

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



01-09-01

20299

January 8, 2001
StID# 4219

Mr. Dale Klettke
Port of Oakland
530 Water St.
Oakland CA 94607-2064

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

**RE: Fuel Leak Site Case Closure, Hangar 9 Area, 7683 Earhart Rd.,
Oakland CA 94621**

Dear Mr. Klettke:

This letter transmits the enclosed underground storage tank (UST) case closure letter in accordance with the Health and Safety Code, Chapter 6.75 (Article 4, Section 25299.37 h). The State Water Resources Control Board adopted this letter on February 20, 1997. As of March 1, 1997, the Alameda County Health Services, Local Oversight Program (LOP) is required to use this case closure letter. We are also enclosing the case closure summary. This document confirms the completion of the investigation and cleanup of the reported release at the subject site, UST and non-UST (SLIC).

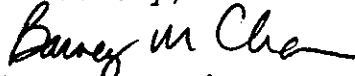
Site Investigation and Cleanup Summary:

Please be advised that the following conditions exist at the site:

- 4100 parts per million (ppm) Total Petroleum Hydrocarbons as gasoline (TPHg), and 0.25, 4.1, 10, 56 ppm benzene, toluene, ethyl benzene and xylenes, respectively remain in the soil at the site.
- 370 parts per billion (ppb) TPHg, 2400 ppb TPH as diesel and 0.96, 3.1 ppb toluene and xylenes, respectively remain in the groundwater at the site.

This site should be included in the City's permit tracking system. Please contact me at (510) 567-6765 with any questions.

Sincerely,


Barney M. Chan

Hazardous Materials Specialist

enclosures: Case Closure Letter, Case Closure Summary

c: Mr. L. Griffin, City of Oakland OES, 1605 MLK Jr. Way,
Oakland CA 94612

B. Chan, files (letter only)

Trlt 7683Earhart

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



01-09-01

20299

January 5, 2001
StID # 4219

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

REMEDIAL ACTION COMPLETION CERTIFICATION

Port of Oakland c/o
Mr. Dale Klettke
530 Water St.
P.O. Box 2064
Oakland CA 94607-2064

RE: Hangar 9 Area, UST site LF19 and LF20, 7683 Earhart Rd.,
Oakland 94621

Dear Mr. Klettke:

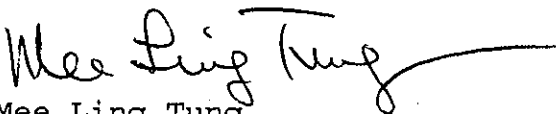
This letter confirms the completion of site investigation and remedial action for the one (1) 1500 gasoline tank and the one (1) 8000 gallon gasoline tank formerly located at the above described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground tank is greatly appreciated.

Based on information in the above-referenced file and with provision that the information provided to this agency was accurate and representative of site conditions, this agency finds that the site investigation and corrective action carried out at your underground storage tank(s) site is in compliance with the requirements of subdivisions (a) and (b) of Section 25299.37 of this Health and Safety Code and with corrective action regulations adopted pursuant to Section 25299.77 of the Health and Safety Code and that no further action related to the petroleum release(s) as the site is required.

This notice is issued pursuant to subdivision (h) of Section 25299.37 of the Health and Safety Code.

Please contact Barney Chan at (510) 567-6765 if you have any questions regarding this matter.

Sincerely,


Mee Ling Tung
Director, Environmental Health

c: B. Chan, Hazardous Materials Division-files
Chuck Headlee, RWQCB
Mr. Allan Patton, SWRCB Cleanup Fund
Mr. Leroy Griffin, City of Oakland OES, 1605 Martin Luther
King Dr., Oakland CA 94612

RACC7683Barhart

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION

8/3
 Date: ~~June 20~~, 2000

Agency name: **Alameda County-HazMat** Address: 1131 Harbor Bay Parkway
 Rm 250, Alameda CA 94502

City/State/Zip: **Alameda** Phone: (510) 567-6700

Responsible staff person: Barney Chan Title: **Hazardous Materials Spec.**

II. CASE INFORMATION

Site facility name: Hangar 9 Area, UST site- LF19 and LF20

Site facility address: 7683 Earhart Rd., Oakland CA 94621

RB LUSTIS Case No: **N/A** Local Case No./LOP Case No.: 4219

ULR filing date: 6/19/92 SWEEPS No: **N/A**

<u>Responsible Parties:</u>	<u>Addresses:</u>	<u>Phone Numbers:</u>
Port of Oakland c/o Mr. Dale Klettke	530 Water St. P.O. Box 2064 Oakland CA 94607-2064	(510) 627-1118

<u>Tank No:</u>	<u>Size in gal.:</u>	<u>Contents:</u>	<u>Closed in-place or removed?:</u>	<u>Date:</u>
1	8000	gasoline	removed	11/15/91
2	1500	gasoline	removed	11/15/91

III RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: possible leaks in piping

Site characterization complete? Yes

Date approved by oversight agency:

Monitoring Wells installed? Yes Number: 7

Proper screened interval? Yes, based on depth to first encountered gw

Highest GW depth: 0.52' bgs Lowest depth: 15.70' bgs (1992)

Leaking Underground Fuel Storage Program

Flow direction: varies from north to sw, due likely to the varying lithology within the shallow fill soils at the airport.

Most sensitive current use: commercial/industrial

Are drinking water wells affected? No Aquifer name: NA

Is surface water affected? No Nearest affected SW name: NA

Off-site beneficial use impacts (addresses/locations): NA

Report(s) on file? **Yes** Where is report(s)?

Alameda County	& City of Oakland Fire Department
1131 Harbor Bay Parkway,	1605 Martin Luther King Dr.
Room 250, Alameda CA 94502-6577	Oakland CA 94612

Treatment and Disposal of Affected Material:

<u>Material</u>	<u>Amount</u> (include units)	<u>Action (Treatment</u> <u>of Disposal w/destination)</u>	<u>Date</u>
Tanks	1- 8000 gallon	disposed @ Erickson, Richmond	11/15/91
	1- 1500 gallon	" " "	"
Free Product	50 gallon	recycled @ Refinery Services, Patterson, CA	11/12/91
Soil	650 cy	treated at Port of Oakland bioremediation site and reused at various Port sites disposed @ Gibson Oil & Refinery 3/24/92 Bakersfield	
	120 cy		
Groundwater	5000 gallons	recycled @ Refinery Services	11/18/91
	1700 gallons	" " "	11/26/91

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm)		Water (ppb)	
	1 Before	2 After	2 Before	3 After
TPH (Gas)	4100	4100	41,000	370
TPH (diesel)				2400
Benzene	0.25	0.25	440	ND
Toluene	4.1	4.1	1700	0.96
Ethylbenzene	10	10	58	ND
Xylenes	56	56	1700	3.1
Lead (WET)			*16,000	
Other: Total Lead	17		60	ND
MTBE				ND
VOCs (8240)				ND
Total Dissolved Solids				ND
Conductivity			17,000 ppm	
			15,820 umhos/cm	

Leaking Underground Fuel Storage Tank Program

Comments (Depth of Remediation, etc.):

1 soil samples W-1, W-3 and W-4

2 grab groundwater from UST LF-19 pit, (BH-W)

3 monitoring well results

* from spoils sample, SP-9, disposed @ Gibson Oil & Refinery

V. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Undetermined

Does corrective action protect public health for current land use? YES

Site management requirements: site should be included in the City of Oakland Permit Tracking System. A site health and safety plan will be required for any subsurface work.

Should corrective action be reviewed if land use changes? Yes

Monitoring wells Decommissioned: one

Number Decommissioned: 1

Number Retained: 6

List enforcement actions taken: none

List enforcement actions rescinded: NA

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: Barney M. Chan

Title: Hazardous Materials Specialist

Signature: *Barney M Chan*

Date: 8/3/00

Reviewed by

Name: Tom Peacock

Title: Manager

Signature: *Tom Peacock*

Date: 8-1-00

Name: Eva Chu

Title: Hazardous Materials Specialist

Signature: *Eva Chu*

Date: 6/21/00

Leaking Underground Fuel Storage Tank Program

VI. RWQCB NOTIFICATION

Date Submitted to RB: 8/7/00

RB Response: *Concur - Cheryl Headlee*

RWQCB Staff Name: C. Headlee

Title: AEG

Date: 8-7-00

VII. ADDITIONAL COMMENTS, DATA, ETC.

See attached site summary.

The commonly referred to "Hangar 9 Area" at one time was thought to consist of two parcels; the 6.7 acre Hangar 9 Parcel including Hangar 9 (Building L-820) and nearby service buildings (L-807, L-808, L-809 and L-811); and an approximately 1 acre vacant parking area on the east side of Earhart Road, **see Figure 1**. Later, this was clarified to state that Hangar 9 consists only of the 6.7 acre parcel. Hangar 9 and adjacent structures were constructed in 1941 for use by the US Navy. The area was used for staging of fighter aircraft being sent overseas to the Pacific Theater during WW II. Historical photos show indications of surface staining related to parked aircraft. This is likely one of the sources of the TPH beyond the TPHg range found not attributable to the former gasoline USTs at the site. Transamerica Airlines occupied Hangar 9 from 1973 to 1986. Based on historical records the other ancillary buildings in Hangar 9 were used for the following activities:

- Building L-807- Former welding and machine shop, former paint and oil storage area.
- Building L-808- Former paint shop with associated paint and solvent storage
- Building L-809- Former metal cleaning shop (used for washing and degreasing aircraft parts.
- Building L-811- Former vehicle maintenance shop.

UST LF-19, the 8000 gallon gasoline tank, was located adjacent to building L-811 and the two gasoline dispensers were located along the south side of the building.

UST LF-20, the 1500 gallon gasoline tank, was located adjacent to building L-807 and its dispenser was located at the southwest corner of the building.

Because of the gasoline release exhibited during the removal of the 8000 gallon UST, the site was put into the LOP program. However, because of the potential release at other areas where chemicals and hazardous wastes were stored, several additional investigations have occurred. This site summary will include all prior investigations and the risk assessment includes all this data and requests closure for both the underground tanks and SLIC release at the Hangar 9 area.

Less is known about Parcel 2, the 1 acre lot located on the east side of Earhart Rd. Potential areas of environmental concern include:

- Among the three former buildings at the site, one was reportedly used by S&S Accessories for the storage of flammable solvents.
- Gasoline pumps were reported to be located in the northwest corner of the site. It is unknown whether USTs were located onsite.

- Currently, a transformer is located on a concrete pad along the western edge of the site and an electrical utility vault is located immediately south of the transformer.

Because no actual release has been identified at parcel 2, this area is not being investigated by our office.

Prior investigations:

The first documented subsurface investigation of the site occurred in July 1991 performed by Tetra Tech. Based on historical site usage, a total of 16 soil samples were collected at various selected locations on Parcel 1. In addition, sludge and aqueous samples were collected from six sumps and one septic tank on Parcel 1 and two sumps on Parcel 2.

The samples for Hangar 9 (L-820) were taken at the following locations: See Figure 4.

- Outside the immediate building within an asphalt patch, within a stained area and outside the former flammable storage area. (H9S-11)
- Inside the building, samples were taken near the south end of the workshop area, from the large sump at the north area of the workshop and from the sump in the boiler room. (H9S-15, H9W-01, H9SL-03)

The samples taken near building L-807, the welding and machine shop, were taken outside the building: See Figure 2.

- One sample was taken southwest of the building near the gas pump of UST LF-20. (H9S-10) Another sample was taken from the septic tank located just south of building L-807. (H9SP-02)

The samples taken within and near building L-808, the former paint shop were: See Figure 2.

- Beneath the concrete floor of one of the spray booths (H9S-07), one sample from the southeast corner of the site (H9S-08) and a third sample just outside the front door of the building (H9S-09).

The samples taken near building L-809, the metal cleaning shop were:

- One sample was taken just north of the building (H9S-03) and one sample south of the building collected from the bottom of a sump (H9S-16). See Figure 3.

The samples taken within and near building L-811 represent potential releases from UST LF-19, its piping and dispensers, from a hydraulic hoist and from surface releases within and outside of the building.

Soil sample H9S-01 taken at a depth of 1.5-2.0' exhibited the highest concentration of TEH and TVH at 5,000 and 6,800 ppm, respectively. Because this sample was shallow and located approximately 100' west of the former UST, its source is likely from past surface releases. The significant concentration of TEH is also contrary to what might be expected from a gasoline tank release. Sludge samples from the hydraulic lift sump exhibited elevated TEH concentrations as well, supporting a non-UST source. (Samples H9S-01 through H9S-06, H9SL-01, H9SL-02, H9SP-03 and H9SPW-03) See Figure 3.

The samples taken on Parcel 2, the eastern lot, were from a sump within a utility vault and a sludge sample from the concrete vault near the transformer. These samples represent collection of surface contaminants. Unfortunately, no samples were taken from near the former dispensers. No information regarding the existence of underground tanks on this site was provided. In addition, no data thus far indicates than an environmental problem exists on Parcel 2.

The results indicate that surface contamination has collected in sumps, septic tanks and vaults. With the exception of the area near the dispensers for UST LF-19, and near the sumps west of L-811, contamination was minor. See Table 1 for a summary of analytical results. No benzene was detected in any soil or sludge sample. The most significant result was from sample H9SLO-3, which exhibited 8.7 ppm of Arochlor 1260. However, this sample was from a sump sample within the boiler room.

On November 15, 1991, the USTs LF-19 and LF-20 were removed from the site. See Figure 1-B. By far, the largest amount of gasoline contamination was observed in the tank pit of LF-19, although no holes were observed in either tank. Significant holes were, however, observed in the piping run from tank LF-19 to its dispensers. Using a PID to screen soil, the UST pit and the piping/dispenser area around LF-19 was over-excavated. Approximately, 580 cubic yards of fill and clay soils was generated along with 120 cubic yards of sandy soil surrounding the tank. The 120 cubic yards of soil exhibited hazardous levels of lead when tested by the WET and was later disposed as hazardous waste. Approximately 70 cy of soil was generated from the removal of LF-20. This soil was later transported to the Port's bioremediation facility at Langley and Doolittle Drive as was the 580 cy of fill and clay spoils from LF-19 excavation.

Ten soil samples were collected from the excavation for tank LF-19. Groundwater was encountered at approximately 6' bgs. Two soil samples were collected from each end of tank LF-20. There was very little sign of a petroleum release from LF-20. A grab groundwater sample was taken from each pit, after an initial removal of a total of 6700 gallons of water from both pits. See Tables 4-A, 4-B and 3-B for a

summary of analytical results and Figures 4-A and 4-B for the location of the samples.

Based on the regional groundwater flow direction, in **May 1992** two monitoring wells (MW-1-4 and MW-2-4) were installed immediately southwest of the former USTs. **See Figure 5.** Soil samples were collected at 5' in both boreholes, just above groundwater. Due to the presence of high boiling petroleum fractions, the detection limit for TPHg was elevated in both soil samples. Jet fuel was exhibited in the 5' samples at 95 and 1100 ppm in MW-1-4 and MW-2-4, respectively. This is further evidence of a sitewide surface release of jet fuel and higher boiling hydrocarbons from past military use. At this time the installation of only two monitoring wells was consistent with the "regional approach" proposed for Port sites. **See Table 2 and 3 for a summary of soil and initial groundwater sampling results.**

In **July 1992**, under the request and review of the Port of Oakland, an additional Phase II investigation was performed at this site. The County was not involved with the review of this work. This work was a result of the initial July 1991 and tank removal reports. Initially, more soil samples were proposed, however, because inspection of the sumps, vaults and septic tanks did not observe any cracks, the samples around the tanks were deemed unnecessary. Six exploratory borings were advanced on July 16 and 17, 1992 in which 3 monitoring wells (MW-1-MW-3) were installed. The three other borings, B-1 through B-3 were advanced near buildings L-807 and L-808. In addition, a sample was taken from V1, vault one, located between buildings L-808 and L809. **See Figure 6 for the locations of the borings. See Table 3-1 for a summary of the analytical results for the boring and vault samples.** The boring logs for MW-1 through MW-3 are attached. The subsurface soil is characterized as clayey silty sand to about 4' bgs, then silty clay (bay mud) to the depth of boring (15'). With the exception of TPHg and TPHd found in the 2' sample from MW-2, very little volatile organics were found. Since MW-2 was located near H9S-01, the TPHd found in the shallow 2' boring may be related to that found in H9S-01 and may not be underground tank related.

On **October 4, 1993** Uribe and Associates installed two wells. Well MW-2A was installed to replace well MW-2, which was abandoned in March 1993 because it had a poor surface seal. Well MW3-4 was installed west-southwest of the residual petroleum contamination north of building L-809. Recall soil sample W-4 taken after over-excavation of the dispenser area for UST LF-19 exhibited up to 4100 ppm TPHg and 10 and 56 ppm E and X, respectively. A south-southwesterly groundwater gradient was assumed for this site. Actual monitoring indicates a shifting gradient, which may be explained by the Airport Channel to the east and the SF Bay to the west and the shallow fill in this area. TPHg and TPHd was exhibited in the 2' sample from MW-3-4 while little to no contamination was detected in MW-2 samples.

See Figure 7 and Table 4 for a site map and the analytical results for the soil samples.

In March of 1995 additional soil data was obtained during the repair of a leaking water line in the general area between buildings L-812 (Post Office) and L-811. Soil samples B-1-4 through B-5-4 were taken by Clayton Environmental to characterize the soil that might be encountered during the repair. See Figure 8 and Drawing 1. As seen in Table 5, only diesel and TRPH was encountered, likely the result of past surficial releases during the time of Navy activities.

On October 24, 1995, additional soil samples (S-1 through S-6) were taken in the area just north of those taken in March of 1995 by Alisto Engineering as part of the repair and replacement of the concrete apron. See Figure 8, Figure 9 and Table 6. Localized hot spots of TPHg, jet fuel, kerosene and motor oil were found. These results are consistent with the assumption of wide spread TPH contamination from historic military usage occurred.

On November 3, 1995 after the demolition of buildings L-807, L808 and L-809 shallow soil samples were collected beneath these former buildings. These samples, S-1 through S-4, were analyzed for TPHg, TPHjf, TPHms, TPHd, TPHo, BTEX, lead and PCBs. See Figure 8, Drawing 2 and Table 7 for these results, which were unremarkable. S-1 was located in former building L-807, S-2 and S-3 were located within former building L-808 and S-4 was located within former building L-809. Sample S-4 exhibited the highest TPH concentrations where up to 700 ppm TPHg, 760 ppm TPHjf and 670 ppm TPHo was found. The detection of TPHjf, TPHms and TPHmo in shallow soils are consistent with surface releases. In addition Arochlor 1254 @ 0.11ppm and Arochlor 1260 @ 0.15ppm were detected. These values are much less than the industrial PRG value for A1254, 19 ppm.

In August 1997, the Hangar 9 area between the Post Office (Bld. L812) and Bld. 811 was further sampled by ITSI to determine the potential contamination that might be encountered during the planned repair of this area. This area was divided into Areas 1-3. A total of 52 borings at shallow, <2.5', depth were taken and divided into 13 sets of 4. Each set of four was composited for chemical analysis, which included TPHg, BTEX, TPHd, TRPH, VOCs, SVOCs, PCBs and heavy metals. See Figure 10. As seen in Table 8, the cumulative soil results, these samples were unremarkable.

