APPENDIX A

LEGAL DESCRIPTIONS OF THE PROPOSED LEASE TRACTS

MINERAL TRACTS ASSOCIATED WITH THE PROPOSED LEASE TRACTS

Tract Name	Mineral Tract Numbers
ARGUS Energy WV	**WVES 50556**
Proposed lease tract A	177M-1, 177M-14, 177M-11, 1717M, 1813M, 2321M
Proposed lease tract B	177M-1, 745M, 746M, 808, 840M, 843M, 846M, 1140M, 1140, 1301, 1313M, 1330M, 1718M, 1810M, 1811M, 1813M, 2020M, 2737
Proposed lease tract C	177M-12, 177M-1, 2321M, 2430M, 2431M
Rockspring Development Inc.	**WVES 50560**
Proposed lease tract A	174M, 184M, 177M-1, 375M, 377M, 376ME-1, 376ME-2, 382M, 545M, 554M, 390ME-1, 395M, 378M, 380M, 381M, 384M, 386M, 177M-2, 430M, 556M
Proposed lease tract B	177M-1
Proposed lease tract C	430M, 177M-1, 177M-2, 382M, 545M, 553M, 554M, 550M, 547M, 548M, 745M, 1450M, 1451M, 1452M, 1453M, 517A, 517B
Proposed lease tract D	177M-1
Proposed lease tract E	177M-1, 1718M, 1717M 1
Proposed lease tract F	177M-1

U.S Department Of The Interior
Bureau Of Land Management
Eastern States
7450 Boston Boulevard
Springfield, Virginia 22153

Re: Application for Emergency Coal Lease
Pen Coal Corporation
P.O. Box 191
Dunlow, WV 25511

43 CFR 3425.1-2 Federal Lands Applied For Per Subpart 3471

A Description, as taken from maps and information provided by Army Corps of Engineers, of the US Government lands (herein referred to as “Federal Reserve”), within the Coalburg seam, being applied for is as follows. Said reserve is within the watersheds of the East Lynn Lake and the surface is governed by the Corp of Engineers, Huntington District, Cabell County, West Virginia. Both a 1” = 800’ plat and a 1”=2,000’ topo map with the reserve boundary are attached.

TRACT “A”

Beginning at a Boundary Monument 2302-1 which is a common corner to Tracts 2800, 2308, 2302 and 2311. The line continues with the driving line between Tracts 2800 and 2311; S 36^0 05’ 01”W 876.31’ Feet to Iron Pin No. 2311-1; S 28^0 29’ 36’W 341.85’ Feet to Iron Pin No. 2311-2; S 73^{0}07’20”W 55.39’ Feet to Iron Pin No. 2311-3; N 88^0 40’ 27’W 104.59’ Feet To Iron Pin No. 2311-4, N 84^0 39’ 09”W 187.02’ Feet to Iron Pin No. 2311-5; N 89^0 57’ 11’W 206.82’ Feet to Iron Pin No. 2311-6; S 82^0 54’ 31”W 143.94’ Feet to Iron Pin No.2311-7; S 71^0 36’ 46”W 102.59’ Feet to Iron Pin No. 2311-8; S 65^0 25’ 42”W 252.36’ Feet to Iron Pin No. 2311-9; S 66^0 09’ 45”W 309.57’ Feet to Iron Pin No. 2311-10. Thence running with the southwestern section of Tract 2311; N 20^0 58’55”W 573.99’ Feet to Iron Pin No. 2311-11; N 46^0 21’ 17”W 252.10’ Feet to Iron Pin No. 2311-12 a southeast corner of Greasy Ridge Cemetery Tract No. 4200 continuing with the line between Tracts 231 and 4200; N 53^0 06’ 01”W 218.15’ Feet to Iron Pin No. 2311-13 a common corner to Tracts 2311, 2904 and 4200. Thence leaving Tract 4200 and continuing with Tracts 2311 and 2904 N 46^0 49’E 296.00’ Feet to Point A common corner of Tracts 2311, 2301 and 2904. N 58 17’ 27” W 344.44’ Feet; S 64 02’ 00” W 427.00’ Feet; N 80 00’ 00” W 104.00’ Feet; N 88 28’ 00” W 186.00’ Feet; S 85 55’ 00” W 168.00’ Feet; S 77 39’ 00” W 248.00’ Feet; N 88 22’ W 70.00’ Feet; N 74 47’ 00” W 282.00’ Feet; N 32 27’ 00” W 488.00’ Feet; N 73 08’ 00” W 138.00’ Feet; N 42 59’ 00” W 60.00’ Feet; N 14 34’ 19” E 833.81’ Feet; S 41 49’ 31” E 384.05’ Feet; N 7 56’ 52” E 209.44’ Feet; N 22 40’ 15” E 398.64’ Feet; N 83 04’ 26” E 315.45’ Feet; N 84 20’ 47” E 222.00’ Feet; N 38 40’ 05” E 109.16’ Feet; N 26 18’ 50” E 205.01’ Feet; N 25^0 28’E 47.00’ Feet to a Point near Spring Branch of Milam Creek. Thence continuing down Spring Branch N 60^0 06’W 92.00’ Feet; N 01^0 18’E 219.00’

