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February 15, 2018

Greg Michael
Wisconsin Department of Natural Resources
141 NW Barstow Street, Room 180
Waukesha, WI 53188

Subject: Chapman Oil Bulk Plant – Risk Assessment Approach for cPAH's. BRRTS #: 02-68-215749, PECFA #: 53199-9998-14

Dear Mr. Michael,

At the request and approval of the WDNR, METCO completed the Risk Assessment Approach for cPAH's using the modified calculator. This was used because numerous PAH's exceeded the NR720 Direct Contact Residual Contaminant Levels (RCLs) at the above site and neighboring properties.

The modified calculator assesses the non-industrial direct contact RCLs for 7 carcinogenic PAH compounds. Thus, any soil samples exceeding the NR720 Direct Contact RCLs for PAH's only could be run on this calculator to determine if levels exceed the cumulative carcinogenic PAH cancer risk threshold and to determine if those samples do not pose a risk, by WDNR criteria.

Eighteen soil samples were run using the modified calculator. Fourteen of them did not show a cumulative cPAH Cancer Risk. Seven other samples exceeding the NR 720 Direct Contact Risk levels were not run, as their levels were higher than the four samples that did exceed the cumulative cPAH Cancer Risk.

The site area with cumulative cPAH exceedences is less than ¼ the area of NR720 Direct Contact Risk exceedences. Therefore, based on these results, the estimated amount of soil required to be addressed/removed would be reduced from approximately 4,000 tons to approximately 940 tons. This would still include excavating onto two neighboring residential properties and within the Right of Way (ROW) along Partridge Street. If the state concurs, please contact METCO to discuss workscope and budget to move this site toward closure.

Per WDNR response, METCO will proceed with this project.

Please see the attached map showing the area of NR720 Direct Contact Exceedences and the areas exceeding the cumulative cPAH Cancer Risk using the modified calculator, updated data tables, and Calculation Summary Sheets for all samples run using the modified calculator.

Should you have any questions, comments, or recommendations please contact me at our La Crosse office (608) 781-8879 or email at jasonp@metcohq.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jason T. Powell". The signature is fluid and cursive, with a long horizontal stroke extending to the left.

