



DEPARTMENT OF THE NAVY
COMMANDER
NAVY REGION HAWAII
850 TICONDEROGA ST STE 110
JBP HH, HAWAII 96860-5101

JUL 20 2021 *cap*

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July 12, 2021

CERTIFIED NO: 9489 0090 0027 6232 9869 27

Ms. Roxanne Kwan
Hawaii State Department of Health
Solid and Hazardous Waste Branch
Underground Storage Tank Section
2827 Waimano Home Road #100
Pearl City, HI 96782

Dear Ms. Kwan:

**SUBJECT: RED HILL BULK FUEL STORAGE FACILITY
INITIAL ABATEMENT MEASURES AND SITE ASSESSMENT
DOH FACILITY ID NO. 9-102271
DOH RELEASE ID NO. 210012**

As requested in DOH letter U0636RK of June 9, 2021, the Navy is providing information on the initial abatement measures and site assessment related to the May 6, 2021 pipeline breach in the tunnel.

As listed in HAR 11-280.1-62(a), the following abatement measures were performed:

- (1) Continue to remove as much of the regulated substance from the UST system as is necessary to prevent further release to the environment

The portion of the pipeline that ruptured has been completely emptied. The two tanks that were closest to the incident, Tanks 18 and 20, have been shut off from the pipeline by two valves each, for redundancy. A skillet has also been placed farther down the tunnel, physically separating the critical pipeline sections from the overall system. The critical section of pipeline is completely separated from the rest of the UST system.

- (2) Visually inspect the area around the UST or tank system for evidence of any aboveground releases or exposed belowground release and continue to take necessary actions to minimize the spread of contamination and to prevent further migration of the released substance into surrounding soils, air, surface water, and groundwater;

Visual inspections were made by multiple individuals from the Navy; including first responders throughout the Red Hill lower tunnel. Multiple wash downs were conducted to clean the lower tunnel of fuel; product and wash-down was collected in the sump and

pumped to a waste oil tank. The integrity of the tunnel and various containment areas were checked and there is no evidence that fuel was released via these pathways.

- (3) Continue to monitor and mitigate any additional fire and safety hazards posed by vapors of free product that have migrated from the UST excavation zone and entered into subsurface structures (such as sewers or basements);

First responders showed up and monitored LEL and VOC levels upon arrival and did not allow unprotected personnel to enter the tunnel until after it was deemed safe. For the first few days after the incident, following multiple wash downs, LEL and VOC levels were monitored and access was limited until VOC's returned to an acceptable level.

- (4) Remedy hazards (such as dust and vapors and the potential for leachate generation) posed by contaminated soils and debris that are excavated or exposed as a result of release confirmation, site investigation, abatement, or release response action activities;

All standing fuel that was not initially captured by the waste oil sump was washed down. There were in total three wash downs; this remediated all hazards within the tunnel.

- (5) Conduct an assessment of the release by measuring for the presence of a release where contamination is most likely to be present at the UST site, unless the presence and source of the release have been confirmed in accordance with the site assessment required by section 11-280.1-52(b) or the site assessment required for change-in-service or permanent closure in section 11-280.1-72(a). In selecting sample types, sample locations, and measurement methods, the owner and operator must consider the nature of the stored substance, the type of backfill and surrounding soil, depth and flow of groundwater and other factors as appropriate for identifying the presence and source of the release;

Soil Vapor: Soil vapor VOC concentrations were measured in the field using a photo-ionization detector. Measurements were taken daily at the following locations:

- Tanks 13, 14, 15, and 16 from May 10 through June 9
- Tanks 17, 18, and 20 from May 13 through June 9
- Tanks 2 through 12 from May 20 through June 9

Measurements were taken twice a week at Tanks 11 through 18 and 20 from June 14 through July 1.

Soil vapor monitoring points (SVMPs) at Tanks 17, 18, and 20 are believed to have been compromised by clean-up activities, resulting in increases in soil vapor VOC concentrations observed.

A conservative approach to assess the integrity of the associated tank system is to establish action thresholds for VOC concentrations in SVMPs beneath tanks as 50 percent of the calculated vapor concentration from fuel-saturated water. These action thresholds for SVMPs beneath tanks containing F-24 or JP-5 is 280,000 parts per billion by volume (ppbv) and 14,000 ppbv in SVMPs beneath tanks containing marine diesel fuel.

Preliminary data indicates all soil vapor VOC concentrations were below the action levels. A summary of soil vapor VOC concentrations is presented in Enclosure 1.

Soil vapor summa canister samples were collected from select SVMPs from May 10 through May 14 for laboratory analysis using methods TO-15 and TO-3. Chromatograms for Zone 7 Sump, SV13S, SV16S, SV17S, SV18S, SV20S, and SV20M are presented in Enclosure 2.

Free Product Gauging and Groundwater Monitoring Well Headspace: Free product gauging and groundwater monitoring well headspace measurements were taken at groundwater monitoring wells RHMW01, RHMW01R, RHMW02, RHMW03 and RHMW05. Per DOH direction, free product gauging transitioned from using an oil/water interface probe to using a clear bailer with photo documentation. Use of the bailer began at RHMW01R, RHMW02, and RHMW03 on June 2 and at RHMW05 on June 3. A summary of monitoring well headspace and free product gauging measurements are included as Enclosure 3.

Groundwater: Groundwater samples were collected from monitoring wells RHMW01R, RHMW02, and RHMW03 weekly from May 12 to 20, three times a week from May 24 to July 11, and weekly from June 17 to July 1. From June 2, samples were collected from the uppermost portion of the water column using a bailer without prior purging. A comparison sample collected from the mid-screen depth was collected once on June 30 using a bladder pump. Samples were analyzed for parameters that would be indicative of JP-5 including TPH, BTEX, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. A summary of validated sample results received to date is presented in Enclosure 4.

Drinking Water: Drinking water samples were collected weekly from June 3 to July 1. Analytes match those of the groundwater samples for comparative purposes. A summary of validated sample results received to date is presented in Enclosure 5.

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- (6) Investigate to determine the possible presence of free product, and begin free product removal in accordance with section 11-280.1-64;

Fuel was captured in the waste sump located in the tunnel below the separated piping at Tanks 18 and 20. No free product removal was necessary.

- (7) Remove or remediate contaminated soil at the site to the extent necessary to prevent the spread of free product;

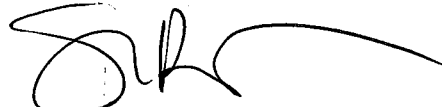
Fuel was captured in the waste sump located in the tunnel below the separated piping at Tanks 18 and 20.

- (8) If any of the remedies in the section include treatment or disposal of contaminated soils, owners or operators must comply with all applicable local, state, and federal requirements.

During the wash downs, fuel was washed into soil vapor monitoring vaults at Tanks 17, 18, and 20. The contaminated soil in these vaults was collected into a drum. The contents of the drum will be sampled, analyzed, and properly disposed.

If there are any questions regarding this matter, or if more information is needed, please contact Ms. Dayna Fujimoto at (808) 471-4805.

Sincerely,



SHERRI R. ENG

Director

Regional Environmental Department

By direction of the

Commander

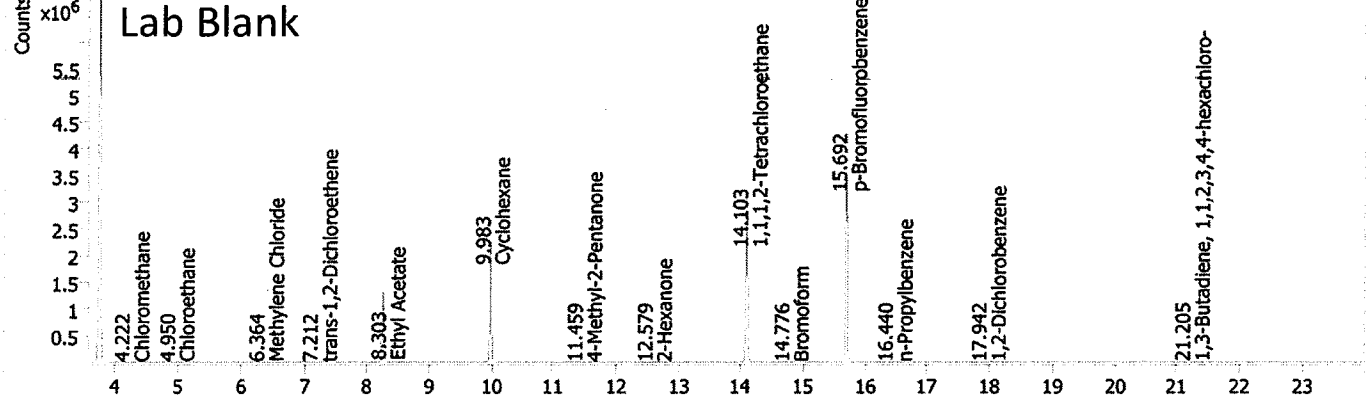
Enclosures:

1. Summary of Soil Vapor VOC Concentrations
2. Chromatograms for Soil Vapor Summa Canister Samples
3. Summary of Free Product Gauging and Monitoring Well Headspace Measurements
4. Summary of Analytical Results for Groundwater Samples
5. Summary of Analytical Results for Drinking Water Samples

