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Alameda County
Environmental Health

June 6, 2007
Project No. 01203087.04

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Alameda County Environmental Health Services
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Alameda, California 94502
Phone (510) 567-6791
Fax (510) 337-9335

Subject: **Workplan for Additional Groundwater Investigation**
Freisman Ranch
1600 Freisman Road
Livermore, California
SLIC Case No. RO0002484

INTRODUCTION

This document, prepared by SCS Engineers (SCS) on behalf of Children's Hospital of Oakland, California (Children's Hospital), provides a Workplan for an additional groundwater investigation at the Freisman Ranch site (the "Property"), located at 1600 Freisman Road, Livermore, California. The purpose of this Workplan is to address the environmental issues described in the Alameda County Environmental Health Services, Environmental Protection Division (the "County") letters dated August 23, 2006 and March 28, 2007. Specifically, this Workplan outlines the proposed scope of work to investigate/address the following environmental issues regarding the Property:

1. Source of gasoline in groundwater.
2. Vertical extent of petroleum hydrocarbon-impacted groundwater beneath the Property.
3. Geotracker EDF submittals.

Figure 1 is a Site Vicinity map and Figure 2 is a Site Plan showing the investigation area and proposed groundwater sampling locations. Two additional environmental issues described in the County letters dated August 23, 2006 and March 28, 2007, 1) Sampling of existing groundwater monitoring wells and 2) Excavation of lead impacted soils near the former incinerator, will be discussed separately in future reports.

BACKGROUND

The Property was first developed in approximately 1910 with houses, barns and outbuildings associated with the former onsite dairy. Dairy operations ceased in 1971, and since that time the Property has been used for residential housing, miscellaneous storage, and animal boarding/grazing (horses, cattle, etc.). During a Phase I Environmental Site Assessment conducted in 1997, petroleum hydrocarbons were detected in soil samples collected from the vicinity of the two boilers and in soil and groundwater samples collected in the driveway between the boilers and a metal shed, which historically housed a fuel oil above ground storage tank (AST) (Kleinfelder, 1997a).

An apparent source of petroleum hydrocarbon contamination at the Property was the former heating oil AST used to fuel the two boilers (Kleinfelder, 1997b). Heating oil is typically composed of diesel range and gasoline range hydrocarbons (Bruya, 1993). In order to remove remaining secondary sources of petroleum hydrocarbon contamination at the Property SCS removed the two boilers, the metal shed, which historically housed the former heating oil AST, associated underground fuel piping, and impacted soil in August and September 2003.

In addition, during a May 10, 2006 site reconnaissance SCS interviewed the caretaker of the Property, Mr. Mike Schofield. Mr. Schofield is a member of the extended Freisman family and has first hand knowledge of the Property's history. Mr. Schofield indicated that a small (approximately 300 gallon) underground gasoline storage tank (UST) was previously located in the vicinity of the former heating oil AST. Mr. Schofield indicated that, to the best of his knowledge, the gasoline UST was removed sometime in the 1970's. This suspected former UST may be a source of gasoline range hydrocarbons detected in groundwater north of the dairy building.

Six groundwater monitoring wells (*KMW-1* through *KMW-6*) were installed at the Property in 1997, at which time a quarterly groundwater sampling plan was initiated. Two additional wells (*KMW-7* and *KMW-8*) were installed at the Property in 1999. Regular groundwater monitoring was conducted at the Property until the end of 2003. Several more sampling events have occurred since on a non routine basis. The two most recent monitoring events have been conducted by SCS on January 9, 2007 and April 18 and 19, 2007.

SOURCE OF GASOLINE IN GROUNDWATER

The exact source of gasoline range hydrocarbons detected in soil and groundwater in the vicinity of the former heating oil AST and associated product lines and boilers is unknown to SCS. However, as described above, heating oil is typically composed of diesel range and gasoline range hydrocarbons (Bruya, 1993) and an approximately 300 gallon gasoline UST may have previously been located in the vicinity of the former heating oil AST. Together, the former heating oil system and suspected gasoline UST may be the source of gasoline range hydrocarbons detected in groundwater north of the dairy building.

In an effort to more fully evaluate the possible presence of USTs in the vicinity of the former heating oil AST SCS proposes to conduct a geophysical survey in the area. The geophysical survey would utilize magnetometer and ground penetrating radar methods in an attempt to locate buried objects in the survey area. However, the usefulness of the geophysical survey may be limited due to the presence of numerous structures and fences in the area.

