



Legend

- Point of Release
- Soil Sample Locations



Project No: 019-078	Kobe Flange Spill Soil Sample Locations Near the Point of Release Laramie Energy Garfield & Mesa Counties, Colorado	 <div>330 Grand Avenue, Unit C Grand Junction, CO 81501 970-549-1015</div>	Figure
Map By: NDB			1
Date: 10-16-2019			

Table 1
Kobe Flange Spill Response
Soil Sample Summary

LABORATORY DATA SUMMARY																	
Sample ID	POR	DRAIN S1	DRAIN S2	DRAIN N1	DRAIN S3	DRAIN N2	DITCH UP	DITCH POR	DITCH MID	DITCH DOWN	Background W Ditch	Background E	Background E1	Background NE	COGCC TABLE 910-1 CONCENTRATION LEVELS	UNITS	
Sample Depth	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"			
Longitude N	39.366315	39.366281	39.366013	39.366203	39.365792	39.366248	39.3666	39.3663	39.36606	39.365675	39.3665	39.3662	39.3657	39.365828			
Latitude W	-108.258432	-108.257745	-108.256767	-108.256923	-108.255744	-108.255154	-108.255	-108.255	-108.254127	-108.253334	-108.259	-108.258	-108.256	-108.255323			
Sample Type	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab			
Sample Date	10/1/19	10/1/19	10/1/19	10/1/19	10/1/19	10/1/19	10/4/19	10/4/19	10/4/19	10/4/19	10/1/19	10/1/19	10/1/19	10/1/19			
Analytical Parameters																	
TPH																	
TPH Gasoline Range Organics	254	42.3	7.43	0.458	0.591	1.18	0.358	0.689	0.252	0.398	NT	NT	NT	NT	500	mg/kg	
TPH Diesel Range Organics	134	16.5	45.3	ND	15.7	27.9	ND	ND	22.4	ND	NT	NT	NT	NT			
BTEX																	
Benzene	0.00263	0.00145	0.00165	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	0.17	mg/kg	
Toluene	0.389	0.123	0.131	0.0279	0.0201	0.00553	ND	ND	ND	ND	NT	NT	NT	NT	85	mg/kg	
Ethylbenzene	0.326	0.0518	0.0718	0.0173	0.00663	0.00495	ND	ND	ND	ND	NT	NT	NT	NT	100	mg/kg	
Total Xylene	13.5	1.49	2.02	0.5	0.164	0.131	ND	ND	ND	ND	NT	NT	NT	NT	175	mg/kg	
Metals																	
Arsenic	4.02	4.74	2.73	3.33	3.75	5.56	5.76	4.98	8.90	9.29	7.29	2.81	5.02	2.65	0.39	mg/kg	
Barium	300	326	199	294	392	336	741	775	715	433	NT	NT	NT	NT	15,000	mg/kg	
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	70	mg/kg	
Chromium	9.86	9.32	6.96	9.11	8.15	6.72	8.65	8.06	8.87	9.06	NT	NT	NT	NT	NA	mg/kg	
Copper	10.4	9.38	6.17	9.07	11.6	9.61	12.50	11.0	10.8	7.9	NT	NT	NT	NT	3,100	mg/kg	
Lead	6.79	6.44	4.32	6.93	7.98	6.91	8.49	ND	9.46	6.32	NT	NT	NT	NT	400	mg/kg	
Mercury	0.0511	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	23	mg/kg	
Nickel	9.28	9.12	6.44	13.3	8.35	6.42	9.69	9.05	10.2	9.58	NT	NT	NT	NT	1,600	mg/kg	
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	390	mg/kg	
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	390	mg/kg	
Zinc	40.2	30.1	26.3	29.3	28.3	26.8	31.9	30.9	33.3	30.7	NT	NT	NT	NT	23,000	mg/kg	
SAR Metals Analysis																	
Sodium Adsorption Ratio	41.6	50.8	52.6	35.2	44.9	54.2	2.58	2.69	3.08	3.12	1.12	1.0	17.90	0.2	<12	ratio	
Polynuclear Aromatic Hydrocarbons																	
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	1,000	mg/kg	
Anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	1,000	mg/kg	
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	0.22	mg/kg	
Benzo(a)pyrene	ND	ND	ND	0.0109	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	0.022	mg/kg	
Benzo(b)fluoranthene	ND	ND	ND	0.0147	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	0.22	mg/kg	
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	2.2	mg/kg	
Chrysene	ND	ND	ND	0.00646	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	22	mg/kg	
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	0.022	mg/kg	
Fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	1,000	mg/kg	
Fluorene	0.0183	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	1,000	mg/kg	
Indeno(1,2,3-cd)pyrene	ND	ND	ND	0.00179	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	0.22	mg/kg	
Napthalene	0.228	0.0304	0.076	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	23	mg/kg	
Pyrene	0.00631	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	1,000	mg/kg	
General Chemistry																	
Chromium, Hexavalent	ND	ND	ND	ND	ND	ND	8.65	8.06	8.87	9.06	NT	NT	NT	NT	23	mg/kg	
Chromium, Trivalent	9.86	9.32	6.96	9.11	8.15	6.72	ND	ND	ND	ND	NT	NT	NT	NT	120,000	mg/kg	
Specific Conductivity	14.80	6.08	12.4	10.0	15.7	9.88	0.408	0.431	0.226	0.212	0.78	0.347	0.59	0.0619	<4 or 2 x the background	mmhos/cm	
pH	7.64	8.08	8.11	7.81	7.76	7.88	8.12	7.98	8.72	8.37	7.83	7.72	8.83	8.16	6-9	su	

