CWC-HDR, Inc.
An HDR Infrastructure Company

3461 Robin Lane
P.O. Box 518
Cameron Park, California
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Telephone
916 677-1695

Water Resources
Wastewater
Industrial
Hazardous Waste

TG Feb 16 TANKS

893/141-16-41
December 19, 1986

Mr. Ted Gerow
Alameda County Division of
Environmental Health
470 27th Street
Room 324
Oakland, CA 94613

SUBJECT: UNDERGROUND STORAGE TANK SUBSURFACE INVESTIGATION AT THE SAFETY-KLEEN [redacted]
404 MARKET STREET, OAKLAND, CA

Gentlemen:

During the installation of a monitoring system at the Safety-Kleen, Oakland facility by CWC-HDR, Inc., contamination of the soil and groundwater was found. The results are shown in the enclosed report. If you have specific questions or comments, please contact Mr. Robert Wachsmuth of the Safety-Kleen Corporation at 1-800-323-5740. Inquiries may also be made to us.

Sincerely,

Mark Montgomery

Mark S. Montgomery, Ph.D.

MSM/jh

Enclosure

cc: Robert Wachsmuth
CRWQCB
DOHS
Jerry Costan

SUBSURFACE INVESTIGATION AND LEAK MONITORING INSTALLATION

for

SAFETY-KLEEN CORPORATION
OAKLAND SERVICE FACILITY
404 Market Street
Oakland, California

Prepared by

CWC-HDR, INC.
3461 Robin Lane
Cameron Park, California
(916) 677-1695

893/141-16-41

December 1986

SUBSURFACE INVESTIGATION AND LEAK MONITORING INSTALLATION

INTRODUCTION

This document details the results of a subsurface investigation conducted by Culp/Wesner/Culp, Consulting Engineers (CWC), at the Oakland facility of the Safety-Kleen Corporation. The investigation, as described in the CWC report "Subsurface Investigation, Leak Monitoring, and Leak Response Plan," was approved by Alameda County, Division of Environmental Health, on May 6, 1986, and conducted between May 28th, and 30th, 1986. The results of the investigation around the tanks indicate that contamination of both the soils and groundwater has occurred.

SITE HISTORY

The Safety-Kleen Corporation is involved with the production and distribution of commercial cleaning products for the automotive and food service industries. The intent of this investigation was to determine the past and present integrity of three undergound steel tanks used by Safety-Kleen to store a mineral spirit solvent product. The tankage at the site consists of two 6,000-gallon steel tanks and one 10,000-gallon tank. Each tank is 8 feet in diameter. The 10,000-gallon tank is used to store new product for distribution. The two 6,000-gallon tanks store used product bound for recycling at the corporation's recycling center at Reedley, California. The tanks were installed at the site in February, 1970. Figure 1 shows the layout of the Oakland service facility.

New product is brought to the facility at regular intervals by tanker truck. The tanker truck unloads the new product and then reloads with used product to be taken to the recycling center. Daily operations at the site revolve around the distribution of the product to customers. The clean product is delivered by truck in either 16- or 30-gallon drums on a regular basis to each customer. The fresh product drum is then traded for the customer's used product drum. The used product is returned to the Oakland site. Drivers unload the used product at an unloading dock (see Figure 1), where it is conveyed via gravity piping to the

