COST 1556

DEPARTMENT OF ECOLOGY
NWRO/TCP TANKS UNIT

INTERIM CLEANUP REPORT [X]
SITE CHARACTERIZATON [X]
FINAL CLEANUP REPORT [X]
OTHER _____ [ ]
AFFECTED MEDIA: SOIL [X]
OTHER _____ GW [ ]
INSPECTOR (INIT.) JB DATE 1-26-94

FINAL REPORT
TANK REMOVAL AND SOIL EXCAVATION
UNDERGROUND TRANSFORMER OIL TANK
SERVICE CENTER, RENTON, WASHINGTON
FOR
PUGET SOUND POWER & LIGHT COMPANY

Independent Action Report Update

Site Name: PUGET POWER

Inc. #: 1556 Date of Report: 3-3-88

County: KING Date Report Rec'd: 1-6-94

Reviewed by: JOHN BAILS

Comments (please include: free prod., tank info., media, contaminant migration, GW conc. trends, PCS treated/fate?):

NFA - FINAL REPORT ✓

REMOVED 1000 GALLON TANK USED TO STORE WASTE TRANSFORMER FLUIDS - POTENTIAL PCB's, REMOVED FROM SERVICE IN 1985 TANK REMOVED 8/8/87. GW @ 5-6' (BGS) KING CO AGREED TO HAVE EXCAVATED SOILS DISPOSED OF AT CEDAL HILLS - PSPL & ECOLOGY AGREED TO CLEAN UP LEVEL OF 300 ppm BECAUSE OF BACKGROUND CONTAMINATION. DISPOSED OF 575-650 yds W/O OF EXCAVATED SOIL. ADDITIONAL REPORTS

TRANSFORMER FLUID.

GeoEngineers

Geotechnical,
Geoenvironmental and
Geologic Services

March 3, 1988

Puget Sound Power & Light Company
Puget Power Building
Bellevue, Washington 98009

Attention: Mr. James K. Kearnes

Gentlemen:

We are submitting eight copies of our Final Report - Tank Removal and Soil Excavation, Underground Transformer Oil Tank, Service Center, Renton, Washington.

We appreciate the opportunity to be of service. Please call if you have any questions regarding this report.

Yours very truly,

GeoEngineers, Inc.

James A. Miller
Principal

SCP:JAM:wd

File No. 0186-61-4

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TANK REMOVAL AND SOIL EXCAVATION

UNDERGROUND TRANSFORMER OIL TANK

SERVICE CENTER, RENTON, WASHINGTON

FOR

PUGET SOUND POWER & LIGHT COMPANY

INTRODUCTION

GeoEngineers, Inc. was contracted by Puget Sound Power & Light Company (PSP&L) on August 10, 1987 to assist with the observation of the removal of a decommissioned underground storage tank located at the PSP&L Service Center at 620 Grady Way in Renton, Washington (Figure 1). The decommissioned underground storage tank had been used for the storage of waste transformer oil, some of which was believed to have the potential for containing low concentrations of polychlorinated biphenyls (PCBs).

During removal of the tank, it became evident that soils around the tank were contaminated with waste oil. On October 5, 1987 PSP&L authorized GeoEngineers to proceed with further services related to evaluation of residual soil contamination and observation and testing during additional soil removal activity.

GeoEngineers' scope of services has included:

1. Observation of tank removal activities.
2. Sampling of tank contents plus soil and ground water from the tank excavation and analyzing the samples for petroleum hydrocarbons and PCBs.
3. Coordination with the Seattle-King County Health Department and the King County Solid Waste Division regarding the disposal of contaminated soils at the Cedar Hills Landfill.
4. Technical assistance to PSP&L in discussions with the Washington Department of Ecology, Northwest Region regarding mitigation of soil contamination.
5. Estimation of the extent of soil contamination through a site investigation using test pit explorations and on-site analytical testing.
6. Assistance to PSP&L with contractor selection for additional soil removal.

7. Observation, sampling and analysis of soils during a second phase of excavation to remove contaminated soils from the former tank vicinity.

The underground storage tank was put into service in the early 1950s and had a 1000-gallon capacity. It was located in a service yard used for the temporary storage of transformers, poles and other service equipment (See Figure 2). The steel tank had been used for the temporary storage of waste oil from the transformer repair shop located immediately north of the tank. Waste oils from the repair shop were placed in a drain which was connected to the underground storage tank via underground piping. The tank was periodically pumped out by disposal contractors. We understand that the tank was removed from service in May 1985, prior to the implementation of sections of the Washington State Dangerous Waste Regulations (WAC 173-303) that pertain to the components from the scrapping of transformers and capacitors that may contain PCBs. We further understand that, because of the date that the tank was removed from service, any residual contamination from the tank contents would not be designated as Dangerous Waste under the requirements of WAC 173-303-9904 (W001).

TANK REMOVAL AND INITIAL EXCAVATION

The underground storage tank was removed on August 8, 1987 by Olympus Contracting, Inc. Observation of the tank suggested that, while the tank was in good condition, a crack at the junction of the vent line to the tank could have resulted in leakage from the tank.

Ground water was observed at a depth of 5 to 6 feet below grade in the tank excavation. Soils exposed in the excavation consisted of about 2 feet of gravelly sand fill overlying a mixture of coal fragments, silt and sand. Soils in the vicinity of the tank were visibly contaminated with residual oil. Surficial soils that did not exhibit visible signs of contamination were stockpiled next to the excavation. Soils that were visibly contaminated were stockpiled on plastic sheeting and covered with plastic. The initial excavation measured about 9 feet by 15 feet in plan dimensions and extended to a depth of about 7 to 8 feet below grade.

Samples of soil, ground water, oil and tank sludge were obtained for laboratory analysis. The results of those analyses are summarized on Table 1. All analytical laboratory reports are included in Appendix A of this report. Analytical methods are described in Appendix B.

Table 1

Laboratory Analyses of Samples From The Initial Tank Excavation

Sample #	Source	Hydrocarbons	PCBs
OB-2	Stockpiled soils - sample 1	7,680 ppm	0.4 ppm
SS-1	Stockpiled soils - sample 2	17,100 ppm	0.31 ppm
SS-2	Stockpiled soils - sample 3	15,900 ppm	0.46 ppm
S 1-6	Composite of excavation walls	7,790 ppm	0.2 ppm
W-1	Water from excavation	NT	<1.0 ppm
W-1	Oil from excavation	NT	4.8 ppm
T-1	Tank Sludge	NT	3.6 ppm
BG-1	Background Soil	170 ppm	NT

Note: NT = Not Tested

Criteria for acceptance of soils for disposal at the Cedar Hills Landfill were agreed to by the Washington Department of Ecology, the Seattle-King County Health Department and the King County Solid Waste Division. The limiting criteria were a maximum oil and grease content not to exceed 3 percent and PCBs not to exceed 2 ppm. Based upon the results of laboratory analyses, the waste soils tested were determined to be acceptable for disposal. Correspondence regarding waste disposal and clearance for the waste soils is included in Appendix C. A cleanup goal for transformer oil in soil was set at 200 ppm over background levels. In consultation with Ecology, the action level was agreed to be 300 ppm which represents 200 ppm over a background level of 100 ppm. The 100 ppm background concentration is attributed to hydrocarbons in the coal backfill.

PLUME CHARACTERIZATION AND FURTHER SOIL EXCAVATION

After receipt of the analytical results shown on Table 1, GeoEngineers returned to the site on August 20, 1987 to observe the removal of contaminated soils and to further characterize the extent of soil contamination. Soil excavation was performed by Olympus Contracting, Inc. On-site analytical services were performed by Farr, Friedman & Bruya, Inc. The on-site analytical services included a capability to analyze petroleum hydrocarbons to a detection limit of 100 ppm. The analytical method used, thin-layer chromatography (TLC), allowed quick and reliable determination of transformer oil concentrations in soil samples.

Soil excavation and removal on August 20, 1987 resulted in widening of the excavation to about 20 by 25 feet in plan dimensions with a depth of about 6 feet. Analytical results for soils collected from the excavation indicated that waste oil had migrated southwest from the tank location. The backfill around the fill line from the transformer shop did not contain measurable concentrations of petroleum hydrocarbons. This indicated that the source the leak was from the immediate vicinity of the tank and that there was no contributory leak along the pipeline alignment.

Excavated soils exceeding 300 ppm total petroleum hydrocarbons were disposed of at the Cedar Hills Landfill. Prior to beginning soil excavation and removal, verbal authorization was received from the Seattle-King County Department of Public Health and the King County Solid Waste Utility for the disposal of the material at the landfill. This August 18, 1987 verbal authorization was confirmed with a memorandum from the Health Department on August 26, 1987 (Appendix C).

The full extent of the contaminated soil were not fully removed at this time. Soil sampling (see sample locations numbered 1 to 39 in Figure 2) indicated that the oil had not migrated as far as sample location 37 to the southwest. Site exploration activities were scheduled to determine the full extent of soil contamination. The results of analyses for PCBs and petroleum hydrocarbons in soils are summarized in Tables 2 and 3 at the end of this report.

PSP&L has other underground tanks at the Renton Service Center used for the storage of diesel fuel and gasoline. Analyses were performed to ascertain if any hydrocarbon product other than the transformer oil was present in the contaminated soil. Figure 3 shows chromatograms of transformer oil, contaminated soil, and a reference chromatogram for soil with low levels of gasoline and diesel fuel contamination. The chromatograms indicate that gasoline or diesel fuel are not contributory contaminants at this site.