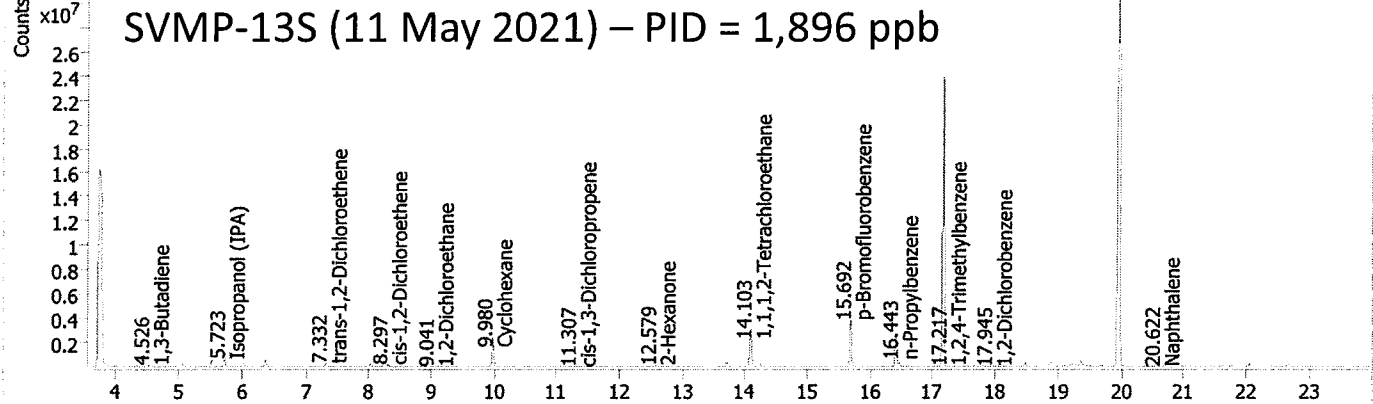
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Copies to: Mr. Steve Linder, U.S. EPA Region 9, Underground Storage Tank Program Office
Mr. John Floyd, NAVSUP FLC Pearl Harbor
Mr. John Reed, DLA Energy Pacific
Ms. Gabriela Carvalho, U.S. EPA Region 9, Red Hill Coordinator