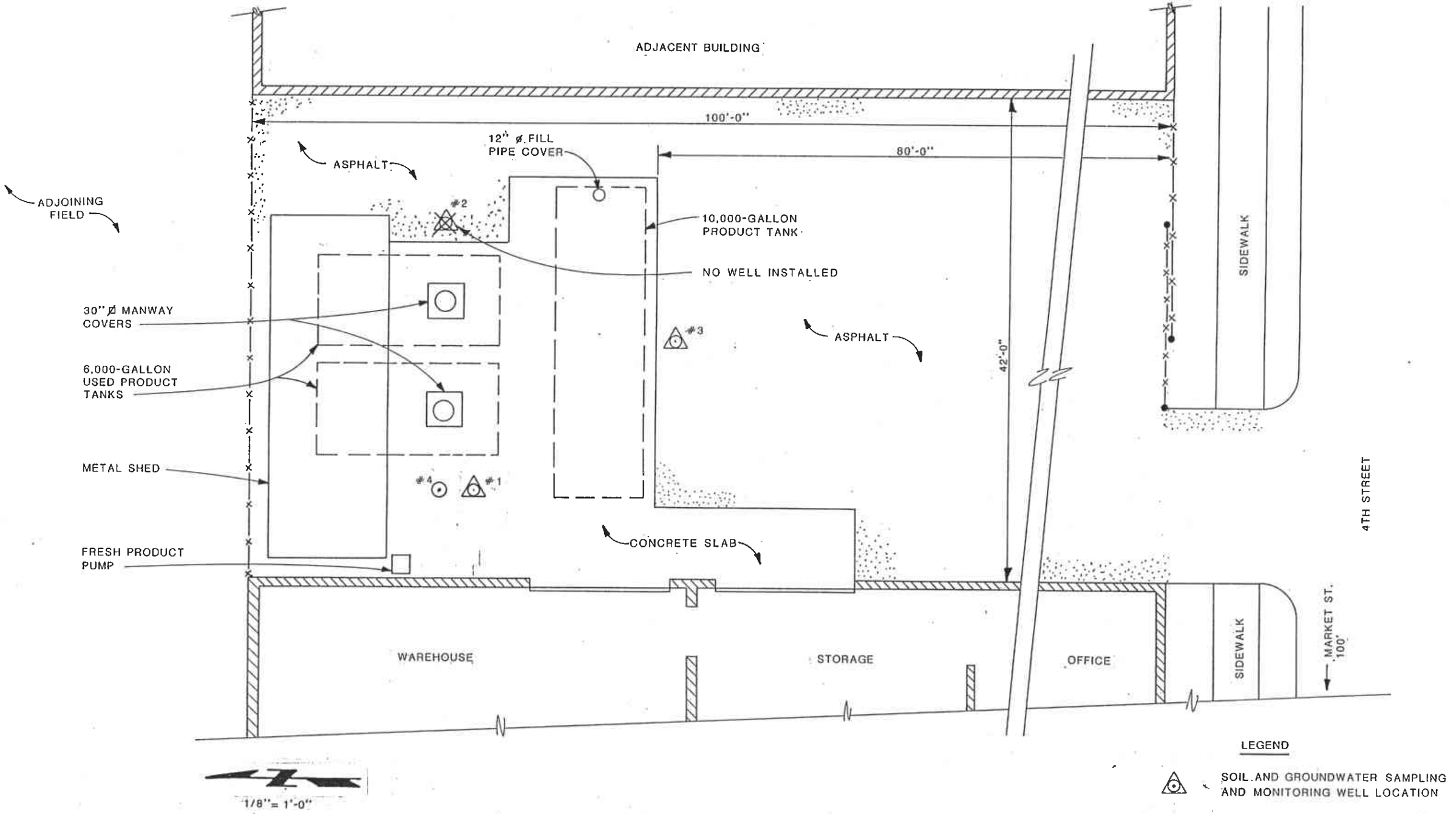

Figure 1. SAFETY-KLEEN SERVICE FACILITY SITE PLAN
OAKLAND, CALIFORNIA

storage tanks. Dispensers located at this dock allow the driver to refill drums with new product for the next day's deliveries. The loading/unloading dock is specially designed to contain minor spills during these operations. This dock was constructed approximately one year ago. Prior to this, the drums were unloaded into standard dumpsters where product flowed by gravity to the tanks.

SITE GEOLOGY

A total of three boreholes were drilled for placement of monitoring wells. In general, the soils encountered in each were very similar and consisted of sandy silts and sandy clayey silts, with varying amounts of very fine sand and clay. (see Appendix A for the logs of the boreholes). An unidentified deposit or obstruction was encountered at 20 feet in each borehole. It gave effective refusal to the drilling equipment used (Mobile Drill Model B-34). Chipping of the drill bit occurred during the attempts made to get past this depth. Monitoring wells were therefore installed to the limiting depth of 20 feet. Figure 2 describes the typical well construction as installed at the site.

SITE GEOHYDROLOGY

Groundwater at the site was found to be at a depth of 6.75 feet. A review of well logs from the Department of Water Resources, performed as part of the initial report, showed no wells within one mile of the facility.

