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Alameda County
Environmental Health

SUSTAINABLE STRATEGIES FOR GLOBAL LEADERS

October 5, 2009
DELTA Project No. SCA8999S1A
SAP# 135244

Mr. Jerry Wickham
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502 - 6577

**Re: Work Plan for Well Installations and Well Destructions
Shell-branded Service Station
8999 San Ramon Road
Dublin, California**

Dear Mr. Wickham,

On behalf of Shell Oil Products US (Shell), Delta Consultants (Delta) has prepared this work plan for the installation of ten groundwater monitoring wells and the destruction of three existing groundwater monitoring wells to further delineate and more accurately monitor groundwater conditions beneath the referenced site.

SITE DESCRIPTION

The subject property is located on the southeast corner of the intersection of Alcosta Boulevard and San Ramon Road in Dublin, California (Figure 1). The property is currently an active Shell-branded service station. The remodeled Shell station includes a station building, a car wash, a large canopy covering two dispenser islands with six total dispenser stations and four 10,000-gallon underground storage tanks (USTs).

WORK PLAN

In May 2008, onsite monitoring wells MW-1 through MW-4, MW-6, and MW-10 were destroyed prior to station remodeling activities. Delta proposes the installation of ten groundwater monitoring wells (MW-1R, MW-2R, MW-2RB, MW-2RC, MW-3R, MW-13, MW-13B, MW-13C, MW-14B, and MW-14C) to replace the wells that were destroyed onsite and to further delineate the extent of petroleum hydrocarbons in groundwater both laterally and vertically in the down-gradient direction (Figure 2). In addition Delta, proposes to destroy three offsite wells (MW-7, MW-9 and MW-11) that have regularly been dry or had insufficient groundwater, and therefore provide little useful data.



PRE-FIELD ACTIVITIES

Prior to field activities, Delta will obtain the necessary drilling permits from the Zone 7 Water Agency, and execute a valid Access Agreement between Shell and the adjacent property owner. Prior to drilling, the proposed borehole locations will be marked onsite, Underground Service Alert (USA) will be notified a minimum of 48 hours before work begins, and a private utility locating company will be contracted to survey the borehole locations for the presence of subsurface utilities. Upon mobilization to the field, an air-knife will be employed to pre-excavate each boring location to a depth of approximately eight feet below ground surface (bgs).

WELL INSTALLATIONS

The well borings will be drilled using 8-inch or 10-inch diameter hollow-stem auger drilling equipment. Soil samples will be collected from well borings MW-1R, MW-2RC, MW-3R, MW-13C, and MW-14C at approximate 5-foot depth intervals for logging and potential laboratory analysis using a split-spoon sampler fitted with brass or steel sample sleeves. The soil samples will be field-screened using a photo-ionization detector (PID), and logged by Delta field staff in accordance with the Unified Soil Classification System. Soil samples will be retained for laboratory analysis if the PID readings are greater than 10 parts per million or obvious indications of petroleum hydrocarbons (i.e. strong odor or staining) are observed.

The borings will be converted to groundwater monitoring wells by the installation of either 2-inch or 4-inch diameter, Schedule 40 polyvinyl chloride (PVC) well casing with ten to fifteen feet of 0.010-inch factory-slotted well screen at the bottom. A filter pack of # 2/12 sand will be placed in the annular space from the bottom of each boring to approximately 1-2 feet above the top of the screen, followed by a sanitary seal consisting of approximately 2-3 feet of hydrated bentonite and neat cement grout that extends to the surface. Upon completion, all wells will be protected with traffic rated well boxes installed flush with the ground surface.

Historically, first-encountered groundwater has been observed at approximately 25 feet bgs, and has stabilized around 20 feet bgs. Recent quarterly monitoring data indicates that the static water level has lowered to approximately 25-30 feet bgs. Many wells constructed with the bottom of the screen interval at a depth of 27-30 feet bgs have recently been dry or had insufficient water for sampling. Based on current groundwater conditions and the construction of existing wells, the A-level wells (MW-1R, MW-2R, MW-3R and MW-13) will be drilled to a total depth of approximately 36 to 40 feet bgs, the B-level wells (MW-2RB, MW-13B and MW-14B) will be drilled to a total depth of approximately 65 feet bgs, and the C-level wells (MW-2RC, MW-13C and MW-14C) will be drilled to a total depth of approximately 100 feet bgs. Well depth and construction may be modified depending on the field conditions encountered.

