

**TABLE 1
FORMER H&S (MINERAL) #1 TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Depth (ft bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
COGCC Table 910-1 Soil Standard (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500
SS01 @ 13'	6/20/2013	13	0.51	41	13	200	0.32	5,900
SS02 @ 6'	6/21/2013	6	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS03 @ 6'	6/21/2013	6	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	0.74
SS04 @ 6'	6/21/2013	6	<0.0050	0.011	<0.0050	0.65	<0.0050	310
SS05 @ 6'	6/21/2013	6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<50
BH09 @ 18-20'	5/29/2019	18-20	0.0032	<0.0050	0.63	12	0.10	610
BH09 @ 27-28'	5/29/2019	27-28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH10 @ 18-20'	5/29/2019	18-20	<0.0020	<0.0050	3.0	58	0.59	1,810
BH10 @ 22-24'	5/29/2019	22-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH11 @ 20-22'	5/29/2019	20-22	0.0051	<0.0050	3.4	52	0.77	1,050
BH11 @ 26-28'	5/29/2019	26-28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH12 @ 20-22'	6/19/2019	20-22	<0.0020	<0.0050	0.010	0.031	<0.010	0.72
BH12 @ 23-24'	6/19/2019	23-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH13 @ 16-18'	6/19/2019	16-18	<0.0020	<0.0050	2.3	45	0.28	1,200
BH13 @ 20-22'	6/19/2019	20-22	<0.0020	<0.0050	0.94	18	0.070	990
BH13 @ 23-24'	6/19/2019	23-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH14 @ 18-20'	6/19/2019	18-20	<0.0020	<0.0050	1.7	34	0.49	1,340
BH14 @ 23-24'	6/19/2019	23-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH15 @ 16-20'	6/19/2019	16-20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH15 @ 20-22'	6/19/2019	20-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH16 @ 18-20'	6/19/2019	18-20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH16 @ 23-24'	6/19/2019	23-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH17 @ 18-20'	6/19/2019	18-20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH17 @ 23-24'	6/19/2019	23-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH18 @ 23-25'	7/29/2019	23-25	0.0064	0.071	0.85	20	0.99	830
BH18 @ 27-29'	7/29/2019	27-29	3.6	120	33	600	4.1	11,900
BH18 @ 30-31'	7/29/2019	30-31	<0.0020	<0.0050	<0.0050	0.083	<0.010	0.93
BH19 @ 23-25'	7/29/2019	23-25	0.70	2.3	7.1	150	0.34	2,820
BH19 @ 27-29'	7/29/2019	27-29	0.88	0.25	13	210	0.064	6,300
BH19 @ 30-31'	7/29/2019	30-31	<0.0020	<0.0050	<0.0050	0.27	<0.010	<50
BH20 @ 23-25'	7/29/2019	23-25	1.3	0.0082	2.7	51	0.27	970
BH20 @ 27-29'	7/29/2019	27-29	1.4	<0.0050	8.2	140	0.26	3,570
BH20 @ 30-31'	7/29/2019	30-31	<0.0020	<0.0050	<0.0050	0.029	<0.010	1.0
BH21 @ 23-25'	7/30/2019	23-25	5.3	<0.0050	16	260	<0.010	6,730
BH21 @ 27-29'	7/30/2019	27-29	1.2	<0.0050	2.9	16	0.21	471
BH21 @ 30-31'	7/30/2019	30-31	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH22 @ 23-25'	7/30/2019	23-25	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH22 @ 27-29'	7/30/2019	27-29	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH23 @ 23-25'	7/30/2019	23-25	<0.0020	<0.0050	0.50	12	0.28	620
BH23 @ 27-29'	7/30/2019	27-29	<0.0020	<0.0050	5.8	32	0.29	810
BH23 @ 30-31'	7/30/2019	30-31	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH24 @ 24-26'	7/31/2019	24-26	1.2	41	6.2	110	1.0	2,490
BH24 @ 28-30'	7/31/2019	28-30	3.4	100	17	290	0.065	5,800
BH24 @ 32-33'	7/31/2019	32-33	0.33	2.5	2.1	12	0.061	1,110
BH25 @ 24-26'	1/22/2020	24-26	0.31	3.9	0.59	12	0.10	250
BH25 @ 28-30'	1/22/2020	28-30	6.4	150	34	520	2.8	10,400
BH25 @ 32-33'	1/22/2020	32-33	0.0065	<0.0050	0.030	0.29	<0.010	11

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Sample ID	Date Sampled	Depth (ft bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
COGCC Table 910-1 Soil Standard (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500
BH25 @ 34-35'	1/22/2020	34-35	<0.0020	0.0054	<0.0050	0.013	<0.010	<50
BH26 @ 24-26'	1/22/2020	24-26	0.0070	14	6.9	140	<0.010	2,780
BH26 @ 28-30'	1/22/2020	28-30	<0.0020	0.080	0.16	24	0.031	456
BH26 @ 32-33'	1/22/2020	32-33	0.0036	0.016	0.096	13	0.048	110
BH26 @ 34-35'	1/22/2020	34-35	0.0041	0.0088	<0.0050	0.026	<0.010	<50
BH27 @ 23-25'	1/22/2020	23-25	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH27 @ 27-29'	1/22/2020	27-29	<0.0020	<0.0050	<0.0050	0.011	<0.010	99
BH27 @ 30'	1/22/2020	30	<0.0020	<0.0050	<0.0050	<0.010	<0.010	1.0
BH28 @ 23-25'	1/22/2020	23-25	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH28 @ 27-29'	1/22/2020	27-29	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH28 @ 30'	1/22/2020	30	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH29 @ 18-20'	1/23/2020	18-20	<0.0020	15	11	230	1.6	3,830
BH29 @ 20-22'	1/23/2020	20-22	<0.0020	26	13	250	1.6	4,170
BH29 @ 24-25'	1/23/2020	24-25	<0.0020	0.011	0.0054	0.088	<0.010	0.66
BH30 @ 15-17'	1/23/2020	15-17	<0.0020	0.20	0.13	2.5	0.048	97
BH30 @ 25-27'	1/23/2020	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	5.7
BH30 @ 29-30'	1/23/2020	29-30	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH31 @ 24-26'	1/23/2020	24-26	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH31 @ 28-30'	1/23/2020	28-30	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH32 @ 24-26'	1/23/2020	24-26	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH32 @ 28-30'	1/23/2020	28-30	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH32 @ 32-33'	1/23/2020	32-33	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH32 @ 35'	1/23/2020	35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH33 @ 24-26'	1/24/2020	24-26	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH33 @ 28-30'	1/24/2020	28-30	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH34 @ 24-26'	1/24/2020	24-26	3.4	<0.0050	11	140	0.54	2,550
BH34 @ 28-30'	1/24/2020	28-30	0.048	0.0070	0.028	0.12	<0.010	1.4
BH36 @ 18-20'	1/27/2020	18-20	<0.0020	<0.0050	2.4	45	0.13	5,500
BH36 @ 20-22'	1/27/2020	20-22	<0.0020	<0.0050	1.4	24	0.28	2,360
BH36 @ 24-25'	1/27/2020	24-25	<0.0020	<0.0050	<0.0050	0.027	<0.010	5.7
BH38 @ 24-26'	1/27/2020	24-26	0.068	<0.0050	0.0077	0.086	<0.010	<50
BH38 @ 28-30'	1/27/2020	28-30	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH39 @ 25-26'	1/28/2020	25-26	<0.0020	<0.0050	<0.0050	0.030	<0.010	<50
BH39 @ 28-30'	1/28/2020	28-30	<0.0020	<0.0050	0.0052	0.013	<0.010	13
BH39 @ 32-33'	1/28/2020	32-33	<0.0020	<0.0050	<0.0050	<0.010	<0.010	9.3
BH39 @ 34-35'	1/28/2020	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH40 @ 18-20'	1/28/2020	18-20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH40 @ 22-24'	1/28/2020	22-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH41 @ 16-18'	1/28/2020	16-18	<0.0020	<0.0050	0.11	5.2	<0.010	2,750
BH41 @ 18-20'	1/28/2020	18-20	<0.0020	<0.0050	33	640	0.40	8,400
BH41 @ 20-22'	1/28/2020	20-22	<0.0020	<0.0050	<0.0050	0.049	<0.010	3.2
BH42 @ 18-20'	1/29/2020	18-20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH42 @ 20-22'	1/29/2020	20-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH43 @ 16-18'	1/29/2020	16-18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH43 @ 18-20'	1/29/2020	18-20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH43 @ 20-22'	1/29/2020	20-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH44 @ 16-18'	1/29/2020	16-18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH44 @ 18-20'	1/29/2020	18-20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

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SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (ft bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
COGCC Table 910-1 Soil Standard (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500
BH44 @ 20-22'	1/29/2020	20-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective May 1, 2018.

2. TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

GRO = Total volatile petroleum hydrocarbons - gasoline range organics

DRO = Total extractable petroleum hydrocarbons - diesel range organics

mg/kg = Milligrams per kilogram

ft bgs = Feet below ground surface

BOLD = Analytical result is in exceedance of COGCC soil standards.

TABLE 2
FORMER H & S (MINERAL) #1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)	
COGCC Table 910-1 Groundwater Standard (µg/L)⁽¹⁾		5	560	700	1,400		
BH01	7/25/2013	6,700	6,200	1,100	19,000	16.53	
BH01	10/31/2013	1,700	1,800	170	4,400	15.65	
BH01	1/24/2014	6.5	<1.0	<1.0	3,000	17.19	
BH01	4/30/2014	290	990	76	2,700	17.35	
BH01	7/25/2014	45	100	53	2,100	14.68	
BH01	10/27/2014	21	19	21	2,100	13.75	
BH01	1/20/2015	9.7	13	<1.0	1,600	15.85	
BH01	5/13/2015	4.9	13	5.2	2,600	15.90	
BH01	7/30/2015	<1.0	6.5	<1.0	290	14.23	
BH01	10/26/2015	1.1	15	5.3	400	13.57	
BH01	1/26/2016	3.1	19	<1.0	980	16.04	
BH01	4/21/2016	NS	NS	NS	NS	16.64	
BH01	7/18/2016	Destroyed					
BH01R	7/18/2016	<1.0	2.4	<1.0	1,200	15.42	
BH01R	10/19/2016	<1.0	<1.0	<1.0	240	14.60	
BH01R	1/20/2017	<1.0	1.8	3.1	48	17.15	
BH01R	4/26/2017	<1.0	<1.0	<1.0	<2.0	14.97	
BH01R	7/31/2017	<1.0	<1.0	<1.0	<2.0	12.18	
BH01R	10/27/2017	<1.0	<1.0	<1.0	<2.0	11.24	
BH01R	1/29/2018	<1.0	<1.0	<1.0	18	14.01	
BH01R	4/24/2018	4.2	<1.0	<1.0	11	14.82	
BH01R	7/2/2018	29	<1.0	<1.0	62	13.01	
BH01R	10/15/2018	8.7	<1.0	<1.0	110	12.10	
BH01R	1/14/2019	5.2	<1.0	<1.0	140	11.17	
BH01R	4/16/2019	15	<1.0	<1.0	140	15.93	
BH01R	8/2/2019	64	<1.0	<1.0	98	13.21	
BH01R	10/23/2019	19	<1.0	<1.0	380	12.36	
BH01R	1/8/2020	12	<1.0	<1.0	490	14.29	
BH02	7/25/2013	3,300	4,700	2,100	36,000	17.63	
BH02	10/31/2013	770	24	39	3,300	16.75	

TABLE 2
FORMER H & S (MINERAL) #1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)
COGCC Table 910-1 Groundwater Standard (µg/L)⁽¹⁾		5	560	700	1,400	
BH02	1/24/2014	730	20	<1.0	2,600	18.25
BH02	4/30/2014	84	12	3.8	410	18.39
BH02	7/25/2014	53	2.3	<1.0	68	15.75
BH02	10/27/2014	4.3	<1.0	<1.0	24	14.91
BH02	1/20/2015	160	<1.0	<1.0	390	17.02
BH02	5/13/2015	93	1.2	<1.0	75	17.14
BH02	7/30/2015	3.4	1.1	<1.0	57	15.61
BH02	10/26/2015	39	16	3.9	450	14.70
BH02	1/26/2016	<1.0	2.5	1.4	18	17.16
BH02	4/21/2016	81	<1.0	2.7	7.8	17.74
BH02	7/18/2016	71	1.0	<1.0	14	15.33
BH02	10/19/2016	9.9	1.2	<1.0	63	14.55
BH02	1/20/2017	5.2	11	2.1	730	17.12
BH02	4/26/2017	<1.0	<1.0	<1.0	<2.0	16.92
BH02	7/31/2017	<1.0	<1.0	<1.0	510	14.16
BH02	10/27/2017	1.1	2.1	<1.0	530	13.23
BH02	1/29/2018	5.2	2.2	<1.0	290	15.96
BH02	4/24/2018	43	<1.0	<1.0	61	16.80
BH02	7/2/2018	310	<1.0	<1.0	430	15.09
BH02	10/15/2018	93	1.1	4.0	770	14.09
BH02	1/14/2019	75	<1.0	4.8	170	14.92
BH02	4/16/2019	340	<1.0	2.0	120	17.95
BH02	8/2/2019	450	<1.0	6.9	2,000	15.23
BH02	10/23/2019	90	<1.0	14	370	14.39
BH02	1/8/2020	150	<1.0	20	360	14.17
BH03	7/25/2013	760	4,400	1,300	23,000	15.98
BH03	10/31/2013	3.6	8.6	2.2	100	15.15
BH03	1/24/2014	2.6	2.0	<1.0	62	16.63
BH03	4/30/2014	1.1	1.6	<1.0	45	16.79
BH03	7/25/2014	33	20	<1.0	480	14.14