mg/kg - milligrams per kilogram
mg/L - milligrams per liter
J - indicates an estimated value
mmhos/cm - millimhos per centimeter
mv - millivolts
su - standard units
NA - not applicable
NT - parameter was not tested
ND - not detected above method detection limit

Over COGCC Table 910-1 concentration levels but under BACKGROUND level.

Over COGCC Table 910-1 concentration levels and not within BACKGROUND level.

Over COGCC Table 910-1 concentration levels



Legend

- Point of Release
- ◆ Water Sample Location




Project No: 019-078	Kobe Flange Spill Water Sample Locations Near the Point of Release Laramie Energy Garfield & Mesa Counties, Colorado	 <div>330 Grand Avenue, Unit C Grand Junction, CO 81501 970-549-1015</div>	Figure
Map By: NDB			2
Date: 10-16-2019			

Table 2
Kobe Flange Spill Response
Water Sample Locations Near the Point of Release Summary

LABORATORY DATA SUMMARY																	
Sample ID	VAULT POR	DRAIN 1N	DRAIN 2N	DRAIN 3N	DRAIN 1S	KOBE FLANGE (2)	DITCH UP	DITCH UP	KOBE FLANGE POR (1)	DITCH POR	DITCH POR	KOBE FLANGE DOWN (3)	DITCH DOWN	DITCH DOWN	KOBE FLANGE - R. CREEK	COGCC TABLE 910-1 CONCENTRATION LEVELS	UNITS
Longitude N	39.366354	39.3663	39.3662	39.633	39.3658	39.366572	39.366572	39.366572	39.366354	39.366354	39.366354	39.365672	39.36572	39.36572	39.365415		
Latitude W	-108.254727	-108.255	-108.255	-108.256	-108.256	-108.25489	-108.25489	-108.254727	-108.254727	-108.253324	-108.253324	-108.253324	-108.253324	-108.252935			
Sample Date	10/1/19	10/1/19	10/1/19	10/1/19	10/1/19	10/1/19	10/2/19	10/3/19	10/1/19	10/2/19	10/3/19	10/1/19	10/2/19	10/3/19	10/1/19		
Sample Description	Point of Release- Produced Water	Produced Water	Produced Water	Produced Water	Produced Water	Ditch Up Gradient- Background	Ditch Up Gradient- Resample	Ditch Up Gradient- Resample	Ditch Point of Release	Ditch POR- Resample	Ditch POR- Resample	Ditch Down Gradient	Ditch DG- Resample	Ditch DG- Resample	Roan Creek Down Gradient		
Analytical Parameters																	
TPH Gasoline Range Organics	2.06	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	Below Detection Limit	mg/kg
TPH Diesel Range Organics	3.05	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
BTEX																	
Benzene	0.00139	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/L
