of 1990, Geo/Resource Consultants Inc. (*GRC*) performed a Preliminary Site Assessment (*PSA*) of the identified petroleum contamination at the Hayward Maintenance Station. The PSA consisted of completing six soil borings around the former tanks and dispenser island. Soil samples were collected at depths ranging from 5 feet to 36 feet below ground surface and analyzed for total petroleum hydrocarbons and aromatic volatile organics. Results of the PSA indicated that the highest petroleum, *gasoline and diesel*, contamination was present around the former fuel dispensing units. Petroleum contamination was reported at isolated depths ranging from 5 to 20 feet below ground surface. Although the PSA indicated general hydrocarbon concentrations in the vicinity of the former tanks and dispenser, the extent of soil contamination had not been completely delineated.

3.3 TETRA TECH SITE INVESTIGATION

Based on the hydrocarbon concentrations reported in the PSA, a Phase II site investigation was conducted in February 1991 by Tetra Tech, Inc. to completely delineate the extent of petroleum-impacted soil. The site investigation included the completion of eight additional step-out soil borings around the reported contamination. Laboratory results indicated isolated lenses of hydrocarbon-concentrated soil set between layers of non-detectable contamination. Non-detectable hydrocarbon concentrations in the outermost perimeter borings indicated that the extent of soil contamination had been delineated. Figure 2 presents a site overview and the estimated areal extent of petroleum-contaminated soil.

ASPHALT COVERAGE

SHED/GARAGE

AREA OF REMOVED
UNDERGROUND STORAGE TANKS

AREA OF REMOVED
DISPENSER FUEL ISLAND

SHED

SHED

SHED

OFFICE

EXTENT OF CONTAMINATION

N

LEGEND

Lateral Extent of Contamination

Chain Linked Fence

0 10 20 40

1"=20'

SITE REMEDIATION
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FIGURE 2 SITE OVERVIEW AND EXTENT OF CONTAMINATION

4.0 SUBSURFACE CONDITIONS

4.1 REGIONAL AND SITE GEOLOGY

The subject site lies within the Castro Valley, and is bounded by the Diablo Hills on the north, east and south sides, and the northwest-trending Hayward fault to the west. The hills surrounding Castro Valley are the source of sedimentary deposits which have been transported mainly by sheet flow runoff and streams, and accumulate in the valley bottom.

Subsurface sediments at the site consist primarily of alluviul deposits overlying bedrock, which consists of dark yellowish brown siltstone. These alluviul deposits consist mainly of interbedded finer-grained sands, silts and clays. Well-sorted sand and sandy gravel lenses were encountered locally at depths ranging from 17 to 30 feet below ground surface. During soil excavation, petroleum contamination was observed to reside within these sand and sandy gravel lenses.

4.2 REGIONAL AND SITE HYDROGEOLOGY

The Hayward Maintenance Station lies within the East Bay Plain, Castro Valley Groundwater Sub-Basin, as reported by the Alameda County Flood Control and Water Conservation District. Depth to groundwater in the vicinity has been reported to historically vary from 28 to 35 feet below ground surface. As discussed in the PSA Report and addressed by Mr. Scott Seery of ACEHA, the recent drought conditions appear to have contributed to the decline in local groundwater levels. During Tetra Tech's site investigation and site remediation programs, moist soils were encountered from approximately 34 to 37 feet bgs, where grayish fractured siltstone bedrock was encountered.

Annual fluctuations of the groundwater table are expected to occur in response to seasonal precipitation. Due to the inclination of the fine-grained bedrock unit and the relatively porosity of the overlying alluvium, long-term retention or storage of groundwater is not anticipated within the site boundaries.

5.0 PROJECT APPROACH

As shown in Figure 2, petroleum-contaminated soil was confined to the circular-shaped area centered around the north end of the former tanks and the east end of the former dispenser island. The extent of contamination was generally limited to the uppermost 20 feet; however, isolated lenses of petroleum-affected soil were documented to depths of 30 feet. Based on the concentrations and extent of contamination, a two-phased soil remediation and monitoring program was recommended:

PHASE I *EXCAVATION AND DISPOSAL OF CONTAMINATED SOIL*

PHASE II *LONG-TERM MONITORING: CONSTRUCTION OF DRY WELLS*

A rapid soil remediation technique was recommended in order to remove the source of potential hydrocarbon migration into groundwater. Excavation and off-site disposal of the contaminated soil was selected over in-situ remedial alternatives due to the relatively low volume of contaminated soil, and the erratic soil horizons reported at the site.

As discussed in Section 4.2, regional groundwater has been documented as high as 28 feet below ground surface. While the excavation program was intended to remove the hydrocarbon-concentrated soil, a long-term monitoring program was also recommended to periodically monitor for the presence of local groundwater. Tetra Tech, Inc. proposed to construct a series of dry monitoring wells to monitor seasonal fluctuations of groundwater, and, if necessary, collect water samples for laboratory analysis.

Following review of a technical remedial workplan, *dated 30 May 1992*, ACDEH Inspector Scott Seery issued approval of the proposed excavation and monitoring program.

6.0 PHASE I: EXCAVATION OF CONTAMINATED SOIL

6.1 Excavation and VOC Field Screening

The first phase of the excavation program involved excavating and stockpiling the petroleum-contaminated soil. The excavation program, conducted from September 14-16 1992, was centered in the vicinity of the former dispenser island, corresponding to the highest and deepest reported hydrocarbon concentrations. The excavation was then extended radially toward the former tank cavity and the Caltrans office building, *located to the west and south of the dispenser island, respectively*. The vertical and lateral extent of the excavation continued until all contamination above regulatory action levels was removed.

Initially, a Case 580K backhoe with 3-foot wide bucket was used to remove contaminated soil to its maximum capacity of approximately 18 feet below ground surface. When floor samples indicated the presence of contamination at 18 feet, excavation was continued with a Kobelco excavator equipped with a 50-foot extension boom. Field observations indicated that petroleum hydrocarbons appeared to have migrated vertically through shallow silt deposits and then pooled and spread laterally in underlying sand layers, located at approximately 27 to 30 feet below grade. The excavation program proceeded until all visible contamination was removed from these sand layers. Excavation was terminated at a vertical depth of approximately 31 feet, corresponding to the siltstone bedrock contact. Figure 3 presents an overview of the maximum lateral boundaries of the excavation. Figure 4 presents a cross-sectional view of the contamination and excavation boundaries.

ASPHALT COVERAGE

SHED/GARAGE

EXCAVATION BOUNDARY

A

A'

SHED

SHED

SHED

OFFICE

N

0 10 20 40

1"=20'

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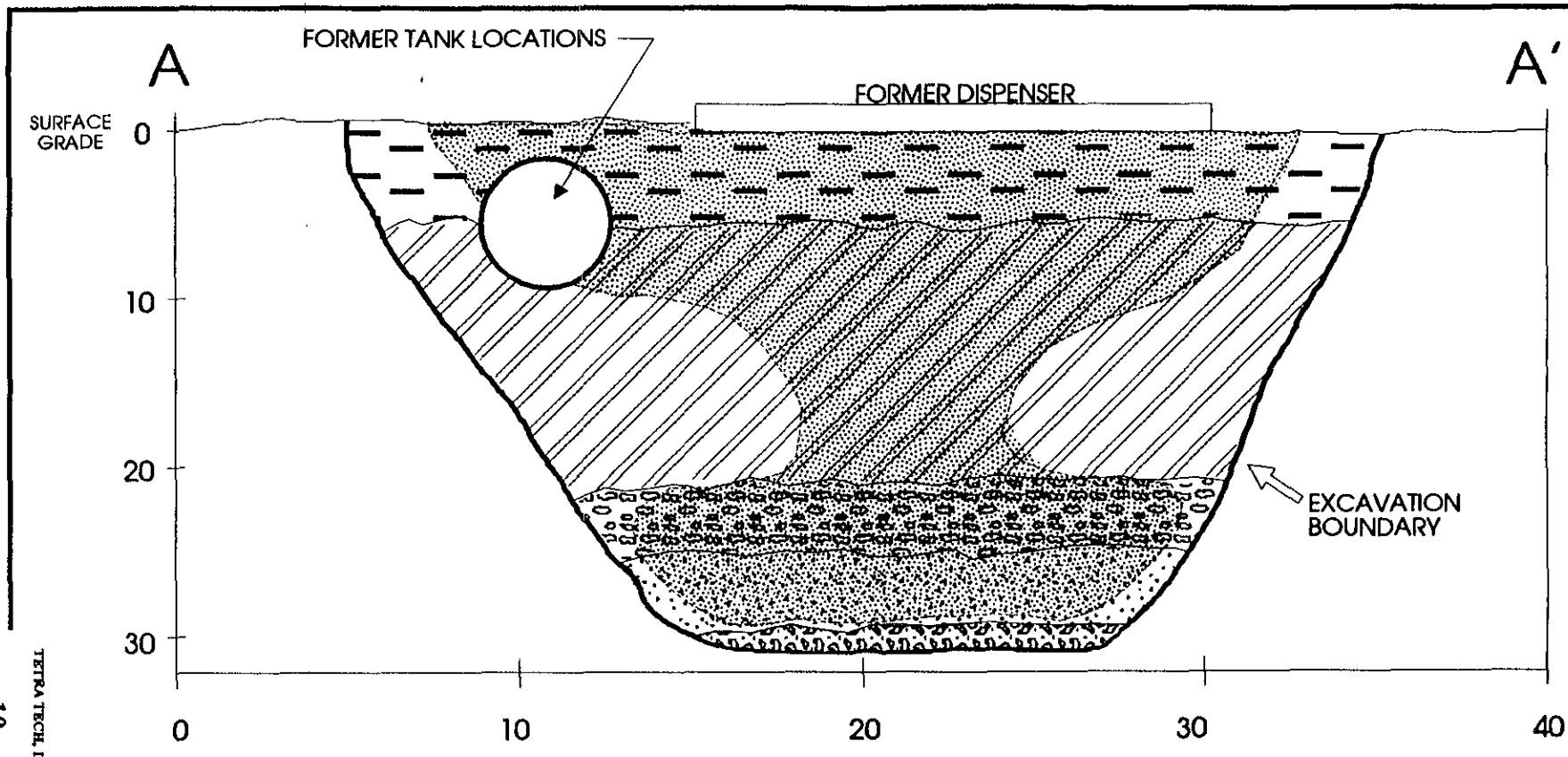
FIGURE 3 OVERVIEW OF EXCAVATION BOUNDARY



1" = 5'

SECTION FROM WEST TO EAST

HORIZONTAL EXAGGERATION 2 : 1

LEGEND

- GREY SILT
- BROWN, CALCAREOUS SILTY AND SANDY CLAY
- SANDY GRAVEL
- WELL SORTED SAND
- SILT STONE BEDROCK
- ESTIMATED BOUNDARY OF SOIL CONTAMINATION
- APPROXIMATE DEPTH OF SOIL CLASSIFICATION CHANGE

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FIGURE 4 Cross-Section - Boundaries of Contamination and Excavation

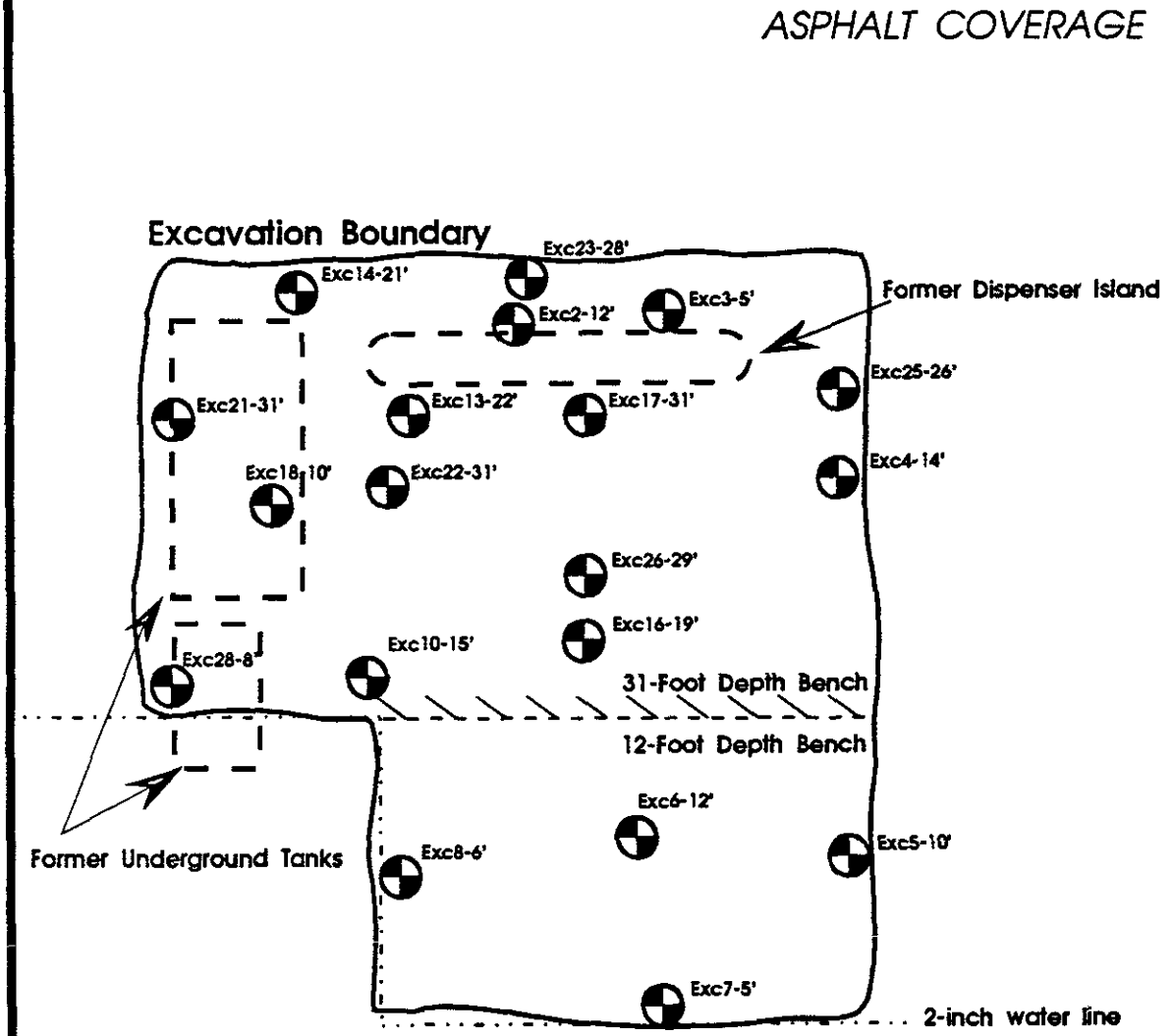
To guide the remediation effort, the excavation soils were evaluated by soil consistency and color, augmented by on-site screening for volatile organic compounds (VOC's). The excavated soil and the perimeter of the excavations were screened using a Foxboro Model 128 GC organic vapor analyzer (OVA). Prior to field use, the OVA was calibrated and bench-tested. After all visible signs of soil contamination had been excavated, verification soil samples were collected for laboratory analysis to confirm and document that the petroleum contamination had been removed. The excavated soil was stockpiled on and covered with polyethylene plastic sheeting in preparation for characterization and disposal. Approximately 391 tons of petroleum-contaminated soil were excavated from the tank cavity and dispenser island areas. Photos of various stages of the excavation operation are presented in Appendix A.