We returned to the site on August 26, 1987 to sample soils from the base of the open excavation to determine the vertical extent of soil contamination below the static ground water level. Three steel sampling tubes were driven to a depth of about 1-1/2 feet below the ground water level in the base of the excavation (sample locations 40, 41 and 42). These soil cores were then extruded in the laboratory where representative samples were taken for hydrocarbon analysis. The results of these analyses are listed on Table 4.

Table 4
Vertical Distribution of Soil Contamination Near the Ground Water Level

Depth Below Grade	Sample Location 40	41	42
Petroleum Hydrocarbons			
5.5 to 6.0 feet	5,000 ppm	40,000 ppm	20,000 ppm
6.0 to 6.5 feet	10,000 ppm	10,000 ppm	30,000 ppm
6.5 to 7.5 feet	100 ppm	10,000 ppm	< 100 ppm
7.0 to 7.5 feet	200 ppm	< 100 ppm	200 ppm
PCBs			
5.5 to 6.0 feet	0.6 ppm	1 ppm	1 ppm

Note: Ground water level was at approximately 6 feet below grade.

Sampling and analysis of soils near the ground water level demonstrated that the petroleum hydrocarbon concentration dropped significantly below the ground water table. As a result, it was determined that excavation of soils to a depth of 1 to 1-1/2 foot below the static water level would be sufficient to achieve removal of most soils contaminated with hydrocarbons at or above the cleanup goal.

PSP&L staff decided to backfill the open excavation prior to the further exploratory activities needed to determine the full extent of the soil contamination. We returned to the site on September 1, 1987 to observe placement of a backfill "plug" in the excavation. The procedure used was as follows:

1. The base of the excavation was overexcavated to a depth of 1 foot below the static ground water level. Excavated soils were mixed with bentonite to remove free moisture before hauling the soil to the Cedar Hills Landfill.
2. Minor amounts of oil on the water surface in the excavation were collected with sorbent pads, which were placed in a drum for disposal by PSP&L.
3. A mixture of silty sand and bentonite was placed in the base of the excavation and gently mixed with the remaining soils. The purpose of the bentonite mixing process was to create a relatively impermeable "plug" at the base of the excavation where any residual transformer oil remained in the ground.
4. The remainder of the excavation was backfilled with clean pit run sand and gravel. Bentonite was added to the fill along the excavation boundary to inhibit movement of residual hydrocarbon contamination into the fill from contaminated soils remaining in the ground.

On September 9, 1987 we returned to the site to perform additional test pit explorations to define the limits of the soil contamination. The explorations were advanced using a rubber tired backhoe provided by PSP&L. On-site analytical services were provided by Farr, Friedman & Bruya, Inc.,

who performed TLC analyses of soils for petroleum hydrocarbons. A total of 13 new test pits were advanced at location numbers 43 through 55 (Figure 2). As a result of these explorations, the limits of the contaminated soil were defined.

FINAL EXCAVATION

Final excavation of the soils contaminated by transformer oil was performed by Fury Construction Company on October 6-8, 1987. We observed the soil excavation and obtained soil samples for on-site analysis of petroleum hydrocarbons by Farr, Friedman & Bruya, Inc. The results of the soil sample analyses were used to define the limits of soil contamination and excavation. Figure 2 shows the limits of the soil contamination and the locations of soil samples used to make this determination. Soils removed were disposed of at the Cedar Hills Landfill with concurrence of the appropriate agencies. Bentonite was added to stabilize excavated soils that contained free liquids. Upon completion of excavation, a soil-bentonite "plug" as previously described was placed in the base of the excavation and the excavation was backfilled with pit run sand and gravel.

We returned to the site on February 11, 1988 to obtain additional soil samples for analysis to confirm that the limits of contaminated soil had been reached during the site excavation activities. Soil samples were collected from locations 106, 107 and 108 (Figure 2) on that date. These samples confirmed that contamination did not extend laterally beyond the limits of excavation.

SUMMARY AND CONCLUSIONS

The petroleum hydrocarbon concentration was the controlling factor in the removal of contaminated soils. The concentration of petroleum hydrocarbons in soil frequently exceeded regulatory cleanup goals.

Soil contamination by petroleum hydrocarbons occurred at two distinct levels at this site. Surficial contamination was localized and was probably the result of spills in the yard and overtopping of the waste oil tank. Shallow soils were excavated and disposed of from areas where surficial contamination was noted outside of the limits of the deeper contamination. These areas were in the vicinity of sample locations 13, 29 and 46.

The deeper contamination, which extended from a depth of below 2 feet to about 6 to 7 feet, was more extensive. The highest oil concentrations in soil generally were found in the immediate water table zone. The lateral extent of soil contamination in the water table zone reflects the former limits of a plume of free (floating) transformer oil that migrated in a downgradient direction from the transformer oil tank. This oil was adsorbed to soil particles that came in contact with the plume, resulting in residual oil contamination of the soil. The vertical distribution of the soil contamination can be attributed to upward and downward mobility of the transformer oil due to seasonal fluctuations of the ground water table.

Testing was done to determine if discreet samples of the waste soils exceeded the disposal criteria which had been accepted by the Washington Department of Ecology, the Seattle-King County Health Department and the King County Solid Waste Division. Some discreet soil samples near the water table showed total petroleum hydrocarbon concentrations in excess of 3 percent. Due to ground water conditions and the granular character of the soil, it was not feasible to segregate the soils near the water table from those cleaner soils immediately above and below. The resulting excavated soils became mixed, resulting in a waste soil which met the disposal criteria. It is our opinion that all soils met the agreed disposal criteria based upon the results of analytical testing of soils and the soil handling methods.

We estimate that the total volume of soil removed from the site and disposed of at the Cedar Hills Landfill was about 575 to 650 cubic yards.

Based upon our observations, sampling and analytical testing, soils contaminated by waste transformer oil at the Renton Service Center have been effectively removed from the site. The minor amounts of contaminants remaining in soils at the base of the excavation have been immobilized by the creation of a relatively impermeable soil-bentonite plug. It is our opinion that this plug will effectively retain remaining petroleum hydrocarbons within the soil matrix. These remaining hydrocarbons will continue to be subjected to degradation by indigenous soil bacteria.

The results of monitor well installation water level measurements, and ground water testing at this site are discussed in a separate report.

Please contact us if there are any questions regarding this report.

Respectfully submitted,

GeoEngineers, Inc.

Stephen C. Perrigo
Waste Management Specialist

James A. Miller
Principal

SCP:JAM

TABLE 2
RESULTS OF PCB ANALYSIS OF SOIL SAMPLES

SAMPLE LOCATION	SAMPLE DATE	SAMPLE DEPTH	PCB CONCENTRATION
28	08/20/87	6.0 feet	2.0 ppm
31 C	08/20/87	6.0 feet	2.2 ppm
33 C	08/20/87	6.0 feet	< 0.2 ppm
34 C	08/20/87	6.0 feet	0.4 ppm
35	08/20/87	7.5 feet	< 0.2 ppm
37 C	08/20/87	6.0 feet	< 0.2 ppm
38 C	08/20/87	6.0 feet	< 0.2 ppm
39 C	08/20/87	6.0 feet	< 0.2 ppm
34 A,B & C	08/20/87	Composite 2 - 6 feet	< 0.2 ppm
47 A,B & C	09/09/87	Composite 2 - 6 feet	< 0.2 ppm
51 A,B & C	09/09/87	Composite 2 - 6 feet	< 0.2 ppm
40 P	08/26/87	6.0 feet	0.6 ppm
41 P	08/26/87	6.0 feet	1.0 ppm
42 P	08/26/87	6.0 feet	1.0 ppm

TABLE 3
RESULTS OF THIN LAYER CHROMOTOGRAPHY HYDROCARBON ANALYSIS

SAMPLE LOCATION	SAMPLE DATE	Subsample A DEPTH	Subsample A RESULT	Subsample B DEPTH	Subsample B RESULT	Subsample C DEPTH	Subsample C RESULT	Subsample D DEPTH	Subsample D RESULT
1	08/20/87	2.0	< 100	4.0	> 10,000				
2	08/20/87	2.0	1000	4.0	> 10,000				
3	08/20/87	2.0	< 100	4.0	> 10,000				
4 & 5	08/20/87	2.0	200	4.0	> 10,000				
6	08/20/87	2.0	< 100	4.0	> 10,000				
7	08/20/87	2.0	< 100	4.0	10000				
8	08/20/87	2.0	5000	4.0	500				
9	08/20/87	2.0	1000	4.0	< 100				
10	08/20/87	2.0	< 100	4.0	> 10,000				
11	08/20/87	2.0	< 100	4.0	< 100				
12	08/20/87	2.0	< 100	3.0	< 100				
13	08/20/87	2.0	1000	3.0	< 100				
14	08/20/87	4.0	< 100						
15	08/20/87	3.0	200						
16	08/20/87	2.0	< 100						
17	08/20/87	1.5	200						
18	08/20/87	4.0	> 10,000	5.0	> 10,000				
19	08/20/87	2.0	> 10,000	3.5	> 10,000	5.0	> 10,000		
20	08/20/87	2.0	> 10,000	3.5	> 10,000	5.0	> 10,000		
21	08/20/87	2.0	> 10,000	3.5	> 10,000	5.0	> 10,000		
22	08/20/87	2.0	< 100	4.0	> 10,000	6.0	> 10,000		
23	08/20/87	2.0	500	4.0	> 10,000	6.0	> 10,000		
24	08/20/87	2.0	> 10,000	4.0	5000	6.0	> 10,000		
25	08/20/87	2.0	< 100	4.0	< 100	6.0	< 100		
26	08/20/87	2.0	200	4.0	< 100	6.0	500		
27	08/20/87	2.0	< 100	4.0	< 100	6.0	< 100		
28	08/20/87	6.0	> 10,000						
29	08/20/87	2.0	> 10,000	4.0	100	6.0	< 100		
30	08/20/87	2.0	1,000	4.0	> 10,000	6.0	1,000		
31	08/20/87	2.0	2,000	4.0	> 10,000	6.0	> 10,000		
32	08/20/87	2.0	< 100	4.0	< 100	6.0	< 100		
33	08/20/87	2.0	< 100	4.0	< 100	6.0	< 100		
34	08/20/87	2.0	< 100	4.0	> 10,000	6.0	> 10,000		
35	08/20/87	7.5	< 100						
36	08/20/87	7.5	1,000						
37	08/20/87	2.0	100	4.0	100	6.0	100		
38	08/20/87	2.0	100	4.0	100	6.0	100		
39	08/20/87	2.0	100	4.0	< 100	6.0	< 100		
40	08/26/87	5.5	5,000	6.0	10000	6.5	100	7.0	200

