APPENDIX B

LITHOLOGIC, CHEMICAL AND PHYSICAL ANALYSES OF OVERBURDEN FOR THE KAYENTA COMPLEX

APPENDIX B

INDEX

Appendix B presents the lithologic, chemical and physical descriptions of the overburden in the coal resource areas for the life-of-mine plans. The locations of the deep, shallow and highwall cores used to characterize the overburden are shown on Drawings 85613 and 85613A.

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(DEEP CORES)

LE # 23155C

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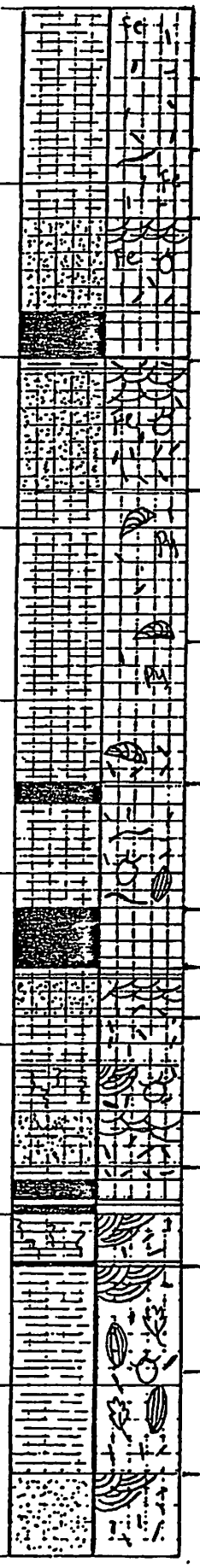

SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	pH
1	55.2	1.5	5.9	16.7	12.6	< 0.06	6.6
2	59.2	1.6	7.2	22.3	16.4	0.08	4.2
3	49.9	1.6	6.0	13.0	16.6	0.07	4.2
4	37.5	2.1	9.9	17.4	27.3	< 0.06	5.7
-	-	12.6	-	11,662	-	2.82	4.7
5	54.4	5.6	17.0	9.5	9.0	< 0.06	6.2
6	66.2	18.3	31.6	4.0	1.9	< 0.06	6.4
7	63.5	22.2	47.8	6.3	3.0	< 0.06	5.9
8	66.2	21.1	20.8	1.1	0.9	< 0.06	6.6
-	-	5.7	-	12,932	-	0.87	7.7
9	64.2	32.4	21.8	0.7	0.2	< 0.06	6.5
10	63.4	17.8	20.2	1.4	1.2	< 0.06	7.9
11	32.9	37.7	40.5	1.3	1.1	< 0.06	7.3
12	64.3	16.3	21.9	1.7	1.9	< 0.06	8.3
13	70.7	10.8	15.8	2.3	2.0	< 0.06	8.7
14	75.1	17.4	25.2	3.1	1.1	< 0.06	8.3
15	38.4	17.4	23.6	2.5	1.2	< 0.06	8.2

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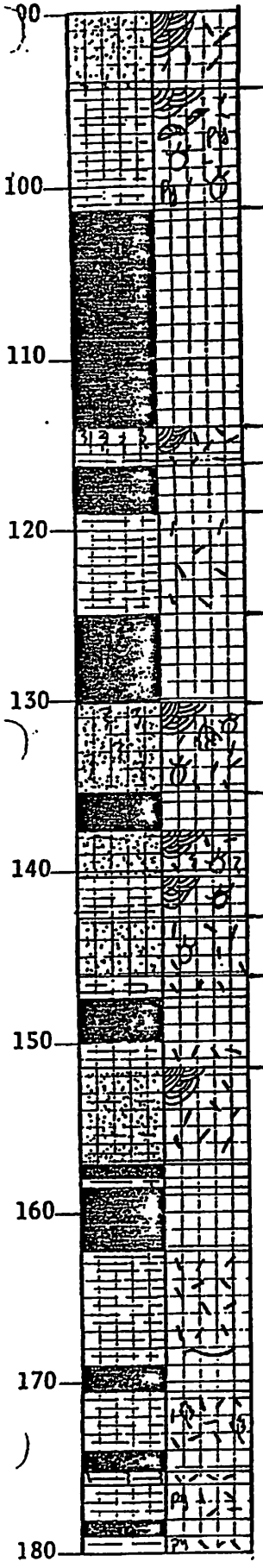
DATE DRILLED 7/20/01

SUB AREA



SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	pH
16	54.3	12.9	54.3	23.4	4.0	< 0.06	8.0
-	-	9.6	-	12,351	-	0.56	7.9
17	70.9	13.9	15.6	1.4	1.1	< 0.06	9.0
-	-	5.12	-	13,034	-	0.52	7.9
18	72.2	14.4	23.7	3.5	1.9	< 0.06	5.6
-	-	31.4	-	9,155	-	1.32	7.3
19	41.3	13.1	19.6	3.2	1.3	< 0.06	
20	57.5	8.6	9.4	1.4	1.0	< 0.06	8.2
21	36.9	21.6	31.8	2.4	2.0	< 0.06	8.4
22	71.9	12.5	14.0	1.7	0.8	< 0.06	7.9

Revised 11/21/03

Mine: Kayenta
Core: 23155-C
Section: 35

Township: 36N
Range: 19E
Date Cored:

PEABODY COAL COMPANY

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meq/l	Ca meq/l	Mg meq/l	SAR	ESP	$NaHCO_3$** P ppm	NH_4OAc** K ppm	Total[1] N ppm
Silty shale	0.0	4.0	1	6.6	3.7	55.2	5.9	16.7	12.6	1.5	1.0	6.6	114.4	15
Silty shale	4.0	4.0	2	4.2	5.0	59.4	7.2	22.3	16.4	1.6	1.3	4.2	151.2	<2
Silty shale	8.0	4.0	3	4.2	3.5	49.9	6.0	13.0	16.6	1.6	0.9	4.2	183.3	<2
Sandstone	12.0	5.4	4	5.7	6.5	37.5	9.9	17.4	27.3	2.1	1.8	5.7	82.7	159
Coal	17.4	2.7	--											
Shale/Sandstone	20.1	7.7	5	6.2	4.2	54.4	17.0	9.5	9.0	5.6	6.6	6.2	164.8	179
Shale	27.8	8.5	6	6.4	4.5	66.2	31.6	4.0	1.9	18.3	21.2	6.4	484.3	105
Shale	36.3	8.5	7	5.9	6.7	63.5	47.8	6.3	3.0	22.2	22.0	5.9	359.6	105
Coal/Shale	44.8	7.2	8	6.6	2.7	66.2	20.8	1.1	0.9	21.1	22.1	6.6	419.2	109
Shaley coal	52.0	3.8	--											
Shale/Sandstone	55.8	2.7	9	6.5	2.6	64.6	21.8	0.7	0.2	32.4	32.9	6.5	192.5	46
Shale/Silty shale	58.5	5.5	10	7.9	2.7	63.4	20.2	1.4	1.2	17.8	22.6	7.9	306.3	142
Sandstone	64.0	3.3	11	7.3	5.2	32.9	40.5	1.3	1.1	37.7	30.5	7.3	162.5	78
Shale/Coal	67.3	5.8	12	8.3	3.0	64.3	21.9	1.7	1.9	16.3	19.9	8.3	322.9	105
Shale	73.1	6.1	13	8.7	2.5	70.7	15.8	2.3	2.0	10.8	11.7	8.7	518.6	114
Shale	79.2	6.0	14	8.3	3.3	75.1	25.2	3.1	1.1	17.4	22.0	8.3	417.7	101
Sandstone	85.2	8.8	15	8.2	2.9	38.4	23.6	2.5	1.2	17.4	20.8	8.2	94.3	114
Siltstone/Shale	94.0	7.4	16	8.0	3.2	54.3	23.4	4.0	2.6	12.9	15.0	8.0	256.2	98
Coal	101.4	12.6	--											
Siltstone/Shale	114.0	2.4	17	9.0	2.2	70.9	15.6	1.4	1.1	13.9	14.3	9.0	235.9	109
Shaley coal	116.4	2.6	--											
Shale	119.0	6.0	18	8.6	3.5	72.2	23.7	3.5	1.9	14.4	18.2	8.6	782.1	98

*Dry Basis
[1]Total-N is Sum of NH_4-N and NO_3-N
**NH_4 - N[illegible]

Revised 11/21/03

Mine: Kayenta
Core: 23155-C
Section: 35

Township: 36N
Range: 19E
Date Cored:

PEABODY COAL COMPANY

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meq/l	Ca meq/l	Mg meq/l	SAR	ESP	$NaHCO_3$* P ppm	NH_4OAc* K ppm	Total N ppm†
Shaley coal	125.0	5.2	—											
Silty sandstone	130.2	5.3	19	7.6	2.8	41.3	19.6	3.2	1.3	13.1	15.1	7.6	143.4	60
Coal/Sandstone/Shale	135.5	7.3	20	8.2	1.2	57.5	9.4	1.4	1.0	8.6	10.2	8.2	182.0	34
Sandstone	142.8	3.4	21	8.4	4.1	36.9	31.8	2.4	2.0	21.6	22.0	8.4	121.0	98
Shale/Coal	146.2	5.4	22	7.9	1.8	71.9	14.0	1.7	0.8	12.5	13.0	7.9	518.9	27

*Dry Basis
†Total-N is Sum of NH_4-N and NO_3-N
**NH_4 - N<2ppm and NO_3 - N>1ppm

Revised 11/21/03

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Central Laboratory

Mine: Kayenta
Core: 23155-C
Date Cored:

Township: 36N
Range: 19E
Section: 35

Lab No.			% * Sulfur	*Tons of $CaCO_3$ Equivalent per 1000 Tons Material: Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCO_3$ Equiv.	* % Organic Matter	Particle Size: % Sand	% Silt	% Clay	% Moisture: 1/3 BAR	15 BAR	Available H_2O Hold. Capacity (1/3-15 BAR)
			*Dry Basis											
1			<0.06	1.88	7.77		5.89	5.2	26.7	43.4	29.8	30.1	16.9	13.2
2			0.08	2.52	0.00	2.52		2.1	29.0	38.1	32.9	34.5	14.4	20.1
3			0.07	2.14	0.00	2.14		4.5	19.5	41.0	39.5	35.6	16.5	19.1
4			<0.06	1.88	18.90		17.02	2.1	72.4	15.2	12.4	21.5	8.0	13.5
—														
5			<0.06	1.88	25.76		23.88	3.9	49.5	16.4	34.1	37.8	19.0	18.8
6			<0.06	1.88	8.33		6.45	10.2	39.7	16.6	43.7	42.4	26.9	15.5
7			<0.06	1.88	8.30		6.42	9.1	25.5	20.1	54.4	48.4	26.3	22.1
8			<0.06	1.88	6.89		5.01	14.3	37.2	20.0	42.8	47.2	23.8	23.4
—														
9			<0.06	1.88	6.45		4.57	3.5	49.5	12.0	38.5	33.3	16.4	16.9
10			<0.06	1.88	3.74		1.86	3.8	11.2	50.1	38.6	41.9	18.5	23.4
11			<0.06	1.88	23.52		21.64	2.2	73.2	18.3	8.5	20.8	7.3	13.5
12			<0.06	1.88	5.05		3.17	15.1	37.6	13.6	48.8	39.8	21.1	18.7
13			<0.06	1.88	6.05		4.17	4.2	41.8	16.9	41.3	43.1	26.5	16.6
14			<0.06	1.88	4.55		2.67	4.0	39.6	12.8	47.6	41.6	23.0	18.6
15			<0.06	1.88	48.85		46.97	1.5	62.3	21.2	16.5	21.2	8.8	12.4
16			<0.06	1.88	18.85		16.97	4.1	34.7	36.2	29.0	31.1	16.1	15.0
—														
17			<0.06	1.88	21.24		19.36	3.9	14.8	50.1	35.1	38.7	20.4	18.3
—														
[illegible]			<0.06	1.88	15.22		13.34	4.0	21.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Revised 11/21/03

Central Laboratory

Mine: Kayenta
Core: 23155-C
Date Cored:

Township: 36N
Range: 19E
Section: 35

Lab No.			% * Sulfur	*Tons of $CaCo_3$ Equivalent per 1000 Tons Material: Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCo_3$ Equiv.	* % Organic Matter	Particle Size: % Sand	% Silt	% Clay	% Moisture: 1/3 BAR	15 BAR	Available H_2O Hold. Capacity (1/3-15 BAR)
--			<0.06	1.88	6.01		4.13	2.6	47.9	42.7	9.4	24.3	10.8	13.5
19			<0.06	1.88	1.43	0.45		14.7	2.5	65.9	31.6	33.6	16.4	17.2
20			<0.06	1.88	24.84		22.96	1.4	46.2	49.1	4.7	20.7	7.5	13.2
21			<0.06	1.88	2.34		0.46	15.1	42.9	16.7	40.3	44.3	26.7	17.6
22														

*Dry Basis

Revised 11/21/03

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E NO 23329C DRILLER G. Hopkins

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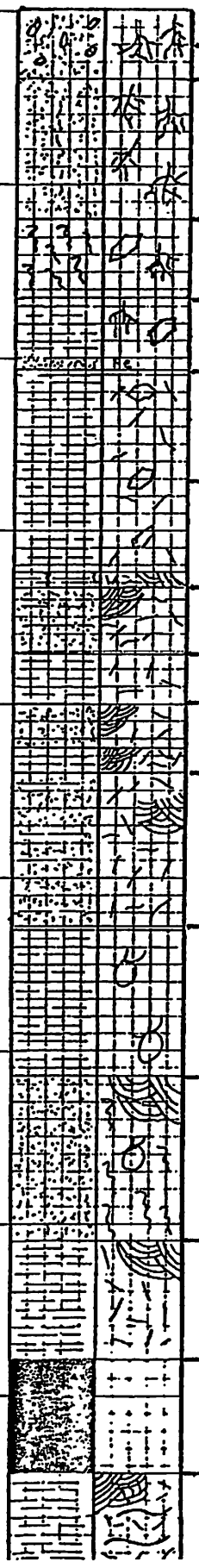

SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	pH
23	72.5	3.4	5.1	3.5	1.0	<0.06	7.9
24	63.4	8.2	22.6	8.7	6.3	<0.06	7.3
25	35.0	8.6	27.8	14.5	6.2	<0.06	7.2
26	41.7	6.6	24.9	16.1	12.4	<0.06	7.2
27	57.9	6.8	24.4	12.1	13.6	<0.06	7.2
28	69.1	8.5	14.5	2.6	3.2	<0.06	7.9
29	59.3	9.6	14.5	2.2	2.4	<0.06	8.2
30	37.9	11.6	20.8	2.4	4.0	<0.06	7.9
31	70.1	8.5	10.5	1.2	1.9	<0.06	8.7
32	32.2	30.6	24.6	0.4	0.9	<0.06	8.2
33	36.1	23.2	28.9	2.1	1.0	<0.06	7.4
34	68.0	43.2	23.8	0.4	0.2	<0.06	7.5
35	37.0	20.0	24.6	2.3	0.8	<0.06	7.7
36	72.9	51.2	28.8	0.4	0.2	<0.06	7.5
		6.4		12,864		0.49	7.8
37	523 72.1	15.8	15.3	Revised 11/21/03 1.1	0.8	<0.06	8.7

NO. 23329C

DRILLER G. Hopkins

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DATE DRILLED 5/19/81

SUB AREA J-28

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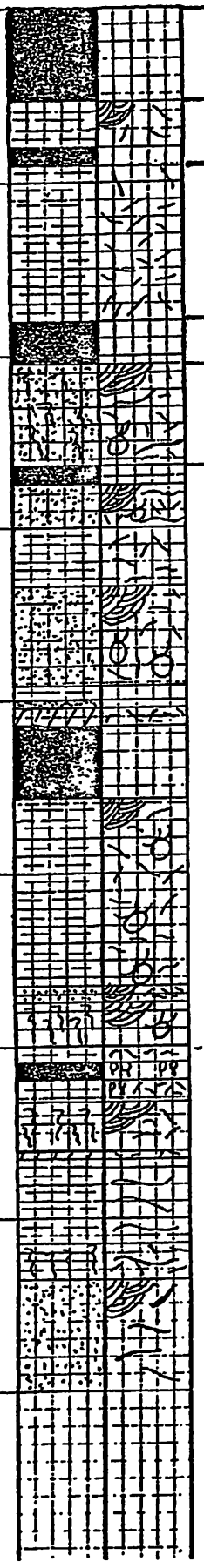

SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	
—	—	5.8	—	12,921	—	0.45	7.8
38	69.3	13.4	20.0	2.7	1.8	0.11	8.2
39	68.2	33.1	31.3	1.3	0.5	0.06	7.7
40	22.7	12.4	13.5	1.3	1.1	< 0.12	8.3
41	37.1	9.2	19.1	7.0	1.7	< 0.06	7.0

Revised 11/21/03

Mine: Kayenta
Core: 23329-C
Section: 35

Township: 36N
Range: 19E
Date Cored: 5/19/81

PEABODY COAL COMPANY

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meq/l	Ca meq/l	Mg meq/l	SAR	ESP	$NaHCO_3$* P ppm	NH_4OAc* K ppm	Total[1] N ppm
Surface soil	0.0	2.0	23	7.9	1.1	72.5	5.1	3.5	1.0	3.4	4.1	7.9	400.4	33
Surface soil	2.0	2.0	24	7.3	3.7	63.4	22.6	8.7	6.3	8.2	8.5	7.3	213.5	44
Sandstone	4.0	8.0	25	7.2	4.8	35.0	27.8	14.5	6.2	8.6	11.2	7.2	106.7	24
Siltstone	12.0	4.5	26	7.1	5.2	41.7	24.9	16.1	12.4	6.6	8.4	7.1	102.8	19
Shale/Sandstone	16.5	4.3	27	7.2	5.9	57.9	24.4	12.1	13.6	6.8	7.6	7.2	107.0	17
Shale/Silty shale	20.8	6.2	28	7.9	2.1	69.1	14.5	2.6	3.2	8.5	9.8	7.9	250.1	23
Shale/Silty shale	27.0	6.3	29	8.2	1.9	59.3	14.5	2.2	2.4	9.6	10.8	8.2	213.9	33
Sandstone	33.3	3.8	30	7.9	2.9	37.9	20.8	2.4	4.0	11.6	15.3	7.9	163.2	34
Shale	37.1	2.9	31	8.7	1.7	70.1	10.5	1.2	1.9	8.5	9.0	8.7	609.9	53
Sandstone/Shale	40.0	4.0	32	8.2	3.2	32.2	24.6	0.4	0.9	30.6	34.6	8.2	210.3	49
Sandstone	44.0	8.8	33	7.4	3.3	36.1	28.9	2.1	1.0	23.2	27.1	7.4	208.4	154
Shale	52.8	8.7	34	7.5	2.7	68.0	23.8	0.4	0.2	43.2	33.4	7.5	816.9	43
Sandstone	61.5	9.5	35	7.7	2.9	37.0	24.6	2.3	0.8	20.0	22.0	7.7	227.4	166
Shale	71.0	6.9	36	7.5	3.1	72.9	28.8	0.4	0.2	51.2	36.5	7.5	1103.2	94
Coal	77.9	6.5	--											
Shale	84.4	5.6	37	8.7	2.1	72.1	15.3	1.1	0.8	15.8	18.2	8.7	637.5	179
Coal	90.0	5.3	--											
Shale/Coal	95.3	3.8	38	8.2	2.6	69.3	20.0	2.7	1.8	13.4	16.2	8.2	460.0	91
Shale	99.1	8.9	39	7.7	3.2	68.2	31.3	1.3	0.5	33.1	29.8	7.7	597.7	37
Coal	108.0	2.5	40	8.3	1.8	22.7	13.5	1.3	1.1	12.4	16.1	8.3	324.5	15
Silty sandstone	110.5	5.8	41	7.0	3.0	37.1	19.1	7.0	1.7	9.2	11.9	7.0	140.2	72

*Dry Basis
[1]Total-N is Sum of NH_4-N and NO_3-N
**NH_4 - N<2ppm and NO_3 - N>1ppm

Section 11/21/03

PEABODY COAL COMPANY
Central Laboratory

Revised 11/21/03

Mine: Kayenta
Core: 23329-C
Date Cored: 5/19/81

Township: 36N
Range: 19E
Section: 35

Lab No.			% * Sulfur	*Tons of $CaCO_3$ Equivalent per 1000 Tons Material: Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCO_3$ Equiv.	* % Organic Matter	Particle Size: % Sand	% Silt	% Clay	% Moisture: 1/3 BAR	15 BAR	Available H_2O Hold. Capacity (1/3-15 BAR)
			*Dry Basis											
23			<0.06	1.88	17.94		16.06	2.3	28.6	31.6	39.8	41.4	23.9	17.5
24			<0.06	1.88	11.00		9.12	1.9	32.0	22.1	45.8	45.3	24.1	21.2
25			<0.06	1.88	6.91		5.03	1.8	59.4	28.9	11.8	21.5	7.6	13.9
26			<0.06	1.88	68.49		66.61	0.8	34.2	52.4	13.5	27.9	13.1	14.8
27			<0.06	1.88	6.94		5.06	0.4	46.5	14.9	38.6	40.7	16.5	24.2
28			<0.06	1.88	2.75		0.87	0.6	18.0	35.3	46.7	40.2	18.8	21.4
29			<0.06	1.88	8.31		6.43	0.6	19.0	46.1	35.0	39.6	19.9	19.7
30			<0.06	1.88	21.63		19.75	1.5	54.5	32.5	13.0	18.1	7.9	10.2
31			<0.06	1.88	19.78		17.90	2.0	40.1	5.6	54.4	45.5	26.8	18.7
32			<0.06	1.88	17.53		15.65	2.1	74.5	19.0	6.5	18.1	7.2	10.9
33			<0.06	1.88	20.16		18.28	1.0	56.8	26.1	17.1	19.2	8.1	11.1
34			<0.06	1.88	10.57		8.69	4.7	21.2	24.6	54.3	46.5	26.4	20.1
35			<0.06	1.88	20.67		18.79	2.0	52.9	37.8	9.3	19.7	8.5	11.2
36			<0.06	1.88	21.64		19.76	4.3	19.2	32.2	48.6	47.0	23.0	24.0
--														
37			<0.06	1.88	3.24		1.36	3.7	30.5	14.4	55.1	40.9	25.3	15.6
--														
38			0.11	3.41	10.11		6.70	31.9	32.7	26.8	40.5	42.4	22.6	19.8
39			<0.06	1.88	5.99		4.11	4.2	25.9	24.8	49.3	43.7	26.6	17.1
40			0.12	4.10	2.25	1.85		44.5	*	*	*	15.1	3.7	11.4
41			<0.06	1.88	6.94		5.06	3.0	50.1	37.9	11.9	26.0	9.3	16.7

*Mostly carbolithic.

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LE # 23330C

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DATE DRILLED 5/25/81

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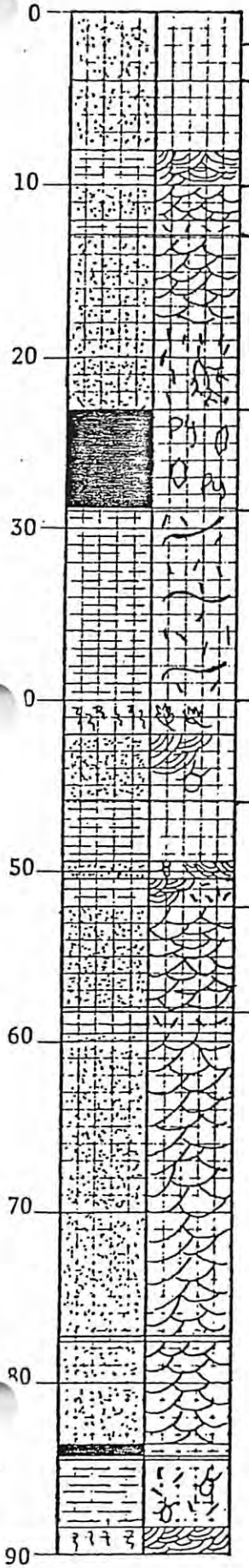
SUB AREA J-28



SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	pH
42	31.8	8.1	71.4	5.0	4.2	< 0.06	7.4
43	35.1	5.9	49.4	35.6	104.1	< 0.06	7.2
44	63.1	4.8	30.3	24.9	55.4	< 0.06	7.2
45	57.2	5.5	28.5	13.9	40.0	< 0.06	7.1
46	38.2	4.3	25.1	23.4	46.2	< 0.06	7.0
-	-	7.0	-	12,827	-	0.63	6.7
47	65.8	21.4	20.9	1.1	0.9	< 0.06	8.3
48	37.5	20.5	28.6	2.1	1.8	< 0.06	8.8
49	62.0	12.2	25.3	4.7	3.9	< 0.06	8.8
50	36.5	19.4	27.3	2.2	1.8	< 0.06	8.3

Revised 11/21/03

Mine: Kayenta
Core: 23330-C
Section: 35

Township: 36N
Range: 19E
Date Cored: 5-25-81

PEABODY COAL COMPANY

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meq/l	Ca meq/l	Mg meq/l	SAR	ESP	$NaHCO_3$* P ppm	NH_4OAc* K ppm	Total N ppm
Sandstone	0.0	2.0	42	7.4	3.7	31.8	17.4	5.0	4.2	8.1	9.5	7.4	411.8	72
Sandstone	2.0	2.0	43	7.2	20.2	35.1	49.4	35.6	104.1	5.9	7.4	7.2	150.3	51
Sandstone/Shale	4.0	6.0	44	7.2	13.3	63.1	30.3	24.9	55.4	4.8	4.9	7.2	220.2	21
Sandstone/Shale	10.0	2.9	45	7.1	9.1	57.2	28.5	13.9	40.0	5.5	6.3	7.1	111.5	25
Sandstone	12.9	10.1	46	7.0	9.8	38.2	25.1	23.4	46.2	4.3	4.9	7.0	96.5	15
Coal	23.0	5.9	--											
Shale	28.9	11.1	47	8.3	2.5	65.8	20.9	1.1	0.9	21.4	25.5	8.3	397.4	91
Siltstone/Sandstone	40.0	5.9	48	8.8	3.4	37.5	28.6	2.1	1.8	20.5	25.1	8.8	240.4	200
Shale/Sandstone	45.9	6.1	49	8.8	4.0	62.0	25.3	4.7	3.9	12.2	14.9	8.8	245.9	154
Sandstone	52.0	6.5	50	8.3	3.2	36.5	27.3	2.2	1.8	19.4	23.3	8.3	246.3	105

Revised 11/21/03

*Dry Basis
Total-N is Sum of NH_4-N and NO_3-N
**NH_4 - N<2ppm and NO_3 - N>1ppm

Central Laboratory

Mine: Kayenta
Core: 23330-C
Date Cored: 5-25-81

Township: 36N
Range: 19E
Section: 35

Lab No.			% * Sulfur	*Tons of $CaCO_3$ Equivalent per 1000 Tons Material: Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCO_3$ Equiv.	* % Organic Matter	Particle Size: % Sand	% Silt	% Clay	% Moisture: 1/3 BAR	15 BAR	Available H_2O Hold. Capacity (1/3-15 BAR)
42			<0.06	1.88	23.53		21.65	1.5	62.2	24.4	13.4	19.3	8.5	10.8
43			<0.06	1.88	22.97		21.09	0.7	73.9	12.6	13.5	20.6	8.3	12.3
44			<0.06	1.88	2.81		0.93	0.4	42.8	25.2	32.1	40.6	18.2	22.4
45			<0.06	1.88	26.19		24.31	0.4	41.7	28.8	29.5	38.5	18.6	19.9
46			<0.06	1.88	6.87		4.99	0.7	44.3	49.2	6.5	20.9	8.7	12.2
--														
47			<0.06	1.88	3.22		1.34	2.7	41.5	4.6	53.9	40.8	27.3	13.5
48			<0.06	1.88	19.78		17.90	1.5	38.0	35.8	26.2	25.5	10.2	15.3
49			<0.06	1.88	30.84		28.96	2.4	45.1	21.9	33.1	35.5	18.4	17.1
50			<0.06	1.88	5.10		3.22	1.6	66.2	22.0	11.8	21.8	8.8	13.0

*Dry Basis

Revised 11/21/03

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E NO. 23331C

DRILLER G. Hopkins

ATION

DATE DRILLED 6/2/81

SUB AREA J-28

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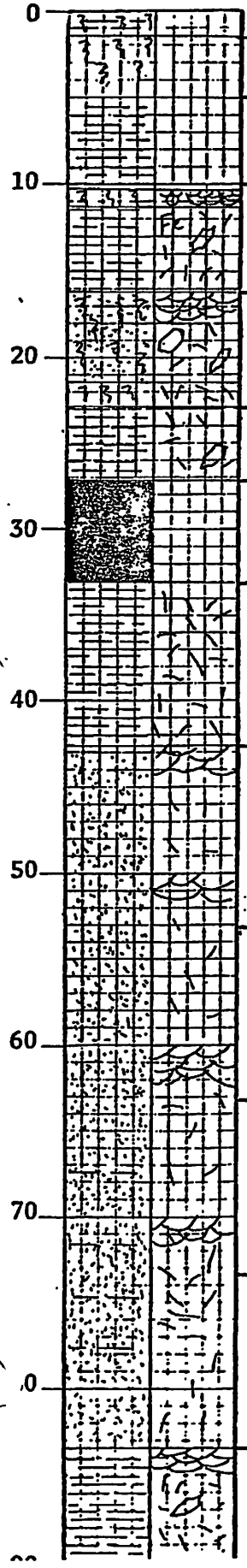

SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	pH
51	49.9	1.6	3.2	5.2	2.5	<0.06	7.8
52	48.5	5.1	12.4	5.1	6.8	<0.06	7.5
53	73.2	2.4	8.8	7.4	20.7	<0.06	5.5
54	51.7	0.9	5.4	13.1	57.7	<0.06	4.4
55	36.4	0.7	4.0	12.6	44.3	<0.06	5.5
56	69.3	0.8	3.7	7.2	36.2	<0.06	5.9
-	-	6.4	-	12,858	-	0.85	5.6
57	75.0	15.5	19.3	1.2	2.0	<0.06	7.6
58	38.0	27.2	27.9	1.2	1.0	< 0.06	7.0
59	35.7	15.7	18.5	0.9	1.9	< 0.06	7.4
60	34.9	15.9	18.3	1.1	1.6	< 0.06	7.8
61	37.3	7.8	26.3	5.3	17.6	< 0.06	8.5
62	75.9	7.0	20.2	4.4	12.2	< 0.06	9.0

531

Revised 11/21/03

E NO. 23331C

DRILLER G. Hopkins

ATION

DATE DRILLED 6/2/81

SUB AREA J-28

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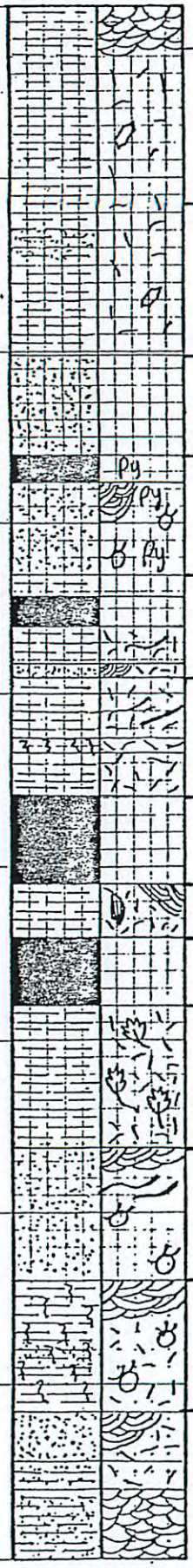

SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	
63	65.0	6.9	18.7	2.9	12.0	< 0.06	
64	76.0	5.6	14.8	1.8	12.2	< 0.06	9.1
65	35.2	5.9	29.1	11.2	37.3	< 0.06	8.6
66	34.5	23.4	25.1	1.3	1.1	< 0.06	6.1
67	72.4	16.6	50.0	0.6	1.0	< 0.06	8.0
68	69.5	12.4	25.1	4.4	3.7	< 0.06	8.6
-	-	13.3	-	11,876	-	0.56	7.
69	74.0	4.2	7.6	2.4	5.0	0.10	8.6
-	-	13.3	-	11,876	-	0.56	7.2
70	71.5	5.3	8.4	2.4	3.0	< 0.06	8.8
71	34.5	5.4	8.4	3.2	1.6	< 0.06	8.3
72	59.5	6.9	7.0	1.5	0.6	< 0.06	8.7
	532			Revised 11/21/03			

Mine: Kayenta
Core: 23331-C
Section: 27

Township: 36N
Range: 19E
Date Cored: 6/2/81

PEABODY COAL COMPANY

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meq/l	Ca meq/l	Mg meq/l	SAR	ESP	$NaHCO_3$* P ppm	NH_4OAc* K ppm	Total[1] N ppm
Silty shale	0.0	1.5	51	7.8	1.5	49.9	3.2	5.2	2.5	1.6	1.2	7.8	341.4	22
Siltstone	1.5	3.5	52	7.5	2.6	48.5	12.4	5.1	6.8	5.1	6.4	7.5	308.5	26
Shale	5.0	5.0	53	5.5	3.9	73.2	8.8	7.4	20.7	2.4	2.2	5.5	422.3	10**
Shale/Siltstone	10.0	6.1	54	4.4	8.7	51.7	5.4	13.1	57.7	0.9	0.1	4.4	149.1	20
Siltstone/Sandstone	16.1	6.8	55	5.5	7.2	36.4	4.0	12.6	44.3	0.7	0.1	5.5	173.4	21
Shale	22.9	4.2	56	5.9	4.9	69.3	3.7	7.2	36.2	0.8	0.1	5.9	418.7	70
Coal	27.1	5.9	--											
Shale	33.0	9.8	57	7.6	2.3	75.0	19.3	1.2	2.0	15.5	18.3	7.6	677.7	91
Sandstone	42.8	10.2	58	7.0	3.5	38.0	27.9	1.2	1.0	27.2	29.5	7.0	122.4	15
Sandstone	53.0	10.2	59	7.4	2.6	35.7	18.5	0.9	1.9	15.7	19.1	7.4	301.0	84
Sandstone	63.2	10.2	60	7.8	2.8	34.9	18.3	1.1	1.6	15.9	17.3	7.8	296.9	91
Sandstone	73.4	10.2	61	8.5	5.8	37.3	26.3	5.3	17.6	7.8	10.5	8.5	101.4	208
Shale	83.6	8.9	62	9.0	4.4	75.9	20.2	4.4	12.2	7.0	7.2	9.0	321.0	132
Shale	92.5	8.9	63	9.1	3.5	65.0	18.7	2.9	12.0	6.9	7.8	9.1	308.8	118
Shale	101.4	8.8	64	9.1	2.6	76.0	14.8	1.8	12.2	5.6	5.8	9.1	296.8	105
Sandstone	110.2	5.8	65	8.6	9.1	35.2	29.1	11.2	37.3	5.9	6.8	8.6	97.1	81
Coal/Sandstone	116.0	7.0	66	6.1	2.8	34.5	25.1	1.3	1.1	23.4	26.4	6.1	103.3	91
Shale/Coal/Sandstone	123.0	6.0	67	8.0	1.9	72.4	15.0	0.6	1.0	16.6	20.3	8.0	740.3	62
Shale/Siltstone	129.0	6.9	68	8.6	3.6	69.5	25.1	4.4	3.7	12.4	16.3	8.6	351.3	91
Coal	135.9	5.1	--											
Shale	141.0	3.0	69	8.6	1.2	74.0	7.6	2.4	5.0	4.2	4.5	8.6	533.4	38
Coal	144.0	4.0	--											

*Dry Basis
[1] Total-N is Sum of NH_4-N and NO_3-N
**NH_4 - N<2ppm and NO_3 - N>1ppm

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Revised 12/03

Mine: Kayenta
Core: 23331-C
Section: 27

Township: 36N
Range: 19E
Date Cored: 6/2/81

PEABODY COAL COMPANY

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meq/l	Ca meq/l	Mg meq/l	SAR	ESP	$NaHCO_3$* P ppm	NH_4OAc* K ppm	Total N ppm
Shale	148.0	8.3	70	8.8	1.2	71.5	8.4	2.4	3.0	5.3	6.7	8.8	678.3	38
Sandstone	156.3	7.6	71	8.3	1.6	34.5	8.4	3.2	1.6	5.4	6.1	8.3	148.3	21
Silty shale	163.9	7.8	72	8.7	1.1	59.5	7.0	1.5	0.6	6.9	8.6	8.7	157.8	35

*Dry Basis
Total-N is Sum of NH_4-N and NO_3-N
**NH_4 - N<2ppm and NO_3 - N>1ppm

Revised 11/21/03

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Central Laboratory

Mine: Kayenta
Core: 23331-C
Date Cored: 6/2/81

Township: 36N
Range: 19E
Section: 27

Lab No.			% * Sulfur (*Dry Basis)	*Tons of $CaCo_3$ Equivalent per 1000 Tons Material: Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCo_3$ Equiv.	* % Organic Matter	Particle Size: % Sand	% Silt	% Clay	% Moisture: 1/3 BAR	15 BAR	Available H_2O Hold. Capacity (1/3-15 BAR)
51			<0.06	1.88	12.85		10.97	1.1	28.4	36.0	35.6	34.3	15.6	18.7
52			<0.06	1.88	9.24		7.36	0.5	3.9	70.9	25.2	25.1	10.9	14.2
53			<0.06	1.88	2.25		0.37	2.9	32.7	21.3	46.0	43.5	23.9	19.6
54			<0.06	1.88	0.00	1.88		1.5	32.9	38.0	29.1	33.8	16.9	16.[illegible]
55			<0.06	1.88	20.68		18.80	1.1	40.6	44.4	15.0	23.5	9.1	14.4
56			<0.06	1.88	23.90		22.02	3.4	17.4	31.3	51.4	46.2	26.3	19.9
--														
57			<0.06	1.88	2.82		0.94	1.4	4.6	41.5	53.9	48.3	33.7	14.[illegible]
58			<0.06	1.88	7.39		5.51	0.7	62.5	33.6	3.9	18.5	7.8	10.7
59			<0.06	1.88	12.02		10.14	1.2	66.2	18.1	15.7	18.1	7.9	10.2
60			<0.06	1.88	5.96		4.08	1.9	75.6	6.2	18.2	20.7	7.5	13.2
61			<0.06	1.88	16.09		14.21	1.6	55.2	28.5	16.3	18.4	8.3	10.1
62			<0.06	1.88	7.44		5.56	1.9	15.7	27.9	56.3	46.8	26.5	20.3
63			<0.06	1.88	3.65		1.77	1.8	24.7	30.5	44.8	42.7	26.[illegible]	16.[illegible]
64			<0.06	1.88	10.57		8.69	1.8	54.3	5.2	40.5	42.0	23.9	18.1
65			<0.06	1.88	11.02		9.14	1.5	53.5	35.9	10.6	21.2	[illegible]	[illegible]
66			<0.06	1.88	0.85	1.03		12.9	59.9	22.8	17.2	18.1	[illegible]	10.8
67			<0.06	1.88	3.71		1.83	15.2	27.6	21.7	50.7	42.3	[illegible]	19.2
68			<0.06	1.88	19.32		17.44	5.4	17.5	44.6	37.9	[illegible]	[illegible]	17.9
69			0.10	3.18	9.24		6.06	34.8	30.1	17.0	52.9	40.8	24.3	16.5
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PEABODY COAL COMPANY
Central Laboratory

Mine: Kayenta
Core: 23331-C
Date Cored: 6/2/81

Township: 36N
Range: 19E
Section: 27

Lab No.			% * Sulfur	*Tons of $CaCo_3$ Equivalent per 1000 Tons Material: Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCo_3$ Equiv.	* % Organic Matter	Particle Size: % Sand	% Silt	% Clay	% Moisture: 1/3 BAR	15 BAR	Available H_2O Hold. Capacity (1/3-15 BAR)
			*Dry Basis											
70			<0.06	1.88	2.27		0.39	2.5	42.6	14.8	42.6	46.2	24.4	21.8
71			<0.06	1.88	24.76		22.88	2.2	69.2	27.8	3.0	18.6	7.4	11.2
72			<0.06	1.88	4.08		2.20	1.1	19.7	43.4	36.9	34.2	16.1	18.1

Revised 11/21/03

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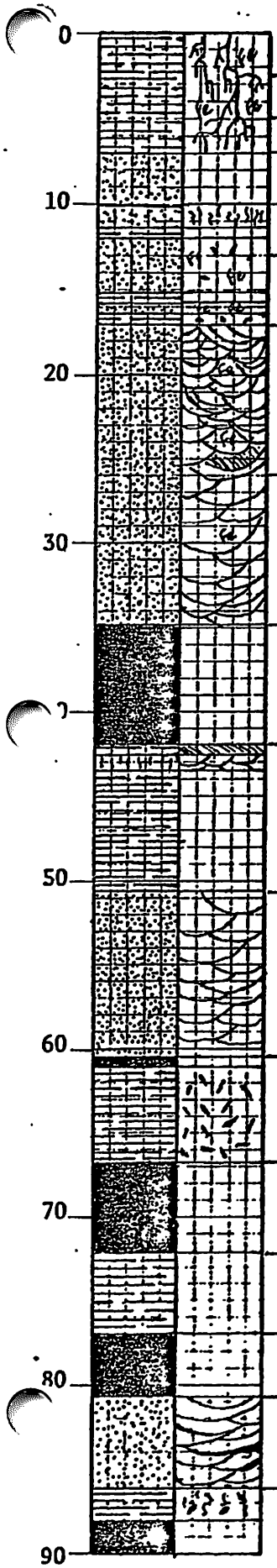
DATE DRILLED 6/7/81

DRILLER G. Hopkins

SUB AREA J-28



SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	pH
73	65.3	1.7	3.8	4.9	4.5	<0.06	7.9
74	65.6	2.5	12.4	11.9	38.5	<0.06	7.2
75	68.5	3.4	16.3	10.1	35.7	<0.06	7.1
76	36.8	4.2	21.4	18.3	34.9	<0.06	7.3
77	41.5	3.5	15.7	10.8	28.5	<0.06	7.1
78	43.3	4.3	17.0	6.5	25.3	<0.06	7.0
79	32.5	2.7	14.8	18.5	42.6	<0.06	6.9
80	34.0	2.1	11.9	22.3	41.5	<0.06	5.1
-	-	5.2	-	12,811	-	0.70	4.3
81	68.2	10.3	10.6	1.2	1.0	<0.06	8.0
82	37.7	8.2	13.0	3.2	1.8	<0.06	7.5
83	72.3	5.7	14.7	3.8	9.6	<0.06	8.8
-	-	7.52	-	2,775	-	0.76	7.8
84	63.3	39.8	33.7	0.5	0.9	<0.06	7.5
85	42.1	18.8	24.9	2.2	1.3	< 0.06	7.7
86	537 59.1	15.0	10.7	Revised 11/21/03 0.3	0.7	0.13	7.4

G. Hopkins

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DATE DRILLED 6/7/81

SUB AREA J-28

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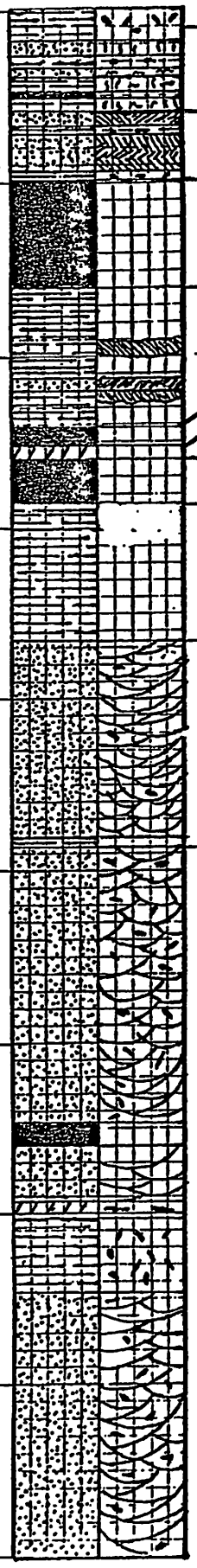

SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	P"
87	54.4	6.7	13.4	1.5	6.4	< 0.06	8.4
88	47.8	22.8	25.7	1.0	1.6	< 0.06	7.7
-	-	7.8	-	12,640	-	0.80	7.4
89	72.6	2.8	6.6	9.1	7.6	< 0.06	9.0
-	-	12.41	-	11,830	-	0.59	7.4
90	25.5	9.2	16.2	1.4	4.8	0.06	7.8
-	-	9.04	-	12,483	-	0.56	7.3
91	64.1	3.3	6.1	1.6	5.4	< 0.06	8.6
92	42.0	3.2	5.8	1.9	4.8	< 0.06	

Revised 11/21/03

Mine: Kayenta
Core: 23332-C
Section: 26

Township: 30N
Range: 19E
Date Cored: 6/7/81

PEABODY COAL COMPANY

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meq/l	Ca meq/l	Mg meq/l	SAR	ESP	$NaHCO_3$* P ppm	NH_4OAc* K ppm	Total N ppm
Cuttings-Shale	0.0	2.5	73	7.9	1.3	65.3	3.8	4.9	4.5	1.7	1.4	7.9	211.1	11
Cuttings-Shale	2.5	2.5	74	7.2	7.5	65.6	12.4	11.9	38.5	2.5	2.3	7.2	302.8	13
Cuttings-Shale	5.0	2.0	75	7.1	7.2	68.5	16.3	10.1	35.7	3.4	3.4	7.1	240.6	12
Cuttings-Sandstone	7.0	3.0	76	7.3	7.6	36.8	21.4	18.3	34.9	4.2	4.0	7.3	71.7	15
Sandstone/Shale	10.0	3.0	77	7.1	6.6	41.5	15.7	10.8	28.5	3.5	3.6	7.1	78.0	12
Sandstone/Shale	13.0	4.0	78	7.0	4.8	43.3	17.0	6.5	25.3	4.3	5.2	7.0	93.1	12
Sandstone	17.0	8.9	79	6.9	8.0	32.5	14.8	18.5	42.6	2.7	2.6	6.9	47.4	13
Sandstone	25.9	8.9	80	5.1	8.5	34.0	11.9	22.3	41.5	2.1	1.8	5.1	77.4	4**
Coal	34.8	7.2	--											
Shale/Siltstone	42.0	8.6	81	8.0	1.5	68.2	10.6	1.2	1.0	10.3	14.0	8.0	244.5	17
Sandstone	50.6	9.9	82	7.5	1.8	37.7	13.0	3.2	1.8	8.2	10.8	7.5	95.5	22
Coal/Shale	60.5	6.3	83	8.8	3.3	72.3	14.7	3.8	9.6	5.7	6.4	8.8	301.4	81
Coal	66.8	5.4	--											
Shale	72.2	4.8	84	7.5	3.7	63.3	33.7	0.5	0.9	39.8	38.1	7.5	699.2	30
Coal	77.0	3.7	--											
Silty sandstone	80.7	5.6	85	7.7	3.4	42.1	24.9	2.2	1.3	18.8	20.6	7.7	154.3	159
Shale/Coal	86.3	4.8	86	7.4	1.4	59.1	10.7	0.3	0.7	15.0	18.7	7.4	466.0	21
Shale/Sandstone/Coal	91.1	4.4	87	8.4	2.5	54.4	13.4	1.5	6.4	6.7	7.5	8.4	226.9	58
Sandstone/Shale	95.5	4.3	88	7.7	3.1	47.8	25.7	1.0	1.6	22.8	26.8	7.7	539.0	33
Coal	99.8	6.1	--											
Shale/Sandstone	105.9	8.3	89	9.0	1.8	72.6	6.6	9.1	7.6	2.8	3.0	9.0	205.8	60
Coal	114.2	1.0	--											
Carbonaceous shale	115.2	0.8	90	7.8	3.0	25.5	16.2	1.4	4.8	9.2	10.6	7.8	499.0	19

*Dry Basis
Total-N is Sum of NH_4-N and NO_3-N
**NH_4 - N~2ppm and NO_3 - N~1ppm

Revised 11/21/83

Mine: Kayenta
Core: 23332-C
Section: 26

Township: 36N
Range: 19E
Date Cored: 6/7/81

PEABODY COAL COMPANY

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meg/l	Saturation Extract Ca meg/l	Saturation Extract Mg meg/l	SAR	ESP	$NaHCO_3$* P ppm	NH_4OAc* K ppm	Total† N ppm
Coal	116.0	2.5	--											
Shale	118.5	8.1	91	8.6	1.0	64.1	6.1	1.6	5.4	3.3	3.9	8.6	383.9	19
Silty sandstone	126.6	11.8	92	7.9	1.5	42.0	5.8	1.9	4.8	3.2	3.5	7.9	136.4	11

†Dry Basis
Total-N is Sum of NH_4-N and NO_3-N
*NH_4 - N<2ppm and NO_3 - N≥1ppm

Revised 11/21/03

Central Laboratory

Mine: Kayenta
Core: 23332-C
Date Cored: 6/7/81

Township: 36N
Range: 19E
Section: 26

*Dry Basis

Lab No.			% * Sulfur	*Tons of $CaCo_3$ Equivalent per 1000 Tons Material: Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCo_3$ Equiv.	* % Organic Matter	Particle Size: % Sand	% Silt	% Clay	% Moisture: 1/3 BAR	15 BAR	Available H_2O Hold. Capacity (1/3-15 BAR)
73			<0.06	1.88	9.66		7.78	0.7	26.3	31.1	42.6	42.1	24.5	17.6
74			<0.06	1.88	4.12		2.24	0.8	35.2	11.5	53.3	47.9	22.8	25.1
75			<0.06	1.88	2.83		0.95	0.8	43.2	14.3	42.5	46.9	26.4	20.5
76			<0.06	1.88	25.80		23.92	0.1	76.2	17.1	6.6	20.8	8.8	12.0
77			<0.06	1.88	1.78	0.10		0.5	53.6	28.0	18.4	28.3	11.1	17.2
78			<0.06	1.88	4.63		2.75	0.4	49.3	41.0	9.7	23.1	10.8	12.3
79			<0.06	1.88	3.20		1.32	0.4	53.1	28.9	18.0	21.4	7.5	13.9
80			<0.06	1.88	0.55	1.33		2.4	75.1	13.2	11.7	20.3	8.1	12.2
81			<0.06	1.88	9.16		7.28	2.4	3.5	47.8	48.7	43.7	20.9	22.8
82			<0.06	1.88	28.54		26.66	2.5	75.9	13.4	10.7	19.0	8.8	10.2
83			<0.06	1.88	14.26		12.38	13.3	37.4	19.3	43.3	46.6	24.5	22.1
84			<0.06	1.88	3.66		1.78	4.8	29.6	27.7	42.7	47.0	27.2	19.8
[illegible]			<0.06	1.88	5.13		3.25	2.7	49.9	27.6	22.5	24.9	9.3	15.6
[illegible]			0.13	4.19	1.79	2.40		39.1	44.6	17.0	38.4	43.6	19.6	24.0
[illegible]			<0.06	1.88	7.43		5.55	13.4	37.0	24.3	38.7	32.0	14.7	17.3
[illegible]			[illegible]	1.88	14.35		12.47	3.6	54.9	12.0	33.1	27.5	13.9	13.6
[illegible]			<0.06	1.88	6.43		4.55	2.5	39.9	17.5	42.6	39.7	21.7	18.0
[illegible]			0.11	3.53	[illegible]		[illegible]	37.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Revised 11/21/83

PEABODY COAL COMPANY
Central Laboratory

Mine: Kayenta
Core: 23332-C
Date Cored: 6/7/81

Township: 36N
Range: 19E
Section: 26

*Dry Basis				*Tons of $CaCo_3$ Equivalent per 1000 Tons Material					Particle Size			% Moisture		Available H_2O Hold. Capacity (1/3-15 BAR)
Lab No.			% * Sulfur	Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCo_3$ Equiv.	* % Organic Matter	% Sand	% Silt	% Clay	1/3 BAR	15 BAR	
--														
91			<0.06	1.88	2.27		0.39	3.7	22.7	34.4	42.9	44.9	24.7	20.2
92			<0.06	1.88	5.51		3.63	0.4	46.1	27.6	26.3	23.3	11.0	12.3

Revised 11/21/03

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LE # 23333C

VATION

DATE DRILLED 6/15/81

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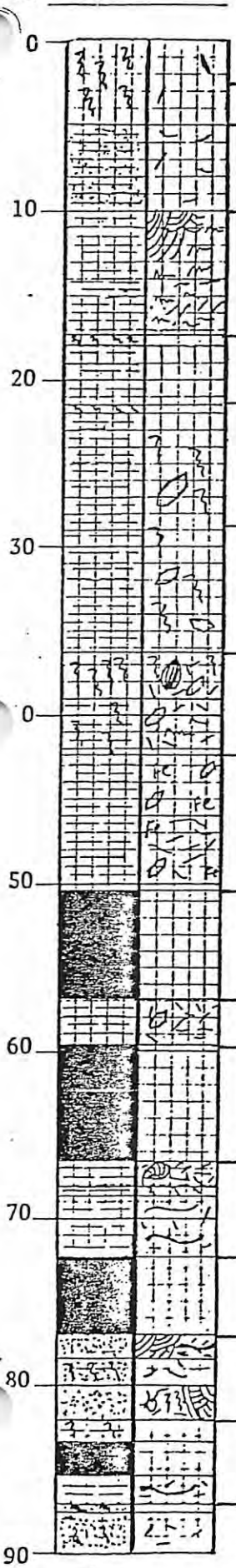
SUB AREA J-28



SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	pH
93	46.3	4.1	6.7	3.9	1.6	< 0.06	7.8
94	45.1	11.9	20.5	2.8	3.2	< 0.06	8.3
95	36.7	10.3	20.2	4.2	3.5	< 0.06	8.0
96	71.0	2.9	3.5	1.8	2.2	< 0.06	8.1
97	45.8	1.7	4.0	4.6	6.1	< 0.06	7.8
98	71.6	0.6	3.9	13.6	59.3	< 0.06	5.4
99	71.6	0.4	2.3	12.6	59.9	< 0.06	4.1
100	46.5	2.2	16.3	18.1	97.0	< 0.06	6.2
101	66.1	1.1	8.1	15.6	101.2	< 0.06	5.3
-	-	6.42		12,790		0.69	5.7
102	75.7	7.1	14.8	2.2	6.4	< 0.06	8.5
-	-	5.21		12,998	-	0.50	7.7
103	64.5	18.5	25.5	1.1	2.7	< 0.06	8.5
-	-	5.43	-	13,020	-	0.72	7.9
104	37.3	12.1	27.9	7.5	3.1	< 0.06	7.4
105	61.3	16.7	26.7	3.3	1.8	< 0.06	5.7

Revised 11/21/03

G. Hopkins

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23333C

DATE DRILLED 6/15/81

SUB AREA J-28

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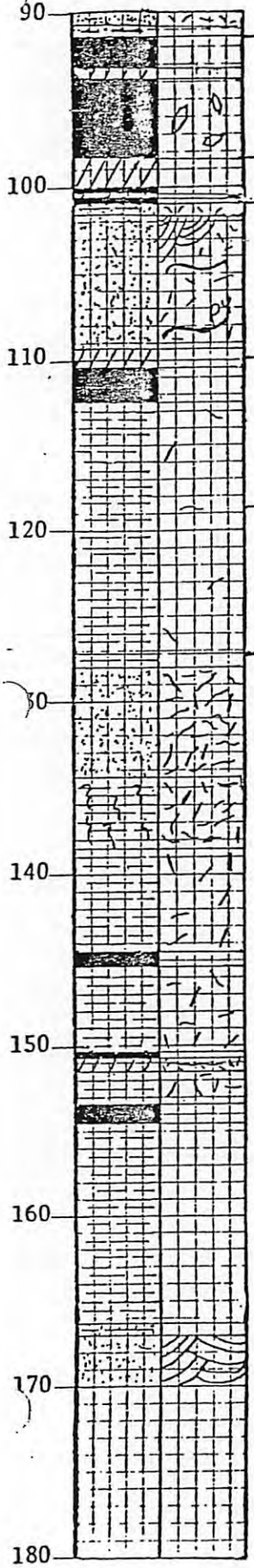

SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	pH
106	48.4	27.9	38.0	2.8	0.9	< 0.06	
-	-	17.98	-	11,122	-	0.81	7.3
107	23.8	9.3	29.2	4.0	15.7	0.15	7.9
108	41.3	7.8	17.0	2.2	7.2	< 0.06	8.3
109	26.5	16.0	38.0	4.2	7.1	< 0.06	8.3
110	66.4	6.0	12.1	2.3	5.8	< 0.06	8.6

Revised 11/21/03

Mine: Kayenta
Core: 23333-C
Section: 26

Township: 36N
Range: 19E
Date Cored: 6/15/81

PEABODY COAL COMPANY

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meq/l	Ca meq/l	Mg meq/l	SAR	ESP	$NaHCO_3$* P ppm	NH_4OAc* K ppm	Total[1] N ppm
Siltstone	0.0	2.5	93	7.8	1.2	46.3	6.7	3.9	1.6	4.1	4.0	7.8	96.1	10**
Siltstone	2.5	2.5	94	8.3	2.9	45.1	20.5	2.8	3.2	11.9	12.4	8.3	147.9	17
Sandstone	5.0	5.0	95	8.0	2.8	36.7	20.2	4.2	3.5	10.3	10.9	8.0	92.1	19
Shale	10.0	7.4	96	8.1	0.6	71.0	3.5	1.8	2.2	2.9	3.3	8.1	236.6	16
Siltstone/Sandstone	17.4	3.7	97	7.8	1.6	45.8	4.0	4.6	6.1	1.7	1.3	7.8	94.1	22
Shale	21.1	7.5	98	5.4	8.4	71.6	3.9	13.6	59.3	0.6	0.1	5.4	264.6	44
Shale	28.6	7.6	99	4.1	7.9	71.6	2.3	12.6	59.9	0.4	0.1	4.1	333.1	5**
Siltstone/Silty shale	36.2	6.2	100	6.2	14.7	46.5	16.3	18.1	97.0	2.2	2.0	6.2	113.8	19
Shale	42.4	7.9	101	5.3	12.6	66.1	8.1	15.6	101.2	1.1	0.3	5.3	199.8	17
Coal	50.3	6.6	---											
Shale	56.9	2.8	102	8.5	2.8	75.7	14.8	2.2	6.4	7.1	9.0	8.5	431.1	67
Coal	59.7	6.9	---											
Shale/Sideritic shale	66.6	5.8	103	8.5	3.2	64.5	25.5	1.1	2.7	18.5	18.8	8.5	394.3	137
Coal	72.4	4.6	---											
Sandstone/Siltstone	77.0	5.1	104	7.4	3.8	37.3	27.9	7.5	3.1	12.1	13.8	7.4	127.2	233
Silty-Shale/Coal	82.1	5.0	105	5.7	3.2	61.3	26.7	3.3	1.8	16.7	18.1	5.7	230.7	11
Siltstone/Sandstone	87.1	4.5	106	7.3	4.6	48.4	38.0	2.8	0.9	27.9	26.6	7.3	98.3	94
Coal	91.6	7.0	---											
Carbon. shale/Coal	98.6	2.4	107	7.9	5.1	23.8	29.2	4.0	15.7	9.3	10.0	7.9	209.2	51
Sandy shale/Sandstone	101.0	8.8	108	8.3	3.0	41.3	17.0	2.2	7.2	7.8	8.5	8.3	173.8	78
Shale/Coal	109.8	8.7	109	8.3	5.2	26.5	38.0	4.2	7.1	16.0	16.0	8.3	269.2	62
Carbon.Shale/Shale	118.5	8.7	110	8.6	2.5	66.4	12.1	2.3	5.8	6.0	7.2	8.6	365.3	67