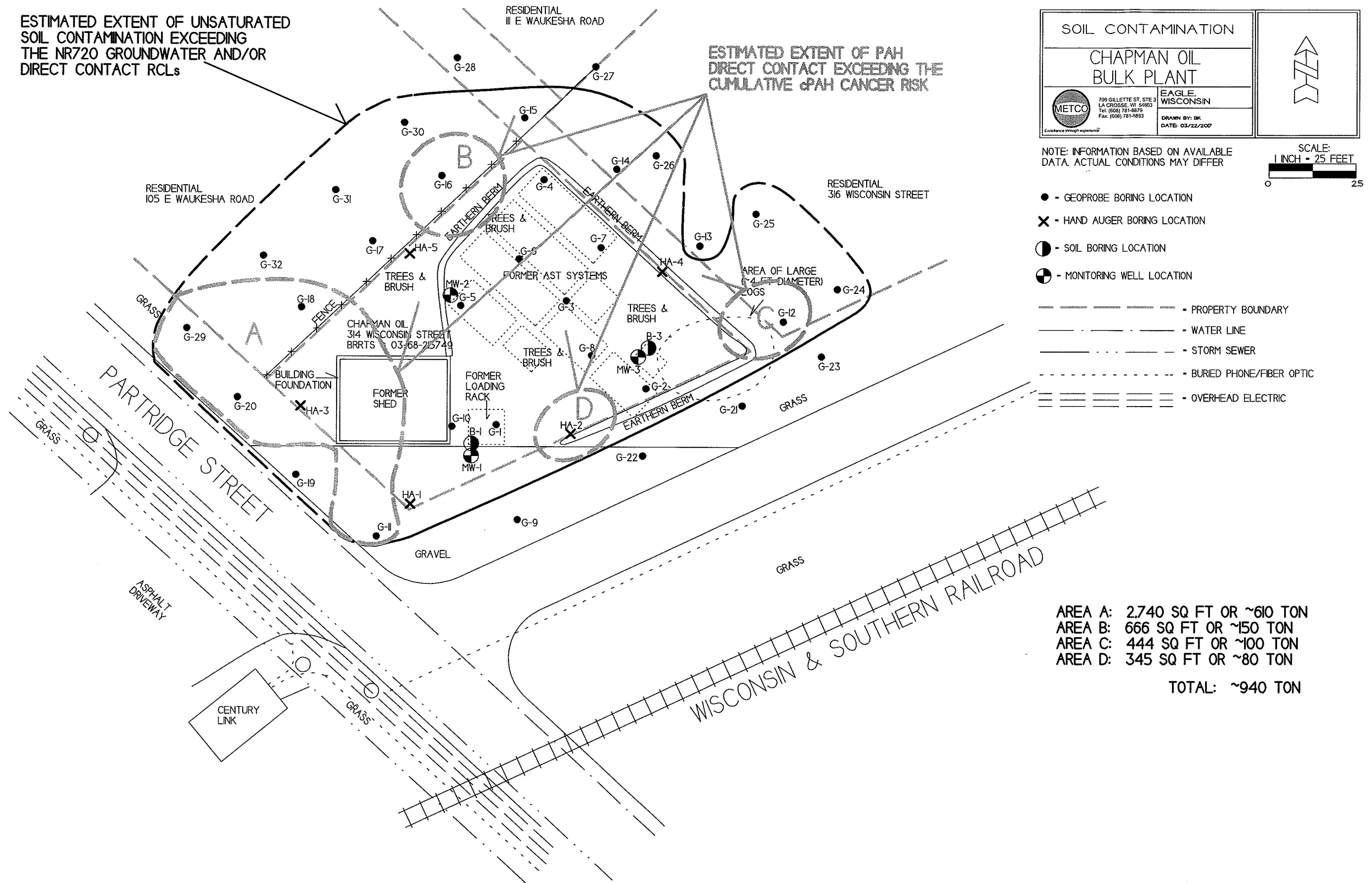
Jason T. Powell
Staff Scientist

Attachments

c: Rob Chapman – Client

ESTIMATED EXTENT OF UNSATURATED
SOIL CONTAMINATION EXCEEDING
THE NR720 GROUNDWATER AND/OR
DIRECT CONTACT RCLs

ESTIMATED EXTENT OF PAH
DIRECT CONTACT EXCEEDING THE
CUMULATIVE PAH CANCER RISK



A.2. Soil Analytical Results Table
(PAH)
Chapman Oil BRRTS# 02-68-215749

Sample	Depth (feet)	Saturation U/S	Date	Acenaph- thene (ppm)	Acenaph- thylene (ppm)	Anthracene (ppm)	Benzo(a) anthracene (ppm)	Benzo(a) pyrene (ppm)	Benzo(b) fluoranthene (ppm)	Benzo(g,h,i) perylene (ppm)	Benzo(k) fluoranthene (ppm)	Chrysene (ppm)	Dibenzo(a,h) anthracene (ppm)	Fluoranthene (ppm)	Fluorene (ppm)	Indeno(1,2,3-cd) pyrene (ppm)	1-Methyl- naphthalene (ppm)	2-Methyl- naphthalene (ppm)	Naph- thalene (ppm)	Phenan- threne (ppm)	Pyrene (ppm)	DIRECT CONTACT PAH	
																						(Cumulative) cPAH Cancer Risk	Cumulative Hazard Index
G-6-1	3.5	U	08/13/13	<0.0218	<0.0192	<0.0195	0.105	0.138	0.225	0.086	0.079	0.129	<0.0223	0.129	<0.0222	0.073	<0.0207	0.0289	<0.0221	0.047	0.131	1.8E-06	0.0081
HA-2	1.5	U	08/12/14	0.032	0.037	0.089	0.330	0.400	0.620	0.350	0.252	0.450	0.068	0.960	0.033	0.288	<0.0195	<0.0204	<0.0211	0.500	0.750	5.2E-06	0.0235
G-11-2	3.5	U	07/12/16	<0.0135	0.069	0.06	0.36	0.42	0.58	0.36	0.237	0.43	0.063	0.69	<0.0135	0.33	<0.0143	<0.0119	<0.0122	0.156	0.61	5.3E-06	0.0244
G-14-1	1.0	U	07/12/16	<0.0135	0.069	0.049	0.41	0.33	0.46	0.233	0.161	0.43	0.051	0.66	<0.0135	0.221	0.05	0.052	0.0221	0.132	0.72	4.3E-06	0.0196
G-15-1	1.0	U	07/12/16	<0.0135	0.033	0.032	0.192	0.181	0.261	0.139	0.117	0.234	0.0152	0.38	<0.0135	0.128	0.029	0.0235	0.018	0.102	0.37	2.2E-06	0.0108
G-16-2	3.5	U	07/12/16	<0.0135	0.065	0.073	0.410	0.440	0.610	0.309	0.271	0.520	0.070	0.780	<0.0135	0.301	0.0149	0.0151	<0.0122	0.135	0.680	5.6E-06	0.0256
G-17-1	1.0	U	07/12/16	<0.0135	0.0237	0.0233	0.134	0.166	0.217	0.13	0.104	0.196	0.0259	0.286	<0.0135	0.116	0.0189	0.0189	<0.0122	0.110	0.279	2.1E-06	0.0098
G-17-2	3.5	U	07/12/16	<0.0135	0.0214	0.028	0.123	0.146	0.196	0.112	0.080	0.180	0.0229	0.261	<0.0135	0.102	<0.0143	<0.0119	<0.0122	0.082	0.272	1.8E-06	0.0086