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COGCC Table 910-1 Groundwater Standard (µg/L)⁽¹⁾		5	560	700	1,400	
BH03	10/27/2014	17	3.3	<1.0	210	13.27
BH03	1/20/2015	<1.0	<1.0	<1.0	8.7	15.35
BH03	5/13/2015	<1.0	<1.0	<1.0	8.2	15.38
BH03	7/30/2015	<1.0	<1.0	<1.0	4.9	13.72
BH03	10/26/2015	<1.0	<1.0	<1.0	12	13.09
BH03	1/26/2016	<1.0	1.4	<1.0	9.7	15.55
BH03	4/21/2016	<1.0	1.0	<1.0	5.7	16.16
BH03	7/18/2016	<1.0	<1.0	<1.0	<1.0	13.75
BH03	10/19/2016	<1.0	<1.0	<1.0	5.9	12.94
BH03	1/20/2017	<1.0	<1.0	<1.0	<1.0	15.50
BH03	4/26/2017	<1.0	<1.0	<1.0	<2.0	14.60
BH03	7/31/2017	<1.0	<1.0	<1.0	<2.0	11.82
BH03	10/27/2017	<1.0	<1.0	<1.0	<2.0	10.90
BH03	1/29/2018	<1.0	<1.0	<1.0	<2.0	13.60
BH03	4/24/2018	<1.0	<1.0	<1.0	<2.0	14.47
BH03	7/2/2018	2.4	<1.0	<1.0	<2.0	12.73
BH03	10/15/2018	1.2	<1.0	<1.0	14	11.75
BH03	1/14/2019	<1.0	<1.0	<1.0	22	12.03
BH03	4/16/2019	<1.0	<1.0	<1.0	2.7	15.68
BH03	8/2/2019	6.4	<1.0	<1.0	18	12.97
BH03	10/23/2019	2.5	<1.0	<1.0	25	12.10
BH03	1/8/2020	1.5	<1.0	<1.0	39	14.05
BH04	7/25/2013	1,700	170	1,200	19,000	15.91
BH04	10/31/2013	2,500	140	620	13,000	15.09
BH04	1/24/2014	2,100	320	740	14,000	16.60
BH04	4/30/2014	1,700	300	1,100	19,000	16.74
BH04	7/25/2014	410	9.3	36	6,400	14.11
BH04	10/27/2014	37	2.4	<1.0	630	13.22
BH04	1/20/2015	45	<1.0	<1.0	520	15.46
BH04	5/13/2015	2.6	<1.0	<1.0	110	15.40

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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)
COGCC Table 910-1 Groundwater Standard (µg/L)⁽¹⁾		5	560	700	1,400	
BH04	7/30/2015	8.8	1.2	2.4	780	13.76
BH04	10/26/2015	3.2	3.9	7.2	450	13.05
BH04	1/26/2016	<1.0	2.2	2.4	43	15.51
BH04	4/21/2016	<1.0	<1.0	<1.0	10	16.10
BH04	7/18/2016	<1.0	<1.0	<1.0	2.0	13.71
BH04	10/19/2016	<1.0	<1.0	<1.0	<1.0	12.88
BH04	1/20/2017	<1.0	<1.0	<1.0	<1.0	15.47
BH04	4/26/2017	<1.0	<1.0	<1.0	<2.0	15.26
BH04	7/31/2017	<1.0	<1.0	<1.0	<2.0	12.50
BH04	10/27/2017	<1.0	<1.0	<1.0	<2.0	11.63
BH04	1/29/2018	<1.0	<1.0	<1.0	<2.0	14.34
BH04	4/24/2018	4.4	<1.0	<1.0	<2.0	15.14
BH04	7/2/2018	22	<1.0	<1.0	3.0	13.40
BH04	10/15/2018	14	<1.0	<1.0	16	12.43
BH04	1/14/2019	1.5	<1.0	<1.0	34	13.64
BH04	4/16/2019	14	<1.0	<1.0	210	16.32
BH04	8/2/2019	40	<1.0	1.2	410	13.61
BH04	10/23/2019	17	<1.0	1.3	330	12.76
BH04	1/8/2020	2.4	<1.0	1.3	110	14.71
BH05	7/25/2013	17	3,300	930	15,000	13.07
BH05	10/31/2013	<1.0	<1.0	2.0	85	12.01
BH05	1/24/2014	<1.0	<1.0	<1.0	<1.0	13.52
BH05	4/30/2014	<1.0	<1.0	<1.0	4.5	13.65
BH05	7/25/2014	<1.0	<1.0	<1.0	5.8	11.03
BH05	10/27/2014	<1.0	<1.0	<1.0	2.9	10.37
BH05	1/20/2015	<1.0	<1.0	<1.0	<1.0	12.50
BH05	5/13/2015	<1.0	<1.0	<1.0	<1.0	12.41
BH05	7/30/2015	<1.0	<1.0	<1.0	2.3	10.91
BH05	10/26/2015	<1.0	<1.0	<1.0	<1.0	10.17
BH05	1/26/2016	<1.0	<1.0	<1.0	<1.0	12.79

TABLE 2
FORMER H & S (MINERAL) #1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)
COGCC Table 910-1 Groundwater Standard (µg/L)⁽¹⁾		5	560	700	1,400	
BH05	4/21/2016	<1.0	<1.0	<1.0	<1.0	13.20
BH05	7/18/2016	<1.0	<1.0	<1.0	<1.0	11.11
BH05	10/19/2016	<1.0	<1.0	<1.0	<1.0	10.03
BH05	1/20/2017	<1.0	<1.0	<1.0	<1.0	12.59
BH05	4/26/2017	<1.0	<1.0	<1.0	<2.0	13.85
BH05	7/31/2017	<1.0	<1.0	<1.0	<2.0	11.07
BH05	10/27/2017	<1.0	<1.0	<1.0	<2.0	10.14
BH05	1/29/2018	<1.0	<1.0	<1.0	<2.0	12.88
BH05	4/24/2018	<1.0	<1.0	<1.0	<2.0	13.72
BH05	7/2/2018	<1.0	<1.0	<1.0	<2.0	11.94
BH05	10/15/2018	<1.0	<1.0	<1.0	<2.0	11.02
BH05	1/14/2019	<1.0	<1.0	<1.0	<2.0	13.27
BH05	4/16/2019	<1.0	<1.0	<1.0	28	14.86
BH05	8/2/2019	<1.0	<1.0	<1.0	15	12.19
BH05	10/23/2019	<1.0	<1.0	<1.0	38	11.30
BH05	1/8/2020	<1.0	<1.0	<1.0	33	13.25
BH06	10/31/2013	<1.0	<1.0	1.9	57	12.46
BH06	1/24/2014	<1.0	<1.0	<1.0	2.9	13.95
BH06	4/30/2014	<1.0	<1.0	2.0	49	14.06
BH06	7/25/2014	<1.0	<1.0	<1.0	4.9	11.44
BH06	10/27/2014	<1.0	<1.0	<1.0	2.6	10.81
BH06	1/20/2015	<1.0	<1.0	<1.0	2.3	12.93
BH06	5/13/2015	<1.0	<1.0	750	10,000	12.82
BH06	7/30/2015	<1.0	<1.0	<1.0	<1.0	11.32
BH06	10/26/2015	<1.0	<1.0	<1.0	<1.0	10.59
BH06	1/26/2016	<1.0	<1.0	<1.0	<1.0	13.09
BH06	4/21/2016	<1.0	<1.0	270	4,800	13.55
BH06	7/18/2016	<1.0	<1.0	9.6	240	11.18
BH06	10/19/2016	<1.0	<1.0	<1.0	250	10.36
BH06	1/20/2017	<1.0	<1.0	<1.0	21	12.94

**TABLE 2
FORMER H & S (MINERAL) #1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)
COGCC Table 910-1 Groundwater Standard (µg/L)⁽¹⁾		5	560	700	1,400	
BH06	4/26/2017	<1.0	<1.0	<1.0	11	14.16
BH06	7/31/2017	<1.0	<1.0	<1.0	<2.0	11.37
BH06	8/14/2017	Abandoned				
BH06R	10/27/2017	<1.0	<1.0	<1.0	<2.0	10.30
BH06R	1/29/2018	<1.0	<1.0	<1.0	<2.0	13.04
BH06R	4/24/2018	<1.0	<1.0	<1.0	<2.0	13.90
BH06R	7/2/2018	<1.0	<1.0	<1.0	3.5	12.11
BH06R	10/15/2018	<1.0	<1.0	1.4	17	11.18
BH06R	1/14/2019	<1.0	<1.0	<1.0	<2.0	13.47
BH06R	4/16/2019	<1.0	<1.0	8.4	120	15.07
BH06R	8/2/2019	<1.0	<1.0	22	520	12.35
BH06R	10/23/2019	<1.0	<1.0	18	280	11.49
BH06R	1/8/2020	<1.0	<1.0	<1.0	<2.0	13.43
BH07	7/25/2013	<1.0	<1.0	<1.0	<1.0	15.33
BH07	10/31/2013	<1.0	<1.0	<1.0	<1.0	14.31
BH07	1/24/2014	<1.0	<1.0	<1.0	<1.0	15.81
BH07	4/30/2014	<1.0	<1.0	<1.0	<1.0	15.96
BH07	7/25/2014	<1.0	<1.0	<1.0	<1.0	13.27
BH07	10/27/2014	<1.0	<1.0	<1.0	<1.0	10.60
BH07	1/20/2015	<1.0	<1.0	<1.0	<1.0	14.78
BH07	5/13/2015	<1.0	<1.0	<1.0	<1.0	14.53
BH07	7/30/2015	<1.0	<1.0	<1.0	<1.0	13.17
BH07	10/26/2015	<1.0	<1.0	<1.0	<1.0	12.37
BH07	1/26/2016	<1.0	<1.0	<1.0	<1.0	14.92
BH07	4/21/2016	<1.0	<1.0	<1.0	<1.0	15.39
BH07	7/18/2016	<1.0	<1.0	<1.0	<1.0	13.11
BH07	10/19/2016	<1.0	<1.0	<1.0	<1.0	12.29
BH07	1/20/2017	<1.0	<1.0	<1.0	<1.0	14.86
BH07	4/26/2017	Removed From Monitoring Network				

TABLE 2
FORMER H & S (MINERAL) #1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
BH08	7/25/2013	<1.0	<1.0	<1.0	<1.0	13.47
BH08	10/31/2013	<1.0	<1.0	<1.0	<1.0	12.41
BH08	1/24/2014	<1.0	<1.0	<1.0	<1.0	13.91
BH08	4/30/2014	<1.0	<1.0	<1.0	<1.0	14.05
BH08	7/25/2014	<1.0	<1.0	<1.0	<1.0	11.42
BH08	10/27/2014	NS	NS	NS	NS	NM
BH08	1/22/2015	<1.0	<1.0	<1.0	<1.0	12.88
BH08	5/13/2015	<1.0	<1.0	<1.0	<1.0	12.90
BH08	7/30/2015	<1.0	<1.0	<1.0	<1.0	11.30
BH08	10/26/2015	<1.0	<1.0	<1.0	<1.0	10.56
BH08	1/26/2016	<1.0	<1.0	<1.0	<1.0	13.04
BH08	4/21/2016	<1.0	<1.0	<1.0	<1.0	13.57
BH08	7/18/2016	<1.0	<1.0	<1.0	<1.0	11.22
BH08	10/19/2016	<1.0	<1.0	<1.0	<1.0	10.38
BH08	1/20/2017	<1.0	<1.0	<1.0	<1.0	12.96
BH08	4/26/2017	Removed From Monitoring Network				
BH09	5/31/2019	1,000	<1.0	600	8,900	17.00
BH09	8/2/2019	450	<1.0	320	5,300	15.36
BH09	10/23/2019	270	<1.0	230	3,700	14.52
BH09	1/8/2020	370	<1.0	380	6,300	16.47
BH10	5/31/2019	8.3	<1.0	530	8,600	15.15
BH10	8/2/2019	3.7	1.5	140	3,100	13.49
BH10	10/23/2019	1.7	<1.0	100	1,600	12.64
BH10	1/8/2020	2.1	<1.0	240	3,300	14.60
BH11	5/31/2019	130	6,500	680	13,000	16.78
BH11	8/2/2019	71	2,800	300	6,800	15.13
BH11	10/23/2019	140	3,000	270	4,700	14.32
BH11	1/8/2020	37	1,100	490	7,800	16.27
BH12	6/24/2019	<1.0	9.2	340	5,800	15.63

TABLE 2
FORMER H & S (MINERAL) #1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)
COGCC Table 910-1 Groundwater Standard (µg/L)⁽¹⁾		5	560	700	1,400	
BH12	8/2/2019	<1.0	5.4	170	2,400	14.50
BH12	10/23/2019	<1.0	6.9	130	2,400	13.68
BH12	1/8/2020	<1.0	2.6	93	2,100	15.63
BH13	6/24/2019	<1.0	160	560	10,000	14.57
BH13	8/2/2019	<1.0	74	180	4,100	13.49
BH13	10/23/2019	<1.0	44	140	2,900	12.66
BH13	1/8/2020	<1.0	23	76	2,000	14.62
BH14	6/24/2019	<1.0	<1.0	46	1,300	13.40
BH14	8/2/2019	<1.0	<1.0	21	630	12.34
BH14	10/23/2019	<1.0	<1.0	<1.0	22	11.45
BH14	1/8/2020	<1.0	<1.0	2.7	60	14.42
BH15	6/24/2019	<1.0	<1.0	<1.0	<2.0	14.36
BH15	8/2/2019	<1.0	<1.0	<1.0	<2.0	13.28
BH15	10/23/2019	<1.0	<1.0	<1.0	<2.0	12.42
BH15	1/8/2020	<1.0	<1.0	<1.0	<2.0	14.39
BH16	6/24/2019	<1.0	<1.0	<1.0	<2.0	13.86
BH16	8/2/2019	<1.0	<1.0	<1.0	<2.0	12.75
BH16	10/23/2019	<1.0	<1.0	<1.0	<2.0	11.91
BH16	1/8/2020	<1.0	<1.0	<1.0	<2.0	13.91
BH17	6/24/2019	<1.0	<1.0	<1.0	<2.0	13.37
BH17	8/2/2019	<1.0	<1.0	<1.0	<2.0	12.33
BH17	10/23/2019	<1.0	<1.0	<1.0	<2.0	11.43
BH17	1/8/2020	<1.0	<1.0	<1.0	<2.0	14.40
BH18	8/2/2019	360	1,900	480	8,900	20.72
BH18	10/23/2019	340	850	320	5,800	19.84
BH18	1/8/2020	850	2,000	570	10,000	21.73
BH19	8/2/2019	1,400	3,400	630	11,000	20.29
BH19	10/23/2019	1,200	920	370	6,400	19.44

TABLE 2
FORMER H & S (MINERAL) #1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
BH19	1/8/2020	1,900	1,500	630	10,000	21.33
BH20	8/2/2019	4,100	<100	660	11,000	20.09
BH20	10/23/2019	3,100	<100	380	6,500	19.20
BH20	1/8/2020	3,600	6.0	520	9,400	21.10
BH21	8/2/2019	1,300	1.7	470	6,500	19.09
BH21	10/23/2019	1,000	<1.0	340	4,400	18.25
BH21	1/8/2020	2,000	1.8	560	7,700	20.19
BH22	8/2/2019	41	1.6	250	2,600	19.43
BH22	10/23/2019	34	<1.0	180	1,500	18.62
BH22	1/8/2020	45	1.2	250	3,800	20.57
BH23	8/2/2019	<1.0	<1.0	510	9,100	20.19
BH23	10/23/2019	1.3	4.0	410	7,300	19.30
BH23	1/8/2020	<1.0	<1.0	190	5,200	21.22
BH24	8/2/2019	2,800	13,000	760	13,000	22.29
BH24	10/23/2019	2,800	11,000	710	12,000	21.44
BH24	1/8/2020	5,900	29,000	1,200	21,000	23.33
BH27	1/24/2020	<1.0	<1.0	<1.0	<2.0	22.56 *
BH28	1/24/2020	<1.0	<1.0	<1.0	<2.0	21.74 *
BH29	1/24/2020	1.4	1,700	430	7,500	15.50 *
BH30	1/24/2020	<1.0	<1.0	<1.0	<2.0	19.04 *
BH31	1/24/2020	<1.0	<1.0	<1.0	<2.0	19.39 *
BH32	1/24/2020	<1.0	<1.0	<1.0	<2.0	20.42 *
BH37	1/28/2020	<1.0	<1.0	1.1	<2.0	22.63 *
BH38	1/28/2020	2,800	<1.0	290	3,300	24.32 *
BH39	1/28/2020	180	14	190	3,700	24.32 *

TABLE 2
FORMER H & S (MINERAL) #1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
BH40	1/28/2020	<1.0	<1.0	<1.0	13	16.72 *
BH45	1/30/2020	1,200	<1.0	83	2.1	23.90 *
BH46	1/30/2020	<1.0	<1.0	<1.0	<2.0	24.71 *

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective May 1, 2018.

