6/15/01 Approved WP

JUN 1 3 2001

DOULOS
Environmental, Inc.

1704 Via Riata Roseville, CA 95747 Tel: (916) 771-7098, FAX :(916) 771-4584

April 20, 2001

Ms. Eva Chu
Alameda County Health Care Services
Hazardous Material Division
1131 Harbor Bay Parkway
Alameda, CA 94502-5677

Subject: *Work Plan for Additional Subsurface Assessment Activities*
Beacon Station No. 3604
1619 West First Street
Livermore, California
Doulos Project No. 99-3604

Dear Ms. Chu:

Doulos Environmental, Inc. (Doulos), has been authorized by Ultramar, Inc. (Ultramar), to conduct additional subsurface investigation at Beacon Station No. 3604, located at 1619 West First Street, Livermore, California. The purpose of this investigation is to assess the lateral extent of petroleum hydrocarbons in ground water relative to the above referenced site. The proposed work includes the following:

1. Advance three soil borings to a depth of 45 feet below surface grade (bsg).

2. Collect soil samples for geologic logging, field screening, and potential chemical analysis.

3. Complete the three soil borings as ground water monitoring wells MW-8, MW-9 and MW-10 and produce a well installation results report.

This proposed work plan has been prepared in response to the Alameda County Care Health Care Services (ACHCS) letter dated November 1, 2000. A copy of the ACHCS letter is included in Enclosure A. The location of the site is shown on Figure 1 and the site features and proposed monitoring well locations are illustrated on Figure 2.

Project Background Information

In November 1992, Ultramar removed and replaced the three underground storage tanks (USTs). Petroleum hydrocarbons were detected during soil sampling activities collected during the UST removal activities. The tank basin excavation was extended to a depth of 27-feet in the southwest corner of the tank basin. Petroleum hydrocarbons were detected in the soil samples collected from the bottom of the over-excavation.

In May and June 1993, three monitoring wells (MW-1 through MW-3), three vapor wells (VW-1 through VW-3) were installed and one soil boring was advanced. Four additional offsite monitoring wells (MW-4 through MW-7) were installed on March 29 and 30, 1994. In June 1994, an additional subsurface investigation utilizing hydro punch technology was performed on the Livermore Arcade Shopping Center Property to collect soil and ground water samples for down-gradient delineation.

Soil vapor and groundwater extraction tests were conducted in June 1994. Based on the remediation field-testing, soil vapor extraction and air sparging wells were installed in September and October 1995. The remediation system operated from early 1996 through 1997. The operation of the remediation system was discontinued in January 1997. A Risk Based Corrective Action report was submitted to the agency in August 1997.

This work plan is being requested by the ACHCS to investigate off-site subsurface conditions. The work plan was requested in the ACHCS letter dated November 1, 2000. A copy of the letter is included in Enclosure A.

Monitoring Well Installation

Doulos proposes to drill three off site soil borings using a hollow stem auger-drilling rig. The soil borings will be drilled to a minimum depth of 45 feet bsg. Ground water is anticipated to be approximately 30 to 35 feet bsg. The soil borings will be completed as monitoring wells MW-8, MW-9, and MW-10. The drilled depth of the borings and completed depth of the monitoring wells will be dependent on the field screening results and lithology. The locations of the proposed monitoring wells are illustrated on Figure 2.

Soil samples will be collected from each soil boring at 5-foot vertical intervals or at obvious changes in lithology. Samples will be field-analyzed for the presence of organic vapors using a photo ionization detector (PID). A minimum of two soil samples from each boring will be submitted to Kiff Analytical laboratory in Davis, California for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), and total petroleum hydrocarbons (TPHg) as gasoline, and the following oxygenate compounds: MTBE, tert-amyl methyl ether (TAME), tert butanol (TBA), di-isopropyl ether (DIPE), ethyl-t-butyl ether (ETBE) and 1,2-dichloroethane (1,2-DCA), using EPA Method 8260B. The field methods to be used to drill and sample the soil borings are described in Enclosure B. Soil sample selection will be based on stratigraphic location, field screening, and soil lithology.

