Delcore, Lee R - DNR

From: Jason Powell <jasonp@metcohq.com>
Sent: Tuesday, July 16, 2019 3:58 PM
To: Delcore, Lee R - DNR
Cc: Ron Anderson; Debby Skogen
Subject: Herriges Oil Bulk Plant South - gw sampling - Kewaskum, WI
Attachments: 2809_001.pdf

Lee, we have received the results of the first round of gw sampling from the above site (see attached). One of the wells had an NR140 ES exceedance for a PAH compound and several of the wells had NR140 PAL exceedences.
Based on these results, could you please approve the laboratory analysis for sampling the five monitoring wells for PVOC and PAH analysis? The costs would be as follows:

5 PAH's @ $72.98 = $364.90
6 PVOC's @ $26.99 = $161.94
Total = $526.84

We could also remove the following:

7 PVOC+Naph @ $30.35 = $212.45
6 Dissolved Lead @ $12.39 = $74.34 (as all of the Lead samples came up "no detects"
Total = $286.79

So the total additional cost based on the difference above would be **$240.05**.

Just an email response and note in Tracker on BRRTS would work for us.

Any questions let me know.
Thanks,

Jason Powell
METCO - Staff Scientist
jasonp@metcohq.com / 608.781.8879
709 Gillette Street - Suite 3, La Crosse WI 54603
www.metcohq.com

A.1 Groundwater Analytical Table
Herriges Oil BP S BRRTS #02-67-111819

Well MW-1
PVC Elevation = 945.77 (feet) (MSL)

Date	Water Elevation (in feet msl)	Depth to water from top of PVC (in feet)	Lead (ppb)	Benzene (ppb)	Ethyl Benzene (ppb)	MTBE (ppb)	Naph-thalene (ppb)	Toluene (ppb)	Trimethyl-benzenes (ppb)	Xylene (Total) (ppb)
06/18/19	941.96	3.81	<1.1	**16.9**	4.8	<0.28	*24.8*	<0.19	6.11	1.53-1.82
ENFORCEMENT STANDARD **ES = Bold**			**15**	**5**	**700**	**60**	**100**	**800**	**480**	**2000**
PREVENTIVE ACTION LIMIT *PAL = Italics*			*1.5*	*0.5*	*140*	*12*	*10*	*160*	*96*	*400*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-2
PVC Elevation = 946.00 (feet) (MSL)

Date	Water Elevation (in feet msl)	Depth to water from top of PVC (in feet)	Lead (ppb)	Benzene (ppb)	Ethyl Benzene (ppb)	MTBE (ppb)	Naph-thalene (ppb)	Toluene (ppb)	Trimethyl-benzenes (ppb)	Xylene (Total) (ppb)
06/18/19	942.35	3.65	<1.1	**7.2**	<0.26	6.7	<2.1	<0.19	<1.43	<0.72
ENFORCEMENT STANDARD **ES = Bold**			**15**	**5**	**700**	**60**	**100**	**800**	**480**	**2000**
PREVENTIVE ACTION LIMIT *PAL = Italics*			*1.5*	*0.5*	*140*	*12*	*10*	*160*	*96*	*400*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-3
PVC Elevation = 945.70 (feet) (MSL)

Date	Water Elevation (in feet msl)	Depth to water from top of PVC (in feet)	Lead (ppb)	Benzene (ppb)	Ethyl Benzene (ppb)	MTBE (ppb)	Naph-thalene (ppb)	Toluene (ppb)	Trimethyl-benzenes (ppb)	Xylene (Total) (ppb)
06/18/19	934.54	11.16	<1.1	<0.22	<0.26	0.56	<2.1	<0.19	<1.43	<0.72
ENFORCEMENT STANDARD **ES = Bold**			**15**	**5**	**700**	**60**	**100**	**800**	**480**	**2000**
PREVENTIVE ACTION LIMIT *PAL = Italics*			*1.5*	*0.5*	*140*	*12*	*10*	*160*	*96*	*400*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured
Note: Elevations are presented in feet mean sea level (msl).

A.1 Groundwater Analytical Table
Herriges Oil BP S BRRTS #02-67-111819

Well MW-4
PVC Elevation = 944.56 (feet) (MSL)

Date	Water Elevation (in feet msl)	Depth to water from top of PVC (in feet)	Lead (ppb)	Benzene (ppb)	Ethyl Benzene (ppb)	MTBE (ppb)	Naph-thalene (ppb)	Toluene (ppb)	Trimethyl-benzenes (ppb)	Xylene (Total) (ppb)
06/18/19	935.96	8.60	<1.1	<0.22	<0.26	<0.28	<2.1	<0.19	<1.43	<0.72
ENFORCEMENT STANDARD **ES = Bold**			**15**	**5**	**700**	**60**	**100**	**800**	**480**	**2000**
PREVENTIVE ACTION LIMIT *PAL = Italics*			*1.5*	*0.5*	*140*	*12*	*10*	*160*	*96*	*400*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-5
PVC Elevation = 944.37 (feet) (MSL)

Date	Water Elevation (in feet msl)	Depth to water from top of PVC (in feet)	Lead (ppb)	Benzene (ppb)	Ethyl Benzene (ppb)	MTBE (ppb)	Naph-thalene (ppb)	Toluene (ppb)	Trimethyl-benzenes (ppb)	Xylene (Total) (ppb)
06/18/19	936.04	8.33	<1.1	<0.22	<0.26	3.7	<2.1	<0.19	<1.43	<0.72
ENFORCEMENT STANDARD **ES = Bold**			**15**	**5**	**700**	**60**	**100**	**800**	**480**	**2000**
PREVENTIVE ACTION LIMIT *PAL = Italics*			*1.5*	*0.5*	*140*	*12*	*10*	*160*	*96*	*400*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured
Note: Elevations are presented in feet mean sea level (msl).

A.1 Groundwater Analytical Table
Herriges Oil BP S BRRTS #02-67-111819

Well Sampling Conducted on:	06/18/19	06/18/19	06/18/19	06/18/19	06/18/19		
VOC's						ENFORCEMENT STANDARD = ES – Bold	*PREVENTIVE ACTION LIMIT = PAL - Italics*
Well Name	**MW-1**	**MW-2**	**MW-3**	**MW-4**	**MW-5**		
Lead, dissolved/ppb	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	**15**	*1.5*
Benzene/ppb	**16.9**	**7.2**	<0.22	< 0.22	< 0.22	**5**	*0.5*
Bromobenzene/ppb	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	==	==
Bromodichloromethane/ppb	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	**0.6**	*0.06*
Bromoform/ppb	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	**4.4**	*0.44*
tert-Butylbenzene/ppb	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	==	==
sec-Butylbenzene/ppb	1.67 "J"	< 0.79	< 0.79	< 0.79	< 0.79	==	==
n-Butylbenzene/ppb	1.85 "J"	< 0.71	< 0.71	< 0.71	< 0.71	==	==
Carbon Tetrachloride/ppb	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	**5**	*0.5*
Chlorobenzene/ppb	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	==	==
Chloroethane/ppb	< 0.61	< 0.61	< 0.61	< 0.61	< 0.61	**400**	*80*
Chloroform/ppb	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	**6**	*0.6*
Chloromethane/ppb	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	**30**	*3*
2-Chlorotoluene/ppb	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	==	==
4-Chlorotoluene/ppb	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	==	==
1,2-Dibromo-3-chloropropane/ppb	< 2.96	< 2.96	< 2.96	< 2.96	< 2.96	**0.2**	*0.02*
Dibromochloromethane/ppb	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	**60**	*6*
1,4-Dichlorobenzene/ppb	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	**75**	*15*
1,3-Dichlorobenzene/ppb	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85	**600**	*120*
1,2-Dichlorobenzene/ppb	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	**600**	*60*
Dichlorodifluoromethane/ppb	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	**1000**	*200*
1,2-Dichloroethane/ppb	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	**5**	*0.5*
1,1-Dichloroethane/ppb	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	**850**	*85*
1,1-Dichloroethene/ppb	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	**7**	*0.7*
cis-1,2-Dichloroethene/ppb	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	**70**	*7*
trans-1,2-Dichloroethene/ppb	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	**100**	*20*
1,2-Dichloropropane/ppb	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	**5**	*0.5*
1,3-Dichloropropane/ppb	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	==	==
trans-1,3-Dichloropropene/ppb	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	**0.4**	*0.04*
cis-1,3-Dichloropropene/ppb	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26		
Di-isopropyl ether/ppb	< 0.21	0.30 "J"	< 0.21	< 0.21	< 0.21	==	==
EDB (1,2-Dibromoethane)/ppb	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	**0.05**	*0.005*
Ethylbenzene/ppb	4.8	< 0.26	< 0.26	< 0.26	< 0.26	**700**	*140*
Hexachlorobutadiene/ppb	< 1.34	< 1.34	< 1.34	< 1.34	< 1.34	==	==
Isopropylbenzene/ppb	5.9	< 0.78	< 0.78	< 0.78	< 0.78	==	==
p-Isopropyltoluene/ppb	1.07	< 0.24	< 0.24	< 0.24	< 0.24	==	==
Methylene chloride/ppb	< 1.32	< 1.32	< 1.32	< 1.32	< 1.32	**5**	*0.5*
Methyl tert-butyl ether (MTBE)/ppb	< 0.28	6.7	0.56 "J"	< 0.28	3.7	**60**	*12*
Naphthalene/ppb	*24.8*	< 2.1	< 2.1	< 2.1	< 2.1	**100**	*10*
n-Propylbenzene/ppb	9.1	< 0.61	< 0.61	< 0.61	< 0.61	==	==
1,1,2,2-Tetrachloroethane/ppb	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	**0.2**	*0.02*
1,1,1,2-Tetrachloroethane/ppb	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	**70**	*7*
Tetrachloroethene (PCE)/ppb	*1.05 "J"*	*0.74 "J"*	0.40 "J"	< 0.38	< 0.38	**5**	*0.5*
Toluene/ppb	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	**800**	*160*
1,2,4-Trichlorobenzene/ppb	< 1.15	< 1.15	< 1.15	< 1.15	< 1.15	**70**	*14*
1,2,3-Trichlorobenzene/ppb	< 1.71	< 1.71	< 1.71	< 1.71	< 1.71	==	==
1,1,1-Trichloroethane/ppb	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	**200**	*40*
1,1,2-Trichloroethane/ppb	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	**5**	*0.5*
Trichloroethene (TCE)/ppb	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	**5**	*0.5*
Trichlorofluoromethane/ppb	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	==	==
1,2,4-Trimethylbenzene/ppb	3.5	< 0.8	< 0.8	< 0.8	< 0.8	**Total TMB's 480**	*Total TMB's 96*
1,3,5-Trimethylbenzene/ppb	2.61	< 0.63	< 0.63	< 0.63	< 0.63		
Vinyl Chloride/ppb	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	**0.2**	*0.02*
m&p-Xylene/ppb	1.53	< 0.43	< 0.43	< 0.43	< 0.43	**Total Xylenes 2000**	*Total Xylenes 400*
o-Xylene/ppb	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29		

NS = not sampled, NM = Not Measured
Q = Analyte detected above laboratory method detection limit but below practical quantitation limit.
= = No Exceedences
(ppb) = parts per billion
"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

A.1 Groundwater Analytical Table
(PAH)
Herriges Oil BP S BRRTS #02-67-111819

Well MW-1

Date	Ace-naphthene (ppb)	Acenaph-thylene (ppb)	Anthracene (ppb)	Benzo(a) anthracene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(g,h,I) Perylene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Dibenzo(a,h) anthracene (ppb)	Fluoran-thene (ppb)	Fluorene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	1-Methyl-naphthalene (ppb)	2-Methyl-naphthalene (ppb)	Naph-thalene (ppb)	Phenan-threne (ppb)	Pyrene (ppb)
6/18/2019	<0.0282	<0.0468	<0.045	0.049	<0.0501	<0.048	<0.0426	<0.0438	<0.0471	<0.0519	0.032	0.036	<0.0363	<0.0573	<0.0558	<0.078	<0.0429	<0.0363
ENFORCEMENT STANDARD = **ES – Bold**			**3000**	-	**0.2**	**0.2**	-	-	**0.2**	-	**400**	**400**	-	-	-	**100**	-	**250**
PREVENTIVE ACTION LIMIT = *PAL - Italics*			*600*	-	*0.02*	*0.02*	-	-	*0.02*	-	*80*	*80*	-	-	-	*10*	-	*50*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-2

Date	Ace-naphthene (ppb)	Acenaph-thylene (ppb)	Anthracene (ppb)	Benzo(a) anthracene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(g,h,I) Perylene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Dibenzo(a,h) anthracene (ppb)	Fluoran-thene (ppb)	Fluorene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	1-Methyl-naphthalene (ppb)	2-Methyl-naphthalene (ppb)	Naph-thalene (ppb)	Phenan-threne (ppb)	Pyrene (ppb)
6/18/2019	<0.0094	<0.0156	<0.015	0.036	*0.021*	*0.033*	0.024	0.022	*0.035*	0.020	0.031	0.013	0.023	<0.0191	<0.0186	0.101	0.042	0.029
ENFORCEMENT STANDARD = **ES – Bold**			**3000**	-	**0.2**	**0.2**	-	-	**0.2**	-	**400**	**400**	-	-	-	**100**	-	**250**
PREVENTIVE ACTION LIMIT = *PAL - Italics*			*600*	-	*0.02*	*0.02*	-	-	*0.02*	-	*80*	*80*	-	-	-	*10*	-	*50*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-3

Date	Ace-naphthene (ppb)	Acenaph-thylene (ppb)	Anthracene (ppb)	Benzo(a) anthracene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(g,h,I) Perylene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Dibenzo(a,h) anthracene (ppb)	Fluoran-thene (ppb)	Fluorene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	1-Methyl-naphthalene (ppb)	2-Methyl-naphthalene (ppb)	Naph-thalene (ppb)	Phenan-threne (ppb)	Pyrene (ppb)
6/18/2019	<0.0094	<0.0156	<0.015	0.018	<0.0167	*0.038*	0.027	0.017	*0.027*	<0.0173	0.033	<0.0079	0.018	<0.0191	<0.0186	<0.026	0.026	0.038
ENFORCEMENT STANDARD = **ES – Bold**			**3000**	-	**0.2**	**0.2**	-	-	**0.2**	-	**400**	**400**	-	-	-	**100**	-	**250**
PREVENTIVE ACTION LIMIT = *PAL - Italics*			*600*	-	*0.02*	*0.02*	-	-	*0.02*	-	*80*	*80*	-	-	-	*10*	-	*50*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured
Note: Elevations are presented in feet mean sea level (msl).

A.1 Groundwater Analytical Table
(PAH)
Herriges Oil BP S BRRTS #02-67-111819

Well MW-4

Date	Ace-naphthene (ppb)	Acenaph-thylene (ppb)	Anthracene (ppb)	Benzo(a) anthracene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(g,h,I) Perylene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Dibenzo(a,h) anthracene (ppb)	Fluoran-thene (ppb)	Fluorene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	1-Methyl-naphthalene (ppb)	2-Methyl-naphthalene (ppb)	Naph-thalene (ppb)	Phenan-threne (ppb)	Pyrene (ppb)
6/18/2019	<0.0094	<0.0156	<0.015	0.024	<0.0167	*0.037*	0.024	0.017	*0.028*	<0.0173	0.036	<0.0079	0.022	<0.0191	<0.0186	0.062	0.045	0.031
ENFORCEMENT STANDARD = **ES – Bold**			**3000**	-	**0.2**	**0.2**	-	-	**0.2**	-	**400**	**400**	-	-	-	**100**	-	**250**
PREVENTIVE ACTION LIMIT = *PAL - Italics*			*600*	-	*0.02*	*0.02*	-	-	*0.02*	-	*80*	*80*	-	-	-	*10*	-	*50*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-5

Date	Ace-naphthene (ppb)	Acenaph-thylene (ppb)	Anthracene (ppb)	Benzo(a) anthracene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(g,h,I) Perylene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Dibenzo(a,h) anthracene (ppb)	Fluoran-thene (ppb)	Fluorene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	1-Methyl-naphthalene (ppb)	2-Methyl-naphthalene (ppb)	Naph-thalene (ppb)	Phenan-threne (ppb)	Pyrene (ppb)
6/18/2019	0.018	0.229	0.165	0.51	**0.59**	**0.83**	0.55	0.292	**0.48**	0.121	0.71	0.032	**0.43**	<0.0191	<0.0186	0.049	0.279	0.66
ENFORCEMENT STANDARD = **ES – Bold**			**3000**	-	**0.2**	**0.2**	-	-	**0.2**	-	**400**	**400**	-	-	-	**100**	-	**250**
PREVENTIVE ACTION LIMIT = *PAL - Italics*			*600*	-	*0.02*	*0.02*	-	-	*0.02*	-	*80*	*80*	-	-	-	*10*	-	*50*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured
Note: Elevations are presented in feet mean sea level (msl).

A.6 Water Level Elevations
Herriges Oil BP S BRRTS #02-67-111819
Kewaskum, Wisconsin

	MW-1	MW-2	MW-3	MW-4	MW-5
Ground Surface (feet msl)	946.01	946.30	946.02	944.95	944.76
PVC top (feet msl)	945.77	946.00	945.70	944.56	944.37
Well Depth (feet)	13.00	13.00	13.00	13.00	13.00
Top of screen (feet msl)	943.01	943.30	943.02	941.95	941.76
Bottom of screen (feet msl)	933.01	933.30	933.02	931.95	931.76
Depth to Water From Top of PVC (feet)					
06/18/19	3.81	3.65	11.16	8.60	8.33
Depth to Water From Ground Surface (feet)					
06/18/19	4.05	3.95	11.48	8.99	8.72
Groundwater Elevation (feet msl)					
06/18/19	941.96	942.35	934.54	935.96	936.04

Note: Elevations are presented in feet mean sea level (msl).

A.7 Other
Groundwater NA Indicator Results
Herriges Oil BP S BRRTS #02-67-111819

Well MW-1

Date	Dissolved Oxygen (ppm)	pH	ORP	Temp (C)	Specific Conductance	Nitrate + Nitrite (ppm)	Total Sulfate (ppm)	Dissolved Iron (ppm)	Man-ganese (ppb)
06/18/19	2.79	6.03	-102.8	12.99	1478	<0.47	30.9	0.03	**1010**
ENFORCEMENT STANDARD = **ES – Bold**						**10**	-	-	**300**
PREVENTIVE ACTION LIMIT = *PAL - Italics*						*2*	-	-	*60*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured ORP = Oxidation Reduction Potential
Note: Elevations are presented in feet mean sea level (msl).

Well MW-2

Date	Dissolved Oxygen (ppm)	pH	ORP	Temp (C)	Specific Conductance	Nitrate + Nitrite (ppm)	Total Sulfate (ppm)	Dissolved Iron (ppm)	Man-ganese (ppb)
06/18/19	2.76	6.40	-104.0	15.96	1484	<0.47	18.3	0.04	**1120**
ENFORCEMENT STANDARD = **ES – Bold**						**10**	-	-	**300**
PREVENTIVE ACTION LIMIT = *PAL - Italics*						*2*	-	-	*60*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured ORP = Oxidation Reduction Potential
Note: Elevations are presented in feet mean sea level (msl).

Well MW-3

Date	Dissolved Oxygen (ppm)	pH	ORP	Temp (C)	Specific Conductance	Nitrate + Nitrite (ppm)	Total Sulfate (ppm)	Dissolved Iron (ppm)	Man-ganese (ppb)
06/18/19	3.22	6.76	-80.2	12.15	3120	<0.47	82.4	<0.03	**572**
ENFORCEMENT STANDARD = **ES – Bold**						**10**	-	-	**300**
PREVENTIVE ACTION LIMIT = *PAL - Italics*						*2*	-	-	*60*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured ORP = Oxidation Reduction Potential
Note: Elevations are presented in feet mean sea level (msl).

A.7 Other
Groundwater NA Indicator Results
Herriges Oil BP S BRRTS #02-67-111819

Well MW-4

Date	Dissolved Oxygen (ppm)	pH	ORP	Temp (C)	Specific Conductance	Nitrate + Nitrite (ppm)	Total Sulfate (ppm)	Dissolved Iron (ppm)	Man-ganese (ppb)
06/18/19	3.01	6.47	-90.5	11.08	1036	<0.47	11.1	0.14	*173*
ENFORCEMENT STANDARD = **ES – Bold**						**10**	-	-	**300**
PREVENTIVE ACTION LIMIT = *PAL - Italics*						*2*	-	-	*60*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured ORP = Oxidation Reduction Potential
Note: Elevations are presented in feet mean sea level (msl).

Well MW-5

Date	Dissolved Oxygen (ppm)	pH	ORP	Temp (C)	Specific Conductance	Nitrate + Nitrite (ppm)	Total Sulfate (ppm)	Dissolved Iron (ppm)	Man-ganese (ppb)
06/18/19	2.99	6.42	-96.9	11.38	1679	<0.47	27.8	0.15	**503**
ENFORCEMENT STANDARD = **ES – Bold**						**10**	-	-	**300**
PREVENTIVE ACTION LIMIT = *PAL - Italics*						*2*	-	-	*60*

(ppb) = parts per billion (ppm) = parts per million
NS = not sampled NM = not measured ORP = Oxidation Reduction Potential
Note: Elevations are presented in feet mean sea level (msl).

Synergy Environmental Lab,

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

DOUGLAS POLZEON
DOUGLAS POLZEON
1245 FOND DU LAC AVE.,
KEWASKUM, WI 53040

Report Date *11-Jul-19*

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360A
Sample ID MW-3
Sample Matrix Water
Sample Date 6/18/2019

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Iron, Dissolved	< 0.03	mg/l	0.03	0.1	1	200.7		6/24/2019	CWT	1
Lead, Dissolved	< 1.1	ug/L	1.1	3.7	1	7421		6/25/2019	CWT	1
Manganese, Dissolved	572	ug/L	4.2	13.8	1	200.7		6/24/2019	CWT	1
Organic										
PAH SIM										
Acenaphthene	< 0.0094	ug/l	0.0094	0.03	1	M8270C	6/25/2019	6/25/2019	MJR	6
Acenaphthylene	< 0.0156	ug/l	0.0156	0.0495	1	M8270C	6/25/2019	6/25/2019	MJR	6
Anthracene	< 0.015	ug/l	0.015	0.0478	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(a)anthracene	0.018 "J"	ug/l	0.0131	0.0418	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(a)pyrene	< 0.0167	ug/l	0.0167	0.0531	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(b)fluoranthene	0.038 "J"	ug/l	0.016	0.0509	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(g,h,i)perylene	0.027 "J"	ug/l	0.0142	0.0451	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(k)fluoranthene	0.017 "J"	ug/l	0.0146	0.0463	1	M8270C	6/25/2019	6/25/2019	MJR	1
Chrysene	0.027 "J"	ug/l	0.0157	0.0499	1	M8270C	6/25/2019	6/25/2019	MJR	1
Dibenzo(a,h)anthracene	< 0.0173	ug/l	0.0173	0.0549	1	M8270C	6/25/2019	6/25/2019	MJR	1
Fluoranthene	0.033	ug/l	0.0088	0.0281	1	M8270C	6/25/2019	6/25/2019	MJR	1
Fluorene	< 0.0079	ug/l	0.0079	0.0251	1	M8270C	6/25/2019	6/25/2019	MJR	6
Indeno(1,2,3-cd)pyrene	0.018 "J"	ug/l	0.0121	0.0385	1	M8270C	6/25/2019	6/25/2019	MJR	1
1-Methyl naphthalene	< 0.0191	ug/l	0.0191	0.0609	1	M8270C	6/25/2019	6/25/2019	MJR	6
2-Methyl naphthalene	< 0.0186	ug/l	0.0186	0.059	1	M8270C	6/25/2019	6/25/2019	MJR	6
Naphthalene	< 0.026	ug/l	0.026	0.083	1	M8270C	6/25/2019	6/25/2019	MJR	6
Phenanthrene	0.026 "J"	ug/l	0.0143	0.0456	1	M8270C	6/25/2019	6/25/2019	MJR	1
Pyrene	0.038 "J"	ug/l	0.0121	0.0386	1	M8270C	6/25/2019	6/25/2019	MJR	1
VOC's										
Benzene	< 0.22	ug/l	0.22	0.71	1	8260B		6/26/2019	CJR	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360A
Sample ID MW-3
Sample Matrix Water
Sample Date 6/18/2019

	Result		Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Bromobenzene		< 0.44	ug/l	0.44	1.38	1	8260B		6/26/2019	CJR	1
Bromodichloromethane		< 0.33	ug/l	0.33	1.06	1	8260B		6/26/2019	CJR	1
Bromoform		< 0.45	ug/l	0.45	1.44	1	8260B		6/26/2019	CJR	1
tert-Butylbenzene		< 0.25	ug/l	0.25	0.8	1	8260B		6/26/2019	CJR	1
sec-Butylbenzene		< 0.79	ug/l	0.79	2.53	1	8260B		6/26/2019	CJR	1
n-Butylbenzene		< 0.71	ug/l	0.71	2.25	1	8260B		6/26/2019	CJR	1
Carbon Tetrachloride		< 0.31	ug/l	0.31	0.98	1	8260B		6/26/2019	CJR	1
Chlorobenzene		< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
Chloroethane		< 0.61	ug/l	0.61	1.95	1	8260B		6/26/2019	CJR	1
Chloroform		< 0.26	ug/l	0.26	0.82	1	8260B		6/26/2019	CJR	1
Chloromethane		< 0.54	ug/l	0.54	1.72	1	8260B		6/26/2019	CJR	1
2-Chlorotoluene		< 0.31	ug/l	0.31	0.98	1	8260B		6/26/2019	CJR	1
4-Chlorotoluene		< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
1,2-Dibromo-3-chloropropane		< 2.96	ug/l	2.96	9.43	1	8260B		6/26/2019	CJR	1
Dibromochloromethane		< 0.22	ug/l	0.22	0.69	1	8260B		6/26/2019	CJR	1
1,4-Dichlorobenzene		< 0.7	ug/l	0.7	2.22	1	8260B		6/26/2019	CJR	1
1,3-Dichlorobenzene		< 0.85	ug/l	0.85	2.7	1	8260B		6/26/2019	CJR	1
1,2-Dichlorobenzene		< 0.86	ug/l	0.86	2.74	1	8260B		6/26/2019	CJR	1
Dichlorodifluoromethane		< 0.32	ug/l	0.32	1.02	1	8260B		6/26/2019	CJR	1
1,2-Dichloroethane		< 0.25	ug/l	0.25	0.78	1	8260B		6/26/2019	CJR	1
1,1-Dichloroethane		< 0.36	ug/l	0.36	1.14	1	8260B		6/26/2019	CJR	1
1,1-Dichloroethene		< 0.42	ug/l	0.42	1.34	1	8260B		6/26/2019	CJR	1
cis-1,2-Dichloroethene		< 0.37	ug/l	0.37	1.16	1	8260B		6/26/2019	CJR	1
trans-1,2-Dichloroethene		< 0.34	ug/l	0.34	1.07	1	8260B		6/26/2019	CJR	1
1,2-Dichloropropane		< 0.44	ug/l	0.44	1.39	1	8260B		6/26/2019	CJR	1
1,3-Dichloropropane		< 0.3	ug/l	0.3	0.94	1	8260B		6/26/2019	CJR	1
trans-1,3-Dichloropropene		< 0.32	ug/l	0.32	1.01	1	8260B		6/26/2019	CJR	1
cis-1,3-Dichloropropene		< 0.26	ug/l	0.26	0.81	1	8260B		6/26/2019	CJR	1
Di-isopropyl ether		< 0.21	ug/l	0.21	0.66	1	8260B		6/26/2019	CJR	1
EDB (1,2-Dibromoethane)		< 0.34	ug/l	0.34	1.09	1	8260B		6/26/2019	CJR	1
Ethylbenzene		< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
Hexachlorobutadiene		< 1.34	ug/l	1.34	4.28	1	8260B		6/26/2019	CJR	1
Isopropylbenzene		< 0.78	ug/l	0.78	2.47	1	8260B		6/26/2019	CJR	1
p-Isopropyltoluene		< 0.24	ug/l	0.24	0.76	1	8260B		6/26/2019	CJR	1
Methylene chloride		< 1.32	ug/l	1.32	4.21	1	8260B		6/26/2019	CJR	1
Methyl tert-butyl ether (MTBE)	0.56 "J"		ug/l	0.28	0.89	1	8260B		6/26/2019	CJR	1
Naphthalene		< 2.1	ug/l	2.1	6.65	1	8260B		6/26/2019	CJR	1
n-Propylbenzene		< 0.61	ug/l	0.61	1.95	1	8260B		6/26/2019	CJR	1
1,1,2,2-Tetrachloroethane		< 0.3	ug/l	0.3	0.97	1	8260B		6/26/2019	CJR	1
1,1,1,2-Tetrachloroethane		< 0.35	ug/l	0.35	1.13	1	8260B		6/26/2019	CJR	1
Tetrachloroethene	0.40 "J"		ug/l	0.38	1.21	1	8260B		6/26/2019	CJR	1
Toluene		< 0.19	ug/l	0.19	0.6	1	8260B		6/26/2019	CJR	1
1,2,4-Trichlorobenzene		< 1.15	ug/l	1.15	3.67	1	8260B		6/26/2019	CJR	1
1,2,3-Trichlorobenzene		< 1.71	ug/l	1.71	5.43	1	8260B		6/26/2019	CJR	1
1,1,1-Trichloroethane		< 0.33	ug/l	0.33	1.05	1	8260B		6/26/2019	CJR	1
1,1,2-Trichloroethane		< 0.42	ug/l	0.42	1.32	1	8260B		6/26/2019	CJR	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360A
Sample ID MW-3
Sample Matrix Water
Sample Date 6/18/2019

	Result		Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Trichloroethene (TCE)		< 0.3	ug/l	0.3	0.94	1	8260B		6/26/2019	CJR	1
Trichlorofluoromethane		< 0.35	ug/l	0.35	1.1	1	8260B		6/26/2019	CJR	1
1,2,4-Trimethylbenzene		< 0.8	ug/l	0.8	2.55	1	8260B		6/26/2019	CJR	1
1,3,5-Trimethylbenzene		< 0.63	ug/l	0.63	2	1	8260B		6/26/2019	CJR	1
Vinyl Chloride		< 0.2	ug/l	0.2	0.65	1	8260B		6/26/2019	CJR	1
m&p-Xylene		< 0.43	ug/l	0.43	1.38	1	8260B		6/26/2019	CJR	1
o-Xylene		< 0.29	ug/l	0.29	0.93	1	8260B		6/26/2019	CJR	1
SUR - 1,2-Dichloroethane-d4	101		REC %			1	8260B		6/26/2019	CJR	1
SUR - 4-Bromofluorobenzene	93		REC %			1	8260B		6/26/2019	CJR	1
SUR - Dibromofluoromethane	106		REC %			1	8260B		6/26/2019	CJR	1
SUR - Toluene-d8	90		REC %			1	8260B		6/26/2019	CJR	1
Wet Chemistry											
General											
Nitrite Plus Nitrate, Dissolved		< 0.47	mg/l	0.47	1.56	1	353.2		7/8/2019	NJC	1
Sulfate, Unfiltered	82.4 "J"		mg/l	33.7	112.3	10	ASTM D516-		7/10/2019	NJC	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360B
Sample ID MW-4
Sample Matrix Water
Sample Date 6/18/2019

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Iron, Dissolved	0.14	mg/l	0.03	0.1	1	200.7		6/24/2019	CWT	1
Lead, Dissolved	< 1.1	ug/L	1.1	3.7	1	7421		6/25/2019	CWT	1
Manganese, Dissolved	173	ug/L	4.2	13.8	1	200.7		6/24/2019	CWT	1
Organic										
PAH SIM										
Acenaphthene	< 0.0094	ug/l	0.0094	0.03	1	M8270C	6/25/2019	6/25/2019	MJR	1
Acenaphthylene	< 0.0156	ug/l	0.0156	0.0495	1	M8270C	6/25/2019	6/25/2019	MJR	1
Anthracene	< 0.015	ug/l	0.015	0.0478	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(a)anthracene	0.024 "J"	ug/l	0.0131	0.0418	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(a)pyrene	< 0.0167	ug/l	0.0167	0.0531	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(b)fluoranthene	0.037 "J"	ug/l	0.016	0.0509	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(g,h,i)perylene	0.024 "J"	ug/l	0.0142	0.0451	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(k)fluoranthene	0.017 "J"	ug/l	0.0146	0.0463	1	M8270C	6/25/2019	6/25/2019	MJR	1
Chrysene	0.028 "J"	ug/l	0.0157	0.0499	1	M8270C	6/25/2019	6/25/2019	MJR	1
Dibenzo(a,h)anthracene	< 0.0173	ug/l	0.0173	0.0549	1	M8270C	6/25/2019	6/25/2019	MJR	1
Fluoranthene	0.036	ug/l	0.0088	0.0281	1	M8270C	6/25/2019	6/25/2019	MJR	1
Fluorene	< 0.0079	ug/l	0.0079	0.0251	1	M8270C	6/25/2019	6/25/2019	MJR	1
Indeno(1,2,3-cd)pyrene	0.022 "J"	ug/l	0.0121	0.0385	1	M8270C	6/25/2019	6/25/2019	MJR	1
1-Methyl naphthalene	< 0.0191	ug/l	0.0191	0.0609	1	M8270C	6/25/2019	6/25/2019	MJR	1
2-Methyl naphthalene	< 0.0186	ug/l	0.0186	0.059	1	M8270C	6/25/2019	6/25/2019	MJR	1
Naphthalene	0.062 "J"	ug/l	0.026	0.083	1	M8270C	6/25/2019	6/25/2019	MJR	1
Phenanthrene	0.045 "J"	ug/l	0.0143	0.0456	1	M8270C	6/25/2019	6/25/2019	MJR	1
Pyrene	0.031 "J"	ug/l	0.0121	0.0386	1	M8270C	6/25/2019	6/25/2019	MJR	1
VOC's										
Benzene	< 0.22	ug/l	0.22	0.71	1	8260B		6/26/2019	CJR	1
Bromobenzene	< 0.44	ug/l	0.44	1.38	1	8260B		6/26/2019	CJR	1
Bromodichloromethane	< 0.33	ug/l	0.33	1.06	1	8260B		6/26/2019	CJR	1
Bromoform	< 0.45	ug/l	0.45	1.44	1	8260B		6/26/2019	CJR	1
tert-Butylbenzene	< 0.25	ug/l	0.25	0.8	1	8260B		6/26/2019	CJR	1
sec-Butylbenzene	< 0.79	ug/l	0.79	2.53	1	8260B		6/26/2019	CJR	1
n-Butylbenzene	< 0.71	ug/l	0.71	2.25	1	8260B		6/26/2019	CJR	1
Carbon Tetrachloride	< 0.31	ug/l	0.31	0.98	1	8260B		6/26/2019	CJR	1
Chlorobenzene	< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
Chloroethane	< 0.61	ug/l	0.61	1.95	1	8260B		6/26/2019	CJR	1
Chloroform	< 0.26	ug/l	0.26	0.82	1	8260B		6/26/2019	CJR	1
Chloromethane	< 0.54	ug/l	0.54	1.72	1	8260B		6/26/2019	CJR	1
2-Chlorotoluene	< 0.31	ug/l	0.31	0.98	1	8260B		6/26/2019	CJR	1
4-Chlorotoluene	< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
1,2-Dibromo-3-chloropropane	< 2.96	ug/l	2.96	9.43	1	8260B		6/26/2019	CJR	1
Dibromochloromethane	< 0.22	ug/l	0.22	0.69	1	8260B		6/26/2019	CJR	1
1,4-Dichlorobenzene	< 0.7	ug/l	0.7	2.22	1	8260B		6/26/2019	CJR	1
1,3-Dichlorobenzene	< 0.85	ug/l	0.85	2.7	1	8260B		6/26/2019	CJR	1
1,2-Dichlorobenzene	< 0.86	ug/l	0.86	2.74	1	8260B		6/26/2019	CJR	1
Dichlorodifluoromethane	< 0.32	ug/l	0.32	1.02	1	8260B		6/26/2019	CJR	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360B
Sample ID MW-4
Sample Matrix Water
Sample Date 6/18/2019

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,2-Dichloroethane	< 0.25	ug/l	0.25	0.78	1	8260B		6/26/2019	CJR	1
1,1-Dichloroethane	< 0.36	ug/l	0.36	1.14	1	8260B		6/26/2019	CJR	1
1,1-Dichloroethene	< 0.42	ug/l	0.42	1.34	1	8260B		6/26/2019	CJR	1
cis-1,2-Dichloroethene	< 0.37	ug/l	0.37	1.16	1	8260B		6/26/2019	CJR	1
trans-1,2-Dichloroethene	< 0.34	ug/l	0.34	1.07	1	8260B		6/26/2019	CJR	1
1,2-Dichloropropane	< 0.44	ug/l	0.44	1.39	1	8260B		6/26/2019	CJR	1
1,3-Dichloropropane	< 0.3	ug/l	0.3	0.94	1	8260B		6/26/2019	CJR	1
trans-1,3-Dichloropropene	< 0.32	ug/l	0.32	1.01	1	8260B		6/26/2019	CJR	1
cis-1,3-Dichloropropene	< 0.26	ug/l	0.26	0.81	1	8260B		6/26/2019	CJR	1
Di-isopropyl ether	< 0.21	ug/l	0.21	0.66	1	8260B		6/26/2019	CJR	1
EDB (1,2-Dibromoethane)	< 0.34	ug/l	0.34	1.09	1	8260B		6/26/2019	CJR	1
Ethylbenzene	< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
Hexachlorobutadiene	< 1.34	ug/l	1.34	4.28	1	8260B		6/26/2019	CJR	1
Isopropylbenzene	< 0.78	ug/l	0.78	2.47	1	8260B		6/26/2019	CJR	1
p-Isopropyltoluene	< 0.24	ug/l	0.24	0.76	1	8260B		6/26/2019	CJR	1
Methylene chloride	< 1.32	ug/l	1.32	4.21	1	8260B		6/26/2019	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.28	ug/l	0.28	0.89	1	8260B		6/26/2019	CJR	1
Naphthalene	< 2.1	ug/l	2.1	6.65	1	8260B		6/26/2019	CJR	1
n-Propylbenzene	< 0.61	ug/l	0.61	1.95	1	8260B		6/26/2019	CJR	1
1,1,2,2-Tetrachloroethane	< 0.3	ug/l	0.3	0.97	1	8260B		6/26/2019	CJR	1
1,1,1,2-Tetrachloroethane	< 0.35	ug/l	0.35	1.13	1	8260B		6/26/2019	CJR	1
Tetrachloroethene	< 0.38	ug/l	0.38	1.21	1	8260B		6/26/2019	CJR	1
Toluene	< 0.19	ug/l	0.19	0.6	1	8260B		6/26/2019	CJR	1
1,2,4-Trichlorobenzene	< 1.15	ug/l	1.15	3.67	1	8260B		6/26/2019	CJR	1
1,2,3-Trichlorobenzene	< 1.71	ug/l	1.71	5.43	1	8260B		6/26/2019	CJR	1
1,1,1-Trichloroethane	< 0.33	ug/l	0.33	1.05	1	8260B		6/26/2019	CJR	1
1,1,2-Trichloroethane	< 0.42	ug/l	0.42	1.32	1	8260B		6/26/2019	CJR	1
Trichloroethene (TCE)	< 0.3	ug/l	0.3	0.94	1	8260B		6/26/2019	CJR	1
Trichlorofluoromethane	< 0.35	ug/l	0.35	1.1	1	8260B		6/26/2019	CJR	1
1,2,4-Trimethylbenzene	< 0.8	ug/l	0.8	2.55	1	8260B		6/26/2019	CJR	1
1,3,5-Trimethylbenzene	< 0.63	ug/l	0.63	2	1	8260B		6/26/2019	CJR	1
Vinyl Chloride	< 0.2	ug/l	0.2	0.65	1	8260B		6/26/2019	CJR	1
m&p-Xylene	< 0.43	ug/l	0.43	1.38	1	8260B		6/26/2019	CJR	1
o-Xylene	< 0.29	ug/l	0.29	0.93	1	8260B		6/26/2019	CJR	1
SUR - 4-Bromofluorobenzene	91	REC %			1	8260B		6/26/2019	CJR	1
SUR - Dibromofluoromethane	107	REC %			1	8260B		6/26/2019	CJR	1
SUR - 1,2-Dichloroethane-d4	103	REC %			1	8260B		6/26/2019	CJR	1
SUR - Toluene-d8	95	REC %			1	8260B		6/26/2019	CJR	1
Wet Chemistry										
General										
Nitrite Plus Nitrate, Dissolved	< 0.47	mg/l	0.47	1.56	1	353.2		7/8/2019	NJC	1
Sulfate, Unfiltered	11.1 "J"	mg/l	3.37	11.23	1	ASTM D516-		7/10/2019	NJC	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360C
Sample ID MW-5
Sample Matrix Water
Sample Date 6/18/2019

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Iron, Dissolved	0.15	mg/l	0.03	0.1	1	200.7		6/24/2019	CWT	1
Lead, Dissolved	< 1.1	ug/L	1.1	3.7	1	7421		6/25/2019	CWT	1
Manganese, Dissolved	503	ug/L	4.2	13.8	1	200.7		6/24/2019	CWT	1
Organic										
PAH SIM										
Acenaphthene	0.018 "J"	ug/l	0.0094	0.03	1	M8270C	6/25/2019	6/25/2019	MJR	1
Acenaphthylene	0.229	ug/l	0.0156	0.0495	1	M8270C	6/25/2019	6/25/2019	MJR	1
Anthracene	0.165	ug/l	0.015	0.0478	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(a)anthracene	0.51	ug/l	0.0131	0.0418	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(a)pyrene	0.59	ug/l	0.0167	0.0531	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(b)fluoranthene	0.83	ug/l	0.016	0.0509	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(g,h,i)perylene	0.55	ug/l	0.0142	0.0451	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(k)fluoranthene	0.292	ug/l	0.0146	0.0463	1	M8270C	6/25/2019	6/25/2019	MJR	1
Chrysene	0.48	ug/l	0.0157	0.0499	1	M8270C	6/25/2019	6/25/2019	MJR	1
Dibenzo(a,h)anthracene	0.121	ug/l	0.0173	0.0549	1	M8270C	6/25/2019	6/25/2019	MJR	1
Fluoranthene	0.71	ug/l	0.0088	0.0281	1	M8270C	6/25/2019	6/25/2019	MJR	1
Fluorene	0.032	ug/l	0.0079	0.0251	1	M8270C	6/25/2019	6/25/2019	MJR	1
Indeno(1,2,3-cd)pyrene	0.43	ug/l	0.0121	0.0385	1	M8270C	6/25/2019	6/25/2019	MJR	1
1-Methyl naphthalene	< 0.0191	ug/l	0.0191	0.0609	1	M8270C	6/25/2019	6/25/2019	MJR	1
2-Methyl naphthalene	< 0.0186	ug/l	0.0186	0.059	1	M8270C	6/25/2019	6/25/2019	MJR	1
Naphthalene	0.049 "J"	ug/l	0.026	0.083	1	M8270C	6/25/2019	6/25/2019	MJR	1
Phenanthrene	0.279	ug/l	0.0143	0.0456	1	M8270C	6/25/2019	6/25/2019	MJR	1
Pyrene	0.66	ug/l	0.0121	0.0386	1	M8270C	6/25/2019	6/25/2019	MJR	1
VOC's										
Benzene	< 0.22	ug/l	0.22	0.71	1	8260B		6/26/2019	CJR	1
Bromobenzene	< 0.44	ug/l	0.44	1.38	1	8260B		6/26/2019	CJR	1
Bromodichloromethane	< 0.33	ug/l	0.33	1.06	1	8260B		6/26/2019	CJR	1
Bromoform	< 0.45	ug/l	0.45	1.44	1	8260B		6/26/2019	CJR	1
tert-Butylbenzene	< 0.25	ug/l	0.25	0.8	1	8260B		6/26/2019	CJR	1
sec-Butylbenzene	< 0.79	ug/l	0.79	2.53	1	8260B		6/26/2019	CJR	1
n-Butylbenzene	< 0.71	ug/l	0.71	2.25	1	8260B		6/26/2019	CJR	1
Carbon Tetrachloride	< 0.31	ug/l	0.31	0.98	1	8260B		6/26/2019	CJR	1
Chlorobenzene	< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
Chloroethane	< 0.61	ug/l	0.61	1.95	1	8260B		6/26/2019	CJR	1
Chloroform	< 0.26	ug/l	0.26	0.82	1	8260B		6/26/2019	CJR	1
Chloromethane	< 0.54	ug/l	0.54	1.72	1	8260B		6/26/2019	CJR	1
2-Chlorotoluene	< 0.31	ug/l	0.31	0.98	1	8260B		6/26/2019	CJR	1
4-Chlorotoluene	< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
1,2-Dibromo-3-chloropropane	< 2.96	ug/l	2.96	9.43	1	8260B		6/26/2019	CJR	1
Dibromochloromethane	< 0.22	ug/l	0.22	0.69	1	8260B		6/26/2019	CJR	1
1,4-Dichlorobenzene	< 0.7	ug/l	0.7	2.22	1	8260B		6/26/2019	CJR	1
1,3-Dichlorobenzene	< 0.85	ug/l	0.85	2.7	1	8260B		6/26/2019	CJR	1
1,2-Dichlorobenzene	< 0.86	ug/l	0.86	2.74	1	8260B		6/26/2019	CJR	1
Dichlorodifluoromethane	< 0.32	ug/l	0.32	1.02	1	8260B		6/26/2019	CJR	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360C
Sample ID MW-5
Sample Matrix Water
Sample Date 6/18/2019

	Result		Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,2-Dichloroethane		< 0.25	ug/l	0.25	0.78	1	8260B		6/26/2019	CJR	1
1,1-Dichloroethane		< 0.36	ug/l	0.36	1.14	1	8260B		6/26/2019	CJR	1
1,1-Dichloroethene		< 0.42	ug/l	0.42	1.34	1	8260B		6/26/2019	CJR	1
cis-1,2-Dichloroethene		< 0.37	ug/l	0.37	1.16	1	8260B		6/26/2019	CJR	1
trans-1,2-Dichloroethene		< 0.34	ug/l	0.34	1.07	1	8260B		6/26/2019	CJR	1
1,2-Dichloropropane		< 0.44	ug/l	0.44	1.39	1	8260B		6/26/2019	CJR	1
1,3-Dichloropropane		< 0.3	ug/l	0.3	0.94	1	8260B		6/26/2019	CJR	1
trans-1,3-Dichloropropene		< 0.32	ug/l	0.32	1.01	1	8260B		6/26/2019	CJR	1
cis-1,3-Dichloropropene		< 0.26	ug/l	0.26	0.81	1	8260B		6/26/2019	CJR	1
Di-isopropyl ether		< 0.21	ug/l	0.21	0.66	1	8260B		6/26/2019	CJR	1
EDB (1,2-Dibromoethane)		< 0.34	ug/l	0.34	1.09	1	8260B		6/26/2019	CJR	1
Ethylbenzene		< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
Hexachlorobutadiene		< 1.34	ug/l	1.34	4.28	1	8260B		6/26/2019	CJR	1
Isopropylbenzene		< 0.78	ug/l	0.78	2.47	1	8260B		6/26/2019	CJR	1
p-Isopropyltoluene		< 0.24	ug/l	0.24	0.76	1	8260B		6/26/2019	CJR	1
Methylene chloride		< 1.32	ug/l	1.32	4.21	1	8260B		6/26/2019	CJR	1
Methyl tert-butyl ether (MTBE)	3.7		ug/l	0.28	0.89	1	8260B		6/26/2019	CJR	1
Naphthalene		< 2.1	ug/l	2.1	6.65	1	8260B		6/26/2019	CJR	1
n-Propylbenzene		< 0.61	ug/l	0.61	1.95	1	8260B		6/26/2019	CJR	1
1,1,2,2-Tetrachloroethane		< 0.3	ug/l	0.3	0.97	1	8260B		6/26/2019	CJR	1
1,1,1,2-Tetrachloroethane		< 0.35	ug/l	0.35	1.13	1	8260B		6/26/2019	CJR	1
Tetrachloroethene		< 0.38	ug/l	0.38	1.21	1	8260B		6/26/2019	CJR	1
Toluene		< 0.19	ug/l	0.19	0.6	1	8260B		6/26/2019	CJR	1
1,2,4-Trichlorobenzene		< 1.15	ug/l	1.15	3.67	1	8260B		6/26/2019	CJR	1
1,2,3-Trichlorobenzene		< 1.71	ug/l	1.71	5.43	1	8260B		6/26/2019	CJR	1
1,1,1-Trichloroethane		< 0.33	ug/l	0.33	1.05	1	8260B		6/26/2019	CJR	1
1,1,2-Trichloroethane		< 0.42	ug/l	0.42	1.32	1	8260B		6/26/2019	CJR	1
Trichloroethene (TCE)		< 0.3	ug/l	0.3	0.94	1	8260B		6/26/2019	CJR	1
Trichlorofluoromethane		< 0.35	ug/l	0.35	1.1	1	8260B		6/26/2019	CJR	1
1,2,4-Trimethylbenzene		< 0.8	ug/l	0.8	2.55	1	8260B		6/26/2019	CJR	1
1,3,5-Trimethylbenzene		< 0.63	ug/l	0.63	2	1	8260B		6/26/2019	CJR	1
Vinyl Chloride		< 0.2	ug/l	0.2	0.65	1	8260B		6/26/2019	CJR	1
m&p-Xylene		< 0.43	ug/l	0.43	1.38	1	8260B		6/26/2019	CJR	1
o-Xylene		< 0.29	ug/l	0.29	0.93	1	8260B		6/26/2019	CJR	1
SUR - Dibromofluoromethane	106		REC %			1	8260B		6/26/2019	CJR	1
SUR - Toluene-d8	91		REC %			1	8260B		6/26/2019	CJR	1
SUR - 4-Bromofluorobenzene	91		REC %			1	8260B		6/26/2019	CJR	1
SUR - 1,2-Dichloroethane-d4	104		REC %			1	8260B		6/26/2019	CJR	1
Wet Chemistry											
General											
Nitrite Plus Nitrate, Dissolved		< 0.47	mg/l	0.47	1.56	1	353.2		7/8/2019	NJC	3 64
Sulfate, Unfiltered	27.8		mg/l	3.37	11.23	1	ASTM D516-		7/10/2019	NJC	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360D
Sample ID MW-2
Sample Matrix Water
Sample Date 6/18/2019

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Iron, Dissolved	0.04 "J"	mg/l	0.03	0.1	1	200.7		6/24/2019	CWT	1
Lead, Dissolved	< 1.1	ug/L	1.1	3.7	1	7421		6/25/2019	CWT	1
Manganese, Dissolved	1120	ug/L	4.2	13.8	1	200.7		6/24/2019	CWT	1
Organic										
PAH SIM										
Acenaphthene	< 0.0094	ug/l	0.0094	0.03	1	M8270C	6/25/2019	6/25/2019	MJR	1
Acenaphthylene	< 0.0156	ug/l	0.0156	0.0495	1	M8270C	6/25/2019	6/25/2019	MJR	1
Anthracene	< 0.015	ug/l	0.015	0.0478	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(a)anthracene	0.036 "J"	ug/l	0.0131	0.0418	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(a)pyrene	0.021 "J"	ug/l	0.0167	0.0531	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(b)fluoranthene	0.033 "J"	ug/l	0.016	0.0509	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(g,h,i)perylene	0.024 "J"	ug/l	0.0142	0.0451	1	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(k)fluoranthene	0.022 "J"	ug/l	0.0146	0.0463	1	M8270C	6/25/2019	6/25/2019	MJR	1
Chrysene	0.035 "J"	ug/l	0.0157	0.0499	1	M8270C	6/25/2019	6/25/2019	MJR	1
Dibenzo(a,h)anthracene	0.020 "J"	ug/l	0.0173	0.0549	1	M8270C	6/25/2019	6/25/2019	MJR	1
Fluoranthene	0.031	ug/l	0.0088	0.0281	1	M8270C	6/25/2019	6/25/2019	MJR	1
Fluorene	0.013 "J"	ug/l	0.0079	0.0251	1	M8270C	6/25/2019	6/25/2019	MJR	1
Indeno(1,2,3-cd)pyrene	0.023 "J"	ug/l	0.0121	0.0385	1	M8270C	6/25/2019	6/25/2019	MJR	1
1-Methyl naphthalene	< 0.0191	ug/l	0.0191	0.0609	1	M8270C	6/25/2019	6/25/2019	MJR	1
2-Methyl naphthalene	< 0.0186	ug/l	0.0186	0.059	1	M8270C	6/25/2019	6/25/2019	MJR	1
Naphthalene	0.101	ug/l	0.026	0.083	1	M8270C	6/25/2019	6/25/2019	MJR	1
Phenanthrene	0.042 "J"	ug/l	0.0143	0.0456	1	M8270C	6/25/2019	6/25/2019	MJR	1
Pyrene	0.029 "J"	ug/l	0.0121	0.0386	1	M8270C	6/25/2019	6/25/2019	MJR	1
VOC's										
Benzene	7.2	ug/l	0.22	0.71	1	8260B		6/26/2019	CJR	1
Bromobenzene	< 0.44	ug/l	0.44	1.38	1	8260B		6/26/2019	CJR	1
Bromodichloromethane	< 0.33	ug/l	0.33	1.06	1	8260B		6/26/2019	CJR	1
Bromoform	< 0.45	ug/l	0.45	1.44	1	8260B		6/26/2019	CJR	1
tert-Butylbenzene	< 0.25	ug/l	0.25	0.8	1	8260B		6/26/2019	CJR	1
sec-Butylbenzene	< 0.79	ug/l	0.79	2.53	1	8260B		6/26/2019	CJR	1
n-Butylbenzene	< 0.71	ug/l	0.71	2.25	1	8260B		6/26/2019	CJR	1
Carbon Tetrachloride	< 0.31	ug/l	0.31	0.98	1	8260B		6/26/2019	CJR	1
Chlorobenzene	< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
Chloroethane	< 0.61	ug/l	0.61	1.95	1	8260B		6/26/2019	CJR	1
Chloroform	< 0.26	ug/l	0.26	0.82	1	8260B		6/26/2019	CJR	1
Chloromethane	< 0.54	ug/l	0.54	1.72	1	8260B		6/26/2019	CJR	1
2-Chlorotoluene	< 0.31	ug/l	0.31	0.98	1	8260B		6/26/2019	CJR	1
4-Chlorotoluene	< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
1,2-Dibromo-3-chloropropane	< 2.96	ug/l	2.96	9.43	1	8260B		6/26/2019	CJR	1
Dibromochloromethane	< 0.22	ug/l	0.22	0.69	1	8260B		6/26/2019	CJR	1
1,4-Dichlorobenzene	< 0.7	ug/l	0.7	2.22	1	8260B		6/26/2019	CJR	1
1,3-Dichlorobenzene	< 0.85	ug/l	0.85	2.7	1	8260B		6/26/2019	CJR	1
1,2-Dichlorobenzene	< 0.86	ug/l	0.86	2.74	1	8260B		6/26/2019	CJR	1
Dichlorodifluoromethane	< 0.32	ug/l	0.32	1.02	1	8260B		6/26/2019	CJR	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360D
Sample ID MW-2
Sample Matrix Water
Sample Date 6/18/2019

	Result		Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,2-Dichloroethane		< 0.25	ug/l	0.25	0.78	1	8260B		6/26/2019	CJR	1
1,1-Dichloroethane		< 0.36	ug/l	0.36	1.14	1	8260B		6/26/2019	CJR	1
1,1-Dichloroethene		< 0.42	ug/l	0.42	1.34	1	8260B		6/26/2019	CJR	1
cis-1,2-Dichloroethene		< 0.37	ug/l	0.37	1.16	1	8260B		6/26/2019	CJR	1
trans-1,2-Dichloroethene		< 0.34	ug/l	0.34	1.07	1	8260B		6/26/2019	CJR	1
1,2-Dichloropropane		< 0.44	ug/l	0.44	1.39	1	8260B		6/26/2019	CJR	1
1,3-Dichloropropane		< 0.3	ug/l	0.3	0.94	1	8260B		6/26/2019	CJR	1
trans-1,3-Dichloropropene		< 0.32	ug/l	0.32	1.01	1	8260B		6/26/2019	CJR	1
cis-1,3-Dichloropropene		< 0.26	ug/l	0.26	0.81	1	8260B		6/26/2019	CJR	1
Di-isopropyl ether	0.30 "J"		ug/l	0.21	0.66	1	8260B		6/26/2019	CJR	1
EDB (1,2-Dibromoethane)		< 0.34	ug/l	0.34	1.09	1	8260B		6/26/2019	CJR	1
Ethylbenzene		< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
Hexachlorobutadiene		< 1.34	ug/l	1.34	4.28	1	8260B		6/26/2019	CJR	1
Isopropylbenzene		< 0.78	ug/l	0.78	2.47	1	8260B		6/26/2019	CJR	1
p-Isopropyltoluene		< 0.24	ug/l	0.24	0.76	1	8260B		6/26/2019	CJR	1
Methylene chloride		< 1.32	ug/l	1.32	4.21	1	8260B		6/26/2019	CJR	1
Methyl tert-butyl ether (MTBE)	6.7		ug/l	0.28	0.89	1	8260B		6/26/2019	CJR	1
Naphthalene		< 2.1	ug/l	2.1	6.65	1	8260B		6/26/2019	CJR	1
n-Propylbenzene		< 0.61	ug/l	0.61	1.95	1	8260B		6/26/2019	CJR	1
1,1,2,2-Tetrachloroethane		< 0.3	ug/l	0.3	0.97	1	8260B		6/26/2019	CJR	1
1,1,1,2-Tetrachloroethane		< 0.35	ug/l	0.35	1.13	1	8260B		6/26/2019	CJR	1
Tetrachloroethene	0.74 "J"		ug/l	0.38	1.21	1	8260B		6/26/2019	CJR	1
Toluene		< 0.19	ug/l	0.19	0.6	1	8260B		6/26/2019	CJR	1
1,2,4-Trichlorobenzene		< 1.15	ug/l	1.15	3.67	1	8260B		6/26/2019	CJR	1
1,2,3-Trichlorobenzene		< 1.71	ug/l	1.71	5.43	1	8260B		6/26/2019	CJR	1
1,1,1-Trichloroethane		< 0.33	ug/l	0.33	1.05	1	8260B		6/26/2019	CJR	1
1,1,2-Trichloroethane		< 0.42	ug/l	0.42	1.32	1	8260B		6/26/2019	CJR	1
Trichloroethene (TCE)		< 0.3	ug/l	0.3	0.94	1	8260B		6/26/2019	CJR	1
Trichlorofluoromethane		< 0.35	ug/l	0.35	1.1	1	8260B		6/26/2019	CJR	1
1,2,4-Trimethylbenzene		< 0.8	ug/l	0.8	2.55	1	8260B		6/26/2019	CJR	1
1,3,5-Trimethylbenzene		< 0.63	ug/l	0.63	2	1	8260B		6/26/2019	CJR	1
Vinyl Chloride		< 0.2	ug/l	0.2	0.65	1	8260B		6/26/2019	CJR	1
m&p-Xylene		< 0.43	ug/l	0.43	1.38	1	8260B		6/26/2019	CJR	1
o-Xylene		< 0.29	ug/l	0.29	0.93	1	8260B		6/26/2019	CJR	1
SUR - 1,2-Dichloroethane-d4	107		REC %			1	8260B		6/26/2019	CJR	1
SUR - 4-Bromofluorobenzene	92		REC %			1	8260B		6/26/2019	CJR	1
SUR - Dibromofluoromethane	109		REC %			1	8260B		6/26/2019	CJR	1
SUR - Toluene-d8	93		REC %			1	8260B		6/26/2019	CJR	1
Wet Chemistry											
General											
Nitrite Plus Nitrate, Dissolved		< 0.47	mg/l	0.47	1.56	1	353.2		7/8/2019	NJC	1
Sulfate, Unfiltered	18.3		mg/l	3.37	11.23	1	ASTM D516-		7/10/2019	NJC	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360E
Sample ID MW-1
Sample Matrix Water
Sample Date 6/18/2019

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Iron, Dissolved	0.03 "J"	mg/l	0.03	0.1	1	200.7		6/24/2019	CWT	1
Lead, Dissolved	< 1.1	ug/L	1.1	3.7	1	7421		6/25/2019	CWT	1
Manganese, Dissolved	1010	ug/L	4.2	13.8	1	200.7		6/24/2019	CWT	1
Organic										
PAH SIM										
Acenaphthene	< 0.0282	ug/l	0.0282	0.09	3	M8270C	6/25/2019	6/25/2019	MJR	1
Acenaphthylene	< 0.0468	ug/l	0.0468	0.1485	3	M8270C	6/25/2019	6/25/2019	MJR	1
Anthracene	< 0.045	ug/l	0.045	0.1434	3	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(a)anthracene	0.049 "J"	ug/l	0.0393	0.1254	3	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(a)pyrene	< 0.0501	ug/l	0.0501	0.1593	3	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(b)fluoranthene	< 0.048	ug/l	0.048	0.1527	3	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(g,h,i)perylene	< 0.0426	ug/l	0.0426	0.1353	3	M8270C	6/25/2019	6/25/2019	MJR	1
Benzo(k)fluoranthene	< 0.0438	ug/l	0.0438	0.1389	3	M8270C	6/25/2019	6/25/2019	MJR	1
Chrysene	< 0.0471	ug/l	0.0471	0.1497	3	M8270C	6/25/2019	6/25/2019	MJR	1
Dibenzo(a,h)anthracene	< 0.0519	ug/l	0.0519	0.1647	3	M8270C	6/25/2019	6/25/2019	MJR	1
Fluoranthene	0.032 "J"	ug/l	0.0264	0.0843	3	M8270C	6/25/2019	6/25/2019	MJR	1
Fluorene	0.036 "J"	ug/l	0.0237	0.0753	3	M8270C	6/25/2019	6/25/2019	MJR	1
Indeno(1,2,3-cd)pyrene	< 0.0363	ug/l	0.0363	0.1155	3	M8270C	6/25/2019	6/25/2019	MJR	1
1-Methyl naphthalene	< 0.0573	ug/l	0.0573	0.1827	3	M8270C	6/25/2019	6/25/2019	MJR	1
2-Methyl naphthalene	< 0.0558	ug/l	0.0558	0.177	3	M8270C	6/25/2019	6/25/2019	MJR	1
Naphthalene	< 0.078	ug/l	0.078	0.249	3	M8270C	6/25/2019	6/25/2019	MJR	1
Phenanthrene	< 0.0429	ug/l	0.0429	0.1368	3	M8270C	6/25/2019	6/25/2019	MJR	1
Pyrene	< 0.0363	ug/l	0.0363	0.1158	3	M8270C	6/25/2019	6/25/2019	MJR	1
VOC's										
Benzene	16.9	ug/l	0.22	0.71	1	8260B		6/26/2019	CJR	1
Bromobenzene	< 0.44	ug/l	0.44	1.38	1	8260B		6/26/2019	CJR	1
Bromodichloromethane	< 0.33	ug/l	0.33	1.06	1	8260B		6/26/2019	CJR	1
Bromoform	< 0.45	ug/l	0.45	1.44	1	8260B		6/26/2019	CJR	1
tert-Butylbenzene	< 0.25	ug/l	0.25	0.8	1	8260B		6/26/2019	CJR	1
sec-Butylbenzene	1.67 "J"	ug/l	0.79	2.53	1	8260B		6/26/2019	CJR	1
n-Butylbenzene	1.85 "J"	ug/l	0.71	2.25	1	8260B		6/26/2019	CJR	1
Carbon Tetrachloride	< 0.31	ug/l	0.31	0.98	1	8260B		6/26/2019	CJR	1
Chlorobenzene	< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
Chloroethane	< 0.61	ug/l	0.61	1.95	1	8260B		6/26/2019	CJR	1
Chloroform	< 0.26	ug/l	0.26	0.82	1	8260B		6/26/2019	CJR	1
Chloromethane	< 0.54	ug/l	0.54	1.72	1	8260B		6/26/2019	CJR	1
2-Chlorotoluene	< 0.31	ug/l	0.31	0.98	1	8260B		6/26/2019	CJR	1
4-Chlorotoluene	< 0.26	ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
1,2-Dibromo-3-chloropropane	< 2.96	ug/l	2.96	9.43	1	8260B		6/26/2019	CJR	1
Dibromochloromethane	< 0.22	ug/l	0.22	0.69	1	8260B		6/26/2019	CJR	1
1,4-Dichlorobenzene	< 0.7	ug/l	0.7	2.22	1	8260B		6/26/2019	CJR	1
1,3-Dichlorobenzene	< 0.85	ug/l	0.85	2.7	1	8260B		6/26/2019	CJR	1
1,2-Dichlorobenzene	< 0.86	ug/l	0.86	2.74	1	8260B		6/26/2019	CJR	1
Dichlorodifluoromethane	< 0.32	ug/l	0.32	1.02	1	8260B		6/26/2019	CJR	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360E
Sample ID MW-1
Sample Matrix Water
Sample Date 6/18/2019

	Result		Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,2-Dichloroethane		< 0.25	ug/l	0.25	0.78	1	8260B		6/26/2019	CJR	1
1,1-Dichloroethane		< 0.36	ug/l	0.36	1.14	1	8260B		6/26/2019	CJR	1
1,1-Dichloroethene		< 0.42	ug/l	0.42	1.34	1	8260B		6/26/2019	CJR	1
cis-1,2-Dichloroethene		< 0.37	ug/l	0.37	1.16	1	8260B		6/26/2019	CJR	1
trans-1,2-Dichloroethene		< 0.34	ug/l	0.34	1.07	1	8260B		6/26/2019	CJR	1
1,2-Dichloropropane		< 0.44	ug/l	0.44	1.39	1	8260B		6/26/2019	CJR	1
1,3-Dichloropropane		< 0.3	ug/l	0.3	0.94	1	8260B		6/26/2019	CJR	1
trans-1,3-Dichloropropene		< 0.32	ug/l	0.32	1.01	1	8260B		6/26/2019	CJR	1
cis-1,3-Dichloropropene		< 0.26	ug/l	0.26	0.81	1	8260B		6/26/2019	CJR	1
Di-isopropyl ether		< 0.21	ug/l	0.21	0.66	1	8260B		6/26/2019	CJR	1
EDB (1,2-Dibromoethane)		< 0.34	ug/l	0.34	1.09	1	8260B		6/26/2019	CJR	1
Ethylbenzene	4.8		ug/l	0.26	0.83	1	8260B		6/26/2019	CJR	1
Hexachlorobutadiene		< 1.34	ug/l	1.34	4.28	1	8260B		6/26/2019	CJR	1
Isopropylbenzene	5.9		ug/l	0.78	2.47	1	8260B		6/26/2019	CJR	1
p-Isopropyltoluene	1.07		ug/l	0.24	0.76	1	8260B		6/26/2019	CJR	1
Methylene chloride		< 1.32	ug/l	1.32	4.21	1	8260B		6/26/2019	CJR	1
Methyl tert-butyl ether (MTBE)		< 0.28	ug/l	0.28	0.89	1	8260B		6/26/2019	CJR	1
Naphthalene	24.8		ug/l	2.1	6.65	1	8260B		6/26/2019	CJR	1
n-Propylbenzene	9.1		ug/l	0.61	1.95	1	8260B		6/26/2019	CJR	1
1,1,2,2-Tetrachloroethane		< 0.3	ug/l	0.3	0.97	1	8260B		6/26/2019	CJR	1
1,1,1,2-Tetrachloroethane		< 0.35	ug/l	0.35	1.13	1	8260B		6/26/2019	CJR	1
Tetrachloroethene	1.05 "J"		ug/l	0.38	1.21	1	8260B		6/26/2019	CJR	1
Toluene		< 0.19	ug/l	0.19	0.6	1	8260B		6/26/2019	CJR	1
1,2,4-Trichlorobenzene		< 1.15	ug/l	1.15	3.67	1	8260B		6/26/2019	CJR	1
1,2,3-Trichlorobenzene		< 1.71	ug/l	1.71	5.43	1	8260B		6/26/2019	CJR	1
1,1,1-Trichloroethane		< 0.33	ug/l	0.33	1.05	1	8260B		6/26/2019	CJR	1
1,1,2-Trichloroethane		< 0.42	ug/l	0.42	1.32	1	8260B		6/26/2019	CJR	1
Trichloroethene (TCE)		< 0.3	ug/l	0.3	0.94	1	8260B		6/26/2019	CJR	1
Trichlorofluoromethane		< 0.35	ug/l	0.35	1.1	1	8260B		6/26/2019	CJR	1
1,2,4-Trimethylbenzene	3.5		ug/l	0.8	2.55	1	8260B		6/26/2019	CJR	1
1,3,5-Trimethylbenzene	2.61		ug/l	0.63	2	1	8260B		6/26/2019	CJR	1
Vinyl Chloride		< 0.2	ug/l	0.2	0.65	1	8260B		6/26/2019	CJR	1
m&p-Xylene	1.53		ug/l	0.43	1.38	1	8260B		6/26/2019	CJR	1
o-Xylene		< 0.29	ug/l	0.29	0.93	1	8260B		6/26/2019	CJR	1
SUR - 1,2-Dichloroethane-d4	104		REC %			1	8260B		6/26/2019	CJR	1
SUR - 4-Bromofluorobenzene	89		REC %			1	8260B		6/26/2019	CJR	1
SUR - Dibromofluoromethane	107		REC %			1	8260B		6/26/2019	CJR	1
SUR - Toluene-d8	93		REC %			1	8260B		6/26/2019	CJR	1
Wet Chemistry											
General											
Nitrite Plus Nitrate, Dissolved		< 0.47	mg/l	0.47	1.56	1	353.2		7/8/2019	NJC	3 64
Sulfate, Unfiltered	30.9		mg/l	3.37	11.23	1	ASTM D516-		7/10/2019	NJC	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360F
Sample ID TRIP
Sample Matrix Water
Sample Date 6/18/2019

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
VOC's										
Benzene	< 0.22	ug/l	0.22	0.71	1	8260B		6/25/2019	CJR	1
Bromobenzene	< 0.44	ug/l	0.44	1.38	1	8260B		6/25/2019	CJR	1
Bromodichloromethane	< 0.33	ug/l	0.33	1.06	1	8260B		6/25/2019	CJR	1
Bromoform	< 0.45	ug/l	0.45	1.44	1	8260B		6/25/2019	CJR	1
tert-Butylbenzene	< 0.25	ug/l	0.25	0.8	1	8260B		6/25/2019	CJR	1
sec-Butylbenzene	< 0.79	ug/l	0.79	2.53	1	8260B		6/25/2019	CJR	1
n-Butylbenzene	< 0.71	ug/l	0.71	2.25	1	8260B		6/25/2019	CJR	1
Carbon Tetrachloride	< 0.31	ug/l	0.31	0.98	1	8260B		6/25/2019	CJR	1
Chlorobenzene	< 0.26	ug/l	0.26	0.83	1	8260B		6/25/2019	CJR	1
Chloroethane	< 0.61	ug/l	0.61	1.95	1	8260B		6/25/2019	CJR	1
Chloroform	< 0.26	ug/l	0.26	0.82	1	8260B		6/25/2019	CJR	1
Chloromethane	< 0.54	ug/l	0.54	1.72	1	8260B		6/25/2019	CJR	1
2-Chlorotoluene	< 0.31	ug/l	0.31	0.98	1	8260B		6/25/2019	CJR	1
4-Chlorotoluene	< 0.26	ug/l	0.26	0.83	1	8260B		6/25/2019	CJR	1
1,2-Dibromo-3-chloropropane	< 2.96	ug/l	2.96	9.43	1	8260B		6/25/2019	CJR	1
Dibromochloromethane	< 0.22	ug/l	0.22	0.69	1	8260B		6/25/2019	CJR	1
1,4-Dichlorobenzene	< 0.7	ug/l	0.7	2.22	1	8260B		6/25/2019	CJR	1
1,3-Dichlorobenzene	< 0.85	ug/l	0.85	2.7	1	8260B		6/25/2019	CJR	1
1,2-Dichlorobenzene	< 0.86	ug/l	0.86	2.74	1	8260B		6/25/2019	CJR	1
Dichlorodifluoromethane	< 0.32	ug/l	0.32	1.02	1	8260B		6/25/2019	CJR	1
1,2-Dichloroethane	< 0.25	ug/l	0.25	0.78	1	8260B		6/25/2019	CJR	1
1,1-Dichloroethane	< 0.36	ug/l	0.36	1.14	1	8260B		6/25/2019	CJR	1
1,1-Dichloroethene	< 0.42	ug/l	0.42	1.34	1	8260B		6/25/2019	CJR	1
cis-1,2-Dichloroethene	< 0.37	ug/l	0.37	1.16	1	8260B		6/25/2019	CJR	1
trans-1,2-Dichloroethene	< 0.34	ug/l	0.34	1.07	1	8260B		6/25/2019	CJR	1
1,2-Dichloropropane	< 0.44	ug/l	0.44	1.39	1	8260B		6/25/2019	CJR	1
1,3-Dichloropropane	< 0.3	ug/l	0.3	0.94	1	8260B		6/25/2019	CJR	1
trans-1,3-Dichloropropene	< 0.32	ug/l	0.32	1.01	1	8260B		6/25/2019	CJR	1
cis-1,3-Dichloropropene	< 0.26	ug/l	0.26	0.81	1	8260B		6/25/2019	CJR	1
Di-isopropyl ether	< 0.21	ug/l	0.21	0.66	1	8260B		6/25/2019	CJR	1
EDB (1,2-Dibromoethane)	< 0.34	ug/l	0.34	1.09	1	8260B		6/25/2019	CJR	1
Ethylbenzene	< 0.26	ug/l	0.26	0.83	1	8260B		6/25/2019	CJR	1
Hexachlorobutadiene	< 1.34	ug/l	1.34	4.28	1	8260B		6/25/2019	CJR	1
Isopropylbenzene	< 0.78	ug/l	0.78	2.47	1	8260B		6/25/2019	CJR	1
p-Isopropyltoluene	< 0.24	ug/l	0.24	0.76	1	8260B		6/25/2019	CJR	1
Methylene chloride	< 1.32	ug/l	1.32	4.21	1	8260B		6/25/2019	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.28	ug/l	0.28	0.89	1	8260B		6/25/2019	CJR	1
Naphthalene	< 2.1	ug/l	2.1	6.65	1	8260B		6/25/2019	CJR	1
n-Propylbenzene	< 0.61	ug/l	0.61	1.95	1	8260B		6/25/2019	CJR	1
1,1,2,2-Tetrachloroethane	< 0.3	ug/l	0.3	0.97	1	8260B		6/25/2019	CJR	1
1,1,1,2-Tetrachloroethane	< 0.35	ug/l	0.35	1.13	1	8260B		6/25/2019	CJR	1
Tetrachloroethene	< 0.38	ug/l	0.38	1.21	1	8260B		6/25/2019	CJR	1
Toluene	< 0.19	ug/l	0.19	0.6	1	8260B		6/25/2019	CJR	1
1,2,4-Trichlorobenzene	< 1.15	ug/l	1.15	3.67	1	8260B		6/25/2019	CJR	1

Project Name HERRIGES OIL BP SOUTH **Invoice #** E36360
Project #

Lab Code 5036360F
Sample ID TRIP
Sample Matrix Water
Sample Date 6/18/2019

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,2,3-Trichlorobenzene	< 1.71	ug/l	1.71	5.43	1	8260B		6/25/2019	CJR	1
1,1,1-Trichloroethane	< 0.33	ug/l	0.33	1.05	1	8260B		6/25/2019	CJR	1
1,1,2-Trichloroethane	< 0.42	ug/l	0.42	1.32	1	8260B		6/25/2019	CJR	1
Trichloroethene (TCE)	< 0.3	ug/l	0.3	0.94	1	8260B		6/25/2019	CJR	1
Trichlorofluoromethane	< 0.35	ug/l	0.35	1.1	1	8260B		6/25/2019	CJR	1
1,2,4-Trimethylbenzene	< 0.8	ug/l	0.8	2.55	1	8260B		6/25/2019	CJR	1
1,3,5-Trimethylbenzene	< 0.63	ug/l	0.63	2	1	8260B		6/25/2019	CJR	1
Vinyl Chloride	< 0.2	ug/l	0.2	0.65	1	8260B		6/25/2019	CJR	1
m&p-Xylene	< 0.43	ug/l	0.43	1.38	1	8260B		6/25/2019	CJR	1
o-Xylene	< 0.29	ug/l	0.29	0.93	1	8260B		6/25/2019	CJR	1
SUR - Toluene-d8	94	REC %			1	8260B		6/25/2019	CJR	1
SUR - 1,2-Dichloroethane-d4	98	REC %			1	8260B		6/25/2019	CJR	1
SUR - 4-Bromofluorobenzene	96	REC %			1	8260B		6/25/2019	CJR	1
SUR - Dibromofluoromethane	105	REC %			1	8260B		6/25/2019	CJR	1

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.
3	The matrix spike not within established limits.
6	The surrogate recovery not within established limits.
64	Spike recovery failed due to matrix interference.

CWT denotes sub contract lab - Certification #445126660

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature Michael Ricker

CHAIN OF CUSTODY RECORD

Synergy
Environmental Lab, Inc.

1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • FAX 920-733-0631

Chain # № 33[illegible]7

Page 1 of 1

Sample Handling Request
____ Rush Analysis Date Required ____
(Rushes accepted only with prior authorization)
X Normal Turn Around

Lab I.D. #

Account No. : | Quote No.:

Project #:

Sampler: (signature) Ben Nelson / Rob Wilmott

Project (Name / Location): Herriges oil B.P. South / Kewaskum, WI

Reports To: Douglas Polzean	Invoice To: Douglas Polzean
Company	Company c/o METCO
Address 1245 Fond du lac Ave	Address 709 Gillette st, Ste #3
City State Zip Kewaskum, WI 53040	City State Zip La Crosse, WI 54603
Phone 262-626-2244	Phone 608-781-8879
FAX	FAX

Analysis Requested / Other Analysis

Lab I.D.	Sample I.D.	Collection Date	Collection Time	Comp	Grab	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation	DRO (Mod DRO Sep 95)	GRO (Mod GRO Sep 95)	LEAD (DISS)	NITRATE/NITRITE	OIL & GREASE	PAH (EPA 8270)	PCB	PVOC (EPA 8021)	PVOC + NAPHTHALENE	SULFATE	TOTAL SUSPENDED SOLIDS	VOC DW (EPA 524.2)	VOC (EPA 8260)	8-RCRA METALS	DISS. Iron, Manganese							PID/FID
5036360 A	mw-7	6-18	12:04		X	N	5	GW	HCL						X				X			X									
	mw-3		12:04			Y	2		H_2SO_4/HNO_3			X	X											X							
B	mw-4		12:36			N	5		HCL						X				X			X									
	mw-4		12:36			Y	2		H_2SO_4/HNO_3			X	X											X							
C	mw-5		12:43			N	5		HCL						X				X			X									
	mw-5		12:43			Y	2		H_2SO_4/HNO_3			X	X											X							
D	mw-2		1:16			N	5		HCL						X				X			X									
	mw-2		1:16			Y	2		H_2SO_4/HNO_3			X	X											X							
E	mw-1		1:28			N	5		HCL						X				X			X									
	mw-1		1:28			Y	2		H_2SO_4/HNO_3			X	X											X							

Comments/Special Instructions (*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge etc.)

F TB – – N 1 – HCL X

Lab to send copy of report to METCO / Jason P. (Invoice to METCO)

Agent Status # W+C Rate Apply

Sample Integrity - To be completed by receiving lab.

Method of Shipment: GC

Temp. of Temp. Blank ____ °C On Ice: X

Cooler seal intact upon receipt: X Yes ____ No

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date
[signature]	5:54	5-19-19			
[signature]	5:54	5-19-19			

Received in Laboratory By: [signature] Time: 8:00 Date: 6/21/19