RESULTS

The results of the investigation are summarized in Table 1 (see Appendix B for Laboratory Analyses). As indicated, contamination of both soil and groundwater by mineral spirits has occurred at the facility.

At the location of Monitoring Well No. 1, concentrations of mineral spirits in the soil were at 2,300 ppm just beneath the concrete. The concentration of a grab sample collected at the ground surface of Hole No. 4, located 3 feet north of Monitoring Well No. 1, has 5,100 ppm. The concentration of contamination at Monitoring Well No. 1 increased with depth to 10,000 ppm at 10 feet of depth.

storage tanks. Pumps located at this dock allow the driver to refill drums with new product for the next day's deliveries. The loading/unloading dock is specially designed to contain minor spills during these operations. This dock was constructed approximately one year ago. Prior to this, the drums were unloaded into standard dumpsters where product flowed by gravity to the tanks.

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A total of three boreholes were drilled for placement of monitoring wells. In general, the soils encountered in each were very similar and consisted of sandy silts and sandy clayey silts, with varying amounts of very fine sand and clay. (see Appendix A for the logs of the boreholes). An unidentified deposit or obstruction was encountered at 20 feet in each borehole. It gave effective refusal to the drilling equipment used (Mobile Drill Model B-34). Chipping of the drill bit occurred during the attempts made to get past this depth. Monitoring wells were therefore installed to the limiting depth of 20 feet. Figure 2 describes the typical well construction as installed at the site.

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RESULTS

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At the location of Monitoring Well No. 1, concentrations of mineral spirits in the soil were at 2,300 ppm just beneath the concrete. The concentration of a grab sample collected at the ground surface of Hole No. 4, located 7 feet west of Monitoring Well No. 1, has 5,100 ppm. The concentration of contamination at Monitoring Well No. 1 increased with depth to 10,000 ppm at 10 feet of depth.