The ground water monitoring wells will be constructed of 2-inch diameter, flush-threaded, Schedule 40 PVC casing. Wells will be screened over the lower most 20 feet with 0.020-inch slotted casing. The annular space in the well will be filled with No. 3 Lonestar sand from 2-foot above the top of the well screen to the maximum depth of each well. A 2-foot thick bentonite seal will be placed above the filter pack. A copy of the well construction detail is illustrated in Enclosure C.

Upon approval of this work plan, Doulos will request right-of-entry from the adjacent property owner and the City of Livermore for the proposed off-site monitoring wells and submit soil boring permit applications to Zone 7 Water Agency. Following completion of the wells, ground water samples will be collected from monitoring wells MW-8, MW-9 and MW-10, and will be submitted to Kiff Analytical laboratory for the same analysis discussed above. Upon the completion of the monitoring well installations and the collection of the proposed ground water samples from the new monitoring wells, Doulos will produce a monitoring well installation results report.

Work Schedule

Doulos proposes that the installation of the monitoring wells proceed as soon as the work plan is approved and the proper permits are obtained. A results report discussing the details of the monitoring well installations will be conducted during this phase of work.

Remarks/Signatures

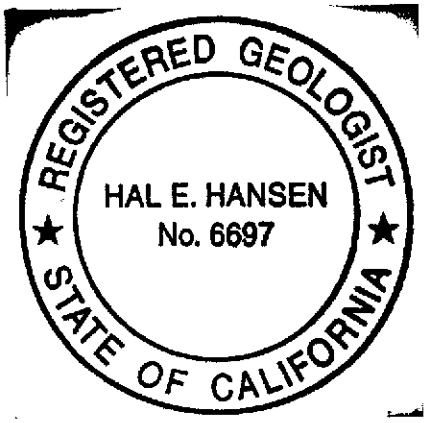
The interpretations contained in this work plan represent our professional opinions, and are based in part, on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeological and engineering practices at this time and location. Other than this, no warranty is implied or intended.

If you have any questions regarding this project, please contact Richard Munsch at (916) 771-7098.

Sincerely,

DOULOS ENVIRONMENTAL, INC.