Feet; N 31^0 38'W 116.00' Feet; N 02^0 50'W 101.00' Feet; N 33^0 05'W 185.00'Feet; Thence leaving Spring Branch and Tract 2903 and running with the outcrop of the Coalburg Coal Seam N 06^0 49' 19"E 197.13' Feet; N 28^0 11' 15'E 174.03' Feet; N 75^0 58' 08"E 128.04' Feet; N 16^0 49' 39"E 246.10'Feet; N 27^0 38' 05"E 220.55' Feet; N 64^0 37' 14"E 238.58' Feet; N 29^0 26' 12"E 163.55' Feet; N 47^0 33' 20"E 349.05' Feet; N 52^0 34' 44"E 372.63' Feet; N 68^0 33' 34"E 164.86" Feet; N 83^0 17' 34"E 93.81' Feet; N 49^0 26' 58"E 283.69' Feet; N 80^0 40' 47"E 124.03' Feet; N 41^0 26' 04"E 124.22' Feet; N 63^0 47' 12"E 136.42' Feet; N 22^0 02' 37"E 165.49' Feet; N 37^0 30' 11"E 168.03' Feet; N 58^0 44' 45"E 179.50' Feet; N 85^0 30' 33"E 256.53' Feet; N 90^0 00' 00"E 286.80' Feet; N 84^0 26' 32"E 207.40' Feet; S 75^0 04' 26"E 85.07' Feet; N 63^0 26' 37"E 114.36' Feet; N 77^0 45' 44"E 198.14' Feet; N 76^0 44' 29"E 262.75' Feet; S 84^0 53' 59"E 102.71' Feet; S 58^0 44' 45"E 119.67' Feet; S 06^0 07' 04"E 205.69' Feet; S 03^0 24' 04"W 369.52' Feet; S 07^0 31' 58"E 320.50' Feet; S 36^0 25' 36"E 138.44' Feet; S 86^0 08' 41"E 162.95' Feet; S 07^0 27' 48"W 154.70' Feet; S 16^0 53' 34"E 106.87' Feet. To a point in Orchard Branch; N 57^0 54' 41"E 158.52' Feet; N 22^0 00' 14"E 163.25' Feet; N 74^0 15' 16"E 148.04' Feet; S 75^0 06' 10" E 234.40' Feet; S 58^0 44' 45"E 299.16' Feet; S 76^0 01' 08"E 506.40' Feet; N 75^0 21' 32"E 183.23' Feet; S 66^0 32' 18"E 120.68' Feet; S 23^0 42' 19"E 351.44' Feet; S 04^0 45' 56'"W 87.67' Feet; S 26^0 34' 25"W 123.73' Feet; S 20^0 19' 49"W 251.55' Feet; S 00^0 00'00"E 117.94' Feet; S 15^0 12' 02"E 122.22' Feet; S 30^0 25' 14"E 155.34' Feet; S 78^0 49' 49"E 120.26' Feet; S 65^0 46' 49"E 95.83' Feet; S 45^0 00' 39"E 121.51' Feet; N 52^0 44' 38"E 168.36' Feet; N 73^0 39' 12"E 253.50' Feet; N 88^0 06' 38"E 441.59' Feet; S 78^0 38' 09"E 280.80' Feet; S 68^0 12' 22"E 211.78' Feet; S 42^0 53' 23"E 278.23' Feet; S 29^0 30' 36"E 127.16'Feet; S 04^0 50' 45"W 86.22' Feet; S 20^0 46'46"W 135.49' Feet; S 29^0 06' 50"W 323.33' Feet; S 27^0 29'00"W 205.16' Feet; S 08^0 33' 13"W 421.12' Feet; S 08^0 49' 59"E 151.77' Feet; S 31^0 03' 04"E 183.56' Feet; S 37^0 39' 29"E 257.49' Feet; S 53^0 05'15"E 315.17' Feet; S 37^0 01' 16"E 118.54' Feet; S 03^0 32' 01"E 118.17' Feet; S 15^0 19' 57"W 203.82' Feet; S 21^0 15' 28"E 84.37' Feet; S 09^0 47' 10"W 171.40' Feet; S 16^0 22' 25"W 217.02' Feet; S 02^0 00' 19"W 291.39' Feet; S 07^0 33' 51"W 165.98' Feet; S 12^0 37' 26"W 99.97' Feet; S 25^0 09' 11"W 78.82' Feet; S 10 47' 52" E 246.78' Feet to Monument 2608-31; N 88 25' 38" W 192.37' Feet to Monument 2608-32; S 39 31' 37" W 107.65' Feet to Monument 2608-1; S 27 24' 23" W 770.37' Feet to Monument 2608-2; S 54 12' 00" E 539.05' Feet to Monument 2608-3; S 60 14' 03" E 111.89' Feet to Monument 2608-4; S 15 27' 10" W 870.12' to Monument 2608-5; N 32 26' 17" W 648.90' Feet to Monument 2608-6; N 70 23' 45" W 283.32' Feet; S 01 53' 24" E 812.04' Feet; N 56 16' 00" W 122.00' Feet; N 57 28' 34" W 124.97' Feet; N 56 45' 00" W 538.00' Feet; N 23 03' 00" W 153.00' Feet; N 7 40' 00" W 120.00' Feet; N 3 02' 00" W 113.00' Feet; N 5 05' 00" E 136.00' Feet; N 0 33' 00" W 210.00' Feet; S 90 00' 00" W 9.00' Feet; N 23 52' 00" W 61.50' Feet; N 23 04' 31" W 413.50 to Monument 2607-7; N 24 06' 03" W 234.34' Feet to Monument 2607-8; N 41^0 18" 06"W 224.61' Feet to Boundary Monument No. 2607-9; thence N 15^0 57' 22"W 345.40' Feet to Boundary Monument No. 2607-10; thence N 13^0 44' 26"W 138.34' Feet; to Boundary Monument No. 2607-11; thence N 00^0 55' 29"E 235.43' Feet to Boundary Monument No. 2607-12; thence N 04^0 21' 29"E 249.50' Feet to Boundary Monument No. 2607-13; thence N 27^0 37' 46"W 471.59' Feet to Boundary Monument no. 2308-1; thence S 83^0 17' 33"W 624.73' Feet to Boundary Monument No. 2308-2;