Toluene	0.0423	0.00603	0.00612	0.0162	0.0127	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.56 to 1.0	mg/L
Ethylbenzene	0.0173	0.00343	0.00339	0.00887	0.00619	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	mg/L
Total Xylene	0.513	0.101	0.105	0.286	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4 to 10	mg/L
DISSOLVED METALS																	
Barium	NT	NT	NT	NT	NT	NT	0.0547	0.0539	NT	0.0568	0.0563	NT	0.0556	0.0552	NT	NA	mg/L
Boron	NT	NT	NT	NT	NT	NT	0.283	0.29	NT	0.284	0.291	NT	0.287	0.291	NT	NA	mg/L
Calcium	NT	NT	NT	NT	NT	NT	110	109	NT	109	108	NT	110	109	NT	NA	mg/L
Iron	NT	NT	NT	NT	NT	NT	0.755	0.5	NT	0.806	0.73	NT	0.787	0.425	NT	NA	mg/L
Magnesium	NT	NT	NT	NT	NT	NT	101	104	NT	101	104	NT	102	104	NT	NA	mg/L
Manganese	NT	NT	NT	NT	NT	NT	0.0913	0.0991	NT	0.0914	0.0978	NT	0.0877	0.0952	NT	NA	mg/L
Potassium	NT	NT	NT	NT	NT	NT	4.19	3.86	NT	4.22	3.93	NT	4.23	3.87	NT	NA	mg/L
Selenium	NT	NT	NT	NT	NT	NT	ND	ND	NT	ND	ND	NT	ND	ND	NT	NA	mg/L
Sodium	NT	NT	NT	NT	NT	NT	201	199	NT	200	200	NT	202	200	NT	NA	mg/L
Strontium	NT	NT	NT	NT	NT	NT	1.84	1.86	NT	1.83	1.86	NT	1.85	1.86	NT	NA	mg/L
ANIONS																	
Nitrate-Nitrite	NT	NT	NT	NT	NT	NT	ND	ND	NT	ND	ND	NT	ND	ND	NT	NA	
Nitrate	NT	NT	NT	NT	NT	NT	ND	ND	NT	ND	ND	NT	ND	ND	NT	NA	mg/L
Phosphorous	NT	NT	NT	NT	NT	NT	ND	ND	NT	ND	ND	NT	ND	ND	NT	NA	mg/L
Bromide	NT	NT	NT	NT	NT	NT	ND	ND	NT	ND	ND	NT	ND	ND	NT	NA	mg/L
Chloride	25600	NT	NT	NT	NT	NT	18.9	19.5	19.9	20.3	19.5	19.2	20.5	19.5	18.3	<1.25 x background	mg/L
Flouride	NT	NT	NT	NT	NT	NT	0.738	0.752	NT	0.726	0.745	NT	0.729	0.753	NT	NA	mg/L
Sulfate	126	NT	NT	NT	NT	NT	580	571	591	585	574	584	604	577	607	<1.25 x background	mg/L
INORGANICS																	
Total Dissolved Solids	49100	NT	NT	NT	NT	432	1180	1220	1260	1240	1200	1270	1200	1250	1260	<1.25 x background	mg/l
Alkalinity, Bicarbonate	NT	NT	NT	NT	NT	NT	532	503	NT	538	533	NT	529	531	NT	NA	mg/L
Alkalinity, Carbonate	NT	NT	NT	NT	NT	NT	NT	ND	NT	ND	ND	NT	ND	ND	NT	NA	mg/L
Specific Conductance	NT	NT	NT	NT	NT	NT	1.7	1.84	NT	1.64	1.55	NT	16.6	1.25	NT	NA	mmhos/cm
pH	NT	NT	NT	NT	NT	NT	8.19	8.22	NT	8.24	8.24	NT	8.24	8.27	NT	NA	mg/L

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Over COGCC Table 910-1 concentration levels but under BACKGROUND level.
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Over COGCC Table 910-1 concentration levels.