Richard D. Munsch
Project Manager

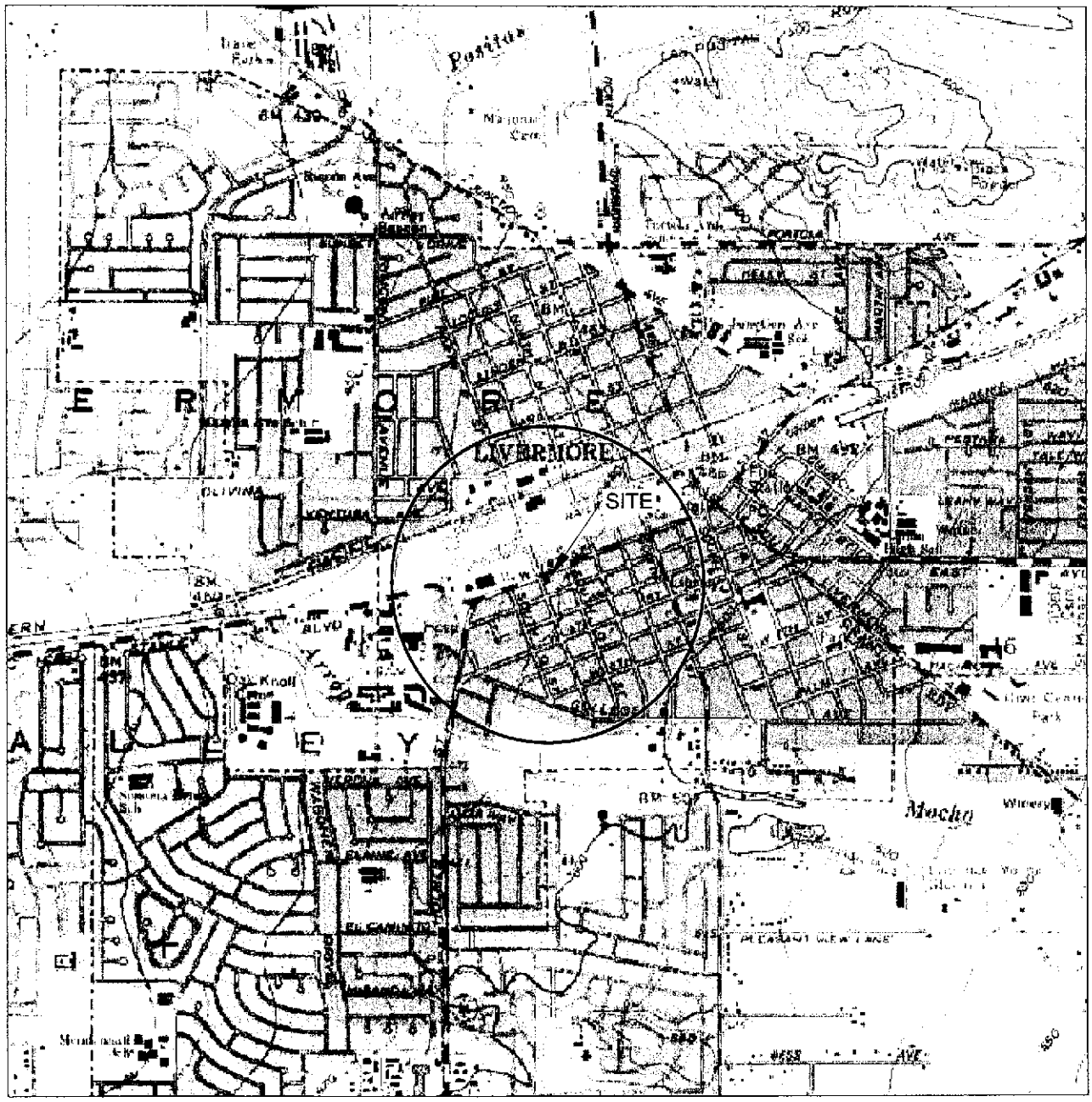


Hal Hansen, R.G.
California Registered Geologist No. 6697

RDM (3604 Work Plan MW-8, MW-9, MW-10 4-16-01)

Enclosures

cc: Mr. Joe Aldridge, Ultramar, Inc.
Mr. Cecil Fox – California Regional Water Quality Control Board



GENERAL NOTES:
BASE MAP FROM U.S.G.S.
LIVERMORE, CA.
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1980

QUADRANGLE LOCATION

N

0 2000 FT

SCALE 1:24,000

FIGURE 1

SITE LOCATION MAP

BEACON STATION NO. 3604
1619 WEST FIRST STREET
LIVERMORE, CALIFORNIA

PROJECT NO. 99-604-01	DRAWN BY M.L. 4/9/01
FILE NO. 3604 SITE	PREPARED BY RDM
REVISION NO. 1	REVIEWED BY

DOULOS Environmental, Inc.

