

Started to review on 1/17/95
Review complete on 1/26 - see letter of

ALCO
HAZMAT

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January 6, 1995
719-3A, MV121503

Ms. Juliet Shin
ALAMEDA COUNTY HEALTH CARE SERVICES
Department Of Environmental Health
1131 Harbor Bay Parkway, Room 250
Alameda, California 94502-6577

RE: **WORK PLAN FOR
ADDITIONAL GROUND WATER
QUALITY EVALUATION,
WORTHLY DRIVE PARCEL
SAN LORENZO, CALIFORNIA**

Dear Ms. Shin:

On behalf of COSMAS, LTD., we are pleased to present this work plan to further evaluate ground water quality located at ~~16252~~ ¹⁶⁵²⁵ Worthley Drive in San Lorenzo, California.

Introduction

The site reportedly was developed in the late 1960s as an aircraft engine maintenance facility, which operated there until 1981. Two underground gasoline fuel storage tanks (USTs) were reportedly used by this facility and removed from the site in 1987.

Site History

Subsequent soil and ground water quality investigations have included drilling of several soil borings within and near the former UST excavation, over-excavation of the tank pit to remove impacted soil, performance of a soil vapor survey, and installation of eight ground water monitoring wells. The results of this work were summarized in our first quarter 1994 monitoring report dated August 29, 1994.

In January 1991, a ground water extraction and treatment system was installed at the site. The system extracted ground water from extraction well RW-1 at a limited rate of approximately 0.1 gallon per minute (gpm) and treated the water with activated carbon beds prior to discharge. Laboratory analyses of influent samples collected from the treatment system indicated that petroleum hydrocarbon concentrations have decreased or remained generally consistent over the past several years. Since its installation in November 1989, extraction well RW-1 appears to have

been sampled/analyzed 31 times. Fourteen of 31 sampling events did not detect TPH as gasoline above the laboratory detection limit. Analytical results for the remaining 17 events revealed concentrations typically ranging from 57 ppb to 480 ppb; higher levels were only detected in three sampling events.

benzene?

Quarterly sampling of ground water from well MW-2, located near the former USTs, has historically detected only low levels of total petroleum hydrocarbons (TPH) as gasoline and benzene, toluene, ethylbenzene, and xylene (BTEX) compounds. From 1987 to 1994, concentrations of TPH as gasoline have typically ranged between 57 ppb and 870 ppb. Higher concentrations were detected during two sampling events. Petroleum hydrocarbons typically have not been detected in the other on-site monitoring wells.

benzene?

A summary of previous sampling results from monitoring well MW-2 and extraction well RW-1 is summarized in our second quarter 1994 monitoring report dated September 6, 1994.

The purpose of this work plan is to further evaluate ground water quality at the site as requested by The Alameda County Department of Environmental Health (ACDEH) in their letter dated September 21, 1994.

Purpose

Based on the available information, our proposed scope of work is presented below.

Scope of Work

SOIL AND GROUND WATER QUALITY RECONNAISSANCE

Prior to performing the field work, we will contact Underground Service Alert so that the utility companies may be notified of the drilling activities.

Underground Utility Check

Our field engineer or scientist would direct a subsurface exploratory program, supervise, log, and sample one exploratory boring to a depth of approximately 25 feet. Ground water is anticipated to be at a depth of approximately 10 to 15 feet. Soil samples would be collected at approximately 5-foot depth intervals and monitored for volatile hydrocarbons with an organic vapor meter (OVM). Drilling protocol is presented in Attachment A.

Subsurface Exploration

The boring would be converted into a 2-inch diameter "permanent" monitoring well and constructed according to regulatory guidelines. The well casing would be fitted with a locked, water-tight well cap. The well would be finished with either a steel stove pipe security box extending approximately 3 feet above grade or with a flush-mounted Christy box, as appropriate. A schematic well construction detail is shown in Figure 2. Monitoring well installation protocol is presented in Attachment A.

The proposed monitoring well will be located approximately down-gradient of the former UST locations, with respect to the estimated regional ground water flow direction (southeast). The monitoring well could be installed off-site, approximately 20 feet from the fenced site boundary (Figure 1). This proposed location is directly adjacent to the flood control canal which runs along the site boundary. Thus, an encroachment permit would need to be approved by the Alameda County.

Approximately 48 hours after well completion, the static water level would be measured and the well would be checked for floating product. The well would then be developed by pumping to flush fine-grained material from the well and surrounding soil. Approximately 48 hours after well development, the well would be sampled per EPA guidelines. The well development/sampling protocol is presented in Attachment A.

To evaluate ground water flow direction at the site, the lateral locations of wells will be established using a metered wheel. (The relative elevations of the monitoring wells and ground water will then be surveyed.) The survey will consist of a two-person crew using a Leitz level and an engineer's graduated rod.

One soil sample from the monitoring well boring with the highest OVM reading or, alternatively, the sample collected from immediately above the shallow water-bearing zone will be submitted for laboratory analysis. In addition, one ground water sample collected from the monitoring well will be analyzed. The samples will be analyzed by a state certified laboratory for TPH as gasoline with an additional scan for BTEX (EPA Test

*Previous site data shows gradient of flow S SE SW
Why not on site-specific data?
Who approves?
7200 max. hours per CCR, Table 23, Chap 6, Section 26249 d8*

Well Development/Sampling

Surveying/Gradient Evaluation

inertial... an est. ground water... accuracy of 0.01 feet.

Laboratory Analyses

POK

Method 8015/8020). Chain of custody documentation will be maintained for all samples.

Soil cuttings and purged ground water will be stored on-site in EPA approved drums.

Soil Cuttings and Purged Ground Water

QUARTERLY GROUND WATER SAMPLING

As discussed above, the petroleum hydrocarbon concentrations present in ground water near the former UST area appear to have decreased over the past several years, likely due to the combined effects of ground water extraction and natural attenuation. Based on these results, a decrease in sampling frequency is warranted, in our opinion. Thus, we propose to sample the new well and existing wells RW-1 and MW-2 on an annual basis. If elevated levels of petroleum hydrocarbons are detected in ground water from the new well, the sampling frequency would be re-evaluated.

REPORT PREPARATION

We will prepare a report discussing the results of our investigation, summarizing the field and laboratory data, and presenting our conclusions and recommendations. Our conclusions and recommendations will be based readily available information, observations of existing conditions, and our interpretation of the analytical data. The report will include boring logs with OVM results, a site plan showing well/boring location, and copies of all laboratory data sheets.

SCHEDULE

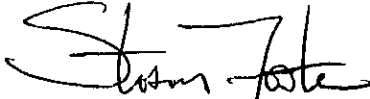
Permitting, scheduling, and performance of the field work will take approximately three weeks. Access to the proposed well location would need to be granted by Alameda County. All samples will be analyzed on a two-week laboratory response time. After receipt of the analytical data, verbal results and preliminary information relating to our subsurface investigation will

be made available. Our report will be issued approximately three weeks after receiving the analytical data.

If you have any questions, please call.

Very truly yours,

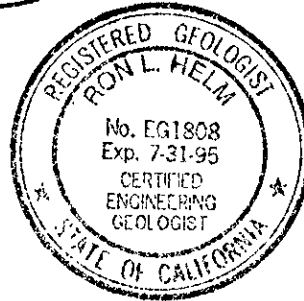
LOWNEY ASSOCIATES



Stason I. Foster, P.E.
Associate
Environmental Engineer



Ron L. Helm, C.E.G.
Principal
Environmental Geologist



RLH:SIF:ASG:lh

Copies: Addressee (1)
COSMAS, LTD. (1)
Attn: Mr. Anthony Varni

Attachments: Protocol
Figure 1 – Site Plan
Figure 2 – Well Construction Detail

**ATTACHMENT A
PROTOCOL**

The subsurface investigation would be conducted using a truck-mounted drill rig equipped with 8-inch hollow-stem augers. The soils encountered in the borings would be logged using the Unified Soil Classification System (ASTM D-2487). Soil samples would be collected in 2.5-inch diameter brass liners using a Modified California drive sampler. The ends of the brass liners would be covered with aluminum foil and plastic end caps and securely taped. The samples then would be placed on ice for transportation to the state certified laboratory.

