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Sent:	Friday, June 30, 2017 3:14 PM
To:	Kalman, Kenneth; Guo, Lifeng; J. Paul Davis
Cc:	Halliburton, Bill
Subject:	Annual Environmental Monitoring Data
Attachments:	2017 Ann Env Data.xlsx

Attached please find an Excel file containing the data from the 2017 annual environmental monitoring event. This year's sampling effort was combined with the 2nd Quarter 2017 sampling event. All together the sampling effort took 2 weeks to complete, and involved the collection of groundwater samples from approximately 200 wells. The sampling event was impacted by three 4+-inch rainfall events, which caused sufficient flooding in the Cimarron River floodplain that sampling crews could not access nine of the monitor wells in Burial Area #1 (BA1) or from either of the two surface water sampling locations.

This means that we obtained no gross alpha, gross beta, or isotopic activity data from monitor wells that are screened within the alluvial materials. However, we had already collected groundwater samples from numerous BA1 monitor wells screened within alluvial materials, and those samples were analyzed for U-235 and U-238 mass concentration. So we are not without uranium concentration data in this area.

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405-642-5152

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Sample No	Coll Date	Parameter	Lab Result	Uncertainty	Total Activity/ Uncertainty	Units	Lab or Data Review Qual	MDL
1314	05/02/2017	ALPHA	0.808	2.38		PCI/L	U	4.18
1314	05/02/2017	BETA	3.68	2.73		PCI/L	U	4.53
1314	05/02/2017	Fluoride	0.322			MG/L		0.033
1314	05/02/2017	Nitrogen, Nitrate/Nitrite	1.24			MG/L		0.085
1314	05/02/2017	Uranium	1.25			UG/L		0.067
1314	05/02/2017	Uranium-233/234	1.76	0.711		PCI/L		0.424
1314	05/02/2017	Uranium-235/236	1.01	0.610	3.64	PCI/L		0.412
1314	05/02/2017	Uranium-238	0.870	0.513	1.068	PCI/L		0.385
1351	05/03/2017	ALPHA	3,120	45.9		PCI/L		8.01
1351	05/03/2017	BETA	463	8.82		PCI/L		4.58
1351	05/03/2017	Fluoride	0.944			MG/L		0.033
1351	05/03/2017	Nitrogen, Nitrate/Nitrite	66.5			MG/L		1.70
1351	05/03/2017	Uranium	1,510			UG/L		6.70
1351	05/03/2017	Uranium-233/234	1,750	35.4		PCI/L		1.14
1351	05/03/2017	Uranium-235/236	90.9	8.99	2,326	PCI/L		1.10
1351	05/03/2017	Uranium-238	485	18.6	41.0	PCI/L		1.03
1352	05/03/2017	ALPHA	59.1	4.93		PCI/L		3.02
1352	05/03/2017	BETA	25.4	3.12		PCI/L		4.22
1352	05/03/2017	Fluoride	0.387			MG/L		0.033
1352	05/03/2017	Nitrogen, Nitrate/Nitrite	28.5			MG/L		0.850
1352	05/03/2017	Uranium	74.9			UG/L		0.067
1352	05/03/2017	Uranium-233/234	27.0	3.05		PCI/L		0.746
1352	05/03/2017	Uranium-235/236	1.98	0.941	49	PCI/L		0.330
1352	05/03/2017	Uranium-238	20.5	2.66	4.15	PCI/L		0.544
1354	05/03/2017	ALPHA	8.10	2.84		PCI/L		3.98
1354	05/03/2017	BETA	25.5	2.89		PCI/L		3.74
1354	05/03/2017	Fluoride	0.448			MG/L		0.033
1354	05/03/2017	Nitrogen, Nitrate/Nitrite	104			MG/L		1.70
1354	05/03/2017	Uranium	3.08			UG/L		0.067
1354	05/03/2017	Uranium-233/234	2.27	0.890		PCI/L		0.609
1354	05/03/2017	Uranium-235/236	0.0285	0.298	4.26	PCI/L	U	0.622
1354	05/03/2017	Uranium-238	1.96	0.809	1.239	PCI/L		0.395
1356	05/03/2017	ALPHA	1,770	31.5		PCI/L		5.81
1356	05/03/2017	BETA	471	8.68		PCI/L		4.03
1356	05/03/2017	Fluoride	0.981			MG/L		0.033
1356	05/03/2017	Nitrogen, Nitrate/Nitrite	6.51			MG/L		0.170