6.2 SOIL SAMPLING

Verification soil samples were collected periodically at various depths to provide laboratory documentation that the full extent of petroleum-contaminated soil had been removed. Soil samples were collected from all suspect hydrocarbon-containing areas until a satisfactory "grid" of uncontaminated samples had been collected. Each clearance sample was analyzed on-site by a State Certified mobile laboratory for petroleum hydrocarbon compounds. After laboratory analyses confirmed that petroleum hydrocarbon concentrations in a given sample had fallen below regulatory action levels, further excavation was discontinued in that direction.

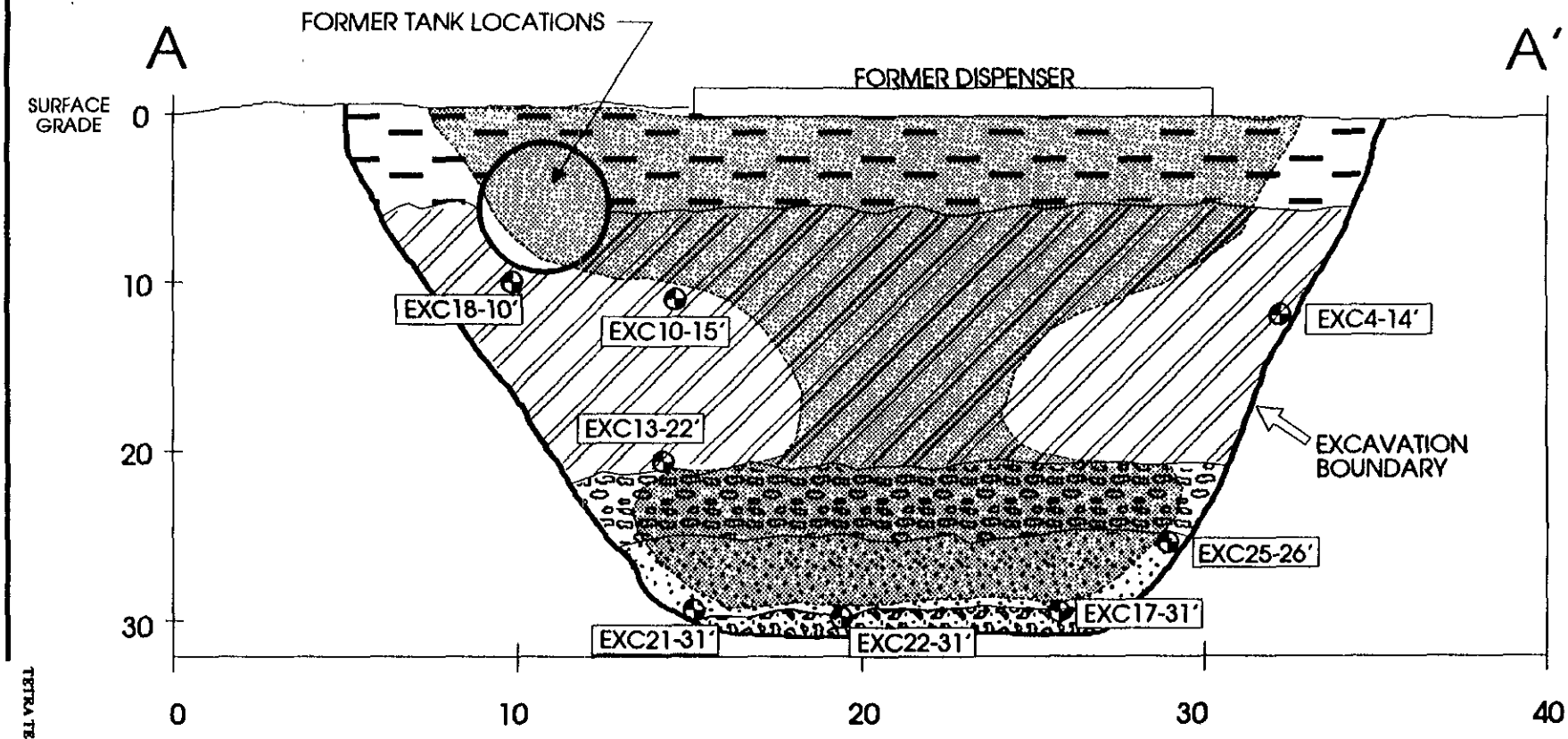
During the excavation program, a total of 28 soil samples were collected from the excavation. Samples were collected laterally around the sidewalls of the excavation at depth intervals ranging from 5 feet to 28 feet below ground surface to document the maximum lateral extent of contamination. Floor samples were also collected at the 31-foot depth interval, the maximum vertical depth of the excavation. Figures 5 and 6 present an overview and cross-sectional view of final perimeter sample locations.

Vehicle Maintenance Bays



Caltrans Offices

Figure 5 Excavation Boundaries and Perimeter Sample Locations



1" = 5'

SECTION FROM WEST TO EAST

HORIZONTAL EXAGGERATION 2 : 1

LEGEND

ESTIMATED BOUNDARY OF SOIL CONTAMINATION

APPROXIMATE DEPTH OF SOIL CLASSIFICATION CHANGE

EXCXX-XX' LOCATION OF SOIL SAMPLE COLLECTION POINTS

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FIGURE 6 Cross-Section
Perimeter Sample Locations

The soil samples were generally collected by two methods; hand-driving a 2-inch diameter brass sleeve into soil collected on the teeth of the backhoe bucket or by driving a stainless steel Shelby tube containing brass sleeves into the soil with a slide hammer. The tube was repeatedly struck by the slide hammer until an undisturbed soil sample, with minimal headspace, was recovered. Preparation of the samples for laboratory analysis involved first covering both ends of the filled brass sleeve with aluminum foil and then sealing with teflon end caps. The samples were then labelled and placed in the refrigerator of the mobile laboratory. Sample identification numbers were recorded on a Chain-of-Custody document.

Several actions were taken to minimize the potential for cross-contamination between sampling intervals. Tetra Tech set up a staging area for storing the clean brass sleeves to be used for collecting the soil samples, and established a decontamination area to clean the Shelby tube between each sampling drive. Between each sampling drive, the tube was washed with TSP solution, rinsed with clean tap water and final-rinsed with distilled water.

6.3 LABORATORY ANALYSIS

All samples collected were analyzed for Total Petroleum Hydrocarbon (TPH) compounds (*gasoline and diesel fractions*) by EPA Method Modified 8015 and for aromatic volatile organics (*benzene, toluene, total xylenes, and ethylbenzene - BTXE*) by EPA Method 8020. Immediate laboratory analyses for TPH and BTEX compounds were provided by Geochem Environmental Laboratory. Copies of the laboratory results and the Chain-of-Custody forms are included in Appendix C. A summary of the laboratory data from the excavation is presented in Table 6-1.

TABLE 6-1
LABORATORY RESULTS OF FINAL PERIMETER AND FLOOR SAMPLES

SAMPLE NUMBER	SAMPLE LOCATION AND DEPTH	TPH - gasoline (ppm)	TPH - diesel (ppm)	B/T/X/E (ppm)
EXC-2	North wall - 12'	ND	.55	ND/ND/.009/ND
EXC-3	North wall - 5'	ND	ND	ND/ND/ND/ND
EXC-4	Northeast corner - 14'	ND	ND	ND/ND/ND/ND
EXC-5	Southeast corner - 10'	ND	ND	ND/ND/ND/ND
EXC-6	Excavation Floor - 12'	ND	ND	ND/ND/ND/ND
EXC-7	Higher South wall - 5'	ND	ND	ND/ND/ND/ND
EXC-8	Southwest corner - 6'	ND	ND	ND/ND/ND/ND
EXC-10	Northwest corner - 15'	ND	ND	ND/ND/ND/ND
EXC-13	North wall - 22'	ND	ND	ND/ND/ND/.58
EXC-14	Northwest corner - 21'	ND	ND	ND/ND/ND/ND
EXC-15	West wall - 21'	ND	ND	ND/ND/ND/ND
EXC-16	Lower south wall - 19'	ND	ND	ND/ND/ND/ND
EXC-17	Floor - 31'	ND	ND	ND/ND/ND/ND
EXC-18	West wall - 10'	ND	3.74	ND/ND/.226/ND
EXC-21	West wall - 31'	ND	ND	ND/ND/ND/ND
EXC-22	Floor - 31'	ND	ND	ND/ND/ND/ND
EXC-23	North wall - 28'	ND	ND	ND/ND/ND/ND
EXC-25	East wall - 26'	ND	ND	ND/ND/ND/ND
EXC-26	Lower South wall - 29'	ND	ND	ND/ND/ND/ND
EXC-28	Southwest corner - 8'	54	2	ND/ND/ND/ND

Detection Limit of 0.5 ppm for gasoline and diesel fractions
Detection Limit of 0.005 ppm for BTXE compounds
ND - Not Detected

6.4 EVALUATION OF LABORATORY RESULTS

As indicated in Table 6-1, only three perimeter soil samples reported TPH concentrations above the 0.5 ppm detection limit. Sample EXC-28, collected at the 8-foot depth interval from the southwest corner of the excavation, reported 54 ppm of total gasoline hydrocarbons and 2 ppm of total diesel hydrocarbons. Samples EXC-1 and EXC-18 reported 0.55 ppm and 3.74 ppm, respectively, of total petroleum hydrocarbons. These residual TPH concentrations are below the current ACDEH guidelines of 100 ppm for TPH compounds.

Of the BTXE compounds, xylenes were detected in two perimeter samples at a maximum concentration of .225 ppm and ethylbenzene was detected in one perimeter sample at a concentration of .58 ppm. Benzene and toluene compounds were not detected in any of the perimeter soil samples.

As discussed, low concentrations of TPH and BTXE compounds were reported in the final perimeter samples collected for analysis. Based on these laboratory results, all contaminated soil from the tank cavity and dispenser island areas have been successfully excavated.

6.5 PROFILING AND DISPOSAL OF CONTAMINATED SOIL

Prior to transportation and disposal, the contaminated soil was profiled by the Toxicity Characteristic Leaching Procedure (*TCLP*) and 96-hour bioassay for federal and state-regulated pollutants. The laboratory results indicated that regulated hazardous materials were not present in the Hayward Maintenance Yard soil. Copies of the analytical data are presented in Appendix D.

The petroleum-contaminated soil from the Caltrans - Hayward Maintenance Yard was transported to R&G Environmental Services (R&G), a State Certified treatment and disposal facility. R&G is a commercial asphalt facility that uses thermal treatment to separate petroleum hydrocarbons from contaminated soils. Upon final remediation, the soil is recycled into either asphaltic concrete, road base or engineered fill material.

A total of 391 tons of hydrocarbon-contaminated soil was transported on September 18 and 21, 1992 from the Caltrans - Hayward Maintenance Yard to the R&G disposal facility. Copies of all transportation and disposal documentation (*weightmaster certificates*) are presented in Appendix D.

6.6 SITE CLOSURE

The open excavation has since been backfilled with remediated, engineered soil imported from the R&G facility. By standard industry practice, compaction of the soil was completed in 1-foot lifts using a remote-controlled RAMMAX tamper and a whacker. The excavation was then capped with four inches of Class II base rock and four inches of asphaltic concrete. As of October 1 1992, final closure of the site has been completed.