*Dry Basis
[1]Total-N is Sum of NH_4-N and NO_3-N
**NH_4 - N<2ppm and NO_3 - N>1ppm

Revised 11/21/03

Central Laboratory

Revised 11/21/03

Mine: Kayenta
Core: 23333-C
Date Cored: 6/15/81

Township: 36N
Range: 19E
Section: 26

Lab No.	*Dry Basis % * Sulfur	*Tons of $CaCo_3$ Equivalent per 1000 Tons Material: Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCo_3$ Equiv.	* % Organic Matter	Particle Size % Sand	% Silt	% Clay	% Moisture 1/3 BAR	15 BAR	Available H_2O Hold. Capacity (1/3-15 BAR)
93	<0.06	1.88	13.25		11.37	0.2	13.0	80.0	7.0	25.6	11.9	13.7
94	<0.06	1.88	7.39		5.51	0.4	17.8	60.8	21.5	27.4	12.5	14.9
95	<0.06	1.88	3.67		1.79	<0.1	60.4	34.6	5.0	21.9	8.1	13.8
96	<0.06	1.88	10.60		8.72	0.3	18.9	33.0	48.1	44.1	22.8	21.3
97	<0.06	1.88	15.15		13.27	0.2	60.5	7.0	32.6	30.4	14.3	16.1
98	<0.06	1.88	3.65		1.77	0.9	19.1	15.1	55.8	43.4	24.0	19.4
99	0.06	1.98	0.00	1.98		1.3	40.4	12.9	46.7	42.1	25.7	16.4
100	<0.06	1.88	21.25		19.37	1.3	58.4	13.9	27.7	29.8	14.2	15.6
101	<0.06	1.88	17.48		15.60	2.6	24.6	32.3	43.1	41.4	22.9	18.5
--												
102	<0.06	1.88	12.41		10.53	15.2	22.7	27.6	49.7	42.0	24.6	17.4
--												
103	<0.06	1.88	22.09		20.21	4.7	11.2	32.7	56.1	45.6	23.2	22.4
--												
104	<0.06	1.88	4.08		2.20	1.8	53.7	24.6	21.6	23.5	9.3	14.2
105	<0.06	1.88	1.35	0.53		14.9	6.6	42.8	50.6	44.3	22.6	21.7
106	<0.06	1.88	27.12		25.24	2.6	25.4	51.5	23.1	25.6	11.1	14.5

107	0.15	4.70	5.08		0.38	43.2	*	*	*	15.4	3.7	11.7
108	<0.06	1.88	3.70		1.82	2.1	40.8	39.2	19.9	24.6	9.5	15.1
109	<0.06	1.88	3.16		1.28	12.8	*	*	*	15.7	4.3	11.4
110	<0.06	1.88	[illegible]		[illegible]	[illegible]	5.8	44.6	49.6	42.9	23.2	19.7

*Mostly carbolithic

OLE # 23334C

DRILLER G. Hopkins

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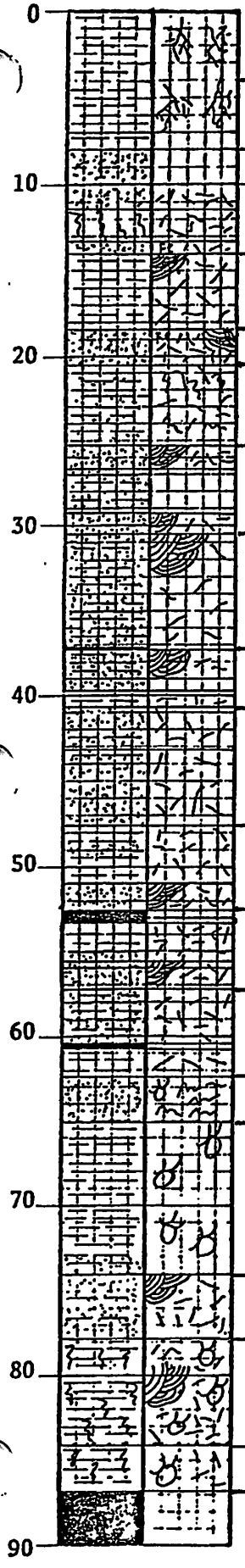
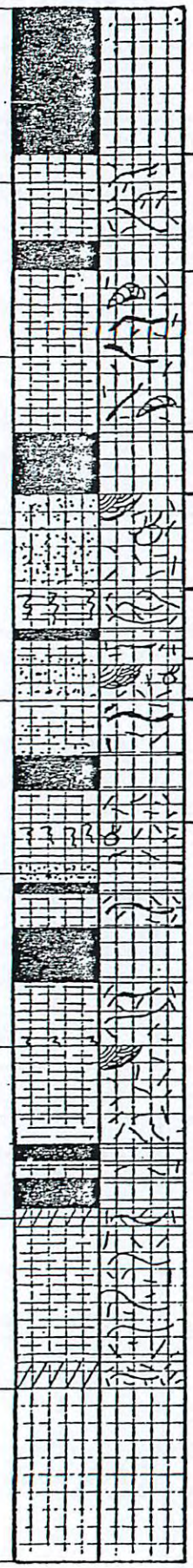


SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	pH
111	71.0	1.9	3.2	3.7	2.0	< 0.06	6.8
112	74.6	4.3	5.8	2.8	0.9	< 0.06	4.4
113	33.6	1.6	5.6	13.2	12.6	0.08	3.9
114	62.5	1.3	4.4	10.5	12.1	< 0.06	6.6
115	73.0	2.6	5.5	2.3	6.7	< 0.06	7.7
116	38.3	2.5	6.5	5.0	8.4	< 0.06	7.4
117	75.7	3.3	6.4	2.8	4.7	< 0.06	7.9
118	56.8	2.6	8.8	9.3	14.3	< 0.06	6.4
119	72.5	4.2	8.7	4.4	4.2	< 0.06	7.6
120	53.1	3.8	8.4	5.3	4.4	< 0.06	7.3
121	48.9	4.2	12.0	7.4	8.8	< 0.06	7.1
122	65.8	5.5	10.4	3.2	4.0	< 0.06	8.0
123	64.1	6.1	16.8	7.8	7.1	< 0.06	7.1
124	66.9	13.5	18.9	1.9	2.1	< 0.06	6.8
125	32.7	8.2	21.8	3.8	10.4	< 0.06	7.9
126	71.0	11.4	14.4	0.5	2.7	< 0.06	8.6
127	31.5	16.1	33.3	3.2	5.3	< 0.06	7.9
128	52.1	12.4	30.0	6.0	5.8	< 0.06	8.1
129	65.3	19.6	33.9	1.9	4.1	< 0.06	7.2

Revised 11/21/03

DATE DRILLED 6/20/81 SUB AREA 526

23334C



ION	SAMPLE NO.	SATURATION % (MOISTURE)	SAR (ASH)	SOL.Na.	SOL.Ca. (BTU)	SOL.Mg	%S	pH
	-	-	5.20	-	13,016	-	0.59	7.7
	130	74.7	13.0	18.7	0.5	3.6	0.12	8.0
	131	65.2	42.1	55.1	2.5	1.0	< 0.06	8.8
	-	-	6.0	-	12,976	-	0.74	7.5
	132	31.6	9.1	25.7	12.5	3.7	< 0.06	7.8
	133	60.1	19.2	21.2	1.6	0.8	0.12	7.7
	134	42.9	14.7	18.9	1.9	1.4	< 0.06	8.5
	135	63.1	12.1	18.7	1.8	3.0	< 0.06	

Revised 11/21/03

Field: [illegible]
Core: 23334-C
Section: 25

Township: [illegible]
Range: 19E
Date Cored: 6/20/81

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meq/l	Saturation Extract Ca meq/l	Saturation Extract Mg meq/l	SAR	ESP	$NaHCO_3$* P ppm	NH_4OAc* K ppm	Total[1] N ppm
Shale	0.0	4.0	111	6.8	1.1	71.0	3.2	3.7	2.0	1.9	1.4	6.8	369.1	10**
Shale	4.0	4.0	112	4.4	1.1	74.6	5.8	2.8	0.9	4.3	5.2	4.4	673.3	2
Sandstone	8.0	2.0	113	3.9	3.6	33.6	5.6	13.2	12.6	1.6	1.1	3.9	115.1	2
Siltstone/Sandstone	10.0	4.0	114	6.6	3.0	62.5	4.4	10.5	12.1	1.3	0.8	6.6	155.3	13
Shale	14.0	4.4	115	7.7	1.6	73.0	5.5	2.3	6.7	2.6	2.6	7.7	463.2	33
Sandstone	18.4	2.3	116	7.4	2.4	38.3	6.5	5.0	8.4	2.5	2.5	7.4	75.2	24
Shale	20.7	4.6	117	7.9	1.6	75.7	6.4	2.8	4.7	3.3	3.4	7.9	428.5	75
Sandstone/Shale	25.3	5.3	118	6.4	3.5	56.8	8.8	9.3	14.3	2.6	2.5	6.4	197.0	38
Sandstone	30.6	6.5	119	7.6	2.0	72.5	8.7	4.4	4.2	4.2	4.9	7.6	439.7	44
Coal/Shale/Sandstone	37.1	3.7	120	7.3	1.9	53.1	8.4	5.3	4.4	3.8	4.2	7.3	122.4	31
Sandstone/Shale	40.8	6.9	121	7.1	3.0	48.9	12.0	7.4	8.8	4.2	4.3	7.1	122.9	34
Shale/Sandstone	47.7	5.0	122	8.0	2.0	65.8	10.4	3.2	4.0	5.5	7.2	8.0	232.3	62
Coal/Shale/Sandstone	52.7	4.6	123	7.1	3.5	64.1	16.8	7.8	7.1	6.1	6.6	7.1	308.8	25
Shale/Coal	57.3	5.2	124	6.8	2.6	66.9	18.9	1.9	2.1	13.5	16.9	6.8	480.8	34
Sandstone	62.5	2.6	125	7.9	3.8	32.7	21.8	3.8	10.4	8.2	8.8	7.9	143.9	48
Shale	65.1	8.9	126	8.6	1.9	71.0	14.4	0.5	2.7	11.4	14.1	8.6	520.9	105
Sandstone	74.0	3.9	127	7.9	5.3	31.5	33.3	3.2	5.3	16.1	20.6	7.9	155.0	114
Silty Shale	77.9	6.3	128	8.1	4.5	52.1	30.0	6.0	5.8	12.4	12.7	8.1	252.4	122
Shale	84.2	2.6	129	7.2	4.0	65.3	33.9	1.9	4.1	19.6	21.3	7.2	471.4	58
Coal	86.8	11.6	---											
Shale/Coal	98.4	6.6	130	8.0	2.5	74.7	18.7	0.5	3.6	13.0	15.9	8.0	452.7	78
Shale	105.0	9.5	131	8.8	3.6	65.2	55.1	2.5	1.0	42.1	37.8	8.8	997.6	193

*Dry Basis
[1]Total-N is Sum of NH_4-N and NO_3-N
**NH_4 - N<2ppm and NO_3 - N>1ppm

Revised 11/21/03

Mine: [illegible]
Core: 23334-C
Section: 25

Township: [illegible]
Range: 19E
Date Cored: 6/20/81

Central Laboratory

Lithology	Depth Ft.	Thickness Ft.	Lab No.	Paste pH	Conductivity Paste	Sat.* %	Saturation Extract Na meq/l	Saturation Extract Ca meq/l	Saturation Extract Mg meq/l	SAR	ESP	$NaHCO_3$* P ppm	NH_4OAc* K ppm	Total N ppm†
Coal	114.5	3.5	---											
Sandstone	118.0	5.6	132	7.8	4.8	31.6	25.7	12.5	3.7	9.1	11.1	7.8	104.9	142
Silty Shale/Coal	123.6	4.0	133	7.7	2.4	60.1	21.2	1.6	0.8	19.2	21.0	7.7	270.2	48
Shale/Sandstone	127.6	2.4	134	8.5	2.8	42.9	18.9	1.9	1.4	14.7	14.6	8.5	264.0	132
Shale/Coal	130.0	7.0	135	8.5	2.4	63.1	18.7	1.8	3.0	12.1	12.1	8.5	488.5	98

*Dry Basis
†Total-N is Sum of NH_4-N and NO_3-N
**NH_4 - N<2ppm and NO_3 - N>1ppm

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Central Laboratory

Mine: Kayenta
Core: 23334-C
Date Cored: 6/20/81

Township: 36N
Range: 19E
Section: 25

Lab No.			% * Sulfur	*Tons of $CaCo_3$ Equivalent per 1000 Tons Material: Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCo_3$ Equiv.	* % Organic Matter	Particle Size: % Sand	% Silt	% Clay	% Moisture: 1/3 BAR	15 BAR	Available H_2O Hold. Capacity (1/3-15 BAR)
111			<0.06	1.88	3.19		1.31	1.0	31.2	17.1	51.7	43.5	24.6	18.9
112			<0.06	1.88	0.02	1.86		0.7	20.2	39.3	40.5	47.7	27.0	20.7
113			0.08	2.50	0.00	2.50		0.3	45.0	49.9	5.1	18.3	7.4	10.9
114			<0.06	1.88	31.34		29.46	1.0	4.8	67.9	27.2	34.7	19.4	15.3
115			<0.06	1.88	9.69		7.81	1.5	6.8	38.1	55.1	49.2	23.7	25.5
116			<0.06	1.88	44.55		42.67	0.7	43.5	50.8	5.7	20.0	8.1	11.9
117			<0.06	1.88	12.36		10.48	1.7	10.4	35.1	54.6	44.8	24.2	20.6
118			<0.06	1.88	6.38		4.50	2.9	30.0	43.5	26.5	34.0	15.3	18.7
119			<0.06	1.88	41.35		39.47	3.3	53.0	18.1	28.9	36.6	19.6	17.0
120			<0.06	1.88	29.86		27.98	11.1	59.3	18.3	22.4	31.2	15.1	16.1
121			<0.06	1.88	6.36		4.48	1.0	67.4	28.8	3.8	28.7	12.0	16.7
122			<0.06	1.88	9.16		7.28	1.7	30.9	29.8	39.3	38.0	18.1	19.9
123			<0.06	1.88	14.30		12.42	14.5	47.0	11.9	41.2	38.1	21.1	17.0
124			<0.06	1.88	6.93		5.05	3.2	18.1	25.6	56.3	41.2	27.2	14.0
125			<0.06	1.88	16.12		14.24	1.1	67.9	24.3	7.8	20.0	7.8	12.2
126			<0.06	1.88	4.57		2.69	2.5	26.5	21.0	52.5	41.1	24.8	16.3
127			<0.06	1.88	14.65		12.77	2.4	53.3	32.6	14.1	18.6	8.2	10.4
128			<0.06	1.88	31.31		[illegible]	1.3	26.9	36.3	36.8	33.8	15.7	18.1
129			<0.06	1.88	10.12		[illegible]	5.0	35.0	20.9	44.1	42.4	27.5	14.9

130			0.12	3.72	5.11		1.39	31.2	40.8	19.2	40.1	44.5	26.7	17.8
131			<0.06	1.88	[illegible]		11.41	3.1	[illegible]	23.8	48.8	46.6	24.5	22.1

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Central Laboratory

Mine: Kayenta
Core: 2334-C
Date Cored: 6/20/81

Township: 36N
Range: 19E
Section: 25

Lab No.			% * Sulfur	*Tons of $CaCO_3$ Equivalent per 100 Tons Material: Max. Req From Total Sulfur	Amount Present By Titration	Amount Needed for Neutrality	Excess $CaCO_3$ Equiv.	* % Organic Matter	Particle Size: % Sand	% Silt	% Clay	% Moisture: 1/3 BAR	15 BAR	Available H_2O Hold. Capacity (1/3-15 BAR)

132			<0.06	1.88	36.33		34.45	1.9	55.1	37.6	7.3	20.0	8.1	11.9
133			0.12	3.77	4.55		0.78	31.9	27.8	38.3	33.9	32.7	15.3	17.4
134			<0.06	1.88	5.98		4.10	1.5	52.2	32.0	15.9	27.4	13.1	14.3
135			<0.06	1.88	13.31		11.43	13.4	28.1	28.2	43.7	44.9	25.3	19.6

*Dry Basis

Revised 11/21/03

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2003 DRILLING AREAS

(DEEP CORES)

LITHOLOGIC SYMBOLS AND DESCRIPTORS

(2003 DRILLING)

COLOR CODES

BLK - black

BR - brown

BRGR - brownish gray

DGR - dark gray

DGRBR - dark grayish brown

DRDBR - dark reddish brown

DRDGR - dark reddish gray

DYBR - dark yellowish brown

GR - gray

GRBR - grayish brown

LBRGR - light brownish gray

LGR - light gray

LRBR - light reddish brown

LRDBR - light reddish brown

LYBR - light yellowish brown

PBR - pale brown

RBR - reddish brown

RD - red

RDBR - reddish brown

RDGR - reddish gray

RGR - reddish gray

RDY - reddish yellow

VDGR - very dark gray

YBR - yellowish brown

LITHOLOGY CODES

BRN - burn

BR - burn

CO - coal

CS - claystone

MS - mudstone

SH - shale

SL - siltstone

SO - soil

SS - sandstone

OTHER CODES

GAL - Green Analytical Laboratory, Inc.

LC - lost core

COAL SEAM CODES (See Chapter 4, Figures 6 and 6a)

B0X - BLUE 0

B1X - BLUE 1

BXX - BLUE

E0X - ORANGE 0

E01 - ORANGE 0 & 1 MERGE

E1X - ORANGE 1

E1A - ORANGE 1 A

E2X - ORANGE 2

E3X - ORANGE 3

EXX - ORANGE

G1X - GREEN 1

GXX - GREEN

M0X - BOTTOM RED 0

M1X - BOTTOM RED 1

MXX - BOTTOM RED

N0X - BROWN 0

N1X - BROWN 1

N2X - BROWN 2

NXX - BROWN

R0X - RED 0

R1X - RED 1

RXX - RED

Y0A - VIOLET 0 A

Y0B - VIOLET 0 B

Y0C - YELLOW 0 C

Y0X - YELLOW 0

Y1A - YELLOW 1 A

Y1B - YELLOW 1 B

Y1X - YELLOW 1

YNX - YELLOW & BROWN MERGE

YXX - YELLOW

HOLE NUMBER: 30365EO*
MINE AREA: J21 West
DATE: 7/29-30/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-6.0	6.0	SO	RBR	LC: 0.0-3.8
2	6.0-15.8	9.8	SS	YBR	LC: 7.3-13.4
3	15.8-18.3	2.5	SH	GR	SILTY
4	18.3-20.0	1.7	CO, SH	VDGR, BLK	
5	20.0-29.1	9.1	SL	GR	LC: 20.0-21.8, SHALEY
6	29.1-32.7	3.6	SH, CO	VDGR, BLK	
7#	32.7-41.3	8.6	SL, SS	GR	
8	41.3-44.2	2.9	SH, CO	VDGR, BLK	LC: 41.5-42.0
9	44.2-54.2	10.0	SL	GR, DGR	LC: 50.0-50.4, SHALEY
10	54.2-57.8	3.6	SH, CO	VDGR, BLK	
11	57.8-63.9	6.1	SL	GR	
12	63.9-65.9	2.0	SH, CO	VDGR, BLK	
13	65.9-74.0	8.1	SL, SS	GR	
**	74.0-76.0	2.0	CO (G1X)	BLK	LC: 74.0-74.2
14+	76.0-78.0	2.0	SH	DGR	SILTY
** +	78.0-101.9	23.9	CO (BXX)	BLK	
15+	101.9-105.2	3.3	SH, SS	DGR, VDGR	
16	105.2-112.0	6.8	SS	GR	SILTY
** +	112.0-123.8	11.8	CO (RXX)	BLK	LC: 121.1-122.0
17#+	123.8-127.0	3.2	SH	VDGR, BLK	COALY
18	127.0-129.0	2.0	SL	DGR	
19	129.0-131.0	2.0	SH, CO	VDGR, BLK	
**	131.0-133.4	2.4	CO (MXX)	BLK	
20+	133.4-136.0	2.6	SH, CO	VDGR, BLK	
21	136.0-144.0	8.0	SL	DGR, GR	SANDY
22	144.0-147.6	3.6	SH, CO	VDGR, BLK	SILTY
23	147.6-152.3	4.7	SS	LGR, GR	
24	152.3-160.0	7.7	SL, SH	VDGR, DGR	
** +	160.0-167.5	7.5	CO (YOX)	BLK	
25+	167.5-171.7	4.2	SS, SL	LGR, GR	
** +	171.7-177.0	5.3	CO (Y1X)	BLK	
26+	177.0-179.6	2.6	SH	VDGR	SILTY
27#	179.6-188.7	9.1	SS, SL	GR, DGR	
**	188.7-196.2	7.5	CO (NXX)	BLK	
28+	196.2-200.0	3.8	SL, SS	GR	SHALEY
**	200.0-202.0	2.0	CO (N1X)	BLK	
29+	202.0-205.2	3.2	SH, CO	VDGR, BLK	
30	205.2-210.0	4.8	SS	GR	SILTY
31	210.0-212.2	2.2	SH	VDGR	
**	212.2-216.4	4.2	CO (EOX)	BLK	
32+	216.4-220.0	3.6	SL	DGR	SHALEY

HOLE NUMBER: 30365EO*
MINE AREA: J21 West
DATE: 7/29-30/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS

* Core boxes 1 through 22, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to GAL.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 76.0-76.3, 86.15-86.35, 94.7-94.9, 96.5-96.8, 101.9-102.2, 113.05-113.10, 121.5-122.0, 123.8-124.1, 133.4-133.7, 162.45-162.60, 163.65-163.70, 165.40-165.45, 167.5-167.7, 173.1-173.2, 177.0-177.3, 196.2-196.5, 202.0-202.3, & 216.4-216.7.

CORE NO: 30365EO

Mine Area: J21 West, Peabody Coordinates: 51518.76E, -47749.44N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	6.00	SO		8.0	0.6	2.4	1.3	3.3	2.5	55	32	13	<0.01			0.01
6.00	9.80	SS		7.9	1.4	5.3	3.2	6.2	3.0	69	25	6	<0.01			0.02
15.80	2.50	SH		7.4	2.0	7.7	7.0	7.2	2.6	22	49	29	<0.01			0.03
18.30	1.70	CO		4.5	4.9	16.0	22.0	25.0	5.7	33	25	42	0.10			4.66
20.00	9.10	SL		6.9	2.9	2.8	6.3	20.0	9.2	30	41	29	0.20			7.78
29.10	3.60	SH		7.6	1.5	1.1	0.7	14.0	14.5	31	49	20	0.08			2.58
32.70	8.60	SL		8.2	1.3	0.5	0.3	12.0	19.2	57	32	11	<0.01			0.12
41.30	2.90	SH		7.5	1.9	0.6	0.4	18.0	25.4	64	27	9	0.30			9.44
44.20	10.00	SL		8.4	1.3	0.5	0.2	12.0	20.9	18	54	28	0.09			2.89
54.20	3.60	SH		8.0	0.8	0.2	0.1	8.5	21.2	20	51	29	0.30			8.00
57.80	6.10	SL		8.4	0.8	0.6	0.3	9.0	13.8	28	43	29	0.10			3.91
63.90	2.00	SH		8.0	0.9	0.1	0.1	7.7	24.2	17	51	32	0.20			5.25
65.90	8.10	SL		8.1	1.6	0.3	0.2	15.0	28.4	55	32	13	<0.01			0.10
74.00	2.00	CO	G1X													
76.00	2.00	SH		8.1	0.7	0.1	0.1	7.0	20.6	16	56	28	0.06			1.90
78.00	23.90	CO	BXX													
101.90	3.30	SH		7.6	0.6	0.1	0.0	6.1	25.8	60	33	7	0.30	0.20	0.20	5.19
105.20	6.80	SS		8.4	0.9	0.2	0.1	8.9	22.6	48	36	16	<0.01			0.20
112.00	11.80	CO	RXX													
123.80	3.20	SH		8.3	1.3	0.2	0.1	12.0	33.1	24	40	36	0.20	0.08	0.10	2.44
127.00	2.00	SL		8.5	1.3	0.5	0.2	14.0	22.2	21	51	28	0.10			4.13
129.00	2.00	SH		7.8	1.8	0.5	0.2	16.0	26.3	41	33	26	0.30			9.13
131.00	2.40	CO	MXX													
133.40	2.60	SH		7.7	0.9	0.1	0.0	8.8	36.7	68	19	13	0.60	0.20	0.40	6.28
136.00	8.00	SL		7.9	2.6	0.6	0.3	25.0	36.6	51	38	11	0.60			18.80
144.00	3.60	SH		7.5	1.5	0.1	0.1	13.0	41.7	40	42	18	0.90	0.60	0.20	19.40
147.60	4.70	SS		8.5	1.7	0.3	0.1	16.0	34.4	62	30	8	<0.01			0.27
152.30	7.70	SL		7.6	2.3	0.7	0.3	20.0	28.1	24	58	18	1.90	1.70	0.20	53.50
160.00	7.50	CO	Y0X													
167.50	4.20	SS		8.1	2.1	0.7	0.3	19.0	25.4	48	41	11	0.10			4.16
171.70	5.30	CO	Y1X													
177.00	2.60	SH		8.7	0.9	0.6	0.3	9.5	14.2	19	56	25	0.07			2.18
179.60	9.10	SS		8.3	1.5	0.2	0.1	14.0	34.5	43	40	17	0.30			9.94
188.70	7.50	CO	NXX													
196.20	3.80	SL		8.6	1.2	0.1	0.0	9.7	33.7	36	36	28	0.20			4.69
200.00	2.00	CO	N1X													
202.00	3.20	SH		8.1	0.9	0.3	0.1	9.1	21.5	26	48	26	0.70	0.50	0.07	16.00
205.20	4.80	SS		8.4	1.7	0.4	0.3	16.0	27.1	69	24	7	0.10			3.16
210.00	2.20	SH		8.3	1.6	0.2	0.1	10.0	25.6	22	53	25	1.10	0.90	0.10	28.40
212.20	4.20	CO	E0X													
216.40	3.60	SL		8.8	0.7	0.2	0.1	8.6	21.6	22	49	29	0.05			1.63

CORE NO: 30365EO

Mine Area: J21 West, Peabody Coordinates: 51518.76E, -47749.44N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	6.00	SO		34.80	34.80	<0.05	<0.05	<0.10	0.38
6.00	9.80	SS		43.80	43.80	<0.05	<0.05	0.20	0.17
15.80	2.50	SH		72.40	72.30	0.07	0.08	0.50	0.25
18.30	1.70	CO		9.06	4.41	0.12	0.14	1.70	0.59
20.00	9.10	SL		35.80	28.00	0.09	0.12	0.80	0.24
29.10	3.60	SH		65.20	62.60	0.07	0.11	1.00	0.22
32.70	8.60	SL		142.00	141.00	<0.05	0.07	0.40	0.18
41.30	2.90	SH		15.90	6.44	0.10	0.13	1.30	0.32
44.20	10.00	SL		26.80	23.90	0.06	0.08	0.30	0.16
54.20	3.60	SH		25.30	17.30	0.08	0.12	0.90	0.21
57.80	6.10	SL		36.40	32.70	0.05	0.08	0.50	0.21
63.90	2.00	SH		9.63	4.38	0.11	0.16	0.70	0.25
65.90	8.10	SL		140.00	140.00	<0.05	0.07	0.60	0.16
74.00	2.00	CO	G1X						
76.00	2.00	SH		8.13	6.23	0.05	0.06	0.90	0.15
78.00	23.90	CO	BXX						
101.90	3.30	SH		3.62	-1.57	0.07	0.10	0.80	0.24
105.20	6.80	SS		83.50	83.30	<0.05	<0.05	0.30	0.18
112.00	11.80	CO	RXX						
123.80	3.20	SH		7.53	5.09	0.07	0.09	0.90	0.16
127.00	2.00	SL		35.20	31.00	0.07	0.09	0.60	0.16
129.00	2.00	SH		17.00	7.92	0.06	0.08	1.40	0.28
131.00	2.40	CO	MXX						
133.40	2.60	SH		7.40	1.12	0.06	0.06	1.50	0.39
136.00	8.00	SL		36.70	17.90	<0.05	0.06	0.50	0.20
144.00	3.60	SH		5.71	-13.70	<0.05	0.08	0.70	0.32
147.60	4.70	SS		89.60	89.40	<0.05	<0.05	0.30	0.19
152.30	7.70	SL		22.20	-31.20	<0.05	0.08	0.70	0.24
160.00	7.50	CO	Y0X						
167.50	4.20	SS		60.00	55.90	0.09	0.11	0.50	0.21
171.70	5.30	CO	Y1X						
177.00	2.60	SH		5.88	3.71	0.12	0.14	0.80	0.25
179.60	9.10	SS		37.20	27.30	0.07	0.09	0.40	0.22
188.70	7.50	CO	NXX						
196.20	3.80	SL		15.30	10.60	0.13	0.15	1.10	0.23
200.00	2.00	CO	N1X						
202.00	3.20	SH		7.96	-8.05	0.11	0.14	1.00	0.31
205.20	4.80	SS		142.00	139.00	<0.05	0.09	0.40	0.22
210.00	2.20	SH		15.50	-12.90	0.11	0.15	1.10	0.35
212.20	4.20	CO	E0X						
216.40	3.60	SL		10.90	9.28	0.11	0.11	0.80	0.27