Notes: Depth is reported as feet below grade
Result is the concentration reported as parts per million

TABLE 3 (continued)
RESULTS OF THIN LAYER CHROMOTOGRAPHY HYDROCARBON ANALYSIS

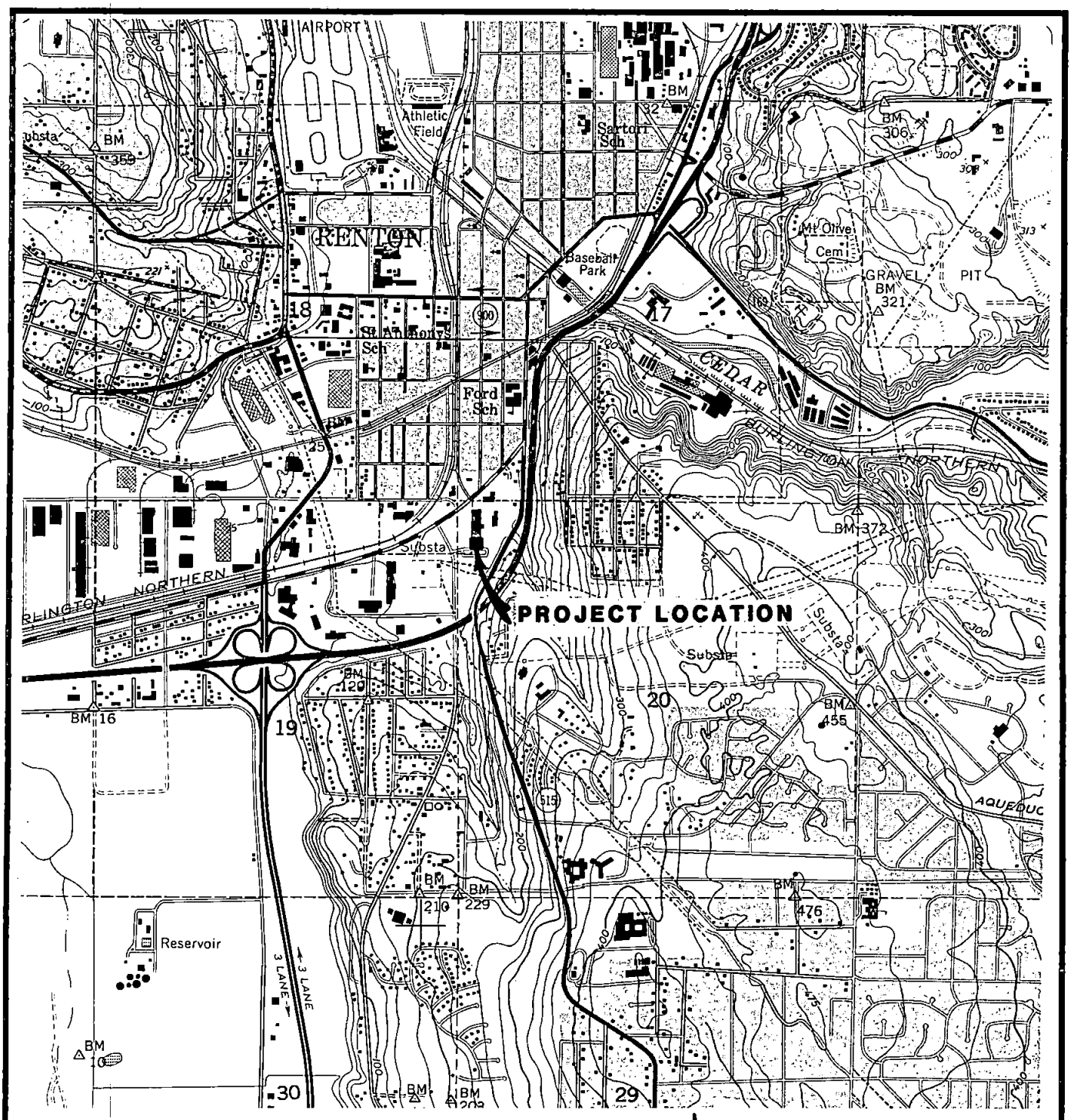
SAMPLE LOCATION	SAMPLE DATE	Subsample A DEPTH	Subsample A RESULT	Subsample B DEPTH	Subsample B RESULT	Subsample C DEPTH	Subsample C RESULT	Subsample D DEPTH	Subsample D RESULT
41	08/26/87	5.5	40,000	6.0	10000	6.5	10,000	7.0	< 100
42	08/26/87	5.5	20,000	6.0	30000	6.5	< 100	7.0	200
43	09/09/87	2.0	< 100	4.0	< 100	6.0	< 100		
44	09/09/87	2.0	< 100	4.0	< 100	6.0	< 100	8.0	< 100
45	09/09/87	2.0	< 100	4.0	< 100	6.0	< 100		
46	09/09/87	2.0	> 30,000	4.0	< 100	6.0	< 100		
47	09/09/87	2.0	< 100	4.0	5000	6.0	10,000	0.5	10,000
48	09/09/87	2.0	< 100	4.5	< 100	6.0	< 100	7.5	< 100
49	09/09/87	2.0	< 100	4.0	< 100	6.0	< 100	0.5	< 100
50	09/09/87	2.0	< 100	4.0	< 100	6.0	< 100	8.0	< 100
51	09/09/87	2.0	< 100	4.0	< 100	6.0	10,000		
52	09/09/87	2.0	30,000	4.0	300	6.0	< 100		
53	09/09/87	2.0	< 100	4.0	< 100	6.0	< 100	4.5	< 100
54	09/09/87	2.0	< 100	4.0	< 100	6.0	< 100		
55	09/09/87	2.0	< 100	4.0	< 100	6.0	< 100		
56	10/06/87	5.0	< 100						
57	10/06/87	5.5	10000						
58	10/06/87	5.0	< 100						
59	10/07/87	5.0	< 100						
60	10/07/87	4.8	10,000						
61	10/07/87	5.0	10,000						
62	10/07/87	5.0	2,500						
63	10/07/87	8.0	< 100						
64	10/07/87	4.5	100						
65	10/07/87	4.5	< 100						
66	10/07/87	5.0	5,000						
67	10/07/87	5.0	< 100						
68	10/07/87	5.0	100						
69	10/07/87	5.0	< 100						
70	10/07/87	5.0	1,000	4.0	500				
71	10/07/87	5.0	100						
72	10/07/87	5.0	100						
73	10/07/87	5.8	500						
74	10/07/87	5.0	100						
75	10/07/87	5.0	2,500						
76	10/07/87	5.0	1,000						
77	10/08/87	6.0	100	6.0	< 100				
78	10/08/87	6.0	10,000						
79	10/08/87	6.0	< 100						
80	10/08/87	6.0	100						

Notes: Depth is reported as feet below grade
Result is the concentration reported as parts per million

TABLE 3 (continued)
RESULTS OF THIN LAYER CHROMOTOGRAPHY HYDROCARBON ANALYSIS

SAMPLE LOCATION	SAMPLE DATE	Subsample A DEPTH	Subsample A RESULT	Subsample B DEPTH	Subsample B RESULT	Subsample C DEPTH	Subsample C RESULT	Subsample D DEPTH	Subsample D RESULT
81	10/08/87	6.0	100						
82	10/08/87	6.0	< 100						
83	10/08/87	6.0	< 100						
84	10/08/87	6.0	< 100						
85	10/08/87	6.0	2,500						
86	10/08/87	6.0	2,500						
87	10/08/87	6.0	< 100						
88	10/08/87	6.0	< 100						
89	10/08/87	6.0	1,000						
90	10/08/87	6.0	< 100						
91	10/08/87	6.0	< 100						
92	10/08/87	6.0	< 100						
93	10/08/87	6.0	100						
94	10/08/87	6.0	< 100						
95	10/08/87	6.0	< 100						
96	10/08/87	5.0	< 100						
97	10/08/87	6.0	5,000						
98	10/08/87	6.0	2,500						
99	10/08/87	6.0	500						
100	10/08/87	6.0	100						
101	10/08/87	5.5	< 100						
102	10/09/87	6.0	10,000						
103	10/09/87	6.0	< 100						
104	10/09/87	6.0	100						
105	10/09/87	6.0	100						
106	02/11/88	4.0	< 10						
107	02/11/88	4.0	10						
108	02/11/88	4.0	100						

Notes: Depth is reported as feet below grade
Result is the concentration reported as parts per million



REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE MAP "RENTON, WASH."