7.0 LONG TERM MONITORING: CONSTRUCTION OF DRY MONITORING WELLS

To monitor potential seasonal fluctuations of local groundwater, Tetra Tech, Inc. constructed a triangulation of dry wells around the perimeter of the excavation. These dry wells will allow for the detection of groundwater accumulation and, if necessary, allow for the future testing of the groundwater by quarterly sampling. A total of three dry wells were installed, the minimum quantity necessary to establish a groundwater gradient in the event that groundwater is detected. The locations of the dry wells are presented in Figure 7.

7.1 DRILLING

Prior to installation of the monitoring wells, Tetra Tech Inc. obtained a Drilling Permit from the Alameda County Flood Control and Water Conservation District. A copy of the Drilling Permit is presented in Appendix E. The monitoring wells were installed on 28 September 1992.

The three dry monitoring wells were extended to a total depth of 35 feet below ground surface. The monitoring well design, drilling, and installation procedures were based on standard criteria of the water-well industry. Each of the well holes were drilled with a ten-inch diameter hollow-stem rotary auger. The wells were completed with four-inch diameter, PVC casing. Periodically, core samples were retrieved for geological monitoring. Soil cuttings from the boreholes were stored in 55-gallon drums.

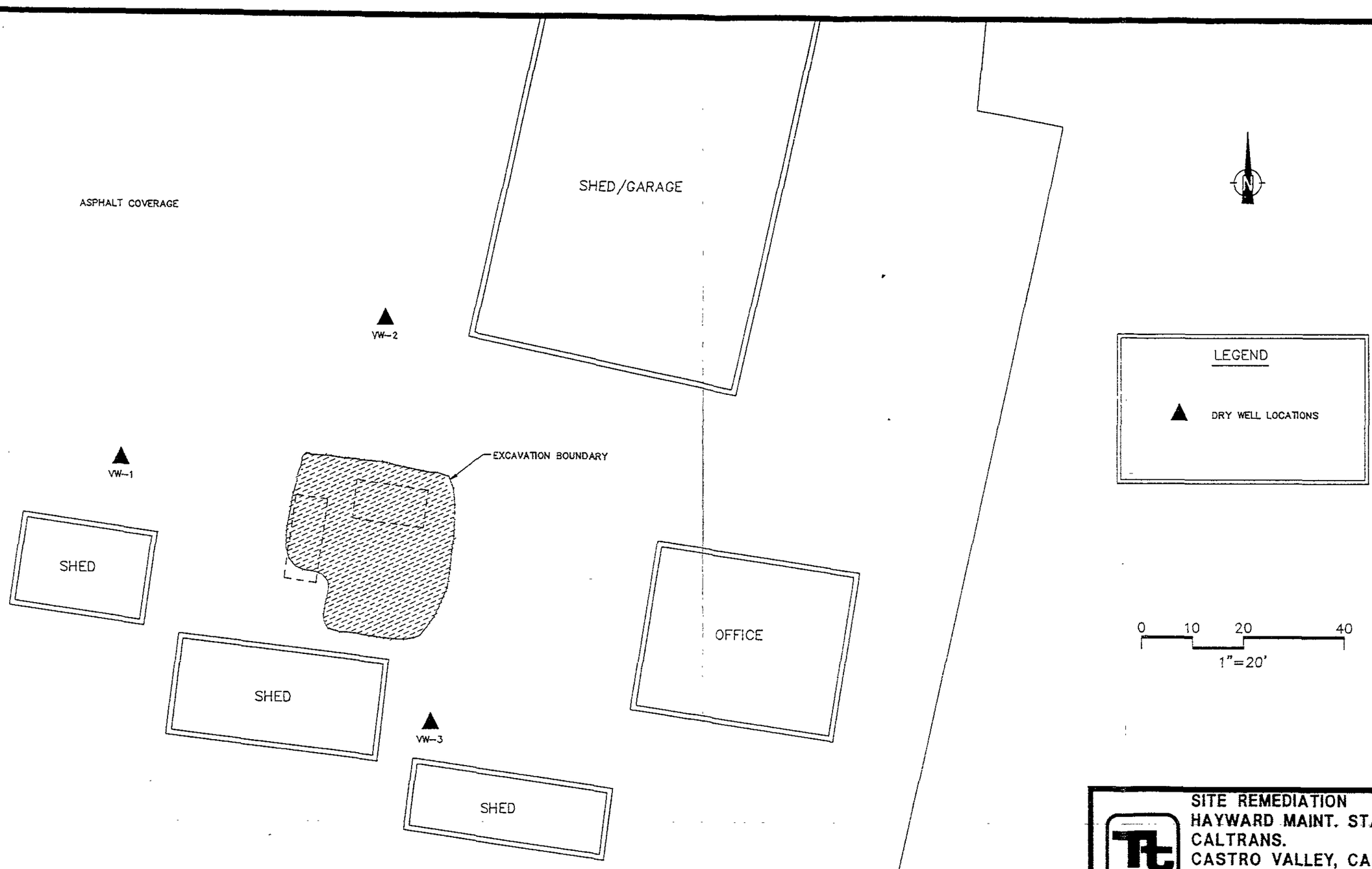

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FIGURE 7 DRY WELL LOCATIONS

7.2 WELL INSTALLATION

Upon completion of drilling, the hole was ready for well construction. The casing string, which consisted of a bottom plug, twenty feet of screened casing, and fifteen feet of blank casing, was lowered into the hole. The auger string was then raised and sand was poured into the annulus (space between the casing and the wall of the borehole), which creates a filter pack between the screened part of the casing and the potential water-bearing formation. The sand pack was built two feet higher than the top of the screened section of the casing. Centering devices were not installed, because the augers kept the casing centered while the sand pack was constructed. Bentonite chips were then poured into the annulus and hydrated to form a seal between the screened zone below and the blank zone above. This was done to help keep water and contamination from entering the producing zone. The final step involved filling the remainder of the annulus with a grout (volclay) slurry. A flush-mounted protective metal cover was then placed over the top of the well casing. A copy of the Soil Boring Logs and Well Construction Specifications are presented in Appendix E.

Following construction, well monitoring was conducted for a period of one week to detect the potential accumulation of groundwater. Since groundwater was not immediately detected, the wells were not developed and samples were not collected.

7.3 FIELD QUALITY ASSURANCE PROCEDURES

Several procedures were followed to minimize the potential for cross-contamination during well construction. The hollow-stem augers were steam-cleaned prior to being delivered to the Hayward Maintenance Yard, and then steam-cleaned between drilling each well hole. The split-spoon sampler was decontaminated between each sample interval by washing in a TSP solution, rinsing in tap water, and final-rinsing in distilled water. Decontamination water was placed in 55-gallon drums, labelled, and stored on-site pending proper disposal.

7.4 PROPOSED MONITORING SCHEDULE

The dry wells have been designed and constructed in accordance with local and State regulated guidelines for the purpose of long-term monitoring for the presence of groundwater. Preliminary monitoring indicated no groundwater had accumulated into the wells. To document the presence or absence of groundwater, monitoring will continue on a quarterly basis for a period of one year. In the event that groundwater is detected in one or more of the wells, water samples will be collected from each well analyzed for the presence of petroleum contaminants. Quarterly reports will be submitted to ACEHD to document monitoring efforts.

8.0 REFERENCES

1. Geo/Resource Consultants, Inc. Preliminary Assessment Report at California Department of Transportation - Hayward Maintenance Station. March 1990.

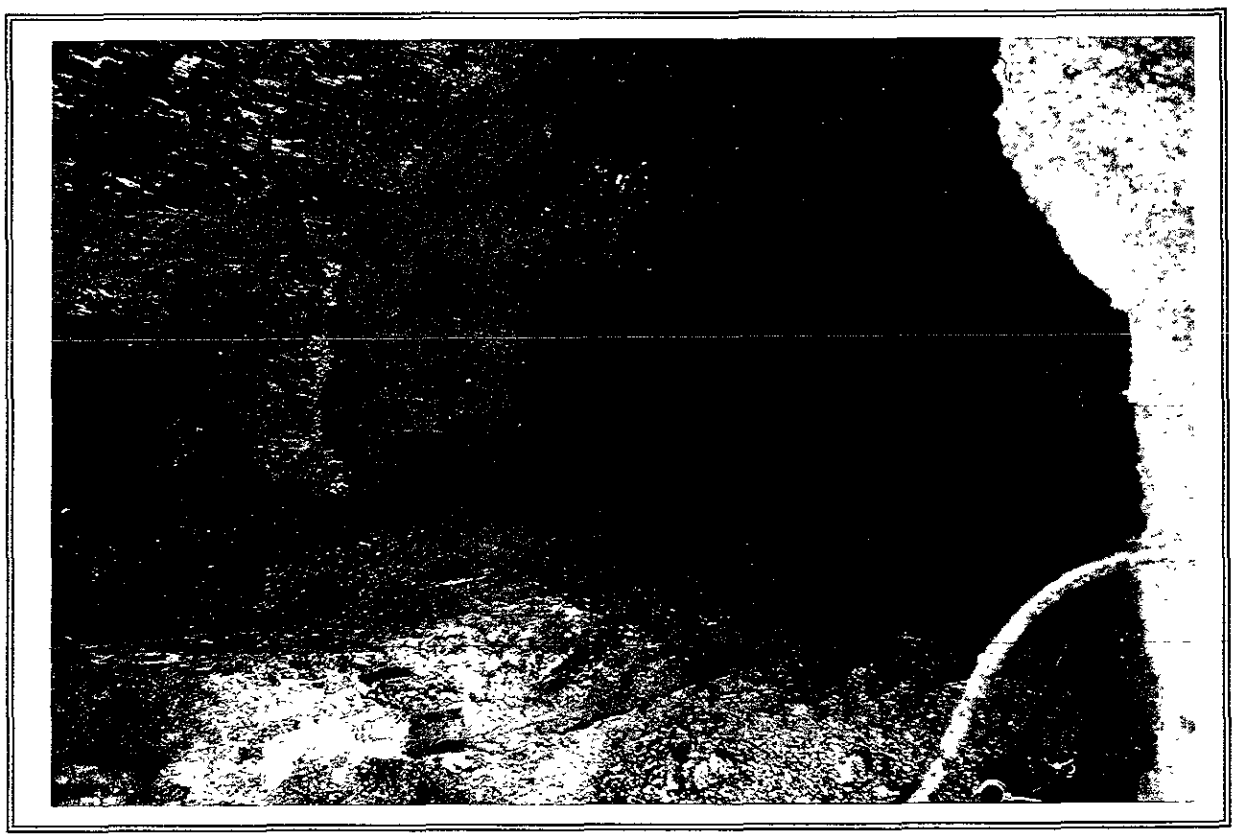
2. State Water Resources Control Board. Leaking Underground Fuel Tank (LUFT) Field Manual. August 1989.

3. Tetra Tech, Inc. Site Investigation Report: Caltrans-Hayward Maintenance Station. June 27, 1991.

4. Tetra Tech, Inc. Remedial Action Plan and Health & Safety Plan: Caltrans-Hayward Maintenance Station. January 1992.

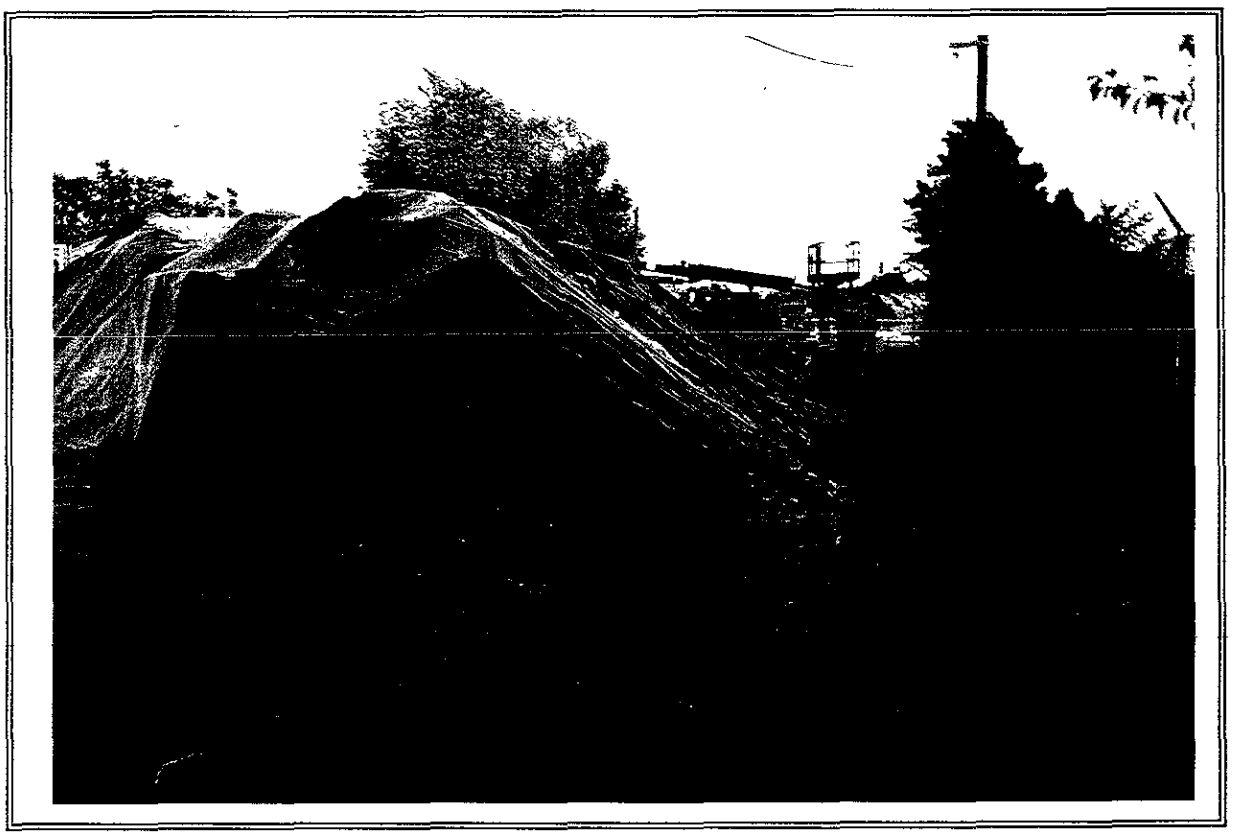
5. United States Geological Survey. Land Subsidence in the Santa Clara Valley, California: Professional Paper 497-F. 1982.