Revised 02/24/12

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HOLE NUMBER: 30355EO*
MINE AREA: N9
DATE: 7/16,21/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-12.2	12.2	SS	YBR	LC: 0.0-2.3
2	12.2-16.7	4.5	SL	GR	
3	16.7-20.4	3.7	SS	YBR	
4	20.4-26.4	6.0	SL, SS	GR, YBR	
5	26.4-30.2	3.8	SL	GR	SANDY
6	30.2-31.4	1.2	CO	BLK	LC: 31.2-31.4
7	31.4-35.7	4.3	SL	DGR	
**	35.7-42.6	6.9	CO (MXX)	BLK	
8+	42.6-47.5	4.9	SS	BRGR	SHALEY
9	47.5-51.4	3.9	SH, CO	VDGR, BLK	LC: 50.0-50.5
10#	51.4-56.3	4.9	SS	GR	
11	56.3-62.2	5.9	SL	DGR	
12	62.2-65.6	3.4	SH, CO	VDGR, BLK	
13	65.6-67.0	1.4	SS	GR	
14	67.0-72.4	5.4	SH, CO	VDGR, BLK	
15	72.4-76.9	4.5	SL	DGR	SHALEY
16	76.9-79.7	2.8	CO (YOX), SH	BLK, VDGR	NONMINABLE
17	79.7-83.9	4.2	SS	GR	SILTY
18	83.9-87.1	3.2	CO, SH	BLK, VDGR	
19	87.1-92.3	5.2	SS	DGR	LC: 90.0-90.4 COAL & SHALE
**	92.3-94.5	2.2	CO (Y1X)	BLK	
20#+	94.5-98.0	3.5	SS	GR	
21	98.0-104.6	6.6	SL	DGR	SHALEY
22	104.6-113.5	8.9	SS	LGR	
23	113.5-115.8	2.3	SH	VDGR	
** +	115.8-125.0	9.2	CO (NXX)	BLK	LC: 120.0-120.5
24+	125.0-127.3	2.3	SH, CO	VDGR, BLK	
25	127.3-133.5	6.2	SH	DGR	SILTY
26	133.5-143.5	10.0	SL	GR	SANDY
27	143.5-153.5	10.0	SS	GR, LGR	
28	153.5-163.5	10.0	SS	LBRGR, LGR	
29	163.5-168.0	4.5	SL, SH	DGR, VDGR	
** +	168.0-172.7	4.7	CO (EOX)	BLK	
30#+	172.7-180.0	7.3	SL	GR	SANDY
31	180.0-190.0	10.0	SL	DGR	SHALEY
32	190.0-194.2	4.2	CO, SH	VDGR, BLK	LC: 190.2-191.4
33	194.2-198.7	4.5	SH	DGR	COAL, SHALEY
**	198.7-201.1	2.4	CO (E1X)	BLK	
34+	201.1-203.3	2.2	SH	DGR, VDGR	SANDY
**	203.3-206.3	3.0	CO (E2X)	BLK	
35+	206.3-210.0	3.7	SL	GR	SANDY

HOLE NUMBER: 30355EO*
MINE AREA: N9
DATE: 7/16, 21/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS

* Core boxes 1 through 21, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to Energy Lab.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 42.6-42.9, 94.5-94.8, 122.15-122.25, 125.0-125.3, 170.05-170.25, 172.7-173.0, 201.1-201.4, & 206.3-206.6.

CORE NO: 30355EO

Mine Area: N09, Peabody Coordinates: 21746.43E, 5480.15N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	12.20	SS		8.0	2.9	5.9	25.4	7.4	1.9	51	31	18	0.02			0.77
12.20	4.50	SL		7.8	2.1	3.4	19.7	3.3	1.0	35	36	29	0.07			2.29
16.70	3.70	SS		7.9	1.6	3.3	14.6	2.3	0.8	58	29	14	0.03			0.93
20.40	6.00	SL		7.7	1.8	4.1	15.8	2.1	0.7	45	30	25	0.06			1.86
26.40	3.80	SL		7.5	1.6	5.7	12.3	2.2	0.7	33	35	33	0.10			3.08
30.20	1.20	CO		7.1	0.5	2.1	1.5	2.3	1.7	93	5	3	0.88	0.06		27.64
31.40	4.30	SL		7.6	1.0	2.8	2.2	4.9	3.1	28	44	29	0.49	0.37		15.27
35.70	6.90	CO	MXX													
42.60	4.90	SS		8.0	2.2	0.6	0.3	21.8	33.2	63	24	14	0.11			3.49
47.50	3.90	SH		7.6	3.5	1.0	0.6	36.5	40.9	44	34	23	1.30	1.12		40.58
51.40	4.90	SS		8.3	2.2	0.5	0.2	22.3	38.0	63	25	13	0.08			2.58
56.30	5.90	SL		7.7	5.4	1.0	0.7	58.3	63.5	30	41	29	1.35	1.06		42.14
62.20	3.40	SH		7.3	4.7	1.0	0.5	49.6	57.1	40	31	29	2.73	1.92		85.32
65.60	1.40	SS		7.7	4.8	1.3	0.6	51.8	52.0	53	29	19	0.52	0.35		16.33
67.00	5.40	SH		6.5	6.1	2.4	1.3	62.6	46.4	33	40	28	3.66	2.57		114.34
72.40	4.50	SL		8.3	3.1	1.1	0.5	34.4	39.0	21	46	33	0.52			16.32
76.90	2.80	CO	YOX	7.8	1.4	0.4	0.2	13.2	23.5	60	19	21	0.78	0.34		24.26
79.70	4.20	SS		8.4	2.9	0.4	0.4	34.2	53.9	68	18	15	0.06			1.73
83.90	3.20	CO		8.4	1.1	0.6	0.4	11.4	15.7	46	29	25	0.47	0.13		14.54
87.10	5.20	SS		5.9	4.1	1.0	0.6	41.4	46.2	59	29	13	1.12	0.99		35.11
92.30	2.20	CO	Y1X													
94.50	3.50	SS		8.5	3.4	0.6	0.2	38.0	60.6	60	23	18	0.31			9.75
98.00	6.60	SL		8.4	1.8	0.5	0.3	17.6	28.7	30	40	30	0.86	0.59		26.74
104.60	8.90	SS		8.6	1.6	0.4	0.2	16.8	31.5	70	20	10	0.19			6.02
113.50	2.30	SH		7.9	5.3	0.8	0.5	57.4	72.8	20	46	34	2.86	2.41		89.28
115.80	9.20	CO	NXX													
125.00	2.30	SH		7.4	1.6	0.2	0.1	15.0	35.0	88	10	3	2.88	1.68		89.81
127.30	6.20	SH		9.2	1.1	0.2	0.1	11.4	29.7	33	35	33	0.06			1.88
133.50	10.00	SL		8.6	1.8	0.5	0.2	19.2	32.2	50	25	25	0.05			1.51
143.50	10.00	SS		8.6	1.4	0.4	0.2	14.3	26.4	63	20	18	0.12			3.88
153.50	10.00	SS		8.6	1.3	0.2	0.1	13.8	31.8	75	16	9	0.04			1.17
163.50	4.50	SL		8.9	1.2	0.2	0.2	12.5	28.7	25	40	35	0.62			19.31
168.00	4.70	CO	EOX													
172.70	7.30	SL		9.7	0.9	0.1	0.1	8.9	32.5	25	43	33	0.04			1.12
180.00	10.00	SL		9.3	1.1	0.1	0.1	12.3	35.2	35	38	28	0.03			1.08
190.00	4.20	SH		8.3	1.0	0.3	0.1	10.0	22.0	75	13	13	0.77	0.35		24.16
194.20	4.50	SH		9.0	1.2	0.1	0.2	13.0	33.4	36	31	33	0.25			7.86
198.70	2.40	CO	E1X													
201.10	2.20	SH		9.1	1.1	0.1	0.1	12.0	33.7	20	33	48	0.16			5.01
203.30	3.00	CO	E2X													
206.30	3.70	SL		7.3	2.9	0.7	0.4	28.3	37.6	48	36	16	0.43	0.27		13.38

CORE NO: 30355EO

Mine Area: N09, Peabody Coordinates: 21746.43E, 5480.15N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	12.20	SS		217.08	216.31	<0.02		0.43	0.81
12.20	4.50	SL		170.04	167.75	0.04		1.02	0.90
16.70	3.70	SS		159.38	158.45	<0.02		0.28	0.57
20.40	6.00	SL		145.17	143.31	0.02		0.73	0.77
26.40	3.80	SL		83.06	79.98	0.04		1.02	1.17
30.20	1.20	CO		10.66	-16.98	<0.02		1.25	2.75
31.40	4.30	SL		11.15	-4.12	0.09		0.70	3.07
35.70	6.90	CO	MXX						
42.60	4.90	SS		26.83	23.34	0.11		0.73	1.86
47.50	3.90	SH		34.67	-5.91	0.13		0.98	2.96
51.40	4.90	SS		54.15	51.57	0.05		0.30	0.75
56.30	5.90	SL		31.24	-10.90	0.09		0.70	3.17
62.20	3.40	SH		11.15	-74.17	0.09		1.27	2.38
65.60	1.40	SS		11.15	-5.18	0.11		0.47	1.66
67.00	5.40	SH		5.76	-108.58	0.08		0.93	1.94
72.40	4.50	SL		40.55	24.23	0.18		1.02	1.66
76.90	2.80	CO	YOX	9.68	-14.58	0.19		1.58	1.92
79.70	4.20	SS		112.22	110.49	0.06		0.35	0.64
83.90	3.20	CO		8.70	-5.84	0.17		0.85	1.71
87.10	5.20	SS		4.29	-30.82	0.08		0.73	0.88
92.30	2.20	CO	Y1X						
94.50	3.50	SS		37.50	27.70	0.09		0.30	0.78
98.00	6.60	SL		7.23	-19.51	0.08		0.40	1.15
104.60	8.90	SS		38.59	32.57	0.02		<0.15	<0.05
113.50	2.30	SH		12.62	-76.66	0.11		0.85	1.75
115.80	9.20	CO	NXX						
125.00	2.30	SH		8.21	-81.60	0.12		4.35	2.33
127.30	6.20	SH		10.66	8.78	0.09		0.88	1.10
133.50	10.00	SL		65.91	64.40	0.07		0.40	1.42
143.50	10.00	SS		17.52	13.64	0.04		0.38	1.02
153.50	10.00	SS		39.08	37.91	0.03		0.30	0.51
163.50	4.50	SL		19.97	0.66	0.14		0.95	2.45
168.00	4.70	CO	EOX						
172.70	7.30	SL		4.78	3.66	0.14		0.57	1.11
180.00	10.00	SL		16.54	15.46	0.06		0.45	1.13
190.00	4.20	SH		9.68	-14.48	0.09		0.93	1.52
194.20	4.50	SH		28.30	20.44	0.17		1.23	1.40
198.70	2.40	CO	E1X						
201.10	2.20	SH		20.46	15.45	0.13		1.30	2.02
203.30	3.00	CO	E2X						
206.30	3.70	SL		7.23	-6.15	0.12		0.52	0.69

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HOLE NUMBER: 30356EO*
MINE AREA: N9
DATE: 7/21-22/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-5.1	5.1	SS	YBR	
2	5.1-12.9	7.8	SH	GR	LC: 10.5-12.0
3	12.9-15.8	2.9	SH, CO	VDGR, BLK	
4	15.8-20.8	5.0	SL	DGR	SHALEY
5#	20.8-30.0	9.2	SL	DGR	SANDY
6	30.0-34.7	4.7	SL, SH	VDGR	
7	34.7-39.5	4.8	SH, CO	VDGR, BLK	
**	39.5-41.5	2.0	CO (B1X)	BLK	
8+	41.5-43.5	2.0	SH, CO	VDGR, BLK	LC: 41.8-42.0
9	43.5-49.9	6.4	SS	GR	SILTY
**	49.9-54.9	5.0	CO (ROX)	BLK	
10+	54.9-59.0	4.1	SS	GR	
11	59.0-60.9	1.9	SH	DGR, VDGR	
**	60.9-65.1	4.2	CO (R1X)	BLK	
12+	65.1-72.0	6.9	SH, SL	DGR	
13	72.0-74.7	2.7	SH, CO	VDGR, BLK	
14	74.7-82.8	8.1	SL	GR	SANDY
15#	82.8-91.8	9.0	SS	GR	SILTY
16	91.8-100.0	8.2	SS	GR	
17	100.0-101.2	1.2	CO, SH	VDGR, BLK	
18	101.2-106.3	5.1	SS	GR	
**	106.3-109.4	3.1	CO (MOX)	BLK	
19+	109.4-112.1	2.7	SL	DGR	
**	112.1-114.0	1.9	CO (M1X)	BLK	
20+	114.0-118.6	4.6	SL	GR, DGR	SANDY
21	118.6-120.7	2.1	SH, CO	VDGR, BLK	
22	120.7-125.8	5.1	SL	GR, DGR	SANDY
23	125.8-130.0	4.2	SS	GR	
24	130.0-139.3	9.3	SS	GR	
25#	139.3-150.0	10.7	SH	DGR, VDGR	
26	150.0-158.5	8.5	SS	GR	
**	158.5-162.4	3.9	CO (YOX)	BLK	LC: 160.0-161.3
27	162.4-166.5	4.1	SS	GR	SILTY
28	166.5-169.0	2.5	CO, SH	VDGR, BLK	
29	169.0-177.5	8.5	SS	GR, DGR	LC: 171.5-172.0
** +	177.5-181.1	3.6	CO (Y1X)	BLK	LC: 180.5-181.1
30+	181.1-189.5	8.4	SS	DGR	SHALEY
31	189.5-192.4	2.9	SS	LGR	VERY HARD
32	192.4-198.8	6.4	SH, CO	VDGR, BLK	
**	198.8-204.6	5.8	CO (NXX)	BLK	LC: 200.0-204.6
33+	204.6-210.0	5.4	SS	DGR	SHALEY
34	210.0-214.1	4.1	CO, SH	VDGR, BLK	LC: 210.0-211.0
35#	214.1-218.0	3.9	SS	DGR	LC: 217.3-218.0 SILTY

HOLE NUMBER: 30356EO*
MINE AREA: N9
DATE: 7/21-22/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS

* Core boxes 1 through 22, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to Energy Lab.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 41.5-41.8, 54.9-55.2, 65.1-65.4, 109.4-109.7, 114.0-114.3, 178.4-178.5, 181.1-181.4, & 204.6-204.9.

CORE NO: 30356EO

Mine Area: N09, Peabody Coordinates: 24738.00E, 13702.75N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	5.10	SS		8.3	0.7	1.3	2.9	2.9	2.0	60	26	14	0.01			0.44
5.10	7.80	SH		7.0	2.1	7.7	13.7	7.2	2.2	10	41	49	0.04			1.17
12.90	2.90	SH		3.1	6.0	25.0	48.8	10.3	1.7	33	25	43	0.38	0.00		11.72
15.80	5.00	SL		7.1	2.2	6.4	12.9	5.7	1.8	26	41	33	0.07			2.04
20.80	9.20	SL		7.0	1.9	9.1	7.4	5.5	1.9	38	35	28	0.41			12.95
30.00	4.70	SL		7.0	1.7	8.7	5.4	6.0	2.2	31	41	28	1.46	1.33		45.61
34.70	4.80	SH		7.0	0.5	1.8	1.3	2.6	2.1	58	20	23	0.45	0.06		14.18
39.50	2.00	CO	B1X													
41.50	2.00	SH		6.5	2.7	3.5	3.2	22.8	12.5	68	14	19	3.32	2.15		103.69
43.50	6.40	SS		6.8	3.1	9.3	5.9	22.7	8.2	54	31	15	0.58	0.48		18.04
49.90	5.00	CO	R0X													
54.90	4.10	SS		7.4	2.9	1.8	0.9	29.8	25.8	46	35	19	0.43			13.32
59.00	1.90	SH		6.8	4.8	3.8	2.1	47.0	27.1	33	39	29	2.51	2.19		78.35
60.90	4.20	CO	R1X													
65.10	6.90	SH		6.7	4.2	1.9	1.0	42.2	35.0	40	34	26	0.97	0.84		30.16
72.00	2.70	SH		7.3	2.4	0.8	0.3	22.5	30.6	34	34	33	1.38	0.96		42.96
74.70	8.10	SL		8.3	1.3	0.5	0.2	13.2	21.3	44	33	24	0.07			2.10
82.80	9.00	SS		8.3	1.2	0.7	0.3	12.3	16.8	43	31	26	0.05			1.57
91.80	8.20	SS		8.1	1.8	0.7	0.3	17.8	24.8	56	21	23	0.08			2.55
100.00	1.20	CO		7.3	1.0	0.3	0.1	9.1	20.2	81	10	9	1.21	0.58		37.71
101.20	5.10	SS		5.7	3.2	4.4	2.5	26.3	14.1	56	28	16	0.81	0.67		25.38
106.30	3.10	CO	M0X													
109.40	2.70	SL		6.8	1.8	3.9	2.6	13.4	7.4	40	40	20	0.76	0.55		23.59
112.10	1.90	CO	M1X													
114.00	4.60	SL		7.1	1.2	4.6	4.5	3.8	1.8	53	29	19	0.15			4.78
118.60	2.10	SH		6.9	1.3	5.5	5.0	4.2	1.8	45	30	25	2.13	1.68		66.45
120.70	5.10	SL		6.9	1.7	9.8	8.7	2.3	0.8	30	21	49	0.55	0.45		17.11
125.80	4.20	SS		6.3	3.2	24.2	20.6	1.7	0.4	85	9	6	0.44			13.61
130.00	9.30	SS		6.9	3.4	22.7	24.6	2.0	0.4	83	13	5	0.38			11.84
139.30	10.70	SH		7.1	1.9	9.5	8.8	4.2	1.4	20	50	30	1.52	1.32		47.61
150.00	8.50	SS		6.1	3.5	29.5	19.0	4.0	0.8	54	34	13	0.85			26.71
158.50	3.90	CO	Y0X													
162.40	4.10	SS		8.8	1.4	0.1	0.1	14.7	46.2	40	35	25	0.16			5.00
166.50	2.50	CO		7.9	1.8	0.2	0.1	17.5	43.5	73	15	13	2.04	1.26		63.60
169.00	8.50	SS		7.1	3.7	2.8	1.5	36.8	25.3	64	24	13	0.52	0.47		16.27
177.50	3.60	CO	Y1X													
181.10	8.40	SS		7.8	2.9	0.6	0.3	28.8	41.3	51	30	19	0.84	0.67		26.25
189.50	2.90	SS		8.0	1.8	0.6	0.6	17.7	22.9	73	19	9	0.08			2.41
192.40	6.40	SH		7.7	3.1	1.1	0.5	33.3	37.7	35	39	26	1.99	1.68		62.14
198.80	5.80	CO	NXX													
204.60	5.40	SS		7.6	2.8	0.7	0.3	27.2	38.8	48	34	19	1.06	0.91		33.24
210.00	4.10	SH		7.9	0.7	0.3	0.2	7.1	15.4	74	16	10	0.78	0.29		24.30
214.10	3.90	SS		7.5	3.1	1.0	0.5	33.8	39.4	58	28	15	0.27			8.29

CORE NO: 30356EO

Mine Area: N09, Peabody Coordinates: 24738.00E, 13702.75N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	5.10	SS		159.87	159.43	<0.02		0.40	0.82
5.10	7.80	SH		5.27	4.10	0.03		0.55	1.14
12.90	2.90	SH		-18.25	-29.97	0.05		1.40	1.67
15.80	5.00	SL		31.24	29.20	0.04		0.70	1.15
20.80	9.20	SL		26.22	13.27	0.08		0.65	1.57
30.00	4.70	SL		6.74	-38.87	0.09		0.73	2.16
34.70	4.80	SH		8.21	-5.97	0.05		1.90	2.57
39.50	2.00	CO	B1X						
41.50	2.00	SH		7.72	-95.97	0.05		0.98	2.27
43.50	6.40	SS		7.23	-10.81	0.07		0.22	<1.25
49.90	5.00	CO	R0X						
54.90	4.10	SS		37.98	24.66	0.09		0.55	<1.25
59.00	1.90	SH		7.72	-70.63	0.12		1.00	2.08
60.90	4.20	CO	R1X						
65.10	6.90	SH		14.09	-16.07	0.10		1.00	2.79
72.00	2.70	SH		4.78	-38.17	0.15		1.10	5.18
74.70	8.10	SL		36.51	34.41	0.04		0.40	1.63
82.80	9.00	SS		19.97	18.40	0.03		0.32	1.52
91.80	8.20	SS		28.79	26.24	0.04		0.30	1.50
100.00	1.20	CO		6.74	-30.97	0.09		0.85	5.70
101.20	5.10	SS		1.35	-24.03	0.07		0.50	1.55
106.30	3.10	CO	M0X						
109.40	2.70	SL		11.15	-12.44	0.10		0.88	2.50
112.10	1.90	CO	M1X						
114.00	4.60	SL		27.81	23.03	0.11		0.90	1.23
118.60	2.10	SH		12.13	-54.32	0.12		1.42	2.24
120.70	5.10	SL		8.70	-8.41	0.12		0.63	0.59
125.80	4.20	SS		23.40	9.79	0.02		<0.15	<0.50
130.00	9.30	SS		46.92	35.08	<0.02		<0.15	<0.50
139.30	10.70	SH		15.07	-32.54	0.06		0.73	1.65
150.00	8.50	SS		9.19	-17.52	0.04		0.40	0.96
158.50	3.90	CO	Y0X						
162.40	4.10	SS		8.21	3.21	0.10		0.50	6.48
166.50	2.50	CO		7.23	-56.37	0.09		1.38	5.66
169.00	8.50	SS		16.05	-0.22	0.07		0.40	1.54
177.50	3.60	CO	Y1X						
181.10	8.40	SS		9.68	-16.57	0.06		0.45	1.47
189.50	2.90	SS		21.44	19.03	0.02		0.17	0.71
192.40	6.40	SH		16.05	-46.09	0.07		1.23	2.47
198.80	5.80	CO	NXX						
204.60	5.40	SS		4.29	-28.95	0.11		0.93	1.96
210.00	4.10	SH		6.74	-17.56	0.05		2.70	2.02
214.10	3.90	SS		15.56	7.27	0.11		0.63	0.79

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HOLE NUMBER: 30357EO*
MINE AREA: N9
DATE: 7/22-23/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-11.5	11.5	SS	YBR	LC: 0.0-3.0
2	11.5-20.0	8.5	SS	BR	
3	20.0-26.2	6.2	SH	GRBR	SANDY
4	26.2-27.4	1.2	CO, SH	VDGR, BLK	
5	27.4-33.7	6.3	SH	DGR, VDGR	LC: 30.0-30.8
6	33.7-35.8	2.1	SH, CO	VDGR, BLK	
**	35.8-37.8	2.0	CO (BOX)	BLK	
7+	37.8-43.5	5.7	CO, SH	BLK, VDGR	
8	43.5-49.0	5.5	SS	DGR	
9	49.0-58.2	9.2	CO, SH	VDGR, BLK	LC: 50.8-51.1, 57.7-58.0
10#	58.2-63.3	5.1	SL, SH	DGR, VDGR	SANDY
**	63.3-67.6	4.3	CO (R1X)	BLK	
11+	67.6-76.9	9.3	SH, CO	VDGR, BLK	LC: 70.0-70.9 SILTY
12	76.9-86.7	9.8	SL, SS	DGR	VERY HARD
13	86.7-96.7	10.0	SS, SL	DGR, GR	
14	96.7-106.6	9.9	SS	GR	
15	106.6-112.6	6.0	SH, CO	DGR-BLK	LC: 106.6-108.6, 111.4-112.0, SANDY
** +	112.6-118.8	6.2	CO (MXX)	BLK	LC: 114.9-115.4, 115.7-116.3
16+	118.8-123.2	4.4	SS	DGR	SILTY
17	123.2-132.8	9.6	SH, CO, SL	VDGR, BLK	SANDY
18	132.8-139.8	7.0	SS, SL	DGR, VDGR	SHALEY
19	139.8-149.0	9.2	SS	GR	LC: 140.0-140.3
20#	149.0-155.1	6.1	SL	GR, DGR	SANDY
21	155.1-156.1	1.0	SH, CO	VDGR, BLK	
**	156.1-159.1	3.0	CO (YOX)	BLK	
22+	159.1-163.3	4.2	SL, SS	GR, DGR	
23	163.3-165.4	2.1	SH, CO	VDGR, BLK	LC: 163.7-164.6
24	165.4-170.0	4.6	SS	GR	
25	170.0-171.0	1.0	SH, CO	VDGR, BLK	
**	171.0-174.7	3.7	CO (Y1X)	BLK	LC: 171.0-172.4
26+	174.7-178.2	3.5	SS	GR	
27	178.2-181.2	3.0	SH	DGR, VDGR	
28	181.2-188.7	7.5	SS	GR	LC: 181.2-182.0, 186.0-187.0
29#	188.7-192.9	4.2	SH	VDGR, BLK	
**	192.9-199.1	6.2	CO (NXX)	BLK	LC: 192.9-194.0, 196.0-199.1
30	199.1-206.0	6.9	SS	GR, DGR	LC: 199.1-204.7
31	206.0-206.9	0.9	SH	VDGR	
**	206.9-210.0	3.1	CO (N2X)	BLK	
32+	210.0-216.0	6.0	SS	GR	

HOLE NUMBER: 30357EO*
MINE AREA: N9
DATE: 7/22-23/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
33	216.0-220.0	4.0	SH, CO	VDGR, BLK	LC: 218.8-219.4
34	220.0-222.0	2.0	SL	DGR	
**	222.0-225.6	3.6	CO (EOX)	BLK	LC: 224.0-225.3
35+	225.6-229.8	4.2	SS, SL	DGR	SHALEY
**	229.8-232.4	2.6	CO (E1A)	BLK	LC: 229.8-230.5
36+	232.4-236.2	3.8	SL	VDGR	
37	236.2-244.9	8.7	SS, SL	GR	LC: 240.6-242.0
38	244.9-250.0	5.1	SS	GR	

* Core boxes 1 through 25, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to Energy Lab.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 37.8-38.1, 67.6-67.9, 115.4-115.7, 118.8-119.1, 159.1-159.4, 174.7-175.0, 210.0-210.3, 225.6-225.9, & 232.4-232.7.