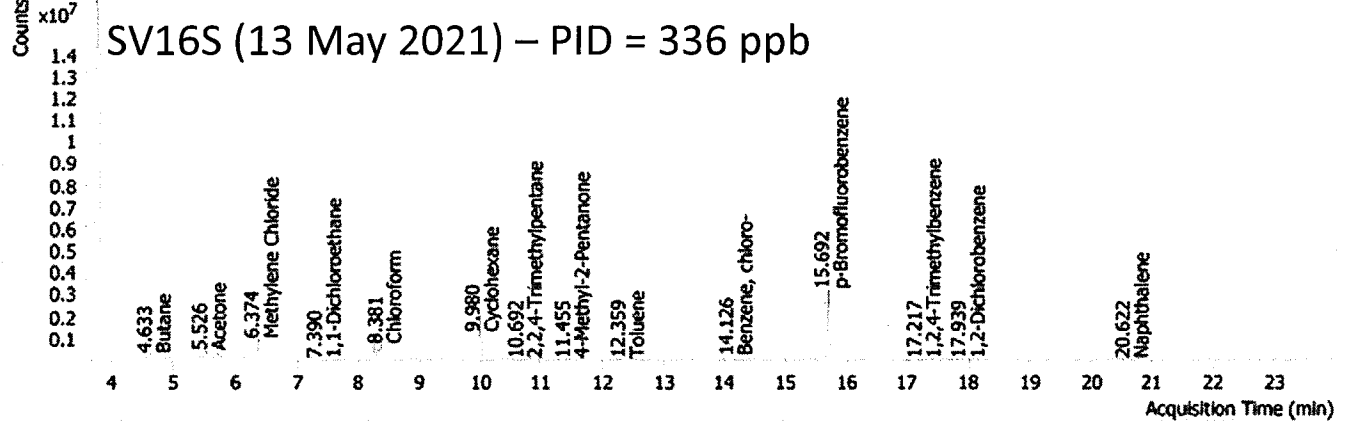
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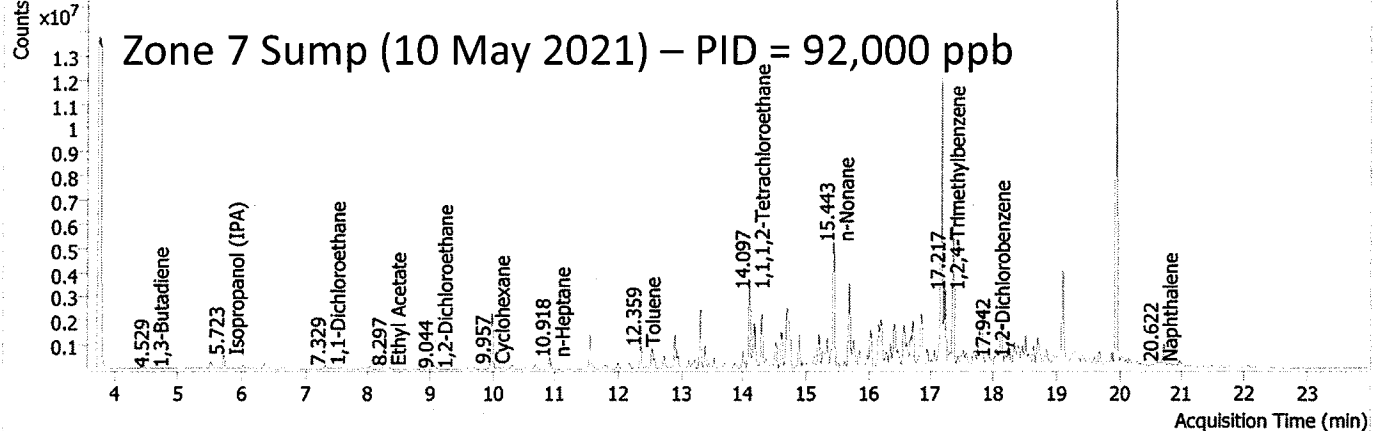
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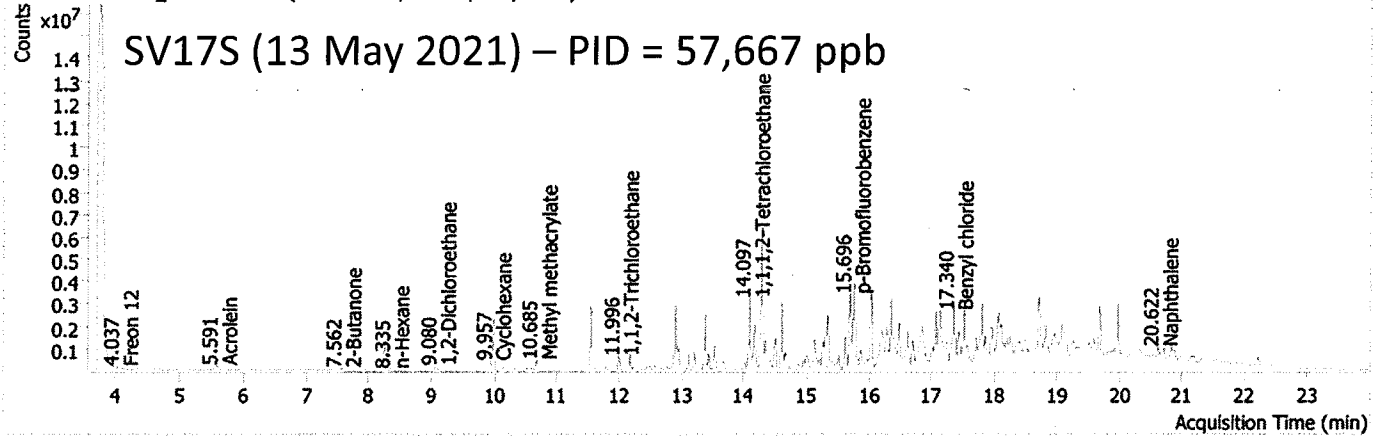
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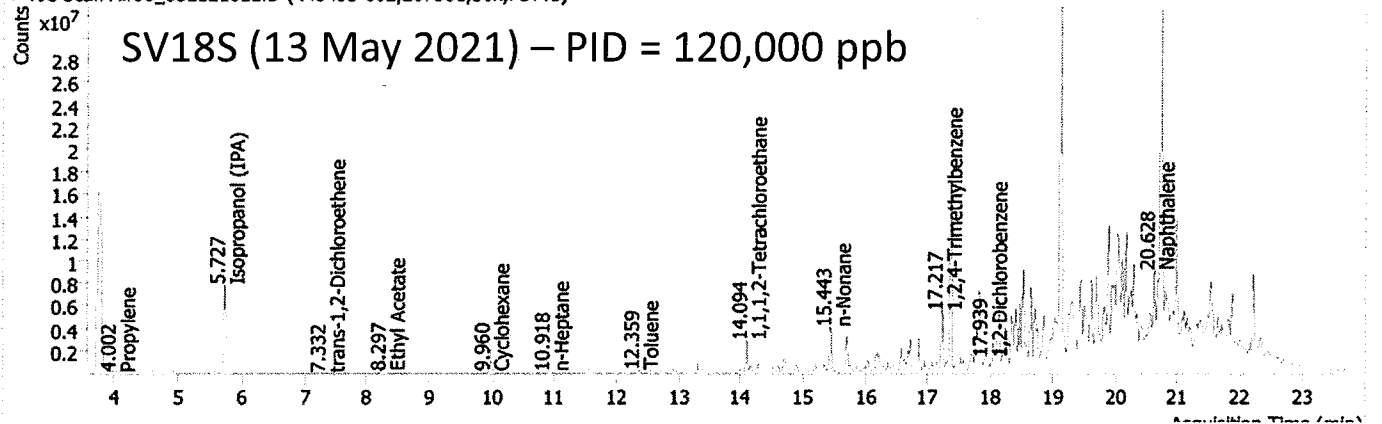
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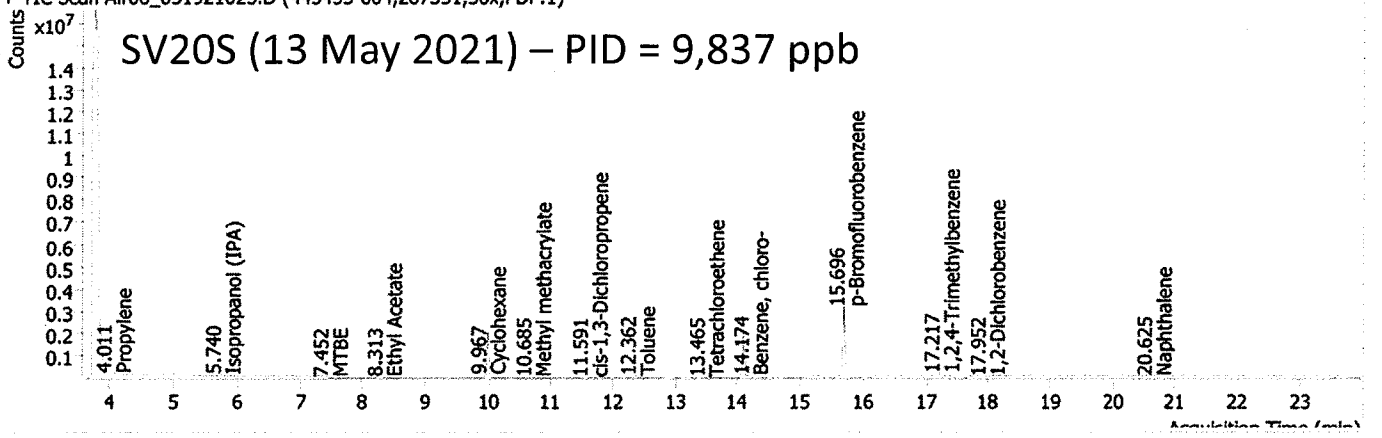
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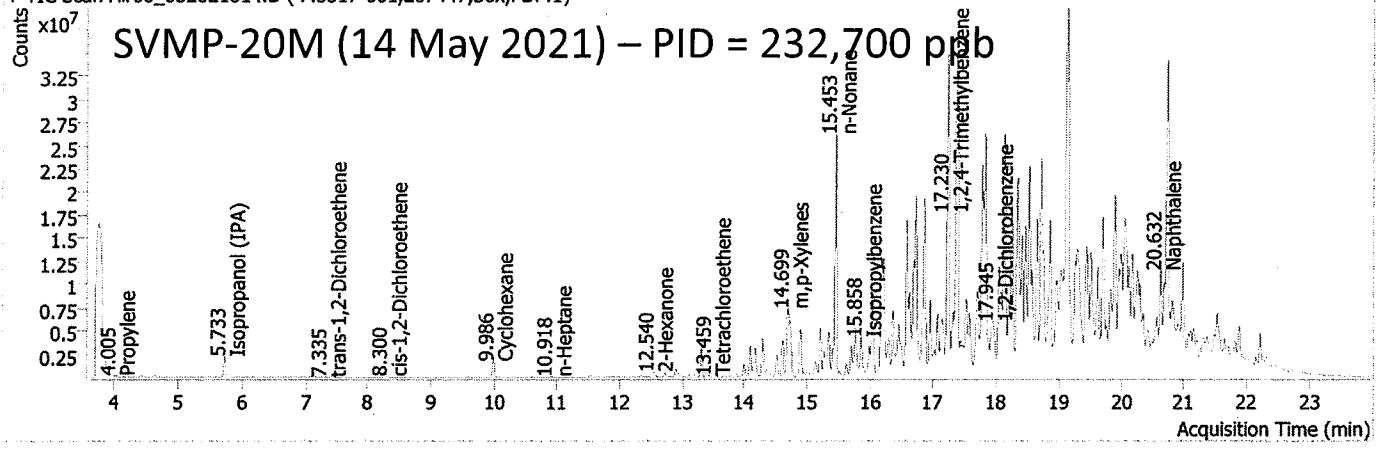
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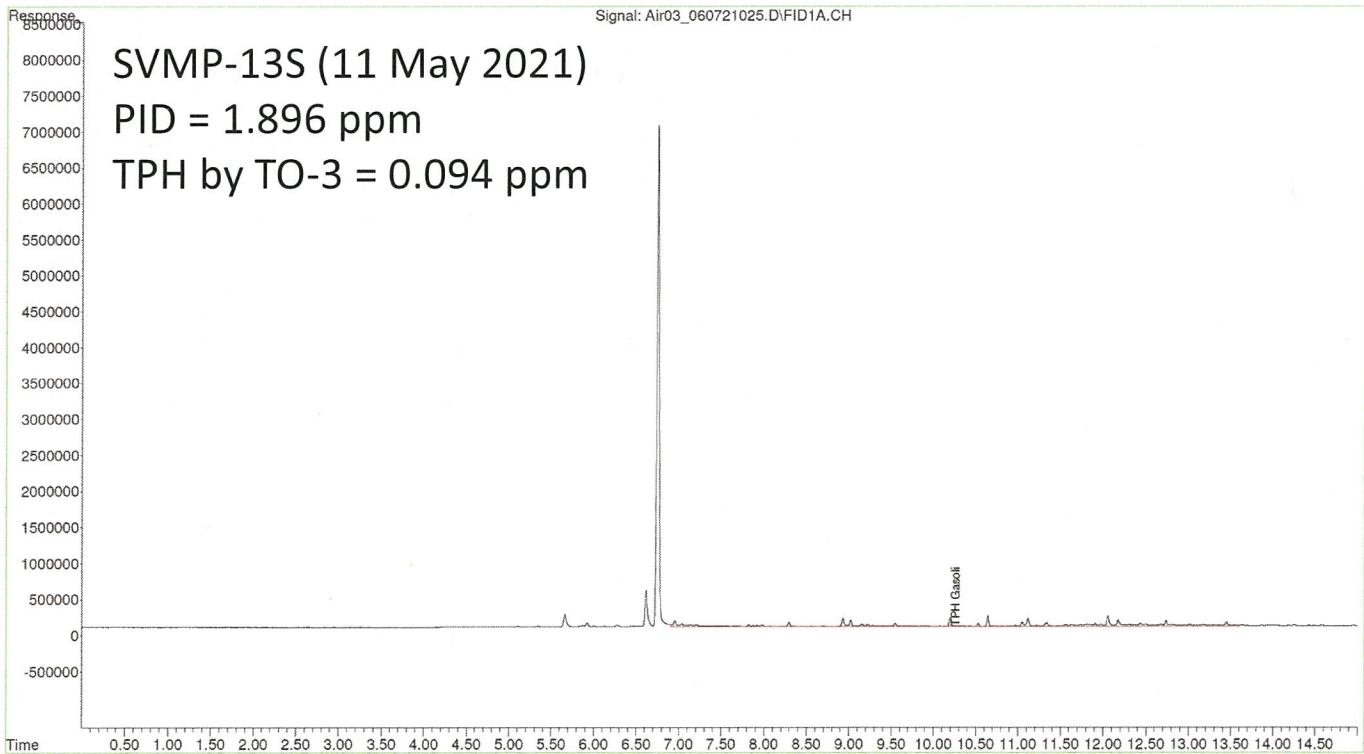
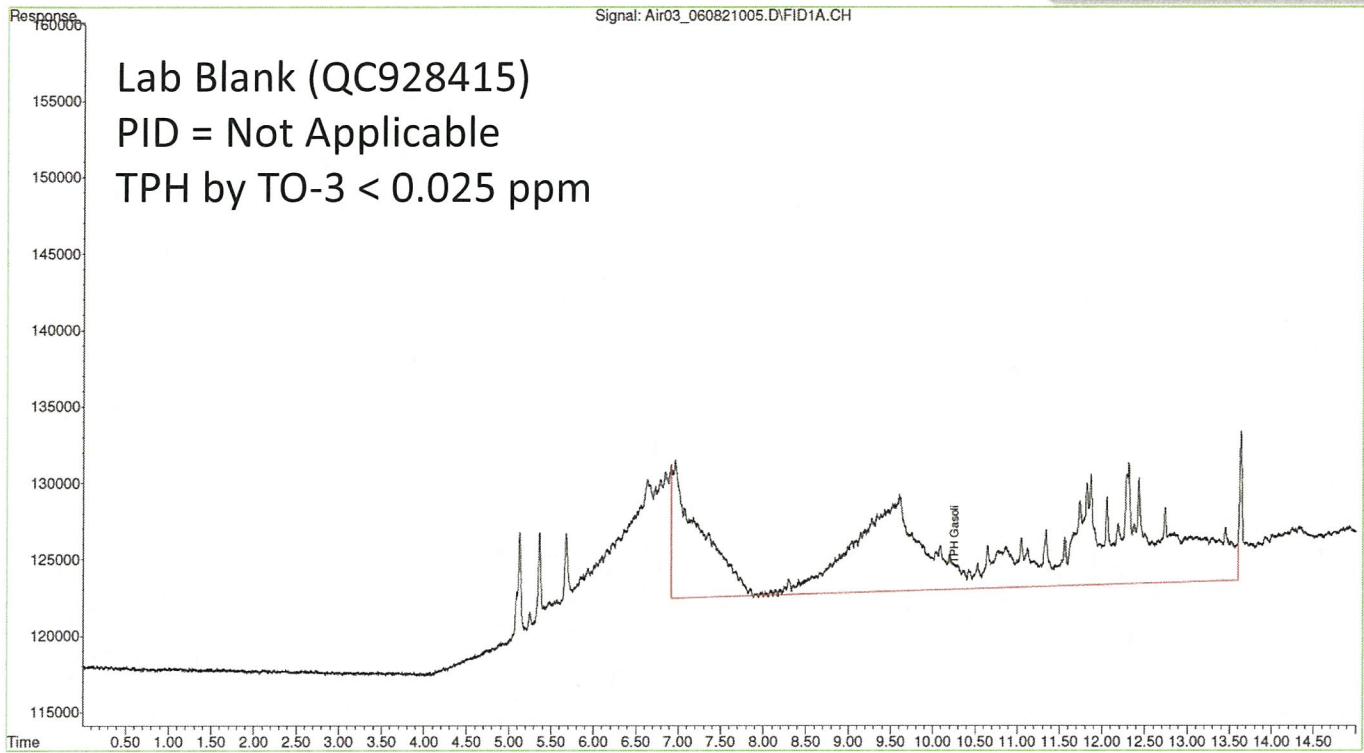