Long term monitoring has been performed from 7/92 to ~~9/95~~ 9/95. See Table 9 for a summary of monitoring results and a figure indicating the varying gradient at the site. Though traces of TPHg,d,jf and o have been detected, it appears that groundwater contamination has stabilized and is decreasing, likely the result of natural bio-remediation. The majority of residual petroleum contamination at this site comes from historic surficial releases as evidenced by the presence of shallow TPHjf and TPHo.

Closure of both LOP and SLIC cases for this site is recommended.

- The site has been extensively characterized. The residual petroleum contamination consists of TPHg near the former piping run of UST LF-19 where up to 4100 ppm TPHg is found, however, residual benzene is only 0.25ppm. The residual TPHd and TVH are found east of LF-19 and likely the result of surface releases during the time the site was used by the US Navy.
- The sources; USTs, soil and groundwater have been removed. The site is totally surfaced and is currently used as a loading and unloading area for aircraft.
- Long term monitoring indicates a stable petroleum plume.
- Shallow groundwater in this area of Oakland is not potable as verified by elevated TDS in well water.
- No environmental receptors are nearby. The closest surface water body is the Airport Channel, approximately 1500' east of the site.
- A human health risk assessment was provided evaluating soil samples from investigations from both underground tank and surface releases. Based upon this evaluation, no threat to human health or the environment is anticipated.

The RBCA submitted for this site determined that the only complete exposure pathway is Outdoor Air Exposure, however, it appears that both surface soil volatilization to indoor and outdoor air are potential viable pathways. The rationale used was that this area was not scheduled for any buildings after the recent removal of existing buildings and the future use will likely continue be as a staging area for aircraft. Should the future use of the property change, ~~these~~ ^{other} viable exposure pathways must be evaluated.

The chemicals of concern (COC) evaluated were identified as BTEX and PCBs. None of the SSTLs were exceeded by the maximum concentration of COC in soil and groundwater for either the commercial or construction worker scenarios.

The COCs for the ecological risk evaluation were identified as TPH as gasoline, diesel and jet fuel and BTEX. The screening levels developed for the SFIA were compared with the highest COC concentrations and none of the screening levels were exceeded. Therefore, no adverse human health or ecological impact is expected due to residual hydrocarbons or PCBs at this site. However, a soil and groundwater management plan and an appropriate health and safety plan for maintenance or construction workers is required prior to future subsurface activity.

Attached are comparison tables for the COCs found in soil and groundwater for both the human health and ecological risk evaluation.

The evaluation for the presence of MTBE was handled two ways. Prior BTEX chromatograms were re-evaluated by Sequoia Analytical who had previously run a MTBE surrogate during the BTEX analysis. Sequoia estimated that prior groundwater samples were < 2ppb MTBE. In addition, because of the past activities at the site, volatile organic compounds, VOCs, were recently analyzed in the Hangar 9 wells, MW3-4, MW1-4, MW-3 and MW-2A. All results were ND including that for MTBE. **See Figure 11.** In addition, the presence of PNAs was questioned because of the presence of TPHd and TPHo found in soils. A soil and grab groundwater sample, BC-1, was collected, at a location near where elevated TPHd soil contamination had previously been detected. The samples exhibited ND for PNAs in both soil and groundwater samples.

FORMER BUILDING LOCATIONS

Figure 3

Vacant Land

Taxi Way

Vacant Land

Taxi Way

Vacant Land

L-812

Parcel 1

L-811

Former UST
LF-19

L-809

L-808

L-807

Former
UST LF-20

Hangar 9/
L-820

Hangar 8/
L-810

Old Earhart Road

Lockheed

Benson

Legend



Approximate Project Area Boundary



Former Underground Storage Tank Location (UST)



Building Remaining at site (1999); other on-site structure removed in early 1990's, or in 1997/98 (Building L-811)

Hangar 9 Area
Metropolitan Oakland International Airport
North Field
Oakland, California

From: McLaren Hart, 1991.



Not to Scale
BASELINE

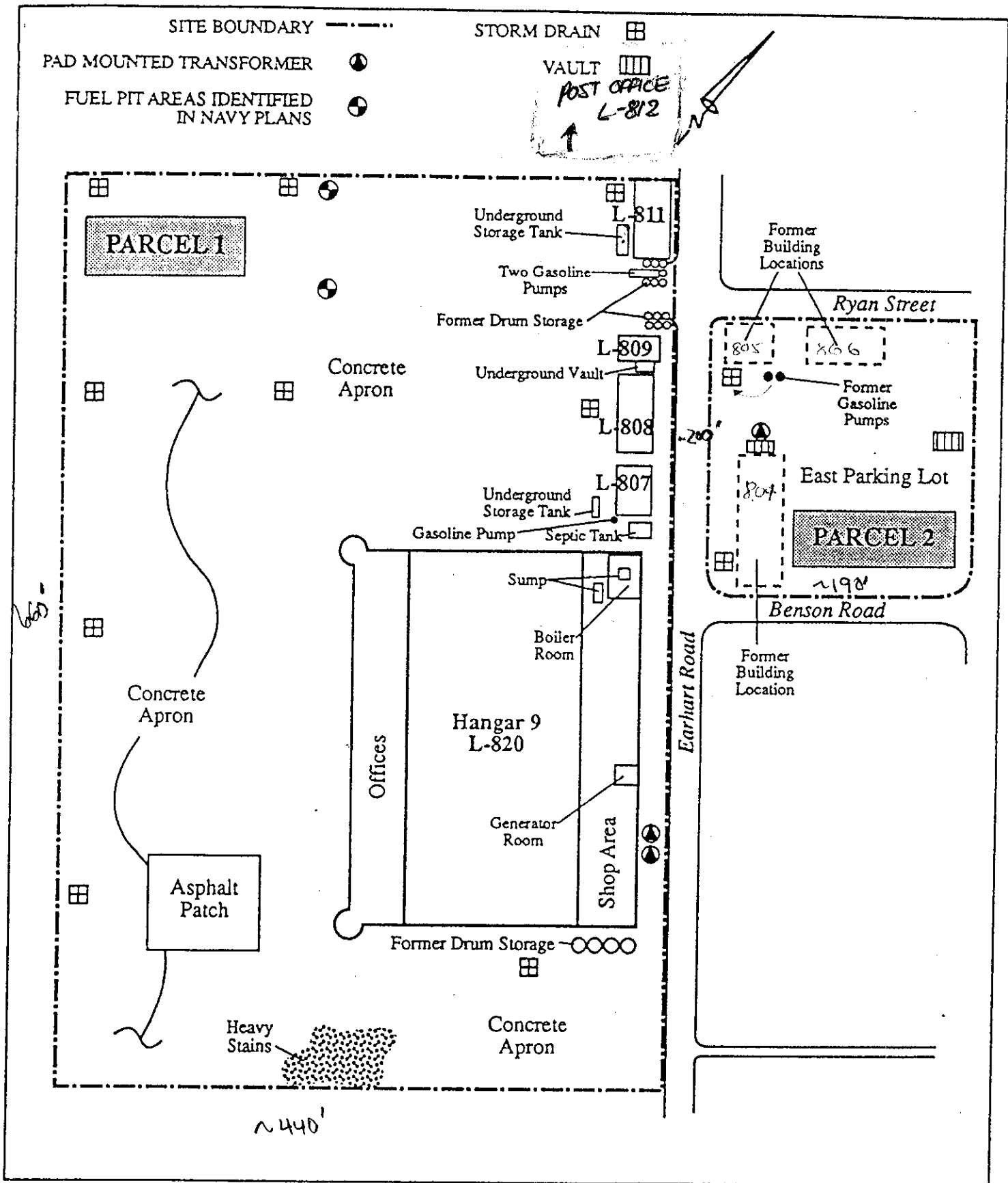


Figure 1 Hangar 9 Site Plan (Parcels 1 and 2)



(McLaren/Hart Phase I Report, 1991)

Not to Scale

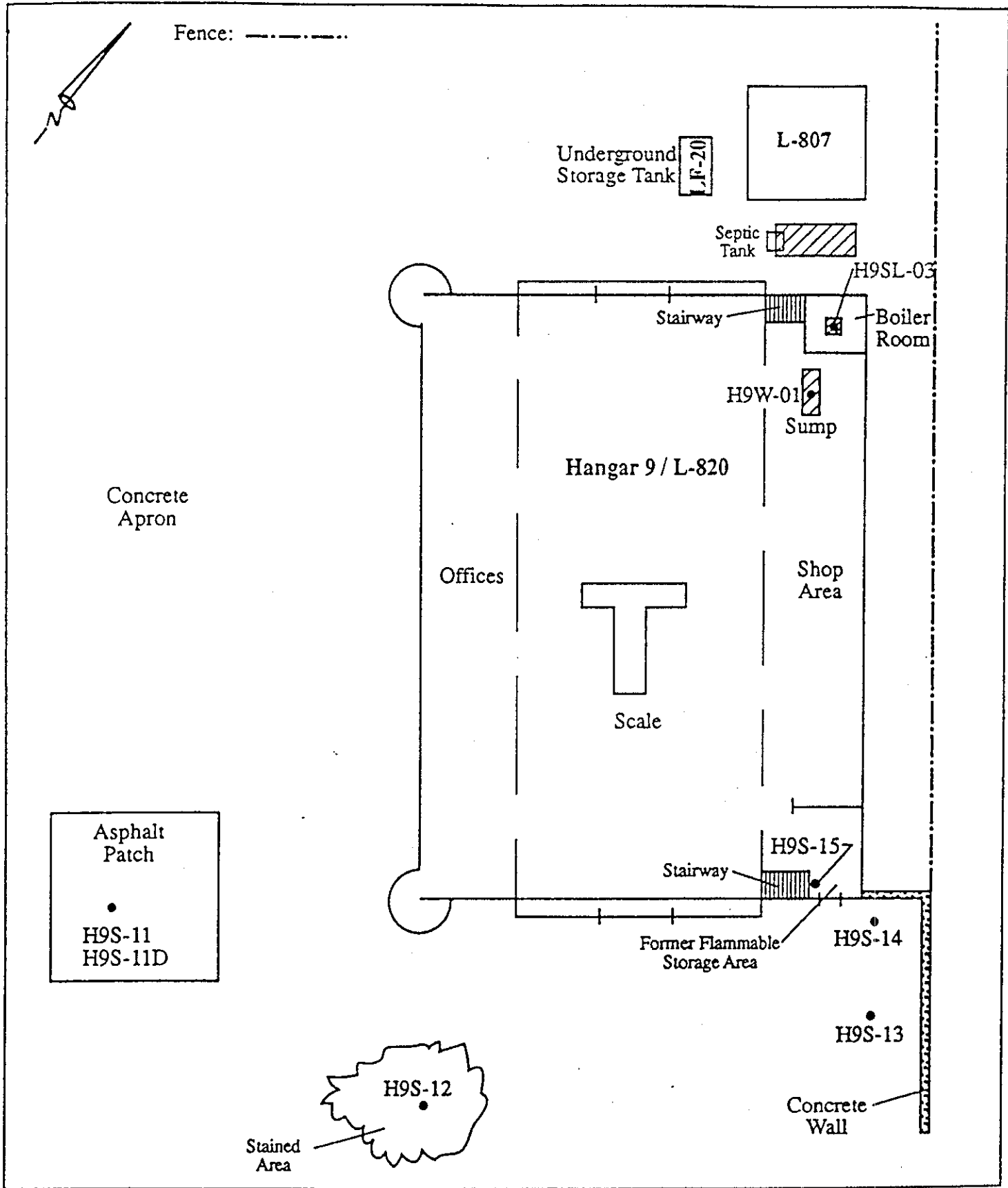


Figure 4

Sample Location Map
Hangar 9



Not to scale

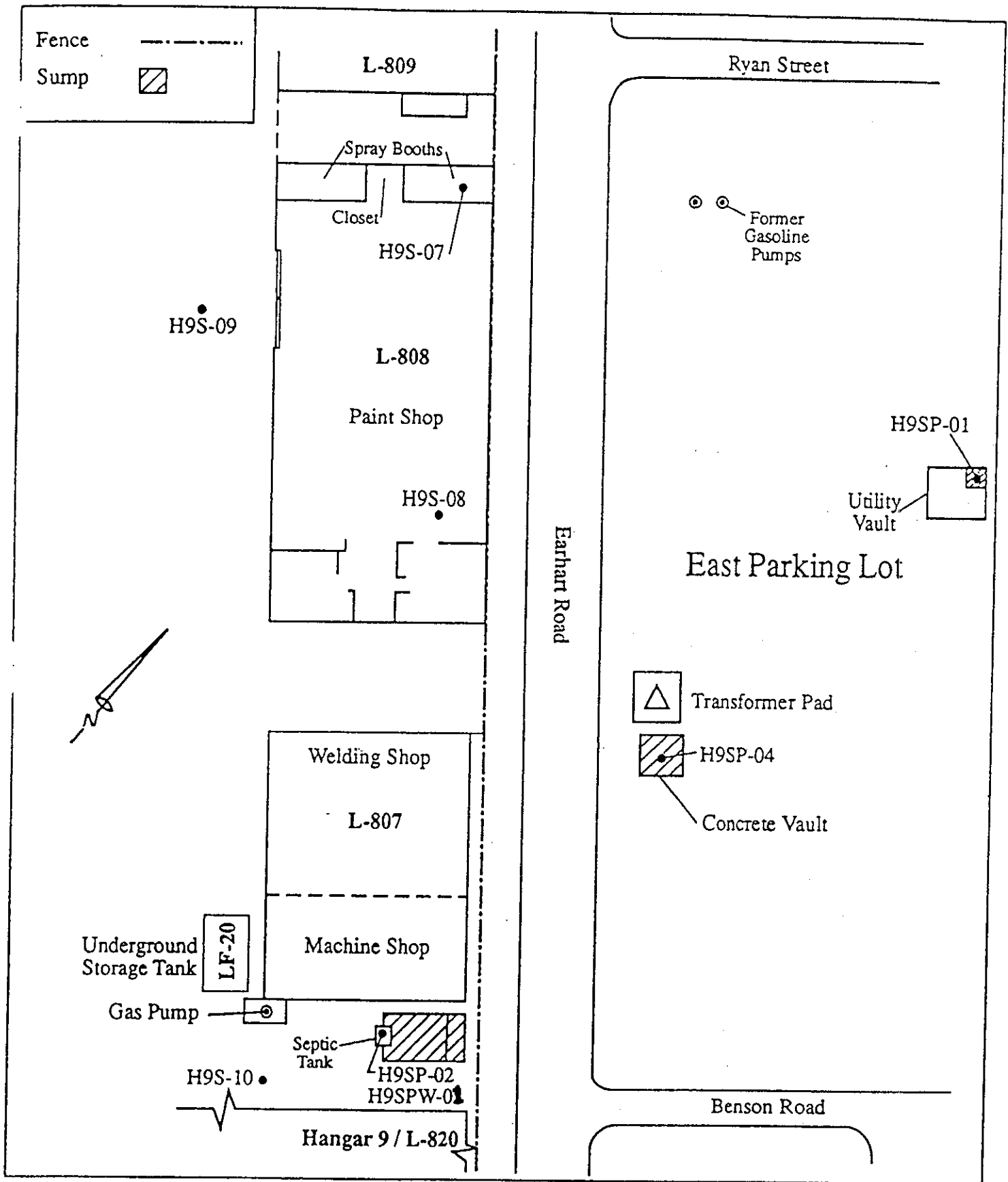


Figure 2 Sample Location Map
 Building L-807 and L-808
 and East Parking Lot

Not to Scale



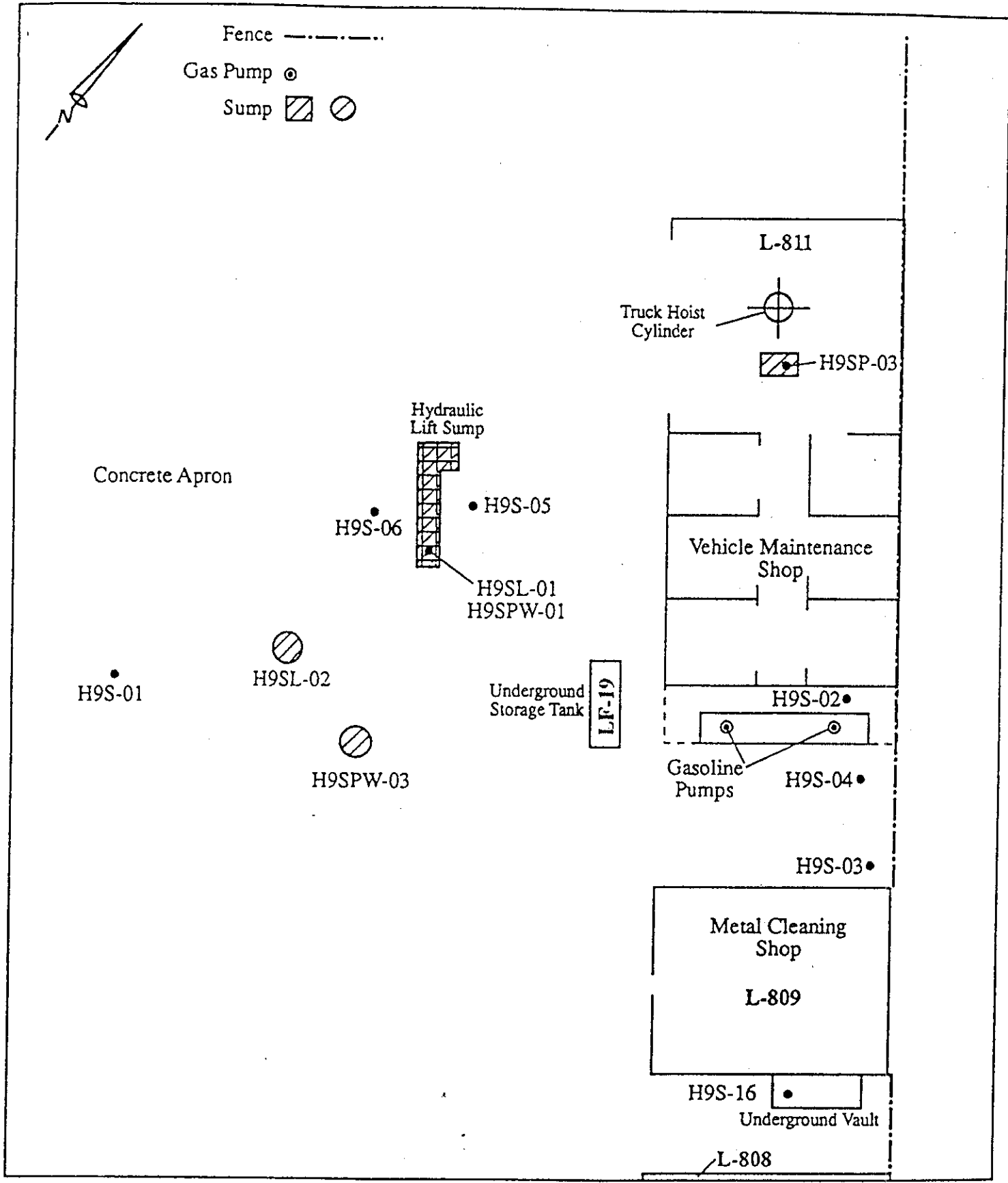


Figure 3

Sample Location Map
Building L-809 and L-811



Not to Scale

TABLE 1
SUMMARY OF ANALYTICAL RESULTS
(ppm)