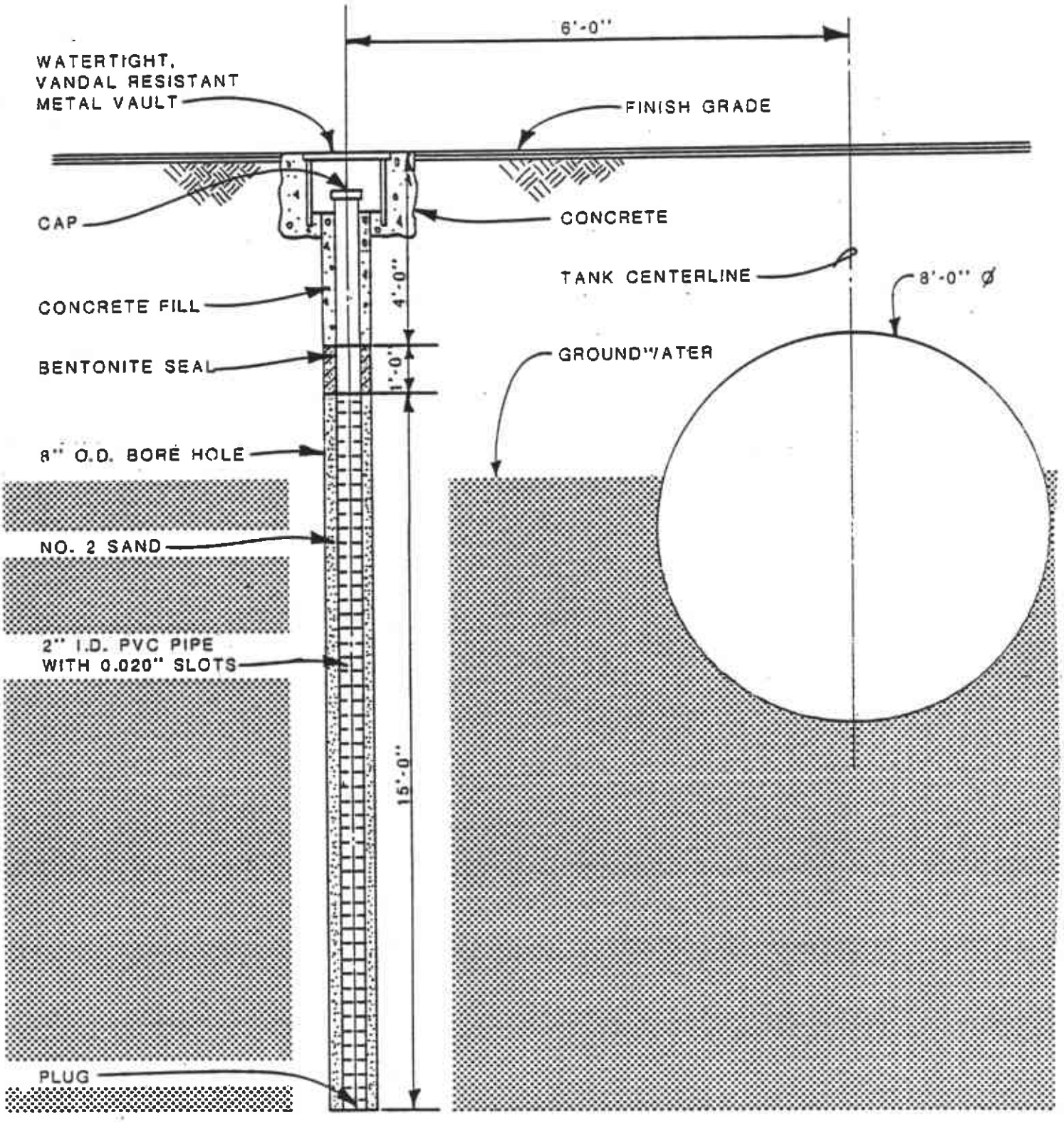


Figure 2. MONITORING WELL CONSTRUCTION
NTS

TABLE 1. RESULTS OF LABORATORY ANALYSES FOR MINERAL SPIRITS[1]
(SAMPLES COLLECTED AT TANKS)

Location	Sample I.D. No.	Sample Type	Concentration[2] (mg/kg or ppm)
Monitoring Well No. 1	MW1-GS[3]	Soil	2,300
	MW1-5'	Soil	2,000
	MW1-10'	Soil	10,000
	MW1-GW[4]	Water	42
Monitoring Well No. 2[5]	MW2-GS	Soil	160
	MW2-5'	Soil	3,000
	MW2-10'	Soil	6,600
	MW2-15'	Soil	55
	MW2-GW	Water	410
Monitoring Well No. 3	MW3-GS	Soil	<10[6]
	MW3-5'	Soil	2,400
	MW3-10'	Soil	4,900
	MW3-GW	Water	52
Hole No. 4	MW4-GS	Soil	5,100

[1] EPA Test Method 8270 FID for Mineral Spirits in Soil or Water (see Appendix B).
[2] Concentration of water samples is in mg/l or ppm.
[3] GS = ground surface (beneath any concrete or asphalt and aggregate base course).
[4] GW = groundwater.
[5] No monitoring well installed at this location. Refer to text, page 6.
[6] <10 = Below detectable limits.

This sample was approximately 3 feet beneath the groundwater level. Attempts at collecting a sample at 15 feet were not successful at this location. A thin layer of solvent was found to be floating on the water surface after drilling. The well casing was installed and the well was then purged of 5 casing volumes prior to sampling. The concentration of the groundwater sample was 42 ppm.

At the proposed location of Monitoring Well No. 2, the ground surface sample showed a concentration of 160 ppm. Again, however, concentrations continued to increase in the samples collected at 5 and 10 feet. The concentrations were 3,000 and 6,600 ppm, respectively. A sample was successfully collected from this bore-

hole at 15 feet deep. The concentration was 55 ppm. During the sampling procedure, soils forced their way into the hollow stem auger. Due to resulting difficulties, this monitoring well was not installed. A layer of solvent approximately 1/2-inch in thickness was found floating on the groundwater surface of the unpurged borehole. A groundwater sample was collected from beneath the solvent layer that had a concentration of 410 ppm. This borehole was filled with concrete at the completion of this investigation.

At the location of Monitoring Well No. 3, samples were collected at ground surface, 5 feet, and 10 feet. Although the ground surface sample showed no contamination, the 5- and 10-foot samples had concentrations of contamination of 2,400 ppm, and 4,900 ppm, respectively. A thin layer of solvent was found at this location also. The casing were installed and the well was purged as at Monitoring Well No. 1. The concentration of the groundwater sample collected was 52 ppm.