Drilling

Soil from each sampling interval would also be placed in a Ziplock plastic bag and, after several minutes, the head space within the bag would be monitored for volatile hydrocarbons using an OVM. These readings would be recorded on the boring logs.

A 2-inch diameter PVC casing would be installed in the boring. The casing would be threaded, flush-jointed, Schedule 40 PVC, with sections containing perforated 0.02-inch slots to be installed in the lower portion of the well. After the casing is installed, a sand filter pack would be placed to approximately 1 to 2 feet above the slotted casing. An approximately 1-foot thick seal composed of hydrated bentonite pellets topped by 11-sack sand slurry would be placed in the annulus above the sandpack to the surface.

**Monitoring Well
Installation**

*Screen interval to
the top of the well is
5 feet above. Just*

It is anticipated that the bottom of the wells will be at a depth of 25 feet. A 10-foot length of slotted casing will be used in each well. Blank casing will be used to construct the remainder of the well to within 0.5-foot of the ground surface.

A sand filter pack and 0.02 slot size PVC screen will be selected to limit the amount of native filter pack material entering the monitoring well. The filter pack will be placed at least 2 feet above the top of the well screen and a 1-foot-thick bentonite seal will be placed on top of the sand. A cement slurry seal will be placed above the bentonite seal to within 0.5-foot of the ground surface.

Approximately ~~48~~⁷² hours after well completion, the wells would be developed by pumping several casing volumes of ground water to flush fine-grained material from the well and surrounding soil.

Well Development and Sampling

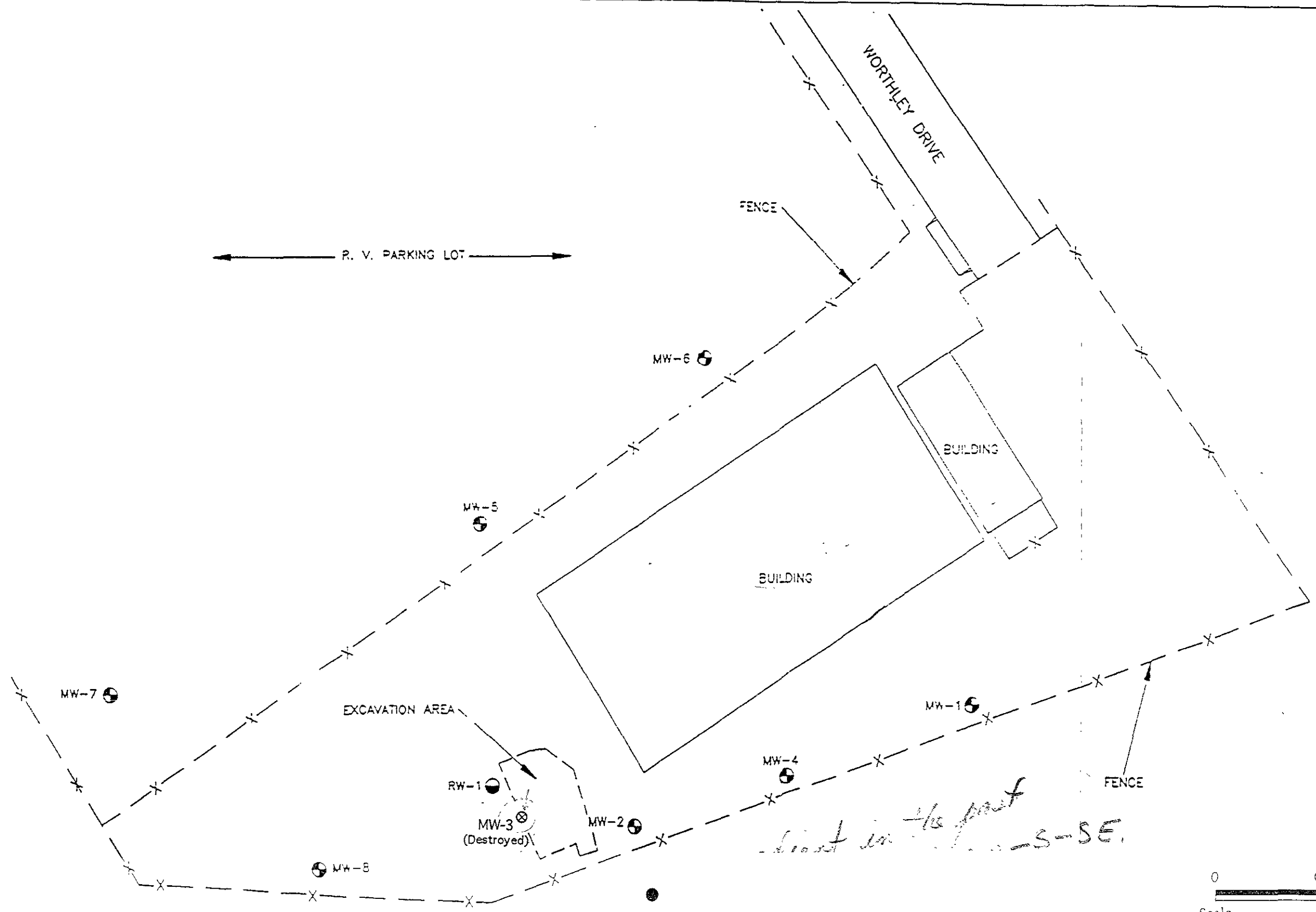
Approximately ^{OK} 48 hours after well development, several well casing volumes of ground water would be purged using a submersible pump or teflon bailer so that samples collected would be representative. Field water quality tests would consist of measuring the pH, conductivity, and temperature of the ground water. After purging a minimum of three well volumes and measured parameters have stabilized, ground water samples would be collected. Each well would be sampled using state and EPA approved sampling techniques.