thence N 88^0 39’ 34”W 732.67’Feet to Boundary Monument No. 2308-3; Thence N 39^0 44’ 26”W 858.09’ Feet to Boundary Monument No. 2302-1 to point of Beginning Containing +/- 836.80 Acres.

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TRACT “B”

Beginning at Boundary Monument 1802-7 which is a common corner Tracts 2900 and 1802 “B”. And running with the East Lynn Lake Boundary Line N 26º 16’ 40” W 1530.88’ Feet to Boundary Monument 1802-8; Thence N 36º 11’ 03” W 249.01’ Feet to Boundary Monument 1802-9; Thence N 37º 45’ 13” W 418.26’ Feet to Boundary Monument 1802-10; Thence N 19º 07’ 01” W 862.70’ Feet to Boundary Monument 1800-1 A corner to Tracts 1802 “B”, 1804 and 2900. Thence leaving Tract 1802 “B” and continuing with the line between Tract 1804 and 2900 N 61º 15’ 41” W 1885.38’ Feet to Boundary Monument 1800-2 a corner to Tracts 2900, 2904 and 1804; Thence leaving these three tracts and running N 78º 07’00” W 714.00’ Feet; N 58º 44’ 00” W 399.00’ Feet; N 72º 17’ 00” W 151.00’ Feet; N 11º 17’ 00” W 350.00’ Feet; S 39º 00’ 00” W 31.00’ Feet; S 32º 17’ 00” W 90.00’ Feet; S 78º 41’ 00” W 66.00’ Feet; N 57º 49’ 00” W 424.00’ Feet; N 54º 18’ 00” W 158.00’ Feet; N 50º 37’ 00”W 124.00’ Feet; N 43º 56’ 00” W 228.00’ Feet; N 24º 33’ 00” W 128.00’ Feet; N 47º 29’ 00” W 114.00’ Feet; N 24º 04’ 00” W 422.00’ Feet; N 59º 22’ 00” W 88.00’ Feet; S 49º 21’ 00” W 261.00’ Feet; S 85º 29’ 00” W 191.00’ Feet; S 63º 56’ 00” W 305.00’ Feet; S 32º 11’ 00” W 105.00’ Feet; S 12º 17’ 00” W 103.00’ Feet; S 62º 20’00” W 157.00’ Feet; S 43º 48’ 00” E 157.00’ Feet; N 40 44’ 03” W 1274.46’ Feet.; N 18 30’ 34” W 253.02’ Feet.; N 83 55’ 34” E 82.20’ Feet.; N 40 17’ 43” W 754.76’ Feet.; S 63 39’ 55” W 86.91’ Feet.; S 12 34’ 46” E 599.15’ Feet.; S 01 38’ 04” W 287.42’ Feet.; S 25 17’ 13” W 266.79’ Feet.; S 78 45’ 08” E 918.63’ Feet.; S 20 19’ 55” E 481.37’ Feet.; S 13 09’ 31” E 92.52’ Feet.; S 88º 07’ 00” W 122.00’ Feet; S 51º 29” 00” W 300’ Feet; S 49º 36” 00” W 279.00’ Feet; S 76º 16’ 00” W 280.00’ Feet; S 68º 26’ 00” W 92.00’Feet; S 63º 59’ 00” W 141.00’ Feet; S 59º 58’ 00” W 133.00’ Feet; N 83º 23’ 00” W 30.00’ Feet; S 88º 45’ 00” W 138.00’ Feet; N 79º 30’ 00” W 126.00’ Feet; N 83º 48’ 00” W 213.00’ Feet; N 61º 15’ 00” W 351.00’ Feet; N 51º 51’ 00” W 160.00’ Feet; N 44º 55’ 00” W 18.00’ Feet; N 44º 37’ 00” W 516.00’ Feet; S 47° 29’ 00”W 802.00’Feet; N 84° 53’00”W 705.00’ Feet; S 36° 59’00”W 274.00’ Feet; S 56° 29’00”W 366.00’ Feet; S 47° 41’00”W 1270.00’ Feet; S 76° 06’ 38”W 269.34’ Feet; To a point near the out crop of the Coalburg Seam N 60º 57’ 16” W 87.17’ Feet; S 10º 18’ 31” W 189.29’ Feet; S 32º 54’ 54” W 171.41’ Feet; S 55º 01’ 05” W 103.35’ Feet; N 86º 49’ 17” W 152.65’ Feet; N 59º 32’ 38” W 333.99’ Feet; N 78º 14’ 10” W 207.59’ Feet; N 64º 32’ 42” W 393.88’ Feet; N 47º 12’ 48” W 311.53’ Feet; N 21º 10’ 07” W 281.39’ Feet; N 05º 02’ 40” W 288.91’ Feet; N 22º 50’ 29” W 174.51’ Feet; N 86° 11’ 14” E 127.30’ Feet; N 38º 40’ 13” E 162.62’ Feet; N 62º 15’ 01” W 181.80’ Feet;N61 49’49”W 268.95’ Feet; N