GeoEngineers Incorporated

VICINITY MAP

FIGURE 1

Limit of Soil Contamination and Excavation

Tank

Water Valve

Transformer Storage

Asphalt Road

Pole Storage

Asphalt Road

Pole Storage

KEY:

1 SAMPLE LOCATION AND NUMBER

N

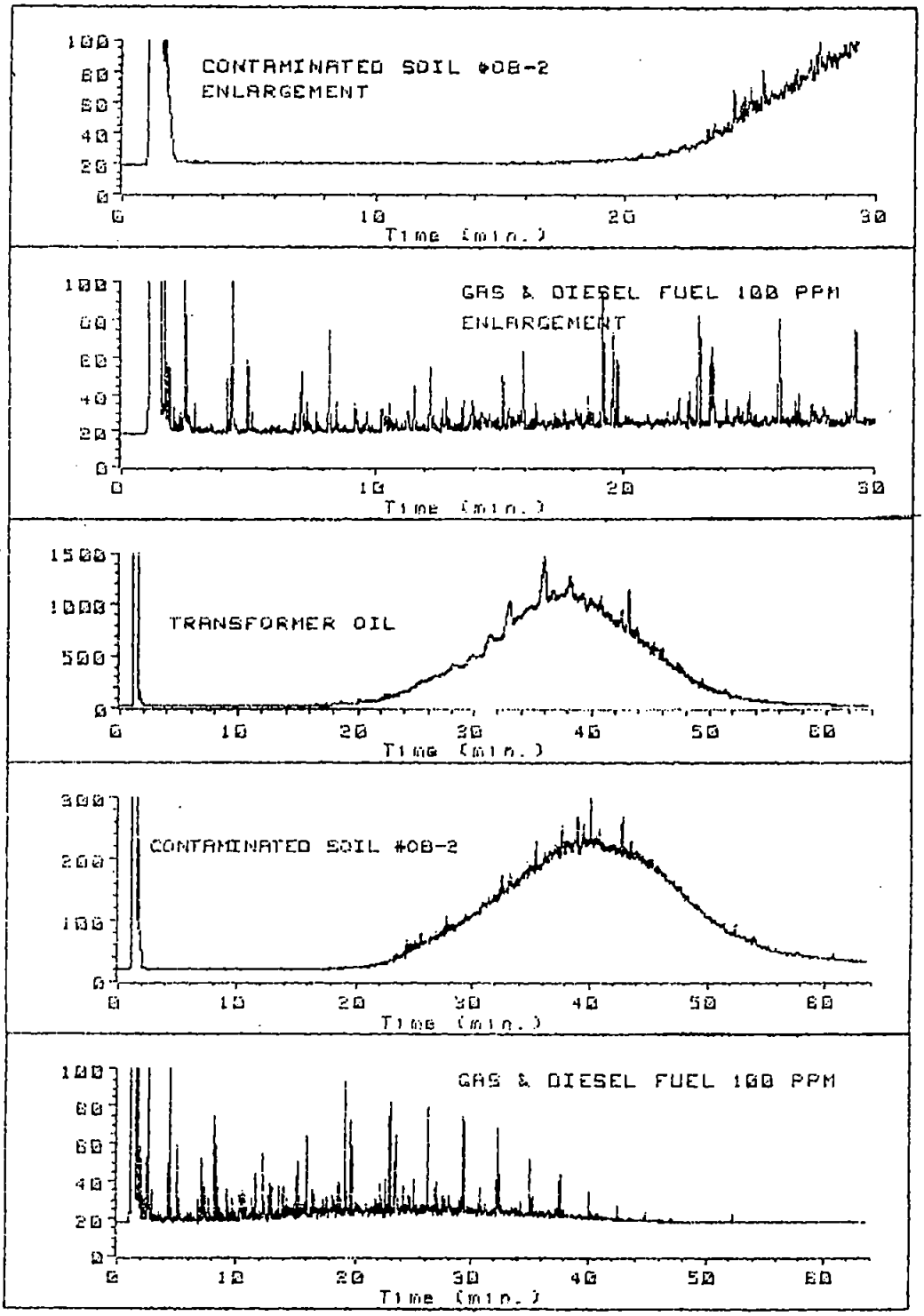
0 10 20

SCALE IN FEET

GeoEngineers Incorporated

SAMPLE LOCATIONS AND LIMIT OF SOIL EXCAVATION

FIGURE 2



GeoEngineers Incorporated

TRANSFORMER OIL CHROMATOGRAMS

FIGURE 3

APPENDIX A

A P P E N D I X A

Analytical Data

Table of Contents

* AmTest = AmTest, Inc.
FFB = Farr, Friedman & Bruya, Inc.

Amended 2/17/88

Date of Report: October 20, 1987
Date Submitted: October 6 and 7, 1987
Project: Puget Power #186-61-4, Renton

ANALYSIS OF SAMPLES FOR TOTAL HYDROCARBONS

Sample #	Total Hydrocarbons (ppm)
56[a]	<100
57[a]	10,000
58[a]	<100
59	<100
60	10,000
61	10,000
62	2,500
63	<100
64	100
65	<100
66	5,000
67	<100
68	100
69	<100
70A	1,000
70B	500
71	100
72	100
73	500
74	100
75	2,500
76	1,000

Quality Assurance

Method Blank	<100
66 Duplicate	5,000
73 Duplicate	500
58 Replicate	<100
62 Replicate	2,500
76 Replicate	1,000
68 Matrix Spike @ 10,000 ppm Percent Recovery	100%

[a] Sample was submitted on October 6, 1987 and analyzed on October 7, 1987.

Date of Report: October 20, 1987
Date Submitted: October 8, 1987
Project: Puget Power #186-61-4, Renton

ANALYSIS OF SAMPLES FOR TOTAL HYDROCARBONS

Sample #	Total Hydrocarbons (ppm)
77A	100
77B	<100
78	10,000
79	<100
80	100
81	100
82	<100
83	<100
84	<100
85	2,500
86	2,500
87	<100
88	<100
89	1,000
90	<100
91	<100
92	<100
93	100
94	<100
95	<100
96	<100
97	5,000
98	2,500
99	500
100	100
101	<100

Quality Assurance

Method Blank	<100
80 Duplicate	100
88 Duplicate	<100
78 Replicate	10,000
86 Replicate	2,500
82 Matrix Spike @ 10,000 ppm Recovery	100%

Date of Report: October 20, 1987
Date Submitted: October 9, 1987
Project: Puget Power #186-61-4, Renton

ANALYSIS OF SAMPLES FOR TOTAL HYDROCARBONS

Sample #	Total Hydrocarbons (ppm)
102	10,000
103	<100
104	100
105	100

Quality Assurance

Method Blank	<100
105 Duplicate	100
103 Replicate	<100
103 Matrix Spike @ 10,000 ppm Recovery	100%

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James K. Farr, Ph.D.
Andrew John Friedman
James E. Bruya, Ph.D.

3008 B - 16th West
Seattle, WA 98119
(206) 285-8282

February 16, 1988

GeoEngineers

Steve Perrigo, Project Geologist
GeoEngineers, Inc.
2405-140th Avenue N.E., Suite 105
Bellevue, WA 98005

FEB 19 1988

Routing

File

Dear Steve:

Enclosed are the results of the analyses performed on soil samples submitted on February 11, 1988 from the Puget Power Project, Site 186-61.

These samples were analyzed for total hydrocarbons as transformer oil by TLC.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this material, please do not hesitate to contact me.

Sincerely,

James K. Farr, Ph.D.

JKF/cag

Enclosures

am test inc.
14603 N.E. 87th St. • REDMOND, WASHINGTON 98052 • 206/885-1664

ANALYSIS REPORT

CLIENT: Geo Engineers

DATE RECEIVED: 8/14/87

REPORT TO: Steve Perrigo
2405 - 140th Avenue NE
Suite 105
Bellevue, WA 98005

DATE REPORTED: 8/17/87

GEI FILE NO.: 0186-61-4

Laboratory Sample Nos.	Client Identification	PCB Type	Concentration (ug/g)	DETECTION LIMIT (ug/g)
710098	OB - 2	A-1260	0.4	0.03
710099	T - 1	A-1260	3.6	1.0
710100*	W - 1 Oil	A-1260	4.8	1.0
710100**	W - 1 Water	A-1260	<1.0	1.0
710101	SS - 1	A-1260	0.31	0.03
710102	SS - 2	A-1260	0.46	0.03
710103 - - 710108	Composite of SS - 1 through SS - 6	A-1260	0.2	0.03

*Oil
**Water

GeoEngineers

AUG 24 1987

Routing Rcp 68

File 0186-61-4

Continued . . . . . .

CLIENT: Geo Engineers

REPORT TO: Steve Perrigo

DATE RECEIVED: 8/14/87

DATE REPORTED: 8/17/87

GEI FILE NO.: 0186-61-4

Laboratory Sample Nos.	Client Identification	Oil & Grease (ug/g)	Petroleum Hydrocarbons (ug/g)
710098	OB - 2	8,570.	7,680.
710101	SS - 1	17,100.	17,100.
710102	SS - 2	16,200.	15,900.
710103 - - 710108	Composite of SS - 1 through SS - 6	8,983.	7,790.
710140	B - 1	170.	170.

