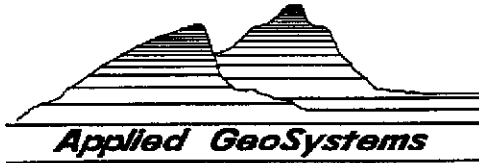


- Joel Coffman



5/15/91

91 MAY 16 AM 8:59

TRANSMITTAL

3315 Almaden Expressway, Suite 34  
San Jose, California 95118  
(408) 264-7723 FAX (408) 264-2435

TO: MR. BARNEY CHAN  
ALAMEDA COUNTY HEALTH CARE SERVICES  
HAZARDOUS MATERIALS DIVISION  
80 SWAN WAY, ROOM 200  
OAKLAND CA 94621

DATE: 5/15/91  
PROJECT NUMBER: 69038.06  
SUBJECT: WORK PLAN AND ADDENDUM  
ONE TO WORK PLAN

FROM: JOEL COFFMAN  
TITLE: ASST. PROJECT GEOLOGIST

WE ARE SENDING YOU  Attached  Under separate cover via \_\_\_\_\_ the following items:  
 Shop drawings  Prints  Reports  Specifications  
 Letters  Change Orders  \_\_\_\_\_

| COPIES | DATED   | NO.      | DESCRIPTION                                     |
|--------|---------|----------|---|
| 1      | 5/15/91 | 69038.06 | WORK PLAN FOR ARCO STATION 4494                 |
| 1      | 5/15/91 | 69038.06 | ADDENDUM ONE TO WORK PLAN FOR ARCO STATION 4494 |
|        |         |          |   |
|        |         |          |   |

THESE ARE TRANSMITTED as checked below:

- For review and comment  Approved as submitted  Resubmit \_\_\_ copies for approval
- As requested  Approved as noted  Submit \_\_\_ copies for distribution
- For approval  Return for corrections  Return \_\_\_ corrected prints
- For your files  \_\_\_\_\_

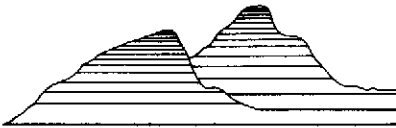
REMARKS:

PER ARCO'S AUTHORIZATION COPIES OF REPORT HAVE BEEN  
FORWARDED FOR YOUR REVIEW.  
COURIER SERVICE (SAME DAY DELIVERY)

Copies: 1 to AGS project file no. 69038.06

SAN JOSE READER'S FILE

\*Revision Date: 10/15/90  
\*File Name: TRANSMT.PRJ



**Applied GeoSystems, Inc.**

3315 Almaden Expressway, Suite 34, San Jose, CA 95118 (408) 264-7723

• FREMONT

• IRVINE

• BOSTON

• SACRAMENTO

• CULVER CITY

• SAN JOSE

**ADDENDUM ONE TO WORK PLAN  
PERFORM UNDERGROUND TANK  
REPLACEMENT INVESTIGATION,  
PRELIMINARY OFFSITE INVESTIGATION,  
AND INTERIM PRODUCT RECOVERY**

at

**ARCO Station 4494  
566 Hegenberger Road  
Oakland, California**

**AGS 69038.06**

**Prepared for  
ARCO Products Company  
P.O. Box 5811  
San Mateo, California 94402**

by

**RESNA/Applied GeoSystems**

**May 15, 1991**



**Applied GeoSystems, Inc.**

3315 Almaden Expressway, Suite 34, San Jose, CA 95118 (408) 264-7723

• FREMONT

• IRVINE

• BOSTON

• SACRAMENTO

• CULVER CITY

• SAN JOSE

May 15, 1991  
AGS 69038.06

Mr. Chuck Carmel  
ARCO Products Company  
P.O. Box 5811  
San Mateo, California 94402

Subject: Addendum One to Work Plan 69038.06 to Perform Underground Tank Replacement Investigation, Preliminary Offsite Investigation, and Interim Product Recovery at ARCO Station 4494, 566 Hegenberger Road, Oakland, California.