G-18-1	1.0	U	07/12/16	<0.0135	0.048	0.078	0.360	0.440	0.66	0.380	0.255	0.510	0.071	0.840	<0.0135	0.340	0.0206	0.0244	<0.0122	0.215	0.720	5.7E-06	0.0254
G-18-2	3.5	U	07/12/16	<0.0135	0.034	0.042	0.239	0.271	0.390	0.226	0.182	0.330	0.043	0.510	<0.0135	0.201	<0.0143	<0.0119	<0.0122	0.125	0.450	3.5E-06	0.0164
G-19-1	1.0	U	07/12/16	<0.0135	0.046	0.045	0.272	0.340	0.480	0.286	0.209	0.390	0.059	0.60	<0.0135	0.260	<0.0143	<0.0119	<0.0122	0.119	0.50	4.4E-06	0.0204
G-19-2	3.5	U	07/12/16	<0.0135	0.09	0.041	0.179	0.254	0.360	0.233	0.133	0.245	0.046	0.301	<0.0135	0.212	<0.0143	<0.0119	<0.0122	0.069	0.288	3.3E-06	0.0154
G-24-1	1.0	U	02/16/17	<0.0151	0.0172	0.035	0.127	0.141	0.263	0.121	0.077	0.148	0.0231	0.301	<0.0179	0.097	<0.0203	<0.0113	<0.0153	0.124	0.256	1.9E-06	0.0091
G-25-1	1.0	U	02/16/17	<0.0151	0.063	0.052	0.36	0.34	0.55	0.24	0.148	0.35	0.058	0.53	<0.0179	0.199	0.0217	0.0215	<0.0153	0.137	0.57	4.4E-06	0.0206
G-26-1	1.0	U	02/16/17	<0.0151	0.048	0.037	0.279	0.253	0.42	0.181	0.113	0.246	0.042	0.40	<0.0179	0.153	<0.0203	0.0215	<0.0153	0.105	0.43	3.3E-06	0.0156
G-30-1	1.0	U	02/16/17	<0.0151	0.0211	0.0278	0.147	0.135	0.242	0.097	0.063	0.127	0.0237	0.221	<0.0179	0.084	<0.0203	0.0195	<0.0153	0.101	0.205	1.8E-06	0.0088
G-31-1	1.0	U	02/16/17	<0.0151	0.0263	0.025	0.183	0.206	0.35	0.171	0.088	0.186	0.035	0.306	<0.0179	0.13	<0.0203	0.015	<0.0153	0.135	0.32	2.7E-06	0.0128
G-32-1	1.0	U	02/16/17	<0.0151	0.057	0.036	0.181	0.221	0.38	0.186	0.096	0.179	0.038	0.278	<0.0179	0.147	<0.0203	<0.0113	<0.0153	0.103	0.287	2.9E-06	0.0136
Groundwater RCL				---	---	197	---	0.47	0.4793	---	---	0.145	---	88.8	14.8	---	---	---	0.6582	---	54.5		
Non-Industrial Direct Contact RCL				3590	---	17900	1.140	0.1150	1.150	---	11.50	115	0.1150	2390	2390	1.150	17.6	239	5.52	---	1790	5.00E-06	1.00E-05
Industrial Direct Contact RCL				(45200)	---	(100000)	(20.8)	(2.11)	(21.1)	---	(211)	(2110)	(2.11)	(30100)	(30100)	(21.1)	(72.7)	(3010)	(24.1)	---	(22600)		
Soil Saturation Concentration (C-sat)*						---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		

