Applied GeoSystems, Inc.
A RESNA Company

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
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91 SEP 24 AM 9:20

TRANSMITTAL

TO: MR. PAUL SMITH
ALAMEDA COUNTY HEALTH CARE SERVICES
AGENCY-HAZ. MAT. DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CALIFORNIA 94621

DATE: 9/23/91
PROJECT NUMBER: 60026.07
SUBJECT: ARCO STATION 276 LOCATED AT 10600 MACARTHUR BOULEVARD, OAKLAND, CALIFORNIA

FROM: JOEL COFFMAN
TITLE: PROJECT GEOLOGIST

WE ARE SENDING YOU [XX] Attached [ ] Under separate cover via _____ the following items:

[ ] Shop drawings [ ] Prints [XX] Reports [ ] Specifications

[ ] Letters [ ] Change Orders [ ] _____

COPIES	DATED	NO.	DESCRIPTION
1	9/23/91	60026.07	FINAL-ADDENDUM TWO TO WORK PLAN FOR THE ABOVE SUBJECT SITE.

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

[XX] For your files [ ] _____

REMARKS: THIS ADDENDUM TWO HAS BEEN FEDERAL EXPRESSED TO YOU AT THE REQUEST OF MR. CHUCK CARMEL OF ARCO PRODUCTS COMPANY.

Copies: 1 to AGS project file no. 60026.07

SAN JOSE READER'S FILE

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

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9-23-91

ADDENDUM TWO TO WORK PLAN
at
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

60026.07

Prepared for
ARCO Products Company
P.O. Box 6411
Artesia, California 90702-6411

by

RESNA

September 23, 1991

Applied GeoSystems, Inc.
A RESNA Company

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3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
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September 23, 1991
60026.07

Mr. Chuck Carmel
ARCO Products Company
P.O. Box 6411
Artesia, California 90702-6411

Subject: Addendum Two to Work Plan for Subsurface Investigations and Remediation at ARCO Station 276, 10600 MacArthur Boulevard, Oakland, California.

Mr. Carmel:

As you requested, this letter has been prepared to serve as Addendum Two to the Work Plan (RESNA/Applied GeoSystems [RESNA] 60026.03, June 27, 1991) for the subject site, and is in response to the letters from Alameda County Health Care Services Agency (ACHCSA) dated June 12 and August 7, 1991 requesting a work plan specifying remedial measures to be employed at the site and additional laboratory analysis during quarterly groundwater monitoring.

At the request of Mr. Paul Smith of ACHCSA, Addendum Two to Work Plan has been prepared in an effort to accelerate investigation and initiate interim remediation (as necessary) at the site. The location of the subject site is shown on the Site Vicinity Map, Plate 1.

RESNA's recommended approach and project tasks to perform this phase of subsurface investigation at this site include the following: researching City of Oakland Fire Department and ACHCSA records in attempt to identify possible offsite sources of hydrocarbons and solvents, drilling and sampling one additional onsite soil boring (B-6) in the area of highest hydrocarbon and solvent ~~concentrations~~ in groundwater in the deeper water-bearing zone at the site, installing one 6-inch diameter groundwater recovery well (RW-1) in boring B-6, developing, measuring ~~water levels~~, and sampling the recovery well in conjunction with measuring and sampling monitoring wells MW-1 through MW-5, surveying the recovery well for top-of-casing elevation relative to mean sea level datum by a licensed surveyor, performing laboratory analyses of soil and groundwater samples, performing an aquifer pump test using recovery well RW-1 as a pumping well, initiate the permitting process for

eventual discharge of recovered and treated groundwater, and preparing a report of the findings, conclusions and recommendations.

The purpose of this work is to evaluate further the extent of gasoline hydrocarbons and solvents in the soil and groundwater, and to provide information necessary for interim remediation system design at the site.

