RZA
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24 February 1989

W-5979

Chevron U.S.A. Inc.
P.O. Box 220
Seattle, Washington 98111

Attention: Ms. Lisa Helmso

Subject: Underground Storage Tank Removal Summary Report
Chevron Service Station No. 1364
1313 156th Avenue NE
Bellevue, Washington

Ms. Helmso:

We are pleased to present herein a copy of the above referenced report. This report presents our observations of underground petroleum product storage tank removal procedures accomplished at the subject site on 16 January 1989. Included with this letter are analytical chemistry results from selected soil samples obtained from representative locations surrounding and underlying these tanks, and from the area where the hydraulic hoist was located inside the former service station.

SUMMARY

A brief summary of our observations and analytical laboratory chemistry results is presented below. The main body of this letter report should be consulted for detailed discussion of the report findings. Approximate site boundaries and locations of underground storage tanks and the hydraulic hoist location are shown on the Site and Tank Removal Locations Plan, Figure 1.

- Prior to removal, the underground storage tanks were decommissioned and prepared for safe removal from the site by the contractor. Upon inspection, all underground storage tanks appeared to have maintained structural integrity.

- In general, soil comprising the main gasoline tank excavation (tanks 1, 2 and 3) sidewalls and bottoms exhibited none or very slight indications of fugitive petroleum hydrocarbon impact, such as discoloration, odors or sheens. Soil samples from the bottom of the excavation for tank 1 and tank 2 showed detectable concentrations of 0.05 parts per million (ppm) ppm toluene and 0.06 ppm xylenes (tank 1) and 0.13 ppm benzene and 0.11 ppm ethyl benzene (tank 2), with concentration of the other BTEX components less than 0.05 ppm and total petroleum hydrocarbons (TPH) concentrations less than 10 ppm. One of the two sidewall composite samples showed concentrations of xylenes at 0.06 ppm and all other BTEX components for both sidewall samples were less than 0.05 ppm with TPH concentrations measured as less than 10 ppm.
- Soils excavated from the fuel oil tank (tank 4) exhibited no petroleum hydrocarbon odor, discoloration or field vapor measurements. Upon analysis, soils excavated from the sidewalls and bottom exhibited concentrations of total petroleum hydrocarbons (TPH) at 30 ppm.
- Soil excavated from the used oil tank (tank 5) sidewalls and bottom exhibited no petroleum hydrocarbon odor, discoloration or field vapor measurements. The soils were analyzed for TPH, total halogens (TOX) and total metals lead and chromium. Concentrations from the used oil tank sidewall composite sample showed 16 ppm TPH, less than 0.2 ppm TOX, 4.9 ppm lead and 15.3 ppm chromium. Concentrations from the used oil tank bottom sample were 36 ppm TPH, less than 0.2 ppm TOX, 5.1 ppm lead and 10.9 ppm chromium.
- Soil analyzed from the hydraulic hoist excavation bottom exhibited elevated concentrations of TPH of 5,024 ppm.

This summary is presented for introductory purposes and should be used only in conjunction with the full text of this letter report.

PURPOSE AND SCOPE

This letter report presents our observations of underground storage tank removal procedures performed on 16 January 1989 at the Chevron Service Station No. 1364 located at 1313 156th Avenue NE, Bellevue, Washington. We also sampled the excavation for a hydraulic hoist which is located where the former service station building was. The purpose of our observations and analyses was to determine the presence and

concentration of petroleum hydrocarbons within the soils and the immediate area of the tank excavation. Our project scope of work included:

- Visual observation and photo documentation of underground tank removal procedures;
- Observation of the condition of the underground tanks;
- Observation of the condition of the soils surrounding or underlying tank locations, utilizing visual and olfactory impressions and data provided by a combustible gas detector survey;
- Collection and analysis of soil samples for BTEX and TPH in the gasoline tank excavation and for TPH in the hydraulic hoist excavation and related spoils stockpiles;
- Collection and analysis of soil samples for lead, chromium, total halogens as chloride (TOX) and TPH, from the used oil tank excavation and its related spoil stockpile;
- Collection and analysis of soil from the fuel oil/use oil tank excavation for TPH;
- Preparation of this letter report.

Authorization for our participation in the project was verbally granted by Ms. Lisa Helmso of Chevron U.S.A. Inc. on 12 January 1989. This report has been prepared for the exclusive use of Chevron and their agents, for specific application to the referenced scope of services in accordance with generally accepted environmentally monitoring practices. No other warranty, expressed or implied is made. In the event that there are any subsequent changes on the existing site, the conclusions contained in this report should be reviewed, and modified as necessary to reflect those changes.

