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August 5, 2008

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DEPARTMENT OF ECOLOGY - CENTRAL REGIONAL OFFICE

Mr. Brian Deeken
Toxics Cleanup Program
Department of Ecology
15 W Yakima Avenue, Suite 200
Yakima, WA 98902

Subject: *Pacific Power & Light*
Union Gap Substation, Facility Site ID# 18988829

Dear Mr. Deeken:

This letter responds to your letter of July 15, 2008 and is intended to provide the requested information and clarify the data results presented in our technical memorandum entitled Soil and Groundwater Sampling Results for PacifiCorp Union Gap Substation Investigation, dated January 14, 2008.

The site is an electrical substation that converts high voltage interstate transmission electricity to lower voltage electricity for distribution to the communities of Yakima and Union Gap. In July 2007 while conducting maintenance activities, PacifiCorp crews discovered one of the oil reservoirs was leaking in a old non-PCB transformer. The leak apparently caused a release of mineral oil to the soil over a number of years. PacifiCorp documents indicate that 250 gallons of non-PCB mineral oil were added to this transformer over the years. During the clean-up activities, approximately 100 gallons of mineral oil was recovered from the transformer vault resulting in an estimated volume of 150 gallons of non-PCB mineral oil potentially released to the soil.

After its discovery, the stained soil around the transformer was excavated until groundwater was reached at approximately 7 feet below ground surface. The excavation was approximately 8 feet wide and 10 feet long. Not all of the soil removed was stained; rather, the excavation was made as large as it was to enable the work crews to safely work in the excavation without shoring the side walls. The excavation area was directly adjacent to the transformer's footing. The excavation contractor noted that the soil under the transformer's footing was grey and appeared to be stained. This gray coloration may indicate the presence of reduced iron caused by seasonal groundwater fluctuations. The soil under the footing was not excavated because of concerns of undermining the structural integrity of the footing and potentially disrupting power supply to the service area.

PacifiCorp retained CH2M HILL to collect groundwater samples at this facility to determine if this mineral oil release had adversely affected shallow groundwater at the site. Groundwater samples were collected from temporary well points advanced by a GeoProbe© direct-push sampling rig on November 1, 2007 as described in our July 14, 2008 memorandum.

CH2M HILL has reviewed its memorandum and noted a few errors that warrant correction:

- Ecology's MTCA Standard Formula and Table Values for Groundwater, Method A for oil presented in the memorandum is one of the two values available from Ecology. The 0.5 mg/L value is cited in the February 2001 revision to MTCA, but the current method A value for mineral oil presented by Ecology in the Cleanup Levels and Risk Calculations (CLARC) database is 1 mg/L (<https://fortress.wa.gov/ecy/clarc/>, accessed August 4, 2008). It is assumed that the 1 mg/L value is the most up-to-date value.
- The data presented for samples 101-GW-B2, 101-GW-B3, and 101-GW-B4 were incorrect in our January 14 memorandum because of a transcription error, although the correct values were provided in the laboratory reports appended to the memorandum. The correct data are presented in Table 1 below, which replaces the incorrect Table 1 in the January memorandum.

Table 1

Groundwater Results for Union Gap Substation Investigation
PacifiCorp

Sample #	Diesel Range Hydrocarbons (mg/L) ^b	Lubricating Oil Range Hydrocarbons (mg/L)
101-GW-B1	0.25 U ^c	0.5 U
101-GW-B2	0.5	0.51 U
101-GW-B3	0.98	0.53
101-GW-B4	0.25 U	0.51 U
101-GW-B5	0.25 U	0.51 U
101-GW-B6	0.25 U	0.51 U
101-GW-B7 ^a	0.25 U	0.5 U

^a Field blank for QA/QC

^b mg/L – milligrams per liter

^c U – analyte not detected at reporting limit shown

As noted above the material released at this site is mineral oil. There is no diesel stored on site, there are no historic documents indicating diesel was ever stored on site, and the site

manager has no recollection of diesel ever being stored on site (personal communication with Stan Yeend, PacifiCorp site manager, 8/1/2008).