All down-hole drilling and sampling equipment will be cleaned prior to use and between boring locations. All soils, water and debris generated during the well installation activities will be stored onsite in Department of Transportation rated, 55-gallon drums pending characterization and appropriate disposal.

A minimum of three days following installation, the monitoring wells will be developed by Blaine Tech Services, Inc. (Blaine) using a surge and bail technique. Each well will be developed until a minimum of ten casing volumes are removed, groundwater quality parameters (i.e. turbidity, pH, electric conductivity and temperature) begin to stabilize and a relative change in groundwater clarity is observed. Following development, the wells will be incorporated into the quarterly groundwater monitoring and sampling program for the site.

The wells will also be surveyed by a licensed surveyor for northings, eastings, latitude, longitude and elevation relative to mean sea level using both conventional survey techniques and GPS technology. The survey data will be uploaded to the California State GeoTracker database.

WELL DESTRUCTIONS

Delta proposes to destroy groundwater monitoring wells MW-7, MW-9 and MW-11 by pressure grouting. These wells have been primarily dry since their installation, and do not produce useful groundwater information.

Prior to destroying the wells, the vault boxes will be removed and an air-knife will be used to clear around the outside of the wells to approximately 5 feet bgs. To destroy the wells, a tremie pipe with an attached hose will be placed down each well and neat cement grout will be pumped in to fill the well casing to approximately 0.5-foot bgs. The tremie pipe and hose will then be pulled from the well and a steel housing with a hose connector will be attached directly to the wellhead. Grout will then be pumped into the well under at least 50 pounds per square inch of pressure for approximately 15 minutes. Following the pressure grouting, the upper casing of each well will be removed to a depth of approximately 5 feet bgs.

Upon completion, the top of the boreholes will be capped with concrete dyed to match the surrounding surface material. The drill cuttings and well materials will be placed in DOT-rated, 55-gallon drums pending characterization and appropriate disposal.

ANALYTICAL TESTING

Selected soil samples will be analyzed for total petroleum hydrocarbons as gasoline (TPH-G) and diesel range organics(DRO) by Environmental Protection Agency (EPA) Method 8015M, and for benzene, toluene, ethylbenzene, and xylenes (BTEX compounds), methyl tert-butyl ether (MTBE) and tert-butyl alcohol (TBA) by EPA Method 8260B.

After installation, the wells will be developed, gauged and sampled by Blaine. The groundwater samples collected will be analyzed for DRO by EPA Method 8015M, and for total purgeable petroleum hydrocarbons (TPPH), BTEX compounds, MTBE, TBA, di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), and by EPA Method 8260B.

SCHEDULE

Delta will begin pre-field preparations following approval of this work plan by the Alameda County Health Care Services Agency, and will commence field activities within 60 days of receipt of the approval letter, assuming all permits and pre-field requirements have been met.

REMARKS

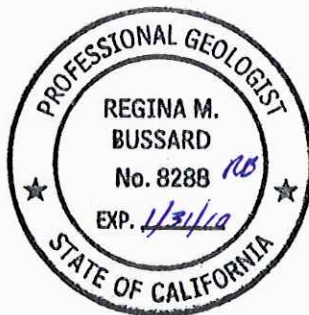
This document represents Delta's professional opinions based upon currently available information and is arrived at in accordance with currently acceptable professional standards. This document is based upon a specific scope of work requested by the client. The Contract between Delta and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this document were performed. This document is intended only for the use of Delta's Client and anyone else specifically listed on this document. Delta will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Delta makes no express or implied warranty as to the contents of this document.

If you have any questions, please call Regina Bussard (Delta at (408) 826 - 1876. or Denis Brown (Shell) at (707) 865-0251.