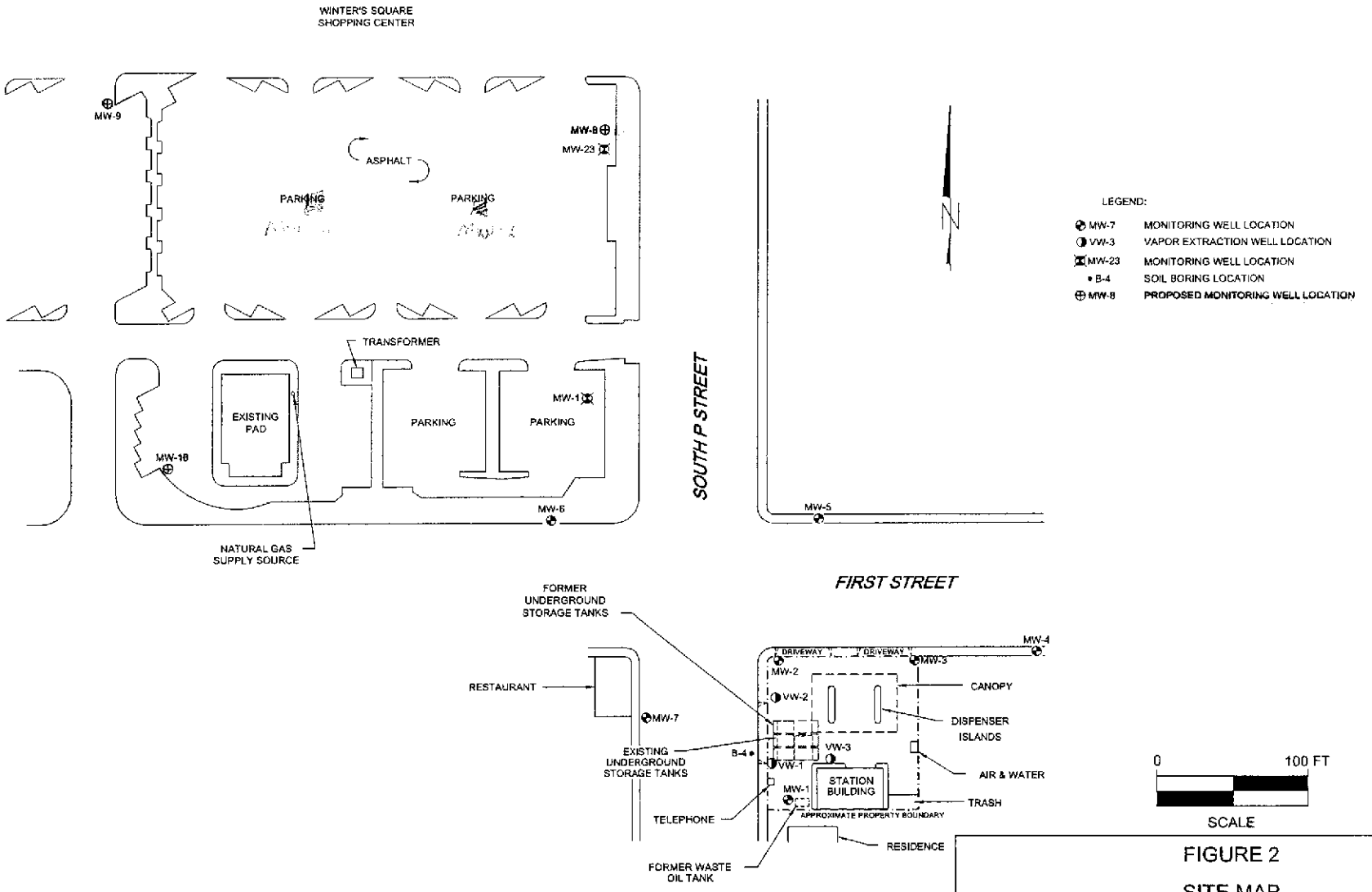


FIGURE 2

SITE MAP

BEACON STATION NO. 3604
1619 WEST FIRST STREET
LIVERMORE, CALIFORNIA

PROJECT NO. 99-604-01	DRAWN BY M.L. 6/6/01
FILE NO. 3604 SITE	PREPARED BY RDM
REVISION NO. 3	REVIEWED BY

DOULOS Environmental, Inc.

ENCLOSURE A

Copy of Alameda County Health Care Services
Letter Dated November 1, 2000

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

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

StID 4032

November 1, 2000

RECEIVED
NOV 13 2000
BY:

Mr. Joe Aldridge
Ultramar Inc.
525 West Third Street
Hanford, CA 93230

RE: Offsite Groundwater Monitoring Well(s) for Beacon Station #604, 1619 W 1st Street, Livermore, CA

Dear Mr. Aldridge:

In September and October 1995 offsite dual-phase extraction wells were installed at the Livermore Arcade Shopping Center/Safeway parking lot to remediate the contaminant plume migrating from the above referenced site. By January 1997, the remediation system was turned off when soil vapor data showed only low hydrocarbon levels were being recovered. Groundwater samples collected from two of the vapor extraction wells (MW-W and MW-E) in December 1998 identified up to 23,000ppb TPHg and 7,600ppb benzene. And in November 1999 the vapor extraction wells were decommissioned by pressure grouting with a neat cement slurry.