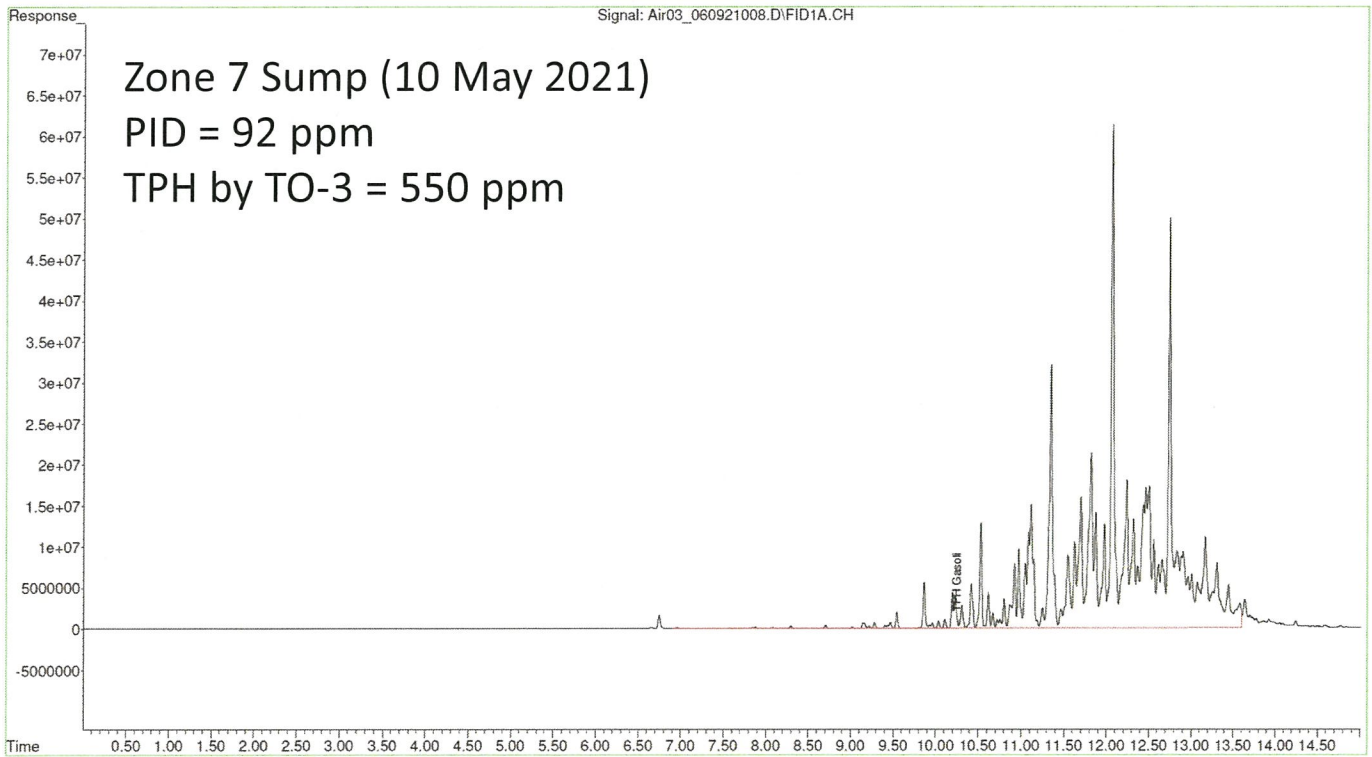
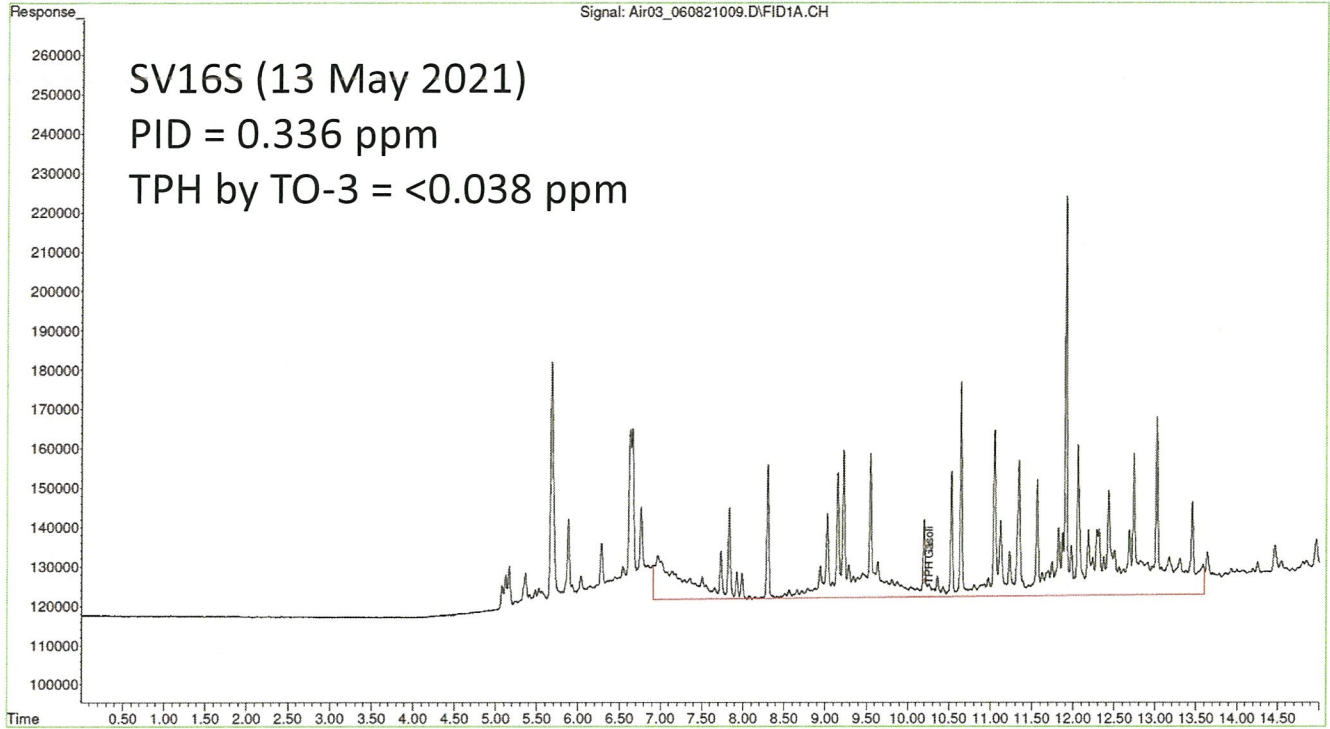
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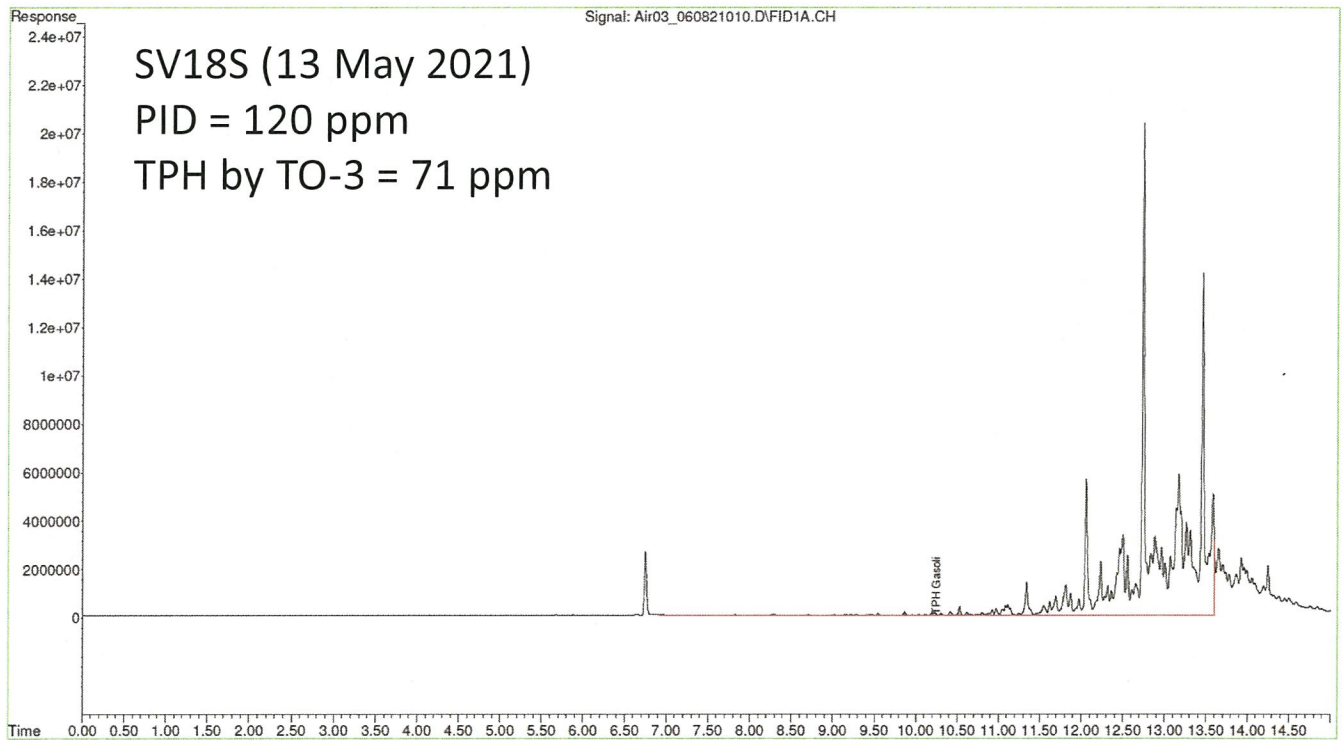
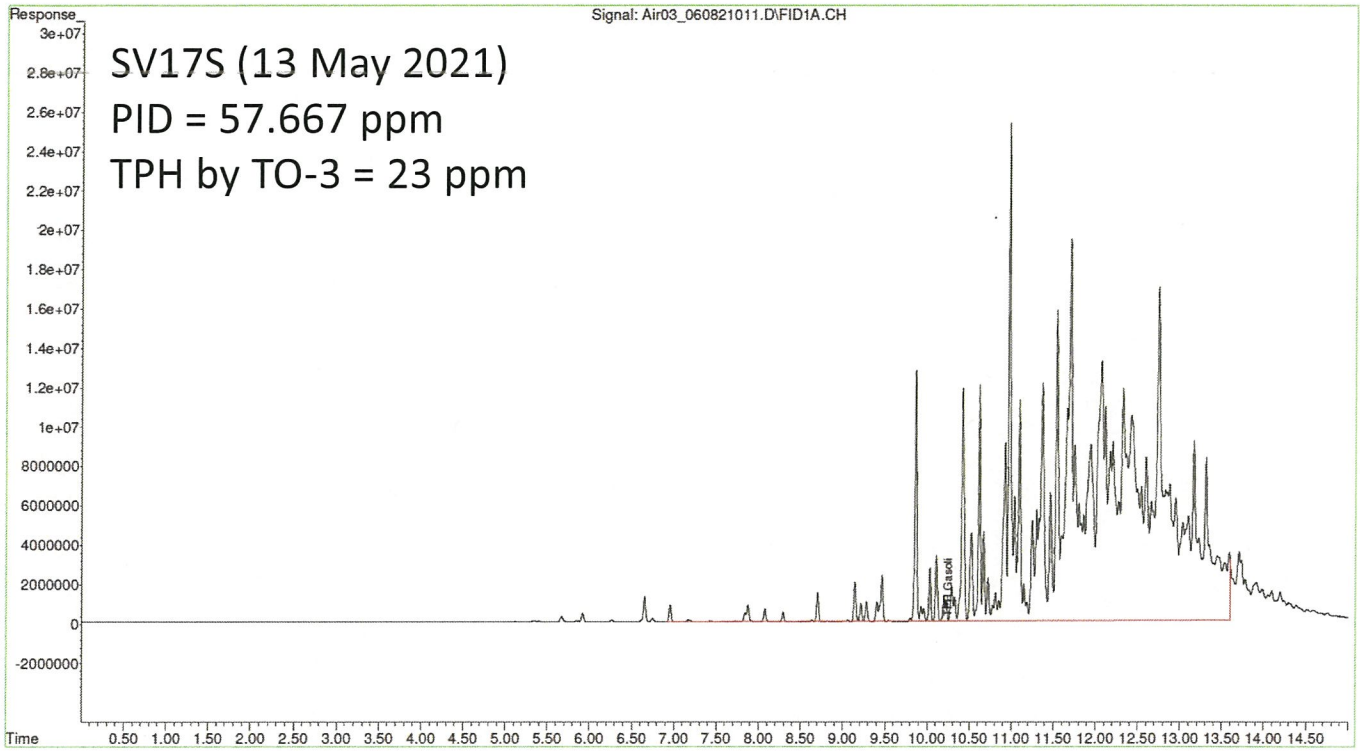