Bold = Groundwater RCL Exceedance

Bold & Underline =Direct Contact RCL Exceedance

(Bold & Parentheses) = Industrial Direct Contact RCL Exceedance

Bold & Asteric * = C-sat Exceedance

NS = Not Sampled

(ppm) = parts per million

DRO = Diesel Range Organics

GRO = Gasoline Range Organics

PID = Photoionization Detector

VOC's = Volatile Organic Compounds

U = unsaturated (based on all time low water table per WDNR)

S = saturated (based on all time low water table per WDNR)

[illegible]

NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

Note: This Summary is OLD. Update with 'Get Summary' in Row 924 of the applicable *_DC_RCLs tab.

BRRTS #:	# of Soil-Concentration Entries: 18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-11-2 3.5'		5.3E-06	0	0.0244	5.3E-06
	Bottom-Line:	NO! This NON-INDUSTRIAL site sampling location will need either further cleanup to lower contaminant levels or the construction of a cap/cover to address the direct-contact pathway.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To- Exceed D-C RCL (mg/kg)	Basis	BTV (mg/kg)	INPUTTED Site Data (mg/kg)	cPAH Cancer Risk from Data	Flag E = Individual Exceedance	Hazard Quotient (HQ) from Data	Cancer Risk (GR) from Data
Naphthalene	91-20-3	178.	5.52	5.52	ca		0.0122			0.0001	2.2E-09
Benzo[a]pyrene	50-32-8	17.8	0.115	0.115	ca		0.42	3.85E-08	cPAH	0.0238	3.7E-06
Acenaphthene	83-32-9	3,590.	-	3,590.	nc		0.0135			0.	
Acenaphthylene	208-96-8	-	-	-	-		0.069				
Anthracene	120-12-7	17,900.	-	17,900.	nc		0.06			0.	
Benz[a]anthracene	56-55-3	-	1.14	1.14	ca		0.36	3.18E-07	cPAH		3.2E-07
Benzo[b]fluoranthene	205-99-2	-	1.15	1.15	ca		0.58	5.04E-07	cPAH		5.0E-07
Benzo[g,h,i]perylene	191-24-2	-	-	-	-		0.36				
Benzo[k]fluoranthene	207-08-9	-	11.5	11.5	ca		0.237	2.06E-08	cPAH		2.1E-08
Chrysene	218-01-9	-	115.	115.	ca		0.43	3.74E-09	cPAH		3.7E-09
Dibenz[a,h]anthracene	53-70-3	-	0.115	0.115	ca		0.063	5.48E-07	cPAH		5.5E-07
Fluoranthene	206-44-0	2,390.	-	2,390.	nc		0.69			0.0003	
Fluorene	86-73-7	2,390.	-	2,390.	nc		0.0135			0.	
Indeno[1,2,3-cd]pyrene	193-39-5	-	1.15	1.15	ca		0.33	2.87E-07	cPAH		2.9E-07
Methylnaphthalene, 1-	90-12-0	4,180.	17.6	17.6	ca		0.0143			0.	8.1E-10
Methylnaphthalene, 2-	91-57-6	239.	-	239.	nc		0.0119			0.	
Phenanthrene	85-01-8	-	-	-	-		0.156				
Pyrene	129-00-0	1,790.	-	1,790.	nc		0.61			0.0003	

NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs):

Note: This Summary is OLD. Update with 'Get Summary' in Row 924 of the applicable *_DC_RCLs tab.