Photograph #1
Commencing Soil Excavation Program



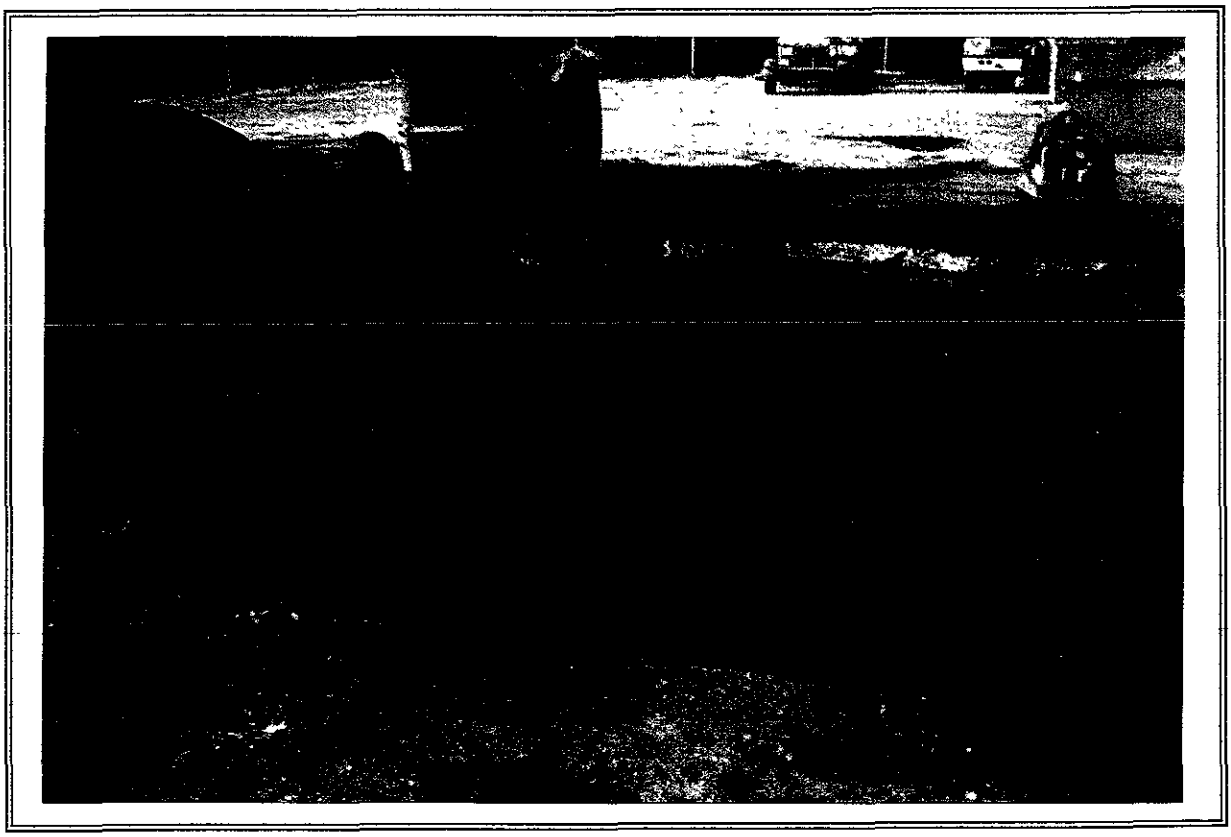
Photograph #2
View of Contaminated Soil

Photograph #3
Overview of Soil Excavation Program

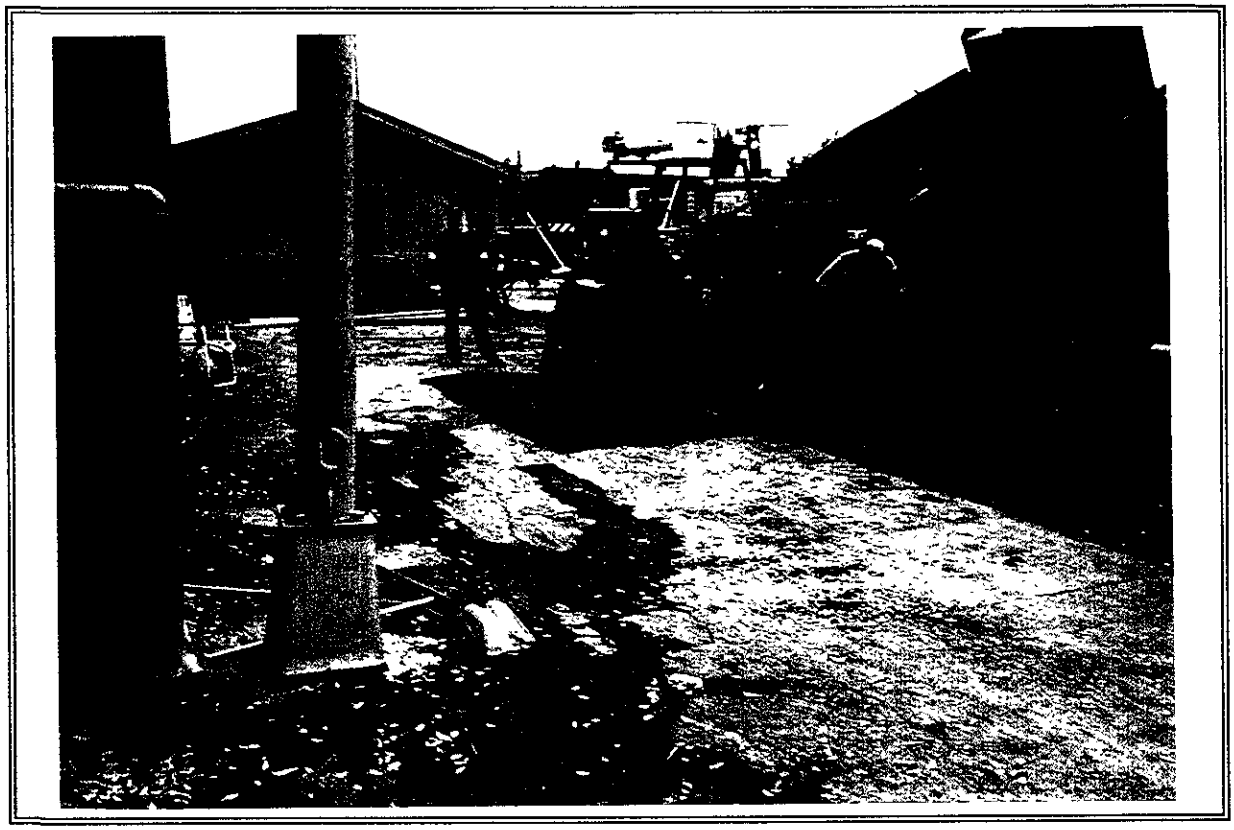


Photograph #4
Overview of Contaminated-Soil Stockpiles

Photograph #5
Backfilling Excavation Bottom with Drain Rock



Photograph #6
Overview of Backfilled Excavation



Photograph #7
Resurfacing Excavation with Asphalt

Photograph #8
Overview of Resurfaced Lot

Photograph #9
Installation of PVC Casing for Dry Well

Photograph #10
Overview of Installed Dry Well

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

September 20, 1991

Ms. Mary Cooper
Office of the State Architect
400 - P Street, 5th Floor
Sacramento, CA 95814

RE: HAYWARD MAINTENANCE CENTER, 21195 CENTER STREET, CASTRO VALLEY, ALAMEDA COUNTY

Dear Ms. Cooper:

This Department has completed review of the April 4, 1991 Tetra Tech, Inc. site investigation report, as submitted under Tetra Tech cover dated May 31, 1991. The cited report documents Tetra Tech's efforts to delineate the vertical and lateral extent of hydrocarbon contamination at the referenced Cal Trans facility.

This Department concurs with the conclusion reached by your consultant that the extent of soil contamination has been adequately assessed to determine an appropriate means to remediate the site. The Department further concurs that excavation and treatment appears to be the most expedient alternative explored for effectively removing this contamination. We do not concur, however, in limiting the extent of the excavation to the 20 foot depth proposed in the report.

Previous work by Geo/Resource Consultants, Inc. (GRC) identified levels of fuel hydrocarbon contamination as high as 2,400 ppm of total petroleum hydrocarbons as diesel (TPH-D) at a depth of 31 feet below grade in GRC boring SB-1, which effectively represents the soil/weathered bedrock interface. A sample collected from this same boring at a depth of 21.5 feet below grade exhibited 790 ppm TPH-gasoline. Should excavation not be extended to these depths, some other means of remediating this contamination must be proposed. The appropriate remediation of this soil is essential to the protection of any meteoric waters migrating beneath and through the site, as the site is a zone of potential recharge. Ground water monitoring is, hence, not an alternative to proper remediation, particularly where little or no ground water is presently known to exist, but rather a means to provide additional assurance that ground water has not been impacted.

As indicated in the April 4 Tetra Tech report, please submit a Remedial Action Work Plan that will address the requirements outlined in this letter, describe the excavation techniques, sampling and treatment methodologies, and a proposal for long term monitoring.

Additionally, please be certain that future laboratory analyses follow strict practical quantitation reporting limits and target appropriate compounds as outlined in the San Francisco Bay Regional Water Quality Control Board's (RWQCB) Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites. Reporting limits for TPH-G/D analyses as presented in the cited Tetra Tech report were all higher than what is appropriate. Further, ground water sampled from MW-1 was not analyzed for TPH-G/D as required, but was analyzed for halogenated compounds, an analyses not requested by this Department.

Please submit the Remedial Action Work Plan within 45 days of the date of this letter.

Please call me at 415/271-4320 should you have any questions.

Sincerely,

Scott O. Seery, CHMM
Hazardous Materials Specialist

cc: Rafat A. Shahid, Assistant Agency Director, Environmental Health
Edgar Howell, Chief, Hazardous Materials Division
Gil Jensen, Alameda County District Attorney's Office
Howard Hatayama, DHS
Lester Feldman, RWQCB
Bob Bohman, Castro Valley Fire Department
Dan Batrack, Tetra Tech, Inc.
files

GEOCHEM Environmental Laboratory
~~15211 Springdale Street~~
~~Huntington Beach, CA 92649~~
~~(714) 379-5955 • FAX (714) 379-5957~~

780 Montague Expwy, Suite 404
San José, CA 95131
Ph: (408) 955-9788 Fax (408) 955-9538

CHAIN OF CUSTODY RECORD

Date 09-15-92 Page 1 of 2

CLIENT Tetra Tech

ADDRESS 670 North Rosemead Blvd.
Pasadena, CA 91107

PROJECT NAME Maintenance
Hayward ~~Maintenance~~ Station

PROJECT MANAGER Phil Stoge

PHONE NUMBER (818) 449-6400

SAMPLERS ~~(Signature)~~ [signature]

TESTS REQUIRED

SAMPLE I.D.	LOCATION DESCRIPTION	DATE	TIME	MATRIX AIR	MATRIX WATER	MATRIX SOIL	NO. OF CTNR	EPA 418.1	8010	8015 M/TPH-gasoline	8015 E/TPH-diesel	8020 (602) BTEX	Organic/Total Lead				Archive
EXC1-17'		09-15-92	8:00 AM			X	1			X	X	X					*
EXC2-12'		09-15-92	8:00 AM			X	1			X	X	X					
EXC3-5'		09-15-92	8:00 AM			X	1			X	X	X					
EXC4-14'		09-15-92	8:05 AM			X	1			X	X	X					
EXC5-5'		09-15-92	8:05 AM			X	1			X	X	X					
EXC6-12'		09-15-92	8:10 AM			X	1			X	X	X					
EXC7-5'		09-15-92	8:10 AM			X	1			X	X	X					
EXC8-10'		09-15-92	8:10 AM			X	1			X	X	X					
EXC9-7'		09-15-92	8:15 AM			X	1			X	X	X					
EXC10-15'		09-15-92	8:15 AM			X	1			X	X	X					

Relinquished by: [signature]	Received by: [signature]	Date 09-15-92	Time 5:00 PM
Relinquished by:	Received by:	Date	Time
Relinquished by:	Received by:	Date	Time

Turnaround time: (Mobile Lab)
24 hr. 48 hr. Normal (3 days)

Special Instructions:

GEOCHEM Environmental Laboratory
~~15211 Springdale Street~~ ~~Huntington Beach, CA 92649~~ ~~(714) 898-5955 • FAX (714) 893-5957~~
780 Montague Expwy, Suite 904
San Jose, CA. 95131
Ph: (408) 955-9588 Fax: (408) 955-9538