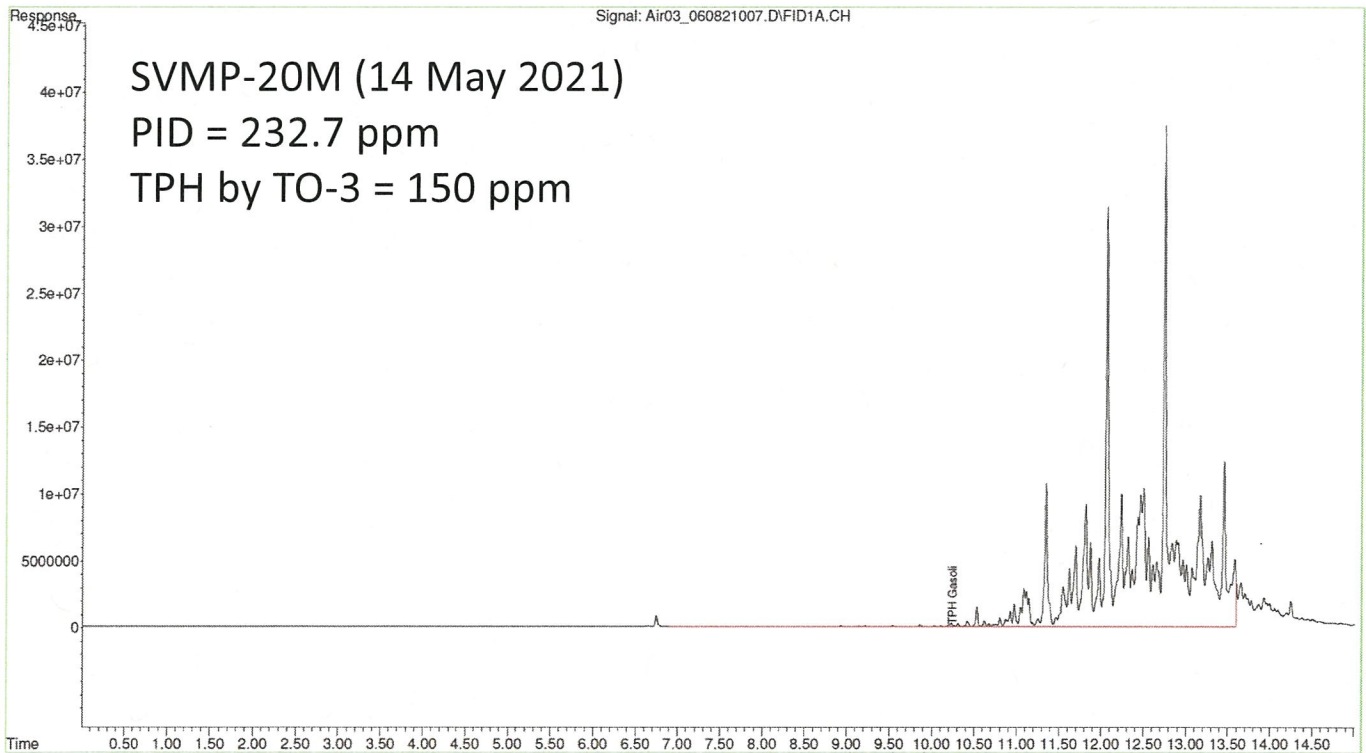
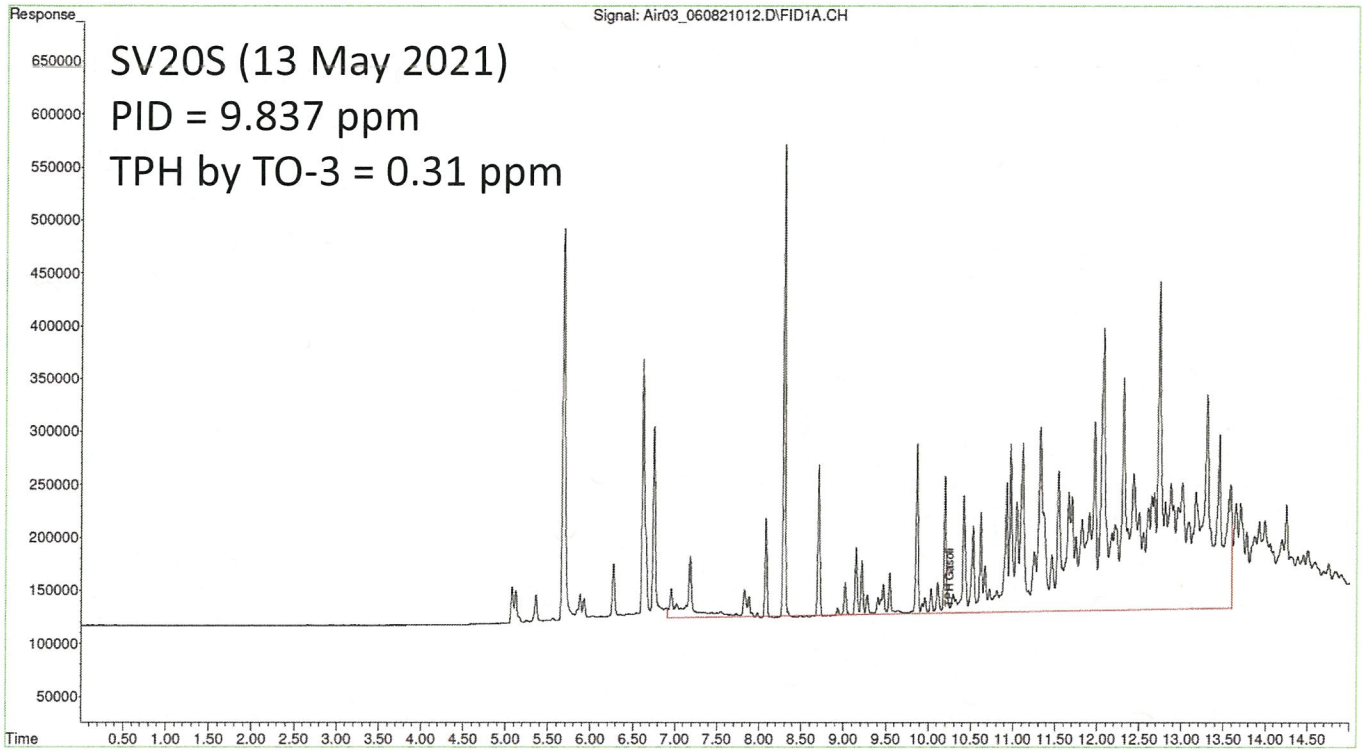
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Red Hill Bulk Fuel Storage Facility
 Notice of Interest 20210507-0852 JP-5 spill that occurred on 6 May 2021
 2.c. Monitoring Wells: RHMW01R, RHMW02, RHMW03 - Groundwater Sampling
 DISCLAIMER: Preliminary Data: Undergoing Validation - Subject to Change.

