Cumulative Groundwater Measurements and Analytical Results for Tunnel Wells
Red Hill Bulk Fuel Storage Facility

Well Name	Sample ID	Date Sampled	TPH-d (µg/l)	TPH-g (µg/l)	TPH-o	TPH-g (µg/l)	1,1,1-Trichloroethane (µg/l)	1,1,2-Trichloroethane (µg/l)	1,1-Dichloroethane (µg/l)	1,1-Dichloroethylene (µg/l)	1,2,3-Trichloropropane (µg/l)	1,2,4-Tricholorobenzene (µg/l)	1,2-Dibromo-3-chloropropane (µg/l)	1,2-Dibromoethane (µg/l)	1,2-Dichlorobenzene (µg/l)	1,2-Dichloroethane (µg/l)	1,2-Dichloropropane (µg/l)	1,3-Dichlorobenzene (µg/l)	1,3-Dichloropropene (total of cis/trans) (µg/l)	1,4-Dichlorobenzene (µg/l)	Acetone (µg/l)	Benzene (µg/l)	Bromodichloromethane (µg/l)	Bromoform (µg/l)	Bromomethane (µg/l)	Carbon Tetrachloride (µg/l)	Chlorobenzene (µg/l)	Chloroethane (µg/l)	Chloroform (µg/l)	Chloromethane (µg/l)	cis-1,2-Dichloroethylene (µg/l)	Dibromochloromethane (µg/l)	Ethylbenzene (µg/l)	Hexachlorobutadiene (µg/l)	Methyl ethyl ketone (2-Butanone) (µg/l)	Methyl isobutyl ketone (4-Methyl-2-Pentanone) (µg/l)	Methyl tert-butyl Ether (µg/l)	Methylene chloride (µg/l)	Napthalene (µg/l)	Styrene (µg/l)	Tetrachloroethane, 1,1,1,2- (µg/l)	Tetrachloroethane, 1,1,2,2- (µg/l)	Tetrachloroethylene (µg/l)	Toluene (µg/l)	trans-1,2-Dichloroethylene (µg/l)	Trichloroethylene (µg/l)	Vinyl chloride (µg/l)	Xylenes, Total (p/m-, o-xylene) (µg/l)	Acenaphthene (µg/l)	Acenaphthylene (µg/l)	Anthracene (µg/l)	Benzo[a]anthracene (µg/l)	Benzo[g,h,i]perylene (µg/l)	Benzo[a]pyrene (µg/l)	Benzo[b]fluoranthene (µg/l)	Benzo[k]fluoranthene (µg/l)	Chrysene (µg/l)	Dibenzo[a,h]anthracene (µg/l)	Fluoranthene (µg/l)	Fluorene (µg/l)	Indeno[1,2,3-cd]pyrene (µg/l)	1-Methylnaphthalene (µg/l)	2-Methylnaphthalene (µg/l)	Naphthalene (µg/l)	Phenanthrene (µg/l)	Pyrene (µg/l)	Dissolved Lead (filtered) (µg/l)	Total Lead (unfiltered) (µg/l)
			8015				8260B																																										8270C																		6020	6010B/6020/200.8
DOH EAL Drinking Water Toxicity	-	-	190	100	4400	100	200	5	2.4	7	0.6	70	0.04	0.04	600	0.15	5	180	0.43	75	22,000	5	0.12	80	8.7	5	100	21,000	70	1.8	70	0.16	700	0.86	7,100	2,000	12	4.8	17	100	0.52	0.067	5	1,000	100	5	2	10,000	370	240	1,800	0.092	1,500	0.2	0.092	0.92	9.2	0.0092	1,500	240	0.092	4.7	24	17	240	180	15	-
DOH EAL Gross Contamination	-	-	100	100	100	100	970	50,000	50,000	1,500	50,000	3,000	10	50,000	10	7,000	10	5	50,000	5	20,000	170	50,000	510	50,000	520	50	16	2,400	50,000	50,000	50,000	30	6	8,400	1,300	5	9,100	21	10	50,000	500	170	40	260	310	3,400	20	20	2,000	22	4.7	0.13	0.51	0.75	0.4	1	0.52	130	950	0.095	10	10	21	410	68	50,000	-
RHMW01 102.27' TOC ELEV	RH-W-001	[illegible]	[illegible] Y	< 50[b] U	770 O	-	-	-	-	-	-	-	-	< 0.0083[b] U	-	[illegible] U	-	-	-	-	-	< 0.50[b] U	-	-	-	-	-	-	-	-	-	-	< 0.50[b] U	-	-	-	< 0.50[b] U	-	-	-	-	-	-	< 0.50[b] U	-	-	-	< 0.50[b] U	0.052	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	0.022	0.025	< 0.020[b] U	0.020	[illegible] U	0.035	0.053	< 0.020[b] U	-	0.14	0.25	0.12	0.056	10.2	-