BDA/pb

REPORTED BY Bryan D. Anderson
Bryan D. Anderson

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James K. Farr, Ph.D.
Andrew John Friedman
James E. Bruya, Ph.D.

Amended 2/17/88

3008 B - 16th West
Seattle, WA 98119
(206) 285-8282

August 25, 1987

Steve Perrigo, Project Geologist
GeoEngineers, Inc.
2405-140th Avenue N.E., Suite 105
Bellevue, WA 98005

Dear Steve:

Enclosed are the results of analyses for PCB on Samples #28, 31C, 33C, 34C, 35, 37C, 38C and 39C. These samples were taken on August 20, 1987 from the Puget Power Site #186-61-4, in Renton.

The analyses were done using a Hewlett-Packard 5890A Gas Chromatograph equipped with an HP-1 capillary column and an electron capture detector. The conditions of analysis were as follows: 170° C initial temperature held for 1 minute; 20° C/min to 260° C; 260° held for 2.5 minutes.

If you have any questions regarding this material, please do not hesitate to call.

Sincerely,

James K. Farr in the absence of Bob Wallace

Bob Wallace, Chemist

BW/cag

Enclosures

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Amended 2/17/88

Date of Analyses: 8/20/87

RESULTS OF ANALYSES FOR
PCB, PUGET POWER SITE.
Results reported as ug/mL (ppm)

Sample #	Concentration
28	2.9
31C	2.2
33C	<.2
34C	.4
35	<.2
37C	<.2
38C	<.2
39C	<.2
Quality Assurance	
Blank	<.2
Continuing Calibration (1 ppm standard)	1

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James K. Farr, Ph.D.
Andrew John Friedman
James E. Bruya, Ph.D.

3008 B - 16th West
Seattle, WA 98119
(206) 285-8282

August 28, 1987

GeoEngineers

Steve Perrigo, Project Geologist
GeoEngineers, Inc.
2405 - 140th Avenue N. E., Suite 105
Bellevue, WA 98005

AUG 31 1987

Routing

File 0186-61-4

Dear Steve:

Enclosed are the results of analyses of soil samples for PCB and Total Hydrocarbons on samples submitted August 26, 1987 for Puget Power Site #186-61-4 in Renton.

The PCB analyses were done using a Hewlett-Packard 5890A gas chromatograph equipped with an HP-1 capillary column and an electron capture detector. The conditions of analysis were as follows: 170° C initial temperature held for 1 minute; 20° C/minute to 260° C; 260° C held for 2.5 minutes.

We appreciate the opportunity to have been of service to you on this project. If you have any questions or comments, please do not hesitate to call.

Sincerely,

Bob Wallace

Bob Wallace, Chemist

BW/cag

Enclosures

Project: Puget Power Site #186-61-4

Date of Report: August 28, 1987

Date Submitted: August 26, 1987

RESULTS OF ANALYSES OF SOIL SAMPLES FOR TOTAL HYDROCARBONS

Sample #	Concentration (ppm)
40A	5,000
40B	10,000
40C	100
40D	200
41A	40,000
41B	10,000
41C	10,000
41D	<100
42A	20,000
42B	30,000
42C	<100
42D	200
Quality Assurance	
Blank	<100
41A Duplicate	40,000
41A Replicate	40,000
42B Matrix Spike (50,000 ppm)	80,000

Project: Puget Power Site #186-61-4

Date of Report: August 28, 1987

Date Submitted: August 26, 1987

RESULTS OF ANALYSES OF SOIL SAMPLES FOR PCB, Results Reported as ng/mL

Sample #	Concentration (ppm)
40P	.6
41P	1
42P	1
Quality Assurance	
Blank	<.2
40P duplicate	.6
40P Replicate	.4
40P Matrix Spike (1 ppm)	2.4
Continuing Calibration (1 ppm)	1

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James K. Farr, Ph.D.
Andrew John Friedman
James E. Bruya, Ph.D.

Amended 2/17/88

3008 B - 16th West
Seattle, WA 98119
(206) 285-8282

September 15, 1987

Steve Perrigo, Project Geologist
GeoEngineers, Inc.
2405-140th Avenue N.E., Suite 105
Bellevue, WA 98005

Dear Steve:

Enclosed are results of the analyses of soil samples submitted on August 20, 26 and September 9, 1987 from Puget Power Site #186-61-4 in Renton. These samples were analyzed for total petroleum hydrocarbons.

A description of the methodology, along with a discussion of the "fingerprinting", is included, as you requested.

We appreciate the opportunity to have been of service to GeoEngineers on this project. If you have any questions or comments, please do not hesitate to contact me.

Sincerely,

Bob Wallace, Chemist

Enclosures

**ANALYSIS OF SAMPLES FOR
TOTAL HYDROCARBONS FROM
PUGET POWER SITE #186-61-4, RENTON**

Methodology:

Approximately 5 grams of soil were weighed into a 30 mL sample vial. To this was added 5 mL of methylene chloride. The vial was shaken vigorously for approximately 20-30 seconds., 10 µL of the extract was spotted on a silica gel plate, along with standards of various concentration. The plate was developed in hexane and stained in an iodine-vapor chamber.

Standard Preparation:

180 µL of transformer oil was added to 2.8 mL of methylene chloride to make a 50,000 ppm stock standard. Standard of 100, 1,000, 10,000 and 30,000 ppm were made by making suitable dilutions.

Fingerprinting:

An attempt was made to determine whether the contaminant present in the soil at the Puget Power site was transformer oil or possibly a diesel fuel.

Three samples, (transformer oil, a gas & diesel standard and extract from a contaminated soil sample), were run on a gas chromatograph under identical conditions (see Figure A). The presence of higher molecular weight compounds, (indicated by a longer eluting time), seem to be consistent with the presence of transformer oil.

PCB

Thin layer chromatography for PCB's (10 ppm detection limit) was run on the first day. Since no PCB's were detected at above that level, no further analysis was conducted.

Amended 2/17/88

Date of Report: September 15, 1987
Date Submitted: August 20, 1987
Project: Puget Power #186-61-4, Renton

ANALYSIS OF SAMPLES FOR TOTAL HYDROCARBONS

Sample #	Total Hydrocarbons
1A	<100
1B	>10,000
2A	1,000
2B	>10,000
3A	<100
3B	>10,000
4A + 5A Composite	200
4B + 5B Composite	>10,000
6A	<100
6B	>10,000
7A	<100
7B	10,000
8A	5,000
8B	500
9A	1,000
9B	<100
10A	<100
10B	>10,000
11A	<100
11B	<100
12A	<100
12B	<100
13A	100
13B	<100
14A	<100
15A	200
16	<100
17	200
18A	>10,000
18B	>10,000
19A	>10,000
19B	>10,000
19C	>10,000
20A	>10,000
20B	>10,000
20C	>10,000
21A	>10,000
21B	>10,000
21C	>10,000
22A	<100

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Amended 2/17/88

Date of Report: September 15, 1987
Date Submitted: August 20, 1987
Project: Puget Power #186-61-4, Renton

ANALYSIS OF SAMPLES FOR TOTAL HYDROCARBONS

Sample #	Total Hydrocarbons
22B	>10,000
22C	>10,000
23A	500
23B	>10,000
23C	>10,000
24A	>10,000
24B	5,000
24C	>10,000
25A	<100
25B	<100
25C	<100
26A	200
26B	<100
26C	500
27A	<100
27B	<100
27C	<100
28	>10,000
29A	>10,000
29B	100
29C	<100
30A	1,000
30B	>10,000
30C	1,000
31A	2,000
31B	>10,000
31C	>10,000
32A	<100
32B	<100
32C	<100
33A	<100
33B	<100
33C	<100
34A	<100
34B	>10,000
34C	>10,000
35	<100
36	1,000
37A	100
37B	100

Amended 2/17/88

Date of Report: September 15, 1987
Date Submitted: August 20, 1987
Project: Puget Power #186-61-4, Renton

ANALYSIS OF SAMPLES FOR TOTAL HYDROCARBONS

Sample #	Total Hydrocarbons
37C	100
38A	100
38B	100
38C	100
39A	100
39B	<100
39C	<100

Quality Assurance

Blank	<100
14A Duplicate	<100
18A Duplicate	>10,000
20B Duplicate	>10,000
21C Duplicate	>10,000
27B Duplicate	<100
25A Matrix Spike Percent Recovery	100%

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Amended 2/17/88

Date of Report: September 15, 1987
Date Submitted: August 26, 1987
Project: Puget Power #186-61-4, Renton

ANALYSIS OF SAMPLES FOR TOTAL HYDROCARBONS

Sample #	Total Hydrocarbons
40A	5,000
40B	10,000
40C	100
40D	200
41A	40,000
41B	10,000
41C	10,000
41D	<100
42A	20,000
42B	30,000
42C	<100
42D	200

Quality Assurance

Blank	<100
41A Duplicate	40,000
41A Replicate	40,000
42B Matrix Spike Percent Recovery	100%

Amended 2/17/88

Date of Report: September 15, 1987
Date Submitted: September 9, 1987
Project: Puget Power #186-61-4, Renton

ANALYSIS OF SAMPLES FOR TOTAL HYDROCARBONS (continued)

Sample #	Total Hydrocarbons
43A	<100
43B	<100
43C	<100
44A	<100
44B	<100
44C	<100
44D	<100
45A	<100
45B	<100
45C	<100
46A	>30,000
46B	<100
46C	<100
47A	<100
47B	5,000
47C	10,000
47S	10,000
48A	<100
48B	<100
48C	<100
48D	<100
49A	<100
49B	<100
49C	<100
49P	<100
50A	<100
50B	<100
50C	<100
50D	<100
51A	<100
51B	<100
51C	10,000
52A	30,000
52B	300
52C	<100
53A	<100
53B	<100
53C	<100
53D	<100
54A	<100