Before this Agency approved the abandonment of the vapor wells, it was agreed with Mr. Terry Fox, of Ultramar, that replacement groundwater monitoring wells will be installed offsite to monitor the contaminant plume. At this time, please submit a workplan for the installation of replacement groundwater monitoring wells at the Livermore Arcade Shopping Center/Safeway. The workplan is due within 60 days of the date of this letter, **or by January 3, 2000.**

If you have any questions, I can be reached at (510) 567-6762.

eva chu
Hazardous Materials Specialist

c: Dale van Dam, El Dorado Environmental, 2221 Goldorado Trail, El Dorado, CA 95623

beacon604-9

DOULOS ENVIRONMENTAL, INC.

Attachment B

Sampling Methods

Proper sampling methods must be followed to assure that samples represent actual field conditions and that samples are labeled, preserved, and transported properly to retain sample integrity. This attachment describes procedures to be followed by Doulos Environmental Company (Doulos), during collection of samples of subsurface soil and groundwater. Sampling procedures will be based on sampling guidance documents from the American Society of Testing and materials (ASTM), U.S. Environmental protection Agency (EPA), and California Department of Health Services (DHS). Actual sampling procedures to be employed will be based on field conditions and may differ from those described here.

A. EXPLORATION BORING/SOIL SAMPLING PROCEDURES

Soil borings and soil sampling will be performed under the direction of a Doulos geologist. The soil borings will be advanced using drilling techniques appropriate for each project, as specified in the project work plan.

Soil samples will be collected at maximum intervals of 5 feet. Soil sampling will be done in accordance with ASTM 1586-84. Using this procedure, three 1.06- to 2-inch-diameter, 6-inch-length, brass or stainless steel tubes are placed in a California-type-split-barrel sampler, or a slide hammer with a single 6-inch by 2-inch brass or stainless tube by tapping the tube into the soil in the backhoe bucket with a hammer. The sampler is driven into the soil by a 140-pound weight falling 30 inches or with a slide hammer on hand auger samples. After an initial set of 6 inches, the number of blows required to drive the sampler an additional 12 inches is known as penetration resistance, or the AN≅ value. The AN≅ value is used as an empirical measure of the relative density of cohesion less soils and the consistency of cohesive soils. When collecting a soil sample from a tank excavation or line excavation, the soil sample will be collected by tapping a brass stainless steel tube into the soil in the backhoe bucket.

Upon recovery of the split-barrel sampler or slide hammer sampler, the brass or stainless steel tubes containing the soil will be removed. One tube will be sealed at the ends with plastic end caps. The end caps will be secured to the ends of the tube to prevent loss of volatile constituents. The sample will be labeled with an identification number, time, date, locations, and requested laboratory analysis. The sample will then be placed in a plastic bag and stored at approximately 4 degrees Celsius 8 in an ice chest for transport to the laboratory. Sample custody procedures outlined in Section E of this attachment will be followed. This will be performed for each sample collected.

Soil in one of the brass or stainless steel tubes from the split-barrel sampler will be extracted upon recovery, placed in a plastic bag, and sealed for later screening for organic vapors using a photo ionization detector (PID) or a flame ionization detector (FID). The remaining portion of the soil sample will be examined and a complete log of soil conditions will be recorded on a soil boring log using the Unified Soil Classification System. The soil will be examined for grain size, color, and moisture content.

The split-barrel sampler or slide hammer sampler will be cleaned to prevent contamination across sampling intervals using procedures described in Section C. Soil generated from the soil borings will be stored in
55-gallon drums (unless otherwise directed by agencies or the client) labeled with the corresponding boring number, date, and address of the facility.