PROPOSED WORK

RESNA recommends the following work at the site based on the previous investigation:

Step 1: submit Addendum Two to Work Plan to ACHCSA describing the proposed work for this phase for the subject site;

Step 2: research records of City of Oakland Fire Department and ACHCSA to identify potential offsite sources of gasoline hydrocarbons and solvents;

Step 3: update the site safety plan, obtain permits for installation of recovery well RW-1, and drill and obtain soil samples for soil classification and laboratory analysis from one onsite soil boring (B-6) as shown on Plate 2, Proposed Recovery Well. Drill boring B-6 up to 5 feet into a possible perching or confining layer beneath the first encountered groundwater in the second water bearing zone (total depths of approximately 45 feet below the ground surface) and install one 6-inch diameter groundwater recovery well (RW-1) in boring B-6. The purpose of the boring/recovery well is to further evaluate the presence of gasoline hydrocarbons and solvents in soil and groundwater, for use in evaluation of the gradient of the deeper groundwater-bearing zone beneath the site, and to provide a future extraction point for groundwater recovery;

Step 4: submit selected soil samples, under Chain of Custody Record, from boring B-6 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 5030/8015/8020, respectively. Volatile organic compounds (VOCs) will be analyzed in representative soil samples collected from B-6 using EPA Method 8240;

Step 5: survey the recovery well to a National Geodetic Vertical Datum for elevation relative to mean sea level (msl);

Step 6: develop the recovery well;

Step 7: measure depths-to-water, record visual evidence of floating product in initial groundwater samples, and purge and collect groundwater samples for laboratory analysis from wells RW-1 and MW-1 through MW-5. Submit groundwater samples to a State-certified laboratory for analysis for TPHg and BTEX by EPA methods 5030/8015/602 and for VOCs using EPA method 624. Chain of Custody Records will be maintained for all samples;

Step 8: perform a pump test using recovery well RW-1 as the pumping well. Data obtained from this pumping test permits the determination of the sustainable pumping rate from the pumping well and an estimate of the hydraulic conductivity and storativity of the aquifer. The information is also used to determine the zone of capture of the extraction well and the feasibility of groundwater extraction as an effective means of remediation at the site;

Step 9: initiate National Pollution Discharge Elimination System (NPDES) or other permit application process for eventual discharge of recovered and treated groundwater; and

Step 10: prepare a report to include results of the investigation, our conclusions, and recommendations for possible future work at the site.

Field work proposed in this Addendum Two to Work Plan will be performed according to the Field Methods included in Appendix A (Field Protocol) of the above referenced Work Plan for Subsurface Investigations and Remediation for the subject site. A preliminary time schedule to perform Steps 1 through 10 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.

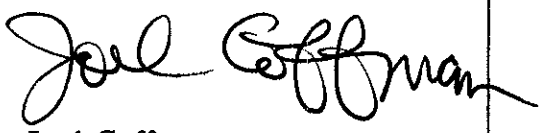
Copies of this Addendum Two should be forwarded to:

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

Mr. Paul Smith
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 Two to Work Plan, please call us at (408) 264-7723.