Amended 2/17/88

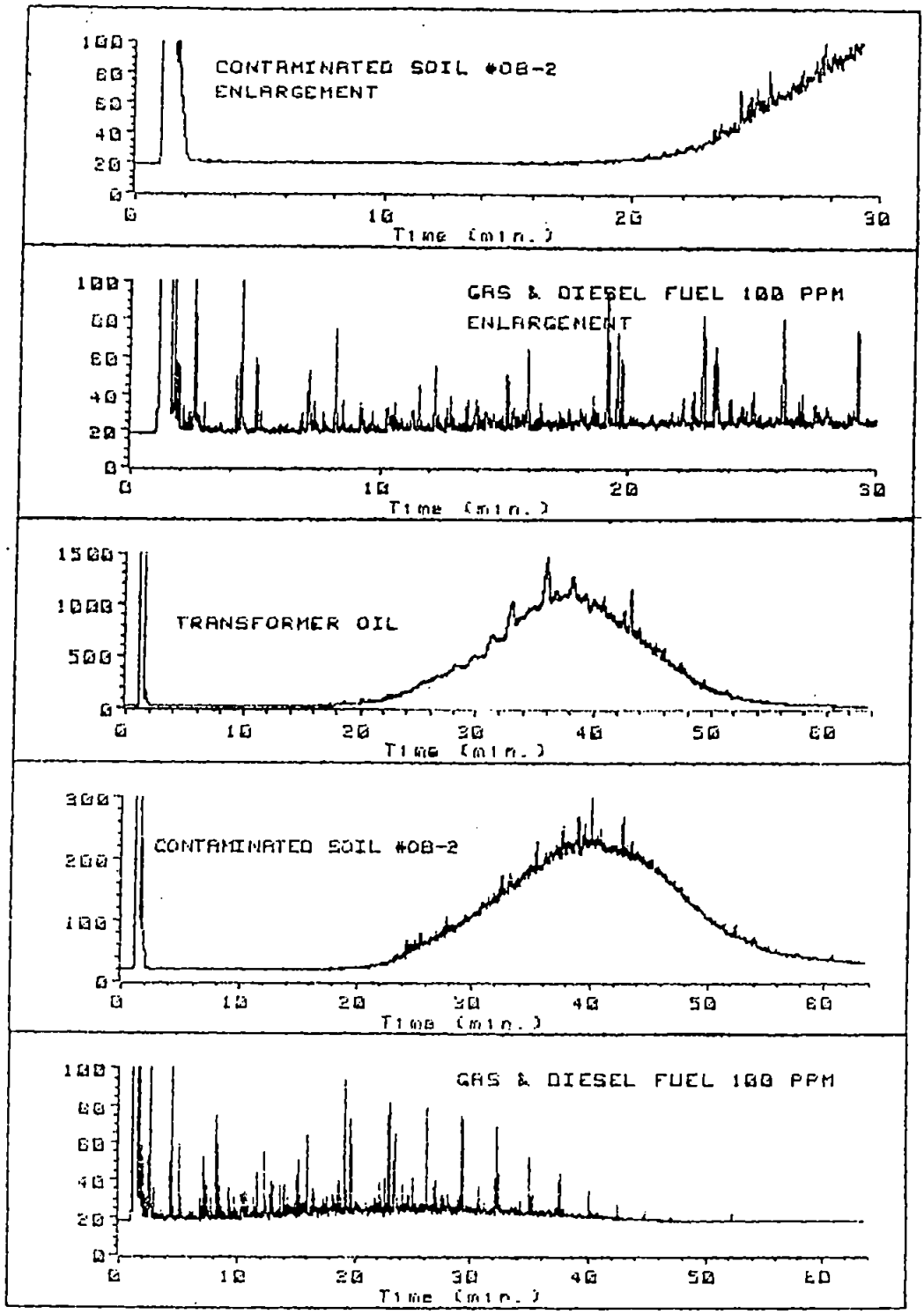
Date of Report: September 15, 1987
Date Submitted: September 9, 1987
Project: Puget Power #186-61-4, Renton

ANALYSIS OF SAMPLES FOR TOTAL HYDROCARBONS (continued)

Sample #	Total Hydrocarbons
54B	<100
54C	<100
55A	<100
55B	<100
55C	<100

Quality Assurance

Blank	<100
47A Duplicate	<100
47B Duplicate	5,000
47C Duplicate	10,000
47S Duplicate	10,000
47C Replicate	10,000
43C Matrix Spike Percent Recovery	100%



T: null.

Figure a: Comparison of contaminated soil extract to diesel fuel and transformer oil. Please note difference in scale.

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James K. Farr, Ph.D.
Andrew John Friedman
James E. Bruya, Ph.D.

Amended 2/17/88

3008 B - 16th West
Seattle, WA 98119
(206) 285-8282

September 17, 1987

Steve Perrigo, Project Geologist
GeoEngineers, Inc.
2405-140th Avenue N.E., Suite 105
Bellevue, WA 98005

Dear Steve:

Enclosed are the results of analyses for PCB performed on composited samples from locations #34, 47 and 51. These analyses were performed on samples submitted by GeoEingineers, Inc. from the Puget Power site #186-61-4 in Renton, WA.

Three subsamples (A, B and C) were taken from each location. Sample number 34 was submitted on August 20, 1987. Sample numbers 47 and 51 were submitted on September 9, 1987. The samples were analyzed on September 15, 1987.

The analyses were done using a Hewlett-Packard 5890A gas Chromatograph equipped with an HP-1 capillary column and an electron capture detector. The conditions of analysis were as follows: 170° C initial temperature held for 1 minute; 20° C/minute to 260° C; 260° C held for 2.5 minutes.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this material, please do not hesitate to call.

Sincerely,

James E. Farr in the absence of Bob Wallace

Bob Wallace, Chemist

BW/cag

Enclosures

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Amended 2/17/88

Date Reported: September 17, 1987
Date Submitted: August 20 and September 9, 1987
Analysis Requested: September 15, 1987

RESULTS OF ANALYSES OF SOIL SAMPLES FOR PCB

Sample #	PCB (ppm)
34 Composite	<.2
47 Composite	<.2
51 Composite	<.2
Quality Assurance	
Blank	<.2
47 Duplicate	<.2
34 Replicate	<.2
51 Matrix Spike Recovery (Spiked to 1 ppm)	160%
Continuing Calibration (1 ppm)	.7

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James K. Farr, Ph.D.
Andrew John Friedman
James E. Bruya, Ph.D.

Amended 2/17/88

3008 B - 16th West
Seattle, WA 98119
(206) 285-8282

October 20, 1987

Steve Perrigo, Project Geologist
GeoEngineers, Inc.
2405-140th Avenue N.E., Suite 105
Bellevue, WA 98005

Dear Steve:

Enclosed are results of the analyses of soil samples submitted from October 6, through October 9, 1987 from Puget Power Site #186-61-4 in Renton. These samples were analyzed for total petroleum hydrocarbons.

A description of the methodology is also enclosed.

We appreciate the opportunity to have been of service to GeoEngineers on this project. If you have any questions or comments, please do not hesitate to contact me.

Sincerely,

John Blunt, Chemist

JB/cag

Enclosures

**ANALYSIS OF SOIL SAMPLES FOR
TOTAL HYDROCARBONS FROM
PUGET POWER SITE #186-61-4, RENTON**

Methodology:

Approximately 5 grams of soil were weighed into a 30 mL sample vial. To this was added 5 mL of methylene chloride. The vial was shaken vigorously for approximately 20-30 seconds. The extract (10 µL) was spotted on a silica gel plate, along with standards of various concentration. The plate was developed in hexane and stained in an iodine-vapor chamber.

Standard Preparation:

Transformer oil (180 µL) was added to methylene chloride (2.8 mL) to make a 50,000 ppm stock standard. Standard of 100, 1,000, 10,000 and 30,000 ppm were made by making suitable dilutions.

Date of Report: February 16, 1988
Date Submitted: February 11, 1988
Project: Puget Power, Site 186-61

RESULTS OF ANALYSES OF SOIL SAMPLES FOR TOTAL HYDROCARBONS AS TRANSFORMER OIL BY TLC

Sample #	Total hydrocarbons as Transformer Oil by TLC (ppm)
106	<10
107	10
108	100
Quality Assurance	
Method Blank	<10
108 Duplicate	100
108 Matrix Spike Spiked @ 100 ppm Percent Recovery	150%

APPENDIX B

ANALYTICAL PROCEDURES

Analytical Procedures - AmTest, Inc.

Oil and Grease:	EPA Method 413.2
Total Petroleum Hydrocarbon:	EPA Method 418.1
PCBs in Soil:	EPA Method 8080
PCBs in Water:	EPA Method 608
PCBs in Oil:	EPA's "PCB in oil method"

Analytical Procedures - Farr, Friedman & Bruya, Inc.

Hydrocarbon Analysis - See next page

PCB in soil: Modified version of the method contained in Field Measurement of PCBs in Soil and Sediments, Thomas Sittler, Region I, EPA, in: 4th National Conference on Management of Uncontrolled Hazardous Waste Sites, October 1983, Washington DC.