At the request of Ms. Lisa Helmso of Chevron, we arrived on the subject site on 16 January 1989, to observe and document the removal of five underground petroleum hydrocarbon storage tanks. Table 1 summarizes information provided to us about the storage tanks.

Table 1
Underground Tanks Removed

Quantity	Type	Estimated Capacity (gallons)	Former Contents	Tank Number
1	Steel	5,000	Gasoline	T-1
1	Steel	10,000	Gasoline	T-2
2	Steel	10,000	Gasoline	T-3
1	Steel	500	Fuel oil	T-4
1	Steel	1,000	Used oil	T-5

Safety, decommissioning, excavations and removal of the tanks were performed by A.F. Sleister and Sons Construction, Inc., Lynnwood, Washington. Excavations and tank removal procedures were accomplished with a John Deere track-hoe. Upon visual and manual inspection, no obvious evidence of punctures or corrosion of the tank sidewalls prior to excavation was observed. We also observed an excavation accomplished where the service station hydraulic hoist was formerly located.

SOILS/GROUNDWATER

Soils encountered within the excavation pits consisted of rust-brown/tan and gray, fine, to medium silty SANDS with scattered gravel. Groundwater was not encountered in any of the excavations. Existing backfill materials consisted of fine to medium sand and surrounded all tanks.

Soils obtained from localized areas immediately adjacent to the filling apertures on all tanks, exhibited none to very slight petroleum hydrocarbon odor, sheen, or staining. References to odor should be considered subjective data since odors are influenced by olfactory sensitivity, fatigue and environmental factors such as temperature, air velocity and hydrocarbon degradation.

SAMPLING METHODOLOGY

Discreet soil samples were acquired from all four sidewalls from all underground tank excavations at depths of approximately five to ten feet below ground surface. Discreet soil samples were collected from bottom soils in all of the tank excavations and the hydraulic hoist excavation.

Samples were selected from soils that appeared to be representative of typical soils surrounding the tanks. Once the sample was collected, it was then transferred to the laboratory-prepared container with a stainless steel spoon and tightly sealed.

The sampling tools were decontaminated between each sampling location. All sample containers were labeled to identify the project number, test location, sample number and depth interval. All samples were immediately placed in a chilled cooler until transferred to cold storage at the laboratory. RZA's chain-of-custody procedures were used to maintain sample integrity.

LABORATORY ANALYSIS

All soil samples obtained from the excavation for tanks 1, 2 and 3 were submitted to a subcontract laboratory for TPH analysis by EPA Method 8015 and for BTEX by EPA Method 8020. The soil samples obtained from the excavation for tank 4 were submitted to a subcontracted analytical laboratory for analysis of TPH by EPA Method 418.1. Soil samples obtained from the used fuel oil tank (tank 5) were submitted for TPH analysis by Method 418.1, total lead and chromium by atomic absorption (AA), methods, and total halogens (TOX), as chloride, by micro calemetry titration procedures. Table 2 presents a summary of the analytical test results. Soil samples collected from the hydraulic hoist excavation were analyzed for TPH by EPA Method 418.1.

RESULTS

A Summary Table of Analytical Laboratory Results is provided in Table 2. Detectable concentrations of volatile aromatic hydrocarbons (BTEX) were found in soil samples from the bottom of the excavation of tank 2, tank 1 and a sidewall composite sample (east sidewall). Benzene concentrations for the bottom sample from tank 2 were 0.13 ppm and ethyl benzene concentrations were at 0.11 ppm. Other BTEX components for

the tank 2 bottom sample were below 0.05 ppm. The detectable BTEX components from the bottom of the excavation for tank 1 were 0.05 ppm toluene and 0.06 ppm xylenes with all other constituents measured at concentrations less than 0.05 ppm. One sidewall (east sidewall) composite sample from the gasoline tank excavation displayed 0.06 ppm xylenes with all other BTEX component concentrations reported as less than 0.05 ppm.

Detectable concentrations of total petroleum hydrocarbons (TPH) were found in several soil samples. The soil sample from the hydraulic hoist excavation bottom showed the highest TPH concentration at 5,024 ppm. Soils from the excavation bottom of gasoline tank 2 showed concentrations of 13 ppm TPH. Soils from the fuel oil tank excavation (tank 4) displayed TPH concentrations of 30 ppm. Soils from the used oil tank excavation sidewalls (tank 5) and bottom displayed TPH concentrations of 16 and 36 ppm respectively. The other soil samples all showed concentrations of TPH less than 10 ppm.