40º 36’ 43” W 156.10’ Feet; N 22º 23’ 16” W 155.63 Feet; N 15º 57’ 04” E 184.87’ Feet; N 36º 10’ 06” E 272.62’ Feet; N 52º 00’ 42” E 343.81’ Feet; N 56º 59’ 09” E 403.93’ Feet; N 79º 41’ 56” E 189.34’ Feet; S 79º 30’ 45” E 232.51’ Feet; S 69º 27’ 04” E 217.03’ Feet; N 27º 39’ 17” W 200.63’ Feet; N 26º 34’ 25” W 189.29’ Feet; N 28º 37’ 10” E 106.07’ Feet; N 72º 00’ 08” E 356.14’ Feet to a point in the Right Fork of Flat Branch; Thence continuing with the Coalburg outcrop N 63º 26’ 37” W 321.86’ Feet; N 15º 57’ 04” W 123.25’ Feet; N 03º 41’ 34” W 262.95’ Feet; N 08º 07’ 59” E 239.42’ Feet to a point in Flat Branch. Thence continuing with the Coalburg outcrop. S 38º 03’ 27” W 494.50’ Feet; S 06º 00’ 40” W 161.72’ Feet; S 24º 34’ 31” W 325.77’ Feet; S 62º 06’ 42” W 162.87’ Feet; S 67º 04’ 32” W 239.04’ Feet; S 65º 51’ 45” W 269.09’ Feet; S 47º 07’ 55” W 485.24’ Feet; S 36º 32’ 21” W 284.45’ Feet; S 83º 39’ 44” W 153.36’ Feet; N 66º 48’ 33” W 128.97’ Feet; N 57° 16’ 28” W 281.83’ Feet; N 30° 04’ 40” W 185.85’ Feet; N 43º 16’ 30” W 197.64’ Feet; N 30° 04’ 40” W 185.85’ Feet; N 10º 37’ 25” E 137.79’ Feet; N 44º 06’ 05” E 377.19’ Feet; N 36º 07’ 46” E 387.76’ Feet to a point in a small drain; Thence N 81º 52’ 22” W 59.88’ Feet; S 56º 19’ 11” W 244.22’ Feet; S 50º 12’ 18” W 198.37’ Feet; S 62º 32’ 04” W 238.58’ Feet; S 78º 41’ 39” W 172.71’ Feet; N 78º 01’ 42” W 285.65’ Feet; N 57º 16’ 28” W 140.92’ Feet; N 09º 27’ 57” W 51.49’ Feet; N 25º 21’ 16” W 177.97’ Feet; N 23º 41’ 02” W 130.27’ Feet; N 39º 42’ 12” W 218.82’ Feet; N 08º 38’ 02” W 190.71’ Feet; N 17º 53’ 06” W 274.19’ Feet; N 10º 00’ 42” E 58.12’ Feet; N 66º 15’ 30” E 183.98’ Feet; N 43º 16’ 30” E 39.31’ Feet; N 00º 00’ 00” E 112.79’ Feet; N 31º 22’ 41” W 449.59’ Feet; N 14º 40’ 54” W 146.19’ Feet; N 05º 18’ 34” E 309.41’ Feet; N 30º 12’ 45” E 130.52’ Feet; N 30º 32’ 21” W 76.23’ Feet; N 59º 28’ 47” W 76.24’ Feet; N 39º 48’ 58” W 144.66’ Feet; N 10º 10’ 45” W 266.83’ Feet; N 01º 50’ 11” E 262.76’ Feet; N 12º 08’ 16” E 157.69’ Feet; N 23º 58’ 43” E 129.76’ Feet; N 14º 02’ 29” E 76.36’ Feet; N 45º 00’ 39” E 52.39’ Feet; N 12º 05’ 57” W 48.21’ Feet; N 60º 42’ 37” W 268.41’ Feet; N 16º 15’ 28” W 88.63’ Feet;N06 55’29”W 255.15’ Feet; N 18º 26’ 29” W 58.56’ Feet; S 75º 46’ 04” W 116.41’ Feet; N 87º 19’ 02” W 215.81’ Feet; N 71º 13’ 43” W 88.94’ Feet; N 33º 49’ 55” W 202.67’ Feet; N 00º 00’ 00” E 74.07’ Feet; N 45º 00’ 53” E 252.45’ Feet; N 32º 40’ 14” E 155.99’ Feet; N 19º 45’ 13” E 139.52’ Feet; N 32º 38’ 27” E 277.89’ Feet; N 46º 34’ 33” E 217.97’ Feet; N 58º 02’ 54” E 232.23’ Feet; N 53º 45’ 23” E 93.97’ Feet; N 58º 53’ 39” E 218.33’ Feet; N 71º 28’ 48” E 179.71’ Feet; N 90º 00’ 00” E 59.27’ Feet; N 05º 42’ 46” E 85.07’ Feet; N 74º 45’ 01” E 193.09’ Feet; N 83º 09’ 35” E 213.21’ Feet; S 85º 36’ 11” E 220.81’ Feet; S 70º 49’ 40” E 206.19’ Feet; N 58º 00’ 15” E 79.88’ Feet; N 67º 59’ 46” E 429.25’ Feet; S 82º 52’ 39” E 136.54’ Feet; S 54º 47’ 33” E 176.18’ Feet; S 32º 00’ 54” E 399.31’ Feet; S 20º 46’ 46” E 262.55’ Feet; S 10º 00’ 42” W 292.24’ Feet; S 20º 19’ 49” W 243.73’ Feet; S 34º 42’ 19” W 133.85’ Feet; S 06º 35’ 04” E 221.54’ Feet; S 00º 00’ 00” E 245.47 Feet; S 29º 22’ 01” W 155.40’ Feet; S 50º 12’ 18” E 132.25’ Feet; S 29º 03’ 49” E 261.47’ Feet to a point in the creek in Indianlick Branch; Thence N 08º 07’ 59” E 119.71’ Feet; N 01º 08’ 46” E 423.31’ Feet; N 27º 21’ 31” E 276.39’ Feet; N 06 42’44” E 144.89’ Feet; N 22º 43’ 19” E 394.60’ Feet; N 46º 24’ 29” E 245.52’ Feet; N 67º 23’ 16” E 220.15’ Feet; N 72º 33’ 32” E 310.65’ Feet; to a point in the Left Fork of Indianlick Branch. Thence N 72º 54’ 12” W 230.34’ Feet; N 68º 45’ 24” W 327.06’ Feet; N 71º 34’ 17” W 160.66’ Feet; N 40º 36’ 43” W 156.10’ Feet; N 16º 42’ 19” E 88.38’ Feet; N 33º 42’ 00” W 61.05’ Feet; N 06º 42’ 44” W 144.89’ Feet; N 11º 18’ 51” E 215.81’ Feet; N 45º 00’ 39” E 251.43’ Feet; N 64º 08’ 31” E 310.53’Feet to a point in a drain. N 75º 04’ 26” W 262.90’ Feet; N 71º 02’ 10” W 286.52’ Feet; N 34º 31’ 07” W 164.37’ Feet; N 25º 34’ 06” W 215.82’ Feet; N 02º 17’ 29” W 211.78’ Feet; N 15º 57’ 04” E 308.12’ Feet; N 32º 00’ 54” E 319.45’ Feet; N 45º 00’ 39” W 107.76’ Feet; N 20º 19’ 49” W 243.73’ Feet; N 07º 46’ 05” W 187.94’ Feet; N 18º 00’ 38” E 356.03’ Feet; N 16º 51’ 52” E 291.88’ Feet; N 37º 39’ 29” E 374.22’ Feet; N 68º 58’ 11” E 117.94’ Feet; N 26º 34’ 25” W 208.22’ Feet; N 04º 11’ 11” E 347.98’ Feet; N 11º 46’ 21” E 207.51’ Feet; N 02º 23’ 13” E 203.33’ Feet; N 11º 18’ 51” E 215.81’ Feet; N 38º 18’ 02” E 204.93’ Feet; N 65º 55’ 57” E 435.88’ Feet; N 54º 41’ 56” E 249.01’ Feet; N 84º 36’ 46” E 450.78’ Feet; S 73º 18’ 24” E 88.40’ Feet; S 13º 40’ 34” E 322.33’ Feet; N 56º 19’ 11” E 152.64’ Feet; N 20º 33’ 47” E 144.65’ Feet; N 45º 00’ 39” E 227.49’ Feet; N 77º 37’ 25” E 355.44’ Feet; S 65º 46’ 49” E 185.70’ Feet; S 32º 00’ 54” E 239.59’ Feet; S 39º 48’ 58” E 330.60’ Feet; S 33º 07’ 16” E 464.91’ Feet to a point in the drain; N 12º 23’ 07” W 355.32’ Feet; N 07º 22’ 35” W 725.49’ Feet; N 24º 27’ 07” E 102.28’ Feet; N 49º 11’ 44” E 246.11’ Feet; N 38º 40’ 13” E 162.62’ Feet; N 18º 26’ 29” W 80.30’ Feet; N 52º 26’ 30” W 277.72’ Feet; N 31º 42’ 40” W 338.30’ Feet: N 08º 28’ 27” W 402.23’ Feet; N 30º 35’ 19” E 216.32’ Feet; N 76º 45’ 51” W 147.88’ Feet; N 39º 31’ 06” W 625.44’ Feet; N 13º 23’ 50” W 182.73’ Feet; N 08º 58’ 33” E