Method Summary:
1. Hexane extraction of soil.
2. Spike extract with lindane.
3. Analyze by GC-ECD.

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

**ANALYSIS OF SAMPLES FOR
TOTAL HYDROCARBONS FROM
PUGET POWER SITE #186-61-4, RENTON**

Methodology:

Approximately 5 grams of soil were weighed into a 30 mL sample vial. To this was added 5 mL of methylene chloride. The vial was shaken vigorously for approximately 20-30 seconds., 10 µL of the extract was spotted on a silica gel plate, along with standards of various concentration. The plate was developed in hexane and stained in an iodine-vapor chamber.

Standard Preparation:

180 µL of transformer oil was added to 2.8 mL of methylene chloride to make a 50,000 ppm stock standard. Standard of 100, 1,000, 10,000 and 30,000 ppm were made by making suitable dilutions.

Fingerprinting:

An attempt was made to determine whether the contaminant present in the soil at the Puget Power site was transformer oil or possibly a diesel fuel.

Three samples, (transformer oil, a gas & diesel standard and extract from a contaminated soil sample), were run on a gas chromatograph under identical conditions (see figure a). The presence of higher molecular weight compounds, (indicated by a longer eluting time), seem to be consistent with the presence of transformer oil.

PCB:

Thin layer chromatography for PCB's (10 ppm detection limit) was run on the first day. Since no PCB's were detected at above that level, no further analysis was conducted.

APPENDIX C

WASTE CHARACTERIZATION DOCUMENTATION

FILE COPY

GeoEngineers Incorporated

(206) 746-5200
Fax (206) 746-5068
2405 - 140th Ave. N.E.
Bellevue, WA 98005

Consulting Geotechnical Engineers and Geologists

August 18, 1987

Seattle-King County Department of Public Health
172 - 20th Avenue
Seattle, Washington 98122

Attention: Mr. Steve Burke

Gentlemen:

Request for Soils Disposal at
Cedar Hills Landfill
Tank Removal Consultation
Renton, Washington
File No. 0186-61-4

GeoEngineers, Inc. is assisting Puget Sound Power and Light Company (PSP&L) with the excavation and removal of a decommissioned underground storage tank in Renton, Washington. The tank had been used for storage of waste transformer oils with low concentrations of polychlorinated biphenyls (PCBs). Soil contamination in the vicinity of the tank has necessitated removal of soils for disposal. On behalf of PSP&L, we are requesting permission for disposal of these soils at the Cedar Hills landfill.

The soils are contaminated with transformer oil that has a low concentrations of PCBs (less than 1 percent of that level at which they would be regulated). Transformer oil is a viscous mineral oil with a flash point in the range of 296 to 490°F (non-combustible).

We are expecting to remove 20 to 60 yards of contaminated soil that would require disposal. Soils in the immediate vicinity of the tank have been excavated, stockpiled on-site, and analyzed for PCB and hydrocarbon content. The results of these analyses are presented below. We have also characterized soils remaining in the ground that will be excavated.

	PCB(ppm)	Oil & Grease (%)	Total Petroleum Hydrocarbons(%)
Stockpiled soils removed from excavation (Average of 3 analyses)	0.4	1.4	1.4
Soils to be excavated	0.1	0.9	0.8

As additional excavation is done, we will use on-site chemical analyses to determine the hydrocarbon content of the soil. We feel that the following criteria can be met for any waste soil to be disposed of at the Cedar Hills Landfill:

Total Soil Volume:	20 to 60 cubic yards
Maximum Oil and Grease Content:	3%
Maximum PCB Content:	<1 ppm
Free Liquids:	None (stabilized with bentonite if required)
Period of Disposal:	August 19, 1987 through August 28, 1987

The following contacts are included for your convenience:

Generator: Puget Sound Power and Light Company
Puget Power Building
Bellevue, Washington 98009

Project Engineer: Mr. Gary Reid 462-3077
Environmental Coordinator: Mr. Ted Van Decar 462-3066

Environmental and Geotechnical Consultation Services:

GeoEngineers, Inc.
2405 - 140th Ave. NE, Suite 105
Bellevue, Washington 98005

Contact: Mr. Steve Perrigo 746-5200

Tank Removal Contractor and Waste Hauler:

Olympus Contracting, Inc.
19219 West Valley Highway, Suite M103
Kent, Washington 98032

Project Engineer: Mr. Larry McGill 251-9420

- o O o -

Thank you for your assistance in this matter. If you need any more information regarding the waste soils or our schedule, please call.

Yours very truly,

GeoEngineers, Inc.

Stephen C. Perrigo
Waste Management Specialist

SCP:da

cc: Mr. Gary Reid
Puget Sound Power & Light Co.

Mr. Wally Semon
Olympus Contracting

MEMORANDUM

SEATTLE-KING COUNTY
DEPARTMENT OF PUBLIC HEALTH

TO: Rod Hansen, Manager, King County Solid Waste Division
Attention: Mel Andriesen, Cedar Hills

FROM: Steve Burkey, Senior Environmental Health Specialist
Chemical/Physical Hazards Program

DATE: 8-26-87

SUBJECT: WASTE MATERIAL CLEARED FOR LOCAL LANDFILL AT CEDAR HILLS

This is to advise you that we find the waste material listed from the following company currently acceptable for the landfill at Cedar Hills.

Company:	Olympus Contractors, Inc. Contact: Larry McGill or Wally Semon at 251-9420 19219 West Valley Highway, M-103 Kent, washington 98032	
Hauling For:	Puget Sound Power & Light Company Puget Power Building Bellevue, Washington 98009	Contact: Ted VanDecar at 462-3066 or Gary Reid at 462-3077
Material:	Soil excavated during an underground storage tank removal, low levels of PCB's exist in the soil.	
Amount:	50 - 125 cubic yards	
Frequency:	This time only	

GeoEngineers

AUG 27 1987

Routing

File 0184-61-4

Specifications on these waste materials were submitted to us for review. The above substances were found not to meet the State DOE definitions for either extremely hazardous waste or dangerous waste or Federal EPA criteria for hazardous waste or toxic substances.

Please note that it is only the described materials that are approved for disposal. Any other type of questionable waste from this company will require separate review and analysis.

If you have any questions or need additional information, please call me at 587-4632.

cc: Chuck Rice, Hazardous Waste, Region X, EPA
Julie Sellick, Hazardous Waste, Northwest Office, DOE
Larry Kirchner, EHS Supervisor, Southeast Office
Greg Bishop, EHS Supvr., Tech. Support/Smith Tower Bldg.
Debbie Lambert, King County Solid Waste
Steve Perrigo, Geoengineers - 2405-140th N.E., Bellevue, Wa., 98005

Total Soil Volume:	500 to 800 cubic yards
Maximum Oil and Grease Content:	3%
Maximum PCB Content:	<2 ppm
Free Liquids:	None (stabilized with bentonite if required)
Period of Disposal:	September 28, 1987 through October 31, 1987

The following contacts are included for your convenience:

Generator: Puget Sound Power & Light Company
Puget Power Building
Bellevue, Washington 98009

Project Engineer: Mr. Gary Reid 462-3077
Environmental Coordinator: Mr. Ted Van Decar 462-3066

Environmental and Geotechnical Consultation Services:

GeoEngineers, inc.
2405 - 140th Avenue NE, Suite 105
Bellevue, Washington 98005

Contact: Mr. Steve Perrigo 746-5200

Tank Removal Contractor and Waste Hauler:

Not determined at this time.

Washington State Department of Ecology Representative:

Northwest Regional Office
4350 - 150th Avenue Northeast
Redmond, Washington 98052

Contact: Ms. Gail Colburn 867-7025

- o O o -

Thank you for your assistance in this matter. If you need any more information regarding the waste soils or our schedule, please call.

Yours very truly,

GeoEngineers, Inc.

Stephen C. Perrigo
Waste Management Specialist

SCP:da

cc: Mr. Gary Reid
Puget Sound Power & Light Co.

Ms. Gail Colburn
Washington State Dept. of Ecology

File No. 0186-61-4

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WASTE SCREENING CHECKLIST

WAC 173-303	TITLE OR TEST	DONE	RESULTS	COMMENTS
-081	Discarded Chemical Product			
-082	D.W. Source			
-084	D.W. Mixture			
-090	D.W. Characteristics a) Ignitability b) Corrosivity c) Reactivity d) E.P. Tox			
-101	Toxic D.W. a) Equivalent Conc. b) Bioassay			
-102	Persistent D.W. a) Halogenates b) PAH's			
-103	Carcinogenic D.W.			
Other	Petroleum Hydrocarbons	Yes	Not D.W.	1 - 2%
	PCB's	Yes	Not D.W.	less than 2 p.p.m.

Abbreviations: Y = Yes ; N = No ; NA = Not Applicable ;
WAC = Washington Administrative Code ; E.P. Tox = Extraction Procedure Toxicity ;
D.W. = Dangerous Waste ; PAH = Polycyclic Aromatic Hydrocarbon ;
D.O.E. = Department of Ecology;

FILE COPY

GeoEngineers
Incorporated

(206) 746-5200
Fax (206) 746-5068
2405 140th Ave N E
Bellevue, WA 98005

Consulting Geotechnical
Engineers and Geologists

September 17, 1987

Seattle-King County Department of Public Health
172 - 20th Avenue
Seattle, Washington 98122

Attention: Mr. Steve Burke

Gentlemen:

GeoEngineers, inc. is continuing to assist Puget Sound Power & Light Company (PSP&L) with further excavation and removal of contaminated soil associated with the removal of a decommissioned underground storage tank in Renton, Washington. The tank had been used for storage of waste transformer oils with low concentrations of polychlorinated biphenyls (PCBs). Soil contamination in the vicinity of the tank has necessitated removal of soils for disposal. On behalf of PSP&L, we are requesting permission for disposal of these soils at the Cedar Hills Landfill.