The used oil tank excavation, upon analysis, also showed soils with detectable concentrations of 4.9 ppm lead from the sidewall composite sample and 5.1 ppm lead from the bottom sample and chromium concentrations at 15.3 ppm and 10.9 ppm for the sidewall composite and bottom samples, respectively. Total halogens (TOX) were less than detection limits at 0.2 ppm for both samples. These metal results are typical of background concentrations reported in the literature.

Discreet soil samples obtained from specific locations within the excavation pits are in cold storage at RZA. If further quantification of impacted soils is deemed necessary, these samples would be available. Our observations and tests were limited to the soils present within the excavation pits and do not reflect upon other areas of the subject site.

We appreciate this opportunity to be of continued service to Chevron U.S.A. Inc.. If you have any questions regarding this letter, please do not hesitate to call us at your earliest convenience.

Respectfully submitted,

RITTENHOUSE-ZEMAN & ASSOCIATES, INC.

Sue Bream

Sue Bream
Hydrogeologist

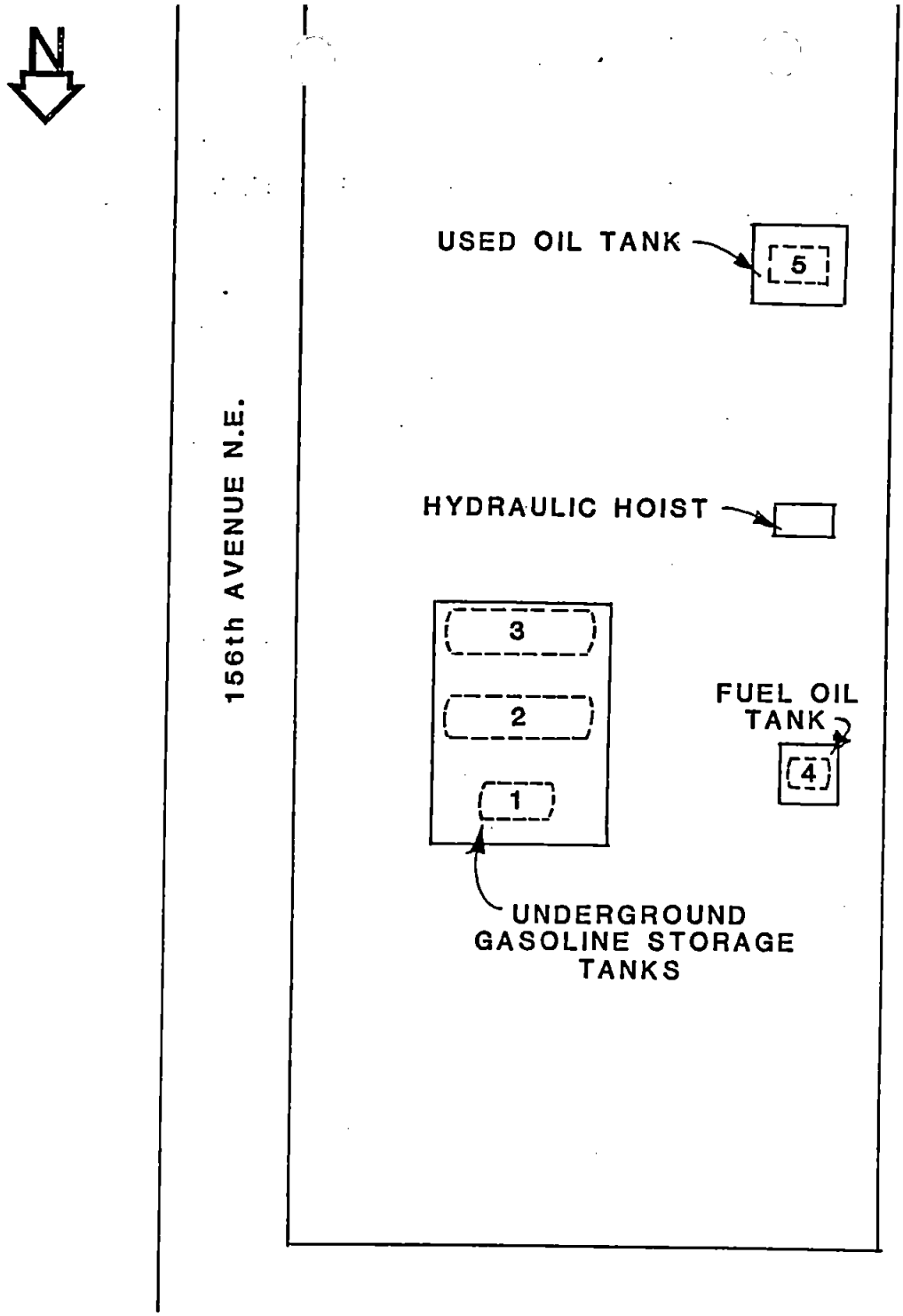
David G. Cooper, P.G.
Senior Engineering Geologist