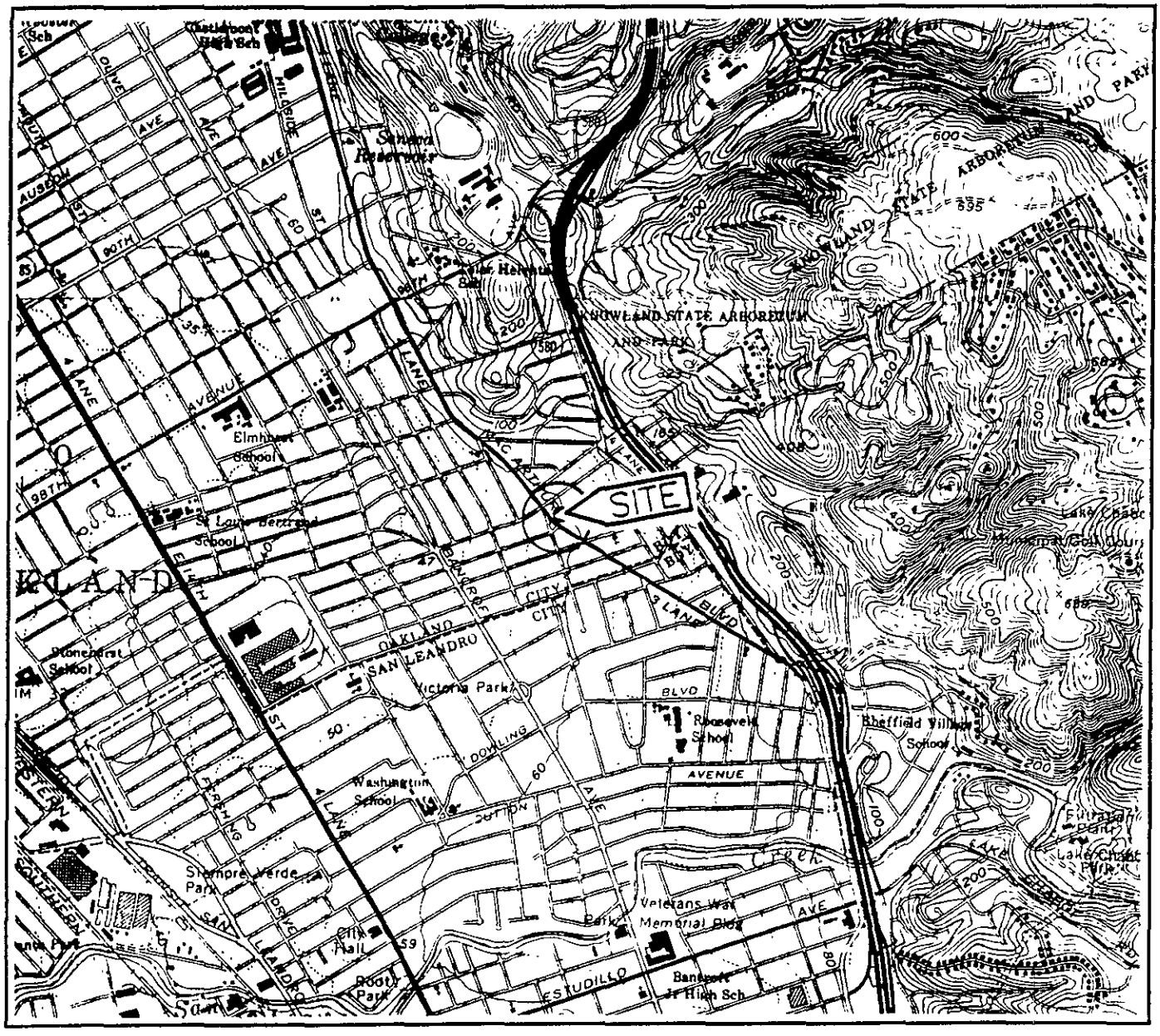
Sincerely,
RESNA



Joel Coffman
Project Geologist

Enclosures: Plate 1, Site Vicinity Map
Plate 2, Proposed Boring/Recovery Well Location
Plate 3, Preliminary Time Schedule

