AUG 1990

REPORT
SOIL BORING/SAMPLING AND CHEMICAL TESTING
EXISTING UNDERGROUND GASOLINE TANK
BUS MAINTENANCE YARD
2900 LADD AVENUE
LIVERMORE, CALIFORNIA

BSK
& Associates

BSK & Associates, Geotechnical Consultants, Inc.

Geotechnical Engineering • Engineering Geology • Environmental Engineering • Engineering Laboratories • Chemical Laboratories

August 10, 1990 **OUR JOB P90150**

Livermore Valley Joint
Unified School District
685 Las Positas Boulevard
Livermore, CA 94550

Attention: Mr. Rudy D'Ambra 447-9500 x236

SUBJECT: Report
Soil Boring/Sampling and Chemical Testing
Existing Underground Gasoline Tank
Bus Maintenance Yard
2900 Ladd Avenue
Livermore, California

Gentlemen:

As requested and authorized, we have drilled and obtained soil samples at and below the bottom level of the existing 6,000-gallon regular unleaded gasoline tank located at the above referenced facility. The samples were tested to assess possible fuel leak from the subject tank. The tank and boring location are presented on Figure 1, Site Plan.

Project Description

Based on the plans provided to us prior to our investigation and as shown on Figure 1, the facility consists of a Transportation Facility building and three Underground Storage Tanks (USTs) in a common excavation 30 feet by 32 feet and 12 feet deep. The tank cluster consists of a 6,000 gallon regular leaded gasoline tank, a 6,000 gallon low leaded gasoline, and a 10,000 gallon diesel tank. The tanks rest on an 8-inch thick concrete hold-down pad.

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☐ **Bakersfield**, California 93304 • 117 "V" Street • Telephone (805) 327-0671, Fax (805) 324-4218
☒ **Pleasanton**, California 94566 • 5729-F Sonoma Drive • Telephone (415) 462-4000, Fax (415) 462-6283
☐ **Sacramento**, California 95829 • 9901 Elkm Road, Suite C • Telephone (916) 361-1851, Fax (916) 361-1825

We understand that the regular gasoline tank has failed a recent tank test while the other two tanks passed such test. There was approximately 20 inches of product in the first tank at the time of our field investigation. The purpose of our investigation was to drill an angled boring adjacent to the suspect tank and obtain soil samples for chemical analyses in order to make a preliminary assessment of soil contamination, if any, in the vicinity and below the tank bottom.

Field Work and Subsurface Conditions

Field work was performed on July 25, 1990, and consisted of drilling and sampling an exploration boring adjacent to the 6,000-gallon regular gasoline tank. The boring, located approximately 10 feet from the fill nozzle, was drilled at a 30 degree angle with respect to the vertical axis in order to obtain soil samples below the tank bottom for field observations and laboratory chemical testing. The boring was advanced using an 8-inch hollow stem auger from a truck-mounted rig.

The soils encountered in the boring were visually classified in the field by a geologist, in accordance with the Unified soil Classification System (Figure 2). A boring log is presented on Figure 3. After field classification, the soil samples retained in 2-inch stainless tubes were immediately sealed and refrigerated, then transferred to our State-certified analytical laboratory for testing.

Drilling spoils removed from the boring were placed and sealed in an approved storage drum and stored at the site until a determination could be made as to the condition of the soils.

Following completion of the sampling operation, the boring was backfilled and sealed with neat cement. Drilling and sampling equipment in contact with site soils were hand washed with Trisodium Phosphate detergent or cleaned with hi-pressure, hi-temperature wash prior to use or re-use at the site.

Subsurface Conditions

The subsurface strata, as encountered in our boring, consist of an uppermost layer of silty clay below asphalt concrete pavement to a depth of 3 feet, underlain by primarily clayey gravels extending to the maximum 20-feet explored. No groundwater was encountered at the time of drilling.

No hydrocarbon odor was noted above the tank bottom level. A slight hydrocarbon odor was noted right at the tank bottom level (11 feet below surface) and became much stronger with increased depth. A Photo-Ionization Detector (PID) was used in the field as a screening tool to detect hydrocarbon contaminants in the boring. The unit was calibrated to 100 ppm isobutylene. Photo-ionizable hydrocarbons were detected at the tank bottom level and below. The PID reading ranged from 37 to 738 as shown on the boring log.

Chemical Testing

Two soil samples from depths of 16.5 and 19.5 feet were tested for Petroleum Hydrocarbons (TPH) as Gasoline, and BTXE by EPA 8015M and EPA 8020 Test Methods, respectively.

The following Table presents the results of the chemical analyses. Copies of the chemical test data sheets, together with the Chain-of-Custody Record, are presented on the attached Figures 4 through 6.

TABLE 1

SUMMARY OF CHEMICAL TEST RESULTS

All units in mg/kg (ppm) unless otherwise indicated

Sample Designation	Sample Depth (Ft.) Inclined	Vertical	TPH* as Gas	Benzene*	Toluene	Ethyl-Benzene*	Total Xylene*
(Detection Limit)			(500)	(1.0)	(1.0)	(1.0)	(1.0)
EB-1, No. 2	16.5	14	2,300	9.8	79	38	220
EB-1, No. 3	19.5	17	1,500	7.3	54	22	140

*Test results exceed Action Levels of 100, 0.3, 0.3, 1 and 1 for TPH as Gas, Benzene, Toluene, Ethylbenzene, and Total Xylene as derived from Table 2-1 of the LUFT Manual, dated October 1990.

Findings

As indicated on the preceding table and based on our field observations, hydrocarbon contamination of soil has taken place below the tank bottom. The assessment of the vertical and horizontal extent of soil contamination, and its impact on the groundwater may require the tank removal and further soil/groundwater investigations per the State Water Resources Control Board LUFT Manual and Regional Water Quality Control Board guidelines regarding unauthorized release of fuel product from underground storage tanks. We would be pleased to provide such service if so required.

Report Distribution

Copies of this report should be submitted to the Alameda County Department of Environmental Health, Hazardous Materials Division for their review. We are providing you with extra copies for this purpose. We understand that copies of the report may be forwarded by ACEH to the Regional Water Quality Control Board in Oakland for their review.

LIMITATIONS

The findings presented in this report are based on field review and observations, and from the limited testing program described in this report. This report has been prepared in accordance with generally accepted methodologies and standards of practice of the area. No other warranty, expressed or implied, is made as to the findings included in the report.

The findings of this report are valid as of the present. The passage of time, natural processes or human intervention on the property or adjacent property can cause changed conditions which can invalidate the findings presented in this report.

* * * *

BSK & Associates is pleased to have been of service to you in the preparation of this report. If you have questions concerning the contents of this report, please do not hesitate to contact us.

The following figures are attached and complete this report.

FIGURE 1	Site Plan
FIGURE 2	Legend for Test Hole Logs
FIGURE 3	Log of Boring
FIGURE 4 & 5	Chemical Analysis Data Sheets
FIGURE 6	Project Chain-of-Custody Record

Respectfully submitted,

BSK & Associates

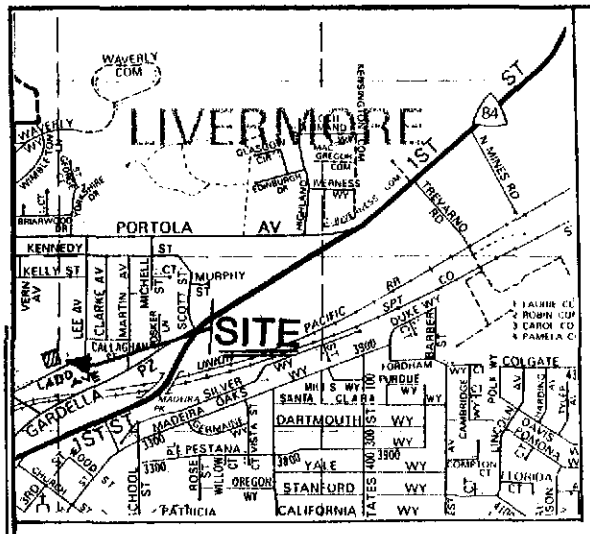
Alex Y. Eskandari

Alex Y. Eskandari, P.E.
C.E. 38101

AYE:hhc
(MISC#2.87)

Distribution:
Livermore Valley Joint U.S.D. (5 copies)

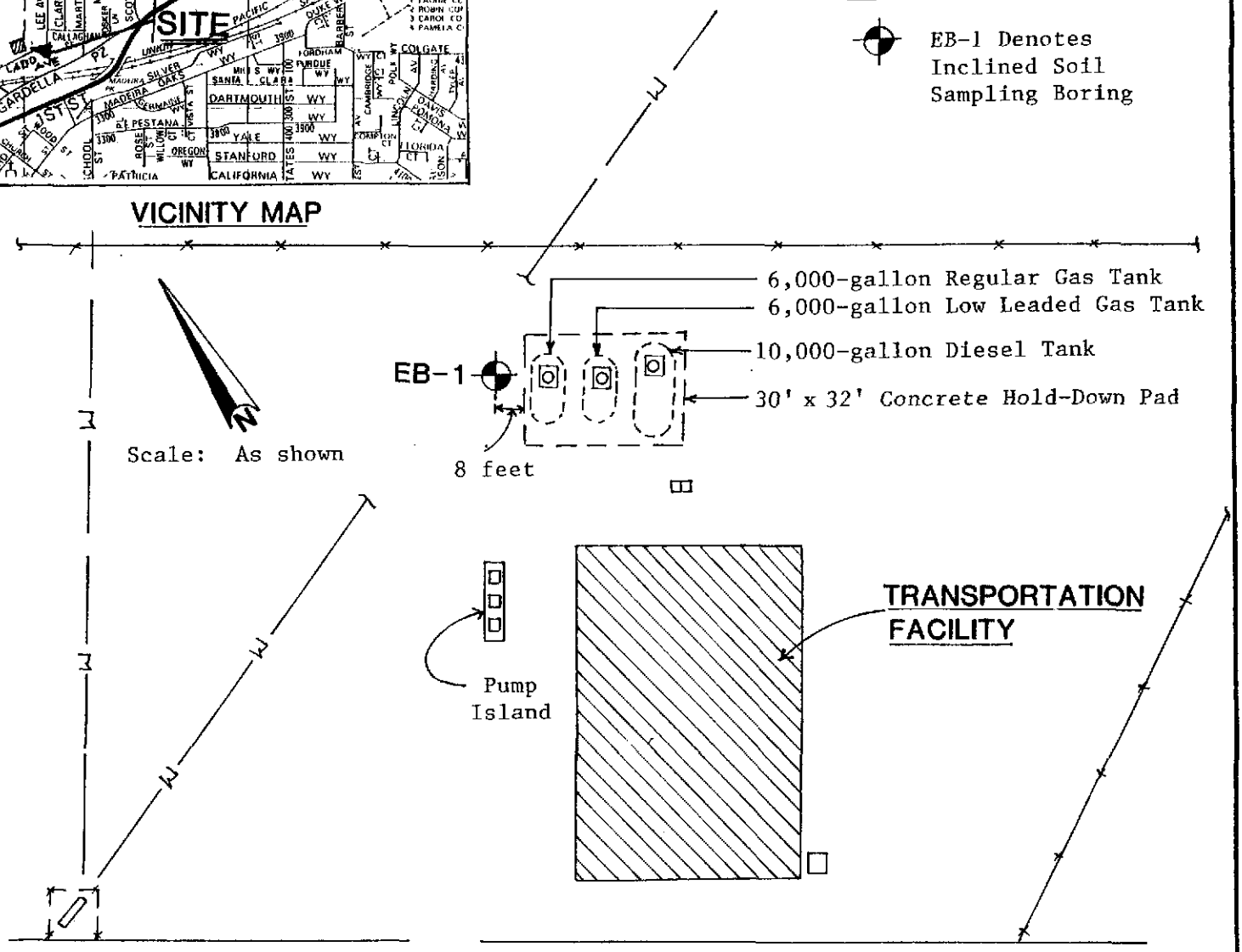
FIGURE: 1
Job No. P90150
August 1990



VICINITY MAP

Legend:

EB-1 Denotes Inclined Soil Sampling Boring



CHECKED BY

DATE

BY

SITE PLAN

SOIL SAMPLING & CHEMICAL TESTING

EXISTING UNDERGROUND GASOLINE STORAGE TANK

BUS MAINTENANCE YARD

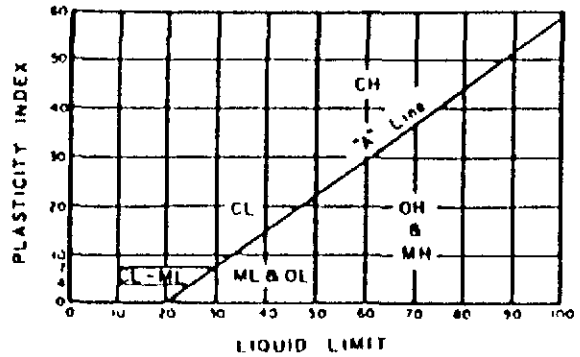
2908 LADD AVENUE - LIVERMORE, CALIFORNIA

BSK & Associates

LEGEND FOR TEST HOLE LOGS

METHOD OF SOIL CLASSIFICATION
(Unified Soil Classification System)

MAJOR DIVISIONS		SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 1/2 of soil > no. 200 sieve size)	GRAVELS (More than 1/2 of coarse fraction > no. 4 sieve size)	GW	Well graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction < no. 4 sieve size)	SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS (More than 1/2 of soil < no. 200 sieve size)	SILTS & CLAYS LL < 50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL > 50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts



PLASTICITY CHART

Key to Samples

- ■ Indicates depth of undisturbed sample
- ☐ Sample not recovered
- ⊠ Indicates depth of disturbed sample
- ▚ Indicates depth of Standard Penetration Split Spoon Sample

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DATE: 07/25/90
LOGGED BY: MC
ELEVATION: --
WATER LEVEL: None encountered
EQUIPMENT: Mobile Drill B-53, 8" Hollow Stem Auger (Drilled at a 30° angle from vertical)

LOG DESIGNATION EB-1

JOB: P90150
FIGURE: 3

DEPTH, FEET	NOMINAL (1) DIAMETER, IN.	BLOWS/FOOT (2)	MOISTURE %	DRY DENSITY, PCF	SAMPLES	U.S.C.S.	SOIL OR ROCK DESCRIPTION	NOTES
						PMT	3" Asphaltic Concrete over 8" Aggregate Base	
						CL	SILTY CLAY: Redish medium brown, very moist, slightly gravelly, no odor	OVM* = 0
						GC	CLAYEY GRAVEL: Medium brown, damp, medium to coarse-grained	OVM = 0
5								
10								OVM = 37
	2.0	-	-	-	1		CLAYEY SANDY GRAVEL: Light brown, very moist, slight hydrocarbon odor	OVM = 37
15								
	2.0	-	-	-	2		Strong gasoline odor, sample wet with product	OVM = 512
	2.0	-	-	-	3		as above	OVM = 738
20								Boring Terminated At 20'
25							OVM: Denotes Organic Vapor Meter	

THE LOGS SHOW SUBSURFACE CONDITIONS AT THE DATES AND LOCATIONS INDICATED, AND IT IS NOT WARRANTED THAT THEY ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

(1) SAMPLER INSIDE DIAM.
(2) 140lbs HAMMER - 30 INCH DROP.
(P) HYDRAULICALLY PUSHED

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FIGURE: 4

BSK Analytical Laboratories

1414 Stanislaus Street * Fresno, California 93706 * Telephone (209) 485-8310 * Fax (209) 485-7427

BSK Pleasanton
P90150

Lab No. Ch902862-1

Report Date 8/3/90

Sample Type Soil

Date Sampled 7/25/90

Sample Description 1655 hrs.

EB-1 #2 at 16.5'

Date Received 7/26/90

Date of Analyses 7/27/90

Soil Analyses for BTXE and TVH

Compound	Results (mg/kg)	Detection Limit (DLR)
Benzene	9.8	1.0
Toluene	79	1.0
Ethylbenzene	38	1.0
Total Xylene Isomers	220	1.0
Total Volatile Hydrocarbons	2300	500

Method: BTXE-EPA 8020 TVH-EPA 8015M

ND-None Detected BDL-Below Detection Limit

DLR-Detection Limit For the Purposes of Reporting

Cynthia Pigman,
QA/QC Supervisor

Michael Brechmann,
Organics Supervisor

FIGURE: 5

BSK Analytical Laboratories

1414 Stanislaus Street * Fresno, California 93706 * Telephone (209) 485-8310 * Fax (209) 485-7427

BSK Pleasanton
P90150

Lab No. Ch902862-2

Report Date 8/3/90

Sample Type Soil

Date Sampled 7/25/90

Sample Description 1710 hrs.

Date Received 7/26/90

EB-1 #3 at 19.5'

Date of Analyses 7/27/90

Soil Analyses for BTXE and TVH

Compound	Results (mg/kg)	Detection Limit (DLR)
Benzene	7.3	1.0
Toluene	54	1.0
Ethylbenzene	22	1.0
Total Xylene Isomers	140	1.0
Total Volatile Hydrocarbons	1500	500

Method: BTXE-EPA 8020 TVH-EPA 8015M

ND-None Detected BDL-Below Detection Limit

DLR-Detection Limit For the Purposes of Reporting

Cynthia Pigman,
QA/QC Supervisor

Michael Brechmann,
Organics Supervisor

BSK Log Number 8/2

ANALYSIS REQUEST/CHAIN OF CUSTODY RECORD

1000-0474

Client Name: BSK Pleasanton (Livermore School Dist.)	Project or P.O.#: P90150
Address: 5729 F Sonoma Av.	Phone #: (415) 462-4000
City, State, Zip: Pleasanton	Report attention: Alex Eskandari

Lab Use Only in this section: CX

Analysis required: TVH & BTXE; Hazardous sample / Special handling required

Date sampled	Time sampled	Type (See key below)	Sampled by: M. Cline — Sample description	Number of containers	Lab Sample number	Sample Seals (See key below)	TVH & BTXE	Hazardous sample / Special handling required	Remarks
7-25-90	16:55	SO	EB-1 #2 at 16.5'	1	1	P	X		Strong Hydrocarbon Odor
7-25-90	17:10	SO	EB-1 #3 at 19.5'	1	2	P	X		↓ ↓

EXPEDITE 8/2

IMPORTANT NOTICE: No samples will be analyzed without an authorized signature in this section.

I am hereby requesting BSK's Normal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in the U.S. E.P.A. SW 846 and that there is no extra charge for this service.

By: Marty Cline
Authorized Signature

I am hereby requesting BSK's Formal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in U.S. EPA Contract Laboratory Program Statement of Work, Section F, and that there is a charge of $50.00 per work order or $5.00 a bottle, whichever is greater.

By: _____
Authorized Signature

Signature	Print Name	Company	Date	Time
Relinquished by: Marty Cline	Martin Cline	BSK & Assoc.	7-25-90	18:30
Received by: U.S. Envirotech	L. Eldredge	LAB	7/26	1430
Relinquished by				
Received by				
Relinquished by				
Received by				

BSK & Associates Chemical Laboratories

1414 Stanislaus Street Fresno, California 93706

Telephone (209) 485-8310 • Fax (209) 485-7427

KEY: Type: AQ–Aqueous SL–Sludge SO–Soil PE–Petroleum OT–Other
Seals: P–Present A–Absent B–Broken
DISTRIBUTION: WHITE, CANARY - LABORATORY PINK - ORIGINATOR
Note:
Samples are discarded 14 days after results are reported unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

FIGURE: 6