We expect that an additional 500 cubic yards of soil will require disposal. Due to uncertainty as to the exact extent of the limits of contamination, we are requesting permission for disposal of 500 to 800 cubic yards of contaminated soil.

At your suggestion, we have contacted Mr. Mel Andresson at the Cedar Hills landfill regarding this request for disposal. Mr. Andresson indicated that the material would be acceptable for disposal upon clearance from your department. He also requested that we coordinate our activities with the landfill to facilitate the disposal process.

We expect to complete this work during late September and early October. We request that your clearance cover an extended period to allow from unforeseeable events in contractor selection, mobilization, and delays caused by weather.

The soils to be disposed of are contaminated with transformer oil that has low concentrations of PCBs. Transformer oil is a viscous mineral oil with a flash point in the range of 296 to 490°F (non-combustible). Based upon sampling and chemical analysis of the soils to be removed, we feel that the following criteria can be met for the waste soil to be disposed of at the Cedar Hills Landfill:

F P Pc Dta [redacted] 8· 37

WASTE SCREENING CHECKLIST

WAC 173-303	TITLE OR TEST	DONE	RESULTS	COMMENTS
-081	Discarded Chemical Product			
-082	D.W. Source			
-084	D.W. Mixture			
-090	D.W. Characteristics a) Ignitability b) Corrosivity c) Reactivity d) E.P. Tox			
-101	Toxic D.W. a) Equivalent Conc. b) Bioassay			
-102	Persistent D.W. a) Halogenates b) PAH's			
-103	Carcinogenic D.W.			
Other	Petroleum Hydrocarbons	yes	not D.W.	1-2%
	PCB's	yes	not D.W.	less than 1 p.p.m.

breviations: Y = Yes ; N = No ; NA = Not Applicable ;
WAC = Washington Administrative Code ; E.P. Tox = Extraction Procedure Toxicity ;
D.W. = Dangerous Waste ; PAH = Polycyclic Aromatic Hydrocarbon ;
D.O.E. = Department of Ecology;

FILE COPY

GeoEngineers
Incorporated

(206) 746-5200
Fax (206) 746-5068
2405 - 140th Ave. N.E.
Bellevue, WA 98005

Consulting Geotechnical
Engineers and Geologists

August 28, 1987

Seattle-King County Department of Public Health
172 - 20th Avenue
Seattle, Washington 98122

Attention: Mr. Steve Burke

Gentlemen:

Request for Soils Disposal at
Cedar Hills Landfill
Tank Removal Consultation
Renton, Washington
File No. 0186-61-4

GeoEngineers, inc. is continuing to assist Puget Sound Power & Light Company (PSP&L) with further excavation and removal of contaminated soil associated with the removal of a decommissioned underground storage tank in Renton, Washington. The tank had been used for storage of waste transformer oils with low concentrations of polychlorinated biphenyls (PCBs). Soil contamination in the vicinity of the tank has necessitated removal of soils for disposal. On behalf of PSP&L, we are requesting permission for disposal of these soils at the Cedar Hills Landfill.

The remaining soils are contaminated with transformer oil that has a low concentrations of PCBs. Transformer oil is a viscous mineral oil with a flash point in the range of 296 to 490°F (non-combustible). Based upon sampling and chemical analysis of the soils to be removed, we feel that the following criteria can be met for any waste soil to be disposed of at the Cedar Hills Landfill:

Total Soil Volume:	25 to 50 cubic yards
Maximum Oil and Grease Content:	3%
Maximum PCB Content:	<2 ppm
Free Liquids:	None (stabilized with bentonite if required)
Period of Disposal:	September 1, 1987 through September 4, 1987

The following contacts are included for your convenience:

Generator: Puget Sound Power & Light Company
Puget Power Building
Bellevue, Washington 98009

Project Engineer: Mr. Gary Reid 462-3077
Environmental Coordinator: Mr. Ted Van Decar 462-3066

Environmental and Geotechnical Consultation Services:

GeoEngineers, inc.
2405 - 140th Avenue NE, Suite 105
Bellevue, Washington 98005

Contact: Mr. Steve Perrigo 746-5200

Tank Removal Contractor and Waste Hauler:

Olympus Contracting, Inc.
19219 West Valley highway, Suite M104
Kent, Washington 98032

Project Engineer: Mr. Larry McGill 251-9420

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Thank you for your assistance in this matter. If you need any more information regarding the waste soils or our schedule, please call.

Yours very truly,

GeoEngineers, Inc.

Stephen C. Perrigo
Waste Management Specialist

SCP:cs

cc: Mr. Gary Reid
Puget Sound Power & Light Co.

Mr. Wally Semon
Olympus Contracting

MEMORANDUM

SEATTLE-KING COUNTY
DEPARTMENT OF PUBLIC HEALTH

TO: Rod Hansen, Manager, King County Solid Waste Division
Attention: Mel Andriesen, Cedar Hills

FROM: Steve Burke, Senior Environmental Health Specialist
Chemical/Physical Hazards Program

DATE: 8-31-87

SUBJECT: WASTE MATERIAL CLEARED FOR DISPOSAL AT CEDAR HILLS

This is to advise you that we find the waste material listed from the following company currently acceptable for the landfill at Cedar Hills.

Company: Olympus Contractors, Inc.
Contact: Larry McGill or Wally Semon at 251-9420
19219 West Valley Highway, M-103
Kent, Washington 98032

Hauling For: Puget Sound Power & Light Company
Contact: Ted VanDecar at 462-3066 or Gary Reid at 462-3077
Puget Power Building
Bellevue, Washington 98009

Material: Soil excavated during an underground storage tank removal, low levels of PCB's exist in the soil

Consulted Gail Colburn, DOE

GeoEngineers

SEP - 1987

Filed 0186-61-4

Amount: 30 - 50 cubic yards

Frequency: This time only

Expiration Date: September 30, 1987

Specifications on these waste materials were submitted to us for review. The above substances were found not to meet the State DOE definitions for either extremely hazardous waste or dangerous waste or Federal EPA criteria for hazardous waste or toxic substances.

Please note that it is only the described materials that are approved for disposal. Any other type of questionable waste from this company will require separate review and analysis.

If you have any questions or need additional information, please call me at 587-4632.

cc: Chuck Rice, Hazardous Waste, Region X, EPA
Julie Sellick, Hazardous Waste, Northwest Office, DOE
Larry Kirchner, EHS Supervisor, Southeast Office

CS 13.2.17

-OVER-

MEMORANDUM

SEATTLE-KING COUNTY
DEPARTMENT OF PUBLIC HEALTH

TO: Rod Hansen, Manager, King County Solid Waste Division
Attn: Mel Andriesen, Cedar Hills

FROM: Steve Burke, Senior Environmental Health Specialist
Chemical/Physical Hazards Program DATE: 9-22-87

SUBJECT: **WASTE MATERIAL CLEARED FOR DISPOSAL AT CEDAR HILLS**

This is to advise you that we find the waste material listed from the following company currently acceptable for the landfill at Cedar Hills.

Company: To be determined at a later date - Information will be called into the Health Department.

Hauling For: Puget Sound Power & Light Company
Puget Power Building
Bellevue, WA 98009

Contact: Gary Reid at 462-3077

Material: Soils contaminated with oils associated with an underground storage tank removal. No free liquids. Low levels of PCB's exist in the soils.

Amount: 500 to 800 cubic yards.

GeoEngineers

Frequency: This time only

SEP 23 1987

Routing

File 0126-1-4

Expiration Date: November 27, 1987

Specifications on these waste materials were submitted to us for review. The above substances were found not to meet the State DOE definitions for either extremely hazardous waste or dangerous waste or Federal EPA criteria for hazardous waste or toxic substances.

Please not that it is only the described materials that are approved for disposal. Any other type of questionable waste from this company will require separate review and analysis.

If you have any questions or need additional information, please call me at 587-4632.

SJB/kam

cc: Chuck Rice, Hazardous Waste, Region X, EPA
Julie Sellick, Hazardous Waste, Northwest Office, DOE
Larry Kirchner, EHS Supvr., Southeast Office, SKCDPH
Greg Bishop, EHS Supvr., Smith Tower Bldg., SKCDPH
Debbie Lambert, King County Solid Waste
GeoEngineers, Inc. (Steve Perrigo) 2405-140th N.E., Bellevue, WA., 98005

For: Puget Power (PSP&L)

Date: 9-22-87

WASTE SCREENING CHECKLIST

WAC 173-303	TITLE OR TEST	DONE	RESULTS	COMMENTS
-081	Discarded Chemical Product			
-082	D.W. Source			
-084	D.W. Mixture			
-090	D.W. Characteristics a) Ignitability b) Corrosivity c) Reactivity d) E.P. Tox			
-101	Toxic D.W. a) Equivalent Conc. b) Bioassay			
-102	Persistent D.W. a) Halogenates b) PAH's			
-103	Carcinogenic D.W.			
Other	a) PCB b) Oil & Grease	a) Y b) Y	a) not D.W. b) not D.W.	a) l.t. 2 p.p.m. b) 3% or less

bbreviations: Y = Yes ; N = No ; NA = Not Applicable ;
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D.O.E. = Department of Ecology;