2. Depth to water measurements collected prior to second quarter 2017 were measured from top of casing. Subsequent monitoring well measurements were collected from top of casing and adjusted using survey data and product thickness to reflect depth of water from ground surface.

* Samples were collected concurrent with a multi-phase assessment, therefore depth to water was measured from top of casing.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

ft. = Feet

(<) = Analytical result is less than the indicated laboratory reporting limit.

NM = Not measured

NS = Not sampled

BOLD = Analytical result is in exceedance of COGCC groundwater standards.

ATTACHMENT A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 23, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001244

Enclosed are the results of analyses for samples received by Summit Scientific on 01/22/20 17:52. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH25@24-26'	2001244-01	Soil	01/22/20 10:35	01/22/20 17:52
BH25@28-30'	2001244-02	Soil	01/22/20 10:40	01/22/20 17:52
BH25@32-33'	2001244-03	Soil	01/22/20 13:56	01/22/20 17:52
BH25@34-35'	2001244-04	Soil	01/22/20 10:46	01/22/20 17:52
BH26@24-26'	2001244-05	Soil	01/22/20 12:13	01/22/20 17:52
BH26@28-30'	2001244-06	Soil	01/22/20 12:19	01/22/20 17:52
BH26@32-33'	2001244-07	Soil	01/22/20 14:00	01/22/20 17:52
BH26@34-35'	2001244-08	Soil	01/22/20 12:23	01/22/20 17:52
BH27@23-25'	2001244-09	Soil	01/22/20 13:31	01/22/20 17:52
BH27@27-29'	2001244-10	Soil	01/22/20 13:40	01/22/20 17:52
BH27@30'	2001244-11	Soil	01/22/20 13:44	01/22/20 17:52
BH28@23-25'	2001244-12	Soil	01/22/20 14:40	01/22/20 17:52
BH28@27-29'	2001244-13	Soil	01/22/20 14:46	01/22/20 17:52
BH28@30'	2001244-14	Soil	01/22/20 14:51	01/22/20 17:52

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

2001244.1

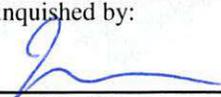
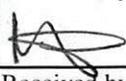
Summit Scientific

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Client: PDC
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: Jake McCarver

Project Manager: Mark Longhurst
E-Mail: Mark.Longhurst@pdce.com
Project Name: H+S Minecat #1
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:						Special Instructions			
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)									
BH25e 24-26'	1/22/20	10:35	1			X			X			X	X							
BH25e 28-30'		10:40	1																	
BH25e 32-33'		1356	1																	
BH25e 34-35'		1046	1																	
BH26e 24-26'		1213	1																	
BH26e 28-30'		1219	1																	
BH26e 32-33'		1400	1																	
BH26e 34-35'		1223	1																	
BH27e 23-25'		1331	1																	
BH27e 27-29'	✓	1340	✓																	

Relinquished by: 	Date/Time: <u>1/22/20</u> <u>4:42 pm</u>	Received by: 	Date/Time: <u>01-22-2020 16:42</u>	Turn Around Time (Check)	
				Same Day	<input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>
				24 Hours	<input type="checkbox"/> Standard <input type="checkbox"/>
				48 Hours	<input type="checkbox"/>
Relinquished by:		Received in Lab by:		Sample Integrity:	
Date/Time:		Date/Time:		Temperature Upon Receipt: <u>13</u>	
				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH25@24-26'
2001244-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.31	0.0020	mg/kg	1	2001308	01/22/20	01/23/20	EPA 8260B	
Toluene	3.9	0.50	"	100	"	"	"	"	
Ethylbenzene	0.59	0.0050	"	1	"	"	"	"	
Xylenes (total)	12	1.0	"	100	"	"	"	"	
Naphthalene	0.10	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	250	50	"	100	"	"	"	"	

Date Sampled: **01/22/20 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		146 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001309	01/22/20	01/22/20	EPA 8015M	

Date Sampled: **01/22/20 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.0 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH25@28-30'
2001244-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

S-02

Date Sampled: **01/22/20 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	6.4	0.20	mg/kg	100	2001308	01/22/20	01/22/20	EPA 8260B	
Toluene	150	0.50	"	"	"	"	"	"	E
Ethylbenzene	34	0.50	"	"	"	"	"	"	
Xylenes (total)	520	1.0	"	"	"	"	"	"	E
Naphthalene	2.8	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	7100	50	"	"	"	"	"	"	E

Date Sampled: **01/22/20 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		125 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		220 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	3300	50	mg/kg	1	2001309	01/22/20	01/22/20	EPA 8015M	

Date Sampled: **01/22/20 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		147 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/23/20 07:02

BH25@32-33'
2001244-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0065	0.0020	mg/kg	1	2001308	01/22/20	01/22/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.030	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.29	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	11	0.50	"	"	"	"	"	"	

Date Sampled: **01/22/20 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		93.4 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.4 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		114 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001309	01/22/20	01/22/20	EPA 8015M	

Date Sampled: **01/22/20 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		103 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH25@34-35'
2001244-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 10:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	2001308	01/22/20	01/22/20	EPA 8260B	
Toluene	0.0054	0.0050		"	"	"	"	"	"	"
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	"
Xylenes (total)	0.013	0.010		"	"	"	"	"	"	"
Naphthalene	ND	0.010		"	"	"	"	"	"	"
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	"

Date Sampled: **01/22/20 10:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		88.0 %		23-173		"	"	"	"	"
Surrogate: Toluene-d8		95.6 %		20-170		"	"	"	"	"
Surrogate: 4-Bromofluorobenzene		98.4 %		21-167		"	"	"	"	"

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 10:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 10:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		104 %		30-150		"	"	"	"	"

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH26@24-26'
2001244-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 12:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0070	0.0020	mg/kg	1	2001308	01/22/20	01/23/20	EPA 8260B	
Toluene	14	0.50	"	100	"	"	"	"	
Ethylbenzene	6.9	0.50	"	"	"	"	"	"	
Xylenes (total)	140	1.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1900	50	"	"	"	"	"	"	

Date Sampled: **01/22/20 12:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		88.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		142 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 12:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	880	50	mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 12:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		128 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH26@28-30'
2001244-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 12:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001308	01/22/20	01/23/20	EPA 8260B	
Toluene	0.080	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.16	0.0050	"	"	"	"	"	"	
Xylenes (total)	24	0.10	"	10	"	"	"	"	
Naphthalene	0.031	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	370	5.0	"	10	"	"	"	"	

Date Sampled: **01/22/20 12:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		90.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		149 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 12:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	86	50	mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 12:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH26@32-33'
2001244-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0036	0.0020	mg/kg	1	2001308	01/22/20	01/23/20	EPA 8260B	
Toluene	0.016	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.096	0.0050	"	"	"	"	"	"	
Xylenes (total)	13	1.0	"	100	"	"	"	"	
Naphthalene	0.048	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	58	0.50	"	"	"	"	"	"	

Date Sampled: **01/22/20 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	52	50	mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		101 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH26@34-35'
2001244-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0041	0.0020	mg/kg	1	2001308	01/22/20	01/22/20	EPA 8260B	
Toluene	0.0088	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.026	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/22/20 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.5 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH27@23-25'
2001244-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001308	01/22/20	01/22/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/22/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		88.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.0 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		114 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH27@27-29'
2001244-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	2001308	01/22/20	01/23/20	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	0.011	0.010		"	"	"	"	"	"	
Naphthalene	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	41	0.50		"	"	"	"	"	"	

Date Sampled: **01/22/20 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		91.1 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		140 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	58	50		mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		109 %		30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH27@30'
2001244-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 13:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001308	01/22/20	01/22/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.0	0.50	"	"	"	"	"	"	

Date Sampled: **01/22/20 13:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		87.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 13:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 13:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		117 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH28@23-25'
2001244-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 14:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	2001308	01/22/20	01/22/20	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
Naphthalene	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **01/22/20 14:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		87.4 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.5 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.9 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 14:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 14:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		109 %		30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH28@27-29'
2001244-13 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 14:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001308	01/22/20	01/22/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/22/20 14:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		88.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.5 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 14:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 14:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		114 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

BH28@30'
2001244-14 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/20 14:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001308	01/22/20	01/23/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/22/20 14:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.2 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/20 14:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001309	01/22/20	01/23/20	EPA 8015M	

Date Sampled: **01/22/20 14:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		114 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 2001308 - EPA 5030 Soil MS

Blank (2001308-BLK1)

Prepared: 01/22/20 Analyzed: 01/23/20

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0423		"	0.0400		106	23-173			
Surrogate: Toluene-d8	0.0410		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0419		"	0.0400		105	21-167			

LCS (2001308-BS1)

Prepared: 01/22/20 Analyzed: 01/23/20

Benzene	0.107	0.0020	mg/kg	0.100		107	70-130			
Toluene	0.0852	0.0050	"	0.100		85.2	70-130			
Ethylbenzene	0.112	0.0050	"	0.100		112	70-130			
m,p-Xylene	0.207	0.010	"	0.200		103	70-130			
o-Xylene	0.0976	0.0050	"	0.100		97.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0403		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0418		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.4	21-167			

Matrix Spike (2001308-MS1)

Source: 2001243-01

Prepared: 01/22/20 Analyzed: 01/23/20

Benzene	0.0828	0.0020	mg/kg	0.100	ND	82.8	70-130			
Toluene	0.116	0.0050	"	0.100	0.0130	103	70-130			
Ethylbenzene	0.0998	0.0050	"	0.100	ND	99.8	70-130			
m,p-Xylene	0.221	0.010	"	0.200	0.0220	99.4	70-130			
o-Xylene	0.0907	0.0050	"	0.100	0.00942	81.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0429		"	0.0400		107	23-173			
Surrogate: Toluene-d8	0.0377		"	0.0400		94.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0524		"	0.0400		131	21-167			

Summit Scientific

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PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/23/20 07:02

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001308 - EPA 5030 Soil MS

Matrix Spike Dup (2001308-MSD1)

Source: 2001243-01

Prepared: 01/22/20 Analyzed: 01/23/20

Benzene	0.0796	0.0020	mg/kg	0.100	ND	79.6	70-130	4.03	30	
Toluene	0.113	0.0050	"	0.100	0.0130	99.6	70-130	2.94	30	
Ethylbenzene	0.0965	0.0050	"	0.100	ND	96.5	70-130	3.33	30	
m,p-Xylene	0.224	0.010	"	0.200	0.0220	101	70-130	1.32	30	
o-Xylene	0.0896	0.0050	"	0.100	0.00942	80.2	70-130	1.13	30	
Surrogate: 1,2-Dichloroethane-d4	0.0423		"	0.0400		106	23-173			
Surrogate: Toluene-d8	0.0360		"	0.0400		90.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0506		"	0.0400		126	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/23/20 07:02

Extractable Petroleum Hydrocarbons by 8015 - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001309 - EPA 3550A

Blank (2001309-BLK1)

Prepared: 01/22/20 Analyzed: 01/23/20

C10-C28 (DRO) ND 50 mg/kg

LCS (2001309-BS1)

Prepared: 01/22/20 Analyzed: 01/23/20

C10-C28 (DRO) 525 50 mg/kg 500 105 70-130

Matrix Spike (2001309-MS1)

Source: 2001243-01

Prepared: 01/22/20 Analyzed: 01/23/20

C10-C28 (DRO) 591 50 mg/kg 500 20.1 114 70-130

Matrix Spike Dup (2001309-MSD1)

Source: 2001243-01

Prepared: 01/22/20 Analyzed: 01/23/20

C10-C28 (DRO) 578 50 mg/kg 500 20.1 112 70-130 2.24 20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/20 07:02

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 24, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001258

Enclosed are the results of analyses for samples received by Summit Scientific on 01/23/20 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH29@18-20'	2001258-01	Soil	01/23/20 10:05	01/23/20 17:40
BH29@20-22'	2001258-02	Soil	01/23/20 10:10	01/23/20 17:40
BH29@24-25'	2001258-03	Soil	01/23/20 10:15	01/23/20 17:40
BH30@15-17'	2001258-04	Soil	01/23/20 11:26	01/23/20 17:40
BH30@25-27'	2001258-05	Soil	01/23/20 11:32	01/23/20 17:40
BH30@29-30'	2001258-06	Soil	01/23/20 11:37	01/23/20 17:40
BH31@24-26'	2001258-07	Soil	01/23/20 13:31	01/23/20 17:40
BH31@28-30'	2001258-08	Soil	01/23/20 13:39	01/23/20 17:40
BH32@24-26'	2001258-09	Soil	01/23/20 14:30	01/23/20 17:40
BH32@28-30'	2001258-10	Soil	01/23/20 14:34	01/23/20 17:40
BH32@32-33'	2001258-11	Soil	01/23/20 14:37	01/23/20 17:40
BH32@35'	2001258-12	Soil	01/23/20 14:41	01/23/20 17:40

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sample Receipt Checklist

S2 Work Order 2001258

Client: PDC Client Project ID: M&S MINERAL #1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	5.5
-----------	-----

Thermometer ID: 61857155-K

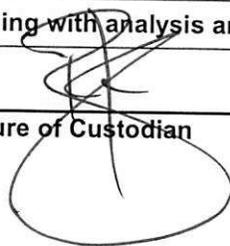
	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