Mr. Carmel:

As you requested, this letter has been prepared to serve as an addendum to the Work Plan (RESNA/Applied GeoSystems [AGS] 69038.06, May 15, 1991) for the subject site. The location of the subject site is shown on the Site Vicinity Map, Plate 1. Pertinent site features at the site are shown on the Generalized Site Plan, Plate 2. AGS' approach and project tasks recommended to perform subsurface investigations and remediation at this site include the following: performing soil sampling and observation services during future tank replacement operations, performing laboratory analysis of soil and "grab" ground-water samples collected from the tank excavation, and preparing a report of our findings, interpretations, and conclusions from the tank replacement operations. Concurrent with the tank replacement operations, assuming offsite access is approved, drilling and sampling one additional offsite soil boring and installing one additional offsite ground-water monitoring well (MW-5) in the downgradient direction from the site, developing, sampling, and measuring water levels in monitoring well MW-5 in conjunction with quarterly monitoring of pre-existing wells, surveying monitoring well MW-5 for top-of-casing elevation, performing laboratory analysis of soil and ground-water samples, remediating ground water by installing a total fluids recovery pump in monitoring well MW-2, and preparing reports of our findings, interpretations, and conclusions. The purpose of this work is to delineate the horizontal and vertical extent of gasoline hydrocarbon impacted soils and ground water offsite, and to initiate interim remediation of floating product reported on the ground water in well MW-2 at the site.

A summary of previous work performed at the site by AGS and others is included in the Work Plan referenced above.

### PROPOSED WORK

Applied GeoSystems recommends the following work at the site based on the results of previous investigations:

- Step 1 Perform soil sampling and observation services during the proposed tank replacement operations at the subject site. The tank replacement operations have tentatively been scheduled for summer 1991 by ARCO.
- Step 2 Collect soil and "grab" ground-water samples (if necessary) for laboratory analysis from the tank pit excavation. Submit these samples to a State-certified laboratory for analysis for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by Environmental Protection Agency (EPA) methods 5030/8015/602.
- Step 3 Prepare a report to include results of the tank replacement investigation and our conclusions.
- Step 4 Contact the property owner(s) of the adjoining property to obtain offsite access.
- Step 5 Acquire offsite access to the parcel immediately east-northeast of the site to drill and install monitoring well MW-5. A well construction permit will also be obtained from the Alameda County Flood Control and Water Conservation District (Zone 7) for the proposed well.
- Step 6 Drill and obtain soil samples for soil classification and laboratory analysis from one offsite soil boring (B-18/MW-5) as shown on Plate 2, Generalized Site Plan. Drill boring B-18 up to 5 feet into a possible perching or confining layer beneath the first encountered ground water (a total depth of approximately 25 feet below the ground surface). Install one ground-water monitoring well (MW-5) with 4-inch diameter well casing in boring B-18. This monitoring well will be located to investigate the presence of gasoline hydrocarbons in the inferred downgradient direction (northeast) of the former gasoline tanks. Submit selected soil samples from boring B-18 to a State-certified laboratory for analysis for TPHg and BTEX by EPA methods 5030/8015/8020.

- Step 7 Survey well MW-5 to a National Geodetic Vertical Datum.
- Step 8 Develop the monitoring well.
- Step 9 Measure depths-to-water, record visual evidence of floating product in initial ground-water samples, and purge and collect ground water samples for laboratory analysis from wells MW-1 through MW-5. Submit ground-water samples to a State-certified laboratory for analysis for TPHg and BTEX by EPA methods 5030/8015/602.
- Step 10 Install a floating product recovery system to pump floating product from monitoring wells MW-2 as a means of interim remediation of floating product at the site. This system will be installed upon obtaining proper permits for product-storage, electrical equipment and hookups, and plumbing connections, as required by local regulatory agencies.