Kurt W Luoesch (for)

Alvin R. Zeman, P.E.
President

Attachments

SB:kb



CHEVRON U.S.A. INC.
SERVICE STATION No. 1364
BELLEVUE, WASHINGTON

SITE & TANK REMOVAL LOCATIONS PLAN
FIGURE 1

W.O. W-5979
BY S.E.B.
DATE FEB 1989
SCALE 1" = 30'

RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
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TABLE 2
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Summary of Analytical Laboratory Results (1st June 1989 Sampling)
(In Parts Per Million) 1ppm = 1 mg/kg

Sample	Location	Benzene (mg/kg)	Ethyl-Benzene (mg/kg)	Toluene (mg/kg)	Xylenes (mg/kg)	TPH (mg/kg)	TOX (mg/kg)	Lead (mg/kg)	Chromium (mg/kg)
1	Gasoline Tank (3) Bottom	<0.05	<0.05	<0.05	<0.05	<10*			
2	Gasoline Tank (1) Bottom	<0.05	<0.05	0.05	<0.06	<10*			
3	Gasoline Tank (2) Bottom	0.13	0.11	<0.05	<0.05	13*			
4	Gasoline Tank Sidewall Composite	<0.05	<0.05	<0.05	0.05	<10*			
5	Gasoline Tank Sidewall Composite	<0.05	<0.05	<0.05	<0.06	<10*			
6	Fuel Oil Tank (4) Sidewall & Bottom Composite					30	NT	NT	NT
7	Used Oil Tank (5) Sidewall Composite					16	<0.2	4.9	15.3
8	Used Oil Tank (5) Bottom					36	<0.2	5.1	10.9
9	Hydraulic Hoist Bottom					5,024	NT	NT	NT

Notes:

1) NT = Not tested
2) BTEX tested by SW-846 Method 8020
3)* TPH tested by SW-846 Method 8015
4) TPH tested by EPA Method 418.1
5) Total halogens tested by Microcoulimetric Method

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4630 PACIFIC HIGHWAY EAST, SUITE B-14, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922- 5047

Report To: Rittenhouse-Zeman Date: January 30, 1989

Report On: Analysis of Soil Lab No.: A 4991
Page 1 of 2

IDENTIFICATION:
Project No. W-5979
Samples received on 1-18-89

Sample No. 1: S-9/T-3B
Sample No. 2: S-1/T-1B
Sample No. 3: S-11/T-2B
Sample No. 4: Composite of S-10/SW-1, S-3/SW-1, & S-7/SW-1
Sample No. 5: Composite of S-13/SW-2, S-4/SW-2, & S-14/SW-2

ANALYSIS:

Contaminant	Concentration (mg/kg)				
Lab Sample No.	1	2	3	4	5
Benzene	< 0.05	< 0.05	0.13	< 0.05	< 0.05
Ethyl benzene	< 0.05	< 0.05	0.11	< 0.05	< 0.05
Toluene	< 0.05	0.05	< 0.05	< 0.05	< 0.05
Xylenes	< 0.05	0.06	< 0.05	< 0.05	0.06
Total Petroleum Hydrocarbons	< 10	< 10	13	< 10	< 10

Analysis procedures: BETX by SW-846 Method 8020
TPH by SW-846 Method 8015

SOUND ANALYTICAL SERVICES, INC.

Rittenhouse-Zeman & Assoc.
Lab No: A 4991

January 30, 1989

IDENTIFICATION:
Project No. W-5979
Samples received on 1-18-89

Sample No. 6: Composite of S-17/T-4, S-18/T-4, & S-19/T-4

Sample No. 7: Composite of S-20/T-5, S-21/T-5, S-22/T-5, & S-23/T-5

Sample No. 8: S-24/T-5B

Sample No. 9: S-25

Contaminant	Concentration (mg/kg)			
Lab Sample No.	6	7	8	9
Total Petroleum Hydrocarbons	30	16	36	5,024
Total Halogens	NT	< 0.2	< 0.2	NT
Lead	NT	4.9	5.1	NT
Chromium	NT	15.3	10.9	NT

Analysis procedures: TPH by EPA Method 418.1
Total halogens by microcoulimetric method
Metals by ICP using SW-846 methods

* NT = Not Tested.

SOUND ANALYTICAL SERVICES

STAN P. PALMQUIST