CHAIN OF CUSTODY RECORD

Date 09-15-92 Page 2 of 2

CLIENT Tetra Tech

ADDRESS 670 North Rosemead Blvd.
Pasadena, CA 91107

PROJECT MANAGER Phil Scrudge

PHONE NUMBER (818) 449-6400

SAMPLERS (Signature)

PROJECT NAME Maintenance
Hayward Maintenance Station

TESTS REQUIRED

SAMPLE I.D.	LOCATION DESCRIPTION	DATE	TIME	MATRIX AIR	MATRIX WATER	MATRIX SOIL	NO. OF CTNR	EPA 418.1	8010	8015 M/TPH-gasoline	8015 E/TPH-diesel	8020 (602) BTEX	Organic/Total Lead				Archive
EXC11-18'		09-15-92	9:00am			X	1			X	X	X					
EXC12-21'		09-15-92	12:25p			X	1			X	X	X					
EXC13-21'		09-15-92	12:55p			X	1			X	X	X					
EXC14-21'		09-15-92	3:30p			X	1			X	X	X					
EXC15-21'		09-15-92	4:05p			X	1			X	X	X					
EXC16-19'		09-15-92	4:29p			X	1			X	X	X					

Relinquished by:	Received by:	Date 09-15-92	Time 5:00p
Relinquished by:	Received by:	Date	Time
Relinquished by:	Received by:	Date	Time

Turnaround time: (Mobil Lab)
24 hr. 48 hr. Normal (3 days)

Special Instructions:

GEOCHEM Environmental Laboratories
780 Montague Expressway, Suite 404
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CHAIN OF CUSTODY RECORD

Date 09-17-92 Page 1 of 2

8380-10

CLIENT	PROJECT NAME
TETRA TECH	(CAL TRANS MAINTENANCE) HAYWARD MAINTENANCE STATION
ADDRESS 670 NORTH ROSEMEAD BLVD. PASADENA, CA 91107	PROJECT MANAGER Phil Sturges
	PHONE NUMBER (818) 449-6400

TESTS REQUIRED

SAMPLE I.D.	LOCATION DESCRIPTION	DATE	TIME	MATRIX AIR	MATRIX WATER	MATRIX SOIL	NO. OF CTNR	418.1/TRPH	8010 (601)	8015 E/TPH-diesel	8015 M/TPH-gasoline	8020 (602) BTEX	7420/Total Lead	Organic Lead			Archive
EXC 17-31'		09-17-92	8:45a			X	1			X	X	X					
EXC 18-16'		09-17-92	8:45a			X	1			X	X	X					
EXC 17-12'		09-12-92	9:00a			X	1			X	X	X					
EXC 20-26'		09-17-92	11:25a			X	1			X	X	X					
EXC 21-31'		09-17-92	11:30a			X	1			X	X	X					
EXC 22-31'		09-17-92	11:40a			X	1			X	X	X					
EXC 23-28'		09-17-92	11:50a			X	1			X	X	X					
EXC 24-26'		09-17-92	1:45p			X	1			X	X	X					
EXC 25-26'		09-12-92	2:15p			X	1			X	X	X					
EXC 26-28'		09-17-92	2:40p			X	1			X	X	X					

Sampled/Relinquished by:	Received by:	Date 09-17-92	Time 3:40p
Relinquished by:	Received by:	Date	Time
Relinquished by:	Received by:	Date	Time

Turnaround time: Mobile Lab.
24 hr. 48 hr. Normal (3-5 days)

Special Instructions:

GEOCHEM Environmental Laboratories
780 Montague Expressway, Suite 404
San Jose, CA 95131
(408) 955-9988 • FAX (408) 955-9538

CHAIN OF CUSTODY RECORD

Date 05-17-92 Page 2 of 2

CLIENT	PROJECT NAME
Tetra Tech	(CALTRANS MAINTENANCE) Hayward ~~Maintenance~~ Station
ADDRESS 670 North Rosemead Blvd	**PROJECT MANAGER**
Pasadena, CA 91107	Phil Sturge
	PHONE NUMBER (818) 449-6400

TESTS REQUIRED

SAMPLE I.D.	LOCATION DESCRIPTION	DATE	TIME	MATRIX: AIR	MATRIX: WATER	MATRIX: SOIL	NO. OF CTNR	418.1/TRPH	8010 (601)	8015 E/TPH-diesel	8015 M/TPH-gasoline	8020 (602) BTEX	7420/Total Lead	Organic Lead			Archive
Exc 27-28'		05-17-92	2:40p			X	1			X	X	X					

Sampled/Relinquished by:	Received by:	Date	Time
Relinquished by:	Received by:	05-17-92	3:44
Relinquished by:	Received by:	Date	Time
		Date	Time

Turnaround time: Mobile Lab
24 hr. 48 hr. Normal (3-5 days)

Special Instructions:

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780 Montague Expressway, Suite 404
San Jose, CA 95131
(408) 955-9988 • FAX (408) 955-9538

CHAIN OF CUSTODY RECORD

Date 09-17-92 Page 1 of 1

TESTS REQUIRED

CLIENT: TETRA TECH
ADDRESS: 670 N. ROSEMEAD Blvd.
PASADENA, CA. 91107

PROJECT NAME: CALTRANS 8380-10
HAYWARD MAINTENANCE STATION
PROJECT MANAGER: Phil SKORGE
PHONE NUMBER: (818) 449-6400

SAMPLE I.D.	LOCATION DESCRIPTION	DATE	TIME	MATRIX AIR	MATRIX WATER	MATRIX SOIL	NO. OF CTNR	418.1/TRPH	8010 (601)	8015 E/TPH-diesel	8015 M/TPH-gasoline	8020 (602) BTEX	7420/Total Lead	Organic Lead			Archive
EXC28-8'		09-17-92	3:45p			V	1			X	X	1					

Sampled/Relinquished by: [signature] — Received by: [signature] — Date 09-17-92 — Time 4:00

Relinquished by: [signature] — Received by: [signature] — Date — Time

Relinquished by: — Received by: — Date — Time

Turnaround time:
24 hr.) 48 hr. Normal (3-5 days)

Special Instructions:

Geochem ENVIRONMENTAL LABORATORIES

Mobile & In-House Laboratories Certified by State of California
Phone: (408) 955-9988 / FAX: (408) 955-9538

ANALYTICAL REPORT

****

Client: Tetra Tech, Inc.
670 North Rosemead Blvd.
Pasadena, CA 91107
Attn: Phillip Skorge

Date Sampled: 09/15/92
Date Received: 09/15/92
Date Analyzed: 09/15/92
Batch:SA-103 Matrix: Soil
Conc. Unit ug/kg (ppb)

Project: Hayward Maintenance Station

****

"**ND**" means "not detected" at indicated detection limit.
B:benzene, **T**:toluene, **E**:ethylbenzene & **X**:total xylenes.
Samples received at job-site with a chain of custody record.

SAMPLE I.D.	8015M TPH-Diesel	8015M TPH-Gasoline	8020 B / T / E / X
DETECTION LIMIT	50 ppb	50 ppb	0.5 ppb
EXC1-17'	262530	45850	ND / ND / ND /4926.6
EXC2-12'	ND	550	ND / ND / ND / 459.9
EXC3-5'	ND	ND	ND / ND / ND / ND
EXC4-14'	ND	ND	ND / ND / ND / ND
EXC5-5'	ND	ND	ND / ND / ND / ND
EXC6-12'	ND	ND	ND / ND / ND / ND
EXC7-5'	ND	ND	ND / ND / ND / ND
EXC8-6'	ND	ND	ND / ND / ND / ND
EXC9-7'	177340	131910	ND / ND / ND /4534.9
EXC10-15'	ND	ND	ND / ND / ND / ND
EXC11-18'	490690	105430	ND / ND / ND /13489.1
EXC12-21'	4305190	234610	ND / ND / ND /209220.0
EXC13-22'	ND	ND	ND / ND / ND / 575.1
EXC14-21'	ND	ND	ND / ND / ND / ND
EXC15-21'	ND	ND	ND / ND / ND / ND
EXC16-19'	ND	ND	ND / ND / ND / ND

Reviewed and approved by George Tsai Oct. 30, 1992
George Tsai, Laboratory Director

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ANALYTICAL REPORT

Client: Tetra Tech, Inc.
670 North Rosemead Blvd.
Pasadena, CA 91107
Attn: Phillip Skorge

Date Sampled: 09/17/92
Date Received: 09/17/92
Date Analyzed: 09/17/92
Batch:SA-104 Matrix: Soil
Conc. Unit ug/kg (ppb)

Project: Hayward Maintenance Station

"**ND**" means "not detected" at indicated detection limit.
B:benzene, **T**:toluene, **E**:ethylbenzene & **X**:total xylenes.
Samples received at job-site with a chain of custody record.

	8015M	8015M	8020			
SAMPLE I.D.	TPH-Diesel	TPH-Gasoline	B	T	E	X
DETECTION LIMIT	50 ppb	50 ppb	0.5 ppb			
EXC17-17'	ND	ND	ND	ND	ND	ND
EXC18-10'	ND	3740	ND	ND	ND	225.7
EXC19-12'	ND	250	ND	ND	ND	ND
EXC20-26'	ND	ND	ND	ND	ND	ND
EXC21-31'	ND	ND	ND	ND	ND	ND
EXC22-31'	ND	ND	ND	ND	ND	ND
EXC23-28'	ND	ND	ND	ND	ND	ND
EXC24-26'	ND	ND	ND	ND	ND	ND
EXC25-26'	ND	ND	ND	ND	ND	ND
EXC26-29'	ND	ND	ND	ND	ND	ND
EXC27-28'	ND	ND	ND	ND	ND	ND

Reviewed and approved by George Tsai, Laboratory Director Oct. 30, 1992

Geochem ENVIRONMENTAL LABORATORIES

Mobile & In-House Laboratories Certified by State of California
Phone: (408) 955-9988 / FAX: (408) 955-9538

ANALYTICAL REPORT

****

Client: Tetra Tech, Inc.
670 North Rosemead Blvd.
Pasadena, CA 91107
Attn: Phillip Skorge

Date Sampled: 09/17/92
Date Received: 09/17/92
Date Analyzed: 09/18/92
Batch:SD-001 Matrix: Soil
Conc. Unit ug/kg (ppb)

Project: Hayward Maintenance Station

****

"**ND**" means "not detected" at indicated detection limit.
B:benzene, **T**:toluene, **E**:ethylbenzene & **X**:total xylenes.
Samples received at job-site with a chain of custody record.

SAMPLE I.D.	8015M TPH-Diesel	8015M TPH-Gasoline	8020 B / T / E / X
DETECTION LIMIT	50 ppb	50 ppb	0.5 ppb
EXC28-8'	54200	1840	ND / ND / ND / ND

Reviewed and approved by George Tsai, Laboratory Director, Sept. 18, 1992

TETRA TECH, INC.
670 N ROSEMEAD BLVD.
PASADENA, CALIFORNIA 91107
TELEPHONE (818)449-6400
TELEFAX (818)351-8126

CHAIN OF CUSTODY RECORD

DATE 9-14-92 PAGE 1 OF 1

CLIENT OFFICE OF THE STATE ARCHITECT

PROJECT NAME: CAL TRANS HAYWARD MAINTENANCE YARD - 21195 CENTER ST, CASTRO VALLEY CA

PROJECT MANAGER DAN BATRACK

TC #. 8380-10

SAMPLERS (SIGNATURES) [signature]

SAMPLE NO	DATE	TIME	8240	CAM 17 METALS										NUMBER OF CONTAINERS	OBSERVATIONS/COMMENTS
COMP - 1	9-14-92	1245	X	X					920916B-6					2	MUST HAVE RESULTS BY MONDAY MORNING 8:00 AM - [redacted]

920916B
2/2

[redacted]

Ken or Phil
916 384-2886

RELINQUISHED BY	SIGNATURE		DATE	TIME		
PHIL SKORGE	[signature]	TETRA TECH, INC.	9-14-92	1700	2	TOTAL NUMBER OF CONTAINERS
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT	
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS	
RECEIVED BY R. ROSENFELD	SIGNATURE [signature]	COMPANY TBD	DATE 9/16/92	TIME 9:45A		

tbd environmental laboratories
2261 Federal Avenue
Los Angeles, California 90064-1403
Telephone: (310) 478-4050 Fax (310) 478-3604

Laboratory Report: CAM Metals

Job No.:	920916B	Client:	Tetra Tech, Inc.
Sampled:	9/14/92	Project:	CalTrans, Hayward
Received:	9/16/92	Field ID:	Comp-1
Prepared:	9/17/92	Lab ID:	920916B-6
Analyzed:	9/18/92	Matrix:	Soil
By:	GD/GS	Batch:	9837

		Concentration		Reporting	
Parameter	Method	Sample	Blank	Limit	Units
Antimony	7040	BRL	ND	1.0	mg/Kg
Arsenic	7060	BRL	ND	1.0	mg/Kg
Barium	7080	62	ND	5.0	mg/Kg
Beryllium	7090	BRL	ND	2.0	mg/Kg
Cadmium	7130	BRL	ND	3.0	mg/Kg
Chromium	7190	7.0	ND	2.0	mg/Kg
Cobalt	7200	17	ND	2.0	mg/Kg
Copper	7210	15	ND	2.0	mg/Kg
Lead	7420	BRL	ND	3.0	mg/Kg
Mercury	7471	BRL	ND	0.3	mg/Kg
Molybdenum	7480	BRL	ND	5.0	mg/Kg
Nickel	7520	40	ND	2.0	mg/Kg
Selenium	7740	BRL	ND	1.0	mg/Kg
Silver	7760	BRL	ND	2.0	mg/Kg
Thallium	7840	BRL	ND	10	mg/Kg
Vanadium	7910	BRL	ND	2.0	mg/Kg
Zinc	7950	39	ND	5.0	mg/Kg