2021 NOI Emergency Groundwater Sampling Event		SDG #		96179	96188	96179	96179	96188	96179			
		Sample ID		ERH1363	ERH1365	ERH1367	ERH1362	ERH1364	ERH1366			
		Collected		5/12/2021	5/13/2021	5/13/2021	5/12/2021	5/13/2021	5/13/2021			
Final results provided (validation pending)		Sample Type		Primary	Primary	Primary	Trip Blank	Trip Blank	Trip Blank			
Final results provided (validation completed)		Location		RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03			
Analyte	Screening Criteria	SSRBL	RHMW01 2018-2021 Historical Ranges (min/max)	RHMW02 2018-2021 Historical Ranges (min/max)	RHMW03 2018-2021 Historical Ranges (min/max)	Units	Result Q	Result Q	Result Q	Results Q	Result Q	Result Q
Benzene	5	750	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
Ethylbenzene	30	--	<0.50	<0.50	<0.50	ug/L	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Toluene	40	--	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
Xylenes (Total)	20	--	<0.30	<0.30	0.4	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
TPH-g	300	--	<18.0	<18.0	95.0	ug/L	<18.0 U	100.0	<18.0 U	<18.0 U	<18.0 U	<18.0 U
TPH-d	400	4500	<300.0	350.0	1500.0	ug/L	180.0 J	1600.0 J	200.0 J	--	--	--
TPH-d w/ Silica Gel Cleanup ¹	400	--	<300.0	67.0	260.0	ug/L	<300.0 U	360.0 J	<300.0 U	--	--	--
TPH-o	500	--	<40.0	<300.0	330.0	ug/L	<300.0 U	240.0 J	<300.0 U	--	--	--
TPH-o w/ Silica Gel Cleanup ¹	500	--	<40.0	<300.0	<300.0	ug/L	<300.0 U	<300.0 U	<300.0 U	--	--	--
1-Methylnaphthalene	10	--	<0.025	<0.10	8.7	ug/L	<0.10 U	33	<0.10 U	--	--	--
2-Methylnaphthalene	10	--	<0.025	<0.10	7.2	ug/L	<0.10 U	24	<0.10 U	--	--	--
Naphthalene	17	--	<0.10	0.19	32.0	ug/L	<0.10 U	59	<0.10 U	--	--	--

Notes:

¹ - Silica Gel Cleanup is an EPA approved methodology (SW-846 Method 3630C) that separates fuel related compounds from non-fuel related or naturally-occurring compounds from the sample. When these non-fuel related compounds are reported in the sample results, the reported value is skewed high.

² - After the application of Silica Gel Cleanup, TPH-o levels are below the screening criteria. TPH-o detects heavy oils and greases. JP-5 is not a heavy oil or grease.

J - estimated value

B - blank method contamination

U - nondetect value

ID - identification

TPH-g - total petroleum hydrocarbons gasoline

TPH-d - total petroleum hydrocarbons diesel (JP-5)

TPH-o - total petroleum hydrocarbons oil/grease

DO - dissolved oxygen

ORP - oxidation-reduction potential

"-" - not applicable

Red Hill Bulk Fuel Storage Facility
 Notice of Interest 20210507-0852 JP-5 spill that occurred on 6 May 2021
 2.c. Monitoring Wells: RHMW01R, RHMW02, RHMW03 - Groundwater Sampling
DISCLAIMER: Preliminary Data: Undergoing Validation - Subject to Change.

2021 NOI Emergency Groundwater Sampling Event			SDG #		96269	96282	96282	96269	96282	96282					
			Sample ID		ERH1370	ERH1372	ERH1374	ERH1369	ERH1371	ERH1373					
			Collected		5/19/2021	5/20/2021	5/20/2021	5/19/2021	5/20/2021	5/20/2021					
			Sample Type		Primary	Primary	Primary	Trip Blank	Trip Blank	Trip Blank					
			Location		RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03					
Final results provided (validation pending)															
Final results provided (validation completed)															
Analyte	Screening Criteria	SSRBL	RHMW01 2018-2021 Historical Ranges (min/max)		RHMW02 2018-2021 Historical Ranges (min/max)		RHMW03 2018-2021 Historical Ranges (min/max)		Units	Result Q	Result Q	Result Q	Results Q	Result Q	Result Q
Benzene	5	750	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
Ethylbenzene	30	–	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	ug/L	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Toluene	40	–	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
Xylenes (Total)	20	–	<0.30	<0.30	<0.30	0.4	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
TPH-g	300	–	<18.0	<18.0	<18.0	95.0	<18.0	<18.0	ug/L	<18.0 U	37.0	<18.0 U	<18.0 U	<18.0 U	<18.0 U
TPH-d	400	4500	<300.0	350.0	1500.0	2900.0	150.0	380.0	ug/L	210.0 J	1700.0	170.0 J	–	–	–
TPH-d w/ Silica Gel Cleanup ¹	400	–	<300.0	67.0	260.0	690.0	<25.0	<300.0	ug/L	<300.0 U	340.0	<300.0 U	–	–	–
TPH-o	500	–	<40.0	<300.0	<300.0	330.0	<300.0	310.0	ug/L	<300.0 U	250.0 J	210.0 J	–	–	–
TPH-o w/ Silica Gel Cleanup ¹	500	–	<40.0	<300.0	<40.0	<300.0	<40.0	<300.0	ug/L	<300.0 U	<300.0 U	<300.0 U	–	–	–
1-Methylnaphthalene	10	–	<0.025	<0.10	8.7	52.0	<0.025	<0.10	ug/L	<0.10 U	21	<0.10 U	–	–	–
2-Methylnaphthalene	10	–	<0.025	<0.10	7.2	51.0	<0.025	<0.10	ug/L	<0.10 U	9.5	<0.10 U	–	–	–
Naphthalene	17	–	<0.10	0.19	32.0	98.0	<0.025	<0.10	ug/L	<0.10 U	52	<0.10 U	–	–	–

Notes:

¹ - Silica Gel Cleanup is an EPA approved methodology (SW-846 Method 3630C) that separates fuel related compounds from non-fuel related or naturally-occurring compounds from the sample. When these non-fuel related compounds are reported in the sample results, the reported value is skewed high.