BRRTS #:	# of Soil-Concentration Entries:	18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-14-1 1.0'			4.3E-06	0	0.0196	4.3E-06
	Bottom-Line:		Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	Basis	BTV (mg/kg)	INPUTTED Site Data (mg/kg)	cPAH Cancer Risk from Data	Flag E = Individual Exceedance!	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data
Naphthalene	91-20-3	178.	5.52	5.52	ca		0.0221			0.0001	4.0E-09
Benzo[a]pyrene	50-32-8	17.8	0.115	0.115	ca		0.33	2.87E-06	cPAH	0.0185	2.9E-06
Acenaphthene	83-32-9	3,590.	-	3,590.	nc		0.0135			0.	
Acenaphthylene	208-96-8	-					0.069				
Anthracene	120-12-7	17,900.	-	17,900.	nc		0.049			0.	
Benz[a]anthracene	56-55-3	-	1.14	1.14	ca		0.41	3.60E-07	cPAH		3.6E-07
Benzo[b]fluoranthene	205-99-2	-	1.15	1.15	ca		0.46	4.00E-07	cPAH		4.0E-07
Benzo[g,h,i]perylene	191-24-2	-					0.233				
Benzo[k]fluoranthene	207-08-9	-	11.5	11.5	ca		0.161	1.40E-08	cPAH		1.4E-08
Chrysene	218-01-9	-	115.	115.	ca		0.43	3.74E-09	cPAH		3.7E-09
Dibenz[a,h]anthracene	53-70-3	-	0.115	0.115	ca		0.051	4.43E-07	cPAH		4.4E-07
Fluoranthene	206-44-0	2,390.	-	2,390.	nc		0.66			0.0003	
Fluorene	86-73-7	2,390.	-	2,390.	nc		0.0135			0.	
Indeno[1,2,3-cd]pyrene	193-39-5	-	1.15	1.15	ca		0.221	1.92E-07	cPAH		1.9E-07
Methylnaphthalene, 1-	90-12-0	4,180.	17.6	17.6	ca		0.05			0.	2.6E-09
Methylnaphthalene, 2-	91-57-6	239.	-	239.	nc		0.052			0.0002	
Phenanthrene	85-01-8	-					0.132				
Pyrene	129-00-0	1,790.	-	1,790.	nc		0.72			0.0004	

NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

Note: This Summary is OLD. Update with 'Get Summary' in Row 924 of the applicable *_DC_RCLs tab.

BRRTS #:	# of Soil-Concentration Entries:	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-15-1 1.0'	18	2.2E-06	0	0.0108	2.2E-06
Bottom-Line:		Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018 List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	Basis	BTU (mg/kg)	INPUTTED Site Data (mg/kg)	cPAH Cancer Risk from Data	Flag E = Individual Exceedance?	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data
Naphthalene	91-20-3	178.	5.52	5.52	ca		0.018			0.0001	3.3E-09
Benzo[a]pyrene	50-32-8	17.8	0.115	0.115	ca		0.181	1.57E-06	cPAH	0.0102	1.6E-06
Acenaphthene	83-32-9	3,590.	-	3,590.	nc		0.0135			0.	
Acenaphthylene	208-96-8	-	-	-			0.033				
Anthracene	120-12-7	17,900.	-	17,900.	nc		0.032			0.	
Benzo[a]anthracene	56-55-3	-	1.14	1.14	ca		0.192	1.68E-07	cPAH		1.7E-07
Benzo[b]fluoranthene	205-99-2	-	1.15	1.15	ca		0.261	2.27E-07	cPAH		2.3E-07
Benzo[g,h,i]perylene	191-24-2	-	-	-			0.139				
Benzo[k]fluoranthene	207-08-9	-	11.5	11.5	ca		0.117	1.02E-08	cPAH		1.0E-08
Chrysene	218-01-9	-	115.	115.	ca		0.234	2.03E-09	cPAH		2.0E-09
Dibenz[a,h]anthracene	53-70-3	-	0.115	0.115	ca		0.0152	1.32E-07	cPAH		1.3E-07
Fluoranthene	205-44-0	2,390.	-	2,390.	nc		0.38			0.0002	
Fluorene	86-73-7	2,390.	-	2,390.	nc		0.0135			0.	
Indeno[1,2,3-cd]pyrene	193-39-5	-	1.15	1.15	ca		0.128	1.11E-07	cPAH		1.1E-07
Methylnaphthalene, 1-	90-12-0	4,180.	17.6	17.6	ca		0.029			0.	1.6E-09
Methylnaphthalene, 2-	91-57-6	239.	-	239.	nc		0.0235			0.0001	
Phenanthrene	85-01-8	-	-	-			0.102				
Pyrene	129-00-0	1,790.	-	1,790.	nc		0.37			0.0002	

NR 722 Direct-Contact **Exceedance** - **Hazard** - **Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

Note: This Summary is OLD. Update with 'Get Summary' in Row 924 of the applicable *_DC_RCLs tab.

BRRTS #:	# of Soil-Concentration Entries:	18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-58-215749 Chapman Oil G-16-2 3.5'			5.6E-08	0	0.0256	5.6E-08
	Bottom-Line:	NO! This NON-INDUSTRIAL site sampling location will need either further cleanup to lower contaminant levels or the construction of a cap/cover to address the direct-contact pathway.				

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

[illegible]

NR 722 Direct-Contact **Exceedance** - **Hazard** - **Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

Note: This Summary is OLD. Update with 'Get Summary' in Row 924 of the applicable *_DC_RCLs tab.

BRRTS # :	# of Soil-Concentration Entries: 18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-17-1 1.0'	Bottom-Line:	2.1E-06	0	0.0098	2.1E-06
		Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

[illegible]

NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

BRRTS # :	# of Soil-Concentration Entries: 18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-17-2 3.5'		1.8E-06	0	0.0086	1.8E-06
	Bottom-Line:	Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

[illegible]

NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs):

BRRTS # : 02-68-215749 Chapman Oil G-18-1 1.0'	# of Soil-Concentration Entries: 18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
		5.7E-06	0	0.0254	5.7E-06
Bottom-Line:		NO! This NON-INDUSTRIAL site sampling location will need either further cleanup to lower contaminant levels or the construction of a cap/cover to address the direct-contact pathway.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

[illegible]

NR 722 Direct-Contact **Exceedance** - **Hazard** - **Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs):

BRRTS #:	# of Soil-Concentration Entries: 18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-18-2 3.5'		3.5E-06	0	0.0164	3.5E-06
Bottom-Line:		Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

[illegible]

NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

BRRTS #:	# of Soil-Concentration Entries: 18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-19-1 1.0'		4.4E-06	0	0.0204	4.4E-06
Bottom-Line:		Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

[illegible]

NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

BRRTS # : 02-68-215749 Chapman Oil G-19-2 3.5'	# of Soil-Concentration Entries: 18	(Cumulative) cPAH Cancer Risk 3.3E-06	Number of Individual Exceedance 0	(Cumulative) Hazard Index 0.0154	(Cumulative) Cancer Risk 3.3E-06
		Bottom-Line: Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018 List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To- Exceed D-C RCL (mg/kg)	Basis	BTU (mg/kg)	INPUTTED Site Data (mg/kg)	cPAH Cancer Risk from Data	Flag E = Individual Exceedance	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data
Naphthalene	91-20-3	178.	5.52	5.52	ca		0.122			0.0007	2.2E-08
Benzo[a]pyrene	50-32-8	17.8	0.115	0.115	ca		0.254	2.21E-08	cPAH	0.0143	2.2E-08
Acenaphthene	83-32-9	3,590.	-	3,590.	nc		0.0135			0.	
Acenaphthylene	208-96-8	-	-	-			0.09				
Anthracene	120-12-7	17,900.	-	17,900.	nc		0.041			0.	
Benzo[a]anthracene	56-55-3	-	1.14	1.14	ca		0.179	1.57E-07	cPAH		1.6E-07
Benzo[b]fluoranthene	205-99-2	-	1.15	1.15	ca		0.36	3.13E-07	cPAH		3.1E-07
Benzo[k]fluoranthene	191-24-2	-	-	-			0.233				
Chrysene	207-08-9	-	11.5	11.5	ca		0.133	1.16E-08	cPAH		1.2E-08
Dibenz[a,h]anthracene	218-01-9	-	115.	115.	ca		0.245	2.13E-09	cPAH		2.1E-09
Fluoranthene	53-70-3	-	0.115	0.115	ca		0.046	4.00E-07	cPAH		4.0E-07
Fluorene	208-44-0	2,390.	-	2,390.	nc		0.301			0.0001	
Indeno[1,2,3-cd]pyrene	86-73-7	2,390.	-	2,390.	nc		0.135			0.0001	
Methylnaphthalene, 1-	193-39-5	-	1.15	1.15	ca		0.212	1.84E-07	cPAH		1.8E-07
Methylnaphthalene, 2-	90-12-0	4,180.	17.6	17.6	ca		0.0143			0.	6.1E-10
Phenanthrene	91-57-6	239.	-	239.	nc		0.0119			0.	
Pyrene	85-01-8	-	-	-			0.069				
	129-00-0	1,790.	-	1,790.	nc		0.288			0.0002	

NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

BRRTS # : 02-88-215749 Chapman Oil G-24-1 1.0'	# of Soil-Concentration Entries: 18	(Cumulative)	Number of	(Cumulative)	(Cumulative)
		cPAH Cancer Risk	Individual Exceedance	Hazard Index	Cancer Risk
		1.9E-06	0	0.0091	1.9E-06
Bottom-Line:		Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	Basis	BTV (mg/kg)	INPUTTED Site Data (mg/kg)	cPAH Cancer Risk from Data	Flag E = Individual Exceedance	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data
Naphthalene	91-20-3	178	5.52	5.52	ca		0.153			0.0009	2.8E-08
Benzo[a]pyrene	50-32-8	17.8	0.115	0.115	ca		0.141	1.23E-06	cPAH	0.0079	1.2E-06
Acenaphthene	83-32-9	3,590	-	3,590	nc		0.0151			0	
Acenaphthylene	208-96-8	-	-				0.0172				
Anthracene	120-12-7	17,900	-	17,900	nc		0.035			0	
Benz[a]anthracene	56-55-3	-	1.14	1.14	ca		0.127	1.11E-07	cPAH		1.1E-07
Benzo[b]fluoranthene	205-99-2	-	1.15	1.15	ca		0.263	2.29E-07	cPAH		2.3E-07
Benzo[g,h,i]perylene	191-24-2	-	-				0.121				
Benzo[k]fluoranthene	207-08-9	-	11.5	11.5	ca		0.077	6.70E-09	cPAH		6.7E-09
Chrysene	218-01-9	-	115	115	ca		0.148	1.29E-09	cPAH		1.3E-09
Dibenz[a,h]anthracene	53-70-3	-	0.115	0.115	ca		0.0231	2.01E-07	cPAH		2.0E-07
Fluoranthene	206-44-0	2,390	-	2,390	nc		0.301			0.0001	
Fluorene	86-73-7	2,390	-	2,390	nc		0.0179			0	
Indeno[1,2,3-cd]pyrene	193-39-5	-	1.15	1.15	ca		0.097	8.43E-08	cPAH		8.4E-08
Methylnaphthalene, 1-	90-12-0	4,180	17.6	17.6	ca		0.0203			0	1.2E-09
Methylnaphthalene, 2-	81-57-6	239	-	239	nc		0.0113			0	
Phenanthrene	85-01-8	-	-				0.124				
Pyrene	129-00-0	1,790	-	1,790	nc		0.256			0.0001	

NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

Note: This Summary is OLD. Update with 'Get Summary' in Row 924 of the applicable *_DC_RCLs tab.

BRRTS #:	# of Soil-Concentration Entries:	18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-25-1 1.0'			4.4E-06	0	0.0206	4.5E-06
	Bottom-Line:	Yes, levels are below direct-contact concern.				

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To- Exceed D-C RCL (mg/kg)	Basis	BTU (mg/kg)	INPUTTED Site Data (mg/kg)	cPAH Cancer Risk from Data	Flag E = Individual Exceedance!	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data
Naphthalene	91-20-3	178.	5.52	5.52	ca		0.153			0.0009	2.8E-08
Benzo[a]pyrene	50-32-8	17.8	0.115	0.115	ca		0.34	2.98E-06	cPAH	0.0191	3.0E-06
Acenaphthene	83-32-9	3,590.	-	3,590.	nc		0.0151			0.	
Acenaphthylene	208-96-8	-	-	-			0.063				
Anthracene	120-12-7	17,900.	-	17,900.	nc		0.052			0.	
Benz[a]anthracene	56-55-3	-	1.14	1.14	ca		0.36	3.18E-07	cPAH		3.2E-07
Benzo[b]fluoranthene	205-99-2	-	1.15	1.15	ca		0.55	4.78E-07	cPAH		4.8E-07
Benzo[g,h,i]perylene	191-24-2	-	-	-			0.24				
Benzo[k]fluoranthene	207-08-9	-	11.5	11.5	ca		0.148	1.29E-08	cPAH		1.3E-08
Chrysene	218-01-9	-	115.	115.	ca		0.35	3.04E-09	cPAH		3.0E-09
Dibenz[a,h]anthracene	53-70-3	-	0.115	0.115	ca		0.058	5.04E-07	cPAH		5.0E-07
Fluoranthene	206-44-0	2,390.	-	2,390.	nc		0.53			0.0002	
Fluorene	86-73-7	2,390.	-	2,390.	nc		0.0179			0.	
Indeno[1,2,3-cd]pyrene	193-39-5	-	1.15	1.15	ca		0.199	1.73E-07	cPAH		1.7E-07
Methylnaphthalene, 1-	90-12-0	4,180.	17.6	17.6	ca		0.0217			0.	1.2E-09
Methylnaphthalene, 2-	91-57-6	239.	-	239.	nc		0.0215			0.0001	
Phenanthrene	85-01-8	-	-	-			0.137				
Pyrene	129-00-0	1,790.	-	1,790.	nc		0.57			0.0003	

NR 722 Direct-Contact **Exceedance · Hazard · Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs;

Note: This Summary is OLD. Update with 'Get Summary' in Row 924 of the applicable *_DC_RCLs tab.

BRRTS #:	# of Soil-Concentration Entries:	18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-26-1 1.0"			3.3E-06	0	0.0156	3.3E-06
	Bottom-Line:		Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

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NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs):

BRRTS # : 02-06-215749 Chapman Oil G-30-1 1.0"	# of Soil-Concentration Entries: 18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
	Bottom-Line:	1.8E-06	0	0.0088	1.8E-06
Yes, levels are below direct-contact concern.					

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

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NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

BRRTS #:	# of Soil-Concentration Entries: 18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-31-1 1.0'		2.7E-06	0	0.0128	2.7E-06
Bottom-Line:		Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

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NR 722 Direct-Contact **Exceedance - Hazard - Risk** Calculation Summary from Soil Data (Exclusive Cumulative-only Assessment of cPAHs)

BRRTS # :	# of Soil-Concentration Entries: 18	(Cumulative) cPAH Cancer Risk	Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
02-68-215749 Chapman Oil G-32-1 1.0'		2.9E-06	0	0.0136	2.9E-06
Bottom-Line:		Yes, levels are below direct-contact concern.			

Date of Entry: 2/14/2018. List below only has contaminants with data.
Date of Worksheet Used: 03/14/2017.

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	Basis	BTV (mg/kg)	INPUTTED Site Data (mg/kg)	cPAH Cancer Risk from Data	Flag E = Individual Exceedance	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data
Naphthalene	91-20-3	178	5.52	5.52	ca		0.153			0.0009	2.8E-08
Benzo[a]pyrene	50-32-8	17.8	0.115	0.115	ca		0.221	1.92E-06	cPAH	0.0124	1.9E-06
Acenaphthene	83-32-9	3,590	-	3,590	nc		0.0151			0.	
Acenaphthylene	208-96-8	-	-				0.057				
Anthracene	120-12-7	17,900	-	17,900	nc		0.036			0.	
Benz[a]anthracene	56-55-3	-	1.14	1.14	ca		0.181	1.59E-07	cPAH		1.6E-07
Benzo[b]fluoranthene	205-99-2	-	1.15	1.15	ca		0.38	3.30E-07	cPAH		3.3E-07
Benzo[g,h,i]perylene	191-24-2	-	-				0.186				
Benzo[k]fluoranthene	207-08-9	-	11.5	11.5	ca		0.096	8.35E-09	cPAH		8.3E-09
Chrysene	218-01-9	-	115	115	ca		0.179	1.98E-09	cPAH		1.8E-09
Dibenzo[a,h]anthracene	53-70-3	-	0.115	0.115	ca		0.038	3.30E-07	cPAH		3.3E-07
Fluoranthene	206-44-0	2,390	-	2,390	nc		0.278			0.0001	
Fluorene	86-73-7	2,390	-	2,390	nc		0.0179			0.	
Indeno[1,2,3-cd]pyrene	193-39-5	-	1.15	1.15	ca		0.147	1.28E-07	cPAH		1.3E-07
Methylnaphthalene, 1-	90-12-0	4,180	17.6	17.6	ca		0.0203			0.	1.2E-09
Methylnaphthalene, 2-	91-57-6	239	-	239	nc		0.0113			0.	
Phenanthrene	85-01-8	-	-				0.103				
Pyrene	129-00-0	1,790	-	1,790	nc		0.287			0.0002	