All sampling equipment would be thoroughly cleaned with an aqueous solution of tri-sodium phosphate and distilled water or steam cleaned. Soil samples would be collected in brass liners, the ends covered with aluminum foil and plastic end caps, and securely taped. Ground water samples would be collected in the appropriate bottles and labeled. The samples would be placed on ice for transportation to the state certified laboratory with chain of custody documentation.

Sampling



← R. V. PARKING LOT →



LEGEND

- ⊕ - Approximate location of ground water monitoring well by Resna (1993)
- ⊖ - Approximate location of ground water recovery well by Resna (1993)
- - Approximate location of proposed monitoring well

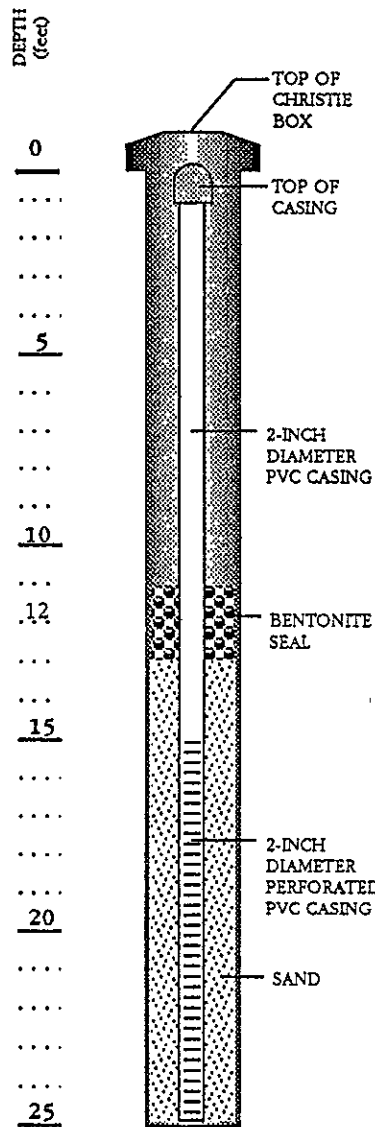


Base by Resna, dated 8/93

SITE PLAN
PACIFIC INTERNATIONAL STEEL
 San Lorenzo, California

LOWNEY ASSOCIATES
 Environmental/Geotechnical/Engineering Services

FIGURE 1
 719-3A, December 1994



WELL CONSTRUCTION DETAIL

PACIFIC INTERNATIONAL STEEL
San Lorenzo, California