Notes: BRL - Below Reporting Limit, ND - Not Detected

Comments:

Approved: Robert D. Person 9/21/92

Laboratory Director Date

Quality Assurance Coordinator Date

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2261 Federal Avenue
Los Angeles, California 90064-1403

Telephone. (310) 478-4050 Fax (310) 478-3604

Analytical Laboratory Report
Method 8260 - Volatile Organics by GC/MS

Job No.	920916B	Client:	Tetra Tech, Inc.
Sampled:	9/14/92	Project:	CalTrans, Hayward Maint. Yard
Type:		Field ID:	Comp-1
Recvd.:	9/16/92	Matrix:	Soil
Prep:	9/16/92	Batch:	V0167
Method:	5030		
Analyzd:	9/16/92	Dilution:	1:50
By:	KLK		
Lab ID:	920916B-6		

	Concn. Found		Percent Recovery				
Compound	Sample 0916B-6 V2481	Blank V2464	Spike 1 0916A-4 V2477	Spike 2 0916A-4 V2478	LCS V2483	Reporting Limit	Units
Dichlorofluoromethane	BRL	ND	116	111	106	250	ug/Kg
Chloromethane	BRL	ND	112	126	109	250	ug/Kg
Vinyl Chloride	BRL	ND	104	118	116	250	ug/Kg
Bromomethane	BRL	ND	89	90	100	250	ug/Kg
Chloroethane	BRL	ND	116	122	114	250	ug/Kg
Trichlorofluoromethane	BRL	0.41	118	106	101	250	ug/Kg
1,1-Dichloroethene	BRL	ND	92	95	106	250	ug/Kg
Methylene Chloride	BRL	2.44	117	60	107	250	ug/Kg
trans-1,2-Dichloroethene	BRL	ND	115	74	105	250	ug/Kg
1,1-Dichloroethane	BRL	ND	107	91	90	250	ug/Kg
cis-1,2-Dichloroethene	BRL	ND	114	70	109	250	ug/Kg
2,2-Dichloropropane	BRL	ND	110	97	113	250	ug/Kg
Chloroform	BRL	0.64	122	80	120	250	ug/Kg
Bromochloromethane	BRL	ND	105	42	97	250	ug/Kg
1,2-Dichloroethane	BRL	ND	104	66	118	250	ug/Kg
1,1,1-Trichloroethane	BRL	ND	108	97	104	250	ug/Kg
1,1-Dichloropropene	BRL	ND	113	110	109	250	ug/Kg
Carbon tetrachloride	BRL	ND	124	114	119	250	ug/Kg
Benzene	BRL	ND	111	100	110	250	ug/Kg
1,2-Dichloropropane	BRL	ND	128	97	97	250	ug/Kg
Trichloroethene	BRL	ND	102	85	95	250	ug/Kg
Dibromomethane	BRL	ND	120	50	117	250	ug/Kg
Bromodichloromethane	BRL	ND	124	82	122	250	ug/Kg
cis-1,3-Dichloropropene	BRL	ND	125	92	124	250	ug/Kg
trans-1,3-Dichloropropene	BRL	ND	105	80	111	250	ug/Kg
Toluene	BRL	1.16	122	119	125	250	ug/Kg
1,1,2-Trichloroethane	BRL	ND	100	62	118	250	ug/Kg
1,3-Dichloropropane	BRL	ND	107	62	104	250	ug/Kg

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Los Angeles, California 90064-1403

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Analytical Laboratory Report
Method 8260 - Volatile Organics by GC/MS

Job No.	920916B	Client:	Tetra Tech, Inc.
Sampled:	9/14/92	Project:	CalTrans, Hayward Maint. Yard
Type:		Field ID:	Comp-1
Recvd.:	9/16/92	Matrix:	Soil
Prep:	9/16/92	Batch:	V0167
Method:	5030		
Analyzd:	9/16/92	Dilution:	1:50
By:	KLK		
Lab ID:	920916B-6		

	Concn. Found		Percent Recovery				
Compound	Sample 0916B-6 V2481	Blank V2464	Spike 1 0916A-4 V2477	Spike 2 0916A-4 V2478	LCS V2483	Reporting Limit	Units
Dibromochloromethane	BRL	ND	91	108	94	250	ug/Kg
Tetrachloroethene	BRL	ND	89	110	82	250	ug/Kg
1,2-Dibromoethane	BRL	ND	94	50	95	250	ug/Kg
Chlorobenzene	BRL	ND	100	95	98	250	ug/Kg
1,1,1,2-Tetrachloroethane	BRL	ND	91	79	94	250	ug/Kg
Ethylbenzene	BRL	ND	102	110	99	250	ug/Kg
Xylene (para + meta)	BRL	ND	101	103	96	250	ug/Kg
Bromoform	BRL	ND	101	44	93	250	ug/Kg
Styrene	BRL	ND	106	87	100	250	ug/Kg
Xylene (ortho)	BRL	ND	103	98	98	250	ug/Kg
1,1,2,2-Tetrachloroethane	BRL	ND	108	61	108	250	ug/Kg
1,2,3-Trichloropropane	BRL	ND	107	58	112	250	ug/Kg
Isopropylbenzene	BRL	ND	95	115	100	250	ug/Kg
Bromobenzene	BRL	ND	93	91	96	250	ug/Kg
2-Chlorotoluene	BRL	ND	102	123	106	250	ug/Kg
n-Propylbenzene	BRL	ND	98	114	101	250	ug/Kg
4-Chlorotoluene	BRL	ND	99	110	102	250	ug/Kg
1,3,5-Trimethylbenzene	1100	ND	98	113	100	250	ug/Kg
tert-Butylbenzene	BRL	ND	95	103	87	250	ug/Kg
1,2,4-Trimethylbenzene	1200	ND	99	111	100	250	ug/Kg
sec-Butylbenzene	BRL	ND	100	112	102	250	ug/Kg
1,3-Dichlorobenzene	BRL	ND	96	94	98	250	ug/Kg
1,4-Dichlorobenzene	BRL	ND	98	91	96	250	ug/Kg
p-Isopropyltoluene	BRL	ND	99	118	98	250	ug/Kg
1,2-Dichlorobenzene	BRL	ND	102	88	99	250	ug/Kg
n-Butylbenzene	BRL	ND	106	93	106	250	ug/Kg
1,2-Dibromo-3-chloropropane	BRL	ND	116	12	107	250	ug/Kg
1,2,4-Trichlorobenzene	BRL	ND	106	36	104	250	ug/Kg

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2261 Federal Avenue
Los Angeles, California 90064-1403
Telephone: (310) 478-4050 Fax: (310) 478-6604

Analytical Laboratory Report
Method 8260 - Volatile Organics by GC/MS

Job No.	920916B	Client:	Tetra Tech, Inc.
Sampled:	9/14/92	Project:	CalTrans, Hayward Maint. Yard
Type:		Field ID:	Comp-1
Recvd.:	9/16/92	Matrix:	Soil
Prep:	9/16/92	Batch:	V0167
Method:	5030		
Analyzd:	9/16/92	Dilution:	1:50
By:	KLK		
Lab ID:	920916B-6		

	Concn. Found		Percent Recovery				
Compound	Sample 0916B-6 V2481	Blank V2464	Spike 1 0916A-4 V2477	Spike 2 0916A-4 V2478	LCS V2483	Reporting Limit	Units
Naphthalene	5200	ND	106	26	108	250	ug/Kg
1,2,3-Trichlorobenzene	BRL	ND	103	19	103	250	ug/Kg
Hexachlorobutadiene	BRL	ND	92	46	108	250	ug/Kg
TICs							
Surrogate Recovery %							
1,2 Dichloroethane-d4	72	100	118	53			
Toluene d8	33	130	115	116			
Bromofluorobenzene	93	126	102	117			

Notes: LCS - Laboratory Control Standard, ND - Not Detected, BRL - Below Reporting Limit
Tentatively identified compounds - TICs, are determined semi-quantitatively.

Comments: Spike 2 recoveries erratic due to plugged sparger. Batch validated by Spike 1 and LCS.
Observe 8 C4-benzenes (2300-4800 ug/Kg), 2 C5-benzenes (2300-2400 ug/Kg) and 2 dihydromethylindene derivatives (2500-4100 ug/Kg).

Approved:

Laboratory Director 9/18/92 Date

QA Coordinator 9/18/92 Date

TETRA TECH, INC.
670 N. ROSEMEAD BLVD.
PASADENA, CALIFORNIA 91107
TELEPHONE (818)449-6400
TELEFAX (818)351-8126

CHAIN OF CUSTODY RECORD

DATE 9-14-92 PAGE 1 OF 1

CLIENT: OFFICE OF THE STATE ARCHITECT
PROJECT NAME: CALTRANS HAYWARD
MAINTENANCE YARD - 21195 CENTER ST, CASTRO VALLEY
PROJECT MANAGER DAN BATRACK
TC # 8380-10
SAMPLERS (SIGNATURES)

SAMPLE NO.	DATE	TIME	96-HOUR FISH BIOASSAY FOR HAZARDOUS WASTE	NUMBER OF CONTAINERS	OBSERVATIONS/COMMENTS
COMP - 1	9-14-92	1300	X	1	MUST HAVE RESULTS BY MONDAY MORNING 8:00 AM [redacted] Call 818 384-2886 FAX Results to R&G 408 292-4192 ATTN TOM Neary

RELINQUISHED BY	SIGNATURE		DATE	TIME		
PHIL SKORGE		TETRA TECH, INC.	9-14-92	1700	1	TOTAL NUMBER OF CONTAINERS
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME	METHOD OF SHIPMENT	
					FED EXPRESS	
RELINQUISHED BY	SIGNATURE	COMPANY	DATE	TIME	SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS	
		ABC LABS	9/16/92	1320		
RECEIVED BY	SIGNATURE	COMPANY	DATE	TIME		

AQUATIC BIOASSAY & CONSULTING
LABORATORIES, INC.

TOXICITY TESTING • OCEANOGRAPHIC RESEARCH

September 21, 1992

Mr. Tom Neary
Tetra Tech, Inc.
670 N. Rosemead Blvd.
Pasadena, CA 91107

Dear Mr. Neary:

In accordance with the Chain of Custody dated September 16, 1992, we are pleased to present the enclosed bioassay report, Lab No. TET0922.331 for the sample labeled COMP-1 and received in this laboratory on September 16, 1992 at 1320. The test was conducted in freshwater, utilizing fathead minnows, (Pimephales promelas). The results were as follows:

Sample I.D.	COMP-1
Date Received	September 16, 1992
96 hr LC50	>750 mg/l
95% Conf. Int. =	N/A

Respectfully submitted,

Thomas (Tim) Mikel
Laboratory Director

29 NORTH OLIVE STREET, VENTURA, CA 93001 • (805) 643-5621

ABC Laboratories
29 North Olive Street
Ventura, Ca. 93001
(805) 643-5621

CLIENT NAME: Tetra Tech

DATE: 09/16/92
1320

SAMPLE ID: COMP-1

LAB.NO: TET0922.331

TEST TYPE: Screening FLOW: Static TANK VOLUME: 10 Liters

DILUTION WATER: Reconstituted Fresh HARDNESS: 46 mg/l ALKALINITY: 29 mg/l
END: 48 END: 31

AERATION: Single bubble aeration in all tanks ACCL.TEMP: 20.0 deg.C

ORGANISM: Fathead Minnow SPECIES: Pimephales promelas SOURCE: Thomas Fish Co.