Legend

◆ Water Sample Location




Project No: 019-078	Kobe Flange Spill Water Sample Locations Downstream of Release Laramie Energy Garfield & Mesa Counties, Colorado	 ENTRADA CONSULTING GROUP	330 Grand Avenue, Unit C Grand Junction, CO 81501 970-549-1015	Figure
Map By: NDB				3
Date: 10-7-2019				

Table 2
Kobe Flange Spill Response
Water Sample Locations Near the Point of Release Summary

LABORATORY DATA SUMMARY									
Sample ID	DITCH BOX	DITCH BOX E	DITCH BOX S	CO RIVER	CO RIVER	DITCH END	DITCH END	COGCC TABLE 910-1 CONCENTRATION LEVELS	UNITS
Longitude N	39.320314	39.320192	39.320195	39.3195	39.3195	39.307445	39.307445		
Latitude W	-108.240638	-108.240646	-108.240725	-108.221901	-108.221901	-108.236812	-108.236812		
Sample Date	10/1/19	10/2/19	10/2/19	10/1/19	10/2/19	10/2/19	10/3/19		
Sample Description	Irrigation Ditch- Before Junction	Irrigation Ditch- East of Junction	Irrigation Ditch- South of Junction	Colorado River	CO River- Resample	End of Irrigation Ditch	End of Irrigation Ditch		
Analytical Parameters									
TPH Gasoline Range Organics	ND	ND	ND	ND	ND	ND	ND	Below Detection Limit	mg/kg
TPH Diesel Range Organics	ND	ND	ND	ND	ND	ND	ND		
BTEX									
Benzene	ND	ND	ND	ND	ND	ND	ND	0.005	mg/L
Toluene	ND	ND	ND	ND	ND	ND	ND	0.56 to 1.0	mg/L
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	1	mg/L
Total Xylene	ND	ND	ND	ND	ND	ND	ND	1.4 to 10	mg/L
DISSOLVED METALS									
Barium	NT	0.137	0.135	NT	NT	NT	NT	NA	mg/L
Boron	NT	0.291	0.292	NT	NT	NT	NT	NA	mg/L
Calcium	NT	99.4	99.3	NT	NT	NT	NT	NA	mg/L
Iron	NT	1.14	1.21	NT	NT	NT	NT	NA	mg/L
Magnesium	NT	101	101	NT	NT	NT	NT	NA	mg/L
Manganese	NT	0.0228	0.0226	NT	NT	NT	NT	NA	mg/L
Potassium	NT	4.47	4.5	NT	NT	NT	NT	NA	mg/L
Selenium	NT	ND	ND	NT	NT	NT	NT	NA	mg/L
Sodium	NT	202	203	NT	NT	NT	NT	NA	mg/L
Strontium	NT	2.17	2.18	NT	NT	NT	NT	NA	mg/L
ANIONS									
Nitrate-Nitrite	NT	ND	ND	NT	NT	NT	NT	NA	mg/L
Nitrate	NT	ND	ND	NT	NT	NT	NT	NA	mg/L
Phosphorous	NT	ND	ND	NT	NT	NT	NT	NA	mg/L
Bromide	NT	ND	ND	NT	NT	NT	NT	NA	mg/L
Chloride	529	22.7	22.7	148	157	NT	NT	<1.25 x background	mg/L
Flouride	NT	0.704	0.690	NT	NT	NT	NT	NA	mg/L
Sulfate	544	583	558	97.3	102	NT	NT	<1.25 x background	mg/L
INORGANICS									
Total Dissolved Solids	2160	1200	1170	480	491	NT	NT	<1.25 x background	mg/l
Alkalinity, Bicarbonate	NT	494	503	NT	NT	NT	NT	NA	mg/L
Alkalinity, Carbonate	NT	ND	ND	NT	NT	NT	NT	NA	mg/L
Specific Conductance	NT	1.69	1.65	NT	NT	NT	NT	NA	mmhos/cm
pH	NT	8.27	8.28	NT	NT	NT	NT	NA	mg/L

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Map By: NDB				4
Date: 10-16-2019				



Legend

● Point of Release ● Petro Sample Locations



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Map By: NDB			5
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