Petroleum hydrocarbons were reported by the laboratory in groundwater samples from the site. The laboratory method used in this investigation was the Northwest total petroleum hydrocarbon quantification method focused on diesel and oil range organics. This process consists of extracting the target contaminants from the substrate (water in this case), and running the extract through a gas chromatograph (GC) coupled with a mass spectrometer (MS). The MS produces a chromatogram that indicates the concentration of carbon chains in the sample. This is plotted by the retention time or the time it takes for a given carbon chain to volatilize off the column, which correlates directly to the number of carbon atoms in the chain. Diesel is generally composed of carbon chains containing seven carbon atoms (C7) to 25 carbon atoms (C25). Figure 1 is an example of a chromatogram produced from a laboratory reference sample of diesel. Mineral oil or transformer oil generally is composed of carbon chains C12 to C29. Figure 2 is a chromatogram produced from a laboratory reference sample of transformer oil.

Laboratories classify hydrocarbons in ranges. For example the Applied Sciences Laboratory (ASL) uses the range C10 to C24 to classify the diesel range hydrocarbons and C24 to C36 is classified as lubricating oil range hydrocarbons (ASL standard operating procedures for NWTPH-Dx). When a laboratory reports a concentration of 0.53 mg/L of diesel range hydrocarbons this does not mean that there is 0.53 mg/L of diesel fuel present in the sample, but that the detected hydrocarbons fall within the carbon range for diesel and their concentrations total the reported value. Examining the sample chromatogram, the concentrations of each carbon chain across the petroleum spectrum is presented. With this perspective it is easier to see the fingerprint of the hydrocarbon, making it easier to identify its origin. Figure 3 is the chromatogram of sample number 101-GW-B2. Figure 4 is the chromatogram for sample number 101-GW-B3. It is apparent that the general shape and retention time associated with the site samples resembles that of mineral oil rather than diesel fuel. In particular, the absence of significant elution from the column prior to 8.5 to 9 minutes in site samples and in transformer oil is striking, compared to diesel fuel, which begins eluting at about 5.5 minutes.

Site history, the nature of the release, and the chromatograms generated for site samples all support CH2M HILL's opinion that the hydrocarbons present at the site are associated with mineral oil and that the screening level used for comparison should be the 1 mg/L MTCA Method A value for mineral oil in groundwater rather than the diesel fuel value. Mineral oil does not have the concentrations of carcinogenic compounds found in diesel and the absence of lighter-end hydrocarbons (less than C12) in mineral oil compared to diesel means mineral oil hydrocarbons are less mobile in the environment than diesel. With the low and isolated concentration found at this site and the long-term use going forward as an active

Mr. Mr. Brian Deeken

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electrical substation , it is reasonable to conclude that the mineral oil detected at the site is not a threat to human health or the environment and that no further action is warranted. On behalf of PacifiCorp, CH2M HILL respectfully requests Ecology's review and concurrence with this evaluation.

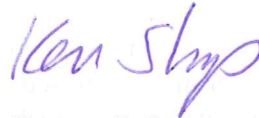
Sincerely,

CH2M HILL



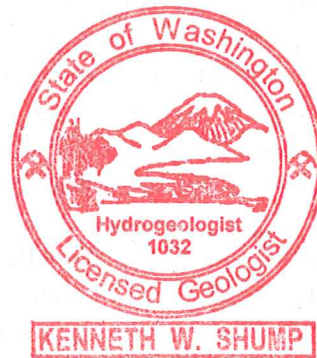
Pat Heins, CHMM

CH2M HILL



Ken Shump, L.G.