CARRIER: Greyhound Bus Co. DATE REC'D: 9/01/92 AVG.LNGTH: 35 mm AVG.WT.: .55g

NUMBER ORGANISMS PER TANK: 10

	Initial	24 Hour	48 Hour	72 Hour	96 Hour
Date:	09/16/92	09/17/92	09/18/92	09/19/92	09/20/92
Time:	1830	1500	1700	1630	1630

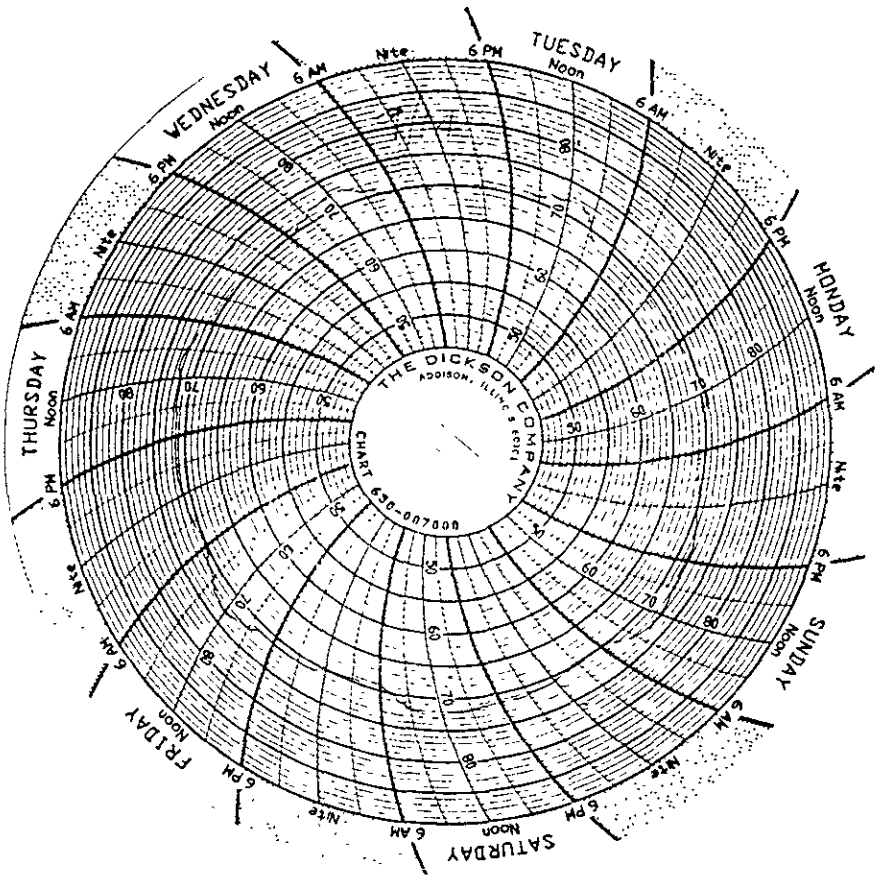
Conc. mg/l	Initial DO	Initial Dg.C	Initial pH	24 Hour DO	24 Hour Dg.C	24 Hour pH	24 Hour #M	48 Hour DO	48 Hour Dg.C	48 Hour pH	48 Hour #M	72 Hour DO	72 Hour Dg.C	72 Hour pH	72 Hour #M	96 Hour DO	96 Hour Dg.C	96 Hour pH	96 Hour #M	Tot. #M
0 (Con.)	8.1	21.8	7.5	8.1	21.8	7.5	0	7.7	21.9	7.5	0	7.8	22.0	7.9	0	7.5	21.9	7.6	0	0
750(A)	8.2	21.8	7.8	8.0	21.8	7.5	0	7.9	21.0	7.6	0	8.2	22.0	7.7	0	7.8	21.9	7.7	0	0
750(B)	8.4	21.8	7.8	7.9	21.8	7.6	0	7.9	21.0	7.6	0	8.2	22.0	7.7	0	7.7	21.8	7.7	0	0
400(A)	8.5	21.8	7.8	7.8	21.8	7.6	0	7.7	21.0	7.6	0	8.1	22.0	7.7	0	7.9	21.7	7.7	0	0
400(B)	8.4	21.8	7.8	7.8	21.9	7.6	0	7.8	21.0	7.6	0	8.1	22.0	7.7	0	7.8	21.8	7.7	0	0

96 HOUR LC50 >750 mg/L 95% CONFIDENCE INTERVAL = N/A

CALCULATION METHOD: Binomial Test ANALYST: DATE: 09/21/92

Martha Meyer, Chief Biologist

REMARKS: Beginning Sample Hardness: 51 mg/L (CACO3) Alkalinity: 30 mg/L
Ending Sample Hardness: 55 mg/L (CACO3) Alkalinity: 32 mg/L


TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SATURDAY
SUNDAY
MONDAY
Noon
6 PM
6 AM
Nite
THE DICKSON COMPANY
ADDISON, ILLINOIS (U.S.A.)
CHART 630-007008

REED & GRAHAM, INC.

CONTRACTORS LIC. C12 - 158410

86-269654

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

ROAD OILS AND ASPHALTS HOT AND COLD PLANT MIXES

690 SUNOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

WEIGHMASTER CERTIFICATE

This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

CUSTOMER:
TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

JOB DESCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD
TOTAL:
DAILY:

JOB TONS
TOTAL:
DAILY:

TIME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
08:33AM 09/22/92	08:33AM 09/22/92	2119	RG-027181 2119	RG-165 JF-3	ON	269654	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
ROCESSING FEE HYDRO SOIL	TON	18.95	0.00	

GROSS	34.7
TARE	15.8
NET	18.9

REED & GRAHAM, INC.
WEIGHMASTER

THE ABOVE RECEIVED BY:
DRIVERS
NAME IN FULL X _____

X KATHLEEN BLUME
DEPUTY

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12 - 158410

ROAD OILS AND ASPHALTS — HOT AND COLD PLANT MIXES

690 SUNOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269656

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

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CUSTOMER:
TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

JOB DESCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD	JOB TONS
TOTAL:	TOTAL:
DAILY:	DAILY:

TIME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
08:39AM 09/22/92	08:39AM 09/22/92	0	RG-027181 2119	RG-3845 T-20	ON	269656	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
PROCESSING FEE HYDRO SOIL	TON	18.67	0.00	

GROSS	34.2
TARE	15.5
NET	18.6

REED & GRAHAM, INC.
WEIGHMASTER

THE ABOVE RECEIVED BY:
DRIVERS
NAME IN FULL X _____

X KATHLEEN BLUME
DEPUTY

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REED & GRAHAM, INC.

CONTRACTORS LIC. C12 - 158410

ILS AND ASPHALTS HOT AND COLD PLANT MIXES

L STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

LEPHONE (408) 287-1400 FAX (408) 294-3696

86-269591

WEIGHED AT
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

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R: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

RIPTION: 21195 CASTRO VALLEY BLVD
CAL TRANS MAINTENANCE

JOB LOAD
TOTAL:
DAILY:

JOB TONS
TOTAL:
DAILY:

E IN	TIME-OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
M 92	01:02PM 09/21/92		RG-027181 2119	RG-2504 41	ON	269591	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
NG FEE HYDRO SOIL	TON	19.58	0.00	

GROSS	34.92
TARE	15.34
NET	19.58

REED & GRAHAM, INC.
WEIGHMASTER

X [illegible] RC GUIDO
DEPUTY

OVE RECEIVED BY:
DRIVERS
AME IN FULL X

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12 - 158410

) OILS AND ASPHALTS HOT AND COLD PLANT MIXES

NOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

ELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269620

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

VIER: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

SCRIPTION: 21195 CASTRO VALLEY BLVD
CAL TRANS MAINTENANCE

JOB LOAD	JOB TONS
TOTAL: DAILY:	TOTAL: DAILY:

IME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
3PM 1/92	03:21PM 09/21/92		RG-027181 2119	RG-2504 41	ON	269620	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
SSING FEE HYDRO SOIL	TON	19.86	0.00	

GROSS	35.20
TARE	15.34
NET	19.86

REED & GRAHAM, INC.
WEIGHMASTER

ABOVE RECEIVED BY:
DRIVERS
NAME IN FULL X _____

X MARC GUIDO
DEPUTY

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12-158410

D OILS AND ASPHALTS HOT AND COLD PLANT MIXES

NOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269632

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

MER: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

SCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD
TOTAL:
DAILY:

JOB TONS
TOTAL:
DAILY:

IME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
)AM 2.92	07:10AM 09/22/92	.	RG-027181 2119	RG-2504 41	ON	269632	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
SSING FEE HYDRO SOIL	TON	23.16	0.00	

GROSS	38.73
TARE	15.57
NET	23.16

REED & GRAHAM, INC.
WEIGHMASTER

X _____
DEPUTY

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DRIVERS
ME IN FULL X _____

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REED & GRAHAM, INC.

CONTRACTORS LIC. C12-158410

AD OILS AND ASPHALTS HOT AND COLD PLANT MIXES

JNOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269633

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

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OMER:
TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

ESCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD
TOTAL:
DAILY:

JOB TONS
TOTAL:
DAILY:

TIME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
2AM 2 92	07:11AM 09/22/92		RG-027181 2119	RG-1082 82	ON	269633	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
SSING FEE HYDRO SOIL	TON	20.75	0.00	

GROSS	36.00
TARE	15.25
NET	20.75

REED & GRAHAM, INC.
WEIGHMASTER

X KATHLEEN BLUME
DEPUTY

BOVE RECEIVED BY:
DRIVERS
VE IN FULL X

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12-158410

) OILS AND ASPHALTS HOT AND COLD PLANT MIXES

NOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269668

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

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MER: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

RIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD	JOB TONS
TOTAL:	TOTAL:
DAILY:	DAILY:

IME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
0AM 92	09:22AM 09/22/92	.	RG-027181 2119	RG-2504 41	ON	269668	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
SSING FEE HYDRO SOIL	TON	20.04	0.00	

GROSS	35.61
TARE	15.57
NET	20.04

REED & GRAHAM, INC.
WEIGHMASTER

OVE RECEIVED BY:
DRIVERS
NAME IN FULL X

X KATHLEEN BLUME
DEPUTY

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REED & GRAHAM, INC.

CONTRACTORS LIC. C12-158410

) OILS AND ASPHALTS HOT AND COLD PLANT MIXES

NOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

LEPHONE (408) 287-1400 FAX (408) 294-3696

86-269679

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

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VIER: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

SCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD	JOB TONS
TOTAL:	TOTAL:
DAILY:	DAILY:

IME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO.
2AM 2.92	09:42AM 09/22/92	.	RG-027181 2119	RG-1082 82	ON	269679	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
SSING FEE HYDRO SOIL	TON	24.75	0.00	

GROSS	40.00
TARE	15.25
NET	24.75

REED & GRAHAM, INC.
WEIGHMASTER

ABOVE RECEIVED BY:
DRIVERS
AME IN FULL X

X KATHLEEN BLOME
DEPUTY

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12 - 158410

ROAD OILS AND ASPHALTS HOT AND COLD PLANT MIXES

690 SUNOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269699

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

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CUSTOMER:
TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

JOB DESCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD	JOB TONS
TOTAL:	TOTAL:
DAILY:	DAILY:

TIME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
08:33AM 09/22/92	10:40AM 09/22/92	2119	RG-027181 2119	RG-165 JF-3	ON	269699	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
PROCESSING FEE HYDRO SOIL	TON	23.05	0.00	

GROSS	38.8
TARE	15.8
NET	23.0

REED & GRAHAM, INC.
WEIGHMASTER

THE ABOVE RECEIVED BY:
DRIVERS NAME IN FULL X _____

X KATHLEEN BLUME
DEPUTY

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12-158410

ROAD OILS AND ASPHALTS — HOT AND COLD PLANT MIXES

690 SUNOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269705

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

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CUSTOMER: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

JOB DESCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD — TOTAL: DAILY:

JOB TONS — TOTAL: DAILY:

TIME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
08:39AM 09/22/92	11:00AM 09/22/92	0	RG-027181 2119	RG-3845 T-20	ON	269705	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
ROCESSING FEE HYDRO SOIL	TON	24.29	0.00	

GROSS	3,982
TARE	15,53
NET	24,2

REED & GRAHAM, INC.
WEIGHMASTER

THE ABOVE RECEIVED BY:
DRIVERS NAME IN FULL X _____

X KATHLEEN BLUME
DEPUTY

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12 - 158410

86-269713

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

ROAD OILS AND ASPHALTS HOT AND COLD PLANT MIXES

690 SUNOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

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CUSTOMER: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

JOB DESCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD
TOTAL:
DAILY:

JOB TONS
TOTAL:
DAILY:

TIME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
07:10AM 09/22/92	11:27AM 09/22/92	.	RG-027181 2119	RG-2504 41	ON	269713	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
PROCESSING FEE HYDRO SOIL	TON	22.82	0.00	

GROSS	38.3
TARE	15.5
NET	22.8

REED & GRAHAM, INC.
WEIGHMASTER

THE ABOVE RECEIVED BY:
DRIVERS
NAME IN FULL X _____

X KATHLEEN BLUME
DEPUTY

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12-158410

) OILS AND ASPHALTS HOT AND COLD PLANT MIXES

NOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269731

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

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MER: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

SCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD	JOB TONS
TOTAL:	TOTAL:
DAILY:	DAILY:

IME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
2AM 92	12:26PM 09/22/92	.	RG-027181 2119	RG-1082 82	ON	269731	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
SSING FEE HYDRO SOIL	TON	19.66	0.00	

GROSS	34.91
TARE	15.25
NET	19.66

REED & GRAHAM, INC.
WEIGHMASTER

ABOVE RECEIVED BY:
DRIVERS
NAME IN FULL

X

X KATHLEEN BLUME
DEPUTY

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12-158410

ROAD OILS AND ASPHALTS HOT AND COLD PLANT MIXES

690 SUNOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269747

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

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CUSTOMER:
TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

JOB DESCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD
TOTAL:
DAILY:

JOB TONS
TOTAL:
DAILY:

TIME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
08:33AM 09/22/92	01:23PM 09/22/92	2119	RG-027181 2119	RG-165 JF-3	ON	269747	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
PROCESSING FEE HYDRO SOIL	TON	9.08	0.00	

GROSS	34.9
TARE	15.8
NET	19.0

REED & GRAHAM, INC.
WEIGHMASTER

THE ABOVE RECEIVED BY:
DRIVERS NAME IN FULL X _____

X KATHLEEN BLUME
DEPUTY

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12-158410

ROAD OILS AND ASPHALTS — HOT AND COLD PLANT MIXES

690 SUNOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269751

WEIGHED AT.
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

CUSTOMER: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

JOB DESCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD
TOTAL:
DAILY:

JOB TONS
TOTAL:
DAILY:

TIME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
08:39AM 09/22/92	01:35PM 09/22/92	0	RG-027181 2119	RG-3845 T-20	ON	269751	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
PROCESSING FEE HYDRO SOIL	TON	21.04	0.00	