Sincerely,
Delta Consultants

Cora Olson
Staff Engineer

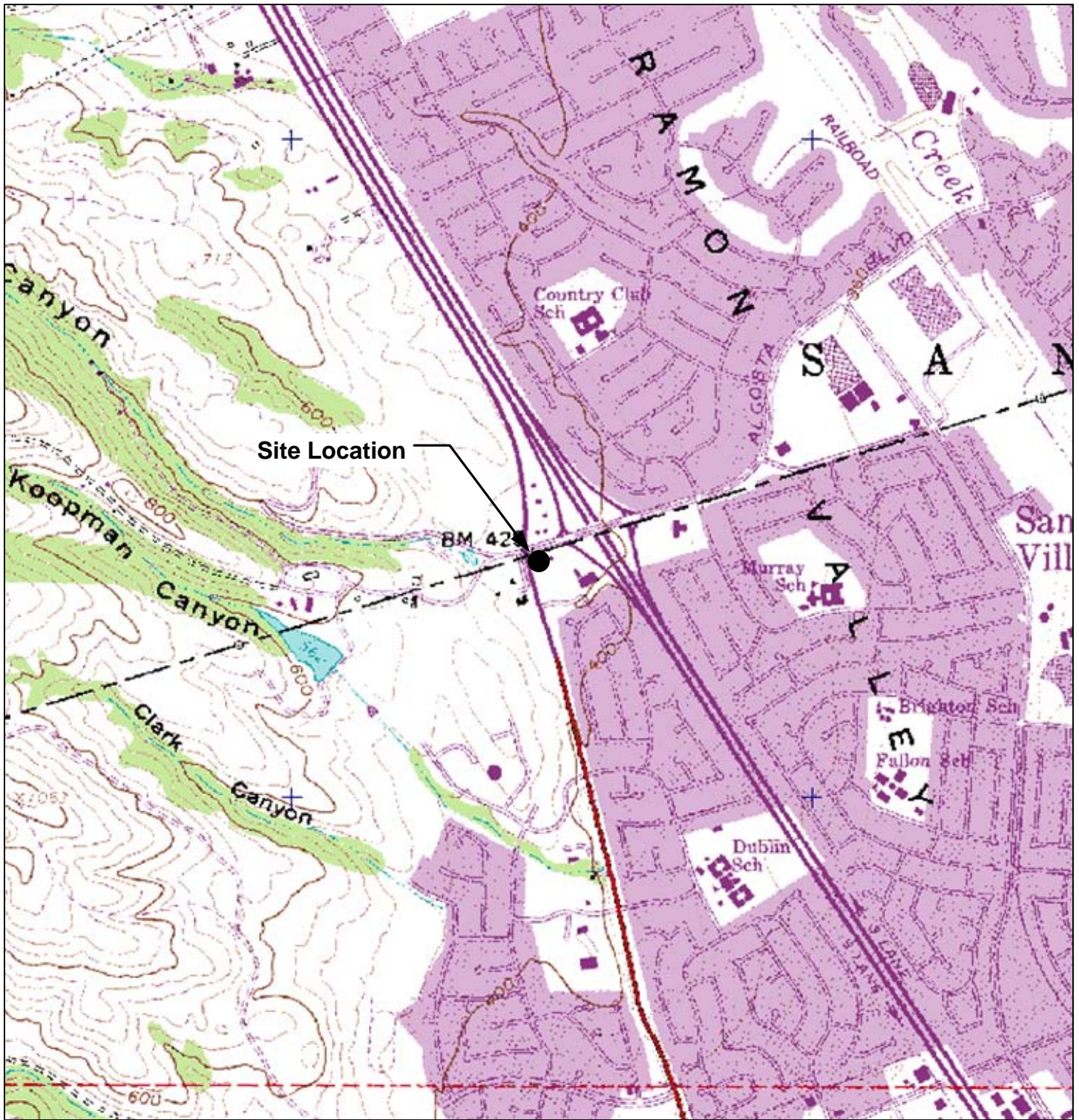
Regina Bussard, PG
Project Manager



Attachments: Figure 1 – Site Location Map
Figure 2 – Site Map

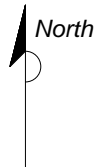
cc: Denis Brown, Shell Oil Products US, Carson
Carl Cox, C and J Cox Corporation, Pleasanton
Colleen Winey, Zone 7 Water Agency, Livermore

FIGURES

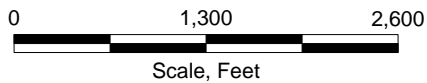


GENERAL NOTES:

Base Map from: 3-D TopoQuads DeLorme
 Yarmouth, ME 04096 Source Data: USGS



QUADRANGLE LOCATION



Scale, Feet

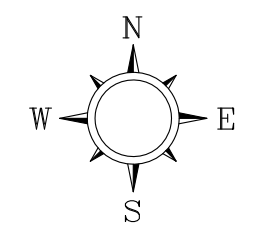
FIGURE 1
SITE LOCATION MAP

SHELL-BRANDED SERVICE STATION
 8999 San Ramon Road
 Dublin, California

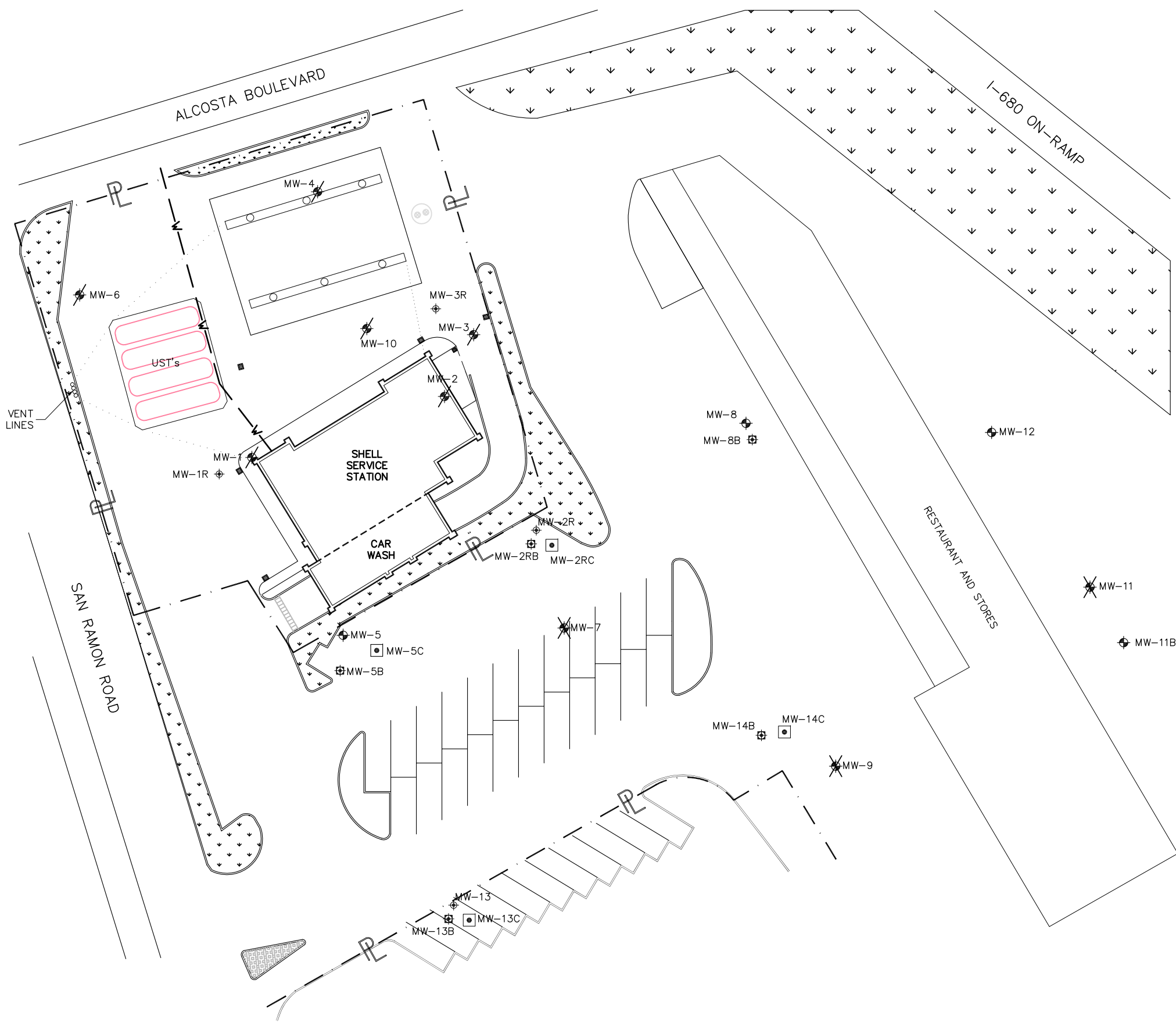
PROJECT NO. SCA8999S1	DRAWN BY V. F. 12/9/04
FILE NO.	PREPARED BY VF
REVISION NO.	REVIEWED BY



PROJECT NUMBER SCA8999S1
 APPROVED BY
 CHECKED BY
 DRAWN BY A.D. SEPT 2009



- LEGEND**
- MW-5 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
 - MW-1 DESTROYED GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
 - MW-8B GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
 - MW-5C GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
 - MW-2R PROPOSED GROUNDWATER MONITORING
 - MW-2RB MONITORING
 - MW-2RC WELL LOCATION
 - MW-9 PROPOSED GROUNDWATER MONITORING WELL DESTRUCTION



0 20 40
 SCALE IN FEET



SHELL OIL PRODUCTS U.S.
 SHELL-BRANDED SERVICE STATION
 DUBLIN, CALIFORNIA

FIGURE 2

SITE MAP

8999 SAN RAMON ROAD
 DUBLIN, CALIFORNIA