RZ
Custodian Printed Name or Initials

Signature of Custodian

1/23/20
Date/Time





PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH29@18-20'
2001258-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	15	0.50		"	100	"	"	"	"	
Ethylbenzene	11	0.50		"	"	"	"	"	"	
Xylenes (total)	230	1.0		"	"	"	"	"	"	
Naphthalene	1.6	1.0		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	2900	50		"	"	"	"	"	"	

Date Sampled: **01/23/20 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		86.8 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		99.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		168 %		21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	930	50		mg/kg	1	2001332	01/23/20	01/23/20	EPA 8015M	

Date Sampled: **01/23/20 10:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		146 %		30-150		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH29@20-22'
2001258-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	26	0.50	"	100	"	"	"	"	
Ethylbenzene	13	0.50	"	"	"	"	"	"	
Xylenes (total)	250	1.0	"	"	"	"	"	"	
Naphthalene	1.6	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	3400	50	"	"	"	"	"	"	

Date Sampled: **01/23/20 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		92.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		171 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	770	50	mg/kg	1	2001332	01/23/20	01/23/20	EPA 8015M	

Date Sampled: **01/23/20 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		135 %	30-150		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH29@24-25'
2001258-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	0.011	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0054	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.088	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.66	0.50	"	"	"	"	"	"	

Date Sampled: **01/23/20 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001332	01/23/20	01/23/20	EPA 8015M	

Date Sampled: **01/23/20 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		105 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH30@15-17'
2001258-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 11:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	0.20	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.13	0.0050	"	"	"	"	"	"	
Xylenes (total)	2.5	0.10	"	10	"	"	"	"	
Naphthalene	0.048	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	97	5.0	"	10	"	"	"	"	

Date Sampled: **01/23/20 11:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		137 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 11:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001332	01/23/20	01/23/20	EPA 8015M	

Date Sampled: **01/23/20 11:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/24/20 06:32

BH30@25-27'
2001258-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 11:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	5.7	0.50	"	"	"	"	"	"	

Date Sampled: **01/23/20 11:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		85.0 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.3 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		95.1 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 11:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001332	01/23/20	01/23/20	EPA 8015M	

Date Sampled: **01/23/20 11:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		107 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH30@29-30'
2001258-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 11:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/23/20 11:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		83.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 11:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001332	01/23/20	01/23/20	EPA 8015M	

Date Sampled: **01/23/20 11:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		108 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH31@24-26'
2001258-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/23/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		83.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001332	01/23/20	01/23/20	EPA 8015M	

Date Sampled: **01/23/20 13:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		115 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH31@28-30'
2001258-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 13:39**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/23/20 13:39**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		85.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 13:39**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001332	01/23/20	01/23/20	EPA 8015M	

Date Sampled: **01/23/20 13:39**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		114 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH32@24-26'
2001258-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 14:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/23/20 14:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		86.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.5 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 14:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001332	01/23/20	01/23/20	EPA 8015M	

Date Sampled: **01/23/20 14:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		113 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH32@28-30'
2001258-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 14:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/23/20 14:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		85.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.0 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 14:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001332	01/23/20	01/24/20	EPA 8015M	

Date Sampled: **01/23/20 14:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		114 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH32@32-33'
2001258-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 14:37**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/23/20 14:37**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		83.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 14:37**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001332	01/23/20	01/24/20	EPA 8015M	

Date Sampled: **01/23/20 14:37**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

BH32@35'
2001258-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/20 14:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001330	01/23/20	01/23/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/23/20 14:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.1 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/20 14:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001332	01/23/20	01/24/20	EPA 8015M	

Date Sampled: **01/23/20 14:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001330 - EPA 5030 Soil MS

Blank (2001330-BLK1)

Prepared: 01/23/20 Analyzed: 01/24/20

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
Naphthalene	ND	0.010	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
Surrogate: 1,2-Dichloroethane-d4	0.0354		"	0.0400		88.4	23-173				
Surrogate: Toluene-d8	0.0376		"	0.0400		94.0	20-170				
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		97.9	21-167				

LCS (2001330-BS1)

Prepared: 01/23/20 Analyzed: 01/24/20

Benzene	0.0958	0.0020	mg/kg	0.100		95.8	70-130				
Toluene	0.0878	0.0050	"	0.100		87.8	70-130				
Ethylbenzene	0.0742	0.0050	"	0.100		74.2	70-130				
m,p-Xylene	0.155	0.010	"	0.200		77.6	70-130				
o-Xylene	0.0757	0.0050	"	0.100		75.7	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0366		"	0.0400		91.6	23-173				
Surrogate: Toluene-d8	0.0386		"	0.0400		96.4	20-170				
Surrogate: 4-Bromofluorobenzene	0.0393		"	0.0400		98.2	21-167				

Matrix Spike (2001330-MS1)

Source: 2001258-06

Prepared: 01/23/20 Analyzed: 01/24/20

Benzene	0.0957	0.0020	mg/kg	0.100	ND	95.7	70-130				
Toluene	0.0731	0.0050	"	0.100	ND	73.1	70-130				
Ethylbenzene	0.0819	0.0050	"	0.100	ND	81.9	70-130				
m,p-Xylene	0.239	0.010	"	0.200	0.00447	117	70-130				
o-Xylene	0.101	0.0050	"	0.100	ND	101	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0371		"	0.0400		92.8	23-173				
Surrogate: Toluene-d8	0.0376		"	0.0400		94.0	20-170				
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	21-167				

Summit Scientific

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PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/24/20 06:32

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch 2001330 - EPA 5030 Soil MS

Matrix Spike Dup (2001330-MSD1)

Source: 2001258-06

Prepared: 01/23/20 Analyzed: 01/24/20

Benzene	0.0962	0.0020	mg/kg	0.100	ND	96.2	70-130	0.469	30	
Toluene	0.0846	0.0050	"	0.100	ND	84.6	70-130	14.6	30	
Ethylbenzene	0.0856	0.0050	"	0.100	ND	85.6	70-130	4.48	30	
m,p-Xylene	0.241	0.010	"	0.200	0.00447	118	70-130	0.787	30	
o-Xylene	0.113	0.0050	"	0.100	ND	113	70-130	11.5	30	
Surrogate: 1,2-Dichloroethane-d4	0.0366		"	0.0400		91.4	23-173			
Surrogate: Toluene-d8	0.0381		"	0.0400		95.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/24/20 06:32

Extractable Petroleum Hydrocarbons by 8015 - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001332 - EPA 3550A

Blank (2001332-BLK1)

Prepared: 01/23/20 Analyzed: 01/24/20

C10-C28 (DRO) ND 50 mg/kg

LCS (2001332-BS1)

Prepared: 01/23/20 Analyzed: 01/24/20

C10-C28 (DRO) 529 50 mg/kg 500 106 70-130

Matrix Spike (2001332-MS1)

Source: 2001258-01

Prepared: 01/23/20 Analyzed: 01/24/20

C10-C28 (DRO) 1510 50 mg/kg 500 934 115 70-130

Matrix Spike Dup (2001332-MSD1)

Source: 2001258-01

Prepared: 01/23/20 Analyzed: 01/24/20

C10-C28 (DRO) 1410 50 mg/kg 500 934 95.8 70-130 6.71 20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/20 06:32

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 27, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001287

Enclosed are the results of analyses for samples received by Summit Scientific on 01/24/20 17:44. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/27/20 06:54

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH33@24-26'	2001287-01	Soil	01/24/20 09:37	01/24/20 17:44
BH33@28-30'	2001287-02	Soil	01/24/20 09:42	01/24/20 17:44
BH34@24-26'	2001287-03	Soil	01/24/20 10:44	01/24/20 17:44
BH34@28-30'	2001287-04	Soil	01/24/20 10:50	01/24/20 17:44

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sample Receipt Checklist

S2 Work Order 200/287

Client: PDC Client Project ID: H&S MINERAL

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

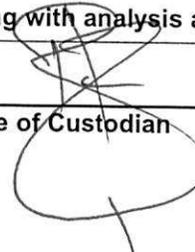
Temp (°C)	5.4
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

RZ
Custodian Printed Name or Initials


Signature of Custodian

1/24/20
Date/Time



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/27/20 06:54

BH33@24-26'
2001287-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/20 09:37**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001350	01/24/20	01/24/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/24/20 09:37**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.7 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/20 09:37**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001349	01/24/20	01/25/20	EPA 8015M	

Date Sampled: **01/24/20 09:37**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		112 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/27/20 06:54

BH33@28-30'
2001287-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/20 09:42**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001350	01/24/20	01/24/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/24/20 09:42**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/20 09:42**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001349	01/24/20	01/25/20	EPA 8015M	

Date Sampled: **01/24/20 09:42**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/27/20 06:54

BH34@24-26'
2001287-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/20 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	3.5	0.20	mg/kg	100	2001350	01/24/20	01/24/20	EPA 8260B	
Toluene	ND	0.0050	"	1	"	"	01/25/20	"	
Ethylbenzene	11	0.50	"	100	"	"	01/24/20	"	
Xylenes (total)	140	1.0	"	"	"	"	"	"	
Naphthalene	0.54	0.010	"	1	"	"	01/25/20	"	
Gasoline Range Hydrocarbons	2300	50	"	100	"	"	01/24/20	"	

Date Sampled: **01/24/20 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173	"	"	"	01/25/20	"	
Surrogate: Toluene-d8		104 %	20-170	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		155 %	21-167	"	"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/20 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	250	50	mg/kg	1	2001349	01/24/20	01/25/20	EPA 8015M	

Date Sampled: **01/24/20 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		108 %	30-150	"	"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/27/20 06:54

BH34@28-30'
2001287-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/20 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.048	0.0020	mg/kg	1	2001350	01/24/20	01/24/20	EPA 8260B	
Toluene	0.0070	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.028	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.12	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.4	0.50	"	"	"	"	"	"	

Date Sampled: **01/24/20 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	23-173	"	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	20-170	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	21-167	"	"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/20 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001349	01/24/20	01/25/20	EPA 8015M	

Date Sampled: **01/24/20 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		102 %	30-150	"	"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/27/20 06:54

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001350 - EPA 5030 Soil MS

Blank (2001350-BLK1)

Prepared: 01/24/20 Analyzed: 01/25/20

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
Naphthalene	ND	0.010	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
Surrogate: 1,2-Dichloroethane-d4	0.0413		"	0.0400		103	23-173				
Surrogate: Toluene-d8	0.0388		"	0.0400		96.9	20-170				
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400		102	21-167				

LCS (2001350-BS1)

Prepared: 01/24/20 Analyzed: 01/25/20

Benzene	0.126	0.0020	mg/kg	0.150		83.9	70-130				
Toluene	0.126	0.0050	"	0.150		83.8	70-130				
Ethylbenzene	0.129	0.0050	"	0.150		85.8	70-130				
m,p-Xylene	0.251	0.010	"	0.300		83.6	70-130				
o-Xylene	0.132	0.0050	"	0.150		87.7	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0415		"	0.0400		104	23-173				
Surrogate: Toluene-d8	0.0397		"	0.0400		99.2	20-170				
Surrogate: 4-Bromofluorobenzene	0.0395		"	0.0400		98.8	21-167				

Matrix Spike (2001350-MS1)

Source: 2001281-01

Prepared: 01/24/20 Analyzed: 01/25/20

Benzene	0.124	0.0020	mg/kg	0.150	ND	82.4	70-130				
Toluene	0.124	0.0050	"	0.150	ND	82.8	70-130				
Ethylbenzene	0.127	0.0050	"	0.150	ND	84.7	70-130				
m,p-Xylene	0.246	0.010	"	0.300	0.00408	80.7	70-130				
o-Xylene	0.128	0.0050	"	0.150	ND	85.3	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0415		"	0.0400		104	23-173				
Surrogate: Toluene-d8	0.0395		"	0.0400		98.7	20-170				
Surrogate: 4-Bromofluorobenzene	0.0410		"	0.0400		102	21-167				

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/27/20 06:54

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch 2001350 - EPA 5030 Soil MS

Matrix Spike Dup (2001350-MSD1)

Source: 2001281-01

Prepared: 01/24/20 Analyzed: 01/25/20

Benzene	0.120	0.0020	mg/kg	0.150	ND	80.1	70-130	2.73	30	
Toluene	0.122	0.0050	"	0.150	ND	81.4	70-130	1.68	30	
Ethylbenzene	0.125	0.0050	"	0.150	ND	83.1	70-130	1.95	30	
m,p-Xylene	0.243	0.010	"	0.300	0.00408	79.8	70-130	1.19	30	
o-Xylene	0.126	0.0050	"	0.150	ND	83.7	70-130	1.87	30	
Surrogate: 1,2-Dichloroethane-d4	0.0393		"	0.0400		98.2	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1
 Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/27/20 06:54

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limit	RPD	Limit	RPD	

Batch 2001349 - EPA 3550A

Blank (2001349-BLK1)

Prepared & Analyzed: 01/24/20

C10-C28 (DRO) ND 50 mg/kg

LCS (2001349-BS1)

Prepared & Analyzed: 01/24/20

C10-C28 (DRO) 521 50 mg/kg 500 104 70-130

Matrix Spike (2001349-MS1)

Source: 2001281-01

Prepared & Analyzed: 01/24/20

C10-C28 (DRO) 552 50 mg/kg 500 7.84 109 70-130

Matrix Spike Dup (2001349-MSD1)

Source: 2001281-01

Prepared & Analyzed: 01/24/20

C10-C28 (DRO) 525 50 mg/kg 500 7.84 103 70-130 4.93 20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/27/20 06:54

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 28, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001299

Enclosed are the results of analyses for samples received by Summit Scientific on 01/27/20 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/20 06:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH36@18-20'	2001299-01	Soil	01/27/20 10:51	01/27/20 17:30
BH36@20-22'	2001299-02	Soil	01/27/20 10:55	01/27/20 17:30
BH36@24-25'	2001299-03	Soil	01/27/20 10:59	01/27/20 17:30
BH38@24-26'	2001299-04	Soil	01/27/20 14:26	01/27/20 17:30
BH38@28-30'	2001299-05	Soil	01/27/20 14:30	01/27/20 17:30

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Summit Scientific

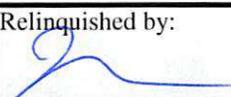
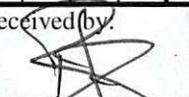
2001299

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: PDC
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: Jake McCarver