CORE NO: 30357EO

Mine Area: N09, Peabody Coordinates: 22964.71E, 11496.07N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	11.50	SS		8.1	1.1	2.0	4.2	6.5	3.7	51	26	23	0.01			0.41
11.50	8.50	SS		7.7	0.9	3.1	3.4	2.8	1.6	69	18	14	0.01			0.20
20.00	6.20	SH		7.3	2.8	11.5	22.6	3.3	0.8	39	28	34	0.04			1.30
26.20	1.20	CO		2.8	4.2	28.1	25.0	3.2	0.6	70	28	3	1.59	0.89		49.67
27.40	6.30	SH		7.5	1.7	8.5	9.0	3.8	1.3	28	46	26	0.26			8.06
33.70	2.10	SH		7.0	2.4	13.4	14.4	4.9	1.3	30	40	30	2.08	1.56		65.14
35.80	2.00	CO	B0X													
37.80	5.70	CO	B0X	6.5	1.5	10.9	6.3	1.5	0.5	76	13	11	1.82	0.88		56.76
43.50	5.50	SS		7.0	2.3	21.7	9.7	1.8	0.5	46	36	18	0.46			14.34
49.00	9.20	SH		6.4	1.8	12.8	7.7	2.1	0.7	68	19	14	1.49	1.05		46.39
58.20	5.10	SL		7.1	2.6	22.1	12.3	2.6	0.6	48	31	21	0.96			30.10
63.30	4.30	CO	R1X													
67.60	9.30	SH		6.5	2.2	16.0	11.7	2.4	0.7	31	38	31	0.74	0.63		23.00
76.90	9.80	SL		7.3	1.3	6.7	6.4	1.9	0.7	53	25	23	0.08			2.39
86.70	10.00	SS		7.3	1.3	6.5	8.2	1.8	0.6	61	20	19	0.07			2.21
96.70	9.90	SS		7.8	1.4	5.7	10.9	1.7	0.6	71	18	11	0.04			1.13
106.60	6.00	SH		5.6	2.5	13.6	16.5	3.4	0.9	59	24	18	1.22	0.87		38.14
112.60	6.20	CO	MXX													
118.80	4.40	SS		7.2	1.4	6.7	6.8	2.6	1.0	49	29	23	0.14			4.41
123.20	9.60	SH		6.6	2.4	14.8	12.4	4.3	1.2	34	38	29	1.62	1.65		50.70
132.80	7.00	SS		6.8	4.2	7.6	3.9	35.1	14.6	28	43	30	1.94	1.69		60.73
139.80	9.20	SS		7.1	3.4	25.9	19.7	4.4	0.9	80	11	9	0.70			21.93
149.00	6.10	SL		7.3	3.1	6.3	3.7	23.7	10.6	55	29	16	0.43			13.36
155.10	1.00	SH		7.4	2.4	1.4	0.6	22.0	21.9	84	8	9	1.58	1.16		49.23
156.10	3.00	CO	Y0X													
159.10	4.20	SL		8.7	2.2	0.8	0.4	23.3	30.4	51	26	23	0.22			6.78
163.30	2.10	SH		7.8	2.0	0.3	0.1	20.1	46.1	58	26	16	1.11	0.72		34.61
165.40	4.60	SS		7.8	3.9	1.7	1.0	39.9	34.1	59	26	15	0.56	0.47		17.38
170.00	1.00	SH		5.6	8.5	9.6	5.6	82.2	29.8	68	19	14	3.62	2.98		113.00
171.00	3.70	CO	Y1X													
174.70	3.50	SS		8.4	2.9	0.5	0.3	31.4	49.1	61	23	16	0.12			3.69
178.20	3.00	SH		8.2	4.8	0.8	0.4	50.9	67.4	24	48	29	1.59	1.21		49.77
181.20	7.50	SS		8.5	2.7	0.5	0.4	30.8	47.9	61	23	16	0.05			1.60
188.70	4.20	SH		7.6	6.2	1.8	1.2	70.0	58.1	34	39	28	2.35	2.48		73.29
192.90	6.20	CO	NXX													
199.10	6.90	SS		7.2	3.9	0.8	0.4	40.4	52.2	49	33	19	0.54	0.40		16.73
206.00	0.90	SH		7.1	4.4	0.8	0.5	40.6	50.4	29	49	23	1.55	0.99		48.55
206.90	3.10	CO	N2X													
210.00	6.00	SS		8.6	2.1	0.6	0.3	19.9	30.7	63	24	14	0.07			2.18
216.00	4.00	SH		8.7	2.2	0.2	0.1	22.3	51.6	35	35	30	1.08			33.71
220.00	2.00	SL		9.4	1.0	0.1	0.1	11.3	40.0	19	43	39	0.08			2.64
222.00	3.60	CO	E0X													
225.60	4.20	SS		8.4	1.6	0.1	0.1	16.8	52.4	50	30	20	0.36			11.12
229.80	2.60	CO	E1A													
232.40	3.80	SL		8.6	1.4	0.2	0.1	14.3	41.3	55	28	18	0.41	0.41		12.77
236.20	8.70	SS		8.6	1.8	0.8	0.4	18.0	22.9	56	28	16	0.07			2.28
244.90	5.10	SS		7.7	1.4	4.5	4.3	6.6	3.1	76	15	9	0.03			0.78

CORE NO: 30357EO

Mine Area: N09, Peabody Coordinates: 22964.71E, 11496.07N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	11.50	SS		105.11	104.70	<0.02		0.52	0.58
11.50	8.50	SS		4.29	4.09	<0.02		<0.15	<0.50
20.00	6.20	SH		8.70	7.40	0.06		0.57	0.97
26.20	1.20	CO		1.35	-48.32	<0.02		1.35	4.70
27.40	6.30	SH		18.01	9.95	0.07		0.65	1.16
33.70	2.10	SH		7.72	-57.42	0.08		1.48	1.85
35.80	2.00	CO	B0X						
37.80	5.70	CO	B0X	7.72	-49.04	0.06		2.03	1.91
43.50	5.50	SS		19.85	5.51	0.06		0.28	<0.50
49.00	9.20	SH		3.80	-42.59	0.06		0.98	2.20
58.20	5.10	SL		41.90	11.80	0.08		0.77	0.98
63.30	4.30	CO	R1X						
67.60	9.30	SH		8.70	-14.30	0.09		1.08	2.43
76.90	9.80	SL		195.40	193.01	0.05		1.05	1.58
86.70	10.00	SS		180.70	178.49	0.04		0.70	0.94
96.70	9.90	SS		86.98	85.85	0.05		0.43	0.52
106.60	6.00	SH		2.33	-35.81	0.09		1.08	2.76
112.60	6.20	CO	MXX						
118.80	4.40	SS		19.97	15.56	0.11		1.15	1.79
123.20	9.60	SH		6.74	-43.96	0.11		1.15	1.70
132.80	7.00	SS		4.78	-55.95	0.09		0.98	3.76
139.80	9.20	SS		99.36	77.43	<0.02		0.25	<0.50
149.00	6.10	SL		20.95	7.59	0.06		0.47	2.25
155.10	1.00	SH		5.27	-43.96	<0.02		2.70	6.74
156.10	3.00	CO	Y0X						
159.10	4.20	SL		16.05	9.27	0.14		0.65	2.89
163.30	2.10	SH		5.27	-29.34	0.14		2.25	3.39
165.40	4.60	SS		10.66	-6.72	0.08		0.47	1.24
170.00	1.00	SH		1.84	-111.16	0.06		1.65	2.94
171.00	3.70	CO	Y1X						
174.70	3.50	SS		14.58	10.89	0.06		0.45	1.11
178.20	3.00	SH		4.29	-45.48	0.09		0.73	1.61
181.20	7.50	SS		24.38	22.78	0.04		0.28	0.56
188.70	4.20	SH		12.62	-60.67	0.09		1.40	1.33
192.90	6.20	CO	NXX						
199.10	6.90	SS		7.23	-9.50	0.13		0.73	0.84
206.00	0.90	SH		3.31	-45.24	0.24		1.52	1.04
206.90	3.10	CO	N2X						
210.00	6.00	SS		40.92	38.74	0.06		0.28	1.02
216.00	4.00	SH		37.12	3.41	0.11		0.93	2.45
220.00	2.00	SL		8.70	6.06	0.16		0.60	3.12
222.00	3.60	CO	E0X						
225.60	4.20	SS		12.13	1.01	0.08		0.40	1.96
229.80	2.60	CO	E1A						
232.40	3.80	SL		2.33	-10.44	0.14		0.47	3.06
236.20	8.70	SS		6.25	3.97	0.07		1.42	1.51
244.90	5.10	SS		1.35	0.57	0.02		<0.15	0.64

Revised 02/24/12

HOLE NUMBER: 30358EO*
MINE AREA: N9
DATE: 7/24/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-6.3	6.3	SH	GRBR	LC: 0.0-1.2, SANDY
2#	6.3-16.3	10.0	SS	YBR	
3	16.3-26.3	10.0	SS	YBR, DGRBR	SHALE CONCRETIONS
4	26.3-34.2	7.9	SS	YBR, DGRBR	LC: 30.0-31.1, SHALE CONCRETIONS
5	34.2-44.0	9.8	SH, SL	DGR, VDGR	
6	44.0-54.0	10.0	SL	GR, DGR	SHALEY
7	54.0-63.6	9.6	SL, SS	GR, DGR	SHALEY
8	63.6-72.4	8.8	SS	GR, DGR	SHALEY
9	72.4-76.0	3.6	SH, CO	VDGR, BLK	SANDY
**	76.0-79.4	3.4	CO (MOX)	BLK	LC: 76.9-78.0
10+	79.4-81.8	2.4	SL	DGR	
**	81.8-84.1	2.3	CO (M1X)	BLK	
11+	84.1-87.1	3.0	SS	GR, DGR	SHALEY
12#	87.1-90.8	3.7	SH, CO	VDGR, BLK	LC: 90.0-90.2
13	90.8-94.5	3.7	SS	GR	
14	94.5-100.0	5.5	SH	DGR	SILTY
15	100.0-103.8	3.8	SH, CO	VDGR, BLK	
16	103.8-107.3	3.5	SL	GR, DGR	SANDY
17	107.3-109.6	2.3	SH	VDGR	
**	109.6-114.5	4.9	CO (YOX)	BLK	
18+	114.5-119.3	4.8	SS	GR	SILTY
19	119.3-122.0	2.7	SH, CO	VDGR, BLK	LC: 120.0-121.0
20	122.0-126.0	4.0	SS	DGR	
21	126.0-132.2	6.2	SH, CO	VDGR, BLK	SILTY
22#	132.2-136.0	3.8	SS	GR	
23	136.0-140.0	4.0	SH	DGR, VDGR	SANDY
24	140.0-148.0	8.0	SS	GR	LC: 140.0-140.7
25	148.0-152.0	4.0	SH, CO	VDGR, BLK	LC: 150.0-150.3
** +	152.0-158.1	6.1	CO (NXX)	BLK	
26+	158.1-160.0	1.9	SH, CO	VDGR, BLK	
27	160.0-161.8	1.8	SS	GR	SILTY
**	161.8-165.2	3.4	CO (N2X)	BLK	LC: 161.8-163.4, 164.0-165.2
28+	165.2-166.7	1.5	SH	VDGR	
29	166.7-173.3	6.6	SS	LGR	
30	173.3-177.4	4.1	SL	DGR	SANDY
31	177.4-179.1	1.7	SH	VDGR	
**	179.1-183.7	4.6	CO (EOX)	BLK	LC: 181.1-182.7
32# +	183.7-188.8	5.1	SH	VDGR	LC: 185.5-186.3, SILTY
**	188.8-191.1	2.3	CO (E1A)	BLK	LC: 190.0-191.1

HOLE NUMBER: 30358EO*
MINE AREA: N9
DATE: 7/24/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
33	191.1-194.0	2.9	SL	DGR	LC: 191.1-191.4
34	194.0-197.6	3.6	SH, CO	VDGR, BLK	
35	197.6-200.0	2.4	SL	GR	

* Core boxes 1 through 20, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to Energy Lab.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 79.4-79.7, 84.1-84.4, 114.5-114.8, 156.15-156.25, 158.1-158.4, 165.2-165.5, & 183.7-184.0.

CORE NO: 30358EO

Mine Area: N09, Peabody Coordinates: 24657.14E, 8684.30N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	6.30	SH		8.2	1.0	1.7	2.9	5.1	3.4	49	31	20	0.01			0.40
6.30	10.00	SS		8.2	0.4	1.5	1.1	1.3	1.2	74	16	10	0.01			0.23
16.30	10.00	SS		8.1	0.6	2.2	2.0	1.5	1.0	60	24	16	0.01			0.29
26.30	7.90	SS		8.0	1.0	3.8	5.5	1.9	0.9	71	18	11	0.01			0.33
34.20	9.80	SH		7.5	1.4	5.4	8.7	2.3	0.9	25	41	34	0.13			4.21
44.00	10.00	SL		7.4	1.3	4.0	7.3	2.2	0.9	35	33	33	0.08			2.44
54.00	9.60	SL		7.5	1.6	6.3	8.4	3.0	1.1	45	28	28	0.06			1.81
63.60	8.80	SS		7.5	1.5	7.0	6.9	3.6	1.4	50	24	26	0.14			4.43
72.40	3.60	SH		7.0	1.8	7.4	6.6	6.0	2.3	38	35	28	1.11	0.77		34.68
76.00	3.40	CO	M0X													
79.40	2.40	SL		7.9	2.3	0.6	0.4	17.6	25.5	36	40	24	0.54	0.42		16.83
81.80	2.30	CO	M1X													
84.10	3.00	SS		8.4	2.2	0.3	0.2	18.8	39.1	38	36	26	0.20			6.22
87.10	3.70	SH		7.8	2.5	0.5	0.3	23.6	36.8	40	35	25	1.51	1.12		47.11
90.80	3.70	SS		8.6	1.9	0.4	0.2	18.3	34.0	55	30	15	0.07			2.16
94.50	5.50	SH		8.1	3.6	0.8	0.5	35.8	44.6	29	43	29	1.44	0.89		45.05
100.00	3.80	SH		8.0	2.7	0.2	0.2	25.9	56.3	25	41	34	2.21	1.71		69.01
103.80	3.50	SL		8.8	1.5	0.2	0.1	15.0	38.5	31	39	30	0.32			9.88
107.30	2.30	SH		7.6	5.0	1.9	1.1	49.6	41.0	11	56	33	3.34	2.87		104.25
109.60	4.90	CO	Y0X													
114.50	4.80	SS		8.7	2.2	0.2	0.1	21.1	47.9	54	26	20	0.23			7.19
119.30	2.70	SH		8.6	1.1	0.1	0.1	10.4	30.3	25	43	33	0.77	0.53		23.92
122.00	4.00	SS		7.4	3.4	2.0	1.3	32.7	25.4	60	26	14	0.84	0.62		26.28
126.00	6.20	SH		7.1	3.2	0.6	0.3	30.5	44.3	76	16	8	1.99	1.49		62.14
132.20	3.80	SS		8.2	2.1	0.5	0.2	19.9	32.3	56	28	16	0.31			9.61
136.00	4.00	SH		7.1	4.1	1.0	0.6	40.1	44.8	35	40	25	2.26	2.30		70.54
140.00	8.00	SS		8.5	2.3	0.3	0.2	20.1	42.0	56	26	18	0.28			8.77
148.00	4.00	SH		7.5	3.3	0.5	0.4	32.0	47.1	41	35	24	2.77	2.34		86.60
152.00	6.10	CO	NXX													
158.10	1.90	SH		7.9	1.3	0.3	0.2	11.9	23.5	75	14	11	0.62	0.33		19.51
160.00	1.80	SS		7.4	3.6	2.5	0.8	35.0	27.0	51	36	13	0.32	0.14		9.93
161.80	3.40	CO	N2X													
165.20	1.50	SH		8.7	1.0	0.1	0.1	9.3	26.6	16	45	39	0.23	0.07		7.24
166.70	6.60	SS		9.0	1.3	0.3	0.1	12.4	28.4	79	13	9	0.06			1.73
173.30	4.10	SL		8.5	2.6	0.4	0.2	24.9	45.1	49	30	21	0.81			25.35
177.40	1.70	SH		8.6	1.6	0.2	0.1	15.4	40.2	25	43	33	1.29	0.88		40.39
179.10	4.60	CO	E0X													
183.70	5.10	SH		9.4	1.3	0.1	0.1	12.5	40.3	18	45	38	0.34			10.73
188.80	2.30	CO	E1A													
191.10	2.90	SL		8.4	1.5	0.5	0.2	14.0	22.7	45	34	21	0.59	0.50		18.33
194.00	3.60	SH		8.8	1.1	0.1	0.1	10.6	34.4	48	26	26	0.34	0.09		10.49
197.60	2.40	SL		9.2	1.1	0.1	0.1	11.1	36.1	15	58	28	0.14			4.27

CORE NO: 30358EO

Mine Area: N09, Peabody Coordinates: 24657.14E, 8684.30N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	6.30	SH		52.80	52.40	<0.02		0.55	0.69
6.30	10.00	SS		149.09	148.86	<0.02		0.17	<0.50
16.30	10.00	SS		132.43	132.14	0.03		0.80	<0.50
26.30	7.90	SS		195.52	195.19	0.06		0.38	<0.50
34.20	9.80	SH		139.78	135.57	0.08		1.05	1.56
44.00	10.00	SL		153.99	151.55	0.04		1.05	1.46
54.00	9.60	SL		241.95	240.14	0.04		0.85	1.44
63.60	8.80	SS		64.93	60.50	0.03		0.60	1.31
72.40	3.60	SH		5.27	-29.41	0.11		1.17	2.06
76.00	3.40	CO	M0X						
79.40	2.40	SL		4.29	-12.54	0.08		0.75	1.66
81.80	2.30	CO	M1X						
84.10	3.00	SS		43.98	37.76	0.16		0.80	1.09
87.10	3.70	SH		23.89	-23.22	0.12		1.00	2.40
90.80	3.70	SS		48.27	46.11	0.05		0.35	0.61
94.50	5.50	SH		31.24	-13.81	0.09		0.80	1.01
100.00	3.80	SH		10.17	-58.84	0.09		1.17	1.65
103.80	3.50	SL		23.89	14.01	0.10		0.63	1.53
107.30	2.30	SH		8.70	-95.55	0.10		1.00	1.48
109.60	4.90	CO	Y0X						
114.50	4.80	SS		25.36	18.17	0.12		0.45	0.72
119.30	2.70	SH		6.25	-17.67	0.16		1.20	1.63
122.00	4.00	SS		19.48	-6.80	0.08		0.35	0.95
126.00	6.20	SH		5.76	-56.38	0.06		1.45	1.84
132.20	3.80	SS		28.18	18.57	0.05		0.32	0.51
136.00	4.00	SH		5.27	-65.27	0.08		0.73	0.97
140.00	8.00	SS		28.30	19.53	0.05		0.25	<0.50
148.00	4.00	SH		10.66	-75.94	0.07		1.30	1.35
152.00	6.10	CO	NXX						
158.10	1.90	SH		6.74	-12.77	0.11		1.50	1.29
160.00	1.80	SS		4.29	-5.64	0.22		0.95	<0.50
161.80	3.40	CO	N2X						
165.20	1.50	SH		3.31	-3.94	0.27		1.50	4.34
166.70	6.60	SS		51.21	49.48	0.04		0.20	<0.50
173.30	4.10	SL		41.53	16.18	0.07		0.43	0.66
177.40	1.70	SH		16.54	-23.85	0.16		1.17	0.93
179.10	4.60	CO	E0X						
183.70	5.10	SH		12.13	1.40	0.20		0.70	1.53
188.80	2.30	CO	E1A						
191.10	2.90	SL		6.25	-12.08	0.19		0.75	1.83
194.00	3.60	SH		5.76	-4.73	0.11		1.45	3.53
197.60	2.40	SL		4.29	0.02	0.08		0.47	3.02

Revised 02/24/12

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HOLE NUMBER: 30354EO*
MINE AREA: N10
DATE: 7/14-15/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-10.0	10.0	SS	LGR, RBR	LC: 0.0-6.0 SILTY
2	10.0-20.0	10.0	SL	GRBR	LC: 10.0-12.0 SANDY
3	20.0-23.5	3.5	SL	GRBR	SANDY
4	23.5-29.7	6.2	SH	VDGR	
**	29.7-32.4	2.7	CO (GXX)	BLK	
5+	32.4-38.2	5.8	SS	GR	
6	38.2-47.7	9.5	SL	GR	LC: 40.2-42.0 SANDY
7#	47.7-50.0	2.3	SH	DGR	
8	50.0-55.6	5.6	SH, CO	VDGR, BLK	
9	55.6-65.3	9.7	SL	DGR	LC: 60.0-60.9 SANDY
10	65.3-69.4	4.1	SH, CO	VDGR, BLK	
**	69.4-74.9	5.5	CO (RXX)	BLK	
11+	74.9-80.0	5.1	SL	GR	
12	80.0-81.4	1.4	SH, CO	VDGR, BLK	LC: 80.0-80.2
**	81.4-84.5	3.1	CO (MXX)	BLK	
13+	84.5-88.1	3.6	SS	GR	
14	88.1-92.5	4.4	SH, CO	BDGR, BLK	LC: 90.0-90.8
15	92.5-96.5	4.0	SS	GR	SILTY
16	96.5-98.8	2.3	SH, CO	VDGR, BLK	
17#	98.8-105.7	6.9	SS	GR	SHALEY
18	105.7-109.0	3.3	SH	VDGR	
19	109.0-119.0	10.0	SL	DGR	SANDY
20	119.0-121.8	2.8	SL, SS	GR, DGR	
**	121.8-126.9	5.1	CO (YOA, YOB)	BLK	SH: 123.7-124.2
21	126.9-135.0	8.1	SH, SL	VDGR, BLK	LC: 130.0-131.2 SANDY
22	135.0-145.0	10.0	SS	GR	LC: 138.3-139.0
23	145.0-155.2	10.2	SS	GR	
**	155.2-157.9	2.7	CO (Y1B)	BLK	
24+	157.9-161.4	3.5	SH	VDGR	
25	161.4-171.1	9.7	SS, SL	GR	
26	171.1-181.0	9.9	SS	GR	
27#	181.0-189.6	8.6	SL	GR	SHALEY
28	189.6-192.6	3.0	SH	VDGR	
** +	192.6-204.2	11.6	CO (NXX)	BLK	
29+	204.2-206.0	1.8	SH	VDGR, BLK	
30	206.0-216.0	10.0	SL	GR	LC: 210.0-210.5
31	216.0-226.0	10.0	SS	GR	
32	226.0-236.0	10.0	SS	GR	
33	236.0-241.0	5.0	SS	GR	LC: 240.5-241.5
34	241.0-244.0	3.0	SH, CO	VDGR, BLK	

HOLE NUMBER: 30354EO*
MINE AREA: N10
DATE: 7/14-15/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
**	244.0-248.3	4.3	CO (EOX)	BLK	
35+	248.3-253.0	4.7	SH	VDGR	
**	253.0-255.5	2.5	CO (E1A)	BLK	
36+	255.5-259.8	4.3	SH	DGR	
**	259.8-265.9	6.1	CO (E1X)	BLK	LC: 260.0-260.8
37#+	265.9-269.3	3.4	SH, SL	VDGR, BLK	
**	269.3-270.0	0.7	CO (E2X)	BLK	

* Core boxes 1 through 27, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to GAL.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 32.4-32.7, 74.9-80.2, 84.5-84.8, 157.9-158.2, 196.45-196.50, 196.75-196.80, 202.0-202.3, 203.4-203.6, 203.8-204.0, 204.2-204.5, 248.3-248.6, 255.5-255.8, & 265.9-266.2.

CORE NO: 30354EO

Mine Area: N10, Peabody Coordinates: 34287.15E, 8595.89N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	10.00	SS		8.0	2.6	4.2	14.0	11.0	3.7	40	37	23	<0.01			0.01
10.00	10.00	SL		5.0	7.7	25.0	117.0	6.5	0.8	41	44	15	0.30	0.04	0.06	1.38
20.00	3.50	SL		3.4	5.9	25.0	48.0	5.3	0.9	45	40	15	0.60	0.30	0.08	8.14
23.50	6.20	SH		6.6	4.1	21.0	26.0	11.0	2.4	27	42	31	0.70			20.30
29.70	2.70	CO	GXX													
32.40	5.80	SS		7.2	1.7	3.3	2.3	13.0	7.9	53	32	15	0.09			2.92
38.20	9.50	SL		7.4	2.8	3.4	2.2	22.0	13.1	42	37	21	0.30			8.25
47.70	2.30	SH		7.0	4.1	6.0	3.6	31.0	14.2	31	42	27	1.40	1.10	0.30	35.50
50.00	5.60	SH		6.5	5.7	10.0	5.9	46.0	16.0	46	33	21	2.40	1.70	0.60	52.70
55.60	9.70	SL		7.1	5.4	9.1	4.1	45.0	17.6	35	38	27	1.30			41.20
65.30	4.10	SH		7.4	1.7	0.5	0.3	17.0	26.5	32	41	27	0.40			13.10
69.40	5.50	CO	RXX													
74.90	5.10	SL		7.1	4.6	4.3	1.8	40.0	23.0	48	35	17	0.80			25.90
80.00	1.40	SH		6.8	7.6	14.0	4.0	66.0	22.1	57	25	18	3.40			68.80
81.40	3.10	CO	MXX													
84.50	3.60	SS		7.7	3.0	0.5	0.3	26.0	41.0	44	39	17	0.20			6.25
88.10	4.40	SH		7.0	3.4	1.6	0.8	38.0	34.5	32	43	25	1.60	1.20	0.30	37.80
92.50	4.00	SS		8.0	2.3	0.7	0.4	25.0	33.5	51	32	17	0.20			4.69
96.50	2.30	SH		7.1	3.0	1.0	0.4	32.0	38.6	33	44	23	2.40	1.90	0.50	59.50
98.80	6.90	SS		7.0	4.4	4.2	1.9	48.0	27.4	37	44	19	1.00			30.50
105.70	3.30	SH		7.2	5.5	4.6	1.6	60.0	34.0	21	48	31	1.50	1.00	0.20	31.60
109.00	10.00	SL		8.2	1.8	0.2	0.1	18.0	45.3	33	38	29	0.10			4.19
119.00	2.80	SL		8.3	1.8	0.3	0.3	18.0	32.0	42	31	27	0.10			2.99
121.80	5.10	CO	YOA													
126.90	8.10	SH		6.8	1.9	11.0	8.6	3.2	1.0	42	35	23	0.60			19.90
135.00	10.00	SS		6.9	2.8	19.0	18.0	1.6	0.4	86	8	6	0.30			9.53
145.00	10.20	SS		7.0	3.5	16.0	9.3	20.0	5.6	60	27	13	0.50			15.00
155.20	2.70	CO	Y1B													
157.90	3.50	SH		6.4	3.7	17.0	9.7	18.0	5.0	38	35	27	2.90	2.40	0.50	75.30
161.40	9.70	SS		8.3	2.0	0.2	0.1	9.2	22.0	30	48	22	0.07			2.16
171.10	9.90	SS		8.2	1.7	0.8	0.5	14.0	17.1	60	28	12	<0.01			0.21
181.00	8.60	SL		7.9	3.2	1.5	0.6	37.0	35.7	28	43	29	1.40			43.10
189.60	3.00	SH		7.5	3.0	1.8	0.6	31.0	28.5	20	50	30	2.90	2.40	0.40	74.80
192.60	11.60	CO	NXX													
204.20	1.80	SH		8.1	1.7	0.2	0.2	16.0	34.5	12	57	31	0.40	0.30	0.10	9.75
206.00	10.00	SL		8.4	0.8	0.1	0.1	7.4	25.3	31	47	22	0.04			1.37
216.00	10.00	SS		8.4	1.3	0.2	0.1	8.9	23.3	61	25	14	0.02			0.69
226.00	10.00	SS		7.9	1.3	1.0	0.7	11.0	12.3	70	20	10	0.04			1.38
236.00	5.00	SS		7.2	2.2	6.8	4.2	12.0	5.1	73	18	9	0.20			5.50
241.00	3.00	SH		8.5	1.4	0.1	0.1	9.0	25.0	23	41	36	0.20			5.09
244.00	4.30	CO	EOX													
248.30	4.70	SH		8.4	1.5	0.2	0.2	17.0	36.9	26	23	51	0.40			12.20
253.00	2.50	CO	E1A													
255.50	4.30	SH		8.4	1.6	0.3	0.2	16.0	33.6	23	72	5	0.60			20.10
259.80	6.10	CO	E1X													
265.90	3.40	SH		8.7	1.0	0.1	0.1	8.8	25.3	9	54	<37	0.08			2.36
269.30	0.70	CO	E2X													

CORE NO: 30354EO

Mine Area: N10, Peabody Coordinates: 34287.15E, 8595.89N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	10.00	SS		14.20	14.20	<0.05	<0.05	0.20	0.55
10.00	10.00	SL		4.51	3.14	<0.05	<0.05	0.40	0.46
20.00	3.50	SL		1.50	-6.64	<0.05	<0.05	0.40	0.41
23.50	6.20	SH		22.60	2.27	0.06	0.07	1.20	0.81
29.70	2.70	CO	GXX						
32.40	5.80	SS		12.40	9.53	<0.05	0.06	0.30	0.65
38.20	9.50	SL		75.50	67.20	<0.05	0.06	0.40	0.64
47.70	2.30	SH		15.80	-19.70	0.05	0.09	1.00	1.22
50.00	5.60	SH		17.80	-34.90	<0.05	0.08	1.50	1.58
55.60	9.70	SL		108.00	66.80	<0.05	0.06	0.70	0.70
65.30	4.10	SH		67.00	53.90	<0.05	0.08	1.00	0.95
69.40	5.50	CO	RXX						
74.90	5.10	SL		37.50	11.60	<0.05	0.06	0.40	0.65
80.00	1.40	SH		52.80	-16.10	<0.05	0.05	1.90	1.32
81.40	3.10	CO	MXX						
84.50	3.60	SS		43.60	37.40	<0.05	0.08	0.30	0.64
88.10	4.40	SH		12.60	-25.20	0.07	0.13	1.20	1.69
92.50	4.00	SS		129.00	124.00	<0.05	0.13	0.80	0.61
96.50	2.30	SH		13.00	-46.50	0.05	0.11	1.10	1.76
98.80	6.90	SS		37.90	7.35	<0.05	0.09	0.60	0.88
105.70	3.30	SH		38.10	6.44	<0.05	0.07	0.60	1.42
109.00	10.00	SL		132.00	128.00	<0.05	0.08	0.50	1.05
119.00	2.80	SL		93.80	90.80	<0.05	0.10	0.40	0.89
121.80	5.10	CO	Y0A						
126.90	8.10	SH		25.90	6.01	0.06	0.12	0.70	0.64
135.00	10.00	SS		36.80	27.30	<0.05	<0.05	0.20	0.32
145.00	10.20	SS		37.50	22.40	<0.05	0.07	0.30	0.50
155.20	2.70	CO	Y1B						
157.90	3.50	SH		11.10	-64.20	<0.05	0.06	0.90	0.91
161.40	9.70	SS		19.10	17.00	<0.05	0.07	0.30	0.79
171.10	9.90	SS		129.00	129.00	<0.05	<0.05	<0.10	0.53
181.00	8.60	SL		53.90	10.80	<0.05	0.06	0.40	1.14
189.60	3.00	SH		28.20	-46.50	<0.05	<0.05	0.60	2.11
192.60	11.60	CO	NXX						
204.20	1.80	SH		9.73	-0.02	0.06	0.10	0.30	1.51
206.00	10.00	SL		31.20	29.80	<0.05	<0.05	0.10	0.81
216.00	10.00	SS		32.20	31.50	<0.05	<0.05	<0.10	0.46
226.00	10.00	SS		22.70	21.40	<0.05	<0.05	<0.10	0.37
236.00	5.00	SS		19.30	13.80	<0.05	<0.05	<0.10	0.39
241.00	3.00	SH		18.60	13.50	0.07	0.10	0.60	1.34
244.00	4.30	CO	E0X						
248.30	4.70	SH		33.50	21.30	0.06	0.09	0.40	0.95
253.00	2.50	CO	E1A						
255.50	4.30	SH		25.20	5.14	0.10	0.17	0.40	0.61
259.80	6.10	CO	E1X						
265.90	3.40	SH		14.50	12.10	0.06	0.10	0.70	0.55
269.30	0.70	CO	E2X						