² - After the application of Silica Gel Cleanup, TPH-o levels are below the screening criteria. TPH-o detects heavy oils and greases. JP-5 is not a heavy oil or grease.

J - estimated value

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ID - identification

TPH-g - total petroleum hydrocarbons gasoline

TPH-d - total petroleum hydrocarbons diesel (JP-5)

TPH-o - total petroleum hydrocarbons oil/grease

DO - dissolved oxygen

ORP - oxidation-reduction potential

"–" - not applicable

Red Hill Bulk Fuel Storage Facility
 Notice of Interest 20210507-0852 JP-5 spill that occurred on 6 May 2021
 2.c. Monitoring Wells: RHMW01R, RHMW02, RHMW03 - Groundwater Sampling
 DISCLAIMER: Preliminary Data - Undergoing Validation - Subject to Change.

2021 NOI Emergency Groundwater Sampling Event		SDG #	96320	96320	96343	96320	96320	96343	96363	96363	96363	96363	96363	96363	96363	96410	96410	96410	96410	96410	96410		
		Sample ID	ERH1376	ERH1378	ERH1380	ERH1375	ERH1377	ERH1379	ERH1382	ERH1384	ERH1386	ERH1381	ERH1383	ERH1385	ERH1388	ERH1390	ERH1392	ERH1387	ERH1389	ERH1391			
		Collected	5/24/2021	5/24/2021	5/25/2021	5/24/2021	5/24/2021	5/25/2021	5/26/2021	5/26/2021	5/26/2021	5/26/2021	5/26/2021	5/26/2021	5/28/2021	5/28/2021	5/28/2021	5/28/2021	5/28/2021	5/28/2021	5/28/2021		
		Sample Type	Primary	Primary	Primary	Trip Blank	Trip Blank	Trip Blank	Primary	Primary	Primary	Trip Blank	Trip Blank	Trip Blank	Primary	Primary	Primary	Trip Blank	Trip Blank	Trip Blank			
		Location	RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03			
Analyte	Screening Criteria	SSRBL	RHMW01 2018-2021 Historical Ranges (min/max)	RHMW02 2018-2021 Historical Ranges (min/max)	RHMW03 2018-2021 Historical Ranges (min/max)	Units	Result Q	Result Q	Result Q	Results Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q
Benzene	5	750	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
Ethylbenzene	30	--	<0.50	<0.50	<0.50	ug/L	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Toluene	40	--	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
Xylenes (Total)	20	--	<0.30	<0.30	0.4	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
TPH-g	300	--	<18.0	<18.0	95.0	ug/L	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	44.0	80.0	<18.0 U
TPH-d	400	4500	<300.0	350.0	1500.0	ug/L	310.0 J	1500.0	160.0 J	--	--	--	210.0 J	1600	<300.0 U	--	--	--	180.0 J	1400.0	180.0 J	--	--
TPH-d w/ Silica Gel Cleanup ¹	400	--	<300.0	67.0	260.0	ug/L	pending	pending	pending	--	--	--	<300.0 U	380.0	--	--	--	--	<300.0 U	210.0 J	<300.0 U	--	--
TPH-o	500	--	<40.0	<300.0	330.0	ug/L	<300.0 U	170.0 J	<300.0 U	--	--	--	<300.0 U	<300.0 U	<300.0 U	--	--	--	<300.0 U	190.0 J	180.0 J	--	--
TPH-o w/ Silica Gel Cleanup ¹	500	--	<40.0	<300.0	<40.0	ug/L	pending	pending	pending	--	--	--	<300.0 U	<300.0 U	--	--	--	--	<300.0 U	<300.0 U	<300.0 U	--	--
1-Methylnaphthalene	10	--	<0.025	<0.10	8.7	ug/L	<0.10 U	22.0	<0.10 U	--	--	--	<0.10 U	19	<0.10 U	--	--	--	<0.10 U	17	<0.10 U	--	--
2-Methylnaphthalene	10	--	<0.025	<0.10	7.2	ug/L	<0.10 U	11.0 J	<0.10 U	--	--	--	<0.10 U	11	<0.10 U	--	--	--	<0.10 U	7.0	<0.10 U	--	--
Naphthalene	17	--	<0.10	0.19	32.0	ug/L	<0.10 U	47.0	<0.10 U	--	--	--	<0.10 U	39	<0.10 U	--	--	--	<0.10 U	35	<0.10 U	--	--

Notes:
¹ - Silica Gel Cleanup is an EPA approved methodology (SW-846 Method 3630C) that separates fuel related compounds from non-fuel related or naturally-occurring compounds from the sample. When these non-fuel related compounds are reported in the sample results, the reported value is skewed high.
² - After the application of Silica Gel Cleanup, TPH-o levels are below the screening criteria. TPH-o detects heavy oils and greases. JP-5 is not a heavy oil or grease.
 J - estimated value
 B - blank method contamination
 U - nondetect value
 ID - identification
 TPH-g - total petroleum hydrocarbons gasoline
 TPH-d - total petroleum hydrocarbons diesel (JP-5)
 TPH-o - total petroleum hydrocarbons oil/grease
 DO - dissolved oxygen
 ORP - oxidation-reduction potential
 "--" - not applicable

Red Hill Bulk Fuel Storage Facility
 Notice of Interest 20210507-0852 JP-5 spill that occurred on 6 May 2021
 2.c. Monitoring Wells: RHMW01R, RHMW02, RHMW03 - Groundwater Sampling
 DISCLAIMER: Preliminary Data: Undergoing Validation - Subject to Change.

2021 NOI Emergency Groundwater Sampling Event		SDG #	96410	96410	96410	96410	96410	96410	96410	96410	96438	96438	96438	96438	96438	96438	96463	96463	96463	96463	96463	96463
		Sample ID	ERH1394	ERH1396	ERH1398	ERH1393	ERH1395	ERH1397	ERH1400	ERH1402	ERH1404	ERH1399	ERH1401	ERH1403	ERH1406	ERH1408	ERH1410	ERH1405	ERH1407	ERH1409		
		Collected	5/31/2021	5/31/2021	5/31/2021	5/31/2021	5/31/2021	5/31/2021	6/2/2021	6/2/2021	6/2/2021	6/2/2021	6/2/2021	6/2/2021	6/4/2021	6/4/2021	6/4/2021	6/4/2021	6/4/2021	6/4/2021		
		Sample Type	Primary	Primary	Primary	Trip Blank	Trip Blank	Trip Blank	Primary	Primary	Primary	Trip Blank	Trip Blank	Trip Blank	Primary	Primary	Primary	Trip Blank	Trip Blank	Trip Blank		
		Location	RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03	RHMW01R	RHMW02	RHMW03		
Analyte	Screening Criteria	SSRBL	RHMW01 2018-2021 Historical Ranges (min/max)	RHMW02 2018-2021 Historical Ranges (min/max)	RHMW03 2018-2021 Historical Ranges (min/max)	Units	Result Q	Result Q	Result Q	Results Q	Result Q	Result Q	Result Q	Result Q	Result Q	Results Q	Result Q	Result Q	Result Q	Results Q	Result Q	Result Q
Benzene	5	750	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
Ethylbenzene	30	--	<0.50	<0.50	<0.50	ug/L	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Toluene	40	--	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
Xylenes (Total)	20	--	<0.30	<0.30	0.4	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U
TPH-g	300	--	<18.0	<18.0	95.0	ug/L	<18.0 U	81.0	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	38.0	<18.0 U	<18.0 U	<18.0 U	<18.0 U	27.0	<18.0 U	<18.0 U	<18.0 U
TPH-d	400	4500	<300.0	350.0	1500.0	ug/L	200.0 J	1300.0	180.0 J	--	--	270.0 J	2000.0	260.0 J	--	--	270.0 J	1500.0	330.0	--	--	--
TPH-d w/ Silica Gel Cleanup ¹	400	--	<300.0	67.0	260.0	ug/L	<300.0 U	330.0	<300.0 U	--	--	<300.0 U	<300.0 U	<300.0 U	--	--	<300.0 U	390.0	<300.0 U	--	--	--
TPH-o	500	--	<40.0	<300.0	330.0	ug/L	<300.0 U	180.0 J	180.0 J	--	--	160.0 J	300.0 J	330.0	--	--	200.0 J	370.0	580.0 ²	--	--	--
TPH-o w/ Silica Gel Cleanup ¹	500	--	<40.0	<300.0	<40.0	ug/L	<300.0 U	<300.0 U	<300.0 U	--	--	240.0 J	<300.0 U	<300.0 U	--	--	<300.0 U	<300.0 U	<300.0 U	--	--	--
1-Methylnaphthalene	10	--	<0.025	<0.10	8.7	ug/L	<0.10 U	14	<0.10 U	--	--	<0.10 U	20	<0.10 U	--	--	<0.10 U	12	<0.10 UJ	--	--	--
2-Methylnaphthalene	10	--	<0.025	<0.10	7.2	ug/L	<0.10 U	7.0	<0.10 U	--	--	<0.10 U	12	<0.10 U	--	--	<0.10 U	2.8	<0.10 UJ	--	--	--
Naphthalene	17	--	<0.10	0.19	32.0	ug/L	<0.10 U	29	<0.10 U	--	--	<0.10 U	42	<0.10 U	--	--	<0.10 U	26	<0.10 UJ	--	--	--