PROPOSED ADDITIONAL GROUNDWATER INVESTIGATION

Historically, all groundwater investigation activities at the Property have focused on the first (shallow) groundwater encountered at the Property. However, on August 23, 2006 and March 28, 2007 the County issued letters formally requesting that the vertical extent of petroleum hydrocarbon-impacted groundwater be assessed prior to evaluation of site closure, and gave specific guidelines. This proposed investigation addresses that request.

Pre-Investigation Activities

SCS will obtain the required drilling permits from the Alameda County Zone 7 Water Agency (Zone 7) prior to beginning drilling activities.

Underground Service Alert will be notified at least 48 hours prior to any subsurface investigation as required by law.

Pilot Soil Borings

SCS proposes to drill three pilot soil borings at the locations shown on Figure 2. These locations were chosen to provide a transect perpendicular to the known plume of petroleum hydrocarbon-impacted groundwater beneath the Property. The goal of the borings is to identify/classify soil types, water bearing zones, confining layers, and indications of impacted soil and/or groundwater (e.g., staining, hydrocarbon odors, field VOC screening, etc.) vertically. Based on driller's logs provided to SCS by Zone 7, historic depth to first groundwater in the vicinity of the site has been reported as deep as 80 feet bgs (well 3S/1E 2F3 drilled June 1982 approximately 1,800 feet northwest of the source area on the Property). As such, SCS proposes to drill each pilot boring to depths of 80 to 100 feet bgs.

A hollow stem auger drill rig equipped with a split spoon sampler or roto-sonic drilling will be used to conduct this study. During drilling soils will be continuously sampled, observed, and classified (logged) using Unified Soil Classification System (USCS). Hollow stem auger logging would be accomplished by advancing an eighteen inch long split spoon sampler (or other appropriate sampler) ahead of the augers. The sampler would then be retrieved to examine and classify the soil. Sample sleeves would not be used in the split spoon to allow for more complete visual observations/logging of encountered soils. Roto-sonic logging would be accomplished by advancing a dual-casing sampling string at ten foot intervals. The inner casing/core barrel would be advanced first followed by the outer casing. The core barrel would then be returned to the surface and a ten-foot long soil core would be retrieved and logged.

The soil types and water bearing zones will be recorded on boring logs, which will be supplied as part of the summary report. For the VOC head space field screening, Ziploc plastic bags will be partially filled with soil from each sample location. The sealed plastic bags will be allowed to sit approximately 30 minutes to allow for volatilization before field measurements will be collected using a MiniRAE 2000 Photo-Ionization Detector (PID) (or equivalent) calibrated to 100 parts per million Isobutylene. Field measurements will be recorded on the boring logs.

Soil samples will be collected for laboratory analysis from the capillary fringe in each boring and from any interval with evidence of impacts (e.g., staining, hydrocarbon odors, field VOC readings, etc.). Soil samples will be collected directly from the soil core using EPA Method 5035 protocols (e.g., Encore sample cores). Immediately following soil sample collection, the sealed sample container will be labeled, placed in a Ziploc-type plastic bag, and placed in a chilled cooler for later transport to a state certified analytical laboratory. Soil samples will be tracked from the point of collection through the laboratory using proper chain-of-custody protocol.

Soil samples will be analyzed for total petroleum hydrocarbons as gasoline (TPHg), TPH as diesel fuel (TPHd), and TPH as stoddard solvent (TPHss) using Environmental Protection Agency (EPA) Method 8015C, for VOCs, including Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), Methyl tert Butyl Ether (MTBE), 1,2-dichloroethane, and ethylene dibromide, using EPA Method 8260B and for lead using EPA Method 6010 (or equivalent). At this time analysis of up to five soil samples per boring is anticipated. However, this may be modified based on field observations.

Once each boring is complete and all water bearing zones have been identified, the augers will be removed and the borehole will be backfilled via tremie with Portland cement grout.

All soil cuttings and overflow groundwater produced during this study will be containerized in sealed and labeled 55-gallon drums. Following receipt of analytical data disposal/recycling options will be evaluated.