The floating product recovery system will include an electrical floating product skimmer pump. The pump removes floating product when it accumulates to thicknesses which are controlled by a product/water interface float-controlled switch. When predetermined floating product thicknesses accumulate on the water column in the well, the float activates the pump which pumps at preset timed intervals until floating product thickness is reduced to a level which will no longer trigger the float-controlled switch. Also included in the system are level switches to prevent tank overflow, flow meter, and PVC-encased hoses. The floating product pump is equipped with an explosion-proof motor.

Recovered fluids will be passed to an onsite holding tank and stored onsite for a period not to exceed 90 days and is periodically pumped and transported from the site by a licensed liquid hazardous waste hauler.

- Step 11 Prepare a report to include results of the investigation and our conclusions.

Field work proposed in this Addendum to Work Plan will be performed according to the Field Methods included in Appendix A of the above referenced Work Plan for Subsurface Investigations and Remediation for the subject site. A preliminary time schedule to perform Steps 1 through 11 is shown on Plate 3. Subsequent addenda to the Work Plan will be prepared and submitted to ARCO and proper regulatory agencies as necessary to describe future work proposed at the site.

Addendum One to Work Plan  
ARCO Station 4494, Oakland, California

May 15, 1991  
AGS 69038.06

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Copies of this Addendum One should be forwarded to:

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

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

If you have any questions or comments about this Addendum to Work Plan, please call us at (408) 264-7723.

Sincerely,  
RESNA \ Applied GeoSystems



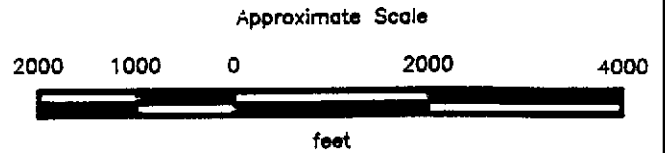
Ken Mateik  
Project Geologist

Enclosures: Plate 1, Site Vicinity Map  
Plate 2, Generalized Site Plan  
Plate 3, Preliminary Time Schedule

cc: H.C. Winsor, ARCO Products Company



Source: U.S. Geological Survey  
 7.5-Minute Quadrangle  
 Oakland East/San Leandro,  
 California  
 Photorevised 1980