cc: Stan Yeend/PacifiCorp



#2 DIESEL

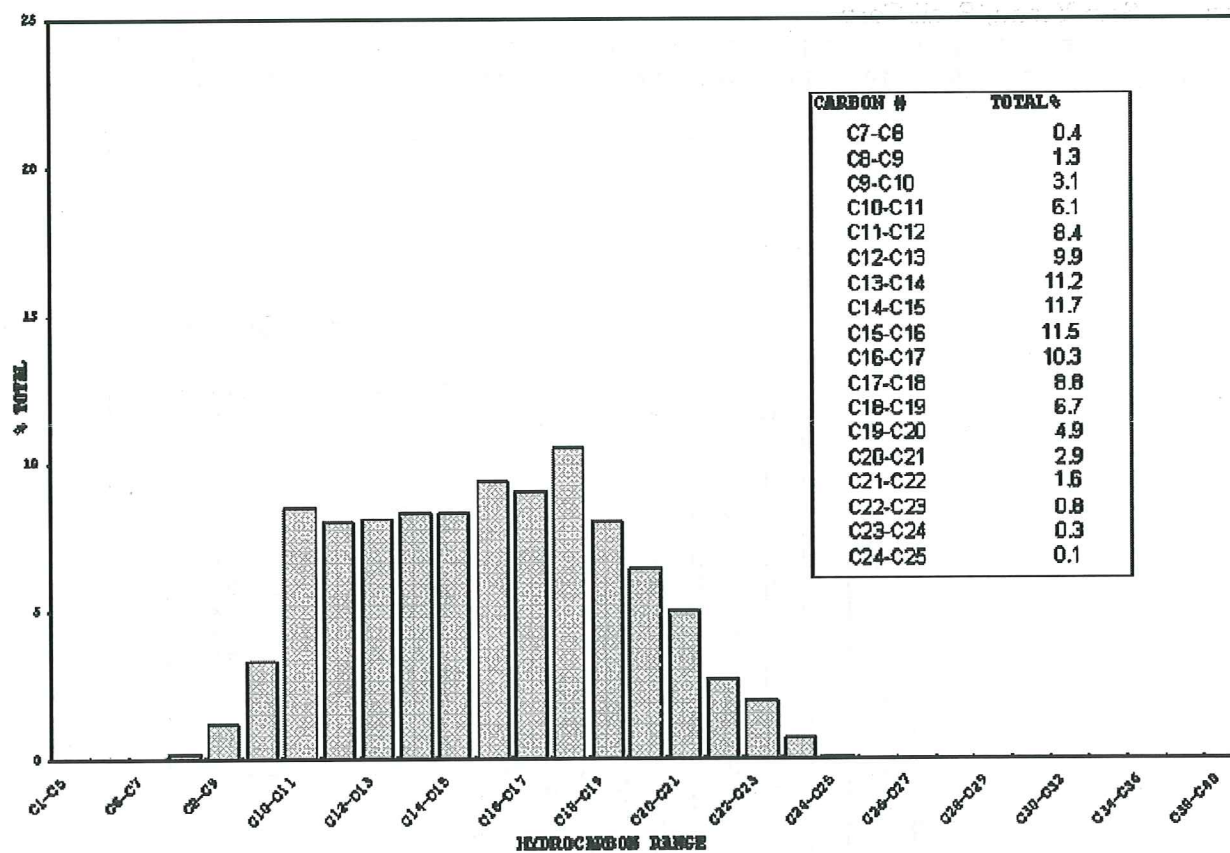