Deep Groundwater Sample Collection

SCS proposes to collect groundwater samples from the water bearing zones identified during the pilot soil boring study outlined above. One groundwater sample will be collected from approximately five feet below first encountered groundwater at each proposed location. In addition, water bearing zones below first encountered groundwater will also be sampled. The method for groundwater sampling will be chosen based on the results of the pilot soil borings described above (e.g., soil types encountered, drilling conditions, depth and number of water bearing zones, etc.). Following completion of the pilot soil borings, a Workplan addendum that describes the selected groundwater sampling methodology in greater detail will be prepared and submitted to DTSC for approval. At this time, one of the following three methods of groundwater sampling are envisioned:

1. Hollow stem auger drilling with groundwater sampling using a Hydropunch or similar driven sampling point. The hollow stem auger rig is used to drill to a depth just above the desired groundwater sampling interval. A Hydropunch or similar sampler is then driven approximately three feet into undisturbed soil ahead of the auger, the outer sleeve is retracted and a groundwater sample is obtained using a small diameter bailer.

2. Roto-sonic drilling with groundwater sampling using the IsoFlow method developed by ProSonic (now Boart Longyear). The IsoFlow method uses a temporary well screen and submersible pump with pneumatic packers that are placed within the outer casing (following removal of the inner casing/core barrel) at the desired sampling depth. The outer casing is then retracted to expose the temporary screen and a groundwater sample is collected using the submersible pump.

3. Cone Penetrometer Testing (CPT) rig with groundwater sampling using a Hydropunch or similar driven sampling point. The CPT rig is used to push the sampling string to a depth just above the desired groundwater sampling interval. A Hydropunch or similar sampler is then driven approximately three feet into undisturbed soil, the outer sleeve is retracted and a groundwater sample is obtained using a small diameter bailer.

Groundwater samples will be collected in new laboratory supplied containers. After collection each sample will be logged, labeled, and placed in a chilled cooler for later transport to a state certified analytical laboratory. Groundwater samples will be tracked from the point of collection through the laboratory using proper chain-of-custody protocol. A quality control trip blank (QCTB) will accompany the collected samples in the cooler and will be analyzed for VOCs along with the samples as a check for cross contamination from an outside source between the field and the lab.

Groundwater samples will be analyzed for TPHg, TPHd, TPHss using EPA Method 8015C, for VOCs, including BTEX, MTBE, 1,2-dichloroethane, and ethylene dibromide using EPA Method 8260B, and for dissolved lead using EPA Method 6010 (or equivalent).

Once each boring is complete and groundwater samples have been collected, the augers will be removed and the borehole will be backfilled via tremie with Portland cement grout.

All soil cuttings and overflow groundwater produced during this study will be containerized in sealed and labeled 55-gallon drums. Following receipt of analytical data, disposal/recycling options will be evaluated.

GEOTRACKER EDF SUBMITTAL

SCS is currently obtaining approval to submit data and other site information to the Geotracker web site. Once approval is granted SCS will upload the required data/information.

REPORTING

Following receipt of analytical results an investigation summary report will be prepared for submittal to the County. The report will included a summary of field activities, figures showing sampling locations, tabulated data summary, and conclusions and recommendations. The report will also include copies of the Zone 7 well permits, boring logs documenting encountered geologic conditions and water bearing zones, a summary of the geophysical survey, and analytical report(s).

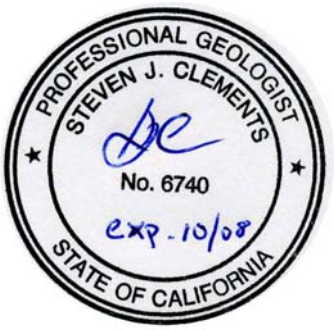
CLOSING

With this letter we seek your approval for the Workplan outlined herein. If you have any questions regarding this submittal, please contact Steve Clements at (925) 240-5152 x24