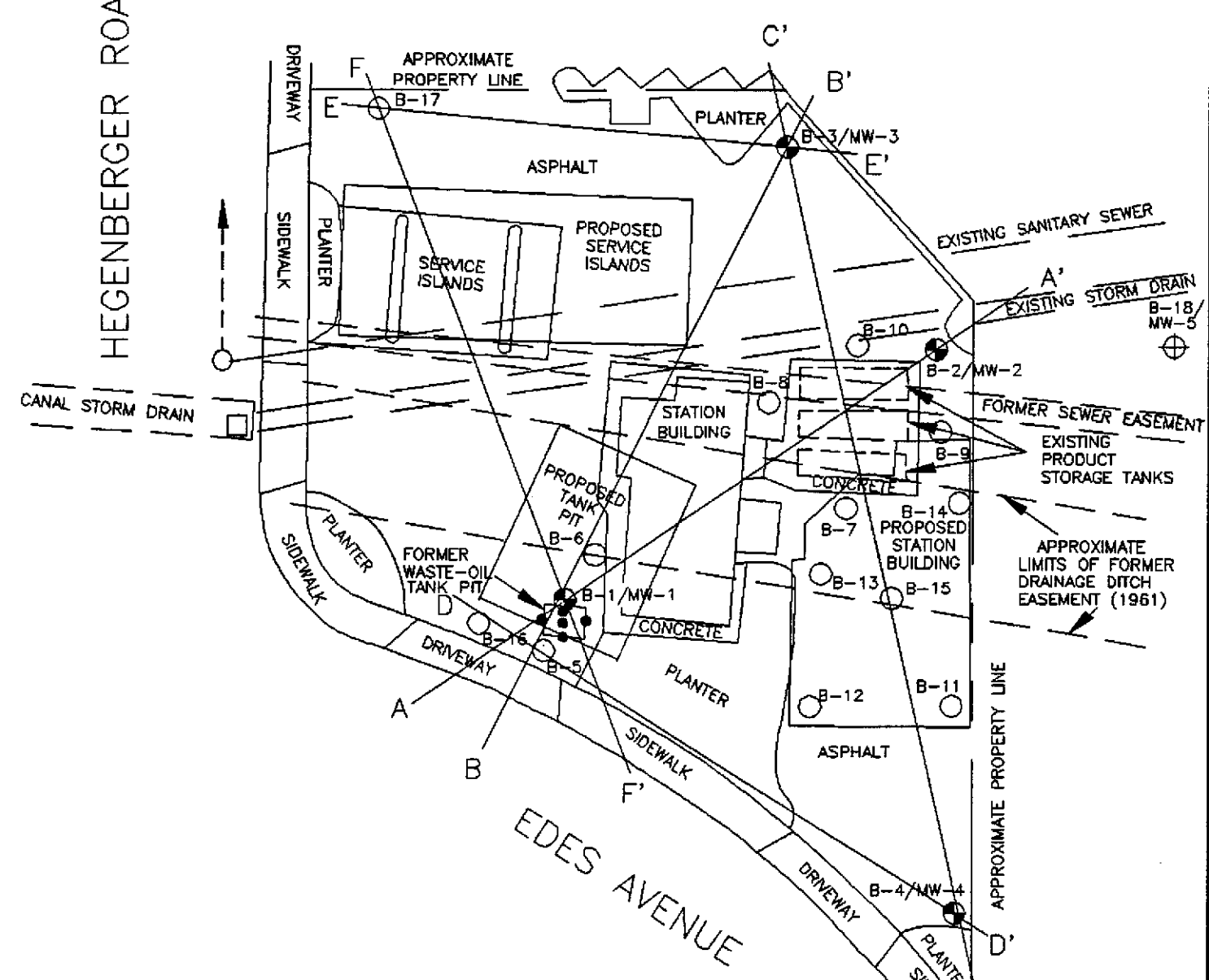


**PROJECT 69038-6**

**SITE VICINITY MAP  
 ARCO Service Station 4494  
 566 Hegenberger Road  
 Oakland, California**

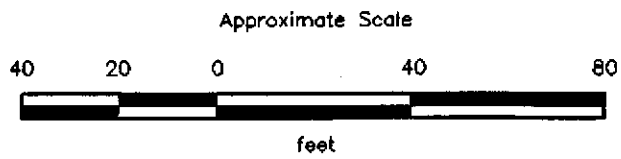
**PLATE  
 1**

HEGENBERGER ROAD



**EXPLANATION**

- B-18/MW-5 ⊕ = Proposed boring/monitoring well
- = Waste-oil tank excavation soil samples (Pacific Environmental Group, January 1989)
- B-4/MW-4 ⊙ = Monitoring wells (Applied GeoSystems, October 1989 and August 1990)
- B-10 ○ = Soil boring (Applied GeoSystems, August 1990 and March 1991)
- F-F' = Geologic Cross Sections



Source: Modified from plans supplied by ARCO Products Co. (dated August 12, 1982) and City of Oakland Dept. of Public Works (dated December 19, 1961).