cc: H.C. Winsor, ARCO Products Company



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

LEGEND

◉ = Site Location

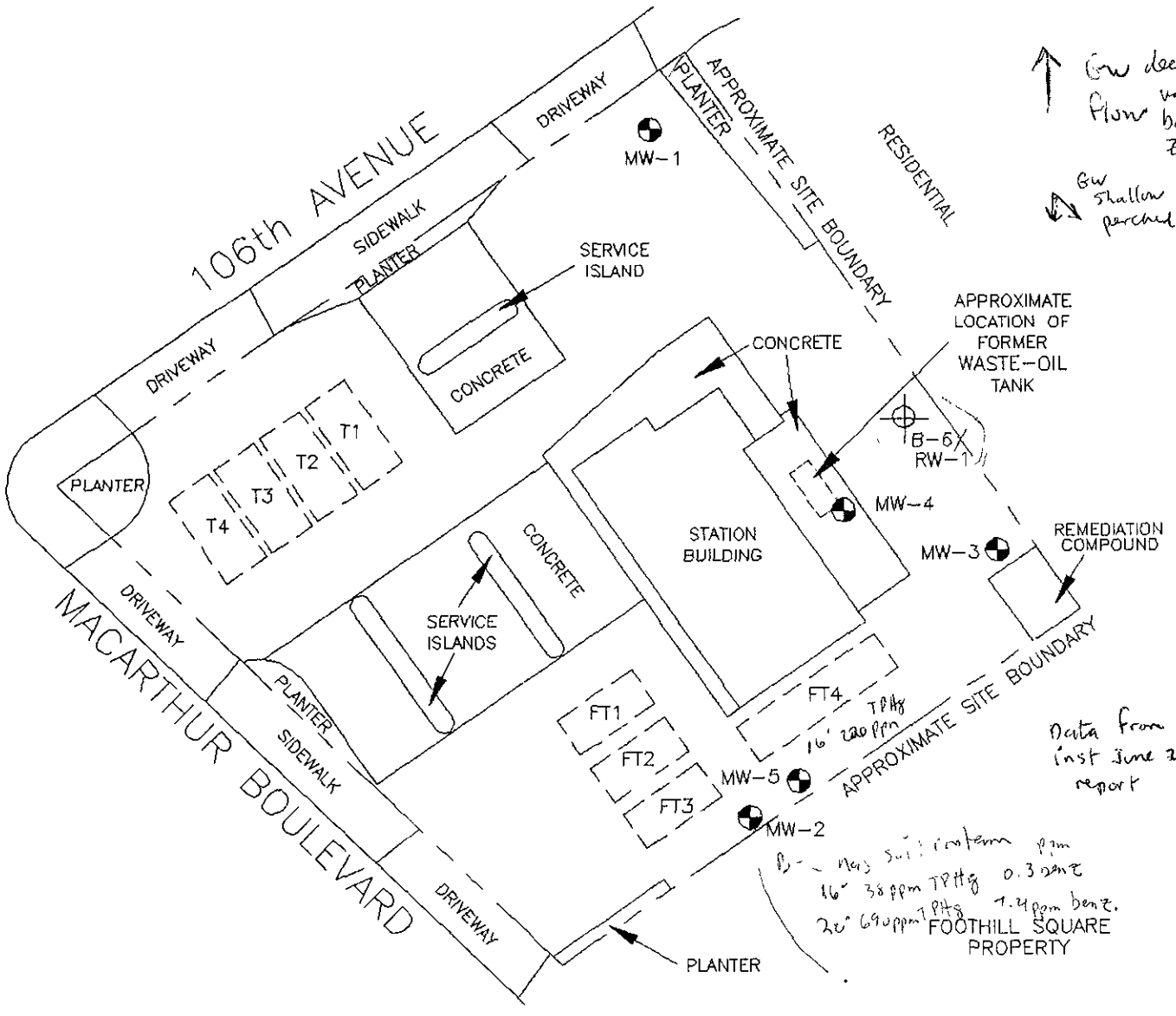
N

Approximate Scale

2000 1000 0 2000 4000

feet

RESNA	**SITE VICINITY MAP** **ARCO Station 276** **10600 MacArthur Boulevard** **Oakland, California**	**PLATE** **1**
PROJECT 60026.07		



EXPLANATION

B-6/RW-1 = Proposed boring/recovery well

MW-5 = Monitoring well (Applied GeoSystems, 1989)

T4 = Existing underground Storage Tanks

FT4 = Former underground Storage Tanks

N

Approximate Scale

30 15 0 30 60

feet

Source: Modified from plan supplied by ARCO and surveyed by Ron Archer, Civil Engineer, Inc.

RESNA

PROJECT 60026.07

PROPOSED BORING/ RECOVERY WELL LOCATION
ARCO Station 276
10600 MacArthur Boulevard
Oakland, California