Sincerely,

Ted Sison, R.E.A.
Staff Scientist
SCS ENGINEERS

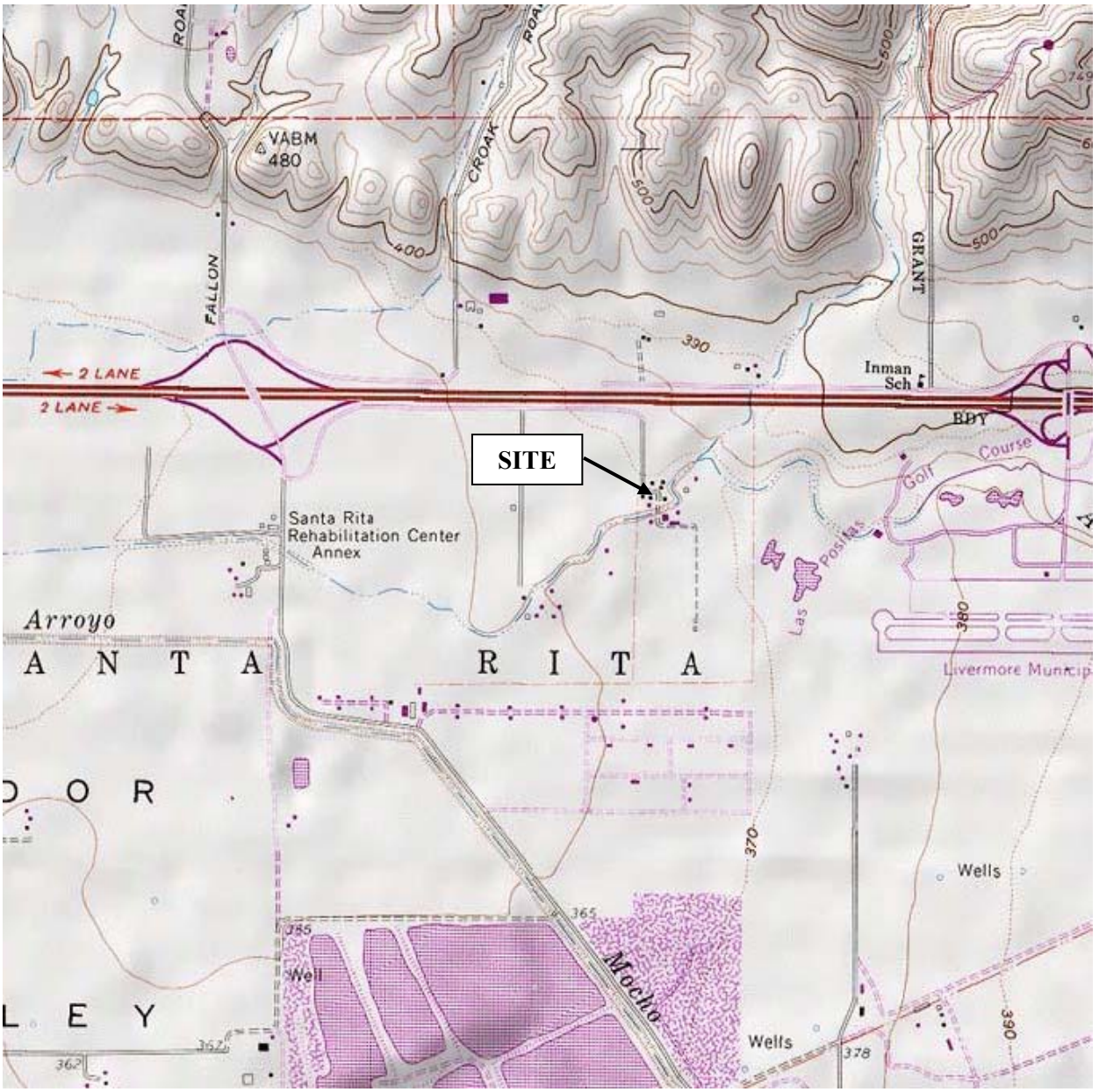
Steve Clements P.G.
Project Manager
SCS ENGINEERS



Attachments: Figure 1 - Site Location Map
Figure 2 - Site Plan
Attachment A - References

cc: Lynn Sagramoso – Children's Hospital
Tom Terrill – The Terrill Company

FIGURES



0 .5 1 MILE

0 1000 FEET 0 500 1000 METERS

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N
W E
S

SOURCE: UNITED STATES GEOLOGICAL SURVEY *LIVERMORE QUADRANGLE, CALIFORNIA 7.5 MINUTE SERIES (TOPOGRAPHIC)* MAP. OBTAINED FROM THE 2000 NATIONAL GEOGRAPHIC TOPO SOFTWARE..