RECOMMENDATIONS

Mineral spirits contamination has been confirmed at the facility. It is unknown if the contamination has resulted from leaking tanks or from spillage that occurred at the site prior to the construction of the spill containment structure. We recommend that a tank precision leak test be completed to assess tank competency. Second, we recommend that a system be installed to recover the floating mineral spirits from the monitoring wells. This would help to stop the spread of the product. Finally, we recommend that additional soil and groundwater exploratory work be completed at the property limits to assess if contamination has migrated off-site.

CULP•WESNER•CULP
Consulting Engineers

LOG OF BORING

MONITORING WELL NO. 1

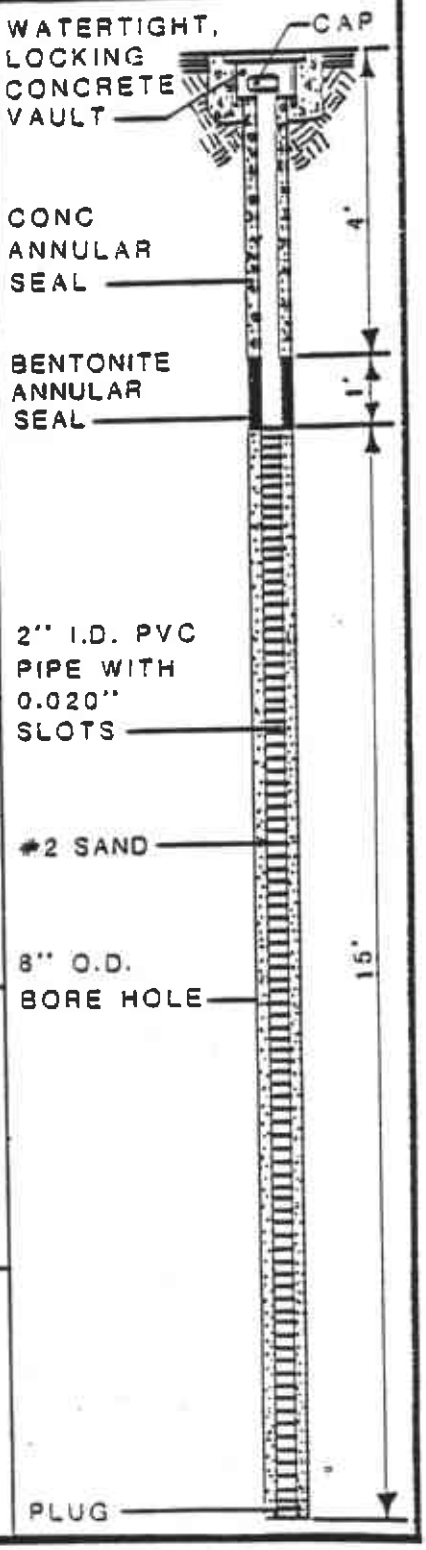
Project Safety-Kleen: Oakland Facility — Project No. 893-260

Date of Boring 5-29-86 — Water Depth 6.75' — Surface Elevation —

Type of Drill Rig Mobile Drill B-34 — Hole Diameter 8"

Weight of Hammer 140 lbs — Falling 30" — Sampler 2½" I.D. Split-Spoon

Depth in Feet	Sample No. & Location	Std. Penetr. Resist., N	Log	Groundwater Depth, Feet	Soil Description and Unified Soil Classification
0	GS	8			Concrete Slab
					Sandy silt (ML): Slight plasticity, small percentage very fine sand, loose, dark brown, moist.
5	5	40		▽	Sandy clayey silt (ML): Slight plasticity, small percentage very fine sand increasing in depth to 25% at 15', 10 to 20% clay to 15', dense to very dense, medium brown, moist to wet.
10	10	51			Sandy silt (ML): Slight plasticity, very fine sand with silt, dense to very dense, light brown with some orange mottles, wet.
15					Sandy clayey silt (ML): Moderate plasticity, small percentage very fine sand, 25% clay, very firm to dense, medium brown, wet.
20					Unidentified deposit not passable with equipment on site. Chipped drill bit attempting to pass. No sample collected. Hole terminated at 20'.