Project Manager: Mark Longhurst
E-Mail: Mark.Longhurst@pdce.com
Project Name: H+S Mineral #1
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:				Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)							
BH36e 18-20'	1/27/20	1051	1			X		X					X	X				
BH36e 20-22'		1055	↓			↓		↓					↓	↓				
BH36e 24-25'	↓	1059	↓			↓		↓					↓	↓				
BH38e 24-26'	↓	1426	↓			↓		↓					↓	↓				
BH38e 28-30'	↓	1430	↓			↓		↓					↓	↓				
Relinquished by:  Date/Time: <u>1/27/20</u> <u>4:28 PM</u>				Received by:  Date/Time: <u>01/27/2020</u> <u>1730</u>				Turn Around Time (Check)										
								Same Day <input checked="" type="checkbox"/>				72 Hours <input type="checkbox"/>						
								24 Hours <input type="checkbox"/>				Standard <input type="checkbox"/>						
								48 Hours <input type="checkbox"/>										
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				Sample Integrity:				Temperature Upon Receipt: <u>4.7</u>						
								Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>										

Sample Receipt Checklist

S2 Work Order 2001299

Client: PDC Client Project ID: H & S MINERAL 1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	4.7
-----------	-----

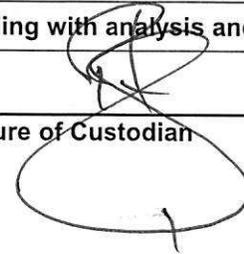
Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

RZ
Custodian Printed Name or Initials


Signature of Custodian

1/27/20
Date/Time



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/28/20 06:01

BH36@18-20'
2001299-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/27/20 10:51**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	2001359	01/27/20	01/27/20	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	2.4	0.50		"	100	"	"	"	"	
Xylenes (total)	45	1.0		"	"	"	"	"	"	
Naphthalene	0.13	0.010		"	1	"	"	"	"	
Gasoline Range Hydrocarbons	3000	50		"	100	"	"	"	"	

Date Sampled: **01/27/20 10:51**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		114 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		92.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		190 %		21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/27/20 10:51**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	2500	50		mg/kg	1	2001360	01/27/20	01/27/20	EPA 8015M	

Date Sampled: **01/27/20 10:51**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		97.4 %		30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/20 06:01

BH36@20-22'
2001299-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/27/20 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001359	01/27/20	01/27/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	1.4	0.50	"	100	"	"	"	"	
Xylenes (total)	24	1.0	"	"	"	"	"	"	
Naphthalene	0.28	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	2000	50	"	100	"	"	"	"	

Date Sampled: **01/27/20 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		145 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/27/20 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	360	50	mg/kg	1	2001360	01/27/20	01/27/20	EPA 8015M	

Date Sampled: **01/27/20 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		71.1 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/20 06:01

BH36@24-25'
2001299-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/27/20 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	2001359	01/27/20	01/27/20	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	0.027	0.010		"	"	"	"	"	"	
Naphthalene	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	5.7	0.50		"	"	"	"	"	"	

Date Sampled: **01/27/20 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		112 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		93.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/27/20 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	2001360	01/27/20	01/27/20	EPA 8015M	

Date Sampled: **01/27/20 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		66.3 %		30-150		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/20 06:01

BH38@24-26'
2001299-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/27/20 14:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	0.068	0.0020		mg/kg	1	2001359	01/27/20	01/27/20	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	0.0077	0.0050		"	"	"	"	"	"	
Xylenes (total)	0.086	0.010		"	"	"	"	"	"	
Naphthalene	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **01/27/20 14:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>		110 %		23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %		20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/27/20 14:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	2001360	01/27/20	01/27/20	EPA 8015M	

Date Sampled: **01/27/20 14:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: o-Terphenyl</i>		65.8 %		30-150		"	"	"	"	

Summit Scientific

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PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/28/20 06:01

BH38@28-30'
2001299-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/27/20 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001359	01/27/20	01/27/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/27/20 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/27/20 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001360	01/27/20	01/27/20	EPA 8015M	

Date Sampled: **01/27/20 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		63.8 %	30-150		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/20 06:01

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001359 - EPA 5030 Soil MS

Blank (2001359-BLK1)

Prepared: 01/27/20 Analyzed: 01/28/20

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
Naphthalene	ND	0.010	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
Surrogate: 1,2-Dichloroethane-d4	0.0394		"	0.0400		98.6	23-173				
Surrogate: Toluene-d8	0.0409		"	0.0400		102	20-170				
Surrogate: 4-Bromofluorobenzene	0.0410		"	0.0400		102	21-167				

LCS (2001359-BS1)

Prepared: 01/27/20 Analyzed: 01/28/20

Benzene	0.0946	0.0020	mg/kg	0.100		94.6	70-130				
Toluene	0.0802	0.0050	"	0.100		80.2	70-130				
Ethylbenzene	0.0920	0.0050	"	0.100		92.0	70-130				
m,p-Xylene	0.185	0.010	"	0.200		92.7	70-130				
o-Xylene	0.0865	0.0050	"	0.100		86.5	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0317		"	0.0400		79.4	23-173				
Surrogate: Toluene-d8	0.0403		"	0.0400		101	20-170				
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.2	21-167				

Matrix Spike (2001359-MS1)

Source: 2001302-01

Prepared: 01/27/20 Analyzed: 01/28/20

Benzene	0.0720	0.0020	mg/kg	0.100	ND	72.0	70-130				
Toluene	0.100	0.0050	"	0.100	ND	100	70-130				
Ethylbenzene	0.0949	0.0050	"	0.100	ND	94.9	70-130				
m,p-Xylene	0.186	0.010	"	0.200	0.0173	84.2	70-130				
o-Xylene	0.0920	0.0050	"	0.100	0.0248	67.3	70-130				QM-07
Surrogate: 1,2-Dichloroethane-d4	0.0382		"	0.0400		95.6	23-173				
Surrogate: Toluene-d8	0.0466		"	0.0400		116	20-170				
Surrogate: 4-Bromofluorobenzene	0.0536		"	0.0400		134	21-167				

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/28/20 06:01

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch 2001359 - EPA 5030 Soil MS

Matrix Spike Dup (2001359-MSD1)	Source: 2001302-01			Prepared: 01/27/20 Analyzed: 01/28/20					
Benzene	0.0754	0.0020	mg/kg	0.100	ND	75.4	70-130	4.64	30
Toluene	0.108	0.0050	"	0.100	ND	108	70-130	7.34	30
Ethylbenzene	0.101	0.0050	"	0.100	ND	101	70-130	5.92	30
m,p-Xylene	0.192	0.010	"	0.200	0.0173	87.3	70-130	3.29	30
o-Xylene	0.0977	0.0050	"	0.100	0.0248	72.9	70-130	5.98	30
Surrogate: 1,2-Dichloroethane-d4	0.0396		"	0.0400		99.0	23-173		
Surrogate: Toluene-d8	0.0481		"	0.0400		120	20-170		
Surrogate: 4-Bromofluorobenzene	0.0628		"	0.0400		157	21-167		

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/28/20 06:01

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001360 - EPA 3550A

Blank (2001360-BLK1)

Prepared: 01/27/20 Analyzed: 01/28/20

C10-C28 (DRO) ND 50 mg/kg

LCS (2001360-BS1)

Prepared: 01/27/20 Analyzed: 01/28/20

C10-C28 (DRO) 457 50 mg/kg 500 91.4 70-130

Matrix Spike (2001360-MS1)

Source: 2001302-01

Prepared: 01/27/20 Analyzed: 01/28/20

C10-C28 (DRO) 906 50 mg/kg 500 439 93.2 70-130

Matrix Spike Dup (2001360-MSD1)

Source: 2001302-01

Prepared: 01/27/20 Analyzed: 01/28/20

C10-C28 (DRO) 894 50 mg/kg 500 439 90.8 70-130 1.33 20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/20 06:01

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 29, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001317

Enclosed are the results of analyses for samples received by Summit Scientific on 01/28/20 17:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH39@25-26'	2001317-01	Soil	01/28/20 09:50	01/28/20 17:25
BH39@28-30'	2001317-02	Soil	01/28/20 09:55	01/28/20 17:25
BH39@32-33'	2001317-03	Soil	01/28/20 10:00	01/28/20 17:25
BH39@34-35'	2001317-04	Soil	01/28/20 10:05	01/28/20 17:25
BH40@18-20'	2001317-05	Soil	01/28/20 11:55	01/28/20 17:25
BH40@22-24'	2001317-06	Soil	01/28/20 12:00	01/28/20 17:25
BH41@16-18'	2001317-07	Soil	01/28/20 14:19	01/28/20 17:25
BH41@18-20'	2001317-08	Soil	01/28/20 14:26	01/28/20 17:25
BH41@20-22'	2001317-09	Soil	01/28/20 14:30	01/28/20 17:25

Summit Scientific

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Sample Receipt Checklist

S2 Work Order 2001317

Client: PDC Client Project ID: H&S MINERAL #1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Air Soil/Solid Water Other: _____
 Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
 (Describe)

Temp (°C)	5.7
-----------	-----

Thermometer ID: 61857155-K

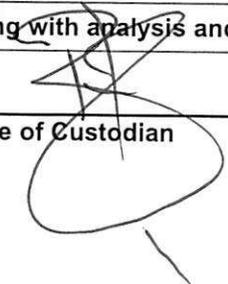
	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?				
Are samples with holding times due within 48 hours sample due within 48 hours present?	✓			
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			✓	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			✓	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

RZ

 Custodian Printed Name or Initials



 Signature of Custodian

1/28/20

 Date/Time



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

BH39@25-26'
2001317-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	2001383	01/28/20	01/28/20	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	0.030	0.010		"	"	"	"	"	"	
Naphthalene	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **01/28/20 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		113 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/28/20 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	2001384	01/28/20	01/28/20	EPA 8015M	

Date Sampled: **01/28/20 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		101 %		30-150		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

BH39@28-30'
2001317-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	2001383	01/28/20	01/29/20	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	0.0052	0.0050		"	"	"	"	"	"	
Xylenes (total)	0.013	0.010		"	"	"	"	"	"	
Naphthalene	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	13	0.50		"	"	"	"	"	"	

Date Sampled: **01/28/20 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>		108 %		23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		88.6 %		20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		120 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/28/20 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	2001384	01/28/20	01/28/20	EPA 8015M	

Date Sampled: **01/28/20 09:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: o-Terphenyl</i>		108 %		30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

BH39@32-33'
2001317-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001383	01/28/20	01/29/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	9.3	0.50	"	"	"	"	"	"	

Date Sampled: **01/28/20 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/28/20 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001384	01/28/20	01/28/20	EPA 8015M	

Date Sampled: **01/28/20 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.7 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

BH39@34-35'
2001317-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 10:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001383	01/28/20	01/28/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/28/20 10:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/28/20 10:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001384	01/28/20	01/28/20	EPA 8015M	

Date Sampled: **01/28/20 10:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

BH40@18-20'
2001317-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 11:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001383	01/28/20	01/28/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/28/20 11:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/28/20 11:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001384	01/28/20	01/28/20	EPA 8015M	

Date Sampled: **01/28/20 11:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

BH40@22-24'
2001317-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001383	01/28/20	01/28/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/28/20 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/28/20 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001384	01/28/20	01/28/20	EPA 8015M	

Date Sampled: **01/28/20 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.5 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

BH41@16-18'
2001317-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 14:19**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	2001383	01/28/20	01/29/20	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	0.11	0.0050		"	"	"	"	"	"	
Xylenes (total)	5.2	1.0		"	100	"	"	"	"	
Naphthalene	ND	0.010		"	1	"	"	"	"	
Gasoline Range Hydrocarbons	2400	50		"	100	"	"	"	"	

Date Sampled: **01/28/20 14:19**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		106 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		185 %		21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/28/20 14:19**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	350	50		mg/kg	1	2001384	01/28/20	01/28/20	EPA 8015M	

Date Sampled: **01/28/20 14:19**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		116 %		30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/29/20 06:17

BH41@18-20'
2001317-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 14:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001383	01/28/20	01/29/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	33	0.50	"	100	"	"	"	"	
Xylenes (total)	640	1.0	"	"	"	"	"	"	E
Naphthalene	0.40	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	6900	50	"	100	"	"	"	"	E

Date Sampled: **01/28/20 14:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		141 %	23-173	"	"	"	"	"	
Surrogate: Toluene-d8		113 %	20-170	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		326 %	21-167	"	"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/28/20 14:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1500	50	mg/kg	1	2001384	01/28/20	01/28/20	EPA 8015M	

Date Sampled: **01/28/20 14:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.9 %	30-150	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

BH41@20-22'
2001317-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 14:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	2001383	01/28/20	01/28/20	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	0.049	0.010		"	"	"	"	"	"	
Naphthalene	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	3.2	0.50		"	"	"	"	"	"	

Date Sampled: **01/28/20 14:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		107 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.6 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/28/20 14:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	2001384	01/28/20	01/28/20	EPA 8015M	

Date Sampled: **01/28/20 14:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		105 %		30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 2001383 - EPA 5030 Soil MS

Blank (2001383-BLK1)

Prepared: 01/28/20 Analyzed: 01/29/20

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0482		"	0.0400		121	23-173			
Surrogate: Toluene-d8	0.0442		"	0.0400		111	20-170			
Surrogate: 4-Bromofluorobenzene	0.0432		"	0.0400		108	21-167			

LCS (2001383-BS1)

Prepared: 01/28/20 Analyzed: 01/29/20

Benzene	0.0788	0.0020	mg/kg	0.100		78.8	70-130			
Toluene	0.0983	0.0050	"	0.100		98.3	70-130			
Ethylbenzene	0.105	0.0050	"	0.100		105	70-130			
m,p-Xylene	0.225	0.010	"	0.200		112	70-130			
o-Xylene	0.0967	0.0050	"	0.100		96.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0396		"	0.0400		99.1	23-173			
Surrogate: Toluene-d8	0.0433		"	0.0400		108	20-170			
Surrogate: 4-Bromofluorobenzene	0.0421		"	0.0400		105	21-167			

Matrix Spike (2001383-MS1)

Source: 2001317-01

Prepared: 01/28/20 Analyzed: 01/29/20

Benzene	0.0792	0.0020	mg/kg	0.100	ND	79.2	70-130			
Toluene	0.106	0.0050	"	0.100	ND	106	70-130			
Ethylbenzene	0.112	0.0050	"	0.100	ND	112	70-130			
m,p-Xylene	0.261	0.010	"	0.200	0.0261	117	70-130			
o-Xylene	0.107	0.0050	"	0.100	0.00378	103	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0385		"	0.0400		96.2	23-173			
Surrogate: Toluene-d8	0.0450		"	0.0400		112	20-170			
Surrogate: 4-Bromofluorobenzene	0.0416		"	0.0400		104	21-167			

Summit Scientific

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PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/29/20 06:17

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

Batch 2001383 - EPA 5030 Soil MS

Matrix Spike Dup (2001383-MSD1)