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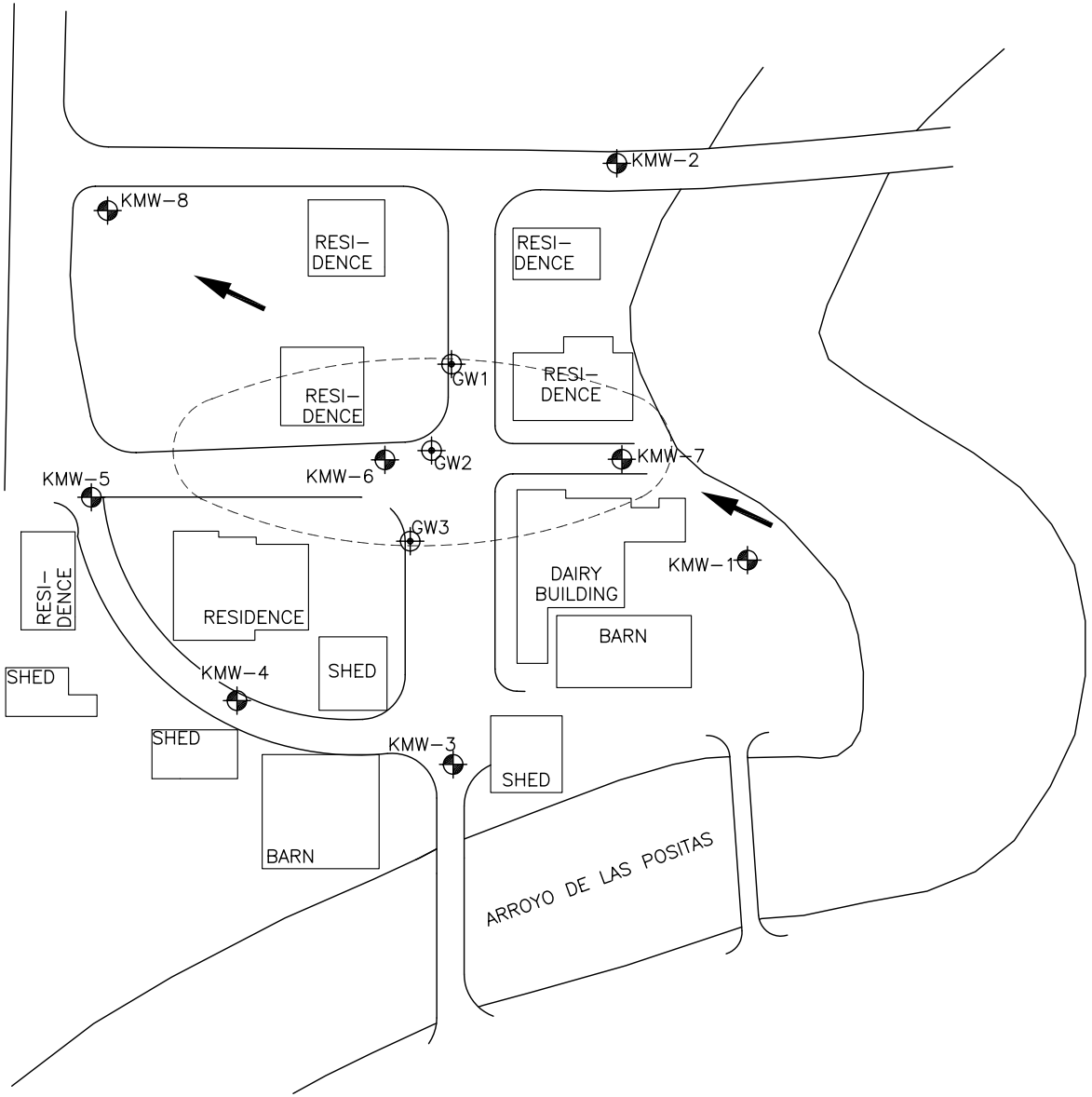
PROJECT NO: 01203087.02		
DESIGNED BY: TMS	SCALE: SHOWN	REVIEWED BY: SJC
DRAWN BY: TMS	DATE: 1-07	

FIGURE 1

SITE LOCATION MAP

FREISMAN RANCH PROPERTY
1600 FREISMAN ROAD
LIVERMORE, CALIFORNIA



LEGEND

- EXISTING GROUNDWATER MONITORING WELL
- PGW2 PROPOSED DEEP GROUNDWATER SAMPLE LOCATION
- HYDROCARBON PLUME (APPROXIMATE)
- GENERAL GROUNDWATER FLOW DIRECTION

N

80 0 80

APPROXIMATE SCALE IN FEET

BASE:
ATC ASSOCIATES INC. MARCH 28, 2003. QUARTERLY GROUNDWATER MONITORING REPORT, FIRST QUARTER 2003, FRIESMAN RANCH PROPERTY, LIVERMORE, CALIFORNIA

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PROJ. NO.	DWN. BY:	ACAD FILE:
01203087.02	TMS	Figure 3.dwg
DATE	CHK. BY:	APP. BY:
5/14/07	TMS	S. Clements

SHEET TITLE: SITE PLAN

PROJECT TITLE: FREISMAN RANCH PROPERTY
1600 FREISMAN ROAD
LIVERMORE, CALIFORNIA

SCALE: AS SHOWN

FIGURE: 2

ATTACHMENT A

References

REFERENCES

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