PLATE 2

STEP 1:
Submit Addendum Two to Work Plan

STEP 2 & 3:
Perform well and records research

STEP 4:
Update Site Safety Plan and drill boring/install well

STEP 5:
Submit soil samples for Laboratory Analysis and receive results

STEP 6:
Survey well

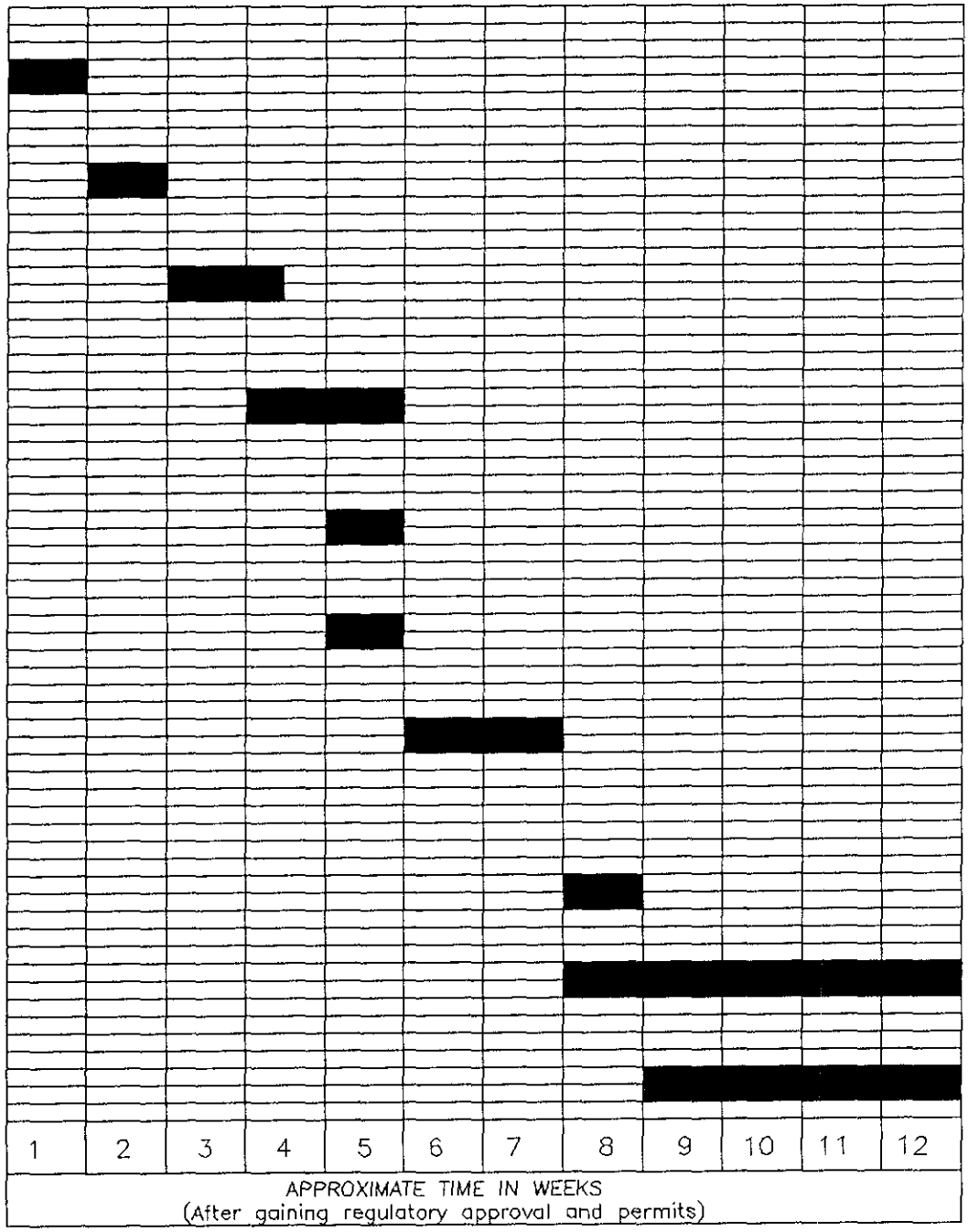
STEP 7:
Develop well

STEP 8:
Measure water levels and sample well, submit water samples for Laboratory Analysis and receive results

STEP 9:
Perform pump test

STEP 10:
Initiate NPDES Permitting process

STEP 11:
Prepare Report



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PROJECT 60026.07

PRELIMINARY TIME SCHEDULE
ARCO Station 2035
1001 San Pablo Avenue
Albany, California

PLATE
3