Revised 02/24/12

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HOLE NUMBER: 30351EO*
MINE AREA: N99
DATE: 7/8-10/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-15.0	15.0	SS	YBR	LC: 0.0-6.3, 10.0-12.0
2	15.0-20.0	5.0	CS	BRGR	
3	20.0-30.0	10.0	SH	GR	LC: 20.0-24.0
4	30.0-40.0	10.0	SS	BRGR	LC: 30.0-33.5
5#	40.0-53.0	13.0	SS	BRGR	LC: 40.0-43.4, 50.0-52.0
6	53.0-63.0	10.0	SS	BRGR	LC: 55.0-57.0, 62.0-63.0
7	63.0-68.1	5.1	SH	BLK	
8	68.1-75.0	6.9	SL, SS	GR	
9	75.0-79.2	4.2	MS	VDGR	LC: 75.0-76.0
10	79.2-82.0	2.8	CO	BLK	WEATHERED
11	82.0-89.1	7.1	MS, CO	VDGR/BLK	
12	89.1-98.3	9.2	SS	GR	
13	98.3-108.0	9.7	SS	GR	SHALEY
14	108.0-117.6	9.6	SS	GR	
15#	117.6-127.5	9.9	SH, MS, CO	DGR-BLK	
**	127.5-130.2	2.7	CO (MXX)	BLK	
16+	130.2-137.9	7.7	SH	DGR/GR	LC: 131.6-136.0
17	137.9-142.2	4.3	SS	GR	
18	142.2-144.9	2.7	SH, CO	DGR, BLK	
19	144.9-150.0	5.1	SS	GR	
20	150.0-154.8	4.8	SH	DGR, VDGR	
21	154.8-156.5	1.7	CO	BLK	
22	156.5-161.8	5.3	MS, SH	GR, DGR	
23	161.8-171.6	9.8	MS, SNDY	GR	LC: 170.0-170.9
24	171.6-181.6	10.0	SH, SL	GR	
25#	181.6-184.7	3.1	SS	GR	
26	184.7-187.4	2.7	SH, CO, SS	VDGR, BLK	
27	187.4-192.5	5.1	MS	DGR	
28	192.5-194.3	1.8	CO	BLK	
29	194.3-198.4	4.1	MS	DGR	
30	198.4-204.0	5.6	SS	GR	
31	204.0-209.5	5.5	SH	VDGR	
**	209.5-213.0	3.5	CO (Y1A)	BLK	LC: 210.0-210.9
32+	213.0-220.0	7.0	SL, SH	DGR	
33	220.0-226.8	6.8	SH, MS	VDGR, DGR	
**	226.8-232.0	5.2	CO (N0X)	BLK	
34+	232.0-233.5	1.5	SH	VDGR-BLK	
**	233.5-236.5	3.0	CO (N1X)	BLK	
35#+	236.5-243.0	6.5	SH	VDGR	
36	243.0-249.8	6.8	SL	DGR	
37	249.8-255.7	5.9	SS	GR	

HOLE NUMBER: 30351EO*
MINE AREA: N99
DATE: 7/8-10/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
38	255.7-263.6	7.9	SH, SL, SS	DGR	
39	263.6-272.9	9.3	SL, SS, SH	DGR	LC: 270.0-271.1
**	272.9-277.7	4.8	CO (E0X)	BLK	
40+	277.7-280.6	2.9	SH	DGR	
**	280.6-289.1	8.5	CO (E1X)	BLK	
41+	289.1-295.7	6.6	SH	VDGR	LC: 290.0-291.4
42	295.7-297.7	2.0	CO (E2X), SH	BLK	NONMINEABLE
43	297.7-300.0	2.3	SS	GR	

* Core boxes 1 through 30, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to GAL.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 130.2-130.5, 213.0-213.3, 232.0-232.3, 236.5-236.8, 277.7-278.0, & 289.1-289.4.

CORE NO: 30351EO

Mine Area: N99, Peabody Coordinates: 38440.07E, -7976.75N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	15.00	SS		7.9	1.4	1.9	1.3	9.3	7.4	68	14	18	<0.01			0.25
15.00	5.00	CS		7.5	1.1	3.5	3.0	3.8	2.1	1	43	56	0.03			1.00
20.00	10.00	SH		7.4	0.6	1.4	1.3	2.5	2.1	1	53	46	<0.01			0.28
30.00	10.00	SS		7.7	1.9	1.2	1.1	2.0	1.8	37	35	28	<0.01			0.04
40.00	13.00	SS		7.7	1.9	1.6	1.2	1.5	1.3	62	20	18	<0.01			0.08
53.00	10.00	SS		7.4	0.6	2.3	1.1	1.6	1.2	62	20	18	0.03			0.98
63.00	5.10	SH		7.0	1.1	5.4	2.2	2.4	1.2	6	34	60	0.02			0.55
68.10	6.90	SL		6.7	1.5	9.6	3.1	2.4	0.9	39	37	24	0.07			2.04
75.00	4.20	MS		5.2	2.0	14.0	4.6	2.4	0.8	37	35	28	0.20			4.91
79.20	2.80	CO		4.0	3.5	31.0	13.0	3.1	0.6	72	20	8	0.70	<0.01	0.60	0.09
82.00	7.10	MS		3.7	4.3	31.0	23.0	3.9	0.8	31	37	32	0.60	0.02	0.40	0.56
89.10	9.20	SS		6.7	1.5	9.3	4.5	2.3	0.9	59	17	24	0.06			1.94
98.30	9.70	SS		7.0	1.0	5.4	3.3	2.3	1.1	56	22	22	0.30			9.31
108.00	9.60	SS		6.9	1.5	9.3	5.8	2.4	0.9	68	16	16	0.07			2.30
117.60	9.90	SH		6.2	4.2	21.0	18.0	15.0	3.4	29	42	29	1.40	1.00	0.30	32.20
127.50	2.70	CO	MXX													
130.20	7.70	SH		7.2	3.4	1.2	0.7	40.0	41.8	19	49	32	0.90			27.20
137.90	4.30	SS		8.0	3.2	0.8	0.5	33.0	40.4	48	28	24	0.07			2.30
142.20	2.70	SH		7.5	4.3	0.8	0.5	41.0	51.1	35	35	30	1.10			34.40
144.90	5.10	SS		8.2	2.2	0.3	0.1	21.0	46.2	41	31	28	0.10			3.19
150.00	4.80	SH		7.2	5.7	2.6	1.2	60.0	44.0	5	57	38	2.20	1.70	0.30	53.10
154.80	1.70	CO		5.9	6.8	5.5	2.2	78.0	39.7	67	15	18	3.70	2.20	1.40	69.40
156.50	5.30	MS		7.2	3.4	0.9	0.4	34.0	41.2	16	48	36	1.20	0.90	0.20	28.60
161.80	9.80	MS		8.7	1.7	0.4	0.2	16.0	30.2	61	17	22	<0.01			0.14
171.60	10.00	SH		8.8	2.0	0.2	0.1	12.0	27.4	62	18	20	<0.01			0.12
181.60	3.10	SS		8.7	1.7	0.3	0.1	16.0	33.5	24	40	36	0.06			2.03
184.70	2.70	SH		7.4	2.5	0.4	0.2	23.0	45.8	45	25	30	1.30	0.80	0.60	23.70
187.40	5.10	MS		7.5	3.5	0.8	0.3	37.0	50.4	36	30	34	0.50			16.50
192.50	1.80	CO		7.2	0.7	0.2	0.1	6.7	18.2	83	7	10	0.70	0.06	0.60	1.84
194.30	4.10	MS		7.4	1.0	5.0	3.8	3.5	1.7	22	44	34	0.10			4.13
198.40	5.60	SS		6.7	3.7	31.0	28.0	4.1	0.8	73	11	16	0.70			21.80
204.00	5.50	SH		5.6	4.2	34.0	29.0	8.3	1.5	16	52	32	2.90	2.30	0.60	71.60
209.50	3.50	CO	Y1A													
213.00	7.00	SL		7.3	5.9	5.8	2.5	60.0	29.3	17	47	36	1.40	1.10	0.20	35.20
220.00	6.80	SH		7.4	5.1	4.1	1.6	55.0	32.7	27	39	34	1.30			39.70
226.80	5.20	CO	N0X													
232.00	1.50	SH		7.6	2.4	0.5	0.2	24.0	41.5	76	10	14	1.00	0.50	0.50	15.00
233.50	3.00	CO	N1X													
236.50	6.50	SH		8.4	1.7	0.2	0.1	18.0	46.5	12	48	40	0.20			7.78
243.00	6.80	SL		8.6	1.7	0.3	0.1	17.0	37.3	31	35	34	0.05			1.65
249.80	5.90	SS		8.6	1.8	0.3	0.1	19.0	39.3	42	28	30	<0.01			0.06
255.70	7.90	SH		8.5	1.9	0.3	0.2	20.0	43.0	33	33	34	0.06			1.91
263.60	9.30	SL		8.6	1.5	0.2	0.1	14.0	36.6	54	23	23	0.03			0.99
272.90	4.80	CO	E0X													
277.70	2.90	SH		9.0	1.0	0.2	0.1	11.0	34.1	2	54	44	0.05			1.61
280.60	8.50	CO	E1X													
289.10	6.60	SH		8.7	1.5	0.2	0.1	11.0	30.9	7	41	52	0.10			3.66
295.70	2.00	CO	E2X	8.0	1.4	0.3	0.1	13.0	27.2	60	12	28	0.40			13.20
297.70	2.30	SS		7.1	3.1	17.0	3.1	17.0	5.4	44	34	22	0.20			5.50

CORE NO: 30351EO

Mine Area: N99, Peabody Coordinates: 38440.07E, -7976.75N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	15.00	SS		8.45	8.21	<0.05	<0.05	<0.10	0.27
15.00	5.00	CS		10.60	9.62	<0.05	<0.05	0.10	0.25
20.00	10.00	SH		10.10	9.84	<0.05	<0.05	0.10	0.29
30.00	10.00	SS		12.30	12.30	<0.05	<0.05	<0.10	0.27
40.00	13.00	SS		10.30	10.20	<0.05	<0.05	<0.10	0.29
53.00	10.00	SS		9.31	8.34	<0.05	<0.05	0.50	0.32
63.00	5.10	SH		10.50	9.99	<0.05	<0.05	0.20	0.58
68.10	6.90	SL		7.47	5.43	<0.05	<0.05	0.20	0.33
75.00	4.20	MS		10.70	5.75	<0.05	<0.05	1.40	0.45
79.20	2.80	CO		3.76	3.66	<0.05	<0.05	14.60	2.00
82.00	7.10	MS		1.77	1.21	<0.05	<0.05	2.20	1.30
89.10	9.20	SS		30.60	28.60	<0.05	<0.05	0.20	0.45
98.30	9.70	SS		44.50	35.20	<0.05	<0.05	0.10	0.37
108.00	9.60	SS		14.10	11.80	<0.05	<0.05	0.20	0.34
117.60	9.90	SH		10.00	-22.10	<0.05	0.05	0.60	1.00
127.50	2.70	CO	MXX						
130.20	7.70	SH		42.80	15.70	<0.05	0.05	0.40	0.66
137.90	4.30	SS		124.00	122.00	<0.05	0.07	0.50	0.57
142.20	2.70	SH		50.40	16.10	<0.05	0.10	0.40	1.50
144.90	5.10	SS		52.90	49.70	<0.05	<0.05	0.20	0.67
150.00	4.80	SH		36.40	-16.70	<0.05	0.06	0.70	1.30
154.80	1.70	CO		11.80	-57.60	<0.05	<0.05	1.70	3.10
156.50	5.30	MS		17.60	-11.00	<0.05	0.06	0.40	1.30
161.80	9.80	MS		125.00	125.00	<0.05	<0.05	0.10	0.51
171.60	10.00	SH		125.00	125.00	<0.05	<0.05	0.10	0.47
181.60	3.10	SS		47.40	45.40	<0.05	<0.05	0.20	0.85
184.70	2.70	SH		10.30	-13.40	0.05	0.07	0.90	1.50
187.40	5.10	MS		21.10	4.58	0.07	0.08	0.60	0.98
192.50	1.80	CO		9.40	7.56	<0.05	<0.05	1.40	2.10
194.30	4.10	MS		46.10	42.00	<0.05	0.05	0.40	0.50
198.40	5.60	SS		65.00	43.20	<0.05	<0.05	0.10	0.40
204.00	5.50	SH		10.70	-60.90	<0.05	<0.05	0.80	1.10
209.50	3.50	CO	Y1A						
213.00	7.00	SL		41.00	5.86	<0.05	0.07	0.40	0.95
220.00	6.80	SH		47.40	7.76	<0.05	0.07	0.60	0.98
226.80	5.20	CO	N0X						
232.00	1.50	SH		18.80	3.85	0.07	0.14	2.60	1.00
233.50	3.00	CO	N1X						
236.50	6.50	SH		18.90	11.10	0.05	0.09	0.80	0.51
243.00	6.80	SL		51.40	49.80	<0.05	0.06	0.20	0.40
249.80	5.90	SS		77.80	77.80	<0.05	0.06	0.20	0.38
255.70	7.90	SH		44.70	42.80	<0.05	0.07	0.40	0.41
263.60	9.30	SL		51.70	50.70	<0.05	0.08	0.20	0.36
272.90	4.80	CO	E0X						
277.70	2.90	SH		10.10	8.48	0.15	0.22	0.60	0.41
280.60	8.50	CO	E1X						
289.10	6.60	SH		27.30	23.70	0.11	0.21	0.70	0.40
295.70	2.00	CO	E2X	44.50	31.30	0.07	0.12	1.20	0.70
297.70	2.30	SS		22.10	16.60	<0.05	0.09	0.20	0.40

Revised 02/24/12

HOLE NUMBER: 30352EO*
MINE AREA: N99
DATE: 7/11-12/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-10.0	10.0	SS, SHALEY	YBR	LC: 0.0-2.0
2#	10.0-14.0	4.0	SS	YBR	
3	14.0-20.0	6.0	SH	DGR, YBR	SANDY
4	20.0-26.1	6.1	SH, SANDY	DGR, YBR	LC: 20.0-22.0
5	26.1-34.5	8.4	SH, SL	DGR	
6	34.5-39.8	5.3	SH, CO	VDGR, BLK	CO: 35.8-36.9
7	39.8-49.6	9.8	SL, SH	DGR, GR	
8	49.6-59.3	9.7	SS	LGR, BRGR	
9	59.3-65.0	5.7	SS	GR	SHALEY
10	65.0-74.9	9.9	SS, SH	GR, DGR	
11	74.9-80.3	5.4	CO	BLK	VDGRSH 78.3-79.2
12#	80.3-86.5	6.2	SS	GR	SHALEY
13	86.5-91.1	4.6	SH	DGR, VDGR	
** +	91.1-94.0	2.9	CO (Y0A)	BLK	
14+	94.0-96.6	2.6	SH	VDGR	
15	96.6-98.5	1.9	CO	BLK	
16	98.5-102.0	3.5	SH	DGR	LC: 100.0-100.7
17	102.0-111.0	9.0	SH, SS, CO	DGR, BLK	LC: 110.0-110.3
18	111.0-116.0	5.0	SS	GR	
19	116.0-122.5	6.5	SS	GR	
20	122.5-124.6	2.1	SH	VDGR	
21	124.6-130.0	5.4	SL	GR	SHALEY
** +	130.0-133.1	3.1	CO (Y1A)	BLK	
22#+	133.1-142.2	9.1	SH	DGR, VDGR	
23	142.2-148.8	6.6	SS	GR, DGR	
**	148.8-154.0	5.2	CO (N0X)	BLK	
24+	154.0-160.8	6.8	SH	VDGR, BLK	
** +	160.8-164.4	3.6	CO (N1X)	BLK	
25+	164.4-170.9	6.5	SL	DGR, VDGR	SHALEY, COAL
26	170.9-181.0	10.1	SS	GR	LC: 173.7-180.0
27	181.0-184.4	3.4	SH	DGR	SANDY
28	184.4-186.8	2.4	SH, CO	VDGR, BLK	CO: 185.9-186.9
29	186.8-196.8	10.0	SL	DGR	LC: 190.0-191.5
30	196.8-201.9	5.1	SL, SH	DGR, VDGR	LC: 200.0-201.9
**	201.9-209.5	7.6	CO (E1X)	BLK	LC: 201.9-208.0
31+	209.5-216.0	6.5	SH	DGR, VDGR	LC: 210.0-213.0
32#	216.0-220.0	4.0	SL, SH	GR, DGR	

* Core boxes 1 through 22, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to GAL.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 91.1-91.4, 94.0-94.3, 130.65-130.70, 133.1-133.4, 154.0-154.3, 162.3-162.5, 164.4-164.7, & 209.5-209.8.

CORE NO: 30352EO

Mine Area: N99, Peabody Coordinates: 44572.08E, -9148.39N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	10.00	SS		7.9	2.9	4.5	11.0	17.0	6.0	58	23	19	<0.01			0.04
10.00	4.00	SS		8.1	1.4	2.0	3.3	5.8	3.6	86	9	5	<0.01			0.01
14.00	6.00	SH		7.7	4.7	16.0	38.0	13.0	2.6	10	42	48	0.06			2.00
20.00	6.10	SH		7.5	6.4	20.0	85.0	9.9	1.4	31	30	39	0.10			3.03
26.10	8.40	SH		4.2	6.5	24.0	76.0	7.1	1.0	30	50	20	0.80	0.60	0.10	19.70
34.50	5.30	SH		6.4	2.9	13.0	8.0	15.0	4.7	28	49	23	1.00	0.70	0.30	23.30
39.80	9.80	SL		8.0	1.3	0.5	0.2	3.8	6.3	35	40	25	<0.01			0.08
49.60	9.70	SS		8.0	1.5	1.4	0.6	13.0	13.4	69	20	11	0.70			2.26
59.30	5.70	SS		8.2	1.4	0.3	0.2	14.0	27.6	76	11	13	0.05			1.44
65.00	9.90	SS		8.3	1.6	0.6	0.3	17.0	25.8	40	33	27	0.10			3.41
74.90	5.40	CO	MXX	6.5	4.7	6.2	2.0	41.0	20.3	57	30	13	2.60	2.00	0.60	62.40
80.30	6.20	SS		8.2	2.2	1.0	0.4	24.0	29.3	42	44	14	0.08			2.62
86.50	4.60	SH		7.2	5.4	7.3	2.7	53.0	23.8	19	52	29	2.20	1.80	0.20	57.80
91.10	2.90	CO	Y0A													
94.00	2.60	SH		7.6	3.6	3.4	1.4	36.0	23.6	27	49	24	0.70	0.60	0.08	18.70
96.60	1.90	CO		7.7	0.9	0.2	0.1	8.0	24.2	92	7	1	1.40	0.40	0.90	13.80
98.50	3.50	SH		8.1	1.9	1.0	0.4	17.0	20.7	27	46	27	0.30			10.80
102.00	9.00	SH		7.4	3.0	6.4	3.3	26.0	11.8	46	34	20	1.30	0.80	0.30	25.40
111.00	5.00	SS		7.0	3.4	32.0	23.0	2.0	0.4	87	6	7	0.30			8.41
116.00	6.50	SS		6.8	4.4	36.0	39.0	2.3	0.4	87	8	5	0.60			19.30
122.50	2.10	SH		6.4	2.9	29.0	19.0	3.4	0.7	28	43	29	3.50	3.00	0.50	94.20
124.60	5.40	SL		6.3	3.0	31.0	19.0	2.8	0.6	38	45	17	1.10	0.90	0.10	28.80
130.00	3.10	CO	Y1A													
133.10	9.10	SH		7.9	5.1	2.1	0.7	59.0	49.9	20	55	25	2.30	2.00	0.20	60.90
142.20	6.60	SS		7.3	4.7	6.7	2.3	48.0	22.6	51	34	15	1.00	0.90	0.09	26.90
148.80	5.20	CO	N0X													
154.00	6.80	SH		7.8	5.1	1.5	0.6	53.0	52.9	50	32	18	1.80	1.40	0.30	42.90
160.80	3.60	CO	N1X													
164.40	6.50	SL		7.9	2.3	0.4	0.1	22.0	43.6	47	39	14	0.50	0.30	0.10	10.60
170.90	10.10	SS		8.6	2.0	0.4	0.2	21.0	39.2	59	28	13	<0.01			0.07
181.00	3.40	SH		8.1	4.0	1.4	0.7	45.0	45.1	47	34	19	0.60			19.80
184.40	2.40	SH		8.2	1.5	0.2	0.1	19.0	48.9	33	40	27	1.00	0.80	0.20	24.30
186.80	10.00	SL		9.0	1.7	0.3	0.1	17.0	43.2	37	40	23	<0.01			0.07
196.80	5.10	SL		9.0	1.4	0.1	0.3	14.0	31.0	15	58	27	0.09			2.96
201.90	7.60	CO	E1X													
209.50	6.50	SH		9.1	1.5	0.5	0.1	12.0	21.1	14	49	37	0.06			1.75
216.00	4.00	SL		8.8	1.3	0.2	0.1	12.0	31.8	29	46	25	0.06			1.78

CORE NO: 30352EO

Mine Area: N99, Peabody Coordinates: 44572.08E, -9148.39N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	10.00	SS		17.60	17.50	<0.05	<0.05	<0.10	0.40
10.00	4.00	SS		7.40	7.39	<0.05	<0.05	<0.10	0.33
14.00	6.00	SH		20.40	18.40	<0.05	<0.05	0.40	0.55
20.00	6.10	SH		23.40	20.40	<0.05	<0.05	0.30	0.52
26.10	8.40	SH		11.50	-8.22	0.05	0.05	0.40	0.78
34.50	5.30	SH		7.43	-15.90	0.06	0.06	0.40	1.40
39.80	9.80	SL		52.10	52.10	<0.05	<0.05	0.30	0.89
49.60	9.70	SS		32.10	29.90	<0.05	<0.05	<0.10	0.47
59.30	5.70	SS		37.30	35.90	<0.05	<0.05	0.10	0.54
65.00	9.90	SS		40.70	37.30	<0.05	0.06	0.40	0.89
74.90	5.40	CO	MXX	-55.00	7.40	<0.05	0.06	1.40	3.70
80.30	6.20	SS		52.90	50.20	<0.05	0.06	0.20	0.87
86.50	4.60	SH		28.50	-29.30	<0.05	0.06	0.70	1.60
91.10	2.90	CO	Y0A						
94.00	2.60	SH		18.90	0.23	0.08	0.08	0.50	1.70
96.60	1.90	CO		9.77	-4.04	<0.05	<0.05	1.70	4.30
98.50	3.50	SH		13.50	2.72	0.09	0.11	0.50	1.50
102.00	9.00	SH		22.00	-3.43	0.08	0.10	0.90	1.80
111.00	5.00	SS		32.50	24.10	<0.05	<0.05	<0.10	0.37
116.00	6.50	SS		73.30	54.00	<0.05	<0.05	0.20	0.37
122.50	2.10	SH		2.38	-91.90	<0.05	0.08	0.80	0.73
124.60	5.40	SL		10.50	-18.30	<0.05	0.05	0.40	0.49
130.00	3.10	CO	Y1A						
133.10	9.10	SH		19.60	-41.30	<0.05	0.06	0.60	1.40
142.20	6.60	SS		30.40	3.59	<0.05	<0.05	0.30	1.00
148.80	5.20	CO	N0X						
154.00	6.80	SH		15.90	-27.10	0.09	0.12	0.80	0.76
160.80	3.60	CO	N1X						
164.40	6.50	SL		-1.08	-11.70	0.07	0.10	0.50	0.58
170.90	10.10	SS		75.60	75.60	<0.05	0.06	0.40	0.39
181.00	3.40	SH		58.20	38.50	<0.05	0.08	0.40	0.47
184.40	2.40	SH		17.60	-6.72	0.05	0.07	0.90	0.89
186.80	10.00	SL		33.80	33.80	0.09	0.10	0.30	0.38
196.80	5.10	SL		9.43	6.47	0.15	0.17	1.40	0.42
201.90	7.60	CO	E1X						
209.50	6.50	SH		12.30	10.60	0.08	0.09	0.40	0.45
216.00	4.00	SL		15.30	13.80	0.05	0.05	0.20	0.46

Revised 02/24/12

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HOLE NUMBER: 30353EO*
MINE AREA: N99
DATE: 7/13-14/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-10.0	10.0	SH	GR	LC: 0.0-8.0
2	10.0-20.0	10.0	SS	LGR, YBR	LC: 10.0-16.0
3	20.0-30.0	10.0	SL	GR	LC: 20.0-24.0
4	30.0-36.5	6.5	SS	GRBR	LC: 30.0-34.0
5	36.5-46.0	9.5	SH	VDGR, BLK	
6	46.0-56.0	10.0	SL	GR	LC: 47.7-48.3, 51.0-53.0
7	56.0-63.1	7.1	SH, CO-MXX	VDGR, BLK	NONMINEABLE
8	63.1-71.2	8.1	SL, SH	GR, DGR	SANDY
9	71.2-76.4	5.2	SH	DGR-BLK	
10#	76.4-85.9	9.5	SL	DGR	LC: 80.0-80.5
11	85.9-96.4	10.5	SL	GR, DGR	SANDY
12	96.4-102.3	5.9	SH, CO	VDGR, BLK	
13	102.3-108.0	5.7	SL	DGR	SHALEY
14	108.0-115.6	7.6	SS	GR	SHALEY
15	115.6-122.2	6.6	SS	GR	
16	122.2-130.0	7.8	SS	GR	
17	130.0-140.0	10.0	SS	GR	LC: 131.2-132.0
18	140.0-144.9	4.9	SL	GR	SANDY, LC: 140.0-140.6
19	144.9-148.0	3.1	SH	VDGR	
20#	148.0-155.6	7.6	SS	GR	LC: 150.0-151.3
21	155.6-158.8	3.2	SL, CO	VDGR, BLK	
22	158.8-164.5	5.7	SL	GR	SANDY LC: 160.0-161.4
23	164.5-170.0	5.5	SH	VDGR, BLK	
24	170.0-180.0	10.0	SH, CO	VDGR, BLK	LC: 170.0-170.9
25	180.0-184.6	4.6	SS	GR	
26	184.6-192.4	7.8	SH, CO	VDGR, BLK	LC: 190.0-192.0
27	192.4-199.0	6.6	SS	DGR	
28	199.0-201.3	2.3	SH	VDGR	LC: 200.0-200.8
29	201.3-210.0	8.7	SL	GR	SANDY
30#	210.0-216.4	6.4	SL	GR	SANDY
** +	216.4-219.6	3.2	CO (Y1A)	BLK	
31+	219.6-222.8	3.2	SL	GR	220.0-220.4
32	222.8-230.0	7.2	SH	DGR	
33	230.0-233.7	3.7	SH	VDGR, BLK	LC: 230.0-231.3
34	233.7-238.0	4.3	SS	DGR	SILTY
**	238.0-244.6	6.6	CO (NOX)	BLK	
35+	244.6-253.0	8.4	SH	VDGR	LC: 252.0-253.0
**	253.0-256.4	3.4	CO (N1X)	BLK	LC: 253.0-254.8
36+	256.4-259.0	2.6	SL	DGR	SHALEY
37	259.0-260.6	1.6	CO (N2X)	BLK	NONMINEABLE
38	260.6-268.0	7.4	SS	GR	
39	268.0-275.0	7.0	SH	DGR	LC: 274.0-275.0

HOLE NUMBER: 30353EO*
MINE AREA: N99
DATE: 7/13-14/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
**	275.0-280.0	5.0	CO (EOX)	BLK	LC: 275.0-278.2
40#	280.0-290.0	10.0	SL, SH	VDGR	LC: 280.0-282.0
**	290.0-298.6	8.6	CO (E1X)	BLK	LC: 290.0-297.0
41+	298.6-303.0	4.4	SH	VDGR, BLK	LC: 300.0-302.0
**	303.0-305.4	2.4	CO (E2X)	BLK	
42+	305.4-307.6	2.2	SH	VDGR	
43	307.6-310.0	2.4	SS	GR	

* Core boxes 1 through 31, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to GAL.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 217.20-217.25, 219.6-219.9, 244.6-244-9, 256.4-256.7, 298.6-298.9, & 305.4-305.7.