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1356	05/03/2017	Uranium	1,240			UG/L		3.35
1356	05/03/2017	Uranium-233/234	916	23.2		PCI/L		0.850
1356	05/03/2017	Uranium-235/236	51.5	6.14	1,350	PCI/L		1.16
1356	05/03/2017	Uranium-238	382	15.0	28.3	PCI/L		0.460
02W09	05/02/2017	ALPHA	7.48	2.7		PCI/L		3.85
02W09	05/02/2017	BETA	3.94	2.68		PCI/L	U	4.43
02W09	05/02/2017	Fluoride	1.01			MG/L		0.033
02W09	05/02/2017	Nitrogen, Nitrate/Nitrite	ND			MG/L	U	0.017
02W09	05/02/2017	Uranium	6.63			UG/L		0.067
02W09	05/02/2017	Uranium-233/234	4.56	1.18		PCI/L		0.509
02W09	05/02/2017	Uranium-235/236	0.218	0.385	7.99	PCI/L	U	0.583
02W09	05/02/2017	Uranium-238	3.21	0.995	1.59	PCI/L		0.428

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02W27	05/02/2017	ALPHA	165	9.58		PCI/L		4.04
02W27	05/02/2017	BETA	34.4	3.22		PCI/L		4.04
02W27	05/02/2017	Fluoride	0.565			MG/L		0.033
02W27	05/02/2017	Nitrogen, Nitrate/Nitrite	1.59			MG/L		0.170
02W27	05/02/2017	Uranium	91.4			UG/L		0.067
02W27	05/02/2017	Uranium-233/234	71.6	4.55		PCI/L		0.460
02W27	05/02/2017	Uranium-235/236	6.14	1.49	111.8	PCI/L		0.279
02W27	05/02/2017	Uranium-238	34.1	3.15	5.73	PCI/L		0.361
02W28	05/02/2017	ALPHA	293	11.0		PCI/L		4.51
02W28	05/02/2017	BETA	85.4	4.12		PCI/L		3.80
02W28	05/02/2017	Fluoride	0.745			MG/L		0.033
02W28	05/02/2017	Nitrogen, Nitrate/Nitrite	ND			MG/L	U	0.017
02W28	05/02/2017	Uranium	298			UG/L		0.670
02W28	05/02/2017	Uranium-233/234	158	7.63		PCI/L		0.671
02W28	05/02/2017	Uranium-235/236	13.5	2.49	281	PCI/L		0.567
02W28	05/02/2017	Uranium-238	109	6.34	10.23	PCI/L		0.287
02W42	05/02/2017	ALPHA	114	7.35		PCI/L		4.73
02W42	05/02/2017	BETA	33.1	3.18		PCI/L		4.03
02W42	05/02/2017	Fluoride	0.452			MG/L		0.033
02W42	05/02/2017	Nitrogen, Nitrate/Nitrite	1.53			MG/L		0.085
02W42	05/02/2017	Uranium	127			UG/L		0.335
02W42	05/02/2017	Uranium-233/234	74.2	5.02		PCI/L		0.651
02W42	05/02/2017	Uranium-235/236	5.82	1.58	131.0	PCI/L		0.602
02W42	05/02/2017	Uranium-238	51.0	4.16	6.71	PCI/L		0.617
MWWA-03	05/03/2017	ALPHA	1480	24.9		PCI/L		4.72
MWWA-03	05/03/2017	BETA	187	5.68		PCI/L		3.59
MWWA-03	05/03/2017	Fluoride	13.3			MG/L		0.165
MWWA-03	05/03/2017	Nitrogen, Nitrate/Nitrite	0.109			MG/L		0.017
MWWA-03	05/03/2017	Uranium	500			UG/L		3.35
MWWA-03	05/03/2017	Uranium-233/234	1,030	21.6		PCI/L		0.650
MWWA-03	05/03/2017	Uranium-235/236	54.4	5.52	1,242	PCI/L		0.804
MWWA-03	05/03/2017	Uranium-238	158	8.45	23.8	PCI/L		0.563
MWWA-09	05/03/2017	ALPHA	144	7.85		PCI/L		3.92
MWWA-09	05/03/2017	BETA	65.3	3.76		PCI/L		3.66
MWWA-09	05/03/2017	Fluoride	4.00			MG/L		0.033
MWWA-09	05/03/2017	Nitrogen, Nitrate/Nitrite	12.3			MG/L		0.425