CULP•WESNER•CULP
Consulting Engineers

LOG OF BORING

MONITORING WELL NO. 2

Project Safety-Kleen: Oakland Facility — Project No. 893-260

Date of Boring 5-28-86 — Water Depth 6.75' — Surface Elevation —

Type of Drill Rig Mobile Drill B-34 — Hole Diameter 8"

Weight of Hammer 140 lbs — Falling 30" — Sampler 2½" I.D. Split-Spoon

Depth in Feet	Sample No. & Location	Std. Penetr. Resist., N	Log	Groundwater Depth, Feet	Soil Description and Unified Soil Classification	Well Data NO WELL INSTALLED
0					3" Asphalt with 3" aggregate base coarse	8" BORE HOLE TO BE FILLED WITH CONCRETE
	GS	17			Sandy silt (ML): Slight plasticity, small percentage very fine sand, firm, dark brown, moist.	
5	5	41		▽	Sandy clayey silt (ML): Slight plasticity, small percentage very fine sand increasing in depth to 25% at 15', 10 to 20% clay to 15', dense to very dense, medium brown, moist to wet.	
10		32			Sandy silt (ML): Slight plasticity, very fine sand with silt, firm to very firm, light brown with some orange mottles, wet.	
15		18			Sandy clayey silt (ML): Moderate plasticity, small percentage very fine sand, 25% clay, very firm to dense, medium brown, wet.	
20					Unidentified deposit not passable with equipment on site. Chipped drill bit attempting to pass. No sample collected. Hole terminated at 20'.	

CULP•WESNER•CULP
Consulting Engineers

LOG OF BORING

MONITORING WELL NO. 3

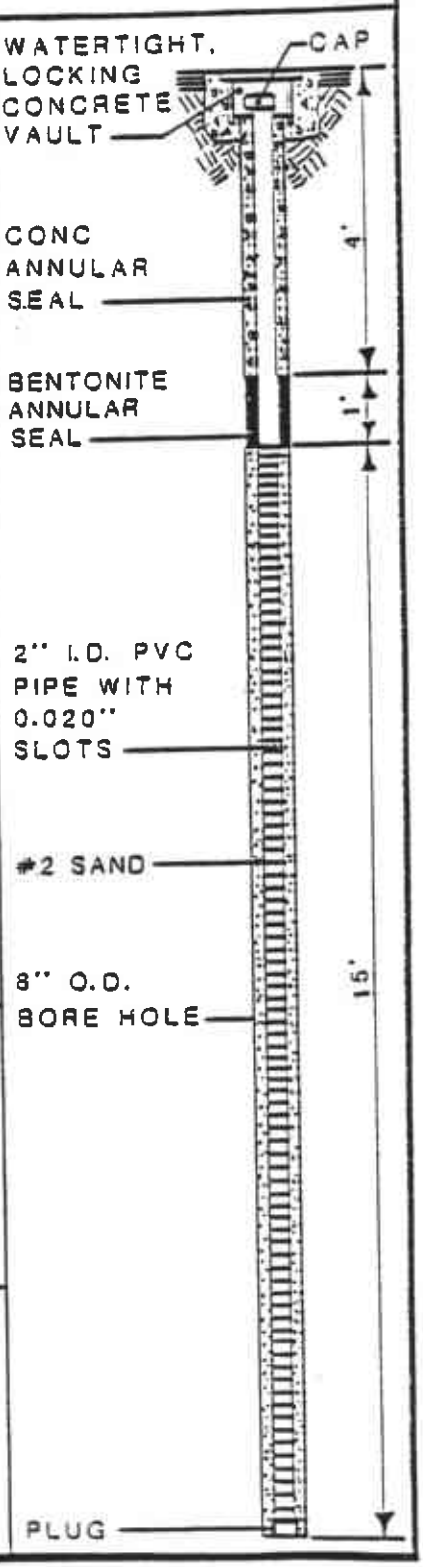
Project Safety-Kleen: Oakland Facility — Project No. 893-260

Date of Boring 5-29-86 — Water Depth 6.75' — Surface Elevation —

Type of Drill Rig Mobile Drill B-34 — Hole Diameter 8"