GROSS	36.57
TARE	15.53
NET	21.04

REED & GRAHAM, INC.
WEIGHMASTER

THE ABOVE RECEIVED BY:
DRIVERS
NAME IN FULL X KEN

X KATHLEEN BLUME
DEPUTY

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12-158410

OILS AND ASPHALTS HOT AND COLD PLANT MIXE

OL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

ELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269754

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

MER: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

SCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD	JOB TONS
TOTAL:	TOTAL:
DAILY:	DAILY:

ME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
AM 2/92	01:42PM 09/22/92	.	RG-027181 2119	RG-2504 41	ON	269754	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
SSING FEE HYDRO SOIL	TON	21.22	0.00	

GROSS	36.79
TARE	15.57
NET	21.22

REED & GRAHAM, INC.
WEIGHMASTER

X KATHLEEN BLUME
DEPUTY

BOVE RECEIVED BY:
DRIVERS
NAME IN FULL X

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12 - 158410

86-269773

WEIGHED AT
690 SUNOL STREET
SAN JOSE CA 95126

ROAD OILS AND ASPHALTS HOT AND COLD PLANT MIXES

690 SUNOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

WEIGHMASTER CERTIFICATE

This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

CUSTOMER: TETRA TECH, INC.
MIKE HOWELL
670 N. ROSEMEAD BLVD
PASADENA, CA 91107

JOB DESCRIPTION: 21195 CASTRO VALLEY BLVD CAL TRANS MAINTENANCE

JOB LOAD	JOB TONS
TOTAL:	TOTAL:
DAILY:	DAILY:

TIME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
07:12AM 09/22/92	03:11PM 09/22/92	.	RG-027181 2119	RG-1082 82	ON	269770	020316

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
ROCESSING FEE HYDRO SOIL	TON	26.55	0.00	

GROSS	41.8
TARE	15.2
NET	26.5

REED & GRAHAM, INC.
WEIGHMASTER

X KATHLEEN BLUME
DEPUTY

THE ABOVE RECEIVED BY:
DRIVERS
NAME IN FULL X

CUSTOMER COPY

REED & GRAHAM, INC.

CONTRACTORS LIC. C12-158410

ROAD OILS AND ASPHALTS HOT AND COLD PLANT MIXES

690 SUNOL STREET — P.O. BOX 5940 — SAN JOSE, CALIFORNIA 95150

TELEPHONE (408) 287-1400 FAX (408) 294-3696

86-269786

WEIGHED AT:
690 SUNOL STREET
SAN JOSE CA 95126

WEIGHMASTER CERTIFICATE

This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

CUSTOMER: OAKLAND SCAVENGER COMPANY-
WASTE MANAGEMENT OF NO. AMER.
2000 EMBARCADERO, STE. 300
OAKLAND, CA 94606

JOB DESCRIPTION: S. FRONT ST. LIVERMORE DUBLIN DISPOSAL CO.

JOB LOAD
TOTAL:
DAILY:

JOB TONS
TOTAL:
DAILY:

TIME IN	TIME OUT	PURCHASE ORDER	JOB NO.	TRUCK	DRIVER	TAG NO.	R & G NO
07:27AM 09/23/92	07:28AM 09/23/92		RG-027191 2116	RG-2504 41	ON	269786	015005

MATERIAL DESCRIPTION	U.O.M.	QUANTITY	PRICE	TOTAL
ROCESSING FEE HYDRO SOIL	TON	9.98	0.00	

GROSS	25.4
TARE	15.4
NET	9.9

REED & GRAHAM, INC.
WEIGHMASTER

THE ABOVE RECEIVED BY:
DRIVERS
NAME IN FULL X _____

X KATHLEEN BLUME
DEPUTY

CUSTOMER COPY

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT CAL TRANS - HAYWARD MAINTENANCE YARD
21195 CENTER STREET, CASTRO VALLEY CA

CLIENT
Name OFFICE OF THE STATE ARCHITECT
Address 400 P STREET Phone
City SACRAMENTO Zip

APPLICANT
Name PHIL SKORGE
TETRA TECH, INC.
Address 670 N. ROSEMEAD BLVD Phone (818) 449-6400
City PASADENA Zip 91107

TYPE OF PROJECT

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

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other MONITORING
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C57 554979

WELL PROJECTS

Drill Hole Diameter	10	in.	Maximum		
Casing Diameter	4	in.	Depth	35	ft.
Surface Seal Depth	10	ft.	Number	3	

GEOTECHNICAL PROJECTS

Number of Borings	2		Maximum		
Hole Diameter	8	in.	Depth	20	ft.

ESTIMATED STARTING DATE 9-28-92
ESTIMATED COMPLETION DATE 9-29-92

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

APPLICANT'S SIGNATURE [signature] Date 9-28-92

FOR OFFICE USE

PERMIT NUMBER 92474
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

(C.) GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

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

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 25 Sep 92
Wyman Hong

31992

TETRA TECH BORING LOG

BORING I.D. NO. VW-1

CLIENT OSA T.C. 8380-10 LOCATION Hayward Maint. Yard DATE 9/28/92

DRILL METHOD Hollow Stem Auger AUGER DIAMETER 10 inches FIELD GEOLOGIST Phil Skorge

DEPTH (feet)	BLOW COUNT	OVA (ppm)	SAMPLE	GRAPHIC COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
					ML	ASPHALT.	
5						SILT WITH GRAVEL - VERY DARK GREY (2.5YN3), NON-PLASTIC FINES, 10% FINE GRAVEL, STIFF, MOIST.	
10							
15					GW	SANDY GRAVEL WITH CLAY - LIGHT YELLOWISH BROWN (10YR6/4), 10% LOW-PLASTICITY FINES, 40% SAND, DENSE, MOIST.	
20	10 12 18						
25	20 50 for 6"					@25': VERY DENSE.	
30	10 20 50 for 5"						
						SILTSTONE - DARK BROWN (7.5YR3/3), MOIST BEDROCK.	
35	15 12 26						
						TOTAL DEPTH = 36', CONVERTED BORING INTO VADOSE MONITORING WELL, NO GROUNDWATER OR ODORS ENCOUNTERED.	
40							

REVIEWING GEOLOGIST Don Indermill SIGNATURE Don Indermill REG. NO. 5102

TETRA TECH BORING LOG

BORING I.D. NO. VW-2

CLIENT OSA T.C. 8380-10 LOCATION Hayward Maint. Yard DATE 9/28/92

DRILL METHOD Hollow Stem Auger AUGER DIAMETER 10 inches FIELD GEOLOGIST Phil Skorge

DEPTH (feet)	BLOW COUNT	OVA (ppm)	SAMPLE	GRAPHIC COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
					ML	ASPHALT.	
5						SILT WITH GRAVEL - VERY DARK GREY (2.5YN3), NON-PLASTIC FINES, 10% FINE GRAVEL, STIFF, MOIST.	
10							
15					GW	SANDY GRAVEL WITH CLAY - LIGHT YELLOWISH BROWN (10YR6/4), 10% LOW-PLASTICITY FINES, 20% SAND, DENSE, MOIST.	
20	10 17 33						
25	7 25 35						
30	13 50 for 6"					@30': VERY DENSE.	
						SILTSTONE - DARK BROWN (7.5YR3/3), MOIST BEDROCK.	
35	50 for 6"					TOTAL DEPTH = 35', CONVERTED BORING INTO VADOSE MONITORING WELL, NO GROUNDWATER OR ODORS ENCOUNTERED.	
40							

REVIEWING GEOLOGIST Don Indermill SIGNATURE Don Indermill REG. NO. 5102

TETRA TECH BORING LOG

BORING I.D. NO. VW-3

CLIENT OSA T.C. 8380-10 LOCATION Hayward Maint. Yard DATE 9/28/92

DRILL METHOD Hollow Stem Auger AUGER DIAMETER 10 inches FIELD GEOLOGIST Phil Skorge

DEPTH (feet)	BLOW COUNT	OVA (ppm)	SAMPLE	GRAPHIC COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
0					ML	ASPHALT.	
5						SILT WITH GRAVEL - VERY DARK GREY (2.5YN3), NON-PLASTIC FINES, 10% FINE GRAVEL, STIFF, MOIST.	
10							
15					GW	SANDY GRAVEL WITH SILT - LIGHT YELLOWISH BROWN (10YR6/4), 10% NON-PLASTICITY FINES, 30% SAND, VERY DENSE, MOIST.	
20	25 30				SW	GRAVELLY SAND - VERY DARK GREYISH BROWN (10YR3/2), TRACE FINES, POORLY SORTED, FINE TO COARSE SAND, 30% FINE GRAVEL, VERY DENSE, MOIST TO DAMP.	
25	30 50					SILTSTONE - YELLOWISH BROWN (7 5YRN3), MOIST BEDROCK.	
30	20 50						
35	50 for 6"					TOTAL DEPTH = 35', CONVERTED BORING INTO VADOSE MONITORING WELL, NO GROUNDWATER OR ODORS ENCOUNTERED.	
40							

REVIEWING GEOLOGIST Don Indermill SIGNATURE Don Indermill REG. NO. 5102

MONITORING WELL CONSTRUCTION SPECIFICATIONS

CLIENT Office of the State Architect BORING WELL # ~~MW-1, MW-2, MW-3~~ VW-1, VW-2, VW-3

PROJECT # 8380-10

PROJECT NAME CAL TRANS - HAYWARD MAINTENANCE YARD

COUNTY ALAMEDA

WELL PERMIT #

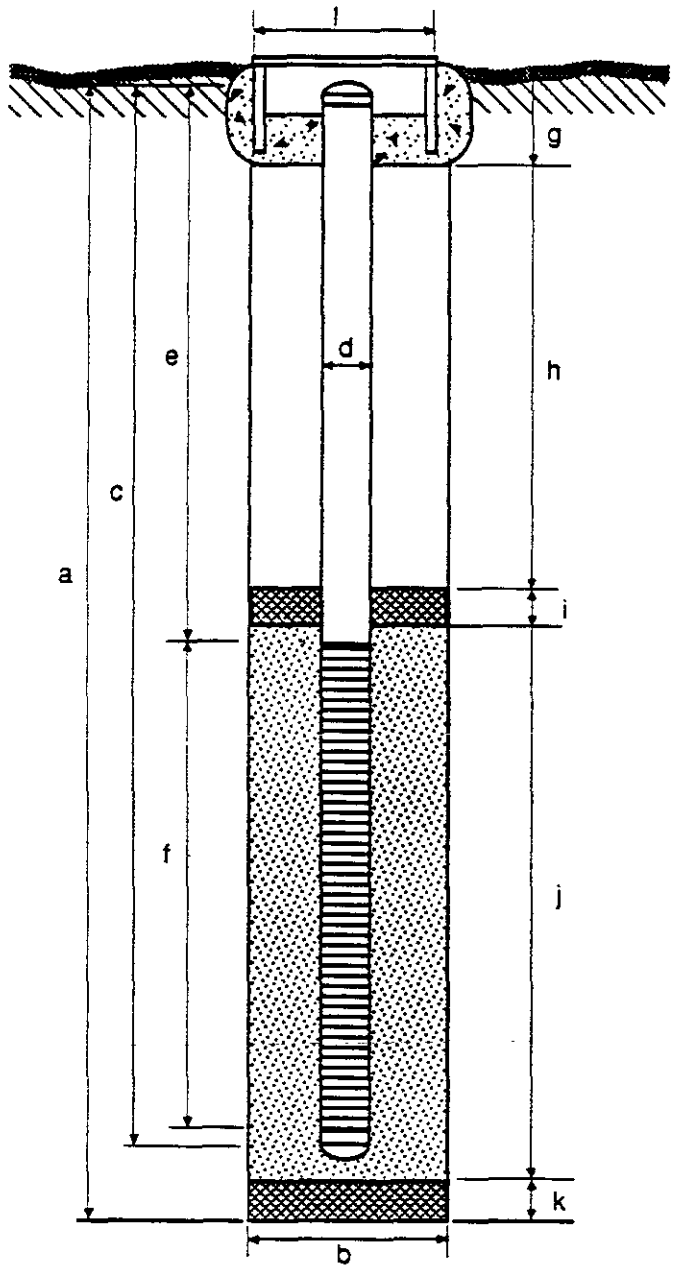
DRILLING CONTRACTOR WEST HAZMAT

DATE 9-28-92

GEOLOGIST

SIGNATURE

REGISTRATION 5102



EXPLORATORY BORING

a. TOTAL DEPTH 35 ft

b. DIAMETER 10 in.

DRILLING METHOD ROTARY AUGER

WELL CONSTRUCTION

c. TOTAL CASING LENGTH 35 ft.

MATERIAL PVC

d. INSIDE DIAMETER 4 in.

e. DEPTH TO TOP PERFORATIONS 15 ft.

f. PERFORATED LENGTH 20 ft.

PERFORATED INTERVAL FROM 15 TO 35 ft.

PERFORATED TYPE SLOTS

PERFORATION SIZE 0.02

g. SURFACE SEAL ~~CONCRETE~~ 2 ft.

SEAL MATERIAL CONCRETE

h. BACKFILL 8 ft.

BACKFILL MATERIAL CEMENT GROUT

i. SEAL 3 ft.

SEAL MATERIAL BENTONITE CHIPS

j. GRAVEL PACK 22 ft.

PACK MATERIAL #3 SAND

k. BOTTOM SEAL ft.

SEAL MATERIAL @ WOOD PLUG

l. WELL COVER DIAMETER 12 in.