CORE NO: 30353EO

Mine Area: N99, Peabody Coordinates: 43480.10E, -5874.13N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	10.00	SH		7.8	1.7	3.1	1.5	15.0	9.8	25	39	36	<0.01			<0.00
10.00	10.00	SS		7.3	1.5	6.7	3.4	7.7	3.4	65	21	14	0.01			0.31
20.00	10.00	SL		7.4	2.9	13.0	27.0	3.6	0.8	24	43	33	<0.01			<0.00
30.00	6.50	SS		7.6	1.6	3.9	15.0	2.4	0.8	46	35	19	0.02			0.63
36.50	9.50	SH		5.8	3.7	26.0	33.0	3.3	0.6	16	48	36	0.50	0.20	0.20	6.06
46.00	10.00	SL		6.8	2.0	15.0	12.0	3.2	0.9	34	43	23	0.60			18.40
56.00	7.10	SH		6.4	3.2	17.0	12.0	16.0	4.1	36	34	30	1.40	0.90	0.40	28.50
63.10	8.10	SL		7.6	1.3	1.4	0.7	13.0	12.4	23	51	26	0.10			3.41
71.20	5.20	SH		7.4	2.6	3.5	1.2	27.0	17.3	17	53	30	0.60			18.70
76.40	9.50	SL		8.2	1.4	1.3	0.6	17.0	16.8	14	57	29	0.06			1.94
85.90	10.50	SL		7.8	2.8	2.7	0.9	27.0	19.9	33	42	25	0.30			10.40
96.40	5.90	SH		5.9	5.3	19.0	5.5	46.0	13.2	30	50	20	2.20	1.80	0.40	54.80
102.30	5.70	SL		8.1	0.8	1.1	0.4	8.1	9.4	12	57	31	0.08			2.50
108.00	7.60	SS		7.8	0.9	2.3	1.2	7.6	5.8	46	34	20	0.08			2.53
115.60	6.60	SS		7.8	1.0	3.1	1.8	5.7	3.6	67	21	12	0.02			0.78
122.20	7.80	SS		7.7	1.3	6.8	4.8	5.3	2.2	70	19	11	0.04			1.41
130.00	10.00	SS		6.1	2.4	19.0	12.0	4.4	1.1	78	16	6	0.30	0.30	0.04	8.15
140.00	4.90	SL		8.0	1.7	1.2	0.6	16.0	17.2	48	30	22	0.06			1.94
144.90	3.10	SH		7.6	3.0	3.9	1.2	31.0	19.4	40	38	22	0.90	0.70	0.20	20.80
148.00	7.60	SS		7.6	1.5	5.8	4.1	7.7	3.5	72	18	10	0.05			1.56
155.60	3.20	SL		7.3	1.3	4.2	2.6	8.2	4.4	50	29	21	0.60	0.30	0.30	9.91
158.80	5.70	SL		7.9	1.7	1.4	0.6	18.0	18.3	49	33	18	0.10			3.28
164.50	5.50	SH		6.8	5.1	15.0	5.3	45.0	14.2	36	36	28	2.50	1.80	0.50	56.10
170.00	10.00	SH		6.6	4.4	5.6	2.0	42.0	21.4	42	32	26	1.60	1.10	0.50	33.70
180.00	4.60	SS		6.9	3.5	7.2	3.6	35.0	15.2	60	22	18	0.90			28.70
184.60	7.80	SH		7.1	1.9	6.1	3.0	13.0	6.1	29	43	28	0.60			18.20
192.40	6.60	SS		7.3	2.6	27.0	15.0	1.9	0.4	85	9	6	0.40			12.40
199.00	2.30	SH		6.1	3.1	34.0	22.0	4.1	0.8	34	38	28	3.40	2.90	0.50	89.30
201.30	8.70	SL		7.0	1.4	11.0	6.9	2.3	0.8	33	43	24	0.20			5.44
210.00	6.40	SL		7.3	0.9	6.2	4.3	1.8	0.8	46	36	18	0.10			3.06
216.40	3.20	CO	Y1A													
219.60	3.20	SL		6.9	4.3	14.0	5.0	39.0	12.7	49	35	16	0.60			18.90
222.80	7.20	SH		7.2	4.8	7.4	2.9	47.0	20.7	18	52	30	2.10	1.80	0.30	55.20
230.00	3.70	SH		6.9	5.3	11.0	4.2	67.0	24.1	15	53	32	2.80	2.40	0.40	74.20
233.70	4.30	SS		7.3	3.4	3.9	1.7	34.0	20.2	49	31	20	0.90			27.40
238.00	6.60	CO	N0X													
244.60	8.40	SH		7.4	4.1	1.8	1.0	51.0	42.9	42	36	22	1.40	1.00	0.30	32.20
253.00	3.40	CO	N1X													
256.40	2.60	SL		7.9	2.3	0.5	0.2	23.0	41.0	24	46	30	0.70	0.40	0.10	13.90
259.00	1.60	CO	N2X	7.6	0.8	0.1	0.1	9.7	30.0	57	21	22	0.60	0.10	0.40	4.34
260.60	7.40	SS		8.4	1.8	0.5	0.2	18.0	31.0	57	27	16	<0.01			0.07
268.00	7.00	SH		8.1	2.6	0.5	0.2	30.0	49.4	30	40	30	0.60			19.70
275.00	5.00	CO	E0X													
280.00	10.00	SL		8.5	1.3	0.3	0.1	16.0	36.9	27	39	34	0.07			2.30
290.00	8.60	CO	E1X													
298.60	4.40	SH		8.3	1.4	0.4	0.2	19.0	34.1	8	42	50	0.30			7.84
303.00	2.40	CO	E2X													
305.40	2.20	SH		7.4	1.8	0.6	0.3	18.0	27.0	20	50	30	0.30	0.20	0.08	6.96
307.60	2.40	SS		7.9	1.4	0.7	0.4	13.0	17.7	54	30	16	0.07			2.06

CORE NO: 30353EO

Mine Area: N99, Peabody Coordinates: 43480.10E, -5874.13N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	10.00	SH		12.80	12.80	<0.05	<0.05	0.10	0.38
10.00	10.00	SS		8.18	7.86	0.05	0.08	0.40	0.28
20.00	10.00	SL		23.30	23.30	0.08	0.10	0.10	0.28
30.00	6.50	SS		7.86	7.23	<0.05	0.06	0.20	0.36
36.50	9.50	SH		11.30	5.26	<0.05	<0.05	0.80	1.50
46.00	10.00	SL		50.70	32.20	<0.05	0.05	0.60	0.62
56.00	7.10	SH		16.40	-12.00	<0.05	0.09	1.20	1.60
63.10	8.10	SL		41.40	38.00	<0.05	0.06	0.50	0.70
71.20	5.20	SH		20.50	1.79	0.07	0.13	0.80	1.00
76.40	9.50	SL		57.50	55.60	<0.05	0.06	0.50	0.70
85.90	10.50	SL		46.00	35.60	<0.05	<0.05	0.40	0.66
96.40	5.90	SH		10.50	-44.30	<0.05	0.09	0.90	1.50
102.30	5.70	SL		15.30	12.80	<0.05	0.08	0.50	0.50
108.00	7.60	SS		51.20	48.70	<0.05	0.06	0.20	0.40
115.60	6.60	SS		47.90	47.10	<0.05	<0.05	<0.10	0.32
122.20	7.80	SS		69.30	67.90	<0.05	<0.05	<0.10	0.32
130.00	10.00	SS		9.02	0.87	<0.05	<0.05	<0.10	0.36
140.00	4.90	SL		41.30	39.40	<0.05	0.11	0.80	0.50
144.90	3.10	SH		22.20	1.40	<0.05	0.09	0.50	0.70
148.00	7.60	SS		49.90	48.30	<0.05	<0.05	<0.10	0.36
155.60	3.20	SL		11.10	1.17	<0.05	0.07	0.70	1.40
158.80	5.70	SL		99.50	96.20	<0.05	0.07	0.50	0.52
164.50	5.50	SH		46.00	-10.00	<0.05	0.08	0.90	1.40
170.00	10.00	SH		14.80	-18.90	<0.05	0.14	1.20	2.90
180.00	4.60	SS		45.80	17.10	<0.05	0.10	0.60	1.90
184.60	7.80	SH		26.40	8.23	<0.05	0.11	0.70	0.86
192.40	6.60	SS		15.20	2.78	<0.05	<0.05	<0.10	0.32
199.00	2.30	SH		10.50	-78.80	<0.05	<0.05	0.90	0.62
201.30	8.70	SL		32.90	27.50	<0.05	<0.05	0.20	0.42
210.00	6.40	SL		33.20	30.10	<0.05	0.05	0.10	0.40
216.40	3.20	CO	Y1A						
219.60	3.20	SL		22.00	3.16	<0.05	0.09	0.50	1.00
222.80	7.20	SH		22.40	-32.90	<0.05	0.06	0.60	1.20
230.00	3.70	SH		18.60	-55.60	<0.05	<0.05	0.70	1.50
233.70	4.30	SS		40.40	13.00	<0.05	<0.05	0.50	0.98
238.00	6.60	CO	N0X						
244.60	8.40	SH		31.40	-0.85	0.07	0.15	1.20	0.68
253.00	3.40	CO	N1X						
256.40	2.60	SL		8.52	-5.35	0.07	0.18	0.70	0.44
259.00	1.60	CO	N2X	13.50	9.17	<0.05	0.13	1.30	0.74
260.60	7.40	SS		127.00	127.00	<0.05	0.09	0.40	0.32
268.00	7.00	SH		57.60	37.80	<0.05	0.12	0.50	0.34
275.00	5.00	CO	E0X						
280.00	10.00	SL		35.80	33.60	<0.05	0.12	0.50	0.42
290.00	8.60	CO	E1X						
298.60	4.40	SH		8.70	0.86	0.10	0.23	1.40	0.52
303.00	2.40	CO	E2X						
305.40	2.20	SH		7.07	0.12	<0.05	0.14	0.60	0.44
307.60	2.40	SS		10.80	8.77	<0.05	0.07	0.10	0.34

Revised 02/24/12

HOLE NUMBER: 30368EO*
MINE AREA: N99-South
DATE: 8/6/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-10.0	10.0	SS	LBRGR	LC: 0.0-1.3
2	10.0-18.1	8.1	SS	LBRGR	
3	18.1-22.0	3.9	SS	LGR, LBRGR	LC: 20.0-20.7, SHALEY
4	22.0-24.0	2.0	SS	PBR	
5#	24.0-34.0	10.0	SS	LGR	LC: 30.0-31.5
6	34.0-44.0	10.0	SS	LGR	LC: 40.0-40.5
7	44.0-53.4	9.4	SS	LGR	LC: 50.0-50.5
8	53.4-56.5	3.1	SS	GR	
9	56.5-59.5	3.0	SH	VDGR	
10	59.5-62.0	2.5	SS	GR	
11	62.0-65.5	3.5	CO, SH	VDGR, BLK	CO: 63.2-65.0
12	65.5-67.7	2.2	SS	GR	
13	67.7-77.5	9.8	SL, SS	DGR, VDGR	SHALEY
14	77.5-81.0	3.5	SS, SL	GR	
**	81.0-87.6	6.6	CO	BLK	LC: 81.0-82.2
15#+	87.6-93.0	5.4	SL	VDGR	LC: 90.0-90.3
16	93.0-100.0	7.0	SH, CO	VDGR, BLK	LC: 97.8-98.2
17	100.0-102.9	2.9	CO, SH	BLK, VDGR	CO: 100.4-101.7
18	102.9-106.0	3.1	SS	GR	
19	106.0-108.0	2.0	SL, CO	VDGR, BLK	SHALEY
20	108.0-114.0	6.0	SS	GR	
21	114.0-115.6	1.6	CO, SH	VDGR, BLK	
22	115.6-125.3	9.7	SS	GR, DGR	SILTY
23	125.3-128.0	2.7	SH	VDGR, BLK	
**	128.0-132.4	4.4	CO	BLK	
24+	132.4-138.6	6.2	SL	DGR	SHALEY
** +	138.6-147.5	8.9	CO	BLK	SH: 146.0-146.8
25#+	147.5-154.0	6.5	SL, SH	DGR, VDGR	LC: 147.8-148.4
**	154.0-157.0	3.0	CO	BLK	LC: 154.0-154.5
26+	157.0-164.0	7.0	SS, SL	GR, DGR	
27	164.0-166.4	2.4	CO, SH	VDGR, BLK	CO: 164.5-165.7
28	166.4-171.1	4.7	SS	GR	
29	171.1-175.1	4.0	CO, SH	VDGR, BLK	CO: 172.8-174.1
30	175.1-181.0	5.9	SS	GR	LC: 180.0-180.4, SILTY
31	181.0-190.3	9.3	SS	LGR	
32	190.3-198.4	8.1	SH, SL	VDGR, DGR	SANDY
33	198.4-208.4	10.0	SS, SL	DGR, GR	
34	208.4-215.9	7.5	CO, SH	VDGR, BLK	CO: 210.8-211.1, CO: 214.4-215.7
35#	215.9-220.0	4.1	SL	DGR	

HOLE NUMBER: 30368EO*
MINE AREA: N99-South
DATE: 8/6/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS

* Core boxes 1 through 22, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to Energy Lab.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 87.6-87.9, 132.4-132.7, 146.0-146.8, 147.5-147.8, & 157.0-157.3.

CORE NO: 30368EO

Mine Area: N99, Peabody Coordinates: 44724.68E, -11246.06N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	10.00	SS		7.8	2.6	5.4	20.9	5.5	1.5	63	20	18	0.03			1.06
10.00	8.10	SS		7.8	1.5	4.8	9.3	2.4	0.9	71	15	14	0.03			0.94
18.10	3.90	SS		7.7	2.0	10.6	10.9	2.3	0.7	56	19	25	0.04			1.25
22.00	2.00	SS		7.8	1.6	8.4	7.5	1.9	0.7	83	10	8	0.02			0.61
24.00	10.00	SS		7.1	2.1	14.0	9.6	1.8	0.5	80	13	8	0.09			2.94
34.00	10.00	SS		7.0	2.1	12.9	9.1	2.3	0.7	70	18	13	0.20			6.15
44.00	9.40	SS		7.5	1.8	10.0	8.4	2.5	0.8	78	13	10	0.04			1.19
53.40	3.10	SS		6.8	4.0	27.9	29.5	3.6	0.7	79	13	9	0.76			23.85
56.50	3.00	SH		5.8	3.8	26.6	24.3	4.3	0.9	25	43	33	3.40	2.79		106.18
59.50	2.50	SS		6.5	2.6	16.6	12.6	2.7	0.7	36	44	20	0.88	0.84		27.53
62.00	3.50	CO	Y1A	7.0	6.4	5.0	2.6	57.9	29.7	45	34	21	1.51	1.46		47.14
65.50	2.20	SS		7.6	2.7	1.2	0.4	23.7	27.1	50	38	13	0.20	0.12		6.26
67.70	9.80	SL		7.8	3.5	0.8	0.4	31.7	40.9	23	46	31	2.20	2.08		68.73
77.50	3.50	SS		6.3	2.8	4.8	3.4	19.4	9.6	65	23	13	1.99	1.70		62.01
81.00	6.60	CO	N0X													
87.60	5.40	SL		7.9	3.9	0.8	0.4	36.5	47.4	50	31	19	1.85	1.44		57.70
93.00	7.00	SH		8.6	1.7	0.2	0.1	14.8	34.9	26	29	45	0.57	0.35		17.95
100.00	2.90	CO	N1X	8.0	1.1	0.2	0.1	9.4	26.3	44	29	28	0.42	0.10		13.04
102.90	3.10	SS		8.4	2.0	0.6	0.3	17.4	26.5	68	20	13	0.05			1.42
106.00	2.00	SL		7.4	2.7	0.5	0.3	23.4	37.3	54	31	15	1.32	1.05		41.36
108.00	6.00	SS		7.0	2.5	0.6	0.3	20.1	29.5	51	39	10	0.17			5.23
114.00	1.60	CO		8.0	1.0	0.1	0.1	8.3	22.2	35	38	28	0.46	0.18		14.36
115.60	9.70	SS		8.6	3.0	0.8	0.3	27.3	36.8	55	28	18	0.37			11.46
125.30	2.70	SH		8.6	1.6	0.2	0.1	14.1	34.9	20	44	36	1.19	1.08		37.05
128.00	4.40	CO	E0X													
132.40	6.20	SL		8.9	1.0	0.1	0.1	9.4	29.1	18	50	33	0.04			1.35
138.60	8.90	CO	E1X													
147.50	6.50	SL		8.7	1.3	0.2	0.1	11.3	31.3	30	26	44	0.13			4.18
154.00	3.00	CO	E2X													
157.00	7.00	SS		7.3	3.8	8.0	3.1	26.4	11.3	50	34	16	0.73			22.86
164.00	2.40	CO		7.3	1.4	0.5	0.2	11.4	20.2	61	25	14	0.78	0.49		24.22
166.40	4.70	SS		8.1	1.9	0.9	0.4	14.9	18.3	49	31	20	0.28			8.83
171.10	4.00	SH		7.9	1.6	0.6	0.2	13.6	21.4	48	26	26	0.75	0.43		23.46
175.10	5.90	SS		8.5	1.0	0.3	0.3	8.3	15.6	35	33	33	0.06			1.98
181.00	9.30	SS		8.2	1.5	0.9	0.4	11.6	14.3	74	14	13	0.02			0.56
190.30	8.10	SH		8.3	1.2	0.3	0.1	9.9	20.1	29	34	38	0.17			5.30
198.40	10.00	SS		8.3	1.3	0.8	0.3	10.7	15.0	53	29	19	0.03			0.87
208.40	7.50	SH		8.0	2.2	1.2	0.4	18.2	20.3	40	25	35	0.59	0.40		18.32
215.90	4.10	SL		8.6	0.9	0.2	0.4	7.5	13.1	13	54	34	0.03			1.06

CORE NO: 30368EO

Mine Area: N99, Peabody Coordinates: 44724.68E, -11246.06N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	10.00	SS		16.54	15.47	<0.02		<0.15	0.50
10.00	8.10	SS		57.07	56.13	<0.02		0.15	<0.50
18.10	3.90	SS		8.70	7.44	0.03		0.25	<0.50
22.00	2.00	SS		10.65	10.05	<0.02		<0.15	<0.50
24.00	10.00	SS		10.65	7.71	0.02		<0.15	<0.50
34.00	10.00	SS		13.10	6.95	0.03		0.15	<0.50
44.00	9.40	SS		18.49	17.30	0.02		<0.15	<0.50
53.40	3.10	SS		112.93	89.08	0.02		0.22	<0.50
56.50	3.00	SH		3.31	-102.88	0.05		1.00	1.70
59.50	2.50	SS		6.25	-21.29	0.07		0.43	0.80
62.00	3.50	CO	Y1A	22.04	-25.10	0.10		0.77	2.85
65.50	2.20	SS		6.25	-0.02	0.11		0.85	1.90
67.70	9.80	SL		18.98	-49.74	0.08		0.50	4.30
77.50	3.50	SS		6.25	-55.77	0.05		0.70	4.70
81.00	6.60	CO	N0X						
87.60	5.40	SL		25.36	-32.35	0.13		1.30	1.25
93.00	7.00	SH		12.62	-5.33	0.20		1.45	1.55
100.00	2.90	CO	N1X	6.25	-6.79	0.12		1.45	1.85
102.90	3.10	SS		86.34	84.92	0.05		1.17	1.45
106.00	2.00	SL		3.79	-37.57	0.12		0.28	1.70
108.00	6.00	SS		5.75	0.53	0.06		1.13	0.70
114.00	1.60	CO		4.78	-9.59	0.15		1.02	2.65
115.60	9.70	SS		134.85	123.40	0.09		1.10	1.40
125.30	2.70	SH		19.48	-17.58	0.16		0.50	1.30
128.00	4.40	CO	E0X						
132.40	6.20	SL		9.68	8.33	0.15		1.05	1.20
138.60	8.90	CO	E1X						
147.50	6.50	SL		19.96	15.79	0.15		0.75	1.10
154.00	3.00	CO	E2X						
157.00	7.00	SS		53.64	30.78	0.09		1.02	<0.50
164.00	2.40	CO		4.78	-19.45	0.10		0.47	1.85
166.40	4.70	SS		27.07	18.23	0.10		1.02	0.70
171.10	4.00	SH		6.25	-17.21	0.11		0.43	1.40
175.10	5.90	SS		3.31	1.33	0.17		1.48	0.75
181.00	9.30	SS		136.32	135.76	0.03		0.65	<0.50
190.30	8.10	SH		9.18	3.89	0.11		0.90	1.05
198.40	10.00	SS		72.63	71.76	<0.02		0.32	1.30
208.40	7.50	SH		5.26	-13.06	0.09		1.45	1.55
215.90	4.10	SL		3.79	2.73	0.12		0.55	2.10

Revised 02/24/12

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HOLE NUMBER: 30369EO*
MINE AREA: N99-South
DATE: 8/7-8/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-10.0	10.0	SC	RDBR	LC: 0.0-8.4
2	10.0-20.0	10.0	SL	GRBR	SHALEY
3	20.0-30.0	10.0	SL	GRBR	SANDY
4	30.0-40.0	10.0	SL	YBR, DYBR	LC: 30.0-31.8, SANDY
5	40.0-46.7	6.7	CO, SH	VDGR, BLK	CO: 43.0-44.4
6	46.7-49.5	2.8	SL	DGR	
7	49.5-59.5	10.0	SS	GR	LC: 50.0-50.3
8	59.5-69.5	10.0	SS	LGR, GR	LC: 60.0-62.0
9	69.5-75.6	6.1	SS	GR	
10#	75.6-84.0	8.4	SL, SH	DGR-BLK	SANDY, COAL
**	84.0-86.7	2.7	CO	BLK	
11+	86.7-88.6	1.9	CO, SH	VDGR, BLK	SANDY
12	88.6-91.0	2.4	SL	DGR	LC: 90.0-90.3
13	91.0-95.4	4.4	SH, CO	VDGR, BLK	CO: 94.1-94.7, SILTY
14	95.4-100.0	4.6	SS	GR	
15	100.0-102.2	2.2	SH, CO	VDGR, BLK	CO: 101.1-102.0, SILTY
16	102.2-107.8	5.6	SS	GR, LGR	
17	107.8-111.8	4.0	SL	DGR	
18	111.8-114.9	3.1	SH, CO	VDGR, BLK	CO: 112.7-114.6
19	114.9-124.0	9.1	SS	GR, LGR	
20#	124.0-133.6	9.6	SS	GR, LGR	
21	133.6-141.5	7.9	CO, SH, SL	DGR-BLK	CO: 133.8-134.5, 136.7-137.4, 139.7-141.3, SANDY
22	141.5-148.0	6.5	SS	LGR, GR	
23	148.0-154.4	6.4	SL	DGR	
** +	154.4-157.3	2.9	CO	BLK	
24+	157.3-160.4	3.1	SL	DGR	SHALEY
25	160.4-166.4	6.0	SS	GR, LGR	
26	166.4-172.2	5.8	SL, SS	DGR	SHALEY
** +	172.2-178.0	5.8	CO	BLK	
27+	178.0-179.4	1.4	SH, SL	VDGR	
** +	179.4-182.4	3.0	CO	BLK	
28+	182.4-184.2	1.8	SH	VDGR	
29	184.2-191.6	7.4	SS	GR, LGR	SILTY
30#	191.6-201.6	10.0	SS	LGR	
31	201.6-209.6	8.0	SS	LGR	
32	209.6-215.7	6.1	SL, SS	GR	
33	215.7-217.6	1.9	CO, SH	VDGR, BLK	CO: 215.7-217.3
34	217.6-226.7	9.1	SS	GR	SILTY
35	226.7-228.6	1.9	SL, SH	VDGR	

HOLE NUMBER: 30369EO*
MINE AREA: N99-South
DATE: 8/7-8/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
** +	228.6-243.0	14.4	CO	BLK	LC: 240.0-240.5
36+	243.0-252.0	9.0	SH, CO	VDGR, BLK	CO: 247.5-247.8, 250.2-250.8, SILTY
37	252.0-260.0	8.0	SL, SS	GR, DGR	

* Core boxes 1 through 26, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to Energy Lab.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 86.7-87.0, 154.59-154.62, 156.69-156.73, 157.3-157.6, 177.35-177.38, 178.0-178.3, 181.10-181.18, 182.4-182.7, 235.63-235.71, & 243.0-243.3.