Weight of Hammer 140 lbs — Falling 30" — Sampler 2½" I.D. Split-Spoon

Depth in Feet	Sample No. & Location	Std. Penetr. Resist., N	Log	Groundwater Depth, Feet	Soil Description and Unified Soil Classification
0					3" Asphalt with 3" aggregate base coarse
		26			Sandy silt (ML): Slight plasticity, small percentage very fine sand, very firm, dark brown, moist.
5		41			Sandy clayey silt (ML): Slight plasticity, small percentage very fine sand increasing in depth to 25% at 15', 10 to 20% clay to 15', dense to very dense, medium brown, moist to wet.
10		54			Sandy silt (ML): Slight plasticity, very fine sand with silt, firm to very firm, light brown with some orange mottles, wet.
15					Sandy clayey silt (ML): Moderate plasticity, small percentage very fine sand, 25% clay, very firm to dense, medium brown, wet.
20					Unidentified deposit not passable with equipment on site. Chipped drill bit attempting to pass. No sample collected. Hole terminated at 20'.



ANALYTICAL LABORATORY
A DIVISION OF DEWANTE & STOWELL

1914 S STREET, SACRAMENTO, CALIFORNIA 95814 • 916-447-2946

June 18, 1986
Date Sampled: ~~05~~/28/86-~~04~~05/30/86
Date Sample Received: 06/02/86
Report #: 109488
Project #: 893-260

Culp, Wesner & Culp
P.O. Box 518
Cameron Park, CA 95682

Attn: Dan Hinrichs

Sample Description/ Anlab ID#	Mineral Spirits by EPA #8270-FID mg/kg
MW1-GS, 109488-1	2300
MW1-5', 109488-2	2000
MW1-10', 109488-3	10000
MW1-GW, 109488-4	42*
MW2-GS, 109488-5	160
MW-2-5', 109488-6	3000
MW2-10', 109488-7	6600
MW2-15', 109488-8	55
MW2-GW, 109488-9	410*
MW3-GS, 109488-10	~~6.4~~ See Addendum 7/28/86
MW3-5', 109488-11	~~19~~ " " "
MW3-10', 109488-12	~~17~~ " " "
MW3-GW, 109488-13	" " "
MW4-GS, 109488-14	~~14~~

*Units are mg/l as these are water samples

Data Certified By _____

Report Approved By _____

Anlab
ANALYTICAL LABORATORY
A DIVISION OF DEWANTE & STOWELL

1914 S STREET, SACRAMENTO, CALIFORNIA 95814 • 916-447-2946

July 28, 1986
Date Sample Rec'd: 06/02/86
Date Sampled: 04/28/86 - 04/30/86
Report #: 109488 ADDENDUM
Project #: 893-260

Culp, Wesner & Culp
P.O. Box 518
Cameron Park, CA 95682

Sample Description	Anlab ID#	Mineral Spirits by EPA #8270-FID mg/kg
MW3-GS	109488-10	<10
MW3-5'	109488-11	3200
MW3-10'	109488-12	4900
MW3-GW	109488-13	52*
MW4-GS	109488-14	5100

*Units are mg/l as these are water samples.

Data Certified By Jon Hucchi

LJY

Report Approved By Roger Elliott

CWC-HDR, Inc.
An HDR Infrastructure Company

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Water Resources
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Hazardous Waste

893/141-16-41
December 19, 1986

Mr. Fred E. Jarvis
Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street
Room 6040
Oakland, CA 94607

SUBJECT: UNDERGROUND STORAGE TANK SUBSURFACE INVESTIGATION AT THE SAFETY-KLEEN FACILITY 404 MARKET STREET, OAKLAND, CA

Gentlemen:

During the installation of a monitoring system at the Safety-Kleen, Oakland facility by CWC-HDR, Inc., contamination of the soil and groundwater was found. The results are shown in the enclosed report. If you have specific questions or comments, please contact Mr. Robert Wachsmuth of the Safety-Kleen Corporation at 1-800-323-5740. Inquiries may also be made to us.

Sincerely,

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Water Resources
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893/141-16-41
December 19, 1986

Mr. Dwight Hoenig
Department of Health Services
Hazardous Waste Management Branch
2151 Berkeley Way
Berkeley, CA 94704

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