Source: 2001317-01

Prepared: 01/28/20 Analyzed: 01/29/20

Benzene	0.0807	0.0020	mg/kg	0.100	ND	80.7	70-130	1.80	30	
Toluene	0.0856	0.0050	"	0.100	ND	85.6	70-130	20.9	30	
Ethylbenzene	0.0943	0.0050	"	0.100	ND	94.3	70-130	16.8	30	
m,p-Xylene	0.219	0.010	"	0.200	0.0261	96.5	70-130	17.4	30	
o-Xylene	0.0910	0.0050	"	0.100	0.00378	87.2	70-130	15.9	30	
Surrogate: 1,2-Dichloroethane-d4	0.0379		"	0.0400		94.8	23-173			
Surrogate: Toluene-d8	0.0425		"	0.0400		106	20-170			
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/29/20 06:17

Extractable Petroleum Hydrocarbons by 8015 - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001384 - EPA 3550A

Blank (2001384-BLK1)

Prepared: 01/28/20 Analyzed: 01/29/20

C10-C28 (DRO) ND 50 mg/kg

LCS (2001384-BS1)

Prepared: 01/28/20 Analyzed: 01/29/20

C10-C28 (DRO) 552 50 mg/kg 500 110 70-130

Matrix Spike (2001384-MS1)

Source: 2001317-01

Prepared: 01/28/20 Analyzed: 01/29/20

C10-C28 (DRO) 542 50 mg/kg 500 9.47 106 70-130

Matrix Spike Dup (2001384-MSD1)

Source: 2001317-01

Prepared: 01/28/20 Analyzed: 01/29/20

C10-C28 (DRO) 528 50 mg/kg 500 9.47 104 70-130 2.59 20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:17

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 30, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001330

Enclosed are the results of analyses for samples received by Summit Scientific on 01/29/20 19:03. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/20 06:10

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH42@18-20'	2001330-01	Soil	01/29/20 09:27	01/29/20 19:03
BH42@20-22'	2001330-02	Soil	01/29/20 09:35	01/29/20 19:03
BH43@16-18'	2001330-03	Soil	01/29/20 10:35	01/29/20 19:03
BH43@18-20'	2001330-04	Soil	01/29/20 10:40	01/29/20 19:03
BH43@20-22'	2001330-05	Soil	01/29/20 10:35	01/29/20 19:03
BH44@16-18'	2001330-06	Soil	01/29/20 11:54	01/29/20 19:03
BH44@18-20'	2001330-07	Soil	01/29/20 11:59	01/29/20 19:03
BH44@20-22'	2001330-08	Soil	01/29/20 12:06	01/29/20 19:03

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Summit Scientific

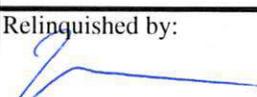
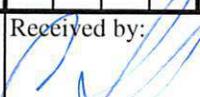
2001330

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: PDC
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: Jake McCarver

Project Manager: Mark Longhurst
E-Mail: Mark.Longhurst@pdce.com
Project Name: H+S Mineral #1
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:							Special Instructions			
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)										
BH42@18-20'	1/29/20	0927	1			X			X			STEXN	TPH-620/DFO								
BH42@20-22'		0935																			
BH43@16-18'		1035																			
BH43@18-20'		1040																			
BH43@20-22'		1035																			
BH44@16-18'		1154																			
BH44@18-20'		1159																			
BH44@20-22'		1206																			
Relinquished by:  Date/Time: <u>1/29/20</u> <u>2:13 pm</u>				Received by:  Date/Time: <u>1-29-20</u> <u>6:45</u>				Turn Around Time (Check)													
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Same Day <input checked="" type="checkbox"/>		72 Hours <input type="checkbox"/>											
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				24 Hours <input type="checkbox"/>		Standard <input type="checkbox"/>											
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				Sample Integrity:							Temperature Upon Receipt: <u>3.9</u>						
								Intact: Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>											

Sample Receipt Checklist

S2 Work Order 2001330

Client: PDC Client Project ID: H&S Mineral #1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	3.9
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	✓			
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			✓	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			✓	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			✓	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

OS
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

1-29-20 6:50
Date/Time



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/20 06:10

BH42@18-20'
2001330-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/29/20 09:27**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001396	01/29/20	01/29/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/29/20 09:27**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/29/20 09:27**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001397	01/29/20	01/29/20	EPA 8015M	

Date Sampled: **01/29/20 09:27**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/20 06:10

BH42@20-22'
2001330-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/29/20 09:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001396	01/29/20	01/29/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/29/20 09:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/29/20 09:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001397	01/29/20	01/30/20	EPA 8015M	

Date Sampled: **01/29/20 09:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		110 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/20 06:10

BH43@16-18'
2001330-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/29/20 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001396	01/29/20	01/29/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/29/20 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/29/20 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001397	01/29/20	01/30/20	EPA 8015M	

Date Sampled: **01/29/20 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		105 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/30/20 06:10

BH43@18-20'
2001330-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/29/20 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001396	01/29/20	01/29/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/29/20 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/29/20 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001397	01/29/20	01/30/20	EPA 8015M	

Date Sampled: **01/29/20 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		105 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/20 06:10

BH43@20-22'
2001330-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/29/20 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001396	01/29/20	01/29/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/29/20 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/29/20 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001397	01/29/20	01/30/20	EPA 8015M	

Date Sampled: **01/29/20 10:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		105 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/20 06:10

BH44@16-18'
2001330-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/29/20 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001396	01/29/20	01/30/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/29/20 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/29/20 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001397	01/29/20	01/30/20	EPA 8015M	

Date Sampled: **01/29/20 11:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/20 06:10

BH44@18-20'
2001330-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/29/20 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001396	01/29/20	01/30/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/29/20 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/29/20 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001397	01/29/20	01/30/20	EPA 8015M	

Date Sampled: **01/29/20 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/30/20 06:10

BH44@20-22'
2001330-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/29/20 12:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	2001396	01/29/20	01/30/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/29/20 12:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/29/20 12:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	2001397	01/29/20	01/30/20	EPA 8015M	

Date Sampled: **01/29/20 12:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/20 06:10

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 2001396 - EPA 5030 Soil MS

Blank (2001396-BLK1)

Prepared: 01/29/20 Analyzed: 01/30/20

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0400		110	23-173			
Surrogate: Toluene-d8	0.0410		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		100	21-167			

LCS (2001396-BS1)

Prepared: 01/29/20 Analyzed: 01/30/20

Benzene	0.0752	0.0020	mg/kg	0.100		75.2	70-130			
Toluene	0.104	0.0050	"	0.100		104	70-130			
Ethylbenzene	0.106	0.0050	"	0.100		106	70-130			
m,p-Xylene	0.222	0.010	"	0.200		111	70-130			
o-Xylene	0.101	0.0050	"	0.100		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0357		"	0.0400		89.3	23-173			
Surrogate: Toluene-d8	0.0442		"	0.0400		111	20-170			
Surrogate: 4-Bromofluorobenzene	0.0398		"	0.0400		99.4	21-167			

Matrix Spike (2001396-MS1)

Source: 2001328-01

Prepared: 01/29/20 Analyzed: 01/30/20

Benzene	0.0982	0.0020	mg/kg	0.100	ND	98.2	70-130			
Toluene	0.0979	0.0050	"	0.100	ND	97.9	70-130			
Ethylbenzene	0.101	0.0050	"	0.100	ND	101	70-130			
m,p-Xylene	0.211	0.010	"	0.200	0.00345	104	70-130			
o-Xylene	0.0976	0.0050	"	0.100	ND	97.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0339		"	0.0400		84.8	23-173			
Surrogate: Toluene-d8	0.0452		"	0.0400		113	20-170			
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/30/20 06:10

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch 2001396 - EPA 5030 Soil MS

Matrix Spike Dup (2001396-MSD1)

Source: 2001328-01

Prepared: 01/29/20 Analyzed: 01/30/20

Benzene	0.102	0.0020	mg/kg	0.100	ND	102	70-130	3.54	30	
Toluene	0.0982	0.0050	"	0.100	ND	98.2	70-130	0.337	30	
Ethylbenzene	0.103	0.0050	"	0.100	ND	103	70-130	1.50	30	
m,p-Xylene	0.211	0.010	"	0.200	0.00345	104	70-130	0.0569	30	
o-Xylene	0.0968	0.0050	"	0.100	ND	96.8	70-130	0.771	30	
Surrogate: 1,2-Dichloroethane-d4	0.0360		"	0.0400		89.9	23-173			
Surrogate: Toluene-d8	0.0433		"	0.0400		108	20-170			
Surrogate: 4-Bromofluorobenzene	0.0405		"	0.0400		101	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/30/20 06:10

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch 2001397 - EPA 3550A

Blank (2001397-BLK1)

Prepared & Analyzed: 01/29/20

C10-C28 (DRO) ND 50 mg/kg

LCS (2001397-BS1)

Prepared & Analyzed: 01/29/20

C10-C28 (DRO) 459 50 mg/kg 500 91.8 70-130

Matrix Spike (2001397-MS1)

Source: 2001328-01

Prepared: 01/29/20 Analyzed: 01/30/20

C10-C28 (DRO) 479 50 mg/kg 500 13.8 93.0 70-130

Matrix Spike Dup (2001397-MSD1)

Source: 2001328-01

Prepared: 01/29/20 Analyzed: 01/30/20

C10-C28 (DRO) 480 50 mg/kg 500 13.8 93.3 70-130 0.311 20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/20 06:10

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 31, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001358

Enclosed are the results of analyses for samples received by Summit Scientific on 01/30/20 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/31/20 06:07

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH45	2001358-01	Water	01/30/20 14:40	01/30/20 17:30
BH46	2001358-02	Water	01/30/20 15:00	01/30/20 17:30

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Summit Scientific

S₂

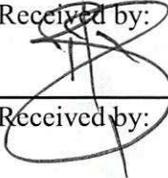
2001388

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Page 1 of 1

Client: PDC / Tasman Project Manager: Mark Longhurst
Address: 6855 W 119th Ave E-Mail: mark.longhurst@PDCE.com
City/State/Zip: Broomfield/ CO/ 80020
Phone: 303-487-1228 Project Name: HES (Mineral) #1
Sampler Name: S. Jungman Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B-GBTXN	8015/10/RO	PH/EC		
1	BH 45	1/30/20	1440	3	X				X				X					
2	BH 46	1/30/20	1500	3	X				X				X					
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished by: 	Date/Time: 1/30/20 1620	Received by: Tasman's Lock Box	Date/Time:	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 hours ___ 24 hours ___ Standard ___ 48 hours ___ Sample Integrity: Temperature Upon Receipt: 4.2 Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 01/30/2020 1730	Received by: 	Date/Time: 01/30/2020 1730		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

Sample Receipt Checklist

S2 Work Order 2001388

Client: PDC / TASMAN Client Project ID: H&S MINERAL #1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

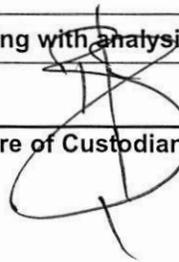
Temp (°C)	4.2
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?	✓			
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		✓		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	✓			HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

RZ
Custodian Printed Name or Initials


Signature of Custodian

1/30/20
Date/Time



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/31/20 06:07

BH45
2001358-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/30/20 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1200	100	ug/l	100	2001406	01/30/20	01/30/20	EPA 8260B	
Toluene	ND	1.0	"	1	"	"	01/30/20	"	
Ethylbenzene	83	1.0	"	"	"	"	"	"	
Xylenes (total)	2.1	2.0	"	"	"	"	"	"	

Date Sampled: **01/30/20 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/31/20 06:07

BH46
2001358-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/30/20 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001406	01/30/20	01/30/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/30/20 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		119 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/31/20 06:07

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001406 - EPA 5030 Water MS

Blank (2001406-BLK1)

Prepared & Analyzed: 01/30/20

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	2.0	"								
Surrogate: 1,2-Dichloroethane-d4	15.7		"	13.3		117		23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.9		20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102		21-167			

LCS (2001406-BS1)

Prepared & Analyzed: 01/30/20

Benzene	32.2	1.0	ug/l	33.3		96.6		51-132			
Toluene	34.1	1.0	"	33.3		102		51-138			
Ethylbenzene	33.8	1.0	"	33.3		102		58-146			
m,p-Xylene	61.8	2.0	"	66.7		92.7		57-144			
o-Xylene	32.6	1.0	"	33.3		98.0		53-146			
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106		23-173			
Surrogate: Toluene-d8	14.4		"	13.3		108		20-170			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		93.1		21-167			

Matrix Spike (2001406-MS1)

Source: 2001333-01

Prepared & Analyzed: 01/30/20

Benzene	35.1	1.0	ug/l	33.3	ND	105		34-141			
Toluene	37.0	1.0	"	33.3	ND	111		27-151			
Ethylbenzene	38.7	1.0	"	33.3	ND	116		29-160			
m,p-Xylene	70.1	2.0	"	66.7	ND	105		20-166			
o-Xylene	37.0	1.0	"	33.3	ND	111		33-159			
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110		23-173			
Surrogate: Toluene-d8	13.7		"	13.3		102		20-170			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.9		21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/31/20 06:07

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch 2001406 - EPA 5030 Water MS

Matrix Spike Dup (2001406-MSD1)

Source: 2001333-01

Prepared & Analyzed: 01/30/20

Benzene	34.8	1.0	ug/l	33.3	ND	104	34-141	0.915	30	
Toluene	36.7	1.0	"	33.3	ND	110	27-151	1.00	30	
Ethylbenzene	38.7	1.0	"	33.3	ND	116	29-160	0.0259	30	
m,p-Xylene	69.6	2.0	"	66.7	ND	104	20-166	0.644	30	
o-Xylene	37.4	1.0	"	33.3	ND	112	33-159	1.07	30	
Surrogate: 1,2-Dichloroethane-d4	15.1		"	13.3		113	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		100	20-170			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.6	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/31/20 06:07

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 31, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001358

Enclosed are the results of analyses for samples received by Summit Scientific on 01/30/20 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/31/20 06:07

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH45	2001358-01	Water	01/30/20 14:40	01/30/20 17:30
BH46	2001358-02	Water	01/30/20 15:00	01/30/20 17:30

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sample Receipt Checklist

S2 Work Order 2001388

Client: PDC / TASMAN Client Project ID: H&S MINERAL #1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

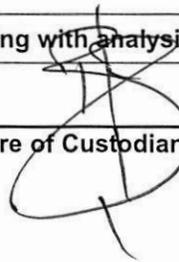
Temp (°C)	4.2
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?	✓			
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		✓		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	✓			HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

RZ
Custodian Printed Name or Initials


Signature of Custodian

1/30/20
Date/Time



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/31/20 06:07

BH45
2001358-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/30/20 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1200	100	ug/l	100	2001406	01/30/20	01/30/20	EPA 8260B	
Toluene	ND	1.0	"	1	"	"	01/30/20	"	
Ethylbenzene	83	1.0	"	"	"	"	"	"	
Xylenes (total)	2.1	2.0	"	"	"	"	"	"	