162.82’ Feet; N 47° 44’ 13” W 251.72’ Feet; N 24° 14’ 09” W 371.31’ Feet; N 12° 59’ 58” E 225.87’ Feet; N 32° 21’ 26” E 300.61’ Feet; N 48° 01’ 25” E 113.90’ Feet; S 88° 21’ 51” E 296.49’ Feet; N 85° 21’ 59” E 628.67’ Feet; S 54° 28’ 21” E 72.83’ Feet; N 43° 27’ 45” E 221.58’ Feet; N 68° 33’ 34” E 254.72’ Feet; N 90° 00’ 00” E 143.95’ Feet; N 02° 36’ 13” E 186.41’ Feet; N 37° 24’ 57” E 181.17’ Feet; N 48° 44’ 31” E 551.94’ Feet; N 44° 22’ 52” E 544.80’ Feet; N 62° 42’ 33” E 295.38’ Feet; S 75° 58’ 08” E 104.74’ Feet; S 33° 07’ 16” E 232.45’ Feet; S 16° 32’ 27” E 565.12’ Feet; S 02° 51’ 49” W 339.01’ Feet; S 00° 59’ 17” E 491.02’ Feet; S 06° 29’ 08” W 374.84’ Feet; S 04° 45’ 56” E 203.85’ Feet; S 21° 34’ 43” E 391.41’ Feet; S 38° 10’ 04” E 150.73’ Feet; S 66° 15’ 30” E 231.26’ Feet; S 12° 32’ 00” W 78.04’ Feet; S 34° 13’ 33” W 255.93’ Feet; S 60° 57’ 16” E 87.17’ Feet; N 87° 36’54” E 203.40’ Feet; N 68° 12’ 22” E 227.99’ Feet; N 32° 28’ 51” E 331.13’ Feet; N 46° 33’ 32” E 221.58’ Feet; N 75° 58’ 08” E 244.39’ Feet; S 73° 36’ 59” E 150.04’ Feet; N 13° 14’ 43” E 147.83’ Feet; N 51° 04’ 59” E 565.93’ Feet; N 64° 32’ 42” E 787.76’ Feet; N 87° 57’ 19” E 237.25’ Feet; S 41° 11’ 48” E 89.99’ Feet; S 10° 39’ 51” W 732.13’ Feet; S 17° 45’ 03” W 222.19’ Feet; S 09° 09’ 57” W 265.79’ Feet; S 00° 00’ 00” E 380.90’ Feet; S 16° 42’ 19” W 176.75’ Feet; S 61° 42’ 30” W 375.04’ Feet; N 65° 13’ 59” W 121.23’ Feet; S 67° 15’ 24” W 284.63’ Feet; S 40° 46’ 27” W 324.15’ Feet; S 61° 23’ 55” W 106.09’ Feet; S 45° 00’ 39” E 59.86’ Feet; S 42° 53’ 23” W 161.74’ Feet; S 84° 17’ 30” W 85.10’ Feet; S 68° 58’ 11” W 235.87’ Feet; S 46° 31’ 05” W 455.13’ Feet; N 81° 52’ 22” E 299.38’ Feet; S 84° 33’ 42” E 178.63’ Feet; N 72° 54’ 12” E 230.34’ Feet; S 79° 41’ 56” E 189.34’ Feet; S 57° 51’ 27” E 350.02’ Feet; S 70° 01’ 26” E 198.22’ Feet; S 69° 09’ 10” E 380.56’ Feet; S 56° 19’ 11” E 183.16’ Feet; S 05° 31’ 47” W 263.63’ Feet; S 35° 50’ 52” W 187.97’ Feet; S 32° 28’ 51” W 441.50’ Feet; S 54° 52’ 33” W 279.53’ Feet; S 59° 21’ 32” W 265.73’ Feet; S 30° 15’ 57” W 117.60’ Feet; S 52° 26’ 30” W 416.59’ Feet; S 46° 59’ 08” W 173.71’ Feet; N 77° 28’ 33” W 156.13’ Feet; S 02° 17’ 29” E 211.78’ Feet; S 22° 56’ 23” W 238.98’ Feet; S 31° 30’ 50” W 307.80’ Feet; S 36° 10’ 06” W 272.62’ Feet; S 65° 13’ 59” W 242.46’ Feet; S 33° 14’ 30” W 587.00’ Feet to a point in Beechy Branch; Thence N 51° 21’ 