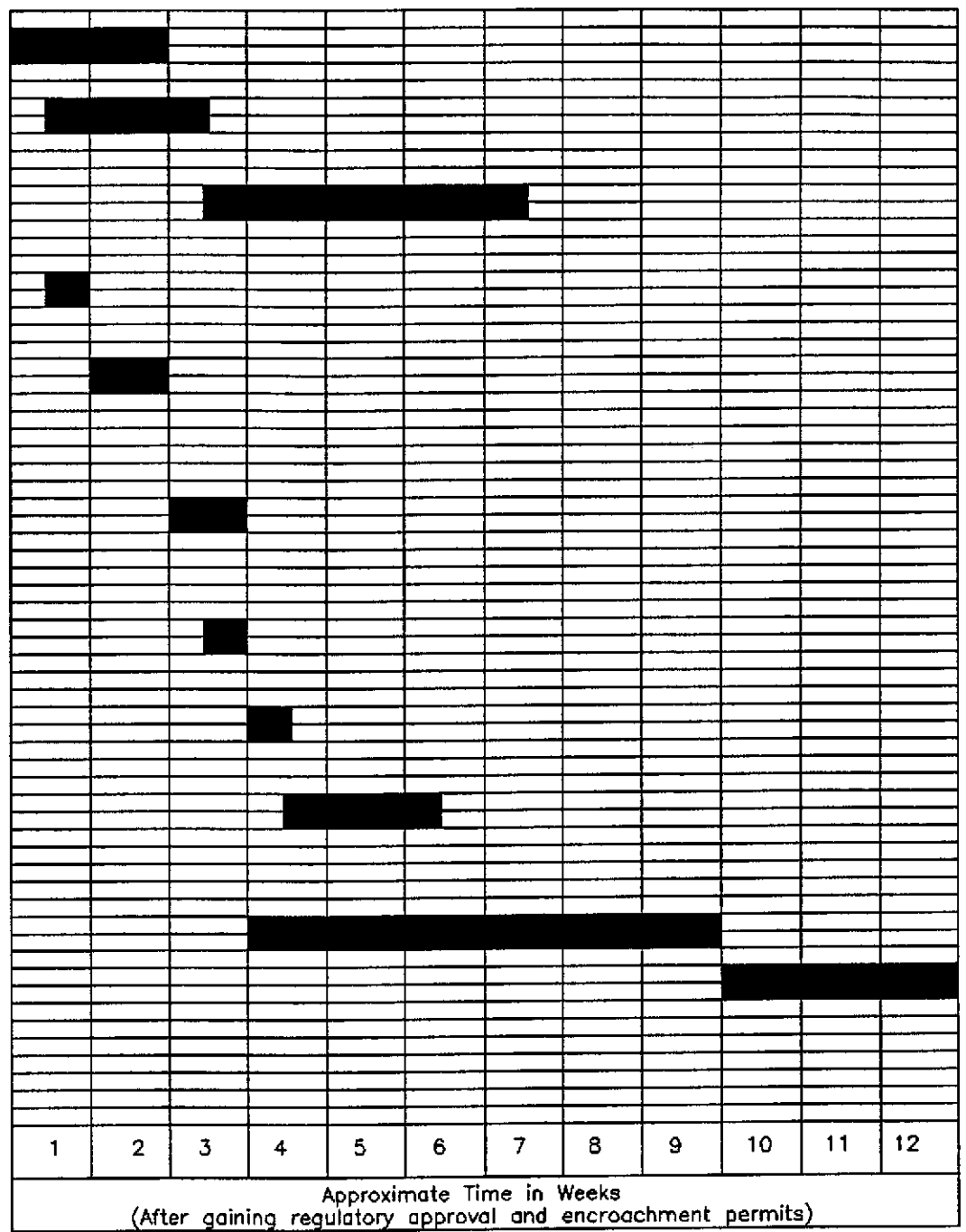
**PROJECT 69038-6**

**GENERALIZED SITE PLAN  
ARCO Service Station 4494  
566 Hegenberger Road  
Oakland, California**

**PLATE  
2**



- 1) Soil sampling during tank replacement.
- 2) Laboratory soil analyses.
- 3) Tank replacement investigation report.
- 4) Contact offsite property owner(s).
- 5) Acquire offsite access for MW-5.
- 6) Drill and install well MW-5; submit soil samples for laboratory analyses.
- 7) Survey MW-5.
- 8) Develop MW-5.
- 9) Collect water samples for laboratory analyses.
- 10) Acquire permits and install pump in MW-2.
- 11) Supplemental Report.



**PROJECT 69038-6**

**PRELIMINARY TIME SCHEDULE  
ARCO Service Station 4494  
566 Hegenberger Road  
Oakland, California**

**PLATE  
3**