CORE NO: 30369EO

Mine Area: N99, Peabody Coordinates: 37996.63E, -12529.23N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	10.00	SS		8.1	1.1	5.7	1.7	3.2	1.7	78	20	3	0.02			0.61
10.00	10.00	SL		7.6	0.8	4.2	1.5	1.5	0.9	23	45	33	0.05			1.52
20.00	10.00	SL		7.4	0.9	4.8	1.5	1.6	0.9	20	45	35	0.03			0.93
30.00	10.00	SL		7.3	1.9	10.7	7.2	2.1	0.7	33	34	34	0.03			0.94
40.00	6.70	SH		5.1	3.7	19.2	24.1	4.9	1.0	40	26	34	0.76	0.82		23.75
46.70	2.80	SL		7.8	0.5	0.9	1.1	2.3	2.3	19	49	33	0.07	0.03		2.07
49.50	10.00	SS		7.9	0.7	2.0	2.2	2.5	1.7	43	36	21	0.05			1.61
59.50	10.00	SS		7.9	0.9	2.4	2.5	3.5	2.3	63	23	15	0.04			1.17
69.50	6.10	SS		7.9	0.9	2.7	2.7	2.8	1.7	55	28	18	0.07			2.03
75.60	8.40	SL		6.9	3.6	4.0	3.0	28.0	15.0	35	40	25	1.35	1.00		42.30
84.00	2.70	CO	MXX													
86.70	1.90	SH		6.7	6.0	2.0	1.1	59.6	48.2	63	24	14	3.33	2.29		104.00
88.60	2.40	SL		7.5	2.8	0.3	0.2	24.0	47.2	31	48	21	0.39	0.31		12.16
91.00	4.40	SH		8.3	1.2	0.1	0.1	10.2	35.3	36	35	29	0.96	0.69		29.96
95.40	4.60	SS		8.4	3.1	0.8	0.4	31.0	39.5	63	25	13	0.21			6.48
100.00	2.20	SH		7.6	4.6	1.2	0.6	43.0	46.4	46	31	23	2.87	2.04		89.72
102.20	5.60	SS		8.6	2.4	0.7	0.2	21.3	31.5	55	30	15	0.05			1.65
107.80	4.00	SL		8.0	2.2	0.3	0.2	18.6	40.4	20	49	31	1.63	1.61		51.01
111.80	3.10	CO		7.2	5.2	1.8	0.9	48.7	41.9	70	18	13	3.97	2.51		123.99
114.90	9.10	SS		8.1	1.8	0.5	0.2	15.2	25.4	39	39	23	0.16			5.04
124.00	9.60	SS		7.9	2.6	0.6	0.4	21.7	31.6	65	20	15	0.12			3.70
133.60	7.90	SH		7.1	4.3	0.8	0.4	40.8	53.4	58	28	15	1.17	0.91		36.71
141.50	6.50	SS		6.7	5.4	13.9	7.9	41.2	12.5	68	18	15	0.60			18.84
148.00	6.40	SL		6.6	6.0	2.0	1.0	53.1	43.9	34	33	34	2.49	2.05		77.94
154.40	2.90	CO	Y1A													
157.30	3.10	SL		7.1	4.8	1.8	0.7	43.5	39.0	18	49	34	1.52	1.35		47.45
160.40	6.00	SS		7.7	3.3	2.1	1.3	27.9	21.3	60	25	15	0.23			7.31
166.40	5.80	SL		7.2	4.8	2.0	0.9	42.1	35.2	18	50	33	2.49	2.17		77.79
172.20	5.80	CO	N0X													
178.00	1.40	SH		7.8	3.6	0.9	0.3	32.3	40.5	76	15	9	1.51	1.04		47.33
179.40	3.00	CO	N1X													
182.40	1.80	SH		8.6	1.2	0.2	0.1	10.3	29.9	44	19	38	0.64	0.41		20.00
184.20	7.40	SS		9.0	2.0	0.5	0.2	17.4	28.3	55	25	20	0.05			1.68
191.60	10.00	SS		8.8	2.0	0.4	0.2	16.1	28.8	75	11	14	0.03			0.80
201.60	8.00	SS		8.8	2.2	0.7	0.3	18.7	26.1	63	20	18	0.05			1.41
209.60	6.10	SL		9.3	1.2	0.1	0.1	10.6	32.4	28	40	33	0.06			1.91
215.70	1.90	CO		8.3	0.6	0.1	0.1	5.1	14.8	90	8	3	0.60	0.47		18.73
217.60	9.10	SS		9.0	1.9	0.5	0.2	16.4	26.7	60	28	13	0.04			1.15
226.70	1.90	SL		9.1	1.4	0.1	0.1	11.7	31.1	15	40	45	1.44	1.24		44.89
228.60	14.40	CO	E01													
243.00	9.00	SH		8.9	1.1	0.3	0.2	8.8	17.1	23	26	51	0.24	0.06		7.50
252.00	8.00	SL		8.7	1.4	0.9	0.4	11.7	14.8	35	35	30	0.06			1.76

CORE NO: 30369EO

Mine Area: N99, Peabody Coordinates: 37996.63E, -12529.23N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	10.00	SS		57.08	56.47	0.09		<0.15	0.85
10.00	10.00	SL		1.83	0.31	0.03		0.32	<0.50
20.00	10.00	SL		3.31	2.38	0.08		0.22	<0.50
30.00	10.00	SL		27.32	26.37	0.13		0.73	0.50
40.00	6.70	SH		3.79	-19.95	0.11		1.15	2.20
46.70	2.80	SL		1.83	-0.24	0.08		0.45	0.75
49.50	10.00	SS		9.18	7.58	0.04		0.28	<0.50
59.50	10.00	SS		10.65	9.48	0.03		<0.15	<0.50
69.50	6.10	SS		36.38	34.34	0.03		<0.15	<0.50
75.60	8.40	SL		4.78	-37.52	0.08		0.90	1.40
84.00	2.70	CO	MXX						
86.70	1.90	SH		4.78	-99.22	0.10		1.17	1.70
88.60	2.40	SL		5.26	-6.90	0.14		0.57	0.75
91.00	4.40	SH		6.25	-23.71	0.13		1.17	1.40
95.40	4.60	SS		105.45	98.98	0.14		0.65	0.55
100.00	2.20	SH		13.60	-76.13	0.14		1.02	1.90
102.20	5.60	SS		135.83	134.19	0.07		0.38	0.75
107.80	4.00	SL		27.80	-23.21	0.10		0.85	1.50
111.80	3.10	CO		10.16	-113.83	0.05		1.83	3.60
114.90	9.10	SS		6.25	1.21	0.07		0.28	1.40
124.00	9.60	SS		30.37	26.67	0.05		0.20	0.90
133.60	7.90	SH		5.26	-31.44	0.13		1.27	3.55
141.50	6.50	SS		24.98	6.14	0.05		0.30	1.10
148.00	6.40	SL		4.78	-73.17	0.04		0.70	3.45
154.40	2.90	CO	Y1A						
157.30	3.10	SL		3.79	-43.66	0.10		0.63	2.50
160.40	6.00	SS		112.44	105.13	0.04		<0.15	0.70
166.40	5.80	SL		9.68	-68.11	0.09		0.60	2.20
172.20	5.80	CO	N0X						
178.00	1.40	SH		6.74	-40.59	0.18		2.55	4.35
179.40	3.00	CO	N1X						
182.40	1.80	SH		5.75	-14.24	0.24		1.77	4.00
184.20	7.40	SS		13.47	11.79	0.09		0.28	0.90
191.60	10.00	SS		7.22	6.43	0.04		<0.15	<0.50
201.60	8.00	SS		24.74	23.33	0.06		<0.15	0.65
209.60	6.10	SL		13.60	11.68	0.07		0.32	1.25
215.70	1.90	CO		8.70	-10.03	0.05		1.25	3.85
217.60	9.10	SS		81.94	80.78	0.06		0.20	<0.50
226.70	1.90	SL		5.26	-39.63	0.41		2.72	2.10
228.60	14.40	CO	E01						
243.00	9.00	SH		7.22	-0.27	0.14		1.10	1.30
252.00	8.00	SL		29.76	27.99	0.06		0.35	0.75

Revised 02/24/12

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HOLE NUMBER: 30370EO*
MINE AREA: N99-South
DATE: 8/8-9/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-10.0	10.0	SC	RD, RDY	LC: 0.0-8.0
2	10.0-19.3	9.3	SS	GR	LC: 10.0-12.0, VERY HARD
3	19.3-24.0	4.7	SC, SH	RDGR, VDGR	LC: 20.0-22.0
4	24.0-30.0	6.0	SL	RDGR	SANDY
5	30.0-40.0	10.0	SL	DRDGR	LC: 30.0-30.4, SHALEY
6#	40.0-44.9	4.9	SL, CO	DRDGR-BLK	CO: 43.8-44.3, SHALEY
7	44.9-50.0	5.1	SS	LGR	SILTY
8	50.0-56.4	6.4	SS, SH, CO	GR-BLK	LC: 50.0-50.3, CO: 51.0-51.4, SILTY
**	56.4-60.0	3.6	CO	BLK	
9	60.0-63.0	3.0	SL, SS	GR	
10	63.0-68.2	5.2	SH, CO	VDGR, BLK	CO: 63.0-63.3 & 66.9-67.5
11	68.2-73.0	4.8	SS	GR	LC: 70.0-70.5
12	73.0-75.1	2.1	SH, CO	VDGR, BLK	
13	75.1-82.2	7.1	SS	LGR, GR	
14	82.2-88.0	5.8	SL	DGR	
15	88.0-90.0	2.0	CO, SH	VDGR, BLK	
16#	90.0-100.0	10.0	SL	DGR	
17	100.0-107.2	7.2	SS, SL	DGR, VDGR	SHALEY, COALY
18	107.2-108.5	1.3	CO, SH	VDGR, BLK	CO: 107.2-108.3
19	108.5-111.9	3.4	SS	GR	LC: 100.0-110.3
**	111.9-114.1	2.2	CO	BLK	
20+	114.1-119.4	5.3	SS	LGR, GR	
21	119.4-125.4	6.0	SL, SH	DGR, VDGR	LC: 120.0-120.2
**	125.4-127.8	2.4	CO	BLK	
22+	127.8-132.6	4.8	SS	GR	LC: 130.0-130.6
23	132.6-134.2	1.6	SL, SH	VDGR	
24	134.2-143.1	8.9	SS	LBRGR, LGR	
25	143.1-145.5	2.4	SL, SH	DGR, VDGR	
26#	145.5-151.4	5.9	SS, SL	GR	
** +	151.4-163.3	11.9	CO	BLK	LC: 158.7-161.2
27+	163.3-174.0	10.7	SS	LGR, GR	SILTY
28	174.0-178.4	4.4	CO, SH	VDGR, BLK	CO: 176.3-177.3
29	178.4-188.4	10.0	SL, SS	LGR, GR	LC: 180.0-180.4
30	188.4-194.0	5.6	SL	DGR	
**	194.0-197.0	3.0	CO	BLK	LC: 195.3-196.0
31+	197.0-201.6	4.6	SL	GR, DGR	
32	201.6-208.8	7.2	SL, SS	GR, LGR	
**	208.8-218.4	9.6	CO	BLK	
33+	218.4-220.0	1.6	SH	VDGR, BLK	

HOLE NUMBER: 30370EO*
MINE AREA: N99-South
DATE: 8/8-9/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
**	220.0-223.0	3.0	CO	BLK	LC: 221.0-223.0
34	223.0-235.8	12.8	SL, SS	GR, DGR	LC: 223.0-231.0
35	235.8-237.8	2.0	SH	VDGR	
**	237.8-239.8	2.0	CO	BLK	
36#+	239.8-246.0	6.2	SL	DGR	
37	246.0-250.0	4.0	SH, CO	VDGR, BLK	CO: 247.7-248.0, 248.4-248.6, & 249.8-250.0

* Core boxes 1 through 25, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to GAL.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 114.1-114.2, 127.8-128.1, 155.80-155.86, 156.50-156.58, 157.10-157.15, 163.3-163.6, 197.0-197.3, 218.4-218.7, & 239.8-240.1.

CORE NO: 30370EO

Mine Area: N99, Peabody Coordinates: 33431.01E, -6154.81N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	10.00	BR		7.4	1.8	8.0	2.2	6.0	2.6	66	29	5	0.02			0.73
10.00	9.30	SS		7.5	0.3	2.1	0.2	0.5	0.5	68	27	5	0.20			5.66
19.30	4.70	SH		7.5	0.7	3.9	1.4	1.0	0.6	46	35	19	0.20			5.03
24.00	6.00	SL		7.6	1.2	4.5	6.2	1.8	0.8	21	48	31	0.02			0.76
30.00	10.00	SL		7.6	1.2	4.7	6.6	1.9	0.8	26	42	32	0.04			1.09
40.00	4.90	SL		6.3	2.6	18.0	13.0	2.4	0.6	36	40	24	0.70	0.40	0.30	11.80
44.90	5.10	SS		7.0	1.9	13.0	8.2	2.0	0.6	41	41	18	0.20			7.19
50.00	6.40	SS		6.8	2.6	20.0	11.0	2.9	0.7	44	36	20	1.10			33.10
56.40	3.60	CO	MXX													
60.00	3.00	SL		6.6	3.4	24.0	16.0	6.4	1.4	41	41	18	0.70	0.60	0.10	18.60
63.00	5.20	SH		7.0	1.9	5.2	4.9	8.5	3.8	47	31	22	0.80	0.50	0.30	14.60
68.20	4.80	SS		7.4	1.8	3.3	3.9	10.0	5.4	58	27	15	0.09			2.81
73.00	2.10	SH		7.4	2.5	2.5	2.4	17.0	10.9	27	64	9	1.70	1.40	0.30	44.10
75.10	7.10	SS		8.2	2.1	0.6	0.4	17.0	24.0	64	22	14	0.02			0.74
82.20	5.80	SL		7.8	5.4	0.7	0.4	48.0	64.5	28	43	29	1.80	1.50	0.20	45.70
88.00	2.00	CO		5.5	8.0	9.0	4.3	74.0	28.6	76	15	9	4.20	2.70	1.20	83.10
90.00	10.00	SL		8.3	2.6	0.3	<0.1	24.0	58.2	29	41	30	0.90			29.20
100.00	7.20	SS		8.3	7.5	1.8	0.8	77.0	66.4	48	32	20	1.90	1.30	0.40	41.70
107.20	1.30	CO		8.3	0.5	0.1	0.1	4.2	13.3	88	10	2	1.20	0.10	1.00	4.06
108.50	3.40	SS		8.2	4.1	0.5	<0.1	36.0	70.4	42	35	23	0.60			19.30
111.90	2.20	CO	YOC													
114.10	5.30	SS		8.3	2.8	1.2	0.8	29.0	29.6	53	32	15	0.20			5.00
119.40	6.00	SL		7.1	4.7	0.5	0.2	41.0	67.6	28	46	26	3.00	2.40	0.40	74.20
125.40	2.40	CO	Y1A													
127.80	4.80	SS		6.8	3.3	0.8	0.5	31.0	37.9	66	21	13	0.40			13.20
132.60	1.60	SL		7.0	5.0	0.9	0.3	47.0	60.5	31	38	31	2.40	1.80	0.50	55.40
134.20	8.90	SS		7.9	2.7	0.6	0.4	22.0	31.7	62	27	11	0.10			4.22
143.10	2.40	SL		7.7	3.3	0.5	0.2	29.0	48.7	12	57	31	2.30	1.90	0.30	58.90
145.50	5.90	SS		8.7	1.6	0.2	<0.1	15.0	50.5	22	50	28	0.06			1.72
151.40	11.90	CO	NXX													
163.30	10.70	SS		8.5	2.4	0.3	<0.1	22.0	50.8	51	31	18	0.30			10.10
174.00	4.40	SH		8.5	1.3	0.4	<0.1	10.0	21.4	28	38	34	0.90	0.50	0.20	15.10
178.40	10.00	SL		8.5	1.9	0.3	<0.1	17.0	39.7	50	27	23	0.30			8.50
188.40	5.60	SL		9.1	1.3	0.3	<0.1	13.0	32.8	12	44	44	0.06			2.02
194.00	3.00	CO	EOX													
197.00	4.60	SL		9.4	1.2	0.2	<0.1	11.0	36.2	2	56	42	0.04			1.14
201.60	7.20	SL		9.0	1.4	0.3	0.2	13.0	26.0	32	40	28	0.06			1.88
208.80	9.60	CO	E1X													
218.40	1.60	SH		8.7	1.3	0.3	<0.1	11.0	28.9	17	37	46	0.10			4.19
220.00	3.00	CO	E2X													
223.00	12.80	SL		7.8	2.4	1.0	0.5	19.0	21.6	38	40	22	0.70			20.80
235.80	2.00	SH		8.3	1.5	0.5	0.2	12.0	19.5	20	46	34	1.20	1.00	0.20	30.20
237.80	2.00	CO														
239.80	6.20	SL		8.7	1.0	0.3	0.2	7.3	14.3	13	52	35	0.08			2.39
246.00	4.00	SH		8.7	1.3	0.4	0.1	10.0	21.2	51	19	30	0.60	0.10	0.30	4.00

CORE NO: 30370EO

Mine Area: N99, Peabody Coordinates: 33431.01E, -6154.81N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	10.00	BR		8.87	8.15	<0.05	<0.05	0.20	0.16
10.00	9.30	SS		10.80	5.11	<0.05	<0.05	0.20	0.15
19.30	4.70	SH		7.98	2.95	<0.05	<0.05	0.40	0.14
24.00	6.00	SL		24.40	23.60	<0.05	<0.05	0.30	0.17
30.00	10.00	SL		33.60	32.60	<0.05	<0.05	0.30	0.16
40.00	4.90	SL		13.90	2.04	<0.05	0.05	0.80	0.47
44.90	5.10	SS		24.80	17.60	<0.05	0.05	0.20	0.17
50.00	6.40	SS		36.10	2.94	<0.05	0.06	0.50	0.21
56.40	3.60	CO	MXX						
60.00	3.00	SL		6.90	-11.70	0.05	0.08	0.50	0.26
63.00	5.20	SH		15.60	0.93	<0.05	0.05	0.90	0.50
68.20	4.80	SS		88.30	85.50	0.05	0.12	0.70	0.31
73.00	2.10	SH		13.40	-30.70	0.05	0.12	0.90	0.71
75.10	7.10	SS		142.00	141.00	<0.05	0.06	0.40	0.28
82.20	5.80	SL		35.90	-9.83	<0.05	0.10	0.60	0.46
88.00	2.00	CO		8.57	-74.60	<0.05	<0.05	1.70	0.96
90.00	10.00	SL		36.60	7.45	<0.05	0.08	0.80	0.35
100.00	7.20	SS		7.20	-34.50	<0.05	0.08	0.90	0.36
107.20	1.30	CO		11.10	7.05	<0.05	<0.05	1.00	0.55
108.50	3.40	SS		29.00	9.67	0.09	0.12	0.90	0.23
111.90	2.20	CO	YOC						
114.10	5.30	SS		71.40	66.40	<0.05	0.07	0.40	0.20
119.40	6.00	SL		8.53	-65.60	<0.05	<0.05	0.70	0.31
125.40	2.40	CO	Y1A						
127.80	4.80	SS		17.00	3.89	<0.05	0.07	0.30	0.33
132.60	1.60	SL		6.90	-48.50	<0.05	0.11	0.80	0.84
134.20	8.90	SS		87.50	83.30	<0.05	<0.05	0.20	0.28
143.10	2.40	SL		20.90	-37.90	<0.05	0.08	0.50	0.47
145.50	5.90	SS		30.70	29.00	0.06	0.09	0.70	0.33
151.40	11.90	CO	NXX						
163.30	10.70	SS		37.80	27.60	<0.05	0.08	0.40	0.18
174.00	4.40	SH		14.50	-0.52	0.07	0.11	1.20	0.33
178.40	10.00	SL		37.80	29.30	<0.05	0.06	0.40	0.23
188.40	5.60	SL		26.70	24.70	0.06	0.08	0.60	0.29
194.00	3.00	CO	EOX						
197.00	4.60	SL		10.40	9.32	0.12	0.13	0.50	0.22
201.60	7.20	SL		52.70	50.80	0.08	0.10	0.60	0.22
208.80	9.60	CO	E1X						
218.40	1.60	SH		41.70	37.50	0.11	0.14	2.30	0.31
220.00	3.00	CO	E2X						
223.00	12.80	SL		26.90	6.06	0.06	0.10	0.70	0.32
235.80	2.00	SH		12.70	-17.50	0.08	0.11	0.90	0.41
237.80	2.00	CO							
239.80	6.20	SL		26.00	23.60	0.05	0.07	0.50	0.40
246.00	4.00	SH		7.75	3.76	0.06	0.08	1.90	0.76

Revised 02/24/12

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HOLE NUMBER: 30381EO*
MINE AREA: N99-South
DATE: 8/9-10/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS
1	0.0-10.0	10.0	SS	LYBR	LC: 0.0-0.9
2	10.0-18.0	8.0	SS	LYBR	LC: 10.0-10.4
3	18.0-21.7	3.7	SS	LYBR	
4	21.7-24.8	3.1	SH	DRDBR	LC: 21.7-23.0
5	24.8-29.0	4.2	SL, SS	GR	
6	29.0-30.8	1.8	SH, CO	VDGR, BLK	CO: 29.8-30.5
7	30.8-37.7	6.9	SS, SL	GR	
8	37.7-47.7	10.0	SS	LYBR	IRON STAINING
9#	47.7-54.0	6.3	SS	LBRGR	
10	54.0-59.3	5.3	SS	LYBR, LBRGR	
11	59.3-65.0	5.7	SS, SL	GR	LC: 60.0-60.4
12	65.0-70.0	5.0	SL, SH, CO	VDGR, BLK	CO: 68.4-69.2
13	70.0-75.2	5.2	SS, SL	GR	
14	75.2-77.5	2.3	SH, CO	VDGR, BLK	CO: 76.3-77.4
15	77.5-84.9	7.4	SS, SL	GR	
16	84.9-87.9	3.0	SH	DGR, VDGR	
**	87.9-90.6	2.7	CO	BLK	
17+	90.6-92.5	1.9	SS, SL	GR	
18#	92.5-95.5	3.0	CO, SH	VDGR, BLK	CO: 92.8-94.6
19	95.5-97.7	2.2	SS, SL	GR	
20	97.7-100.0	2.3	SH, CO	VDGR, BLK	CO: 98.3-98.6, SILTY
21	100.0-104.9	4.9	SS, SL	GR, DGR	LC: 100.0-100.4
22	104.9-108.4	3.5	SH, CO, SL	VDGR, BLK	CO: 105.0-106.8
23	108.4-115.8	7.4	SS	LGR, GR	
24	115.8-118.3	2.5	SH, SL	DGR, VDGR	CO: 116.9-117.0
25	118.3-126.4	8.1	SS, SL	GR	
** +	126.4-129.4	3.0	CO	BLK	
26+	129.4-139.4	10.0	SL, SS	GR, DGR	
27	139.4-144.6	5.2	SS	GR	
** +	144.6-151.1	6.5	CO	BLK	
28#+	151.1-154.5	3.4	SL	DGR	
** +	154.5-158.3	3.8	CO	BLK	
29+	158.3-160.6	2.3	SS	LGR, GR	
30	160.6-162.4	1.8	CO, SH	VDGR, BLK	CO: 161.0-162.2
31	162.4-170.0	7.6	SS	LGR, GR	
32	170.0-172.0	2.0	SL, SH	DGR, VDGR	
**	172.0-176.5	4.5	CO	BLK	
33+	176.5-186.7	10.2	SS	LGR	
**	186.7-194.6	7.9	CO	BLK	LC: 189.5-190.0
34+	194.6-200.0	5.4	SH	VDGR, DGR	LC: 198.0-199.0, SILTY
35	200.0-208.6	8.6	SS	GR	SILTY
36	208.6-210.0	1.4	SH, SL	VDGR	

HOLE NUMBER: 30381EO*
MINE AREA: N99-South
DATE: 8/9-10/03

SAMPLE NO.	DEPTH INCREMENT	THICKNESS	LITHOLOGY	COLOR	COMMENTS

* Core boxes 1 through 21, 10 foot of core per box.

Designated duplicate sample, process core, send representative split to GAL.

** Mineable coal seam, process core & store, no analyses required at this time.

+ The following increments were removed to perform coal washability analyses: 90.6-90.9, 126.7-126.8, 129.1-129.2, 129.4-129.7, 147.5-147.9, 151.1-151.4, 156.1-156.6, 158.3-158.6, 176.5-176.8, & 194.6-194.9.

CORE NO: 30381EO

Mine Area: N99, Peabody Coordinates: 42818.81E, -10630.30N

Depth	Thick	RType	Seam	pH	EC (MMHO/CM)	Calcium (MEQ/L)	Magnesium MEQ/L)	Sodium (MEQ/L)	Sodium Absorption Ratio (SAR)	Sand (%)	Silt (%)	Clay (%)	Sulfur Total (%)	Sulfur Pyritic (%)	Sulfur Organic (%)	Acidity Potential (TN/1000TN)
0.00	10.00	SS		8.0	2.6	2.3	10.0	12.0	4.9	74	19	7	<0.01			0.04
10.00	8.00	SS		7.9	1.6	3.8	8.3	4.1	1.7	72	20	8	<0.01			0.01
18.00	3.70	SS		7.6	4.5	22.0	40.0	3.3	0.6	84	11	5	<0.01			0.03
21.70	3.10	SH		6.1	8.9	22.0	140.0	5.2	0.6	30	29	41	0.20	0.02	0.05	0.64
24.80	4.20	SL		3.5	10.7	21.0	146.0	2.2	0.2	32	47	21	1.00	0.80	0.10	25.50
29.00	1.80	SH		3.6	7.6	23.0	66.0	5.1	0.8	74	18	8	3.90	2.70	1.20	84.40
30.80	6.90	SS		7.1	1.9	5.2	12.0	4.1	1.4	32	45	23	0.10			3.88
37.70	10.00	SS		7.5	1.7	3.4	10.0	4.6	1.8	61	25	14	0.02			0.66
47.70	6.30	SS		8.0	1.3	1.5	7.5	4.3	2.0	75	19	6	<0.01			0.06
54.00	5.30	SS		8.0	1.6	1.2	9.7	5.6	2.4	74	16	10	0.04			1.29
59.30	5.70	SS		7.5	1.8	3.2	9.0	5.2	2.1	43	37	20	0.30			8.47
65.00	5.00	SL		6.7	2.5	8.7	9.8	7.7	2.5	44	34	22	1.50	1.20	0.30	38.10
70.00	5.20	SS		7.4	1.6	4.6	3.3	6.9	3.5	41	39	20	0.50			14.60
75.20	2.30	SH		6.7	2.4	6.2	4.2	13.0	5.9	53	33	14	3.00	2.10	0.80	66.80
77.50	7.40	SS		8.0	1.9	0.7	0.3	16.0	21.9	45	41	14	0.30			9.59
84.90	3.00	SH		7.1	4.4	5.6	3.0	37.0	17.9	20	50	30	2.50	2.20	0.30	67.50
87.90	2.70	CO	Y0A													
90.60	1.90	SS		5.8	3.5	25.0	15.0	4.9	1.1	35	52	13	0.70	0.50	0.10	15.60
92.50	3.00	CO		6.6	1.7	2.3	1.1	11.0	8.3	72	15	13	1.50	0.70	0.70	23.10
95.50	2.20	SS		8.0	1.3	0.9	0.3	9.9	12.6	34	42	24	0.20			4.84
97.70	2.30	SH		7.7	1.8	0.9	0.5	13.0	16.4	30	40	30	1.40	1.00	0.40	29.70
100.00	4.90	SS		7.3	2.5	2.6	1.5	18.0	12.3	40	41	19	0.70			20.30
104.90	3.50	SH		7.2	1.2	4.5	3.2	3.9	2.0	39	40	21	0.60	0.10	0.30	3.56
108.40	7.40	SS		6.9	3.7	29.0	22.0	2.7	0.5	82	13	5	0.40			11.40
115.80	2.50	SH		6.2	3.3	22.0	17.0	4.5	1.0	35	43	22	3.70	3.00	0.60	95.10
118.30	8.10	SS		6.6	2.6	17.0	14.0	3.1	0.8	41	44	15	0.80			25.80
126.40	3.00	CO	Y1A													
129.40	10.00	SL		7.9	3.6	1.2	0.6	32.0	34.1	28	48	24	1.90	1.60	0.20	49.60
139.40	5.20	SS		7.3	4.2	2.2	0.7	35.0	29.0	54	30	16	1.20	1.00	0.20	31.10
144.60	6.50	CO	N0X													
151.10	3.40	SL		7.8	3.1	0.5	0.2	26.0	44.8	55	29	16	2.40	1.60	0.50	50.80
154.50	3.80	CO	N1X													
158.30	2.30	SS		8.2	1.9	0.2	<0.1	15.0	43.4	58	24	18	0.10			3.44
160.60	1.80	CO		7.7	1.6	0.1	<0.1	13.0	55.0	75	17	8	1.10	0.60	0.50	18.30
162.40	7.60	SS		8.5	2.1	0.3	0.2	19.0	38.2	60	28	12	<0.01			0.11
170.00	2.00	SL		8.4	1.7	0.2	<0.1	13.0	39.9	18	49	33	1.40	1.10	0.20	35.50
172.00	4.50	CO	E0X													
176.50	10.20	SS		8.8	1.4	0.3	<0.1	12.0	31.8	56	29	15	<0.01			0.04
186.70	7.90	CO	E1X													
194.60	5.40	SH		8.8	1.2	0.2	<0.1	10.0	26.8	11	48	41	0.09			2.94
200.00	8.60	SS		8.5	1.3	0.3	<0.1	10.0	24.7	37	36	27	0.09			2.84
208.60	1.40	SH		8.5	1.2	0.2	<0.1	11.0	25.7	26	42	32	0.10			3.97

CORE NO: 30381EO

Mine Area: N99, Peabody Coordinates: 42818.81E, -10630.30N

Depth	Thick	RType	Seam	Neutralization Potential (TN/1000TN)	Acid Base Potential (TN/1000TN)	Selenium H2O (PPM)	Selenium ABDTPA (PPM)	Selenium Total (PPM)	Boron (PPM)
0.00	10.00	SS		149.00	149.00	<0.05	<0.05	<0.10	0.15
10.00	8.00	SS		83.40	83.40	<0.05	<0.05	0.10	0.12
18.00	3.70	SS		15.50	15.40	<0.05	<0.05	<0.10	0.13
21.70	3.10	SH		5.60	4.96	<0.05	0.06	0.40	0.30
24.80	4.20	SL		-1.61	-27.10	<0.05	0.06	0.40	0.27
29.00	1.80	SH		1.69	-82.70	<0.05	0.08	1.30	1.25
30.80	6.90	SS		20.00	16.20	0.05	0.07	0.20	0.29
37.70	10.00	SS		10.80	10.20	<0.05	<0.05	<0.10	0.22
47.70	6.30	SS		83.70	83.70	<0.05	<0.05	<0.10	0.16
54.00	5.30	SS		18.40	17.20	<0.05	<0.05	<0.10	0.17
59.30	5.70	SS		38.60	30.20	<0.05	0.07	0.20	0.36
65.00	5.00	SL		6.51	-31.60	<0.05	0.08	0.80	0.88
70.00	5.20	SS		85.40	70.80	<0.05	0.12	0.60	0.42
75.20	2.30	SH		8.14	-58.70	<0.05	0.05	1.00	1.66
77.50	7.40	SS		37.80	28.30	<0.05	0.10	0.30	0.54
84.90	3.00	SH		36.40	-31.10	<0.05	0.09	0.60	0.97
87.90	2.70	CO	Y0A						
90.60	1.90	SS		7.57	-8.02	0.06	0.10	0.60	0.75
92.50	3.00	CO		8.87	-14.30	<0.05	0.08	1.80	1.27
95.50	2.20	SS		12.70	7.83	0.07	0.11	0.40	0.66
97.70	2.30	SH		6.03	-23.70	0.06	0.09	1.00	1.17
100.00	4.90	SS		35.40	15.10	0.08	0.13	0.60	0.71
104.90	3.50	SH		7.13	3.57	0.06	0.10	1.00	0.68
108.40	7.40	SS		89.20	77.80	<0.05	<0.05	0.20	0.25
115.80	2.50	SH		5.64	-89.50	<0.05	0.06	0.70	0.58
118.30	8.10	SS		52.00	26.20	<0.05	0.06	0.30	0.38
126.40	3.00	CO	Y1A						
129.40	10.00	SL		34.90	-14.80	<0.05	0.07	0.40	0.63
139.40	5.20	SS		26.80	-4.27	<0.05	0.07	0.40	0.57
144.60	6.50	CO	N0X						
151.10	3.40	SL		15.30	-35.50	0.06	0.11	1.60	0.36
154.50	3.80	CO	N1X						
158.30	2.30	SS		47.80	44.40	<0.05	0.06	0.30	0.24
160.60	1.80	CO		9.70	-8.61	0.05	0.10	1.20	0.55
162.40	7.60	SS		140.00	140.00	<0.05	0.08	0.40	0.20
170.00	2.00	SL		11.70	-23.80	0.09	0.13	0.70	0.24
172.00	4.50	CO	E0X						
176.50	10.20	SS		58.70	58.60	0.05	0.07	0.20	0.18
186.70	7.90	CO	E1X						
194.60	5.40	SH		9.26	6.32	0.17	0.20	0.60	0.21
200.00	8.60	SS		47.80	45.00	0.07	0.10	0.40	0.20
208.60	1.40	SH		21.00	17.10	0.10	0.13	0.60	0.21