02” E 433.70’ Feet; N 48 37’ 56” E 473.89’ Feet: N 56° 19’ 11” E 213.69’ Feet; N 18° 26’ 29” E 160.61’ Feet; N 37°39’ 29” E 374.22’ Feet; N 41° 11’ 18” E 449.97’ Feet; N 60° 15’ 52” E 546.10’ Feet; N 68° 38’ 12” E 418.25’ Feet; N 57° 23’ 26” E 251.31’ Feet; N 72° 39’ 08” E 141.94’ Feet; S 49° 00’ 06” E 258.05’ Feet; S 42° 24’ 29” E 263.67’ Feet; N 21° 48’ 32” E 91.17’ Feet; N 41° 38’ 39” E 101.94’ Feet; N 46° 28’ 46” W 233.55’ Feet; N 30° 39’ 36” W 265.68’ Feet; N 11° 58’ 50” W 285.55’ Feet; N 19° 38’ 18” E 438.17’ Feet; N 65° 21’ 19” E 126.79’ Feet; N 90° 00’ 00” E 423.39’ Feet; S 75° 39’ 21” E 375.83’ Feet; S 46° 24’ 29” E 245.52’ Feet; S 27° 06’ 15” E 817.76’ Feet; S 32° 28’ 51” E 220.75’ Feet; S 47° 18’ 05” E 149.78’ Feet; S 25° 38’ 58” E 234.75’ Feet; S 74° 28’ 53” E 158.19’ Feet; S 49° 46’ 27” E 144.18’ Feet; S 71° 34’ 17” E 107.11’Feet; S 50°12’18” E 198.37’Feet; S 71° 07’14” E 340.07’Feet; S 59° 02’ 45” E 197.48’Feet; S 11° 02’ 42” E 353.60’Feet; S 09° 52’ 10” W 395.22’ Feet; S 24° 27’07” W 306.85’ Feet; S45° 00’ 39” W 323.27’Feet; S 72° 15’42”W 222.26’ Feet; S 20° 51’ 42” W 380.45’ Feet; S 14° 02’ 29” W 383.91’Feet; S 26° 34’ 25” W 132.50’ Feet; S 51° 43’ 13” W 204.95’ Feet; S 66° 48’ 33” E 193.45’ Feet; S 45° 00’ 39” E 203.54’ Feet; S 00° 00’ 00”E 363.98’Feet; S 29° 22”01”W 155.40’ Feet; S 06° 35’ 04” W 443.08’ Feet to point in Bluelick Branch; N 79° 23’ 03” E 137.84’ Feet; N 09° 41’ 32” E 352.07’ Feet; N 41° 59’52”E 113.90’ Feet; N 90° 00’ 00” E 76.21’ Feet; N 26° 34’ 25” E 208.22’ Feet; N 16° 15’ 58” W 211.62’ Feet; N 03° 43’ 00” E 653.14’ Feet; N 25° 34’ 06” E 215.82’ Feet; N 41° 05’ 33” E 438.02’ Feet; N 50° 55’ 00” E 174.54’ Feet; N 60° 32’ 00” E 223.69’ Feet; N 71° 34’ 17” E 187.43’ Feet; N 00° 00’ 00” E 169.29’Feet; N 03° 29’ 15” W 108.80’ Feet; N 08° 31’ 11” W 241.11’ Feet; N 10° 07’ 42” E 240.76’ Feet; N 00° 00’ 00” E 211.61’ Feet; N 13° 23’ 50”E 182.73’ Feet; N 19° 39’ 38” W 125.84’ Feet; N 03° 28’ 10” W 279.84’ Feet; N 43° 02’ 09” E 173.71’ Feet; N 80° 32’ 28” E 154.52’ Feet; N 03° 56’ 48” W 246.06’ Feet; N 73° 18’ 24” E 88.40’ Feet; S 78° 00’ 27” E 692.53’ Feet; N 88° 49’ 53” E 415.01’ Feet; N 74° 03’ 37” E 246.58’ Feet; S 10° 05’ 03” W 386.88’ Feet; S 21° 32’ 54” W 345.82’ Feet; S 03° 56’ 32” E 684.00’ Feet; S 16° 15’ 25” E 469.83’ Feet; S 23° 28’ 19” E 362.33’ Feet; S 58° 48’ 32” E 151.62’ Feet; S 64° 50’ 05” E 201.83’ Feet;