DECONTAMINATION AND DISPOSAL PROCEDURES

All equipment that comes into contact with potentially contaminated soil, drilling fluid, air or water will be decontaminated before each use. Decontamination will consist of steam cleaning, a high-pressure, hot-water rinse, or trisodium phosphate (TSP) wash and freshwater rinse, as appropriate.Drilling and sampling equipment will be decontaminated as follows:

1. Drill rig augers, drill rods, and drill bits will be steam-cleaned prior to use and between borings. Visible soil, grease, and other impurities will be removed.

2. Soil sampling equipment will be steam-cleaned prior to use and between each boring. Prior to individual sample collection, any sampling device will also be cleaned in a TSP solution and rinsed twice in clean water. Any visible soil residue will be removed.

3. It is anticipated that disposable equipment will be used to collect water samples. If disposable equipment is not used, water sampling equipment will be decontaminated using methods described in item 2 above for soil sampling equipment.

4. Water sampling containers will be cleaned and prepared by the respective analytical laboratories.

5. Stainless steel or brass soil sampling tubes will be steam-cleaned or washed in TSP solution and rinsed with clean water.

6. Field monitoring equipment (pH, conductivity, or temperature probes) will be rinsed with clean water prior to use and between samples.

C. FIELD MEASUREMENTS

Field data will be collected during various sampling and monitoring activities; this section describes routine procedures to be followed by personnel performing field measurements. The methods presented below are intended to ensure that field measurements are consistent and reproducible when performed by various personnel.

C.1 Buried Utility Locations

Prior to commencement of work on site, Doulos will contact appropriate utility companies to have underground utility lines located. Doulos will also visually survey the site to estimate the locations of potentially unmarked underground utilities. All work associated with the borings will be preceded by hand augering to a minimum depth of 5 feet below grade to avoid damaging underground utilities.

C.2 Lithologic Logging

A log of soil conditions encountered during the drilling and sample collection will be maintained using the Unified Soil Classification System by a Doulos geologist. All boring logs will be reviewed by a California registered geologist.

The collected soil samples will be examined and the following information recorded: boring location, sample interval and depth, blow counts, color, soil type, moisture content (qualitative), and depth at which ground water (if present) is first encountered. Also recorded on the soil boring logs will be the field screening results derived from the use of a portable PID or FID.

C.3 Disposal Procedures

Soils and fluids that are produced and/or used during the installation and sampling of borings, and that are known or suspected to contain potentially hazardous materials, will be contained during the above

operations. These substances will be retained on site until chemical testing has been completed to determine the proper means of disposal. Handling and disposal of substances known or suspected to contain potentially hazardous materials will comply with the applicable regulations of DHS, the California

Department of Water Resources, and any other applicable regulations. Soils and fluids produced and/or used during the above-described operations that are shown to contain potentially hazardous materials will be disposed of appropriately.

Residual substances generated during cleaning procedures that are known or suspected to pose a threat to human health or the environment will be placed in appropriate containers until chemical testing has been completed to determine the proper means for their disposal.

C.4 Conductivity, Temperature, and pH

Specific conductance, water temperature, and pH measurements will be made when a water sample is collected. Regardless of the sample collection method, a representative water sample will be placed in a transfer bottle used solely for field parameter determinations. A conventional pH meter with a combination electrode or equivalent will be used for field-specific conductance measurements. Temperature measurements will be performed using standard thermometers or equivalent temperature meters. Combination instruments capable of measuring two or all three of the parameters may also be used.

All instruments will be calibrated in accordance with manufacturer's recommendations. The values for conductivity standards and pH buffers used in calibration will be recorded in a field notebook. All probes will be thoroughly cleaned and rinsed with fresh water prior to any measurements, in accordance with Section C.1

D. SAMPLE CUSTODY

This section describes standard operating procedures for sample custody and custody documentation. Sample custody procedures will be followed through sample collection, transfer, analysis, and ultimate disposal. The purpose of these procedures is to assure that (1) the integrity of samples is maintained during their collection, transportation, and storage prior to analysis and (2) post-analysis sample material is properly disposed of. Sample custody is divided into field procedures and laboratory procedures, as described below.