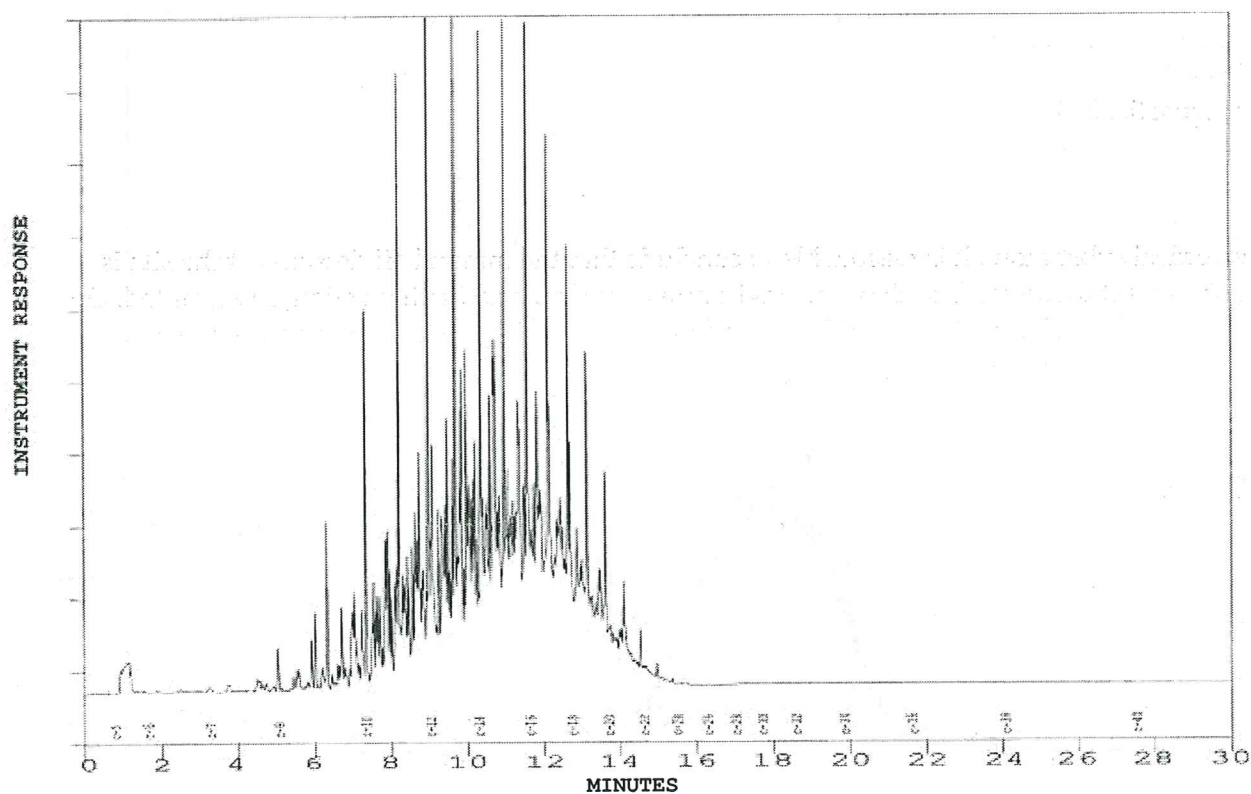