Date Sampled: **01/30/20 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1
 Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/31/20 06:07

BH46
2001358-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/30/20 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001406	01/30/20	01/30/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/30/20 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		119 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/31/20 06:07

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

Batch 2001406 - EPA 5030 Water MS

Blank (2001406-BLK1)

Prepared & Analyzed: 01/30/20

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	15.7		"	13.3		117		23-173		
Surrogate: Toluene-d8	13.2		"	13.3		98.9		20-170		
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102		21-167		

LCS (2001406-BS1)

Prepared & Analyzed: 01/30/20

Benzene	32.2	1.0	ug/l	33.3		96.6		51-132		
Toluene	34.1	1.0	"	33.3		102		51-138		
Ethylbenzene	33.8	1.0	"	33.3		102		58-146		
m,p-Xylene	61.8	2.0	"	66.7		92.7		57-144		
o-Xylene	32.6	1.0	"	33.3		98.0		53-146		
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106		23-173		
Surrogate: Toluene-d8	14.4		"	13.3		108		20-170		
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		93.1		21-167		

Matrix Spike (2001406-MS1)

Source: 2001333-01

Prepared & Analyzed: 01/30/20

Benzene	35.1	1.0	ug/l	33.3	ND	105		34-141		
Toluene	37.0	1.0	"	33.3	ND	111		27-151		
Ethylbenzene	38.7	1.0	"	33.3	ND	116		29-160		
m,p-Xylene	70.1	2.0	"	66.7	ND	105		20-166		
o-Xylene	37.0	1.0	"	33.3	ND	111		33-159		
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110		23-173		
Surrogate: Toluene-d8	13.7		"	13.3		102		20-170		
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.9		21-167		

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/31/20 06:07

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch 2001406 - EPA 5030 Water MS

Matrix Spike Dup (2001406-MSD1)

Source: 2001333-01

Prepared & Analyzed: 01/30/20

Benzene	34.8	1.0	ug/l	33.3	ND	104	34-141	0.915	30	
Toluene	36.7	1.0	"	33.3	ND	110	27-151	1.00	30	
Ethylbenzene	38.7	1.0	"	33.3	ND	116	29-160	0.0259	30	
m,p-Xylene	69.6	2.0	"	66.7	ND	104	20-166	0.644	30	
o-Xylene	37.4	1.0	"	33.3	ND	112	33-159	1.07	30	
Surrogate: 1,2-Dichloroethane-d4	15.1		"	13.3		113	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		100	20-170			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.6	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/31/20 06:07

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 15, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

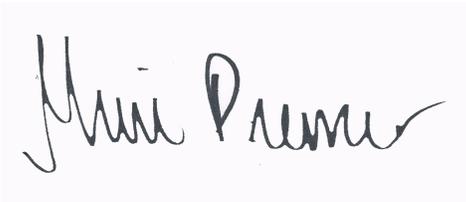
Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001091

Enclosed are the results of analyses for samples received by Summit Scientific on 01/08/20 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large, stylized 'M' and 'P'.

Muri Premer For Paul Shrewsbury
President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/15/20 12:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01R	2001091-01	Water	01/08/20 11:50	01/08/20 17:30
BH02	2001091-02	Water	01/08/20 12:03	01/08/20 17:30
BH03	2001091-03	Water	01/08/20 11:41	01/08/20 17:30
BH04	2001091-04	Water	01/08/20 11:27	01/08/20 17:30
BH05	2001091-05	Water	01/08/20 11:18	01/08/20 17:30
BH06R	2001091-06	Water	01/08/20 11:07	01/08/20 17:30
BH09	2001091-07	Water	01/08/20 12:30	01/08/20 17:30
BH10	2001091-08	Water	01/08/20 12:26	01/08/20 17:30
BH11	2001091-09	Water	01/08/20 12:43	01/08/20 17:30
BH12	2001091-10	Water	01/08/20 12:45	01/08/20 17:30
BH13	2001091-11	Water	01/08/20 12:47	01/08/20 17:30
BH14	2001091-12	Water	01/08/20 11:00	01/08/20 17:30
BH15	2001091-13	Water	01/08/20 12:15	01/08/20 17:30
BH16	2001091-14	Water	01/08/20 10:48	01/08/20 17:30
BH17	2001091-15	Water	01/08/20 12:26	01/08/20 17:30
BH18	2001091-16	Water	01/08/20 11:20	01/08/20 17:30
BH19	2001091-17	Water	01/08/20 11:34	01/08/20 17:30
BH20	2001091-18	Water	01/08/20 11:48	01/08/20 17:30
BH21	2001091-19	Water	01/08/20 11:37	01/08/20 17:30
BH22	2001091-20	Water	01/08/20 11:22	01/08/20 17:30
BH23	2001091-21	Water	01/08/20 11:00	01/08/20 17:30
BH24	2001091-22	Water	01/08/20 11:55	01/08/20 17:30

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Summit Scientific

2001091.3

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 3 of 3

Client: PDC / Tasman
Address: 6855 W 119th Ave
City/State/Zip: Broomfield CO 80020
Phone: 303-487-1228 Fax:
Sampler Name: Alison Dahl

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: H&S Mineral #1
Project Number: n/a

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:						Special Instructions			
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	B	T	E	X					
BH23	1/8/20	1100	3	X				X					X	X						
BH24	1/8/20	1155	3	X				X					X	X						
Relinquished by: <u>Alison Dahl</u>				Date/Time: <u>1/8/2020 1445</u>		Received by: <u>Tasman Lock Box</u>				Date/Time: <u>1/8/2020 1445</u>		Turn Around Time (Check)						Notes:		
												Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>								
Relinquished by: <u>Tasman Lock Box</u>				Date/Time: <u>01/08/2020 1730</u>		Received by: <u>[Signature]</u>				Date/Time: <u>01/08/2020 1730</u>		Sample Integrity: <u>2.5</u>								
Relinquished by:				Date/Time:		Received in Lab by: <u>[Signature]</u>				Date/Time:		Temperature Upon Receipt: <u>2.5</u>								
												Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>								

Sample Receipt Checklist

2001091

S2 Work Order _____

Client: DC HASWAN Client Project ID: ATS MINERAL #1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	2.5
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>			HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

TGE
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

01/08/2020
Date/Time



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1
 Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH01R
2001091-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	12	1.0	ug/l	1	2001101	01/09/20	01/09/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	430	2.0	"	"	"	"	"	"	

Date Sampled: **01/08/20 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		126 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH02
2001091-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 12:03**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	150	1.0		ug/l	1	2001101	01/09/20	01/09/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	20	1.0		"	"	"	"	"	"	
Xylenes (total)	360	2.0		"	"	"	"	"	"	

Date Sampled: **01/08/20 12:03**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		113 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		94.9 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH03
2001091-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:41**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	1.5	1.0		ug/l	1	2001101	01/09/20	01/09/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	39	2.0		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:41**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		123 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		92.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH04
2001091-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:27**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	2.4	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	1.3	1.0		"	"	"	"	"	"	
Xylenes (total)	110	2.0		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:27**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		122 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH05
2001091-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	33	2.0		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		120 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH06R

2001091-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:07**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:07**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		124 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %		21-167		"	"	"	"	

Summit Scientific

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PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH09
2001091-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	370	100		ug/l	100	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	ND	1.0		"	1	"	"	"	"	
Ethylbenzene	380	100		"	100	"	"	"	"	
Xylenes (total)	6300	200		"	"	"	"	"	"	

Date Sampled: **01/08/20 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		118 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		94.9 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		126 %		21-167		"	"	"	"	

Summit Scientific

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PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH10
2001091-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 12:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	2.1	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	240	100		"	100	"	"	"	"	
Xylenes (total)	3300	200		"	"	"	"	"	"	

Date Sampled: **01/08/20 12:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		124 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		117 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH11
2001091-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 12:43**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	37	1.0	ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	1100	100	"	100	"	"	"	"	
Ethylbenzene	490	100	"	"	"	"	"	"	
Xylenes (total)	7800	200	"	"	"	"	"	"	

Date Sampled: **01/08/20 12:43**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		120 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		115 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH12
2001091-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	2.6	1.0		"	"	"	"	"	"	
Ethylbenzene	93	1.0		"	"	"	"	"	"	
Xylenes (total)	2100	200		"	100	"	"	"	"	

Date Sampled: **01/08/20 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		116 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH13
2001091-11 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 12:47**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	23	1.0		"	"	"	"	"	"	
Ethylbenzene	76	1.0		"	"	"	"	"	"	
Xylenes (total)	2000	200		"	100	"	"	"	"	

Date Sampled: **01/08/20 12:47**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		107 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH14
2001091-12 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	2.7	1.0		"	"	"	"	"	"	
Xylenes (total)	60	2.0		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		113 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		21-167		"	"	"	"	

Summit Scientific



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH15
2001091-13 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 12:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/08/20 12:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		115 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.5 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH16
2001091-14 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/08/20 10:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		117 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH17
2001091-15 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 12:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/08/20 12:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		118 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH18
2001091-16 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	850	100		ug/l	100	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	2000	100		"	"	"	"	"	"	
Ethylbenzene	570	100		"	"	"	"	"	"	
Xylenes (total)	10000	200		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>		113 %		23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %		20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		103 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH19
2001091-17 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	1900	100		ug/l	100	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	1500	100		"	"	"	"	"	"	
Ethylbenzene	630	100		"	"	"	"	"	"	
Xylenes (total)	10000	200		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		112 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH20
2001091-18 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	3600	100		ug/l	100	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	6.0	1.0		"	1	"	"	"	"	
Ethylbenzene	520	100		"	100	"	"	"	"	
Xylenes (total)	9400	200		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		102 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		123 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH21
2001091-19 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:37**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	2000	100		ug/l	100	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	1.8	1.0		"	1	"	"	"	"	
Ethylbenzene	560	100		"	100	"	"	"	"	
Xylenes (total)	7700	200		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:37**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>		102 %		23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.2 %		20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		115 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH22
2001091-20 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	45	1.0		ug/l	1	2001101	01/09/20	01/10/20	EPA 8260B	
Toluene	1.2	1.0		"	"	"	"	"	"	
Ethylbenzene	250	100		"	100	"	"	"	"	
Xylenes (total)	3800	200		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>		113 %		23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.3 %		20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		105 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH23
2001091-21 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001099	01/09/20	01/10/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	190	1.0		"	"	"	"	"	"	
Xylenes (total)	5200	200		"	100	"	"	"	"	

Date Sampled: **01/08/20 11:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		130 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		117 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/15/20 12:25

BH24
2001091-22 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/08/20 11:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	5900	100		ug/l	100	2001099	01/09/20	01/13/20	EPA 8260B	
Toluene	29000	100		"	"	"	"	"	"	
Ethylbenzene	1200	100		"	"	"	"	"	"	
Xylenes (total)	21000	200		"	"	"	"	"	"	

Date Sampled: **01/08/20 11:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>		88.1 %		23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		114 %		20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		107 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/15/20 12:25

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

Batch 2001099 - EPA 5030 Water MS

Blank (2001099-BLK1)

Prepared: 01/09/20 Analyzed: 01/10/20

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	15.3		"	13.3		115	23-173			
Surrogate: Toluene-d8	13.0		"	13.3		97.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

LCS (2001099-BS1)

Prepared: 01/09/20 Analyzed: 01/10/20

Benzene	36.0	1.0	ug/l	33.3		108	51-132			
Toluene	34.1	1.0	"	33.3		102	51-138			
Ethylbenzene	35.4	1.0	"	33.3		106	58-146			
m,p-Xylene	77.6	2.0	"	66.7		116	57-144			
o-Xylene	33.8	1.0	"	33.3		101	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.0	21-167			

Matrix Spike (2001099-MS1)

Source: 2001091-21

Prepared: 01/09/20 Analyzed: 01/10/20

Benzene	39.1	1.0	ug/l	33.3	ND	117	34-141			
Toluene	38.4	1.0	"	33.3	ND	115	27-151			
Ethylbenzene	235	1.0	"	33.3	192	130	29-160			
m,p-Xylene	2070	2.0	"	66.7	4320	NR	20-166			QM-07
o-Xylene	623	1.0	"	33.3	840	NR	33-159			QM-07
Surrogate: 1,2-Dichloroethane-d4	15.5		"	13.3		117	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.0	20-170			
Surrogate: 4-Bromofluorobenzene	15.9		"	13.3		120	21-167			

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/15/20 12:25

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 2001099 - EPA 5030 Water MS

Matrix Spike Dup (2001099-MSD1)		Source: 2001091-21			Prepared: 01/09/20		Analyzed: 01/10/20			
Benzene	38.9	1.0	ug/l	33.3	ND	117	34-141	0.564	30	
Toluene	37.9	1.0	"	33.3	ND	114	27-151	1.31	30	
Ethylbenzene	222	1.0	"	33.3	192	90.3	29-160	5.76	30	
m,p-Xylene	1970	2.0	"	66.7	4320	NR	20-166	5.10	30	QM-07
o-Xylene	589	1.0	"	33.3	840	NR	33-159	5.73	30	QM-07
Surrogate: 1,2-Dichloroethane-d4	15.3		"	13.3		115	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		97.1	20-170			
Surrogate: 4-Bromofluorobenzene	15.5		"	13.3		116	21-167			

Batch 2001101 - EPA 5030 Water MS

Blank (2001101-BLK1)		Prepared & Analyzed: 01/09/20								
Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	16.4		"	13.3		123	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		96.2	20-170			
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3		104	21-167			
LCS (2001101-BS1)		Prepared & Analyzed: 01/09/20								
Benzene	36.8	1.0	ug/l	33.3		110	51-132			
Toluene	35.6	1.0	"	33.3		107	51-138			
Ethylbenzene	35.7	1.0	"	33.3		107	58-146			
m,p-Xylene	69.4	2.0	"	66.7		104	57-144			
o-Xylene	34.9	1.0	"	33.3		105	53-146			
Surrogate: 1,2-Dichloroethane-d4	15.4		"	13.3		115	23-173			
Surrogate: Toluene-d8	13.7		"	13.3		103	20-170			
Surrogate: 4-Bromofluorobenzene	14.1		"	13.3		106	21-167			

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/15/20 12:25

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

Batch 2001101 - EPA 5030 Water MS

Matrix Spike (2001101-MS1)