D.1 Field Custody Procedures

Sample quantities, types, and locations will be determined before the actual fieldwork commences. As few personnel as possible will handle samples. The field sampler is personally responsible for the care and custody of the collected samples until they are properly transferred.

D.1.1 Field Documentation

Each sample will be labeled and sealed properly immediately after collection. Sample identification documents will be carefully prepared so that identification and chain-of-custody records can be maintained and sample disposition can be controlled. Forms will be filled out with waterproof ink. The following sample identification documents will be utilized:

- Sample labels
- Field notebook
- Chain-of-custody forms

D.1.2 Sample Labels

Sample labels provide identification of samples. Preprinted sample labels will be provided. Where necessary, the label will be protected from water and solvents with clear label-protection tape. Each label

will contain the following information:

- Name of collector
- Date and time of collection
- Place of collection
- Doulos project number
- Sample number
- Preservative (if any)

D.1.3 Sample Labels

Information pertinent to a field survey, measurements, and/or sampling must be recorded on field data sheets. Entries on data sheets should include the following:

- Name and title of author, date and time of entry, and physical/environmental conditions during field activity.
- Location of sampling or measurement activity.
- Name(s) and title(s) of field crew.
- Type of sampled media (e.g., soil, groundwater, air, etc.).
- Sample collection or measurement method(s).
- Number and volume of sample(s) collected.
- Description of sampling point(s).
- Description of measuring reference point(s).
- Date and time of collection or measurement.
- Sample identification number(s).
- Sample preservative (if any.
- Sample distribution (e.g., laboratory).
- Field observations/comments.
- Field measurement data (pH, etc.).

D.1.4 Chain-of-custody Record

A chain-of-custody record will be filled out for and will accompany every sample and every shipment of samples to the analytical laboratories in order to establish the documentation necessary to trace sample possession from the time of collection. The record will contain the following information:

- Station of sample number of sample I.D.
- Signature of collector, sampler, or recorder.
- Date and time of collection.
- Place of collection.
- Sample type.
- Signatures of persons involved in the chain of possession.
- Inclusive dates of possession.

The laboratory portion of the form should be completed by laboratory personnel and will contain the following information:

- Name of person receiving the sample.

- Laboratory sample number.
- Date and time of sample receipt.
- Analyses requested.
- Sample condition and temperature.

D.1.5 Sample Transfer and Shipment

A chain-of-custody record will always accompany samples. When transferring samples, the individuals relinquishing and receiving the samples will sign, date, and note the time on the chain-of-custody record.

Samples will be packaged properly for shipment and dispatched to the appropriate laboratory for analysis. The chain-of-custody record will accompany each shipment. The method of shipment, courier name(s), and other pertinent information will be entered in the chain-of-custody record.

D.2 Laboratory Custody Procedures

A designated sample custodian will accept custody of the shipped samples and verify that the information on the sample label matches that on the chain-of-custody record. Information regarding method of delivery and sample conditions will also be checked on the chain-of-custody record. The custodian will then enter the appropriate data into the laboratory sample tracking system. The laboratory custodian may use the sample number on the sample label or may assign a unique laboratory number to each sample. The custodian will then transfer the sample to the proper analyst or store the sample in the appropriate secure area.

Laboratory personnel are responsible for the care and custody of samples from the time they are received until the sample is exhausted. Once at the laboratory, the samples will be handled in accordance with U.S. Environmental Protection Agency SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Third Edition, for the intended analyses. All data sheets, chromatographs, and laboratory records will be filed as part of the permanent documentation.

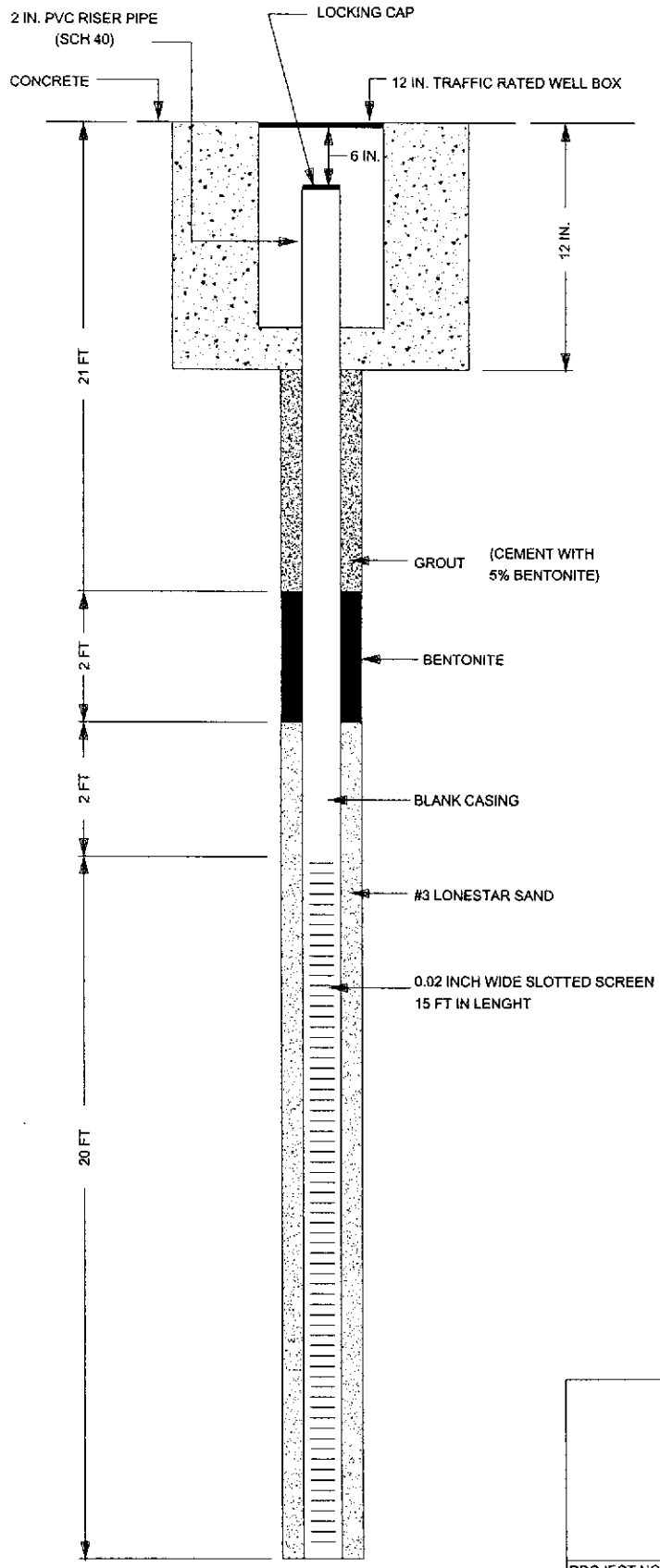
D.3 Corrections to Documentation

Original data recorded in field notebooks, chain-of-custody records, sampling information sheets, and other forms should be written in ink. These documents should not be altered, destroyed, or discarded even if they are illegible or contain inaccuracies that require a replacement document.

If an error is made or found on a document, the individual making the corrections will do so by crossing a single line through the error, entering the correct information, and initialing and dating the change. The erroneous information will be obliterated. Any subsequent error(s) discovered on a document will be corrected. All corrections will be initialed and dated.

D.4 Sample Storage and Disposal

The analytical laboratory should retain samples and extracts for 60 days after the laboratory issues a written report. Unless notified by the program manager, excess or unused samples should be disposed of by the laboratory in an appropriate manner consistent with applicable government regulations.



NOT TO SCALE

WELL DETAIL (TYPICAL)

BEACON STATION NO. 3604
1619 WEST FIRST STREET
LIVERMORE, CALIFORNIA

PROJECT NO. 99-604-01	DRAWN BY M.L. 4/19/01
FILE NO. 3604 WELL DETAIL	PREPARED BY RDM
REVISION NO. 2	REVIEWED BY

DOULOS Environmental, Inc.