LOCATION	MEDIA	DEPTH (FEET)	TEH ⁽¹⁾ DHS LUFT	TVH ⁽²⁾ DHS LUFT	PCBs ⁽³⁾ EPA 8080	VOCs ⁽⁴⁾ EPA 8240
Building L-807						
H9S-10	soil	1.5-2.0	17	1.7	NA	ND
H9SP-02	sediment	septic tank	8,700	NA	0.72	NA
H9SPW-01	water	septic tank	NA	NA	ND	NA
Building L-809						
H9S-03	soil	1.5-2.0	79	16	ND	ND
H9S-16	soil	2.5-3.0	9.4	16	NA	10.0 (chlorobenzene)
Building L-808						
H9S-07	soil	6.0-7.0	11	ND	NA	ND
H9S-08	soil	6.0-7.0	3.9	ND	NA	0.023 (toluene)
H9S-09	soil	1.5-2.0	47	ND	NA	ND
Building L-811						
H9S-01	soil	1.5-2.0	5,000	6,800	NA	6 (total xylenes)
H9S-02	soil	1.5-2.0	ND	ND	NA	ND
H9S-04	soil	1.5-2.0	460	470	NA	ND

Solvent
solvent

*w/ sump
sediment*

*water -
solvent*

TABLE 1 (Continued)

LOCATION	MEDIA	DEPTH (FEET)	TEH ⁽¹⁾ DHS LUFT	TVH ⁽²⁾ DHS LUFT	PCBs ⁽³⁾ EPA 8080	VOCs ⁽⁴⁾ EPA 8240
H9S-05	soil	1.5-2.0	75	ND	NA	ND
H9S-06	soil	1.5-2.0	3,100	1,000	NA	2 (total xylenes)
H9SL-01	sediment	sump	2,400	130	0.3	NA
H9SPW-02	water	sump	NA	NA	ND	NA
H9SL-02	sediment	sump	820	170	ND	NA
H9SPW-03	water	sump	NA	1.7	ND	NA
H9SP-03	oil	sump	NA ⁵	NA	ND	NA
Building L-820						
H9S-11	soil	1.5-2.0	130	430	NA	ND
H9S-11D	soil	1.5-2.0	53	17	NA	ND
H9S-12	soil	1.5-2.0	13	ND	NA	ND
H9S-13	soil	1.5-2.0	90	7.5	NA	ND
H9S-14	soil	1.5-2.0	9.1	ND	NA	ND
H9S-15	soil	3.5-4.0	4.7	ND	NA	ND
H9SL0-3	sediment	sump	1,700	98	8.7	NA
H9W-01	water	sump	NA	NA	ND	NA

TABLE 1 (Continued)

LOCATION	MEDIA	DEPTH (FEET)	TEH ⁽¹⁾ DHS LUFT	TVH ⁽²⁾ DHS LUFT	PCBs ⁽³⁾ EPA 8080	VOCs ⁽⁴⁾ EPA 8240
East Parking Lot						
H9SP-01	soil	sump	NA	NA	0.34	NA
H9SP-04	water	sump	NA	NA	0.08 ⁶	NA

¹ TEH = Total Extraction Hydrocarbons

² TVH = Total Volatile Hydrocarbons

³ PCBs = Polychlorinated Biphenyls

⁴ VOCs = Volatile Organic Compounds

⁵ Sump is filled with oil

⁶ Water sample report in ppb.

ND = Not detected at or above reporting limit

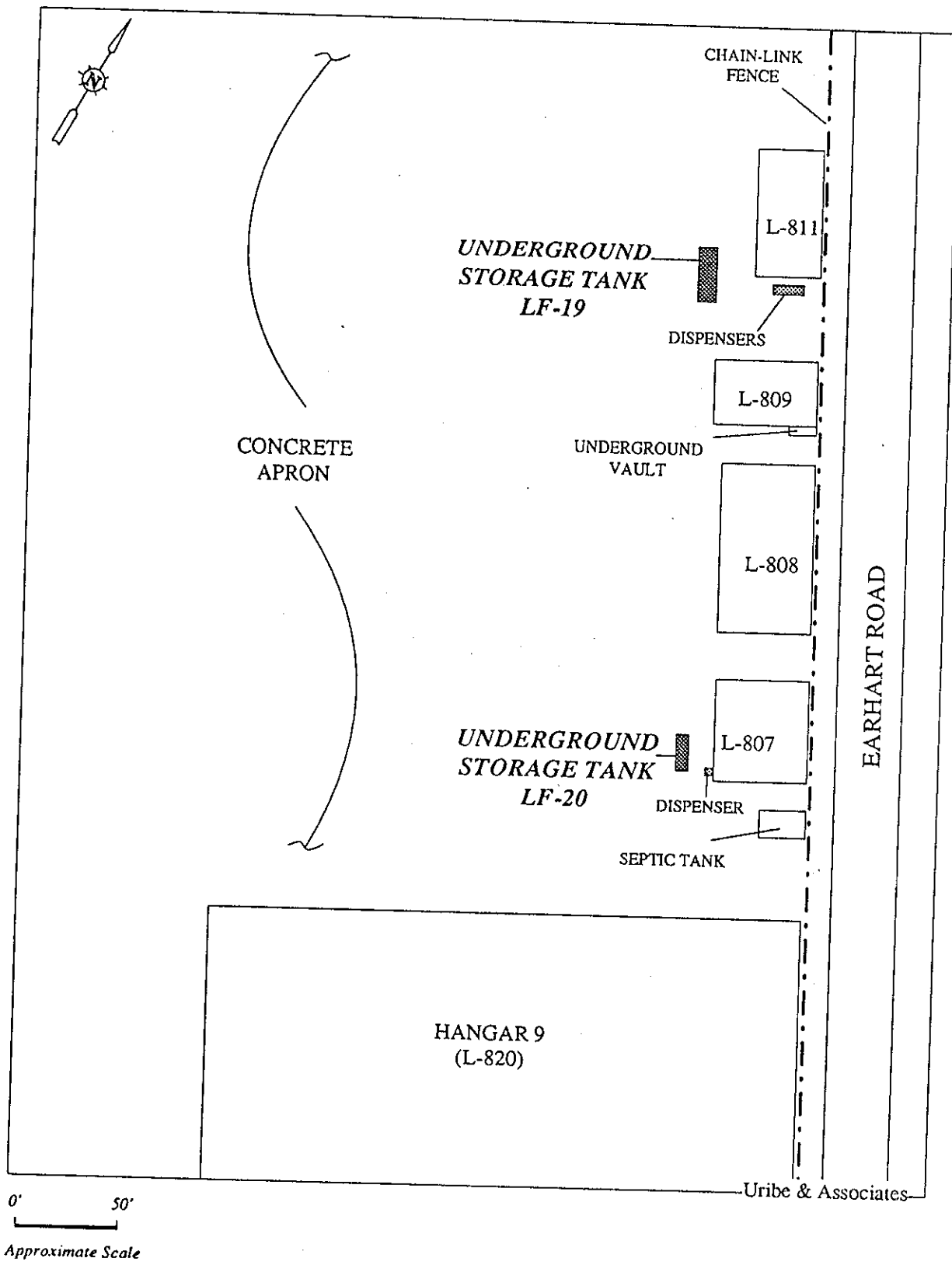


Figure 1-B: Site Plan of Hangar 9 Complex

19

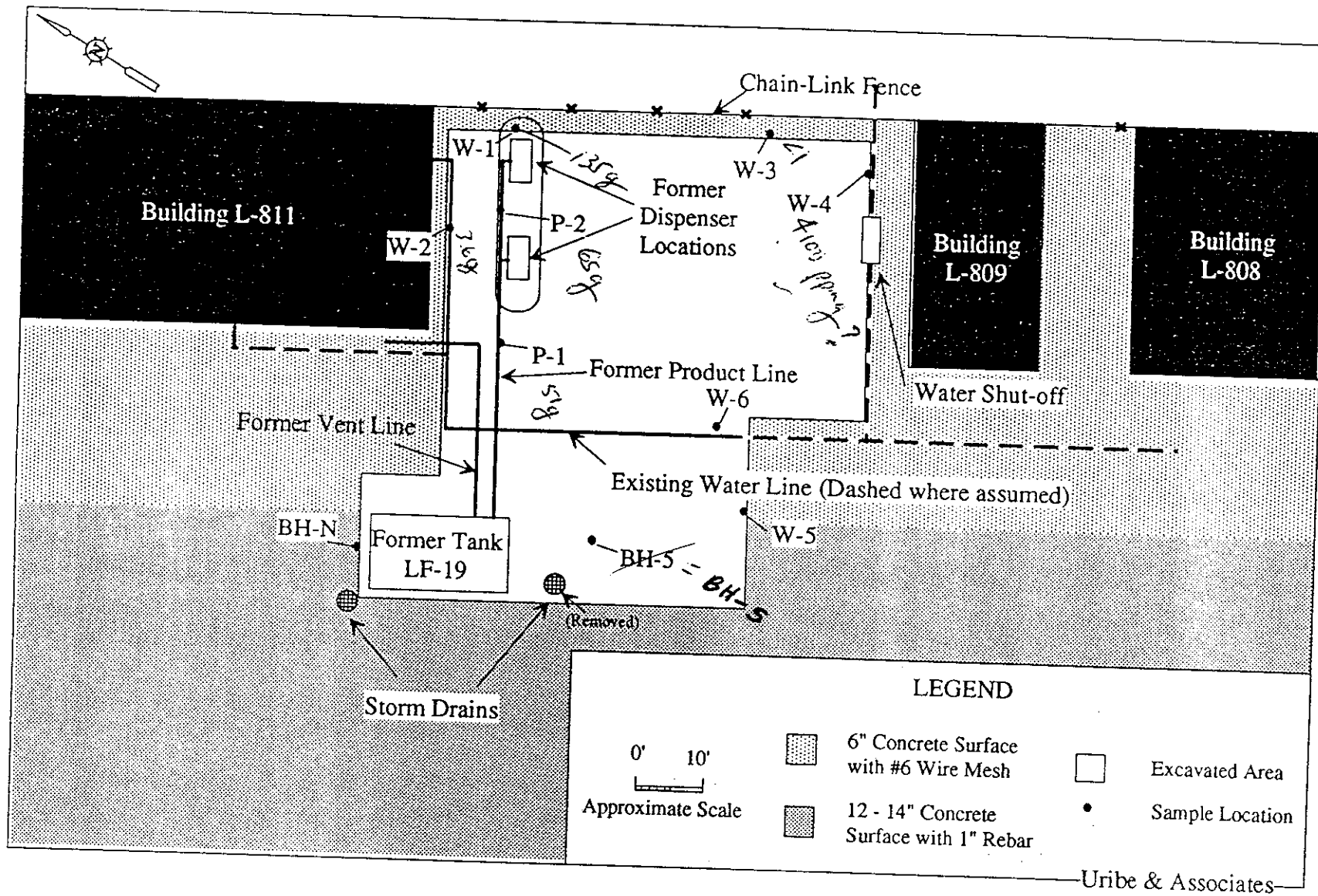


Figure 4-A: Plan View of Sampling Locations and Extent of Excavation at Tank LF-19

4
5

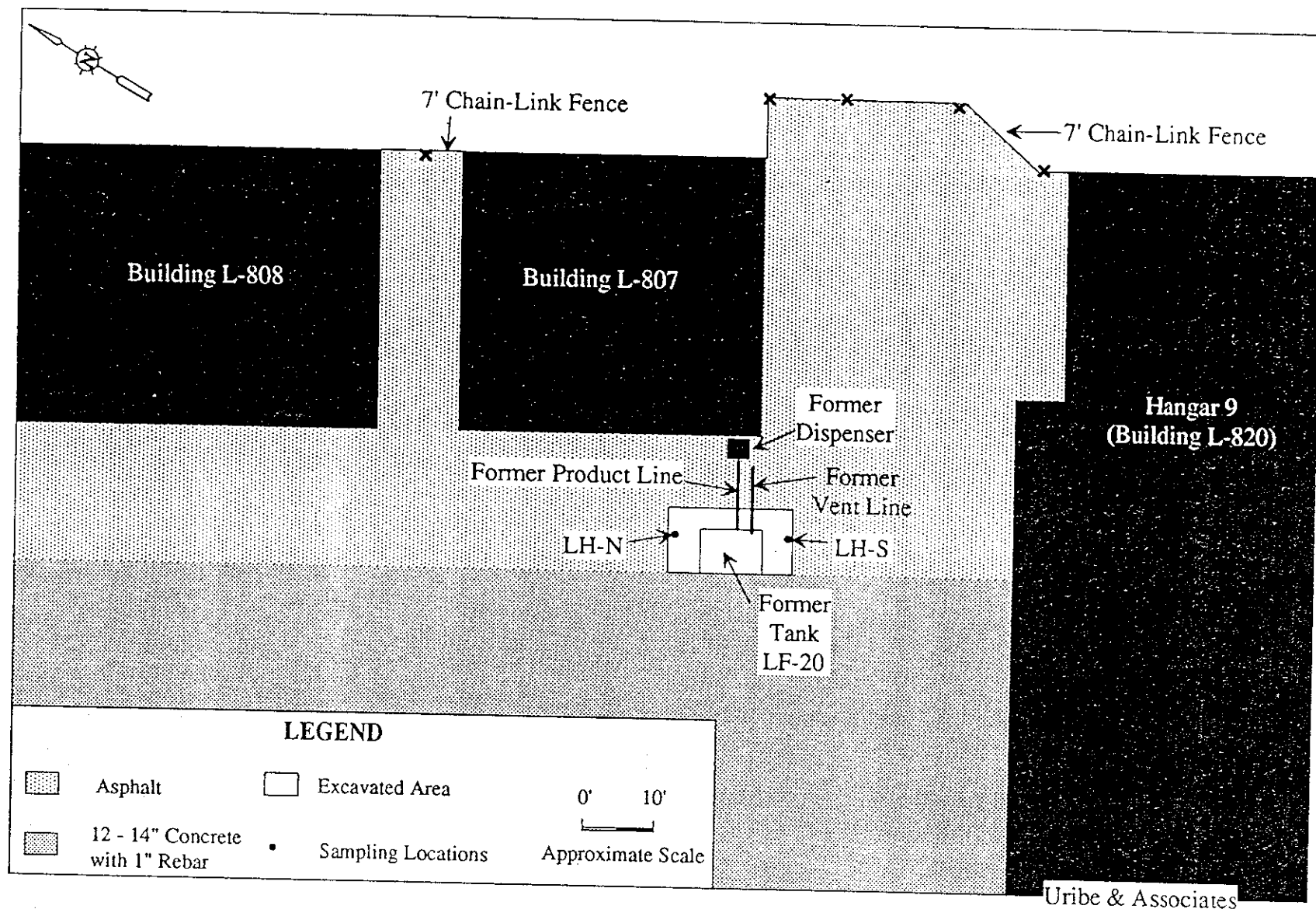


Figure 4-B: Plan View of Sampling Locations and Extent of Excavation at Tank LF-20

brown. This indicates that contamination is likely to be confined to the fill material at the surface and the upper one foot of the clay in this area of the MOIA. We have insufficient data to estimate the actual extent of the soil contamination under the buildings associated with the tank system.

One TPH-G result (for sample W-6) was reported by the laboratory as not matching a gasoline standard. The level of TPH-G was quite low (5.5 mg/kg), so no further investigation of this result was pursued.

One groundwater sample (BH-W) was also collected from the excavation. The sample was analyzed for the same constituents as the soil samples, and it contained all constituents analyzed (Table 4-A).

Table 4-A
Laboratory Analysis Results of Samples from Excavation of Tank LF-19

Sample ID	TPH-G mg/kg	Benzene ug/kg	Toluene ug/kg	Ethylbenzene ug/kg	Xylenes ug/kg	Lead mg/kg
Soil Samples						
BH-N	<1.0	23	<5.0	<5.0	10	4.0
BH-S	<1.0	<5.0	<5.0	<5.0	<5.0	<3.0
P-1	51	8	27	190	780	6.9
P-2	65	230	14	57	810	<3.0
W-1	135	250	4,100	450	1,600	3.5
W-2	3.6	57	16	7.9	33	3.5
W-3	<1.0	<5.0	<5.0	<5.0	<5.0	17
W-4	4,100	<400	<400	10,000	56,000	4.5
W-5	<1.0	<5.0	<5.0	<5.0	<5.0	10.0
W-6	5.5*	<5.0	<5.0	24	270	11.8
Water Sample						
BH-W	41	440	1,700	58	1,700	0.060

* Laboratory reported that the chromatograph did not match a gasoline standard. —
mg/kg = milligrams per kilogram (parts per million)
ug/kg = micrograms per kilogram (parts per billion)

Table 4-B
Laboratory Analysis Results of Samples from Excavation of Tank LF-20

Sample ID	TPH-G mg/kg	Benzene ug/kg	Toluene ug/kg	Ethylbenzene- ug/kg	Xylenes ug/kg	Lead mg/kg
Soil Samples						
LH-N	<1.0	<5.0	<5.0	<5.0	<5.0	5.0
LH-S	<1.0	<5.0	<5.0	<5.0	8.2	<3.0
Water Sample						
LH-W	0.20	3.9	5.7	0.6	3.0	0.0033

See Figure 4-B for sample locations

mg/kg = milligrams per kilogram (parts per million)

ug/kg = micrograms per kilogram (parts per billion)

Table 3-B
Laboratory Analysis Results for Soluble Lead Wet Analysis and TCLP Analysis

Sample Number	WET (ug/L)	TCLP (ug/L)
SP-1	5,650	-
SP-2	1,140	-
SP-3	1,030	-
SP-4	12,000	-
SP-6*	430	110
SP-7	2,130	-
SP-8	3,250	-
SP-9	16,000	3,100
SP-10	1,480	-
SP-11	900	-
SP-12	1,180	<60
SP-13	1,930	-
SP-14	950	-
SP-15	310	-
SP-16	2,710	-

* Sample number SP-5 was not analyzed for soluble lead.

ug/L = micrograms per liter (parts per billion)

STLC = 5,000 ug/L

TCLP threshold is 5,000 ug/L

①

Copy of Phase 2 Site Assessment
w/ add'l borings w/ Hangar 9

Patrick

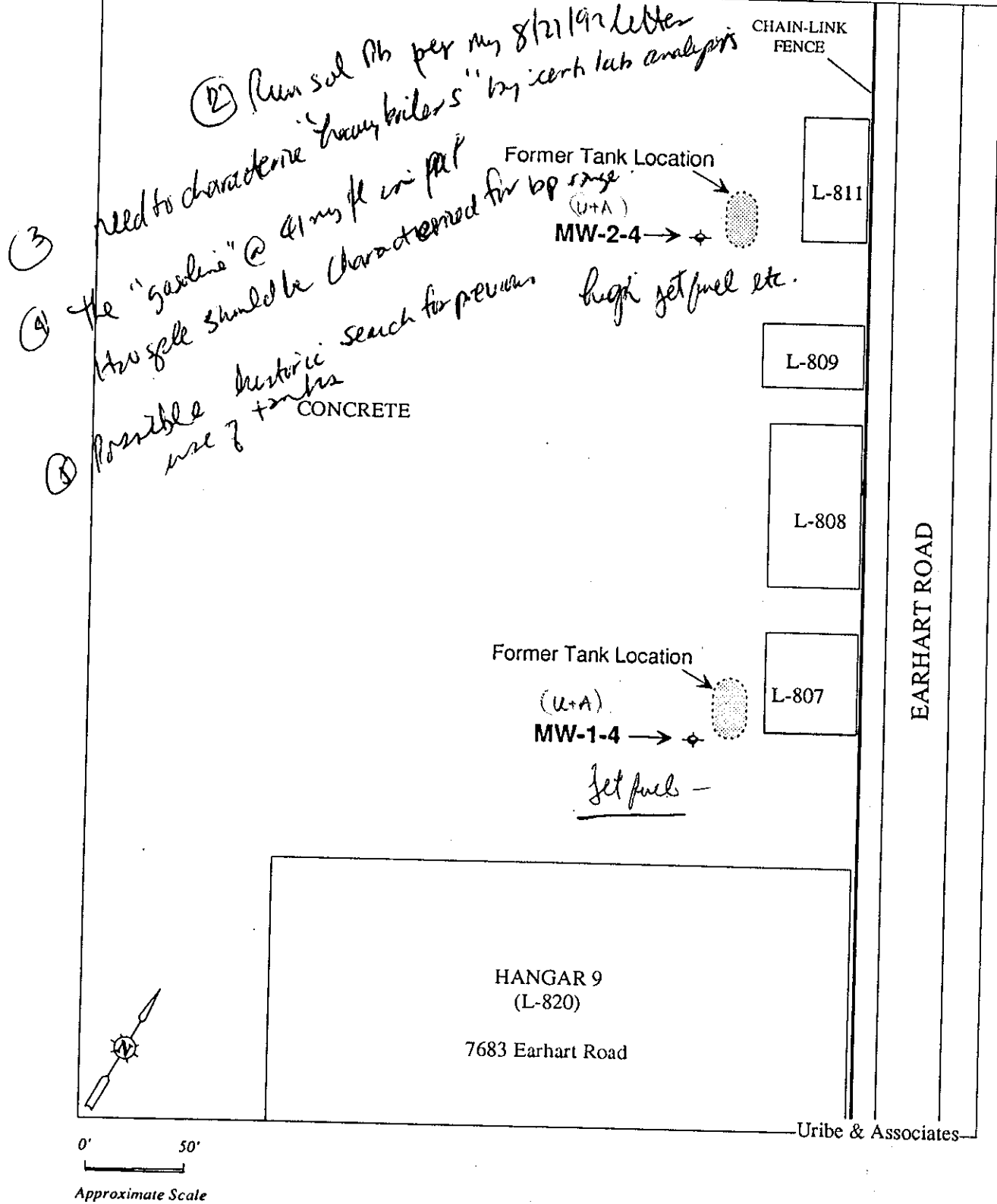


Figure 5: Site Plan Map of Monitoring Wells MW-1-4 and MW-2-4 at Hangar 9 Complex

Table 3
Summary of Water Sample Analysis

Sample ID	MW-1-4	MW-2-4
May 23, 1992		
TPH-G (ug/l)	130	860
Benzene (ug/l)	<0.4	1
Toluene (ug/l)	<0.3	3
Ethylbenzene (ug/l)	<0.3	2
p,m-Xylenes (ug/l)	<0.4	<0.4
o-Xylene (ug/l)	<0.4	17

Table 2
Summary of Soil Sample Analysis

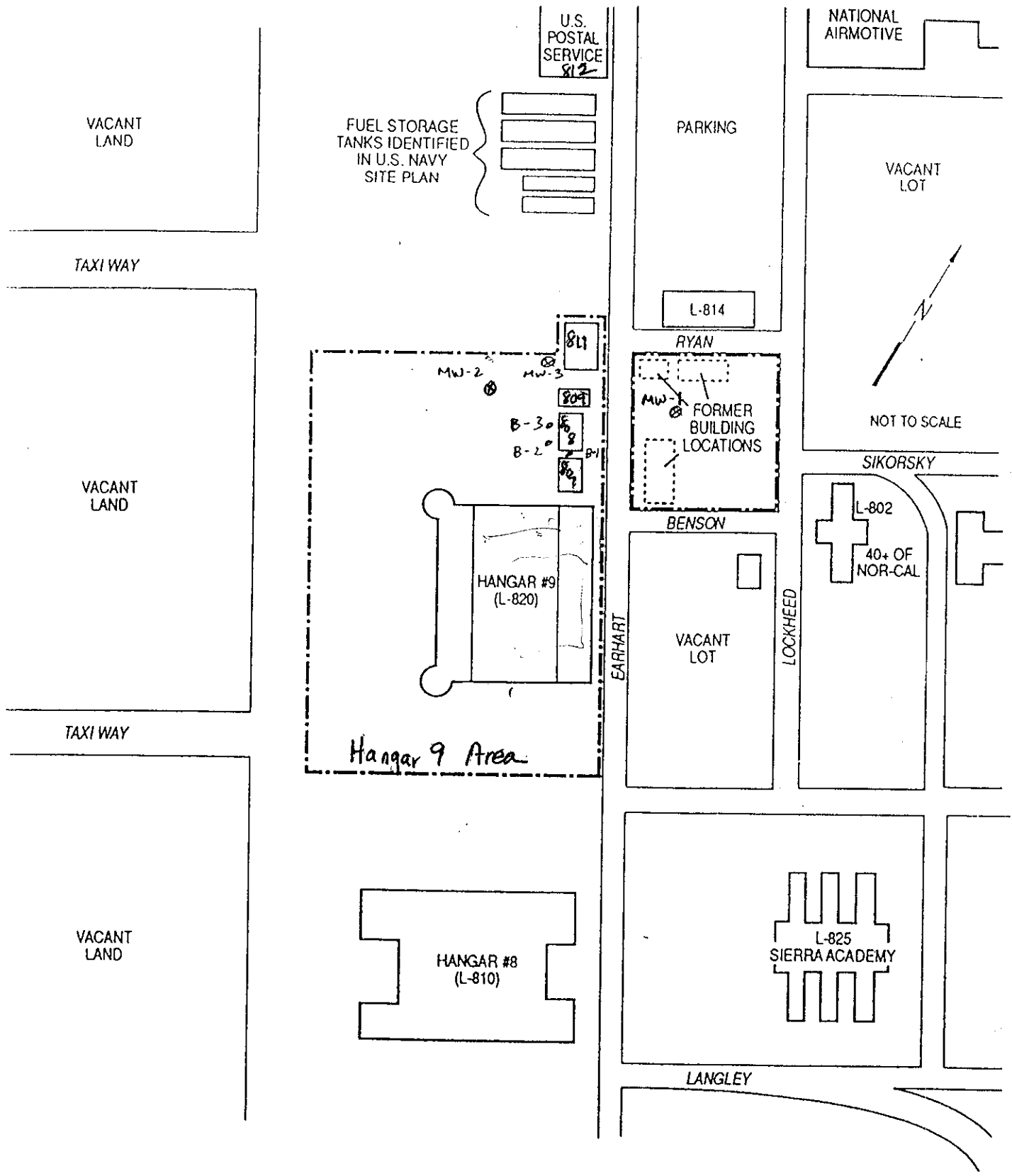
Sample ID	MW-1-4-1 <i>0.5'</i>	MW-2-4-1 <i>0.5'</i>
May 23, 1992		
TPH-G (mg/kg)	<200	<2,000
Benzene (mg/kg)	<0.05	<0.5
Toluene (mg/kg)	<0.05	<0.5
Ethylbenzene (mg/kg)	<0.05	<0.5
p,m-Xylenes (mg/kg)	<0.05	<0.5
o-Xylene (mg/kg)	<0.05	<0.5
May 29, 1992		
<i>soil</i> TPH-Jet fuel (mg/kg)	95	1,100

Should run TPHg - TPHm

(APPROXIMATE → LOCATIONS WERE SURVEYED ON 7/22/92, BUT SURVEYORS BORING DESIGNATIONS ARE DIFFERENT THE MARK DESIGNATIONS.

FIGURE 6
NEIGHBORING PROPERTIES
HANGAR NINE
PORT OF OAKLAND, CA

Page 2/2



LEGEND
----- SITE BOUNDARY



**Table 3-1: Monitoring Well, Boring, and Vault Soil Samples
Hangar 9 and Vicinity
Port of Oakland**

Constituent	Sample Location and Sample Depth						Concentration (mg/kg)
	MW-2			MW-3			
Volatil Organic	2'	3.5'	9.5'	2'	5.5'	13.5'	vault
Chloromethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Bromomethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Vinyl chloride	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Chloroethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Methylene chloride	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.005
Trichlorofluoromethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
1,1-Dichloroethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
1,1-Dichloroethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Trans-1,2-Dichloroethene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Cis-1,2-Dichloroethene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Chloroform	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
1,2-Dichloroethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
1,1,1-Trichloroethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Carbon tetrachloride	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Bromodichloromethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
1,2-Dichloropropane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Cis-1,3-Dichloropropene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Trichloroethene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Benzene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Dibromochloromethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
1,1,2-Trichloroethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Trans-1,3-Dichloropropene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
2-Chloroethylvinylether	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Bromoform	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
1,1,2,2-Tetrachloroethane	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Tetrachloroethene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Toluene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Chlorobenzene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Ethylbenzene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
1,3-Dichlorobenzene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
1,2-Dichlorobenzene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
1,4-Dichlorobenzene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Freon 113	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
p,m-Xylenes	0.017	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
o-Xylene	0.018	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Acetone	0.08	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.02
2-Butanone	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02
4-Methyl-2-pentanone	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02
2-Hexanone	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02
Vinyl acetate	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01
Carbon disulfide	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Styrene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Total Petroleum Hydrocarbons							
Diesel	200	51	ND<1	15	ND<1	2	ND<40
Gasoline	1400	320	ND<0.3	14	ND<0.3	1.0	5.3
	(2)	(2)		(2)		(2)	

EXPLANATIONS

ND: Not detected at or above method detection limit;

NA: Not analyzed for this constituent

(1): Detection limit increased due to presence of heavier hydrocarbons.

(2): Purgeable hydrocarbons quantified as gasoline do not match typical gasoline pattern;

Sample Matrix/Media: SOIL;

Results are reported on a wet weight basis. All values are milligrams per kilogram (mg/kg).

Table 3-1 (continued): Monitoring Well, Boring, and Vault Soil Samples
Hangar 9 and Vicinity
Port of Oakland

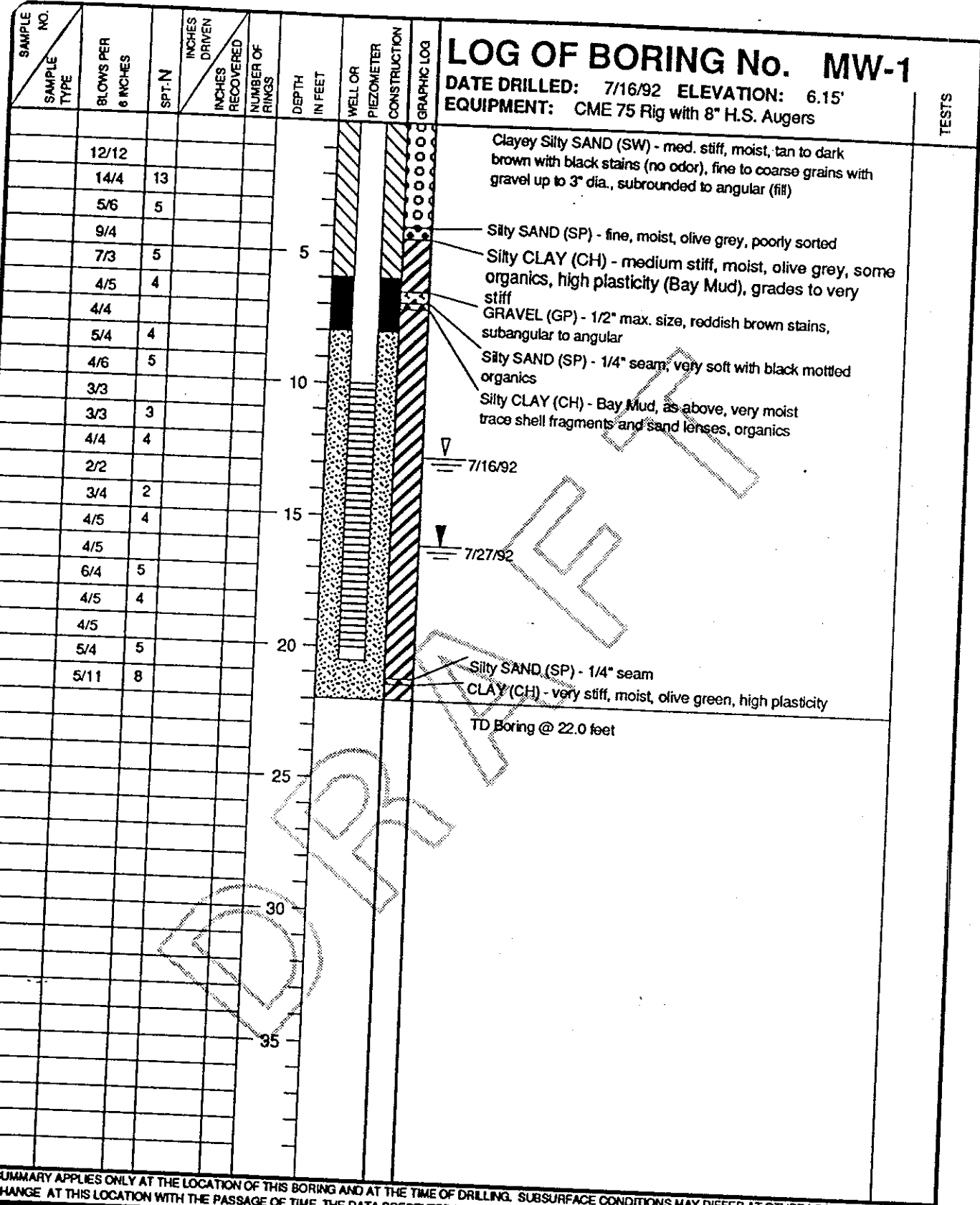
Constituent	Sample Location and Sample Depth						Concentration (mg/kg)	
	B-1			B-2		B-3		
	4'	4.5'	7'	2'	4'	2'	4.5'	
Volatile Organics								
Chloromethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Bromomethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Vinyl chloride	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Chloroethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Methylene chloride	ND <0.01	ND <0.01	ND <0.01	ND <0.01	ND <0.01	ND <0.01	ND <0.01	
Trichlorofluoromethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
1,1-Dichloroethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
1,1-Dichloroethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Trans-1,2-Dichloroethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Cis-1,2-Dichloroethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Chloroform	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
1,2-Dichloroethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
1,1,1-Trichloroethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Carbon tetrachloride	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Bromodichloromethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
1,2-Dichloropropane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Cis-1,3-Dichloropropene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Trichloroethene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Benzene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Dibromochloromethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
1,1,2-Trichloroethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Trans-1,3-Dichloropropene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
2-Chloroethylvinylether	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Bromoform	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
1,1,2,2-Tetrachloroethane	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Tetrachloroethene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Toluene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Chlorobenzene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Ethylbenzene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
1,3-Dichlorobenzene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
1,2-Dichlorobenzene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
1,4-Dichlorobenzene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Freon 113	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
p,m-Xylenes	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
o-Xylene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Acetone	ND <0.05	ND <0.05	ND <0.05	ND <0.05	ND <0.05	ND <0.05	0.32	
2-Butanone (MEK)	ND <0.02	ND <0.02	ND <0.02	ND <0.02	ND <0.02	ND <0.02	0.06	
4-Methyl-2-pentanone	ND <0.02	ND <0.02	ND <0.02	ND <0.02	ND <0.02	ND <0.02	ND <0.02	
2-Hexanone	ND <0.02	ND <0.02	ND <0.02	ND <0.02	ND <0.02	ND <0.02	ND <0.02	
Vinyl acetate	ND <0.01	ND <0.01	ND <0.01	ND <0.01	ND <0.01	ND <0.01	ND <0.01	
Carbon disulfide	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Styrene	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	
Total Petroleum Hydrocarbons								
Diesel	(1) ND <10	ND <1	ND <1	(1) ND <10	ND <1	ND <1	ND <1	
Gasoline	2.4 (2)	0.4 (2)	ND <0.3	1.0 (2)	ND <0.3	ND <0.3	ND <0.3	

EXPLANATIONS

ND: Not detected at or above method detection limit;
 NA: Not analyzed for this constituent;
 (1): Detection limit increased due to presence of heavier hydrocarbons.
 (2): Purgeable hydrocarbons quantified as gasoline do not match typical gasoline pattern;
 Sample Matrix/Media: SOIL;
 Results are reported on a wet weight basis. All values shown are milligrams per kilogram (mg/kg).

LOG OF BORING No. MW-1

DATE DRILLED: 7/16/92 ELEVATION: 6.15'
 EQUIPMENT: CME 75 Rig with 8" H.S. Augers



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.



