



Vitrinite reflectance data for the Greater Green River Basin, southwestern Wyoming, northwestern Colorado, and northeastern Utah

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**U.S. DEPARTMENT OF THE INTERIOR
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The Greater Green River Basin is a large Laramide (Late Cretaceous through Eocene) structural and sedimentary basin that encompasses about 25,000 square miles in southwestern Wyoming, northwestern Colorado, and northeastern Utah (fig. 1). Important conventional oil and gas resources have been discovered and produced from reservoirs ranging in age from Cambrian through Tertiary (Law, 1996). In addition, an extensive overpressured basin - centered gas accumulation has also been identified in Cretaceous and Tertiary reservoirs by numerous researchers including Law (1984a, 1996), Law and others (1980, 1989), McPeek (1981), and Spencer (1987). The purpose of this report is to present new vitrinite reflectance data to be used in support of the U.S Geological Survey assessment of undiscovered oil and gas resources of the Greater Green River Basin.

One hundred eighty-six samples were collected from Cretaceous and Tertiary coal-bearing strata (figs. 1 and 2) in an effort to better understand and characterize the thermal maturation and burial history of potential source rocks. Two samples were from core, one from outcrop, and the remainder from well cuttings. These data were collected to supplement previously published data by Law (1984b), Pawlewicz and others (1986), Merewether and others (1987), and Garcia-Gonzalez and Surdam (1995) and are presented in table 1.

The coal samples were analyzed by vitrinite reflectance to determine levels of thermal maturation. Preparation of the coal for reflectance analysis required (1) crushing the larger coal pieces into 0.25 to 1mm pieces, (2) casting the pieces with epoxy in pre-cut and drilled plugs, and (3) curing the samples overnight. Subsequently, a four-step grinding process was implemented – two with progressively finer sandpaper (60 and 600 grit), and two polishing steps (0.3 and 0.05 micron). Vitrinite reflectance measurements were determined at 500 X magnification using plane-polarized incident white light and a 546 nm monochromatic filter in immersion oil. For samples with sufficient quality vitrinite, at least 25 measurements were recorded. For samples of poorer quality, either due to a poor polish or to the presence of mineral or other inorganic material, fewer measurements were recorded.

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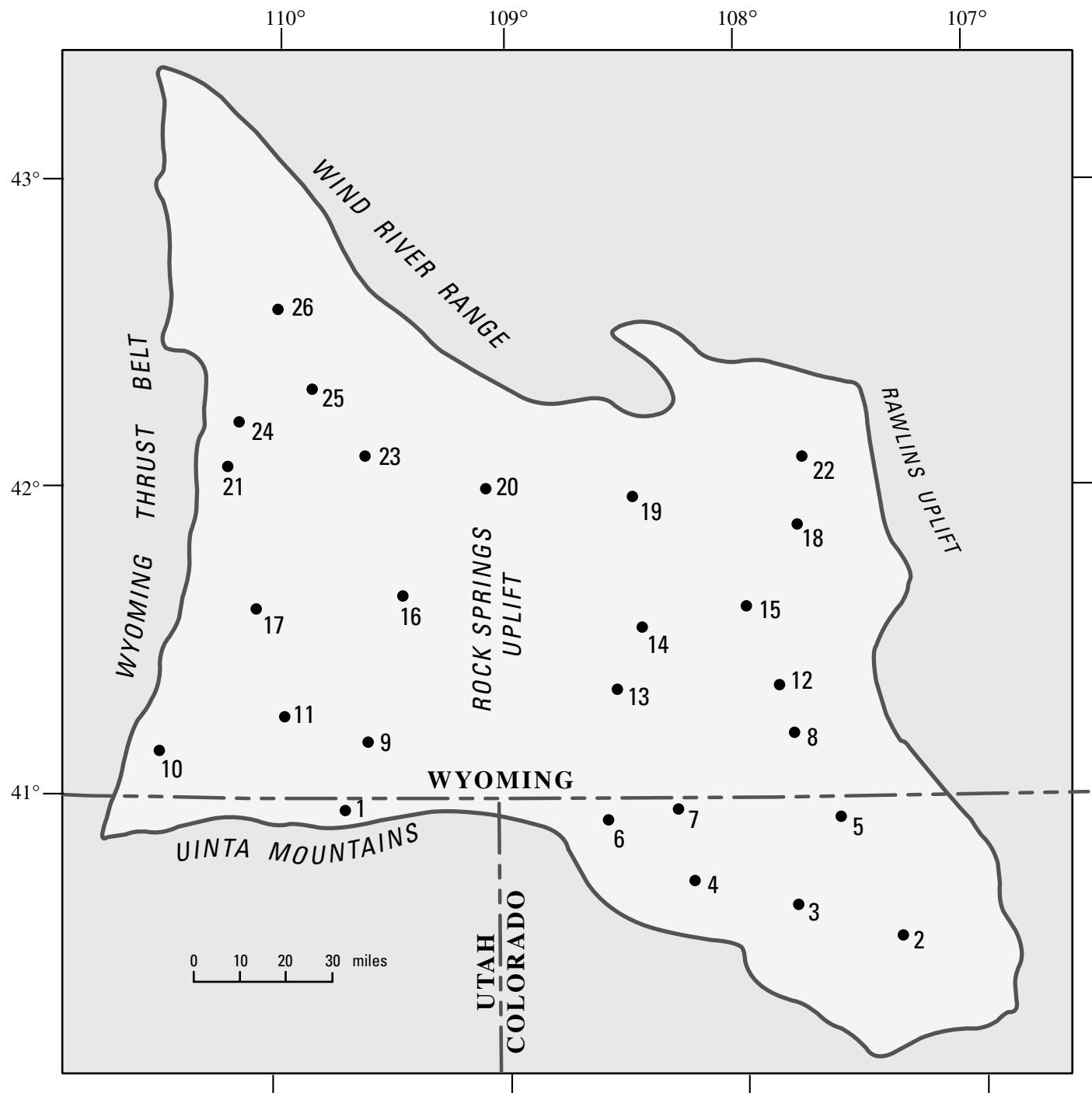
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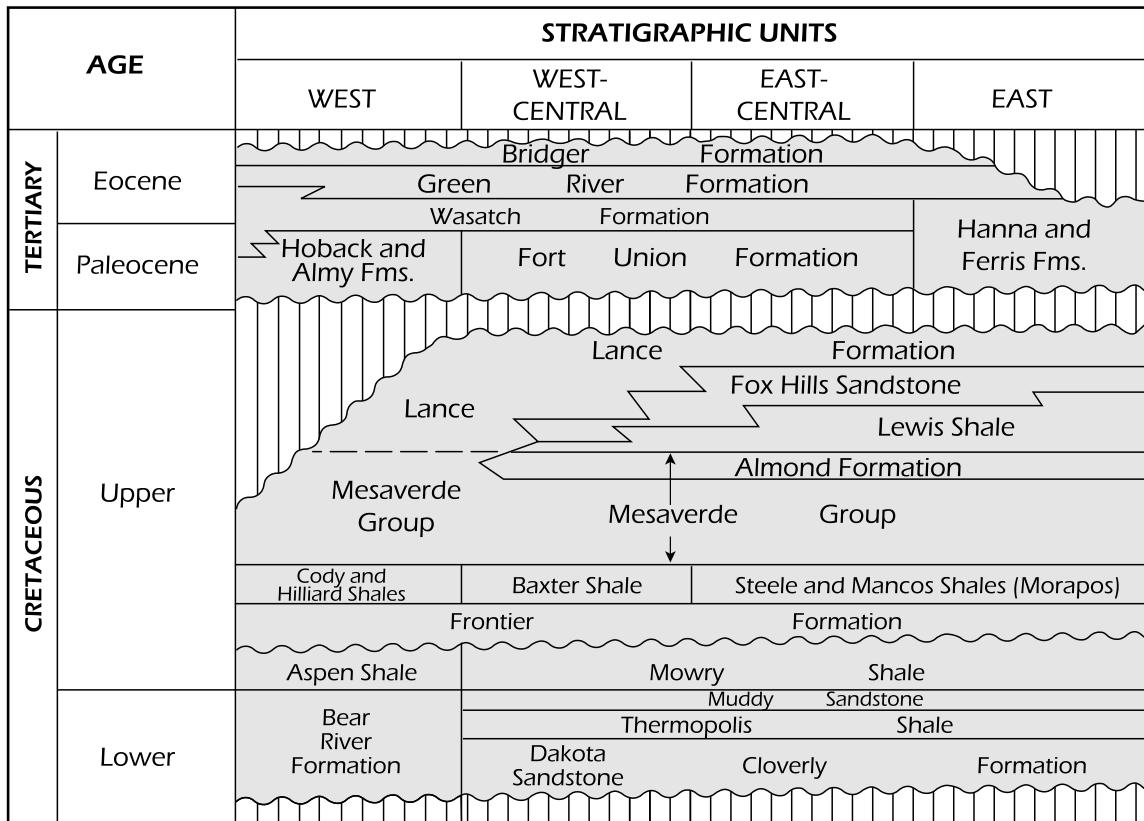
Figure 1. Map showing the general outline of the Greater Green River Basin, and sample localities. Numbers refer to column 1 in Table 1.

Figure 2. Generalized stratigraphic chart of Cretaceous and lower Tertiary rocks in the Greater Green River Basin (modified from Law, 1996).

Table 1. Vitrinite reflectance (R_o) data and sample locations for the Greater Green River Basin; southwestern Wyoming, northwestern Colorado, and northeastern Utah.

Map no. (column 1) refers to numbers plotted on figure 1. [Tnsp = Township; Rng = Range; Sec = Section; Lith = Lithology; carb sh = carbonaceous shale; Std. dev. = Standard deviation; Fm/Grp = Formation/Group. Queried (?) where uncertain; E = East; W = West; N = North; nd = no determination; n = number of readings per sample. Depth is in feet].





Map no.	Operator	Well name	State	Tnsp	Rng	Sec	Sample type	Lith	Depth	%Ro	n	Std. dev.	Fm/Grp
1	Outcrop	2001-UT-1	UT	3N	20E	31	outcrop	coal	surface	0.54	35	0.02	Dakota
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	370-400	0.42	7	0.01	Lance
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	790-820	0.41	21	0.03	Lance
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	3800-3810	0.68	25	0.03	Mesaverde
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	4300-4310	0.68	15	0.04	Mesaverde
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	4800-4810	0.7	27	0.04	Mesaverde
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	5040-5050	0.74	29	0.04	Mesaverde
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	5350-5360	0.71	27	0.04	Mesaverde
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	6200-6210	0.71	31	0.04	Mesaverde
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	6510-6520	0.76	27	0.04	Mesaverde
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	6800-6810	0.67	23	0.05	Mesaverde
2	Texas Pacific	1 Bear	CO	7N	89W	26	cuttings	coal	11050-11060	0.71	12	0.04	Frontier
3	Humble	1 Lay Creek	CO	8N	93W	13	cuttings	coal	960-970	0.52	25	0.06	Fort Union
3	Humble	1 Lay Creek	CO	8N	93W	13	cuttings	coal	1190-1220	0.56	25	0.03	Fort Union
3	Humble	1 Lay Creek	CO	8N	93W	13	cuttings	coal	1500-1540	0.59	27	0.03	Fort Union
3	Humble	1 Lay Creek	CO	8N	93W	13	cuttings	coal	2040-2050	0.55	25	0.03	Lance
3	Humble	1 Lay Creek	CO	8N	93W	13	cuttings	coal	4280-4290	0.75	27	0.03	Mesaverde
3	Humble	1 Lay Creek	CO	8N	93W	13	cuttings	coal	4760-4770	0.75	29	0.04	Mesaverde
3	Humble	1 Lay Creek	CO	8N	93W	13	cuttings	coal	5240-5260	0.78	25	0.06	Mesaverde
3	Humble	1 Lay Creek	CO	8N	93W	13	cuttings	coal	6620-6660	0.88	21	0.05	Mesaverde
4	C & K Petroleum	1-19 Gulf Federal	CO	9N	96W	19	cuttings	coal	7360-7590	0.56	25	0.07	Fort Union
4	C & K Petroleum	1-19 Gulf Federal	CO	9N	96W	19	cuttings	coal	83108-570	0.75	29	0.04	Fort Union
4	C & K Petroleum	1-19 Gulf Federal	CO	9N	96W	19	cuttings	coal	8700-8820	0.8	21	0.07	Fort Union
4	C & K Petroleum	1-19 Gulf Federal	CO	9N	96W	19	cuttings	coal	9180-91400	0.71	25	0.04	Lance
4	C & K Petroleum	1-19 Gulf Federal	CO	9N	96W	19	cuttings	coal	11000-12210	0.93	19	0.04	Mesaverde
5	Superior Oil	1 State	CO	11N	91W	3	cuttings	coal	2190-2210	0.53	25	0.03	Fort Union
5	Superior Oil	1 State	CO	11N	91W	3	cuttings	coal	2900-3010	0.55	27	0.06	Lance
5	Superior Oil	1 State	CO	11N	91W	3	cuttings	coal	6400-6430	0.73	31	0.05	Mesaverde
5	Superior Oil	1 State	CO	11N	91W	3	cuttings	coal	6680-6730	0.71	25	0.04	Mesaverde
5	Superior Oil	1 State	CO	11N	91W	3	cuttings	coal	8100-8130	0.76	25	0.05	Mesaverde
6	Champlin	1 USA 41-12	CO	11N	100W	12	cuttings	coal	3650-3660	0.63	31	0.05	Fort Union
6	Champlin	1 USA 41-12	CO	11N	100W	12	cuttings	coal	4400-4410	0.56	29	0.05	Fort Union
6	Champlin	1 USA 41-12	CO	11N	100W	12	cuttings	coal	5100-5140	0.56	35	0.03	Fort Union
6	Champlin	1 USA 41-12	CO	11N	100W	12	cuttings	coal	5950-5970	0.71	19	0.06	Lance
6	Champlin	1 USA 41-12	CO	11N	100W	12	cuttings	coal	7230-7250	0.75	21	0.08	Mesaverde

6	Champlin	1 USA 41-12	CO	11N	100W	12	cuttings	coal	7900-7940	0.9	35	0.04	Mesaverde
6	Champlin	1 USA 41-12	CO	11N	100W	12	cuttings	coal	8280-8300	0.9	31	0.06	Mesaverde
6	Champlin	1 USA 41-12	CO	11N	100W	12	cuttings	coal	8570-8610	0.84	35	0.05	Mesaverde
6	Champlin	1 USA 41-12	CO	11N	100W	12	cuttings	coal	9200-9240	0.83	5	0.09	Mesaverde
6	Champlin	1 USA 41-12	CO	11N	100W	12	cuttings	coal	15400-15460	2.35	14	0.15	Dakota
7	Mountain Fuel	11 Carl Allen	CO	12N	97W	33	cuttings	coal	5460-5500	0.58	25	0.04	Fort Union
7	Mountain Fuel	11 Carl Allen	CO	12N	97W	33	cuttings	coal	6100-6180	0.55	25	0.03	Fort Union
7	Mountain Fuel	11 Carl Allen	CO	12N	97W	33	cuttings	coal	6690-6750	0.65	25	0.03	Fort Union
7	Mountain Fuel	11 Carl Allen	CO	12N	97W	33	cuttings	coal	8610-8690	0.69	23	0.1	Lance
7	Mountain Fuel	11 Carl Allen	CO	12N	97W	33	cuttings	coal	11020-11040	1.26	26	0.04	Mesaverde
7	Mountain Fuel	11 Carl Allen	CO	12N	97W	33	cuttings	coal	11660-11700	1.25	27	0.04	Mesaverde
7	Mountain Fuel	11 Carl Allen	CO	12N	97W	33	cuttings	coal	12610-12650	1.26	25	0.07	Mesaverde
8	CIG Exploration	6-14-92 Blue Gap II	WY	14N	92W	6	cuttings	coal	3900-3990	0.51	13	0.04	Fort Union
8	CIG Exploration	6-14-92 Blue Gap II	WY	14N	92W	6	cuttings	coal	4770-4830	0.66	31	0.03	Fort Union
8	CIG Exploration	6-14-92 Blue Gap II	WY	14N	92W	6	cuttings	coal	5370-5430	0.66	31	0.04	Lance
8	CIG Exploration	6-14-92 Blue Gap II	WY	14N	92W	6	cuttings	coal	6430-6460	0.76	31	0.06	Lance
8	CIG Exploration	6-14-92 Blue Gap II	WY	14N	92W	6	cuttings	coal	9100-9150	0.97	31	0.04	Mesaverde
8	CIG Exploration	6-14-92 Blue Gap II	WY	14N	92W	6	cuttings	coal	9900-9960	1.06	31	0.07	Mesaverde
8	CIG Exploration	6-14-92 Blue Gap II	WY	14N	92W	6	cuttings	coal	11340-11390	1.33	35	0.14	Mesaverde
9	Tom Brown Inc.	1 Currant Creek Fed.	WY	14N	108W	20	cuttings	carb sh	2950-3040	nd	nd	nd	nd
9	Tom Brown Inc.	1 Currant Creek Fed.	WY	14N	108W	20	cuttings	coal	4490-4600	0.7	10	0.11	Wasatch(?)
9	Tom Brown Inc.	1 Currant Creek Fed.	WY	14N	108W	20	cuttings	coal	6180-6240	0.59	15	0.08	Fort Union
9	Tom Brown Inc.	1 Currant Creek Fed.	WY	14N	108W	20	cuttings	coal	7090-7140	0.59	21	0.05	Fort Union
9	Tom Brown Inc.	1 Currant Creek Fed.	WY	14N	108W	20	cuttings	coal	9050-9180	0.74	27	0.05	Mesaverde
9	Tom Brown Inc.	1 Currant Creek Fed.	WY	14N	108W	20	cuttings	coal	10400-10470	0.95	25	0.05	Mesaverde
9	Tom Brown Inc.	1 Currant Creek Fed.	WY	14N	108W	20	cuttings	coal	16800-16890	1.93	21	0.12	Frontier
9	Tom Brown Inc.	1 Currant Creek Fed.	WY	14N	108W	20	cuttings	carb sh	17280-17300	2.89	5	0.37	Dakota
10	Sun Oil Company	1 Blacks Fork Unit	WY	14N	116W	34	cuttings	coal	7130-7190	0.54	25	0.04	Fort Union
10	Sun Oil Company	1 Blacks Fork Unit	WY	14N	116W	34	cuttings	coal	7480-7530	0.55	25	0.04	Fort Union
10	Sun Oil Company	1 Blacks Fork Unit	WY	14N	116W	34	cuttings	coal	7870-7930	0.57	31	0.06	Fort Union
10	Sun Oil Company	1 Blacks Fork Unit	WY	14N	116W	34	cuttings	coal	8140-8210	0.56	31	0.05	Fort Union
10	Sun Oil Company	1 Blacks Fork Unit	WY	14N	116W	34	cuttings	coal	10470-10550	0.61	31	0.03	Mesaverde
10	Sun Oil Company	1 Blacks Fork Unit	WY	14N	116W	34	cuttings	coal	14790-14800	1.01	35	0.03	Frontier
11	Texaco	1 Leo Unit	WY	15N	111W	20	cuttings	coal	6400-6430	0.78	10	0.04	Fort Union
11	Texaco	1 Leo Unit	WY	15N	111W	20	cuttings	coal	6970-7030	0.57	25	0.06	Fort Union
11	Texaco	1 Leo Unit	WY	15N	111W	20	cuttings	coal	7660-7750	0.6	27	0.05	Fort Union
11	Texaco	1 Leo Unit	WY	15N	111W	20	cuttings	coal	8220-8240	0.68	31	0.06	Fort Union

11	Texaco	1 Leo Unit	WY	15N	111W	20	cuttings	coal	8690-8720	0.72	31	0.05	Fort Union
11	Texaco	1 Leo Unit	WY	15N	111W	20	cuttings	coal	9610-9680	0.77	19	0.03	Mesaverde
11	Texaco	1 Leo Unit	WY	15N	111W	20	cuttings	coal	10130-10140	0.72	33	0.02	Mesaverde
12	Ambassador oil	1 Federal-J-Wyoming	WY	16N	93W	14	cuttings	coal	2320-2380	0.47	27	0.04	Fort Union
12	Ambassador oil	1 Federal-J-Wyoming	WY	16N	93W	14	cuttings	coal	3240-3260	0.47	31	0.04	Fort Union
12	Ambassador oil	1 Federal-J-Wyoming	WY	16N	93W	14	cuttings	coal	4010-4020	0.57	21	0.04	Fort Union
12	Ambassador oil	1 Federal-J-Wyoming	WY	16N	93W	14	cuttings	coal	5520-5600	0.64	31	0.04	Lance
12	Ambassador oil	1 Federal-J-Wyoming	WY	16N	93W	14	cuttings	coal	6010-6060	0.71	31	0.04	Lance
12	Ambassador oil	1 Federal-J-Wyoming	WY	16N	93W	14	cuttings	coal	9030-9040	0.91	31	0.03	Mesaverde
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	3070-3080	0.53	21	0.04	Wasatch
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	4000-4020	0.53	21	0.05	Wasatch
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	5000-5020	0.46	25	0.04	Wasatch
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	6000-6020	0.63	27	0.04	Fort Union
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	7100-7110	0.63	35	0.05	Fort Union
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	8000-8010	0.78	27	0.05	Fort Union
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	8990-9000	0.8	27	0.05	Lance
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	10000-10050	0.71	29	0.09	Lewis
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	10980-11030	1.13	31	0.05	Mesaverde
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	11820-11880	1.2	29	0.07	Mesaverde
13	Amoco Prod. Co.	1 Bitter Creek II	WY	16N	99W	22	cuttings	coal	12800-12830	1.42	31	0.07	Mesaverde
14	Texaco	15 Table Rock Unit	WY	18N	98W	2	cuttings	coal	1530-1560	0.45	25	0.05	Fort Union
14	Texaco	15 Table Rock Unit	WY	18N	98W	2	cuttings	coal	2070-2130	0.45	25	0.04	Fort Union
14	Texaco	15 Table Rock Unit	WY	18N	98W	2	cuttings	coal	2800-2830	0.46	25	0.04	Fort Union
14	Texaco	15 Table Rock Unit	WY	18N	98W	2	cuttings	coal	3280-3310	0.54	25	0.02	Lance
14	Texaco	15 Table Rock Unit	WY	18N	98W	2	cuttings	coal	4660-4750	0.65	25	0.04	Lance
14	Texaco	15 Table Rock Unit	WY	18N	98W	2	cuttings	coal	6450-6480	0.73	26	0.04	Mesaverde
14	Texaco	15 Table Rock Unit	WY	18N	98W	2	cuttings	coal	7050-7140	0.72	25	0.04	Mesaverde
14	Texaco	15 Table Rock Unit	WY	18N	98W	2	cuttings	coal	7710-7770	0.7	25	0.04	Mesaverde
14	Texaco	15 Table Rock Unit	WY	18N	98W	2	cuttings	coal	8110-8170	0.68	25	0.04	Mesaverde
15	Amoco	2 Tierney	WY	19N	94W	15	cuttings	coal	1440-1470	0.57	21	0.05	Wasatch(?)
15	Amoco	2 Tierney	WY	19N	94W	15	cuttings	coal	2440-2470	0.45	25	0.05	Fort Union
15	Amoco	2 Tierney	WY	19N	94W	15	cuttings	coal	3150-3270	0.61	21	0.04	Fort Union
15	Amoco	2 Tierney	WY	19N	94W	15	cuttings	coal	3690-3720	0.61	21	0.03	Fort Union
15	Amoco	2 Tierney	WY	19N	94W	15	cuttings	coal	3980-4010	0.58	25	0.04	Fort Union
15	Amoco	2 Tierney	WY	19N	94W	15	cuttings	coal	6950-7090	0.69	27	0.05	Lance
15	Amoco	2 Tierney	WY	19N	94W	15	cuttings	coal	9660-9670	0.92	31	0.04	Mesaverde
15	Amoco	2 Tierney	WY	19N	94W	15	cuttings	coal	10580-10600	0.94	27	0.04	Mesaverde
15	Amoco	2 Tierney	WY	19N	94W	15	cuttings	coal	10880-10900	0.91	31	0.03	Mesaverde

15	Amoco	2 Tierney	WY	19N	94W	15	cuttings	coal	11200-11210	0.87	27	0.05	Mesaverde
16	Davis Oil Co.	1 Dagger Unit	WY	19N	107W	2	cuttings	coal	6500-6537	0.58	27	0.02	Fort Union
16	Davis Oil Co.	1 Dagger Unit	WY	19N	107W	2	cuttings	coal	6982-7136	0.68	29	0.05	Fort Union
16	Davis Oil Co.	1 Dagger Unit	WY	19N	107W	2	cuttings	coal	7567-7597	0.7	27	0.03	Fort Union
16	Davis Oil Co.	1 Dagger Unit	WY	19N	107W	2	cuttings	coal	8096-8189	0.67	29	0.07	Lance
16	Davis Oil Co.	1 Dagger Unit	WY	19N	107W	2	cuttings	coal	8649-8710	0.71	31	0.06	Mesaverde
16	Davis Oil Co.	1 Dagger Unit	WY	19N	107W	2	cuttings	coal	9951-9983	0.79	31	0.06	Mesaverde
16	Davis Oil Co.	1 Dagger Unit	WY	19N	107W	2	cuttings	coal	10163-10193	0.84	33	0.05	Mesaverde
16	Davis Oil Co.	1 Dagger Unit	WY	19N	107W	2	cuttings	coal	10780-107811	0.97	33	0.05	Mesaverde
16	Davis Oil Co.	1 Dagger Unit	WY	19N	107W	2	cuttings	coal	16269-16331	1.97	21	0.17	Frontier
17	Mountain Fuel	2 Bruff Unit	WY	19N	112W	16	cuttings	coal	6390-6440	0.62	29	0.05	Fort Union
17	Mountain Fuel	2 Bruff Unit	WY	19N	112W	16	cuttings	coal	7030-7090	0.58	37	0.03	Mesaverde
17	Mountain Fuel	2 Bruff Unit	WY	19N	112W	16	cuttings	coal	11200-11230	1.04	16	0.11	Frontier
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	1670-1730	0.46	25	0.03	Fort Union
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	2510-2540	0.49	31	0.04	Fort Union
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	3450-3480	0.49	27	0.04	Fort Union
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	4030-4090	0.57	25	0.05	Fort Union
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	4390-4450	0.5	31	0.06	Fort Union
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	5230-5290	0.52	31	0.03	Fort Union
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	6130-6190	0.64	25	0.02	Lance
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	8080-8140	0.62	31	0.04	Lance
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	9060-9080	0.77	25	0.05	Lance
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	9790-9800	0.83	35	0.03	Lance
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	10260-10270	0.83	31	0.04	Lance
18	Pacific Transmission	3-12 Federal	WY	22N	92W	12	cuttings	coal	13130-13140	1.35	35	0.05	Mesaverde
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	1420-1460	0.47	23	0.07	Fort Union
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	1800-1860	0.44	7	0.06	Fort Union
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	2240-2260	0.61	25	0.08	Fort Union
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	3320-3345	0.55	29	0.05	Fort Union
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	3880-3900	0.55	18	0.04	Fort Union
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	4440-4460	0.63	25	0.05	Fort Union
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	5040-5060	0.67	15	0.05	Lance
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	6720-6750	0.79	27	0.06	Lance
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	7460-7510	0.77	21	0.07	Lance
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	9099-9100	0.94	41	0.05	Mesaverde
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	9140-9150	0.95	25	0.08	Mesaverde
19	Ohio Oil Co.	Mud Lake 1	WY	23N	98W	12	cuttings	coal	9400-9420	0.66	14	0.06	Mesaverde

20	Elf Aquataine	33-32 McBride	WY	24N	103W	32	core	coal	9067	0.9	41	0.03	Frontier
21	El Paso Nat. Gas	1 Unit	WY	24N	113W	11	cuttings	coal	3340-3400	0.67	13	0.07	Fort Union
21	El Paso Nat. Gas	1 Unit	WY	24N	113W	11	cuttings	coal	4050-4060	0.49	29	0.04	Fort Union
21	El Paso Nat. Gas	1 Unit	WY	24N	113W	11	cuttings	coal	4630-4730	0.57	30	0.06	Fort Union
21	El Paso Nat. Gas	1 Unit	WY	24N	113W	11	cuttings	coal	5290-5390	0.66	27	0.07	Mesaverde
21	El Paso Nat. Gas	1 Unit	WY	24N	113W	11	cuttings	coal	6050-6070	0.58	31	0.05	Mesaverde
22	Southland Royalty	1 Eagles Nest Fed.	WY	25N	91W	29	cuttings	coal	6240-6330	0.55	25	0.06	Fort Union
22	Southland Royalty	1 Eagles Nest Fed.	WY	25N	91W	29	cuttings	coal	7260-7380	0.66	25	0.05	Fort Union
22	Southland Royalty	1 Eagles Nest Fed.	WY	25N	91W	29	cuttings	coal	8640-8700	0.68	25	0.03	Fort Union
22	Southland Royalty	1 Eagles Nest Fed.	WY	25N	91W	29	cuttings	coal	9060-9070	0.68	25	0.03	Fort Union
22	Southland Royalty	1 Eagles Nest Fed.	WY	25N	91W	29	cuttings	coal	9270-9300	0.74	25	0.04	Fort Union
22	Southland Royalty	1 Eagles Nest Fed.	WY	25N	91W	29	cuttings	coal	11750-11840	0.81	25	0.05	Lance
22	Southland Royalty	1 Eagles Nest Fed.	WY	25N	91W	29	cuttings	coal	13180-13330	0.98	25	0.05	Lance
22	Southland Royalty	1 Eagles Nest Fed.	WY	25N	91W	29	cuttings	coal	13840-13900	1.21	25	0.05	Lance
22	Southland Royalty	1 Eagles Nest Fed.	WY	25N	91W	29	cuttings	coal	14730-14760	1.4	27	0.05	Lance
22	Southland Royalty	1 Eagles Nest Fed.	WY	25N	91W	29	cuttings	coal	15390-15410	1.46	27	0.04	Lance
23	American Hunter	Enterprise 1-A	WY	25N	107W	30	cuttings	coal	4420-4460	0.53	25	0.02	Fort Union
23	American Hunter	Enterprise 1-A	WY	25N	107W	30	cuttings	coal	5250-5350	0.58	25	0.03	Fort Union
23	American Hunter	Enterprise 1-A	WY	25N	107W	30	cuttings	coal	6310-6320	0.64	25	0.03	Fort Union
23	American Hunter	Enterprise 1-A	WY	25N	107W	30	cuttings	coal	7090-7170	0.7	25	0.04	Fort Union
23	American Hunter	Enterprise 1-A	WY	25N	107W	30	cuttings	coal	8310-8330	0.77	25	0.04	Mesaverde
23	American Hunter	Enterprise 1-A	WY	25N	107W	30	cuttings	coal	8530-8540	0.83	25	0.04	Mesaverde
23	American Hunter	Enterprise 1-A	WY	25N	107W	30	cuttings	coal	10270-10280	1.04	25	0.05	Mesaverde
23	American Hunter	Enterprise 1-A	WY	25N	107W	30	cuttings	coal	10610-10620	1.13	25	0.03	Mesaverde
24	Nat. Gas Corp. of Calif.	Fontenelle 22-22B	WY	26N	112W	22	core	coal	8816	1.02	35	0.04	Frontier
25	Davis Oil Co.	Sugar Loaf Unit 1	WY	27N	109W	7	cuttings	coal	7050-7200	0.65	25	0.05	Lance
25	Davis Oil Co.	Sugar Loaf Unit 1	WY	27N	109W	7	cuttings	coal	7440-7840	0.62	25	0.06	Lance
25	Davis Oil Co.	Sugar Loaf Unit 1	WY	27N	109W	7	cuttings	coal	8640-8830	0.77	25	0.05	Mesaverde
25	Davis Oil Co.	Sugar Loaf Unit 1	WY	27N	109W	7	cuttings	coal	9240-9450	0.71	25	0.04	Mesaverde
25	Davis Oil Co.	Sugar Loaf Unit 1	WY	27N	109W	7	cuttings	coal	9690-9830	0.76	25	0.04	Mesaverde
25	Davis Oil Co.	Sugar Loaf Unit 1	WY	27N	109W	7	cuttings	coal	9450-9650	0.71	25	0.07	Mesaverde
25	Davis Oil Co.	Sugar Loaf Unit 1	WY	27N	109W	7	cuttings	coal	10060-10110	0.81	25	0.05	Mesaverde
25	Davis Oil Co.	Sugar Loaf Unit 1	WY	27N	109W	7	cuttings	coal	11380-11420	0.75	20	0.08	Mesaverde
25	Davis Oil Co.	Sugar Loaf Unit 1	WY	27N	109W	7	cuttings	coal	15520-15650	1.98	25	0.08	Frontier
26	Mountain Fuel	1 Three Bridges	WY	30N	110W	7	cuttings	coal	2220-2280	0.52	31	0.03	Wasatch(?)
26	Mountain Fuel	1 Three Bridges	WY	30N	110W	7	cuttings	coal	3310-3330	0.53	31	0.04	Wasatch(?)

26	Mountain Fuel	1 Three Bridges	WY	30N	110W	7	cuttings	coal	6780-6830	0.63	27	0.06	Fort Union
26	Mountain Fuel	1 Three Bridges	WY	30N	110W	7	cuttings	coal	8600-8700	0.72	27	0.06	Lance
26	Mountain Fuel	1 Three Bridges	WY	30N	110W	7	cuttings	coal	9440-9490	0.85	27	0.1	Lance