Notes:
¹ - Silica Gel Cleanup is an EPA approved methodology (SW-846 Method 3630C) that separates fuel related compounds from non-fuel related or naturally-occurring compounds from the sample. When these non-fuel related compounds are reported in the sample results, the reported value is skewed high.
² - After the application of Silica Gel Cleanup, TPH-o levels are below the screening criteria. TPH-o detects heavy oils and greases. JP-5 is not a heavy oil or grease.
 J - estimated value
 B - blank method contamination
 U - nondetect value
 ID - identification
 TPH-g - total petroleum hydrocarbons gasoline
 TPH-d - total petroleum hydrocarbons diesel (JP-5)
 TPH-o - total petroleum hydrocarbons oil/grease
 DO - dissolved oxygen
 ORP - oxidation-reduction potential
 "--" - not applicable

Red Hill Bulk Fuel Storage Facility
 Notice of Interest 20210507-0852 JP-5 spill that occurred on 6 May 2021
 2.c. Monitoring Wells: RHMW01R, RHMW02, RHMW03 - Groundwater Sampling
 DISCLAIMER: Preliminary Data: Undergoing Validation - Subject to Change.

2021 NOI Emergency Groundwater Sampling Event		SDG #																																					
		96472		96472		96472		96472		96472		96472		96524		96524		96524		96524		96548		96548		96548		96548											
		Sample ID		ERH1412		ERH1414		ERH1416		ERH1411		ERH1413		ERH1415		ERH1418		ERH1420		ERH1422		ER1417		ERH1419		ERH1421		ERH1424		ERH1428		ERH1426		ERH1423		ERH1427		ERH1425	
		Collected		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/9/2021		6/9/2021		6/9/2021		6/9/2021		6/9/2021		6/11/2021		6/11/2021		6/11/2021		6/11/2021		6/11/2021		6/11/2021			
Final results provided (validation pending)		Sample Type		Primary		Primary		Primary		Trip Blank		Trip Blank		Trip Blank		Primary		Primary		Primary		Trip Blank		Trip Blank		Trip Blank		Primary		Primary		Primary		Trip Blank		Trip Blank		Trip Blank	
Final results provided (validation completed)		Location		RHMW01R		RHMW02		RHMW03		RHMW01R		RHMW02		RHMW03		RHMW01R		RHMW02		RHMW03		RHMW01R		RHMW02		RHMW03		RHMW01R		RHMW02		RHMW03		RHMW01R		RHMW02		RHMW03	
Analyte	Screening Criteria	SSRBL	RHMW01 2018-2021 Historical Ranges (min/max)	RHMW02 2018-2021 Historical Ranges (min/max)	RHMW03 2018-2021 Historical Ranges (min/max)	Units	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q		
Benzene	5	750	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U			
Ethylbenzene	30	-	<0.50	<0.50	<0.50	ug/L	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U		
Toluene	40	-	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U		
Xylenes (Total)	20	-	<0.30	<0.30	<0.30	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U	<0.30 U		
TPH-g	300	-	<18.0	<18.0	<18.0	ug/L	<18.0 U	33.0	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	60.0	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U	<18.0 U		
TPH-d	400	4500	<300.0	350.0	1500.0	ug/L	220.0 J	1900.0	430.0	-	-	-	230.0 J	1900.0	370.0	-	-	-	210.0 J	2100.0	260.0 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
TPH-d w/ Silica Gel Cleanup ¹	400	-	<300.0	67.0	260.0	ug/L	<300.0 U	400.0	<300.0 U	-	-	-	<300.0 U	<300.0 U	<300.0 U	-	-	-	<300.0 U	250.0 J	<300.0 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
TPH-o	500	-	<40.0	<300.0	<300.0	ug/L	320.0	320.0	840.0 ²	-	-	-	190.0 J	240.0 J	550.0 ²	-	-	-	<300.0 U	410.0	<300.0 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
TPH-o w/ Silica Gel Cleanup ¹	500	-	<40.0	<300.0	<40.0	ug/L	<300.0 U	<300.0 U	350.0	-	-	-	<300.0 U	<300.0 U	200.0 J	-	-	-	<300.0 U	<300.0 U	<300.0 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1-Methylnaphthalene	10	-	<0.025	<0.10	8.7	ug/L	<0.10 U	19	<0.10 UJ	-	-	-	<0.10 U	12	<0.10 U	-	-	-	<0.10 U	14	<0.10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2-Methylnaphthalene	10	-	<0.025	<0.10	7.2	ug/L	<0.10 U	14	<0.10 UJ	-	-	-	<0.10 U	7.2	<0.10 U	-	-	-	<0.10 U	6.0	<0.10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Naphthalene	17	-	<0.10	0.19	32.0	ug/L	<0.10 U	43	<0.10 UJ	-	-	-	<0.10 U	24	<0.10 U	-	-	-	<0.10 U	26	<0.10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Notes:
¹ - Silica Gel Cleanup is an EPA approved methodology (SW-846 Method 3630C) that separates fuel related compounds from non-fuel related or naturally-occurring compounds from the sample. When these non-fuel related compounds are reported in the sample results, the reported value is skewed high.
² - After the application of Silica Gel Cleanup, TPH-o levels are below the screening criteria. TPH-o detects heavy oils and greases. JP-5 is not a heavy oil or grease.
 J - estimated value
 B - blank method contamination
 U - nondetect value
 ID - identification
 TPH-g - total petroleum hydrocarbons gasoline
 TPH-d - total petroleum hydrocarbons diesel (JP-5)
 TPH-o - total petroleum hydrocarbons oil/grease
 DO - dissolved oxygen
 ORP - oxidation-reduction potential
 "-": not applicable

Red Hill Bulk Fuel Storage Facility
 Notice of Interest 20210507-0852 JP-5 spill that occurred on 6 May 2021
 Drinking Water Sampling - RHMW2254-01 Pre-Chlorination
 DISCLAIMER: Preliminary Data: Undergoing Validation - Subject to Change.

2021 NOI Emergency Groundwater Sampling Event		SDG #	96439	96439	96537	96537	
		Sample ID	ERH1430	ERH1429	ERH1432	ERH1431	
		Collected	6/3/2021	6/3/2021	6/10/2021	6/10/2021	
		Sample Type	Primary	Trip Blank	Primary	Trip Blank	
		Location	RHSF	RHSF	RHSF	RHSF	
Final results provided (validation pending)							
Final results provided (validation completed)							
Analyte	Screening Criteria	SSRBL	Units	Result Q	Results Q	Result Q	Results Q
Benzene	5	750	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U
Ethylbenzene	30	-	ug/L	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Toluene	40	-	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U
Xylenes (Total)	20	-	ug/L	<0.30 U	<0.30 U	<0.30 U	<0.30 U
TPH-g	300	-	ug/L	<18.0 U	<18.0 U	<18.0 U	<18.0 U
TPH-d	400	4500	ug/L	<300.0 U	-	<300.0 U	-
TPH-d w/ Silica Gel Cleanup	400	-	ug/L	-	-	-	-
TPH-o	500	-	ug/L	<300.0 U	-	<300.0 U	-
TPH-o w/ Silica Gel Cleanup	500	-	ug/L	-	-	-	-
1-Methylnaphthalene	10	-	ug/L	<0.10 U	-	<0.10 U	-
2-Methylnaphthalene	10	-	ug/L	<0.10 U	-	<0.10 U	-
Naphthalene	17	-	ug/L	<0.10 U	-	<0.10 U	-

Notes:
 J - estimated value
 B - blank method contamination
 U - nondetect value
 ID - identification
 TPH-g - total petroleum hydrocarbons gasoline
 TPH-d - total petroleum hydrocarbons diesel (JP-5)
 TPH-o - total petroleum hydrocarbons oil/grease
 DO - dissolved oxygen
 ORP - oxidation-reduction potential
 "-" - not applicable