	RH-W-002	[illegible]	[illegible]	< 50[b] U	[illegible]	-	-	-	-	-	-	-	-	< 0.0082[b] U	-	[illegible] U	-	-	-	-	-	< 0.50[b] U	-	-	-	-	-	-	-	-	-	-	< 0.50[b] U	-	-	-	< 0.50[b] U	-	-	-	-	-	-	< 0.50[b] U	-	-	-	< 0.50[b] U	0.054	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	[illegible] U	0.021	0.043	< 0.020[b] U	-	0.057	0.21	0.082	0.029	11.9	-
	RH-W-003	[illegible]	[illegible] Z	< 13 U	-	-	-	-	-	-	-	-	-	< 0.00096 U	-	[illegible] U	-	-	-	-	-	< 0.50[a] U	-	-	-	-	-	-	-	-	-	-	< 0.50[a] U	-	-	-	< 0.50[a] U	-	-	-	-	-	-	< 0.50[b] U	-	-	-	< 0.50[a] U	0.061	< 0.020[b] U	< 0.020[a] U	0.047	0.034	0.045	0.040	0.051	0.062	[illegible] U	0.093	0.041	0.037	-	0.054	0.073	0.14	0.11	6.700	-
	RH-W-004	[illegible]	[illegible] Z	< 13 U	-	-	-	-	-	-	-	-	-	< 0.00095[a] U	-	[illegible] U	-	-	-	-	-	< 0.50[b] U	-	-	-	-	-	-	-	-	-	-	< 0.50[b] U	-	-	-	< 0.50[b] U	-	-	-	-	-	-	< 0.50[b] U	-	-	-	< 0.50[b] U	0.061	< 0.020[b] U	< 0.020[b] U	0.033	0.022	0.031	0.028	0.035	0.044	[illegible] U	0.064	0.039	0.024	-	0.051	0.055	0.10	0.072	6.980	-
	RH-W-005	[illegible]	[illegible] Y	< 13 U	540 O	-	-	-	-	-	-	-	-	< 0.00096 U	-	< 0.12 U	-	-	-	-	-	< 0.14 U	-	-	-	-	-	-	-	-	-	-	< 0.13 U	-	-	-	< 0.20 U	-	-	-	-	-	-	0.15 J	-	-	-	< 0.22 U	0.054	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	0.022	[illegible] U	0.025	0.064	< 0.020[b] U	-	0.038	0.83	0.11	0.050	0.21	-
	RH-W-006	[illegible]	[illegible] Y	< 13 U	720 O	-	-	-	-	-	-	-	-	< 0.00096 U	-	< 0.12 U	-	-	-	-	-	< 0.14 U	-	-	-	-	-	-	-	-	-	-	< 0.13 U	-	-	-	< 0.20 U	-	-	-	-	-	-	0.15 J	-	-	-	< 0.22 U	0.056	< 0.020[b] U	< 0.020[b] U	0.025	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	< 0.020[b] U	0.036	[illegible] U	0.049	0.064	< 0.020[b] U	-	0.038	0.78	0.12	0.058	0.05	-
	RHMW01W01	[illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.50 U	-	-	-	-	-	-	-	-	-	-	< 0.50 U	-	-	-	< 0.50 U	-	-	-	-	-	-	< 0.50 U	-	< 0.50 U	-	< 0.50 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19.6[g]
	RH-W-007	[illegible]	[illegible] Z	< 13 U	-	-	-	-	-	-	-	-	-	< 0.0096 U	-	< 0.12 U	-	-	-	-	-	< 0.14 U	-	-	-	-	-	-	-	-	-	-	< 0.13 U	-	-	-	< 0.20 U	-	-	-	-	-	-	0.12 J	-	-	-	< 0.33 U	0.061	< 0.0018 U	0.012 J	0.027	0.015 J	0.024	0.020 J	0.017 J	0.036	< 0.0017 U	0.062	0.058	0.017 J	-	0.098	0.51	0.10	0.072	0.06	-
	RH-W-008	[illegible]	[illegible] Z	< 13 U	-	-	-	-	-	-	-	-	-	< 0.0095 U	-	< 0.12 U	-	-	-	-	-	< 0.14 U	-	-	-	-	-	-	-	-	-	-	< 0.13 U	-	-	-	< 0.20 U	-	-	-	-	-	-	< 11	-	-	-	< 0.33 U	0.058	< 0.0018 U	< 0.0011 U	0.0077 J	0.0057 J	0.0086 J	0.0072 J	0.0068 J	0.014 J	< 0.0017 U	0.026	0.050	0.0075 J	-	0.11	0.46	0.059	0.026	0.04	-
	RHMW01-GW02	[illegible]	[illegible]	< 50 U	-	-	< 0.50 U	-	-	< 0.50 U	-	-	-	-	-	-	-	-	-	-	-	< 0.50 U	-	-	-	-	-	-	-	-	-	-	< 0.50 U	-	-	-	< 0.50 U	-	< 1.0 U	-	-	-	< 0.50 U	< 0.50 U	-	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	-	-	-	-	< 0.10 U	-	-	-	-	< 0.25 U	-	-	-	-	< 0.25 U	-	-	< 1.7 U	-
	RHMW01-GW06	[illegible]	[illegible]	< 50 U	-	-	< 0.50 U	-	-	< 0.50 U	-	-	-	-	-	-	-	-	-	-	-	< 0.50 U	-	-	-	-	-	-	-	-	-	-	< 0.50 U	-	-	-	< 0.50 U	-	< 1.0 U	-	-	-	< 0.50 U	< 0.50 U	-	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	-	-	-	-	< 0.099 U	-	-	-	-	< 0.25 U	-	-	-	-	< 0.25 U	-	-	< 1.7 U	-
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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RHMW05 121.96' TOC ELEV