Hangar 9 Phase II Site Investigation
 Port of Oakland
 Oakland, California

PROJECT NO.
91-1168301.80

DRAWING NO.
2

West HazMat
 DRILLING CONTRACTOR Tom Wright
 DRILLER

DLW
 PREPARED BY DKR DATE 10/01/92
 REVIEWED BY

LOG OF BORING No. MW-2

DATE DRILLED: 7/16/92 ELEVATION: 3.24'
 EQUIPMENT: CME 75 Rig with 8" H.S. Augers

SAMPLE NO.	SAMPLE TYPE	BLOWS PER 8 INCHES	SPT-N	INCHES DRIVEN	INCHES RECOVERED	NUMBER OF RINGS	DEPTH IN FEET	WELL OR PIEZOMETER CONSTRUCTION	GRAPHIC LOG
		9/22							
MW-2-1'		35/7	28						
MW-2-3.5'		7/9	8						
		1/1					5		
		1/1	1						
		1/1	1						
		1/1	1						
		1/1	1						
MW-2-9.5'		1/1	1				10		
		1/1							
		1/1	1						
		1/1	1						
		1	1				15		
							20		
							25		
							30		
							35		

7/27/92
 Clayey Silty SAND(SW) - slightly moist, tan to dark brown and grey with black stains, fine to coarse grains, with gravel up to 2", subrounded to angular, hydrocarbon smell (fill)

7/16/92
 Silty CLAY (CH) - soft to medium stiff, wet, olive green and grey, trace fine sand to medium sand, high plasticity (Bay Mud), grades to very soft

Trace shell fragments and fine sand lenses

TD Boring @ 14.5 feet

TESTS
 TPH, VOC
 TPH, VOC
 TPH, VOC

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

Hangar 9 Phase II Site Investigation
 Port of Oakland
 Oakland, California

PROJECT NO.
 91-1168301.80

DRAWING NO.
 3



DLW
 PREPARED BY
 DKR
 DATE 10/01/92

West HazMat
 DRILLING CONTRACTOR
 Tom Wright
 DRILLER

SAMPLE NO. SAMPLE TYPE	BLOWS PER 8 INCHES	SPT-N	INCHES DRIVEN	INCHES RECOVERED	NUMBER OF RINGS	DEPTH IN FEET	WELL OR PIEZOMETER CONSTRUCTION	GRAPHIC LOG	TESTS
	4/5	7							
MW-3-2'	9								TPH, VOC
	5/8								
MW-3-5.5'	7/5	7				5			TPH, VOC
	7/9	8						7/16/92	
	4/5								
	7/3	6							
	3/3	3				10		7/27/92	
	3/3								
	3/3	3							
	3/3	3							
MW-3-13.5'	5/4								TPH, VOC
	5	4				15			
						20			
						25			
						30			
						35			

LOG OF BORING No. MW-3

DATE DRILLED: 7/16/92 ELEVATION: 3.30'
 EQUIPMENT: CME 75 Rig with 8" H.S. Augers

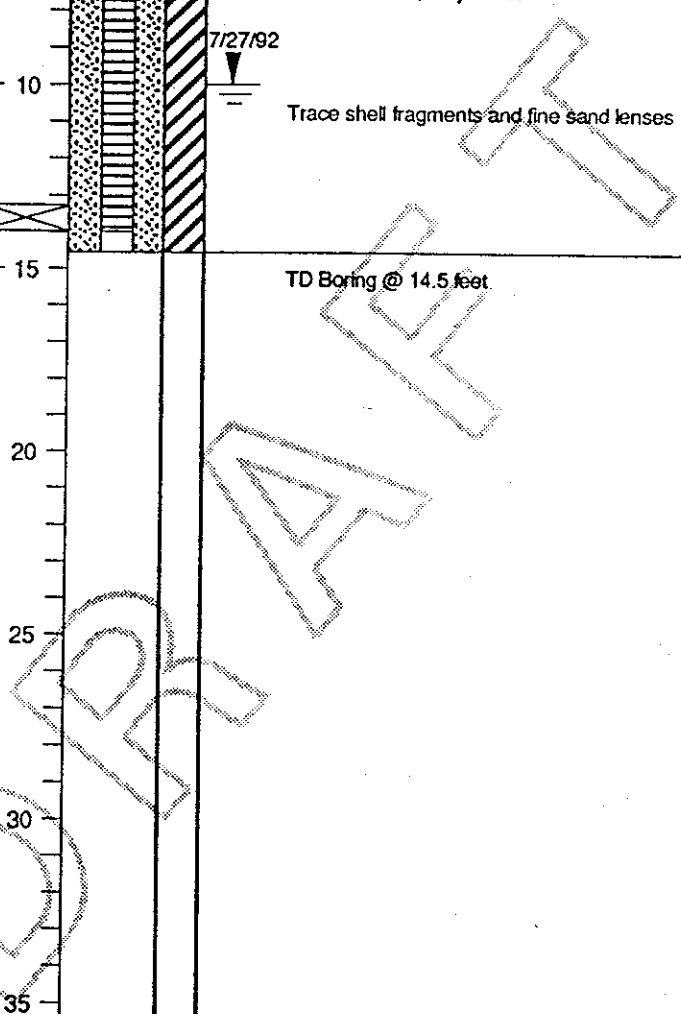
Clayey Silty SAND(SW) - slightly moist, tan to dark brown, fine to coarse grains, with gravel up to 2', subrounded to angular (fill)

Silty CLAY (CH) - medium stiff to stiff, moist, olive grey, some organics, high plasticity (Bay Mud)

Grades to soft, very moist

Trace shell fragments and fine sand lenses

TD Boring @ 14.5 feet



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

96-400 DRAWINGS DEC 10-2 3-5-94 PJ

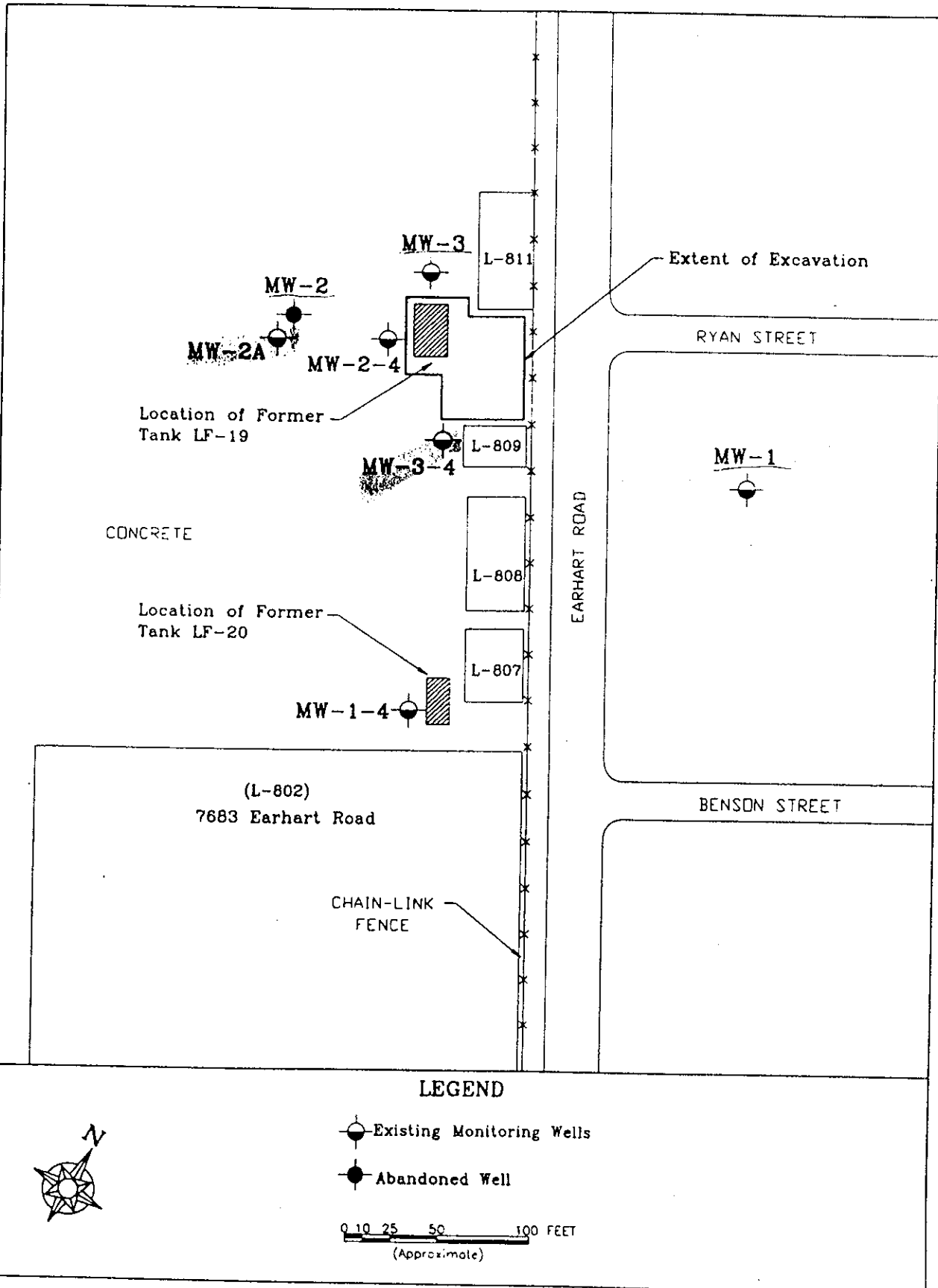


Figure 7: Site Plan of Monitoring Wells at Hangar 9 Complex
- 7683 Earhart Road, Oakland, California

Uribe & Associates

Table 4: Results for Soil Sampling, MW-2A
Samples Collected on October 4, 1993
 Concentrations in mg/kg

Sample ID	TPH-Gasoline	TPH-Diesel	Benzene	Toluene	Ethyl benzene	Xylene
MW-2-2.0	<1.0	1	<0.005	<0.005	<0.005	<0.005 ✓
MW-2-5.0	<1.0	2	<0.005	<0.005	<0.005	<0.005
MW-2-8.0	<1.0	<1	<0.005	<0.005	<0.005	<0.005
MW-2-11.0	<1.0	<1	<0.005	<0.005	<0.005	<0.005
MW-2-14.0	<1.0	<1	<0.005	<0.005	<0.005	<0.005
MW-2-17.0	<1.0	1	<0.005	<0.005	<0.005	<0.005

Table 4: Results for Soil Sampling, MW-3-4
Samples Collected on October 4, 1993
 Concentrations in mg/kg

Sample ID	TPH-Gasoline	TPH-Diesel	Benzene	Toluene	Ethyl benzene	Xylene	Lead
MW3-4-2.0	340	850 ¹	<0.300	<0.300	0.400	0.500	<5.0 ✓
MW3-4-5.0	100	28	<0.300	<0.300	<0.300	<0.300	<4.9
MW3-4-8.0	<1	19	<0.005	<0.005	<0.005	<0.005	<5.0
MW3-4-11.0	<1	<1	<0.005	<0.005	<0.005	<0.005	<4.9
MW3-4-14.0	<1	<1	<0.005	<0.005	<0.005	<0.005	<4.9

Notes:

¹ Laboratory reported as kerosene. Diesel range not reported due to overlap of hydrocarbon ranges.

Figure 8

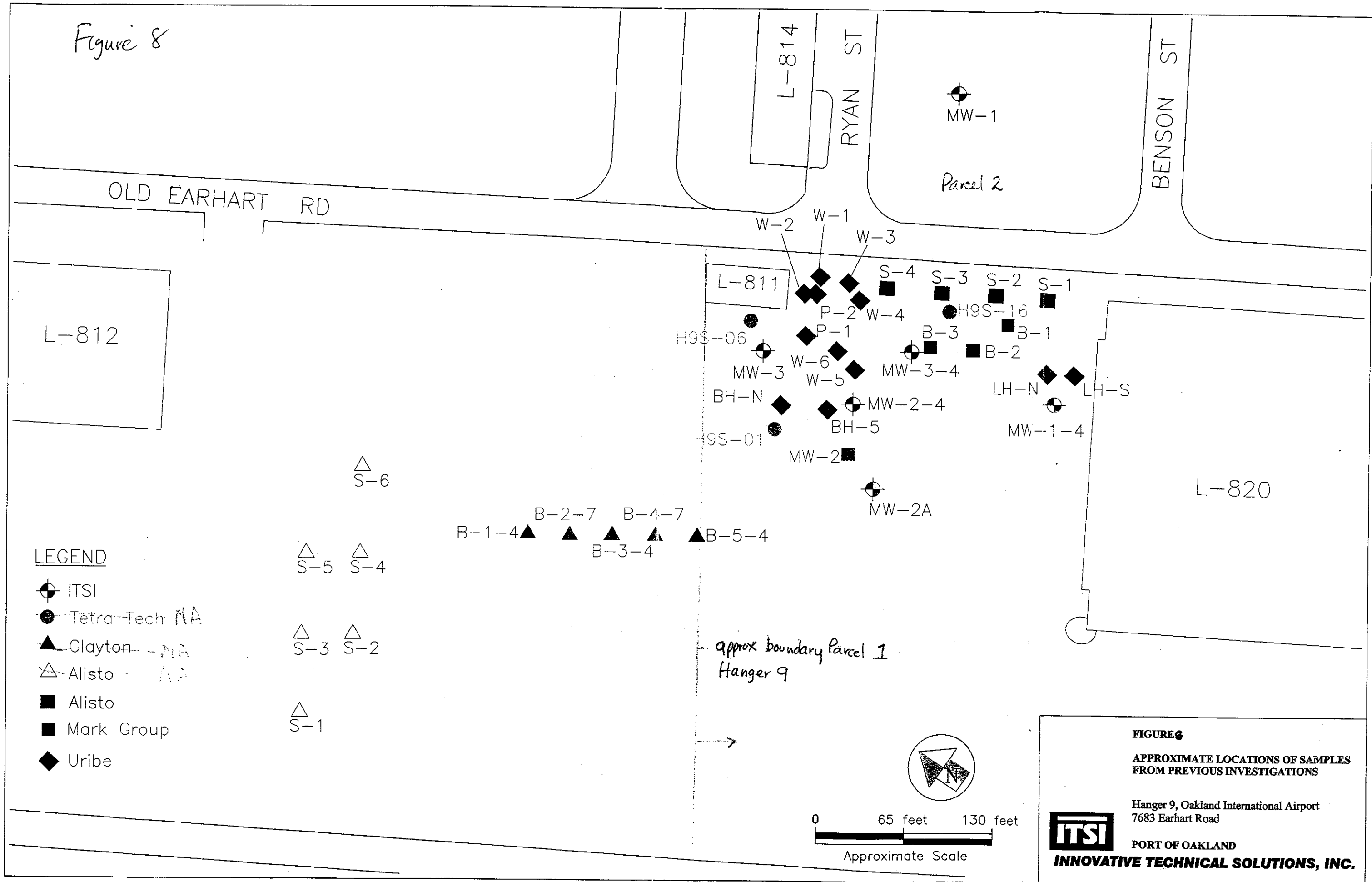


FIGURE 8
APPROXIMATE LOCATIONS OF SAMPLES
FROM PREVIOUS INVESTIGATIONS

Hanger 9, Oakland International Airport
 7683 Earhart Road



PORT OF OAKLAND
INNOVATIVE TECHNICAL SOLUTIONS, INC.

3-30-95 10:26AM ; CLAYTON PROJECT ; 51042601560 465 3755;# 4
MAR 30 '95 10:24AM
005/005
005/005

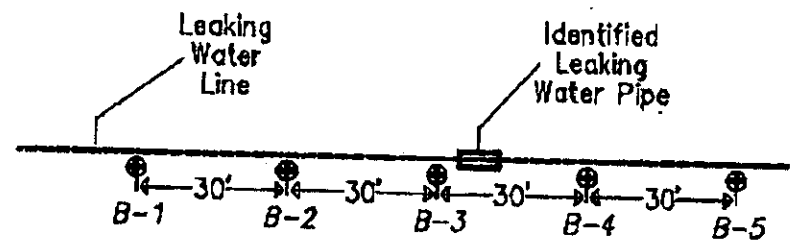
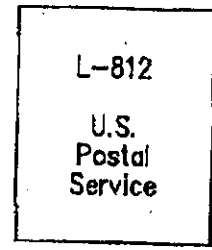
Drawing I

ZN

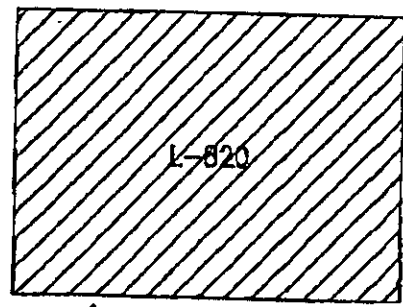
ERHART AVENUE

Fence

1083 Earhart Road



(B-1-4) (B-2-7) (B-3-4) (B-4-7) (B-5-4)



↑ Not to Scale L-820

TAXIWAY

LEGEND

⊕ Sample Location

(not to scale)

Soil Sample Location Near Leaking Water Pipe
Between Buildings L-812 and L-820
OAKLAND AIRPORT
Oakland, California

Clayton Project No. 58560.23

Clayton
ENVIRONMENTAL
CONSULTANTS

Western Operations

1252 Quarry Lane
P.O. Box 9019
Pleasanton, CA 94566
(510) 426-2600
Fax (510) 426-0106

Clayton
ENVIRONMENTAL
CONSULTANTS

March 30, 1995

North of Hanger 9

Ms. Patricia Murphy
PORT OF OAKLAND
530 Water Street
Oakland, California 94607

Clayton Project No. 58560.23

Subject: Sample Results for "Water Line" Soil Samples Between Buildings L-812 and L-820

Dear Ms. Murphy:

Attached are the laboratory reports for soil samples taken adjacent to the leaking water line between Buildings L-812 and L-820. The purpose of the sampling was to assess soils that would be excavated during repair of the water line.

Samples were collected on March 1, 1995, by Dariush Dastmalchi, Clayton Project Geologist. Five soil samples were taken at the locations shown on the attached Figure. Three samples (B-1-4, B-3-4, and B-5-4) were collected at about four feet below ground surface (bgs), and two samples (B-2-7 and B-4-7) were collected at about seven feet bgs. Groundwater was encountered at about two feet bgs.

Analytical results are summarized in the following table.

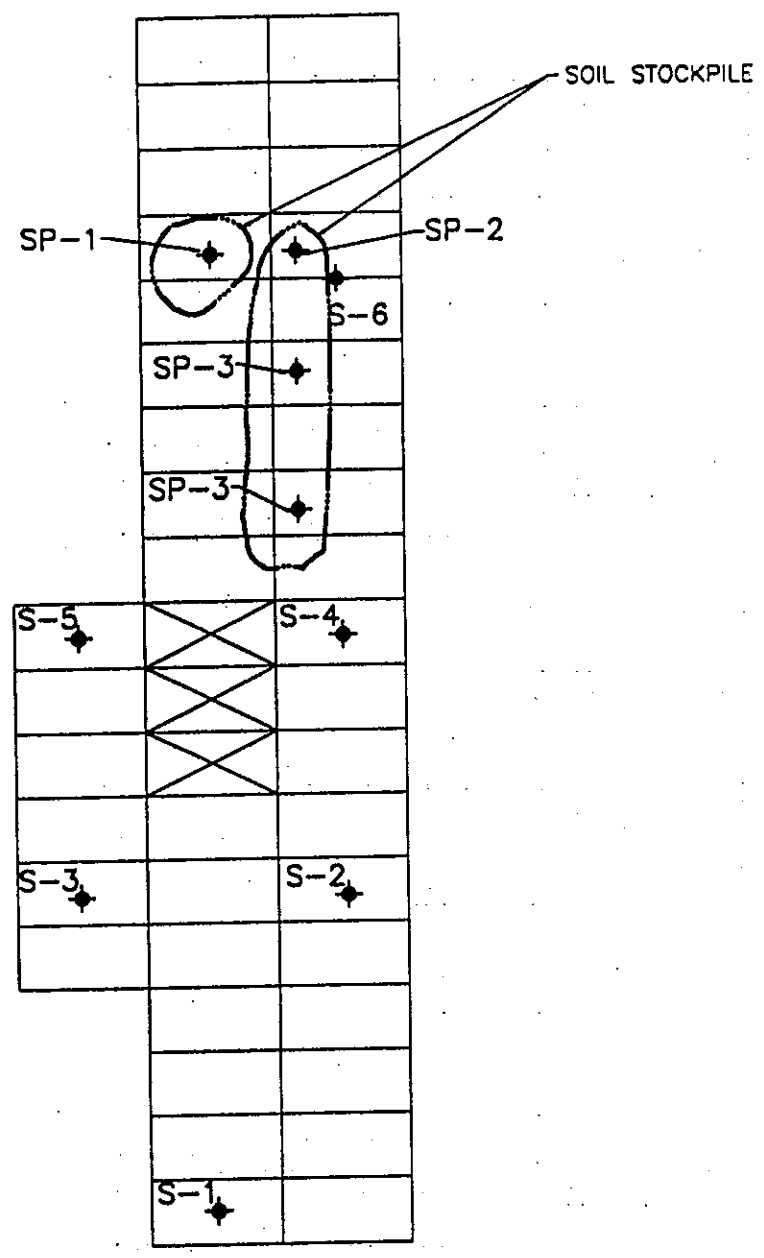
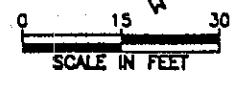
TABLE 5

Sample ID.	TPH-G	BTEX	Jet Fuel	TPH-D	Hydrocarbons
B-1-4	1.2	ND	11	55	90
B-2-7	ND	ND	ND	49	240
B-3-4	0.7	ND	ND	41	1,100
B-4-7	ND	ND	ND	120	260
B-5-4	0.6	ND	ND	160	1,500

All concentrations in milligrams per kilogram (mg/kg)

ACTIVE# 5856023.089

Clayton Environmental Consultants, Inc. • Detroit • New York/Newark • Atlanta • San Francisco • Los Angeles
Honolulu • Windsor, ON • Toronto • Birmingham, U.K. • London, U.K. • Southampton, U.K. • Gateshead, U.K.



LEGEND

◆ SOIL SAMPLE

Figure 9

SITE PLAN

AIRCRAFT APRON PROJECT
HANGAR 9, NORTH FIELD
OAKLAND AIRPORT
OAKLAND, CALIFORNIA
PROJECT NO. 10-317



ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10317C-206 10-30-99 MAY

6
**TABLE 1 - RESULTS OF SOIL SAMPLING
 PORT OF OAKLAND
 AIRCRAFT APRON SITE
 BETWEEN HANGER 9 AND BUILDING L-812
 NORTH FIELD, OAKLAND AIRPORT**

ALISTO PROJECT NUMBER 10-317

SAMPLE ID	DATE OF SAMPLING	TPH-G (mg/kg)	TPH-JF (mg/kg)	TPH-K (mg/kg)	TPH-D (mg/kg)	TPH-MO (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	LAB
S-1	10/24/95	1.1	ND<1	ND<1	2	77	ND<0.005	ND<0.005	ND<0.005	ND<0.005	CEC
S-2	10/24/95	ND<0.3	ND<1	ND<1	ND<1	13	ND<0.005	ND<0.005	ND<0.005	ND<0.005	CEC
S-3	10/24/95	ND<0.3	ND<1	ND<1	ND<1	91	ND<0.005	ND<0.005	ND<0.005	ND<0.005	CEC
S-4	10/24/95	1400	2400	ND<3000	ND<3000	120	ND<0.3	ND<0.3	ND<0.3	ND<0.3	CEC
S-5	10/24/95	84	620	ND<1000	ND<1000	150	ND<0.05	ND<0.05	ND<0.05	ND<0.05	CEC
S-6	10/24/95	45	ND<30	ND<30	26	65	ND<0.05	ND<0.05	ND<0.05	ND<0.05	CEC
SP-1, SP and SP-3	10/24/95	64	ND<40	ND<40	66	110	ND<0.1	ND<0.1	ND<0.1	ND<0.1	CEC
SP-4	10/24/95	65	ND<70	ND<70	36	330	ND<0.1	ND<0.1	ND<0.1	ND<0.1	CEC

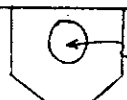
ABBREVIATIONS:

TPH-G Total petroleum hydrocarbons as gasoline
 TPH-JF Total petroleum hydrocarbons as jet fuel
 TPH-K Total petroleum hydrocarbons as kerosene
 TPH-D Total petroleum hydrocarbons as diesel
 TPH-MO Total petroleum hydrocarbons as motor oil
 B Benzene using EPA Method 8020
 T Toluene using EPA Method 8020
 E Ethylbenzene using EPA Method 8020
 X Total xylenes using EPA Method 8020
 mg/kg Milligrams per kilogram
 ND Not detected above reported detection limit
 CEC Clayton Environmental Consultants

(Hand) Drawing 2



2" IRON



PERSONNEL
ACCESS
PORTAL

After Building Demolition

S-4 +
S

S-3 +

S-2 +

S-1 +

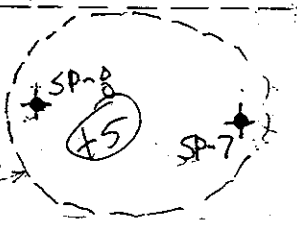
+0

2" IRON
6" TERRA COTTA

2" PIPE
STUD

WOOD
BOX

STOCKPILE



PIT

SP-6

SP-5

SP-4

+2

SP-3

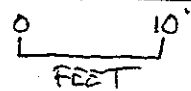


SP-2

+0.5

SP-1 +

+2



SCALE: 1" = 10'

SITE PLAN
AIRCRAFT APRON
HANGER 9
NORTH FIELD
ALISTO PROJECT 10-317

TABLE 7 - RESULTS OF SOIL SAMPLING
 PORT OF OAKLAND
 AIRCRAFT APRON SITE
 HANGER 9, NORTH FIELD, OAKLAND AIRPORT

AFTER BUILDING DEMOLITION

ALISTO PROJECT NUMBER 10-317

SAMPLE ID	DATE OF SAMPLING	TPH-G (mg/kg)	TPH-JF (mg/kg)	TPH-MS (mg/kg)	TPH-D (mg/kg)	TPH-O (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	LEAD (mg/kg)	PCBs (mg/kg)	LAB
S-1	11/03/95	9.4 (a)	6	9.7	ND<9	120 (b)	ND<0.005	ND<0.005	ND<0.05	ND<0.02	98	(c)	CEC
S-2	11/03/95	5 (a)	ND<1	5.4	3	250 (b)	ND<0.005	ND<0.02	ND<0.03	ND<0.01	110	---	CEC
S-3	11/03/95	5.8 (a)	15	6.1	ND<20	190 (b)	ND<0.005	ND<0.01	ND<0.02	ND<0.01	46	---	CEC
S-4	11/03/95	700 (a)	760	740	ND<1000	670 (b)	ND<0.3	ND<0.3	ND<0.3	ND<0.3	67	---	CEC

ABBREVIATIONS:

TPH-G Total petroleum hydrocarbons as gasoline
 TPH-JF Total petroleum hydrocarbons as jet fuel
 TPH-MS Total petroleum hydrocarbons as mineral spirits
 TPH-D Total petroleum hydrocarbons as diesel
 TPH-O Total petroleum hydrocarbons as oil
 B Benzene using EPA Method 8020
 T Toluene using EPA Method 8020
 E Ethylbenzene using EPA Method 8020
 X Total xylenes using EPA Method 8020
 mg/kg Milligrams per kilogram
 --- Not Analyzed
 ND Not detected above reported detection limit
 CEC Clayton Environmental Consultants

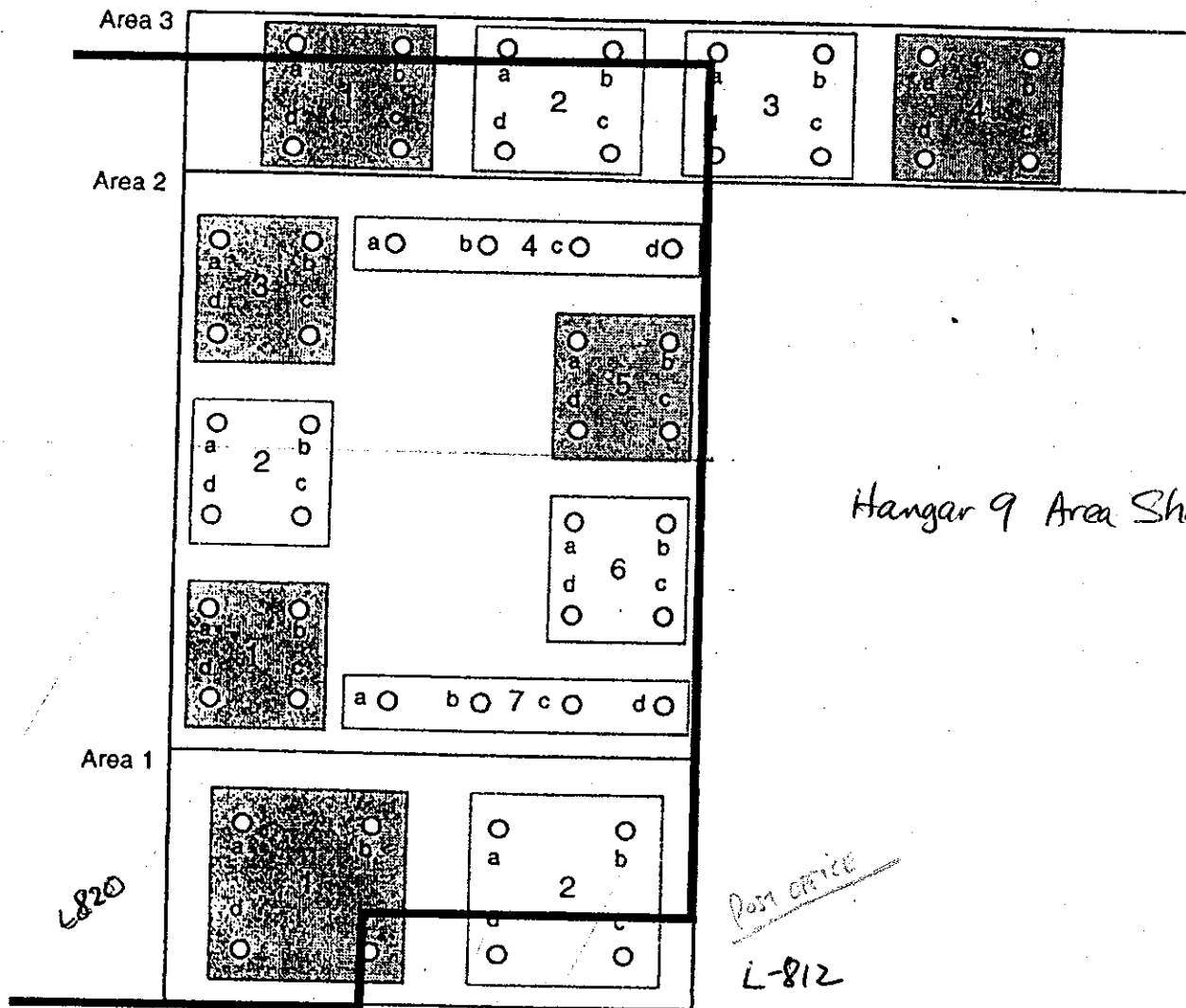
NOTES:

- (a) Does not match typical gasoline pattern.
 (b) Does not match typical oil pattern.
 (c) Arochlor 1254 at 0.11 mg/kg and Arochlor 1260 at 0.15 mg/kg.

Ind
 PREG
 Soil A mg/kg

Figure 10

SCHEMATIC OF SOIL AND CONCRETE SAMPLE LOCATIONS AND DESIGNATIONS, AUGUST 1997



Legend

— Approximate Project Area Boundary (not all areas of boundary shown)

- - - Boundary of Apron and Taxiway Replacement Work



Soil Sample



Soil and Concrete Sample

150' = 1"
 approx scale

From: ITSI, 1997.

Hangar 9 Area
Metropolitan Oakland International Airport
North Field
Oakland, California



BASELINE

TABLE 8

SUMMARY OF ORGANIC COMPOUND CONCENTRATIONS, SOIL
Hangar 9 Area
Metropolitan Oakland International Airport
North Field
Oakland, California
(mg/kg)

Sample ID	Sample Depth (feet bgs)	Sample Date	Source	Benzene	Toluene	Ethyl benzene	Xylenes	TPH as Gasoline	MTBE ¹	TPH as Diesel	TPH as Kerosene and/or Jet Fuel	TPH as Mineral Spirits	TPH as Motor Oil	TRPH	VOCs	SVOCs	PCBs	Total Lead
Surface Soils (≤ 3.5 feet bgs)																		
H9S-01	1.5-2.0	06/25/91	a	<5	<5	<5	6	6,800			5,000							
H9S-05	1.5-2.0	06/14/90	a ²	ND	ND	ND	ND	<1		75					ND			
H9S-06	1.5	06/25/91	a	<0.5	<0.5	<0.5	2	1,000			3,100							
H9S-09	1.5-2.0	06/14/90	a ²	ND	ND	ND	ND	<1		47					ND			
H9S-10 ³	1.5-2.0	06/14/90	a ²	ND	ND	ND	ND	1.7		17					ND			
H9S-11	1.5-2	06/14/90	a ²	ND	ND	ND	ND	430			130				ND			
H9S-11D	1.5-2	06/14/90	a ²	ND	ND	ND	ND	17			53				ND			
H9S-12	1.5-2.0	06/14/90	a ²	ND	ND	ND	ND	<1		13					ND			
H9S-13	1.5-2.0	06/14/90	a ²	ND	ND	ND	ND	7.5		90					ND			
H9S-14	1.5-2.0	06/14/90	a ²	ND	ND	ND	ND	<1		9.1					ND			
H9S-16	2.5	06/25/91	a	<0.5	<0.5	<0.5	<0.5	16			9.4				10 ⁴			
B-2-2	2	07/17/92	d	<0.005	<0.005	<0.005	<0.005	1		<10					ND			
B-3-2	2	07/17/92	d	<0.03	<0.03	<0.03	<0.03	<0.3		<1					ND			
MW-2-2	2	07/16/92	d	<0.005	<0.005	<0.005	0.035	1,400		200					0.08 ⁵			
MW-2-2	2	10/04/93	b or c	<0.005	<0.005	<0.005	<0.005	<1		1	<1							
MW-2A	2	10/04/93	e	<0.005	<0.005	<0.005	<0.005	<1		1 ¹⁴	14		14					
MW-3-2	2	07/16/92	e	<0.005	<0.005	<0.005	<0.005	14		15					ND			
MW3-4-2	2	10/04/93	e	<0.3	<0.3	0.4	0.5	340		15	850 ¹⁵							<5.0
S-1	~2	10/24/95	g	<0.005	<0.005	<0.005	<0.005	1.1		2	<1		77					
S-2	~2	10/24/95	g	<0.005	<0.005	<0.005	<0.005	<0.3		<1	<1		13					
S-3	~2	10/24/95	g	<0.005	<0.005	<0.005	<0.005	<0.3		<1	<1		91					
S-4	~2	10/24/95	g	<0.3	<0.3	<0.3	<0.3	1,400		<3,000	2,400 ¹⁶		120					
											3,000 ¹⁷							
S-5	~2	10/24/95	g	<0.05	<0.05	<0.05	<0.05	84		<1,000	620 ¹⁶		150					
											<1,000 ¹⁷							
S-6	~2	10/24/95	g	<0.05	<0.05	<0.05	<0.05	45		26	<30 ¹⁶		65					
											<40 ¹⁷							
S-1	~1	11/03/95	h ²	<0.005	<0.005	<0.005	<0.05	9.4		<9	6	9.7	120				0.11 ¹²	98
																	0.15 ¹³	
S-2	~1	11/03/95	h ²	<0.005	<0.02	<0.03	<0.01	5		3	<1	5.4	250					110
S-3	~1	11/03/95	h ²	<0.005	<0.01	<0.02	<0.01	5.8		<20	15	6.1	190					46
S-4	~1	11/03/95	h ²	<0.3	<0.3	<0.3	<0.3	700		<1,000	760	740	670					67

post
demo

TABLE 8

SUMMARY OF ORGANIC COMPOUND CONCENTRATIONS, SOIL
Hangar 9 Area
Metropolitan Oakland International Airport
North Field
Oakland, California
(mg/kg)

Sample ID	Sample Depth (feet bgs)	Sample Date	Source	Benzene	Toluene	Ethyl benzene	Xylenes	TPH as Gasoline	MTBE ¹	TPH as Diesel	TPH as Kerosene and/or Jet Fuel	TPH as Mineral Spirits	TPH as Motor Oil	TRPH	VOCs	SVOCs	PCBs	Total Lead
1-1(ABCD)	≤ 2.5	08/11/97	j	<0.005	<0.005	<0.005	<0.005	<1	<0.005	6.3 ^{9,10}				190	ND	0.24 ⁷	<0.020	2.7
1-2(ABCD)	≤ 2.5	8/11/97	j	<0.005	<0.005	<0.005	<0.005	1.1 ⁷	<0.005	16 ^{9,10}				1,400	ND	0.39 ⁸	<0.020	
2-1(ABCD)	≤ 2.5	8/11/97	j	<0.005	<0.005	<0.005	<0.005	<1	<0.005	4.5 ^{9,10}				<25	0.064 ⁵		<0.020	8.0
2-2(ABCD)	≤ 2.5	8/11/97	j	<0.005	<0.005	<0.005	<0.005								0.012 ⁶			15
2-3(ABCD)	≤ 2.5	8/13/97	j	<0.005	<0.005	<0.005	<0.005	<1	<0.005	4.9 ^{9,10}				39				
2-4(ABCD)	≤ 2.5	8/13/97	j	<0.005	<0.005	<0.005	<0.005											19
2-5(ABCD)	≤ 2.5	8/13/97	j	<0.005	<0.005	<0.005	<0.005	33 ⁹	<0.005	21 ^{9,10,11}				260				17
2-6(ABCD)	≤ 2.5	8/13/97	j	<0.005	<0.005	<0.005	<0.005											
2-7(ABCD)	≤ 2.5	8/12/97	j	<0.005	<0.005	<0.005	<0.005	<1	<0.005	14 ^{9,10}				35				
3-1(ABCD)	≤ 2.5	8/12/97	j	<0.005	<0.005	<0.005	<0.005	<1	<0.005	2.1 ^{9,10}				35				
3-2(ABCD)	≤ 2.5	8/12/97	j	<0.005	<0.005	<0.005	<0.005	<1	<0.005	2.7 ^{9,10}				<25				3.1
3-3(ABCD)	≤ 2.5	8/12/97	j	<0.005	<0.005	<0.005	<0.005											
3-4(ABCD)	≤ 2.5	8/12/97	j	<0.005	<0.005	<0.005	<0.005	<1	<0.020	<1								
W-4	3.5	01/10/92	b	<0.04	<0.4	10	56	4,100						<25				7
MW-2-4-1	3.5	05/14/92	c	<0.05	<0.05	<0.05	<0.05	<2,000		1,100 ¹⁴								10
MW-2-3.5	3.5	07/16/92	d	<0.005	<0.005	<0.005	<0.005	320		51								
BC-1	1.5-2.0	11/04/99	k							1.1 ¹⁸					ND			
Subsurface Soils (> 3.5 feet bgs)																		
B-1-4	4	07/17/92	d	<0.005	<0.005	<0.005	<0.005	2.4		<10								
B-1-4.5	4.5	07/17/92	d	<0.005	<0.005	<0.005	<0.005	0.4		<1					ND			
B-1-7	7	07/17/92	d	<0.005	<0.005	<0.005	<0.005	<0.3		<1					ND			
B-2-4	4	07/17/92	d	<0.005	<0.005	<0.005	<0.005	<0.3		<1					ND			
B-3-4.5	4.5	07/17/92	d	<0.005	<0.005	<0.005	<0.005	<0.3		<1					ND			
															0.32 ⁵			
															0.06 ⁶			

ITS I

TABLE 8

SUMMARY OF ORGANIC COMPOUND CONCENTRATIONS, SOIL
 Hangar 9 Area
 Metropolitan Oakland International Airport
 North Field
 Oakland, California
 (mg/kg)

Sample ID	Depth (feet)	Sample Date	Source	Benzene	Toluene	Ethyl benzene	Xylenes	TPH as Gasoline	MTBE ¹	TPH as Diesel	TPH as Kerosene and/or Jet Fuel	TPH as Mineral Spirits	TPH as Motor Oil	TRPH	VOCs	SVOCs	PCBs	Total Lead	
LH-N	7	11/18/91	b	<0.005	<0.005	<0.005	<0.005	<1											
LH-S	7	11/18/91	b	<0.005	<0.005	<0.005	0.0082	<1											5
MW-1-4-1	4	05/14/92	c	<0.05	<0.05	<0.05	<0.05	<200		95 ¹⁴	¹⁴	¹⁴							<3.0
MW-2-9.5	9.5	07/16/92	d	<0.005	<0.005	<0.005	<0.005	<0.3		<1									
MW-3-5.5	5.5	07/16/92	d	<0.005	<0.005	<0.005	<0.005	<0.3		<1									ND
MW-3-13.5	13.5	07/16/92	d	<0.005	<0.005	<0.005	<0.005	1		2									ND

Source: a = Tetrtech, 1991.
 b = Uribe & Associates, March 1992a.
 c = Uribe & Associates, March 1992b.
 d = Mark Group, 1993.
 e = Uribe & Associates, March 1994.
 f = Clayton, 1995.
 g = Alisto Engineering Group, 1995a.
 h = Alisto Engineering Group, 1995b.
 j = ITSI, 1997.
 k = Laboratory report included in Appendix G.