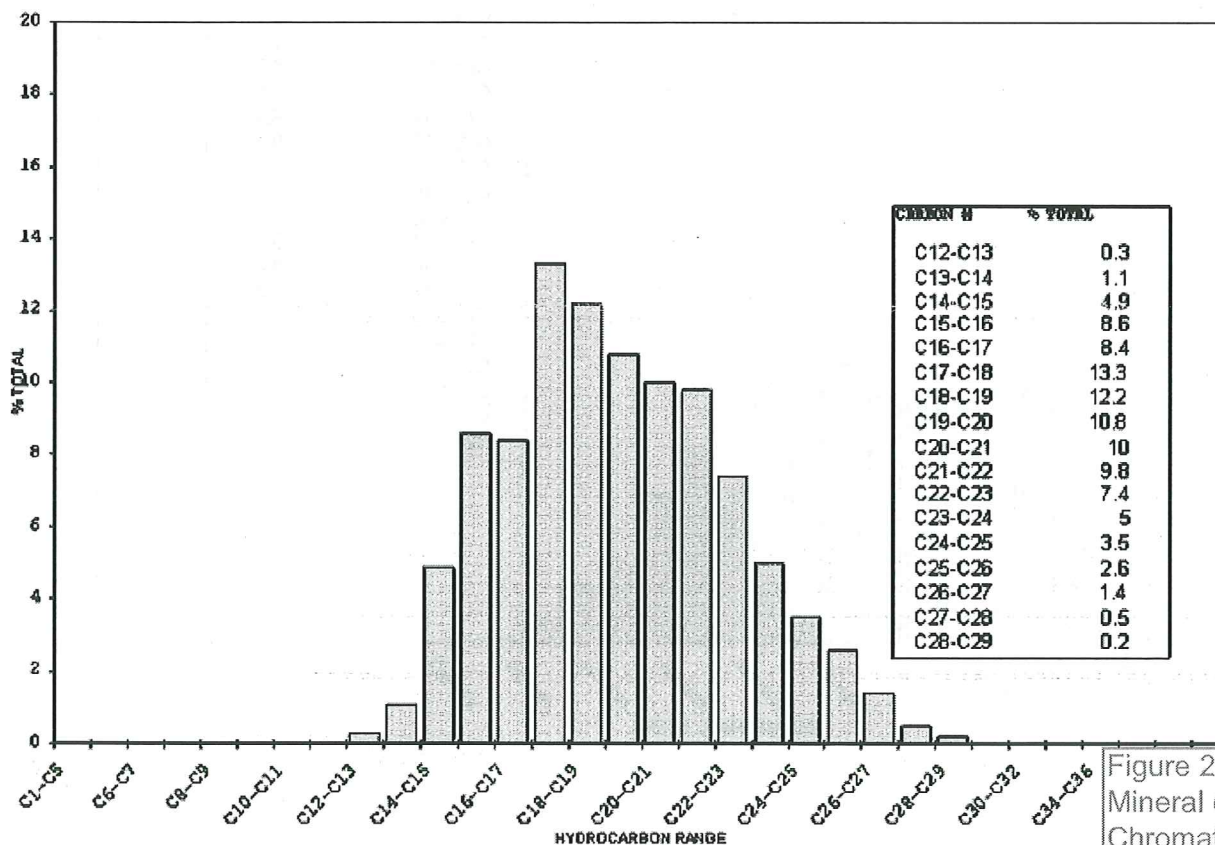
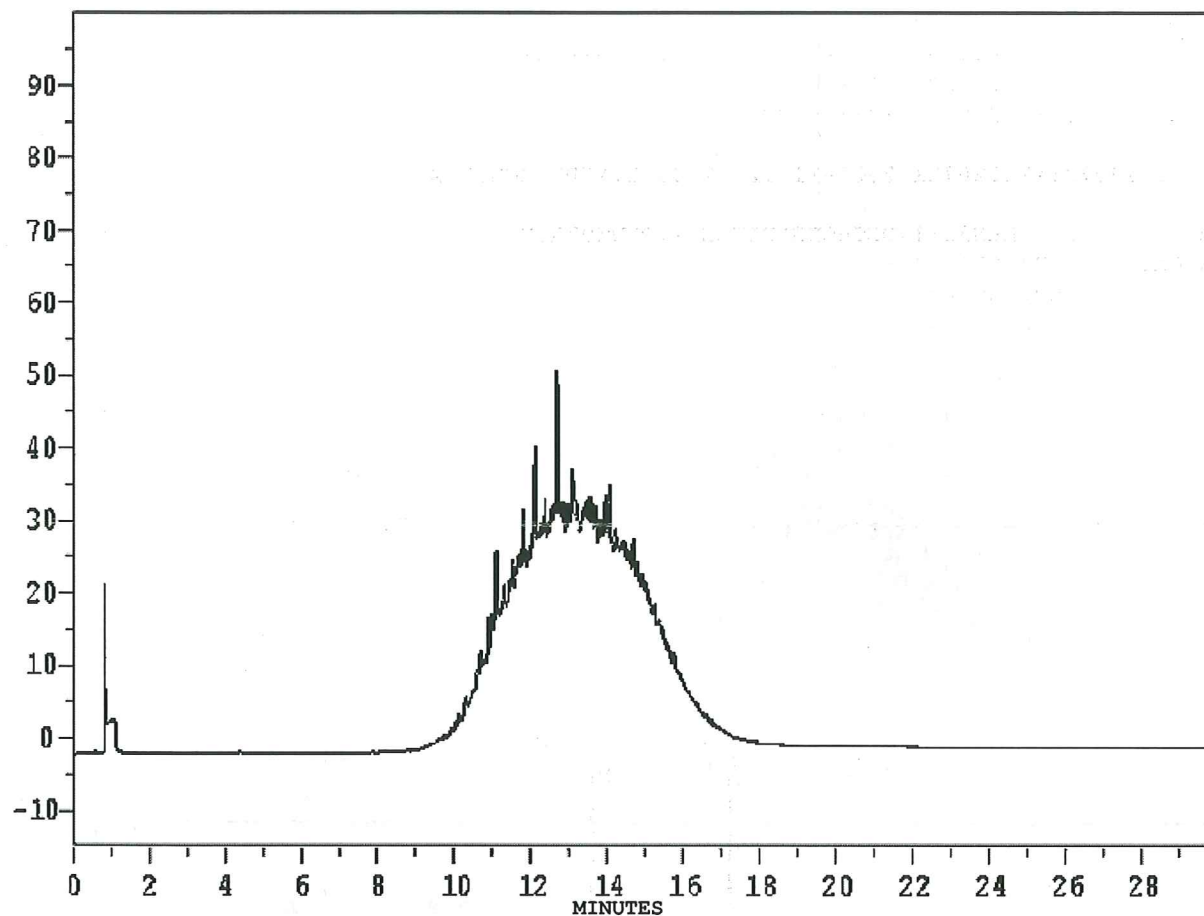


Figure 1
Diesel Chromatogram

TRANSFORMER OIL



Sample Name: G305102

Data File:

C:\CHEM32\1\DATA\111207X1\111207X1 2007-11-12 11-04-17\010F1001.D

Injection Date : 11/12/2007 1:33:00 PM

Injection Time: 11/12/2007 1:33:00 PM

Acq Method:

C:\Chem32\1\DATA\111207X1\111207X1 2007-11-12 11-04-17\TPH_RUN02.M

Analysis Method: C:\CHEM32\1\METHODS\DIESEL\TPHNW02A.M

Last Calibrated On: 7/2/2004

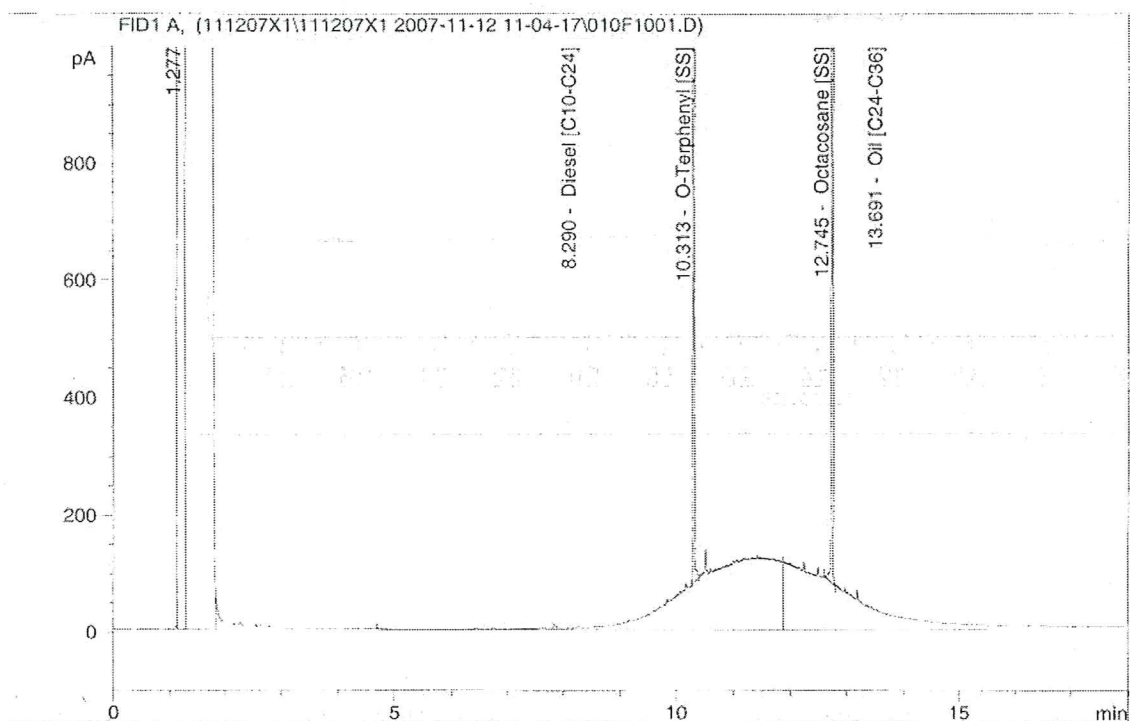
Instrument: Instrument 1

Dilution Factor: 1.000

Operator: ajt

Sample Info:

Units: mg/L



Results Calculated By: ESTD

Exp RT [min]	RT [min]	Peak Area	Int Type	Amount [ppm]	Analyte Name
8.290	8.290	14051	HHA	498.007	Diesel [C10-C24]
10.338	10.313	4912	MM	178.622	O-Terphenyl [SS]
12.766	12.745	4158	MM	182.332	Octacosane [SS]
13.701	13.691	9457	HHA	529.558	Oil [C24-C36]

Figure 3
Sample 101-GW-B2
Chromatogram

11/21/2007

11:47:13 AM

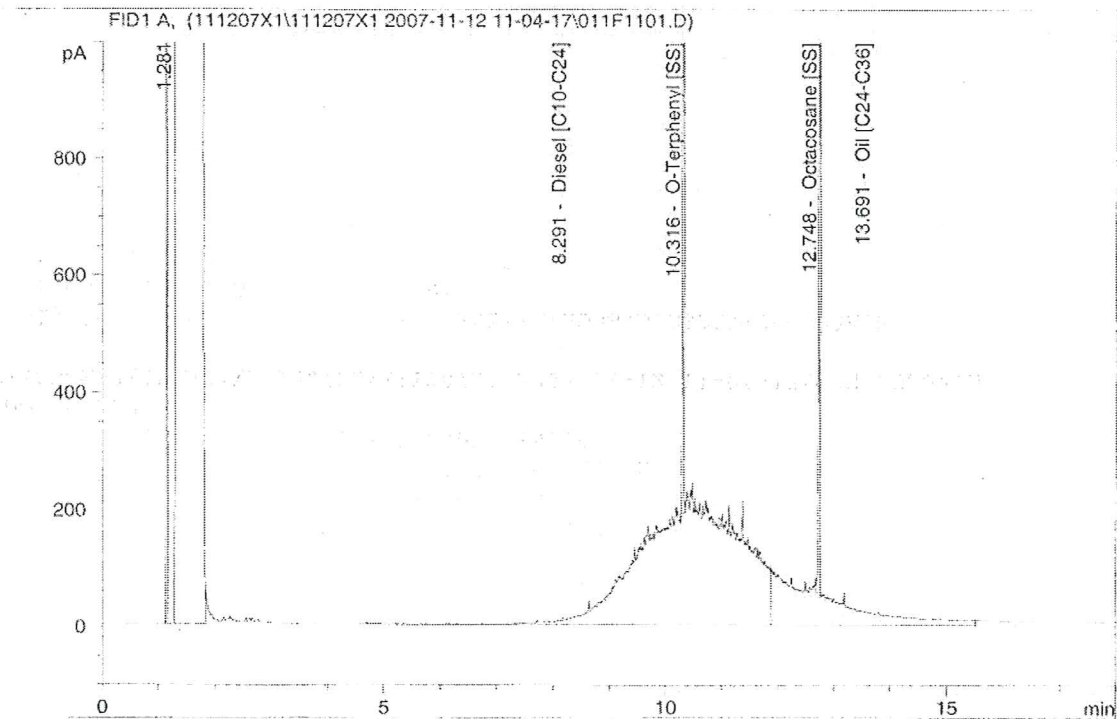
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10/21/07
11/21/07

Sample Name: G305103
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Analysis Method: C:\CHEM32\1\METHODS\DIESEL\TPHNW02A.M
 Last Calibrated On: 7/2/2004
 Instrument: Instrument 1
 Dilution Factor: 1.000
 Operator: ajt
 Sample Info:

Units: mg/L



Results Calculated By: ESTD

Exp RT [min]	RT [min]	Peak Area	Int Type	Amount [ppm]	Analyte Name
8.290	8.291	27132	HHA	961.663	Diesel [C10-C24]
10.338	10.316	5555	MM	202.011	O-Terphenyl [SS]
12.766	12.748	5062	MM	222.010	Octacosane [SS]
13.701	13.691	6559	HHA	367.314	Oil [C24-C36]

Figure 4
 Sample 101-GW-B3
 Chromatogram

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