RHMW03 101.55' TOC ELEV

RHMW2254-01

ES060	[illegible]	<20	U	-	-	16	B,J	<0.50	U,IH	< 0.50	U	< 0.50	U	< 0.50	U	[illegible]	U	< 1.0	U
ES067	[illegible]	<20	U	-	-	-		-		-		-		-		-		-	
ES075	[illegible]	<10	U	-	-	-		-		-		-		-		-		-	
ES085	[illegible]	<10	U	-	-	< 30	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	[illegible]	U	< 1.0	U
ES094	[illegible]	<12	U	-	-	-		-		-		-		-		-		-	
ES102	[illegible]	<12	U	-	-	-		-		-		-		-		-		-	
ES107	[illegible]	<12	U	-	-	< 30	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	[illegible]	U	< 1.0	U
ES117	[illegible]	22	J,HD	-	-	< 30	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	[illegible]	U	< 1.0	U
ES125	[illegible]	<12	U	-	-	< 30	U	< 0.50	U	< 0.50	U	< 0.50	U	< 0.50	U	[illegible]	U	< 1.0	U

Notes:
* duplicate samples
January 2008 to November 2009 depth to water measurements were entered in previous reports a tenth of a foot to high, adjustments were made to correct.
HDOH, EHE Guidance EALs for Drinking Water Action Levels for Human Toxicity (Table D-3a) and Groundwater Gross Contamination Action Levels where groundwater IS a current or potential source of drinking water (Table G-1)
Background historical data are from February 2005 to July 2012.
Non-detects (from October 2012 and on) are the LOD values
1 - The holding time until analysis was exceeded by one day; the results may be biased low.
a - MDL values were used for non-detects
b - MRL values were used for non-detects
c - no analytical lab reports found, could not verify results
d - no analytical lab reports available, used summary table from DOH Quarterly GW Reports
e - results from stilling basin, pumps offline
f - results from stilling basin, pumps online
g - analyzed by Method 6010B
h - analyzed by Method 6020
i - the MRL/MDL has been elevated due to a chromatographic interference
k - analyzed by Method 200.8
µg/l - micrograms per liter
Grey highlight - exceeds EALs
Bold - detected values
B - analyte was present in the associated method blank
F - indicates that the compound was identified but the concentration was above the MDL and below the RL
HD - the chromatographic pattern was inconsistent with the profile of the reference fuel standard
ICH - Initial calibrtn. verif recov. above method CL for this analyte
ICJ - Initial calibrtn. verif. recov. below method CL for this analyte
IH - Calibrtn. verif. recov. below method CL for this analyte
IJ - Calibrtn. verif. recov. above method CL for this analyte
J - indicates an estimated value
O - the chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard
U - indicates that the compound was analyzed for but not detected at or above the stated limit. The stated limit is the LOD unless otherwise specified.
Y - the chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard
Z - the chromatographic fingerprint does not resemble a petroleum product

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