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MWWA-09	05/03/2017	Uranium	116			UG/L		0.335
MWWA-09	05/03/2017	Uranium-233/234	87.7	5.64		PCI/L		0.452
MWWA-09	05/03/2017	Uranium-235/236	4.43	1.43	128	PCI/L		0.350
MWWA-09	05/03/2017	Uranium-238	35.8	3.61	6.85	PCI/L		0.452
T-62	05/02/2017	ALPHA	181	8.88		PCI/L		3.07
T-62	05/02/2017	BETA	96.5	4.26		PCI/L		3.65
T-62	05/02/2017	Fluoride	3.37			MG/L		0.033
T-62	05/02/2017	Nitrogen, Nitrate/Nitrite	25.4			MG/L		0.850
T-62	05/02/2017	Uranium	108			UG/L		0.335
T-62	05/02/2017	Uranium-233/234	113	6.37		PCI/L		0.572
T-62	05/02/2017	Uranium-235/236	9.02	2.02	162	PCI/L		0.347
T-62	05/02/2017	Uranium-238	40.3	3.81	7.69	PCI/L		0.449

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T-64	05/02/2017	ALPHA	98.8	7.90		PCI/L		5.15
T-64	05/02/2017	BETA	29.3	3.12		PCI/L		4.07
T-64	05/02/2017	Fluoride	0.950			MG/L		0.033
T-64	05/02/2017	Nitrogen, Nitrate/Nitrite	7.07			MG/L		0.170
T-64	05/02/2017	Uranium	41.7			UG/L		0.067
T-64	05/02/2017	Uranium-233/234	60.7	4.19		PCI/L		0.360
T-64	05/02/2017	Uranium-235/236	4.54	1.29	81	PCI/L		0.278
T-64	05/02/2017	Uranium-238	15.7	2.14	4.88	PCI/L		0.458
T-70R	05/02/2017	ALPHA	176	11.0		PCI/L		6.24
T-70R	05/02/2017	BETA	21.0	2.88		PCI/L		3.91
T-70R	05/02/2017	Fluoride	0.723			MG/L		0.033
T-70R	05/02/2017	Nitrogen, Nitrate/Nitrite	2.04			MG/L		0.085
T-70R	05/02/2017	Uranium	57.5			UG/L		0.067
T-70R	05/02/2017	Uranium-233/234	116	5.78		PCI/L		0.652
T-70R	05/02/2017	Uranium-235/236	6.11	1.49	140	PCI/L		0.445
T-70R	05/02/2017	Uranium-238	17.9	2.29	6.39	PCI/L		0.556
T-76	05/02/2017	ALPHA	162	10.4		PCI/L		5.62
T-76	05/02/2017	BETA	77.7	4.12		PCI/L		4.04
T-76	05/02/2017	Fluoride	2.71			MG/L		0.033
T-76	05/02/2017	Nitrogen, Nitrate/Nitrite	20.8			MG/L		0.850
T-76	05/02/2017	Uranium	151			UG/L		0.335
T-76	05/02/2017	Uranium-233/234	135	7.29		PCI/L		0.676
T-76	05/02/2017	Uranium-235/236	7.96	1.99	196	PCI/L		0.608
T-76	05/02/2017	Uranium-238	52.9	4.57	8.83	PCI/L		0.627
T-77	05/02/2017	ALPHA	103	10.2		PCI/L		7.34
T-77	05/02/2017	BETA	20.8	3.05		PCI/L		4.25
T-77	05/02/2017	Fluoride	0.823			MG/L		0.033
T-77	05/02/2017	Nitrogen, Nitrate/Nitrite	0.713			MG/L		0.017
T-77	05/02/2017	Uranium	53.9			UG/L		0.067
T-77	05/02/2017	Uranium-233/234	82.9	5.62		PCI/L		0.604
T-77	05/02/2017	Uranium-235/236	4.25	1.44	104	PCI/L		0.586
T-77	05/02/2017	Uranium-238	17.1	2.57	6.35	PCI/L		0.652
T-79	05/02/2017	ALPHA	68.7	8.35		PCI/L		8.48
T-79	05/02/2017	BETA	16.3	2.74		PCI/L		3.93
T-79	05/02/2017	Fluoride	0.703			MG/L		0.033
T-79	05/02/2017	Nitrogen, Nitrate/Nitrite	0.150			MG/L		0.017

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Sample No	Coll Date	Parameter	Lab Result	Uncertainty	Total Activity/ Uncertainty	Units	Lab or Data Review Qual	MDL
T-79	05/02/2017	Uranium	42.5			UG/L		0.067
T-79	05/02/2017	Uranium-233/234	70.2	5.17		PCI/L		0.765
T-79	05/02/2017	Uranium-235/236	4.15	1.42	91	PCI/L		0.366
T-79	05/02/2017	Uranium-238	16.8	2.53	5.93	PCI/L		0.473
T-82	05/02/2017	ALPHA	28.9	6.28		PCI/L		6.35
T-82	05/02/2017	BETA	9.16	2.61		PCI/L		4.02
T-82	05/02/2017	Fluoride	0.387			MG/L		0.033
T-82	05/02/2017	Nitrogen, Nitrate/Nitrite	ND			MG/L	U	0.017
T-82	05/02/2017	Uranium	27.4			UG/L		0.067
T-82	05/02/2017	Uranium-233/234	28.2	3.27		PCI/L		0.722
T-82	05/02/2017	Uranium-235/236	2.05	1.01	41.3	PCI/L		0.362
T-82	05/02/2017	Uranium-238	11.0	2.05	3.99	PCI/L		0.541

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T-82DUP	05/02/2017	ALPHA	22.0	6.07		PCI/L		8.26
T-82DUP	05/02/2017	BETA	4.69	1.62		PCI/L		2.39
T-82DUP	05/02/2017	Fluoride	0.385			MG/L		0.033
T-82DUP	05/02/2017	Nitrogen, Nitrate/Nitrite	ND			MG/L	U	0.017
T-82DUP	05/02/2017	Uranium	26.6			UG/L		0.067
T-82DUP	05/02/2017	Uranium-233/234	24.9	2.74		PCI/L		0.514
T-82DUP	05/02/2017	Uranium-235/236	1.61	0.804	33.9	PCI/L		0.462
T-82DUP	05/02/2017	Uranium-238	7.43	1.52	3.23	PCI/L		0.604
TMW-08	05/02/2017	ALPHA	2510	35.6		PCI/L	J	5.52
TMW-08	05/02/2017	BETA	554	9.18		PCI/L		4.43
TMW-08	05/02/2017	Fluoride	0.563			MG/L		0.033
TMW-08	05/02/2017	Nitrogen, Nitrate/Nitrite	2.05			MG/L		0.085
TMW-08	05/02/2017	Uranium	2,330			UG/L		3.35
TMW-08	05/02/2017	Uranium-233/234	736	22.6		PCI/L	J	1.39
TMW-08	05/02/2017	Uranium-235/236	73.9	7.97	1,499	PCI/L	J	1.36
TMW-08	05/02/2017	Uranium-238	689	21.8	32.4	PCI/L	J	1.39
TMW-09	05/02/2017	ALPHA	2,410	30.6		PCI/L		3.51
TMW-09	05/02/2017	BETA	819	11.4		PCI/L		4.26
TMW-09	05/02/2017	Fluoride	0.704			MG/L		0.033
TMW-09	05/02/2017	Nitrogen, Nitrate/Nitrite	0.0597			MG/L		0.017
TMW-09	05/02/2017	Uranium	2,570			UG/L		3.35
TMW-09	05/02/2017	Uranium-233/234	1,150	30.1		PCI/L		1.35
TMW-09	05/02/2017	Uranium-235/236	98.7	9.81	2,088	PCI/L		1.21
TMW-09	05/02/2017	Uranium-238	839	25.7	40.8	PCI/L		1.13