Source: 2001091-01

Prepared & Analyzed: 01/09/20

Benzene	49.4	1.0	ug/l	33.3	11.6	114	34-141			
Toluene	41.2	1.0	"	33.3	ND	123	27-151			
Ethylbenzene	39.2	1.0	"	33.3	ND	118	29-160			
m,p-Xylene	448	2.0	"	66.7	432	24.0	20-166			
o-Xylene	38.6	1.0	"	33.3	ND	116	33-159			
Surrogate: 1,2-Dichloroethane-d4	15.3		"	13.3		115	23-173			
Surrogate: Toluene-d8	14.7		"	13.3		110	20-170			
Surrogate: 4-Bromofluorobenzene	14.2		"	13.3		106	21-167			

Matrix Spike Dup (2001101-MSD1)

Source: 2001091-01

Prepared & Analyzed: 01/09/20

Benzene	48.0	1.0	ug/l	33.3	11.6	109	34-141	2.87	30	
Toluene	36.4	1.0	"	33.3	ND	109	27-151	12.3	30	
Ethylbenzene	40.2	1.0	"	33.3	ND	121	29-160	2.62	30	
m,p-Xylene	438	2.0	"	66.7	432	7.90	20-166	2.43	30	QM-07
o-Xylene	40.2	1.0	"	33.3	ND	121	33-159	4.16	30	
Surrogate: 1,2-Dichloroethane-d4	15.5		"	13.3		116	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.8	20-170			
Surrogate: 4-Bromofluorobenzene	14.4		"	13.3		108	21-167			

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/15/20 12:25

Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 27, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001283

Enclosed are the results of analyses for samples received by Summit Scientific on 01/24/20 17:36. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/27/20 06:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH27	2001283-01	Water	01/24/20 13:48	01/24/20 17:36
BH28	2001283-02	Water	01/24/20 14:01	01/24/20 17:36
BH29	2001283-03	Water	01/24/20 13:50	01/24/20 17:36
BH30	2001283-04	Water	01/24/20 13:53	01/24/20 17:36
BH31	2001283-05	Water	01/24/20 14:14	01/24/20 17:36
BH32	2001283-06	Water	01/24/20 13:40	01/24/20 17:36

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sample Receipt Checklist

S2 Work Order 200/283

Client: PDC / TASMAN Client Project ID: H&S MINERAL 1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	5.4
-----------	-----

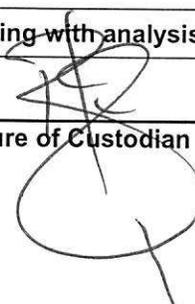
Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCL
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

RZ
Custodian Printed Name or Initials


Signature of Custodian

1/24/20
Date/Time



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1
 Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/27/20 06:49

BH27
2001283-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/20 13:48**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	2001348	01/24/20	01/25/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/24/20 13:48**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		114 %		23-173	"	"	"	"	
Surrogate: Toluene-d8		96.3 %		20-170	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %		21-167	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/27/20 06:49

BH28
2001283-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/20 14:01**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001348	01/24/20	01/25/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/24/20 14:01**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		117 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		99.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/27/20 06:49

BH29
2001283-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/20 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1.4	1.0	ug/l	1	2001348	01/24/20	01/25/20	EPA 8260B	
Toluene	1700	100	"	100	"	"	01/25/20	"	
Ethylbenzene	430	100	"	"	"	"	"	"	
Xylenes (total)	7500	200	"	"	"	"	"	"	

Date Sampled: **01/24/20 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	01/25/20	"	
Surrogate: Toluene-d8		97.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/27/20 06:49

BH30
2001283-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/20 13:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001348	01/24/20	01/25/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/24/20 13:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		115 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/27/20 06:49

BH31
2001283-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/20 14:14**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001348	01/24/20	01/25/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/24/20 14:14**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		118 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/27/20 06:49

BH32
2001283-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/20 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001348	01/24/20	01/25/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/24/20 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		116 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/27/20 06:49

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001348 - EPA 5030 Water MS

Blank (2001348-BLK1)

Prepared: 01/24/20 Analyzed: 01/25/20

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	2.0	"								
Surrogate: 1,2-Dichloroethane-d4	15.1		"	13.3		113		23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.7		20-170			
Surrogate: 4-Bromofluorobenzene	14.0		"	13.3		105		21-167			

LCS (2001348-BS1)

Prepared: 01/24/20 Analyzed: 01/25/20

Benzene	38.1	1.0	ug/l	33.3		114		51-132			
Toluene	39.4	1.0	"	33.3		118		51-138			
Ethylbenzene	39.4	1.0	"	33.3		118		58-146			
m,p-Xylene	71.1	2.0	"	66.7		107		57-144			
o-Xylene	38.2	1.0	"	33.3		114		53-146			
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110		23-173			
Surrogate: Toluene-d8	13.7		"	13.3		103		20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100		21-167			

Matrix Spike (2001348-MS1)

Source: 2001286-01

Prepared: 01/24/20 Analyzed: 01/25/20

Benzene	38.3	1.0	ug/l	33.3	1.14	112		34-141			
Toluene	39.0	1.0	"	33.3	1.03	114		27-151			
Ethylbenzene	39.9	1.0	"	33.3	ND	120		29-160			
m,p-Xylene	71.7	2.0	"	66.7	1.01	106		20-166			
o-Xylene	38.6	1.0	"	33.3	ND	116		33-159			
Surrogate: 1,2-Dichloroethane-d4	14.9		"	13.3		112		23-173			
Surrogate: Toluene-d8	13.4		"	13.3		101		20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100		21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/27/20 06:49

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001348 - EPA 5030 Water MS

Matrix Spike Dup (2001348-MSD1)

Source: 2001286-01

Prepared: 01/24/20 Analyzed: 01/25/20

Benzene	39.4	1.0	ug/l	33.3	1.14	115	34-141	2.86	30	
Toluene	40.2	1.0	"	33.3	1.03	118	27-151	3.08	30	
Ethylbenzene	41.0	1.0	"	33.3	ND	123	29-160	2.65	30	
m,p-Xylene	73.0	2.0	"	66.7	1.01	108	20-166	1.88	30	
o-Xylene	39.4	1.0	"	33.3	ND	118	33-159	1.98	30	
Surrogate: 1,2-Dichloroethane-d4	15.1		"	13.3		113	23-173			
Surrogate: Toluene-d8	13.5		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.8	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/27/20 06:49

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 29, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001318

Enclosed are the results of analyses for samples received by Summit Scientific on 01/28/20 17:28. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:18

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH37	2001318-01	Water	01/28/20 12:35	01/28/20 17:28
BH38	2001318-02	Water	01/28/20 12:45	01/28/20 17:28
BH39	2001318-03	Water	01/28/20 12:58	01/28/20 17:28
BH40	2001318-04	Water	01/28/20 15:50	01/28/20 17:28

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sample Receipt Checklist

S2 Work Order 2001318

Client: PDC Client Project ID: H&S MINERAL #1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	5.7
-----------	-----

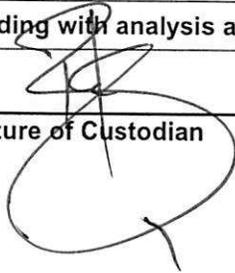
Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCL
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

RZ
Custodian Printed Name or Initials


Signature of Custodian

1/28/20
Date/Time



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1
 Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/29/20 06:18

BH37
2001318-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	2001385	01/28/20	01/28/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	1.1	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/28/20 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/29/20 06:18

BH38
2001318-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	2800	100		ug/l	100	2001385	01/28/20	01/28/20	EPA 8260B	
Toluene	ND	1.0		"	1	"	"	"	"	
Ethylbenzene	290	100		"	100	"	"	"	"	
Xylenes (total)	3300	200		"	"	"	"	"	"	

Date Sampled: **01/28/20 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		75.2 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/29/20 06:18

BH39
2001318-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 12:58**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	180	1.0		ug/l	1	2001385	01/28/20	01/28/20	EPA 8260B	
Toluene	14	1.0		"	"	"	"	"	"	
Ethylbenzene	190	1.0		"	"	"	"	"	"	
Xylenes (total)	3700	200		"	100	"	"	"	"	

Date Sampled: **01/28/20 12:58**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.9 %		23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %		20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/29/20 06:18

BH40
2001318-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/28/20 15:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001385	01/28/20	01/28/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	13	2.0		"	"	"	"	"	"	

Date Sampled: **01/28/20 15:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		114 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %		21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:18

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

Batch 2001385 - EPA 5030 Water MS

Blank (2001385-BLK1)

Prepared & Analyzed: 01/28/20

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	15.3		"	13.3		115	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.1	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

LCS (2001385-BS1)

Prepared: 01/28/20 Analyzed: 01/29/20

Benzene	36.0	1.0	ug/l	33.3		108	51-132			
Toluene	38.1	1.0	"	33.3		114	51-138			
Ethylbenzene	39.5	1.0	"	33.3		119	58-146			
m,p-Xylene	72.9	2.0	"	66.7		109	57-144			
o-Xylene	38.0	1.0	"	33.3		114	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110	23-173			
Surrogate: Toluene-d8	13.8		"	13.3		103	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.0	21-167			

Matrix Spike (2001385-MS1)

Source: 2001318-01

Prepared: 01/28/20 Analyzed: 01/29/20

Benzene	35.9	1.0	ug/l	33.3	ND	108	34-141			
Toluene	36.6	1.0	"	33.3	ND	110	27-151			
Ethylbenzene	41.0	1.0	"	33.3	1.10	120	29-160			
m,p-Xylene	72.8	2.0	"	66.7	1.26	107	20-166			
o-Xylene	37.9	1.0	"	33.3	ND	114	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.9	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/29/20 06:18

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 2001385 - EPA 5030 Water MS

Matrix Spike Dup (2001385-MSD1)

Source: 2001318-01

Prepared: 01/28/20 Analyzed: 01/29/20

Benzene	34.8	1.0	ug/l	33.3	ND	105	34-141	3.00	30	
Toluene	36.0	1.0	"	33.3	ND	108	27-151	1.71	30	
Ethylbenzene	40.2	1.0	"	33.3	1.10	117	29-160	1.99	30	
m,p-Xylene	71.2	2.0	"	66.7	1.26	105	20-166	2.32	30	
o-Xylene	35.2	1.0	"	33.3	ND	106	33-159	7.36	30	
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.3	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.9	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/29/20 06:18

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 31, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: H&S Mineral #1

Work Order #2001358

Enclosed are the results of analyses for samples received by Summit Scientific on 01/30/20 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: H&S Mineral #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/31/20 06:07

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH45	2001358-01	Water	01/30/20 14:40	01/30/20 17:30
BH46	2001358-02	Water	01/30/20 15:00	01/30/20 17:30

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S₂

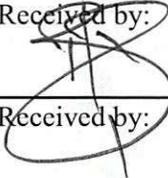
2001388

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Page 1 of 1

Client: PDC / Tasman Project Manager: Mark Longhurst
Address: 6855 W 119th Ave E-Mail: mark.longhurst@PDCE.com
City/State/Zip: Broomfield/ CO/ 80020
Phone: 303-487-1228 Project Name: HES (Mineral) #1
Sampler Name: S. Jungman Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B-GBTXN	8015/10/RO	PH/EC		
1	BH 45	1/30/20	1440	3	X				X				X					
2	BH 46	1/30/20	1500	3	X				X				X					
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished by: 	Date/Time: 1/30/20 1620	Received by: Tasman's Lock Box	Date/Time:	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 hours ___ 24 hours ___ Standard ___ 48 hours ___ Sample Integrity: Temperature Upon Receipt: 4.2 Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 01/30/2020 1730	Received by: 	Date/Time: 01/30/2020 1730		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

Sample Receipt Checklist

S2 Work Order 2001388

Client: PDC / TASMAN Client Project ID: H&S MINERAL #1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

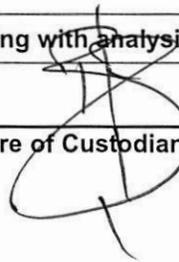
Temp (°C)	4.2
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Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?	✓			
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		✓		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	✓			HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

RZ
Custodian Printed Name or Initials


Signature of Custodian

1/30/20
Date/Time



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BH45
2001358-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/30/20 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1200	100	ug/l	100	2001406	01/30/20	01/30/20	EPA 8260B	
Toluene	ND	1.0	"	1	"	"	01/30/20	"	
Ethylbenzene	83	1.0	"	"	"	"	"	"	
Xylenes (total)	2.1	2.0	"	"	"	"	"	"	

Date Sampled: **01/30/20 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	21-167		"	"	"	"	

Summit Scientific

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Project Manager: Mark Longhurst

Reported:
 01/31/20 06:07

BH46
2001358-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/30/20 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2001406	01/30/20	01/30/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **01/30/20 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		119 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		21-167		"	"	"	"	

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Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/31/20 06:07

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

Batch 2001406 - EPA 5030 Water MS

Blank (2001406-BLK1)

Prepared & Analyzed: 01/30/20

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	15.7		"	13.3		117		23-173		
Surrogate: Toluene-d8	13.2		"	13.3		98.9		20-170		
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102		21-167		

LCS (2001406-BS1)

Prepared & Analyzed: 01/30/20

Benzene	32.2	1.0	ug/l	33.3		96.6		51-132		
Toluene	34.1	1.0	"	33.3		102		51-138		
Ethylbenzene	33.8	1.0	"	33.3		102		58-146		
m,p-Xylene	61.8	2.0	"	66.7		92.7		57-144		
o-Xylene	32.6	1.0	"	33.3		98.0		53-146		
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106		23-173		
Surrogate: Toluene-d8	14.4		"	13.3		108		20-170		
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		93.1		21-167		

Matrix Spike (2001406-MS1)

Source: 2001333-01

Prepared & Analyzed: 01/30/20

Benzene	35.1	1.0	ug/l	33.3	ND	105		34-141		
Toluene	37.0	1.0	"	33.3	ND	111		27-151		
Ethylbenzene	38.7	1.0	"	33.3	ND	116		29-160		
m,p-Xylene	70.1	2.0	"	66.7	ND	105		20-166		
o-Xylene	37.0	1.0	"	33.3	ND	111		33-159		
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110		23-173		
Surrogate: Toluene-d8	13.7		"	13.3		102		20-170		
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.9		21-167		

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Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch 2001406 - EPA 5030 Water MS

Matrix Spike Dup (2001406-MSD1)

Source: 2001333-01

Prepared & Analyzed: 01/30/20

Benzene	34.8	1.0	ug/l	33.3	ND	104	34-141	0.915	30	
Toluene	36.7	1.0	"	33.3	ND	110	27-151	1.00	30	
Ethylbenzene	38.7	1.0	"	33.3	ND	116	29-160	0.0259	30	
m,p-Xylene	69.6	2.0	"	66.7	ND	104	20-166	0.644	30	
o-Xylene	37.4	1.0	"	33.3	ND	112	33-159	1.07	30	
Surrogate: 1,2-Dichloroethane-d4	15.1		"	13.3		113	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		100	20-170			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.6	21-167			

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Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference