

Geotechnical Consultants, Inc.
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 94546*

Howard D. Barlow, P.E.
 Manager

Project No. H86078-A28E4
 October 28, 1986

Mr. Dick Bigelow
 20656 Redwood Road
 Castro Valley, California 94546

SUBJECT: Underground Tests
 Soil Sampling and Hydrocarbon Testing
 2896 Castro Valley Boulevard
 Castro Valley, California

Dear Mr. Bigelow:

In accordance with our agreement, we have obtained a soil sample for hydrocarbon testing adjacent to each of the four existing underground storage tanks at the above referenced site. Three tanks contain gasoline and one tank contains waste oil.

The site was sampled using a mobile drill rig on September 25, 1986. We obtained the soil samples from the approximate level of the bottom of the tanks at four locations indicated on the Site Sketch, Figure 1. The logs of the four borings are included as Figures 2 through 5. Petroleum odors were noted in each of the borings during drilling.

The soil samples were sealed and refrigerated until delivery to the analytical laboratory. The samples were then tested for total hydrocarbons. The chemical testing was performed by BSK & Associates. The results of the tests are as follows:

<u>Soil Sample</u>	<u>Total Volatile Hydrocarbons (ppm)</u>	<u>Total Extractable Hydrocarbons (ppm)</u>
B-1 at 10'	173	--
B-2 at 10'	267	--
B-3 at 10'	15.4	--
B-4 at 6'	1.3	1.3

3/10/89

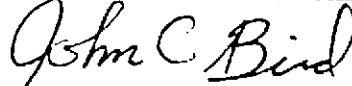
Mr. Dick Bigelow

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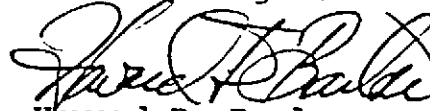
If you have any questions regarding the information contained in this letter or if we can be of any further assistance to you, please do not hesitate to contact us.

Respectfully submitted,

JHA GEOTECHNICAL CONSULTANTS, INC.



John C. Bird
Staff Geologist



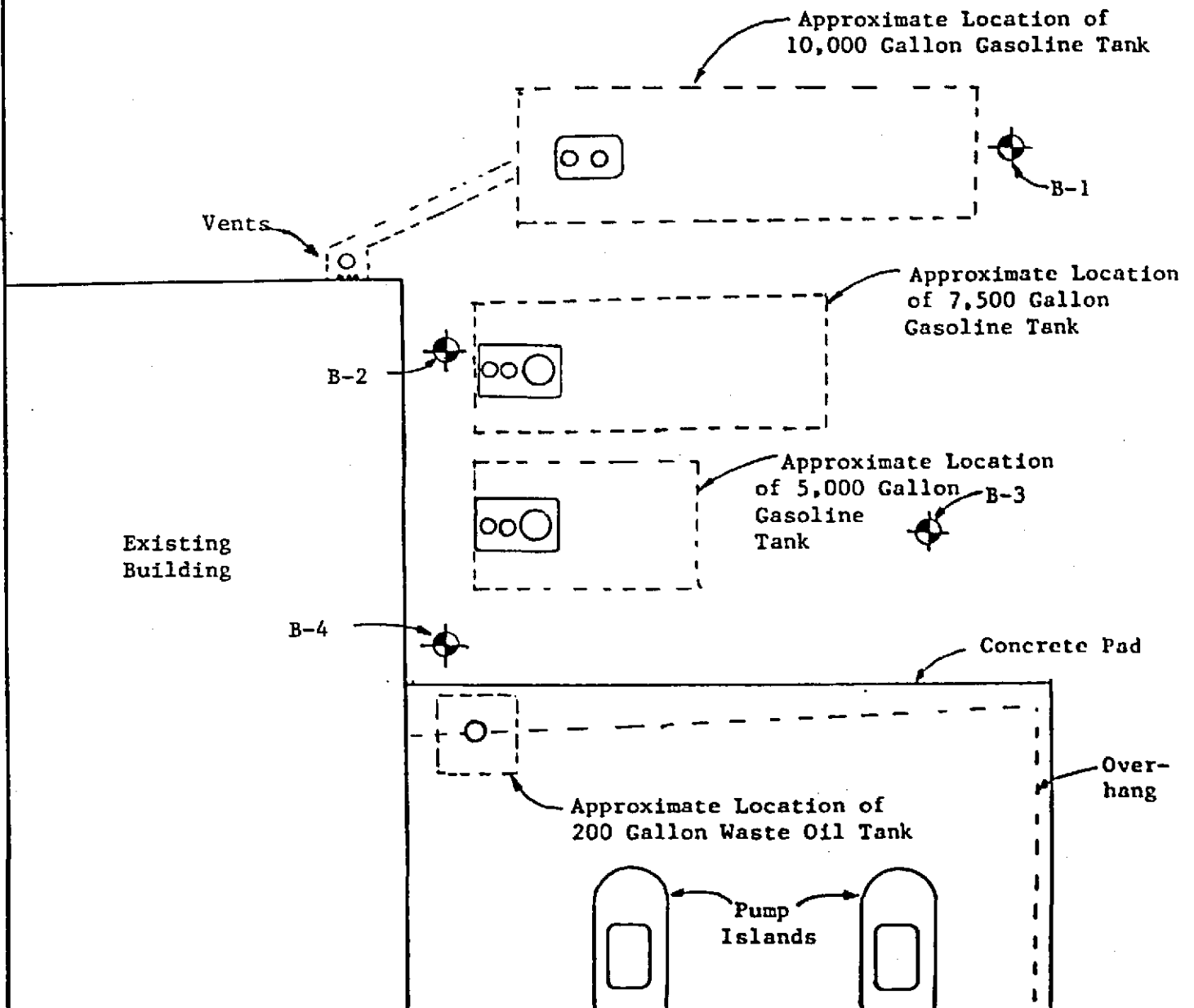
Howard D. Barlow
Soil Engineer
C.E. 35734

JCB/HDB:kg
Enclosures

Distribution: Mr. Dick Bigelow (4 Copies)



(Scale: 1"=10')



Proposal NO. HP86079
September, 1986

FIGURE 1 - SITE SKETCH

Jha

Logged by: JCB Date: 9/25/86 Equipment: 4.5" Dia. Flight Auger Log of: B-1

Depth, ft.	Sample No. and Type	Symbol	MATERIAL DESCRIPTION	Unified Soil Classification	Blows/foot 360 ft-lbs.	Cu - 1.1 Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
1			Asphalt and Baserock						
2			BASEROCK: brown; dry to moist; coarse; <u>FILL.</u>	GP					
3									
4			SANDY CLAY: brownish-black to brown; moist; petroleum odor.	CL					
5									
6									
7									
8									
9									
10	VL								
11									
12			Drilling terminated at 10.5'. No free groundwater encountered at time of drilling.						
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

Stratification lines represent the approximate boundary between the engineer's description of material types and the actual transitions may be gradual and vary with time or location.

FIGURE No. 2

Logged by: JCB Date: 9/25/86 Equipment: 4.5" Dia. Flight Auger Log of: B-2

Depth, ft.	Sample No. and Type	Symbol	MATERIAL DESCRIPTION	Unified Soil Classification	Blows/foot 360 ft-lbs.	Cu - L & L Penetrometer	Dry Density P.c.t.	Moisture % dry wt.	MISC. LAB RESULTS
1			Asphalt and Baserock						
2			BASEROCK: brown; dry to moist; coarse; <u>FILL.</u>	GP					
3									
4			SANDY CLAY: brownish-black to brown; moist; petroleum odor.	CL					
5									
6									
7									
8									
9									
10	VL								
11			Drilling terminated at 10.5'. No free groundwater encountered at time of drilling.						
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

Stratification lines represent the approximate boundary between the engineer's description of material types and the actual transitions may be gradual and vary with time or location.

Logged by: JCB Date: 9/25/86 Equipment: 4.5" Dia. Flight Auger Log of: B-3

Depth, ft.	Sample No. and Type	Symbol	MATERIAL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft-lbs.	Cu - L. s. T. Penetrometer	Dry Density p.c.t.	Moisture % dry wt.	MISC. LAB RESULTS
1			Asphalt and Baserock						
2			BASEROCK: brown; dry to moist; coarse; <u>FILL.</u>	GP					
3									
4			SANDY CLAY: brownish-black to brown; moist; petroleum odor.	CL					
5									
6									
7									
8									
9									
10		VL							
11			Drilling terminated at 10.5'. No free groundwater encountered at time of drilling.						
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

Stratification lines represent the approximate boundary between the engineer's description of material types and the actual transitions may be gradual and vary with time or location.

FIGURE No. 4



Logged by: JCB Date: 9/25/86 Equipment: 4.5" Dia. Flight Auger Log of: B-4

Depth, ft.	Sample No. and Type	Symbol	MATERIAL DESCRIPTION	Unified Soil Classification	Blows/foot 350 lb-ft.	Cu - L. s. l. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
1			Asphalt and Baserock						
2			BASEROCK: brown; dry to moist; coarse; <u>FILL</u> .	GP					
3									
4									
5			SANDY CLAY: brownish-black; moist; strong petroleum odor.	CL					
6		VL							
7									
8			Drilling terminated at 6.5'. No free groundwater encountered at time of drilling.						
9									
10									
11									
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Stratification lines represent the approximate boundary between the engineer's description of material types and the actual transitions may be gradual and vary with time or location.

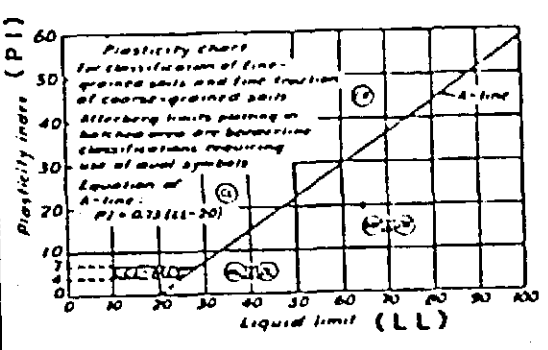
FIGURE No. 5

JCB

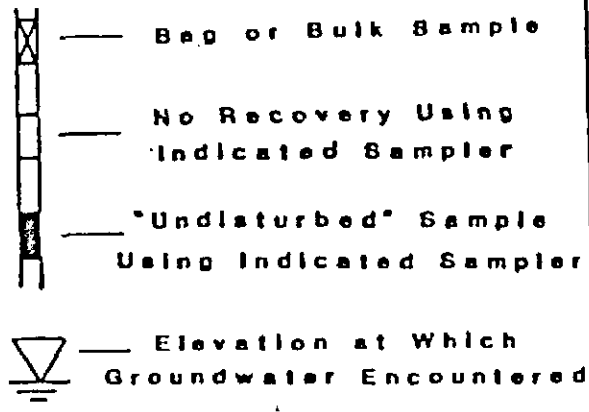
UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

Major Divisions	Group Symbols	Typical Names	Classification Criteria
<p>Coarse-Grained Soils</p> <p>More than 50% retained on No. 200 sieve</p> <p style="text-align: center;">Gravels 30% or more of coarse fraction retained on No. 4 sieve</p> <p style="text-align: center;">Sands More than 50% of coarse fraction passes No. 4 sieve</p> <p style="text-align: center;">Gravels with Fines</p> <p style="text-align: center;">Clean Gravels</p> <p style="text-align: center;">Clean Sands</p> <p style="text-align: center;">Sands with Fines</p>	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	<p>$C_u = D_{60}/D_{10}$ Greater than 4</p> <p>$C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3</p> <p>Not meeting both criteria for GW</p> <hr/> <p>Atterberg limits plotting below "A" line or plasticity index less than 4</p> <p>Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols</p> <hr/> <p>Atterberg limits plot above "A" line and plasticity index greater than 7</p> <hr/> <p>$C_u = D_{60}/D_{10}$ Greater than 6</p> <p>$C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3</p> <p>Not meeting both criteria for SW</p> <hr/> <p>Atterberg limits plotting below "A" line or plasticity index less than 6</p> <p>Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols</p> <hr/> <p>Atterberg limits plot above "A" line and plasticity index greater than 7</p>
	GP	Poorly graded gravels and gravel-sand mixtures, little or no fines	
	GM	Silty gravels, gravel-sand-silt mixtures	
	GC	Clayey gravels, gravel-sand-clay mixtures	
	SW	Well-graded sands and gravelly sands, little or no fines	
	SP	Poorly graded sands and gravelly sands, little or no fines	
	SM	Silty sands, sand-silt mixtures	
	SC	Clayey sands, sand-clay mixtures	
	<p>Fine-Grained Soils</p> <p>50% or more passes No. 200 sieve</p> <p style="text-align: center;">Silt and Clays Liquid limit 50% or less</p> <p style="text-align: center;">Silt and Clays Liquid limit greater than 50%</p>	ML	
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	
MH		Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts	
CH		Inorganic clays of high plasticity, fat clays	
OH		Organic clays of medium to high plasticity	
PI		Peat, muck and other highly organic soils	Visual-manual identification

Classification on basis of percentage of fines
 Less than 5% Pass No. 200 sieve
 More than 5% Pass No. 200 sieve
 5% to 12% Pass No. 200 sieve
 12% to 15% Pass No. 200 sieve
 15% to 35% Pass No. 200 sieve
 35% to 50% Pass No. 200 sieve
 50% to 75% Pass No. 200 sieve
 75% to 100% Pass No. 200 sieve
 Reorderline classification requiring use of dual symbols



Other Log Symbols



Soil Sampler Types

- L-Bullnose (3" O.D. - 2.375" I.D.)
- C-California (2.6" O.D. - 1.9" I.D.)
- T-Terzaghi (2" O.D. - 1.375" I.D.)
- VL - (3.25" O.D. - 2.5" I.D.)