Notes: See Figures 4 to 6 and Figures 8 and 9 for sampling locations.
 Table does not include results from soil samples that were collected prior to removal of UST LF-19 and were subsequently excavated.
 bgs = below ground surface
 <x = constituent not identified above the laboratory reporting limit of x.
 MTBE = methyl tert butyl ether.
 ND = below laboratory reporting limit; see original citation for reporting limit.
 PCBs = polychlorinated biphenyls.
 SVOCs = semi-volatile organic compounds.
 TPH = total petroleum hydrocarbons.
 TRPH = total recoverable petroleum hydrocarbons.
 VOCs = volatile organic compounds.

¹ MTBE results were subsequently reported by analytical laboratory in 1999 based on review of original data.
² Original data not reviewed by BASELINE
³ May have been subsequently excavated as part of underground storage tank removal activities.
⁴ Chlorobenzene
⁵ Acetone
⁶ 2-Butanone
⁷ Di-n-Butylphthalate
⁸ bis(2-ethylhexyl)phthalate
⁹ Sample exhibits fuel pattern which does not resemble standard.
¹⁰ Heavier hydrocarbons than indicated standard.
¹¹ Lighter hydrocarbons than indicated standard.
¹² Arochlor 1254
¹³ Arochlor 1260
¹⁴ Speciation of TPH unknown; reported as diesel.
¹⁵ Hydrocarbon overlap in another range
¹⁶ Jet fuel
¹⁷ Kerosene
¹⁸ Sample chromatogram was indicated by laboratory as containing some unidentified hydrocarbons >C16.

TABLE 8
SUMMARY OF METAL CONCENTRATIONS, SOIL
Hangar 9 Area, Metropolitan Oakland International Airport, North Field
Oakland, California
(mg/kg unless indicated otherwise)

Sample ID	Date	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Hg	Mo	Ni	Se	Ag	Tl	V	Zn	
AREA 1																			
1-1 (ABCD)	8/11/97	<2.9	4.0	150	0.16	0.84	9.9	19	31	2.7	<0.091	<0.98	11	<0.24	27	<0.24	40	55	
1-2 (ABCD)	8/11/97	<3.0	4.2	85	0.26	0.41	29	12	28	8.0	<0.091	2.6	29	<0.25	<0.50	<0.25	63	51	
AREA 2																			
2-1 (ABCD)	8/11/97	<3.0	6.2	130	0.37	0.85	29	9.5	10	15	<0.095	<1.0	29	0.28	<0.5	<0.25	38	58	
2-3 (ABCD)	8/13/97	<2.9	5.7	160	0.27	<2.4	4.8	15	16	19	0.17	<0.96	5.6	<0.24	<0.48	<0.24	52	95	
2-5 (ABCD)	8/13/97	<2.9	7.3	86	0.36	<0.24	46	9.5	34	17	<0.095	<0.96	44	<0.24	<0.48	<0.24	48	55	
AREA 3																			
3-1 (ABCD)	8/12/97	<3.0	3.3	73	0.14	0.72	22	12	20	3.5	0.10	<0.99	20	<0.25	<0.50	0.94	54	49	
3-4 (ABCD)	8/12/97	<2.9	4.8	160	0.32	0.29	31	14	15	7.0	<0.10	<0.96	38	<0.24	0.75	0.50	38	67	
Regulatory Thresholds																			
TTL	-	500	500	10,000	75	100	2,500	8,000	2,500	1,000	20	3,500	2,000	100	500	700	2,400	5,000	
STLC ¹	-	15	5.0	100	0.75	1.0	5	80	25	5.0	0.2	350	20	1.0	5	7.0	24	250	
Residential PRG	-	31	22 ³	5,400	150	9.0 ²	210	4,700	2,900	130 ²	23	390	150 ²	390	390	6.3 ⁴	550	23,000	

Source: ITSI, 1997.
U.S. EPA, 1998.

Notes: See Figure 9 for soil sampling locations.
Data for concrete samples collected during this investigation are not included in this table.
All samples represent surface soils (collected at or less than 3.5 feet below ground surface).
PRG = U.S. EPA 1999 Preliminary Remediation Goal.
STLC = Soluble Threshold Limit Concentration.
TTL = Total Threshold Limit Concentration.

Sb = antimony; As = arsenic; Ba = barium; Be = beryllium; Cd = cadmium; Cr = chromium; Co = cobalt; Cu = copper; Pb = lead; Hg = mercury; Mo = molybdenum; Ni = nickel; Se = selenium; Ag = silver; Tl = Thallium; V = vanadium; Zn = zinc.

¹ Soluble Threshold Limit Concentrations (STLC) in mg/L.

² California-modified PRG.

³ Cancer PRG is 0.39 mg/kg.

⁴ Lowest PRG for thallium compounds listed.

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TABLE 9. SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
PORT OF OAKLAND, OAKLAND INTERNATIONAL AIRPORT - HANGER 9
7683 EARHART ROAD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-249

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/l)	TPH-JF (ug/l)	TPH-O (ug/l)	TPH-K and TPH-MS (ug/l)	TPH-MO (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	Total Lead (ug/l)	TDS (mg/l)	LAB
MW-1-4	05/18/92	3.98	9.85	-5.87	130	---	---	---	---	ND<0.4	ND<0.3	ND<0.3	ND<0.4	---	---	---
MW-1-4	08/07/92	3.98	4.44	-0.46	90	180	---	---	---	ND<0.4	ND<0.3	0.3	1.5	---	---	---
MW-1-4	11/20/92	3.98	5.85	-1.87	ND<0.4	---	---	---	---	ND<0.4	ND<0.3	ND<0.3	ND<0.4	---	---	---
MW-1-4	11/24/92	3.98	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-1-4	12/21/92	3.98	4.58	-0.60	---	---	---	---	---	---	---	---	---	---	---	---
MW-1-4	02/11/93	3.98	4.42	-0.44	160	520	---	---	---	0.5	ND<0.3	ND<0.3	ND<0.4	---	---	---
MW-1-4	05/17/93	3.98	4.15	-0.17	ND<50	1300	---	---	---	0.4	ND<0.3	ND<0.3	ND<0.4	---	---	---
MW-1-4	08/02/93	3.98	3.79	0.19	ND<50	ND<50	1300	---	---	0.5	ND<0.5	ND<0.5	ND<0.5	---	12200	---
MW-1-4	11/19/93	3.98	4.16	-0.18	ND<50	ND<50	ND<50	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	12000	---
MW-1-4	02/17/94	3.97	4.25	-0.28	ND<50	---	---	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	12000	---
MW-1-4(c)	02/23/94	3.97	---	---	ND<150	190	ND<50	ND	(d) ND<500	---	---	---	---	---	---	---
MW-1-4	05/31/94	3.97	4.35	-0.38	ND<50	200	---	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---
MW-1-4	09/20/94	3.97	4.27	-0.30	70	140	---	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	11000	---
MW-1-4	02/23/95	3.97	3.83	0.14	ND<50	ND<50	140	---	ND<200	0.7	ND<0.3	ND<0.3	ND<0.4	---	11000	CEC
MW-1-4	06/01/95	3.97	3.72	0.25	ND<50	290	ND<200	---	---	270	ND<0.4	ND<0.3	ND<0.4	---	12000	CEC
MW-1-4	09/07/95	3.97	3.72	0.25	ND<50	ND<50	270	---	500	ND<0.4	ND<0.3	ND<0.3	ND<0.4	---	12000	CEC
MW-2-4	05/18/92	3.26	7.90	-4.64	860	---	---	---	---	1.0	3.0	2.0	17.0	---	---	---
MW-2-4	08/07/92	3.26	2.31	0.95	170	2000	---	---	---	0.7	ND<0.3	0.7	2.5	---	---	---
MW-2-4	11/20/92	3.26	5.20	-1.94	160	---	---	---	---	1.5	0.4	0.5	2.4	ND<100	---	---
MW-2-4	11/24/92	3.26	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-2-4	12/21/92	3.26	6.48	-3.20	---	---	---	---	---	---	---	---	---	---	---	---
MW-2-4	02/11/93	3.26	5.16	-1.90	160	2300	---	---	---	0.5	ND<0.3	ND<0.3	ND<0.4	ND<100	---	---
MW-2-4	05/17/93	3.26	5.60	-2.34	330	2700	---	---	---	ND<0.4	ND<0.3	0.8	3.0	ND<50	9400	---
MW-2-4	08/02/93	3.26	5.16	-1.90	120	---	5200	---	---	ND<0.5	ND<0.5	ND<0.5	1.3	ND<60	8660	---
MW-2-4	11/19/93	3.26	5.37	-2.11	80	1300	---	---	---	1.5	ND<0.5	ND<0.5	0.6	ND<100	9440	---
MW-2-4(c)	02/17/94	3.23	5.70	-2.47	ND<50	ND<50	1400	ND	(d) ND<500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	8900	---
MW-2-4	05/31/94	3.23	1.84	1.39	ND<50	ND<50	---	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	390	6800	---
MW-2-4	09/20/94	3.23	1.82	1.41	130	ND<50	3300	---	---	1.4	ND<0.5	ND<0.5	0.63	ND<150	8100	D&M
MW-2-4	02/23/95	3.23	2.38	0.85	100	3300	ND<3000	---	1200	0.5	ND<0.3	ND<0.3	ND<0.4	ND<50	7500	CEC
MW-2-4	06/01/95	3.23	2.26	0.97	ND<50	1100	ND<1000	---	290	0.5	ND<0.3	ND<0.3	ND<0.4	ND<50	9000	CEC
MW-2-4	09/07/95	3.23	2.60	0.63	60	ND<1000	1000	---	300	ND<0.4	ND<0.3	ND<0.3	ND<0.4	ND<50	9400	CEC
OC-1 (f)	09/07/95	2.96	---	---	90	---	---	---	---	ND<0.4	ND<0.3	ND<0.3	ND<0.4	---	---	CEC

TABLE 6 SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
PORT OF OAKLAND, OAKLAND INTERNATIONAL AIRPORT - HANGER 9
7683 EARHART ROAD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-249

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/l)	TPH-JF (ug/l)	TPH-D (ug/l)	TPH-K and TPH-MS (ug/l)	TPH-MO (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	Total Lead (ug/l)	TDS (mg/l)	LAB
MW-3-4	11/19/93	3.49	4.24	-0.75	ND<50	---	---	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<100	10400	---
MW-3-4(c)	02/17/94	3.49	2.86	0.63	ND<50	ND<50	ND<50	ND (d)	ND<500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	10000	---
MW-3-4	05/31/94	3.49	3.97	-0.48	ND<50	85	---	---	---	---	---	---	---	480	10000	---
MW-3-4	09/20/94	3.49	2.34	1.15	130	310	260	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<150	8400	D&M
MW-3-4	02/23/95	3.49	4.28	-0.79	ND<50	ND<50	ND<50	---	200	ND<0.4	ND<0.3	ND<0.3	ND<0.4	ND<50	10000	CEC
MW-3-4	06/01/95	3.49	3.99	-0.50	ND<50	ND<50	ND<50	---	ND<200	ND<0.4	ND<0.3	ND<0.3	ND<0.4	ND<50	11000	CEC
MW-3-4	09/07/95	3.49	4.14	-0.65	ND<50	ND<300	250	---	ND<200	ND<0.4	ND<0.3	ND<0.3	ND<0.4	ND<50	11000	CEC
QC-2 (g)	02/23/95	---	---	---	ND<50	---	---	---	---	ND<0.4	ND<0.3	ND<0.3	ND<0.4	---	---	CEC
QC-2 (g)	06/01/95	---	---	---	ND<50	---	---	---	---	ND<0.4	ND<0.3	ND<0.3	ND<0.4	---	---	CEC
QC-2 (g)	09/07/95	---	---	---	ND<50	---	---	---	---	ND<0.4	ND<0.3	ND<0.3	ND<0.4	---	---	CEC

ABBREVIATIONS:

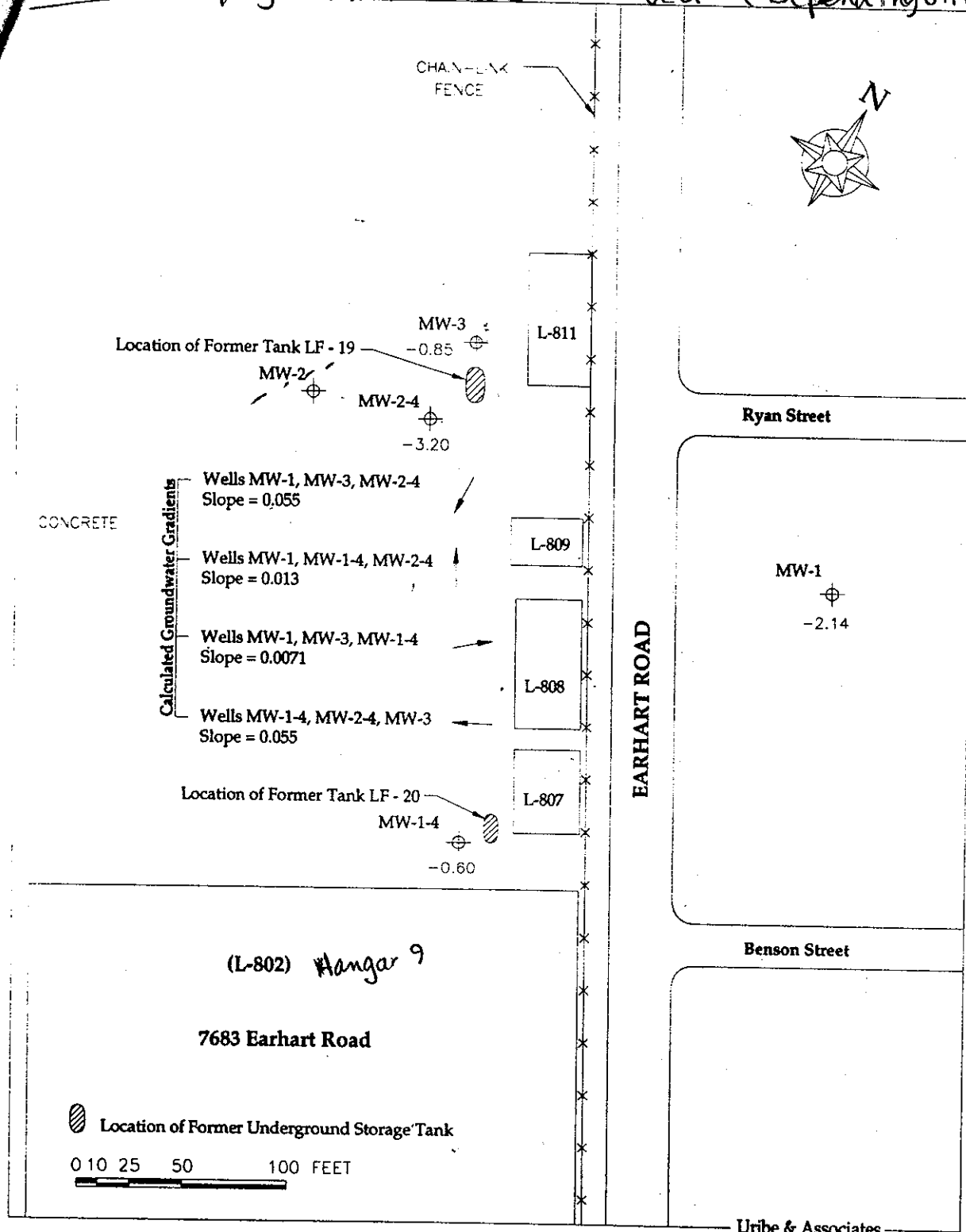
TPH-G	Total petroleum hydrocarbons as gasoline
TPH-JF	Total petroleum hydrocarbons as jet fuel
TPH-D	Total petroleum hydrocarbons as diesel
TPH-K	Total petroleum hydrocarbons as kerosene
TPH-MS	Total petroleum hydrocarbons as mineral spirits
TPH-MO	Total petroleum hydrocarbons as motor oil
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
TDS	Total dissolved solids
ug/l	Micrograms per liter
mg/l	Miligrams per liter
---	Not analyzed/applicable
ND	Not detected above reported detection limit
D&M	D&M Laboratories
CEC	Clayton Environmental Consultants

NOTES:

- (a) Top of casing elevations surveyed to the nearest 0.01 foot relative to mean lower low water (3.2 feet below mean sea level, Port of Oakland Datum).
- (b) Groundwater elevations in feet above mean lower low water.
- (c) Detection limits for kerosene and mineral spirits are 50 and 150 ug/l.
- (d) Detection limits for kerosene and mineral spirits are 500 and 1500 ug/l.
- (e) MW-2 abandoned on March 19, 1993.
- (f) Blind duplicate.
- (g) Travel blank.

E:\010-249\249-1-3.W02

Varying Flow Directions Observed (Depending on Wells)



Site Plan Map of Monitoring Wells at Hangar 9 Complex, 7683 Earhart Road.
 Water Level Data Collected December 21, 1992

TABLE 6
**COMPARISON OF MAXIMUM SITE CONCENTRATIONS FOR SOIL AND GROUNDWATER
 WITH CALCULATED TIER 2 SITE SPECIFIC TARGET LIMITS (SSTLs)
 FOR COMMERCIAL WORKERS AND CONSTRUCTION/UTILITY WORKERS
 Hangar 9 Area, Metropolitan Oakland International Airport, North Field
 Oakland, California**

Chemical of Potential Concern	Risk or Hazard Level	Soil (mg/kg)					Groundwater (mg/L)		
		Maximum On-site Concentration		SSTL			Maximum On-site Concentration ²	SSTL	
		Surface Soil	Subsurface Soil	Surface Soil Ingestion, Dermal Contact, Inhalation ¹	Subsurface Soil Volatilization to Outdoor Air	Subsurface Volatilization to Indoor Air		Groundwater Volatilization to Outdoor Air	Ground water Volatilization to Indoor Air
Commercial Site Workers									
Benzene	1x10 ⁻⁵ cancer risk	ND	0.25	45	3.7	2.7	0.0005	95	5.8
Toluene	HQ = 1	ND	4.1	29,000	>SAT	>SAT	0.0011	>SOL	>SOL
Ethylbenzene	HQ = 1	10	0.45	18,000	>SAT	>SAT	0.0004	>SOL	>SOL
Xylenes	HQ = 1	56	1.6	150,000	>SAT	>SAT	0.0031	>SOL	>SOL
Polychlorinated biphenyls (PCBs)	1x10 ⁻⁵ cancer risk	0.26	No data	1.1	>SAT	>SAT	No data	>SOL	>SOL
Construction/ Utility Workers									
Benzene	1x10 ⁻⁵ cancer risk	0.25 ³	NA	40	NA	NA	NA	NA	NA
Toluene	HQ =1	4.1 ³	NA	>SAT	NA	NA	NA	NA	NA
Ethylbenzene	HQ =1	10 ³	NA	>SAT	NA	NA	NA	NA	NA
Xylenes	HQ =1	56 ³	NA	>SAT	NA	NA	NA	NA	NA

Table 6 - continued

Chemical of Potential Concern	Risk or Hazard Level	Soil (mg/kg)					Groundwater (mg/L)		
		Maximum On-site Concentration		SSTL			Maximum On-site Concentration ²	SSTL	
		Surface Soil	Subsurface Soil	Surface Soil Ingestion, Dermal Contact, Inhalation ¹	Subsurface Soil Volatilization to Outdoor Air	Subsurface Volatilization to Indoor Air		Groundwater Volatilization to Outdoor Air	Ground water Volatilization to Indoor Air
Polychlorinated biphenyls	1x10 ⁻⁵ cancer risk	0.26 ¹	NA	6.9	NA	NA	NA	NA	NA

Notes: For chemicals (e.g., benzene and PCBs) that cause both cancer and non-cancer health effects, the lower of the two SSTLs is shown in the table above. See Table 5 for the maximum concentration of COPC in soil and groundwater.

HQ = Hazard Quotient is defined as the ratio of calculated exposure to the threshold for non-carcinogenic effects. The threshold for toxic effects is based on toxicity data obtained for each COPC from the U.S EPA (IRIS, 1999) and Cal/EPA (Cal/EPA, 1994), as reported in the Oakland RBCA model (Gomez and Spence, 1999). If $HQ \geq 1$ noncarcinogenic effects could potentially occur in the exposed population.

SSTL = Site-Specific Target Level is defined as a risk-based remedial action target level for COPC in soil and groundwater developed using site-specific data, where available. SSTLs are developed for individual COPC to prevent risks in excess of a one-in-one hundred thousand (1×10^{-5}) excess lifetime cancer risk for carcinogens or a hazard quotient of unity (1.0) for noncarcinogens for the selected exposure pathways.

SSTLs for commercial site workers were calculated using the Oakland RBCA approach (Gomez and Spence, 1999). SSTLs for construction/utility workers were calculated using the RBCA Tier 1 and Tier 2 Spreadsheet system, Version 1.01 (GSI, 1995-1997).

> SOL = Calculated SSTL was greater than solubility limit; selected risk or hazard level cannot be reached or exceeded for that COPC under the specified exposure scenario.

> SAT = Calculated SSTL was greater than saturation concentration; selected risk or hazard level cannot be reached or exceeded for that COPC under the specified exposure scenario.

COPC = Chemical of potential concern.

NA = Not applicable or not available.

ND = Not reported above the laboratory reporting limit.

¹ The SSTLs calculated for surface soil ingestion, dermal contact and inhalation include pathways that are not complete for commercial site workers under existing conditions; inhalation of surface soils is the only potentially complete pathway under this combined SSTL. Therefore the calculated SSTLs presented in this table is overly conservative for potentially complete pathways. All of these pathways are expected to be complete for construction/utility workers.

² From the last four groundwater monitoring events.

³ At the request of Alameda County, for the construction/utility worker receptor, the value listed corresponds to the maximum concentration of COPCs in the top five feet of soil which is assumed to be the maximum depth that would be disturbed during construction or utility work.

TABLE 7
**ECOLOGICAL SCREENING LEVELS ESTABLISHED FOR
 SAN FRANCISCO INTERNATIONAL AIRPORT**
 Hangar 9 Area, Metropolitan Oakland International Airport, North Field
 Oakland, California

Chemical of Potential Concern	Tier 0 Cleanup Standard		Tier 1 Cleanup Standard			
			DAF = 0		DAF = 7	
	Soil (mg/kg)	Groundwater (mg/L)	Soil (mg/kg)	Groundwater (mg/L)	Soil (mg/kg)	Groundwater (mg/L)
TPH as gasoline	100	0.6	629	3.7	4,420	26
TPH as diesel/jet fuel	200/200	0.2/0.2	518/640	0.64/0.64	3,645/4,500	4.5/4.5
BTEX (total)	5	0.1	--	--	--	--
Benzene	0.5	0.02	2.73	0.071	44	0.5
Ethylbenzene	--	--	13	0.086	240	0.65
Toluene	--	--	930	5	840 ¹	35
Xylene	--	--	358	2.2	360 ¹	15

Source: SFRWQCB, 1999.

Notes: -- = not applicable.

BTEX = benzene toluene, ethylbenzene and xylenes.

¹ Saturation limit.

TABLE 8
**COMPARISON OF SOIL AND GROUNDWATER CONCENTRATIONS
 WITH ECOLOGICAL SCREENING LEVELS (DAF = 7) DEVELOPED FOR THE SAN FRANCISCO
 INTERNATIONAL AIRPORT**
 Hangar 9 Area, Metropolitan Oakland International Airport, North Field
 Oakland, California

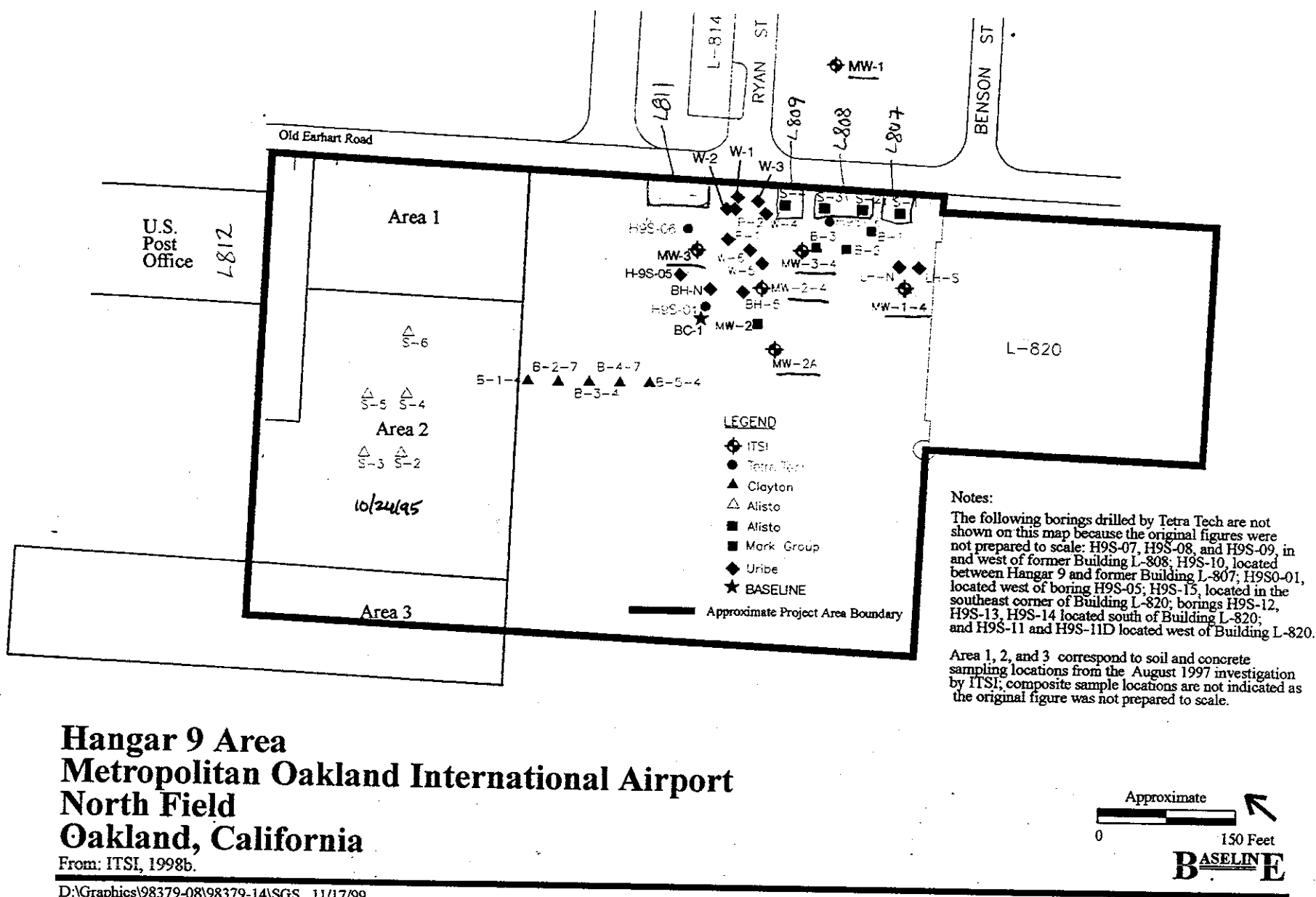
Chemical of Potential Concern	Tier 1 Soil Value, DAF = 7 (mg/kg)	Tier 1 Groundwater Value, DAF = 7 (mg/L)	Maximum Soil Concentration (except where indicated) (mg/kg)	Maximum Groundwater Concentration (except where indicated) (mg/L)
TPH-gasoline	4,420	26	894 ²	0.61
TPH-diesel	3,645	4.5	113 ²	2.4
TPH-jet fuel	4,500	4.5	1,514 ²	2.5
Benzene	44	0.5	0.25	0.0005
Ethylbenzene	240	0.65	10	0.0004
Toluene	840	35	4.1	0.0011
Xylene	360	15	56	0.0031

Notes: See Appendix E for calculation of 95th upper confidence limit for petroleum hydrocarbons in soil.
 See Appendix F for SFIA Screening Level graphs for various dilution attenuation factors (SFRWQCB, 1999).
 See Table 5 for soil concentrations for benzene, toluene, ethylbenzene and xylenes, and for groundwater concentrations.

¹ Maximum concentration of results from the last four groundwater monitoring events among the five on-site wells.
² 95th upper confidence limit concentration.

SOIL AND GROUNDWATER SAMPLING LOCATIONS

Figure 11



Hangar 9 Area Metropolitan Oakland International Airport North Field Oakland, California

From: ITSI, 1998b.

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TABLE 5

**SCREENING FOR CHEMICALS OF POTENTIAL CONCERN
IN SOIL AND GROUNDWATER FOR HUMAN HEALTH
Metropolitan Oakland International Airport, North Field
Oakland, California**

Chemicals of Potential Concern (COPC)	Maximum Site Concentrations						Regulatory Thresholds					Included as Soil and/or Groundwater COPC?	
	Surface Soils (<3.5 feet bgs) (mg/kg)	Sample ID and Depth	Subsurface Soils (>3.5 feet bgs) (mg/kg)	Sample ID and Depth	Groundwater ¹ (mg/L)	Sample Location	Residential Soil PRG (mg/kg)	Industrial Soil PRG (mg/kg)	Mission Bay EIR SSTL, Soil, Adult, Residential (mg/L)	LBNL ² Background Concentration (mg/kg)	MCL ³ (mg/L)		Mission Bay EIR SSTL, Groundwater, Adult, Residential (mg/L)
Organic Compounds													
Benzene	<0.005 - <5	NA	0.25	W-1 @ 5'	0.0005	MW-2-4	0.67 ⁴	1.5 ⁴	--	NA	0.001	--	Yes
Toluene	<0.005 - <5	NA	4.1	W-1 @ 5'	0.0011	MW-3	520	520	--	NA	0.15	--	Yes, even though max < residential PRG; gasoline contaminant
Ethylbenzene	10	W-4 @ 3.5'	0.45	W-1 @ 5'	0.0004	MW-3	230	230	--	NA	0.7	--	Yes, even though max < residential PRG; gasoline contaminant
Xylenes	56	W-4 @ 3.5'	1.6	W-1 @ 5'	0.0031	MW-3	210	210	--	NA	1.75	--	Yes, even though max < residential PRG; gasoline contaminant
PCBS (total)	0.26	S-1 @ ~ 1'	No data	NA	No data	NA	0.22	1.0	--	NA	0.0005	--	Yes
Chlorobenzene	10	H9S-16 @ 2.5'	0.023	H9S-08 @ 6.0-7.0'	No data	ND NA MW3-4	150	540	--	NA	0.039	--	No
Di-butylphthalate	0.24	1-1 (ABCD) @ ≤ 2.5'	No data	NA	No data	ND BC-1	6,100	88,000	--	NA	3.7	--	No
Bis(2-ethylhexyl) phthalate	0.39	1-1 (ABCD) @ ≤ 2.5'	No data	NA	No data	ND NA BC-1 MW3-4	35	180	--	NA	0.0048	--	No
Acetone	0.08	MW-2-2 @ 2'	0.32	B-3-4.5 @ 4.5'	No data	ND NA MW3-4	1,600	6,200	--	NA	0.61	--	No; common laboratory contaminant
2-Butanone	0.012	2-1 (ABCD) @ ≤ 2.5'	0.06	B-3-4.5 @ 4.5'	No data	ND NA MW3-4	NA	NA	--	NA	NA	--	No; common laboratory contaminant
Metals													
Lead	110	S-2 @ ~ 1'	17	W-3 @ 5'	0.204	MW-3	130	1,000	--	14.7	0.015	--	No
Antimony	<2.9 - <3.0	NA	No data	NA	No data	NA	31	820	--	5.9	0.006	--	No
Arsenic	6.2	2-1 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	22 ⁵	440 ⁵	--	14	0.05	--	No
Barium	160	2-3 and 3-4 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	5,400	100,000	--	358.8	1	--	No
Beryllium	0.37	2-1 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	150	2,200	--	0.9	0.004	--	No
Cadmium	0.85	2-1 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	9.0	810	--	1.5	0.005	--	No
Chromium	46	2-5 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	210	450	--	91.4	0.05	--	No
Cobalt	19	1-1 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	4,700	100,000	--	22	2.2	--	No

Table 5 - continued

Vic Panel

Chemicals of Potential Concern (COPC)	Maximum Site Concentrations						Regulatory Thresholds						Included as Soil and/or Groundwater COPC?
	Surface Soils (<3.5 feet bgs)		Subsurface Soils (<3.5 feet bgs)		Groundwater ¹ (mg/L)	Sample Location	Residential Soil PRG (mg/kg)	Industrial Soil PRG (mg/kg)	Mission Bay EIR SSTL, Soil, Adult, Residential	LBNL ² Background Concentration	MCL ³	Mission Bay EIR SSTL, Groundwater, Adult, Residential	
	(mg/kg)	Sample ID and Depth	(mg/kg)	Sample ID and Depth					(mg/L/kg)	(mg/kg)	(mg/L)	(mg/L)	
Copper	34	2-5 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	2,900	76,000	--	59.6	1.4	--	No
Mercury	0.17	2-3 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	23	610	--	0.3	0.002	--	No
Molybdenum	2.6	1-2 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	390	10,000	--	3.2	0.18	--	No
Nickel	44	2-5 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	150	41,000	--	120.2	0.1	--	No
Selenium	0.28	2-1 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	390	10,000	--	5.6	0.05	--	No
Silver	27	1-1 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	370	10,000	--	1.7	0.18	--	No
Thallium	0.94	3-1 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	6.3 ⁶	160 ⁶	--	42.5	0.002	--	No
Vanadium	63	1-2 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	550	14,000	--	78.2	0.26	--	No
Zinc	95	2-3 (ABCD) @ ≤ 2.5'	No data	NA	No data	NA	23,000	100,000	--	91.5	11	--	No
Total Petroleum Hydrocarbons (TPH)													
TPH as gasoline	6,800	H9S-01 @ 1.5-2.0'	135	W-1 @ 5'	0.61	MW-3	NA	NA	14,000	NA	NA	68	No
TPH as diesel	<3,000	S-4 @ ~ 2'	160	B-5-4 @ 4'	2.4	MW-2-4	NA	NA	150,000	NA	NA	17,000	No
TPH as jet fuel and/or kerosene	5,000	H9S-01 @ 1.5-2.0'	11	B-1-4 @ 4'	2.5	MW-3	NA	NA	NA	NA	NA	NA	No
TPH as motor oil	670	S-4 @ ~ 1'	No data	NA	0.75	MW-3	NA	NA	2,300,000	NA	NA	130,000	No
TPH as mineral spirits	740	S-4 @ ~ 1'	No data	NA	No data	NA	NA	NA	NA	NA	NA	NA	No
TRPH	1,400	1-2 (ABCD) @ ≤ 2.5'	1,500	B-5-4 @ 4'	No data	NA	NA	NA	NA	NA	NA	NA	No

Notes:

NA = not available or not applicable.

-- = Not relevant to this evaluation.

See Tables 1, 2 and 4 for soil and groundwater data.

PRGs from U.S. EPA, 1999

Mission Bay EIR SSTLs (ENVIRON, 1998) account only for inhalation of volatiles in indoor and ambient air and do not account for dermal contact or ingestion of TPH constituents. SSTLs protective of construction workers were not developed for TPH constituents. Potential construction worker exposures to residual concentrations would be mitigated by implementation of a health and safety plan.

Background metals concentrations from LBNL, 1995.

Maximum Contaminant Limits (MCLs) from Title 22, California Code of Regulations.

TRPH = Total recoverable petroleum hydrocarbons.

¹ Maximum concentration of results from the last four quarterly monitoring events among the five on-site wells.

² 95th UCL for Colluvium and Fill.

³ Value listed is either MCL or USEPA Tap Water PRG if MCL is not established.

⁴ If PRG was calculated using the California potency factor for benzene (0.01 mg/kg-day)⁻¹, the residential PRG would be 0.19 mg/kg and the industrial PRG, 0.44 mg/kg.

⁵ PRG for noncancer endpoint; PRGs for cancer endpoint for soil are 0.39 and 2.7 mg/kg for residential and industrial PRGs, respectively.

⁶ Lowest PRG for thallium compounds listed.