N 76° 49’ 56” E 176.35’ Feet; N 54° 45’ 14” E 518.94’ Feet; N 70° 28’ 12” E 901.30’ Feet; N 81° 46’ 03” E 140.28’ Feet; S 52° 00’ 42” E 74.17’Feet; S 32° 28’51” E 71.44’ Feet; S 10° 10’ 45” W 72.36’ Feet; S 52° 00’42” W 148.34’ Feet; S 57° 00’ 44” W 335.39’ Feet; S 53° 00’ 54” W 500.83’ Feet; S 49° 55’ 32” W 527.59’ Feet; S 45° 46’ 14” W 486.93’ Feet; S 46 04’ 18” W 697.52’ Feet; S 30 49’ 31” W 242.42’ Feet; S 13° 06’ 40” W 491.24’ Feet; S 10° 55’ 36” E 212.02’ Feet; S 01° 50’ 01” W 228.38’ Feet; S 47° 15’ 01”E 231.35’ Feet; S 22° 43’19”E 85.13’ Feet; N 60° 10’ 25” E 143.19’ Feet; N 76° 30’ 33” E 140.89’ Feet; S 81° 58’ 39” E 706.56’ Feet; S 75° 35’ 04” E 264.06’ Feet; S 60° 41’ 57” E 119.40’ Feet; S 22° 10’ 51” W 522.58’ Feet; S 24° 47’ 00” W 496.80’ Feet; S 46° 43’ 45” W 258.41’ Feet; S 73° 03’ 38” E 244.43’ Feet; S 53° 21’ 15” E 97.90’ Feet; S 25° 32’ 45” E 182.15’ Feet; S 03° 52’ 48” E 215.97’ Feet; S 00° 00’ 00” E 241.04’ Feet; S 18° 26’ 29” W 248.32’ Feet; S 71° 07’ 14” E 220.09’ Feet; S 32° 40’ 43” E 568.40’ Feet; S 10° 10’ 45” E 72.36’ Feet; S 55° 18’54”E 231.04’ Feet; S 45° 00’ 39” E 193.72’ Feet; S 72° 02’ 14” E 213.16’ Feet; S 78° 15’ 31” E 188.45’ Feet; S 86° 57’ 56” E 241.47’ Feet; N 83° 00’ 05” E 209.81’ Feet; N 54° 49’ 46” E 136.32’ Feet; N 45° 00’ 39” E 250.55’ Feet; N 31° 45’ 18” E 298.51’ Feet; N 21° 10’ 35” E 399.50’ Feet; N 20° 31’13” E 573.24’ Feet; N 22° 12’ 11” E 246.54’ Feet; N 36° 39’ 59” E 195.78’ Feet; N 39° 27’ 27” E 186.84’ Feet; N 52° 58’ 48” E 130.41’ Feet; N 77° 35’ 50” E 93.52’ Feet; S 67° 50’ 28” E 106.51’ Feet; S 47° 48’ 12” E 106.03’ Feet; S 44 36 36”E 184.68’ Feet; S 74 28’53” E 238.88’ Feet; S 53 47’ 17” E 355.46’ Feet; S 45° 45’ 53” E 392.64’ Feet; S 55° 43’ 23” E 291.81’ Feet; S 75° 14’ 24” E 487.39’ Feet; S 29° 15’ 29” E 52.33’ Feet; S 68° 16’ 30” W 281.20’ Feet; S 79° 09’ 33” W 485.45’ Feet; S 79° 02’ 31” W 413.07’ Feet; S 70° 41’01” W 298.10’ Feet; S 80° 45’ 26” W 159.17’ Feet; S 44° 36’ 36” W 184.68’ Feet; S 07° 24’ 19” W 467.72’ Feet; S 33° 54’ 22” E 140.81’ Feet; S 22° 45’ 31” E 184.16’ Feet; S 72° 45’ 53” E 110.93’ Feet; S 48° 15’ 01” E 68.56’ Feet; S 00° 00’ 00” E 91.30’ Feet; S 22° 17’ 35” W 120.39’ Feet; S 46° 08’ 03” W 263.51’ Feet; S 37° 41’19” W 233.06’ Feet; S 53° 21’ 15” W 97.90’ Feet; S 63° 26’ 37” W 147.04’ Feet; S 23° 41’24” E 113.66’ Feet; S 09° 11’ 32”E 125.79’ Feet; S 06° 23’ 34” W 229.69’ Feet; S 05° 24’ 50” W 348.51’ Feet; S 24° 56’ 12” W 142.98’ Feet; S 49° 51’ 17” W 152.94’ Feet; S 70° 31’ 49” W 158.88’ Feet; S 88° 00’ 10” W 157.20’ Feet; S 67° 03’32” W 220.19’ Feet; N 63° 44’ 04” W 160.93’ Feet; N 53° 55’ 48” W 291.54’ Feet; N 45° 00’ 39” W 304.79’ Feet; N 58° 40’ 51” W 98.36’ Feet; N 45° 00’ 39” W 240.21’ Feet; N 83° 39’ 44” W 66.17’ Feet to a point in the drain; S 31° 05’ 49” E 290.02’ Feet; S 31° 17’ 14” E 228.64’ Feet; S 40° 17’ 53” E 361.53’ Feet; S 23° 22’ 55” E 234.76’ Feet; S 04° 37’ 33” W 249.16’ Feet; S 51° 45’ 50” W 197.68’ Feet; S 73 34’ 50” W 329.47’ Feet; S 82° 23’ 43” W 538.15’ Feet; to a point in the drain; S 79° 19’ 18” E 719.41’ Feet; N 90° 00’ 00” E 369.01’ Feet; S 67° 41’ 17” E 187.59’ Feet; S 32° 54’ 22” E 585.08’ Feet; S 32 54’ 22” E 585.08’ Feet; S 54° 33’ 52” E 264.56’ Feet; S 79° 14’ 57” E 332.83’ Feet; S 41° 59’ 52” E 122.86’ Feet; S 05° 33’ 43” W 207.32’ Feet; S 52° 36’ 18” W 117.27’ Feet; S 65° 24’ 56” W 640.83’ Feet; S 85° 23’ 28” W 113.63’ Feet; S 38° 08’ 38” W 248.44’ Feet; S 84° 36’ 24” W 330.28’ Feet; S 72° 12’ 25” W 364.52’ Feet to a point in Perry Branch; S 78° 33’ 47” E 313.11’ Feet; S 72° 20’ 28” E 300.98’ Feet; S 35° 58’ 57” E 139.91’ Feet; S 20° 29’ 06” E 469.79’ Feet; S 05° 31’ 47” W 227.49’ Feet; S 53° 58’ 58” W 695.62’ Feet; S 86° 49’ 17” W 164.66’ Feet; S 15° 30’ 01” W 191.35’ Feet; S 47° 33’ 38” W 319.32’ Feet; S 71° 57’ 21” W 430.36’ Feet; S 18° 11’ 04” E 128.78’ Feet; S 41° 39’ 41” 508.41’ Feet; S 41° 23’ 48” W 245.86’ Feet; S 80° 35’ 46” W 312.93’ Feet; N 87° 14’ 38” W 645.59’ Feet; N 75° 52’ 09” W 254.31’ Feet; N 33° 41’ 45” W 133.78’ Feet; N 15° 09’ 00” E 99.00’ Feet; N 02° 50’ 00” W 101.00’ Feet; N 37° 36’ 22” W 142.60’ Feet; S 54° 54’ 00” W 162.99’ Feet to point of beginning containing +/- 5,372.20 Acres.

U.S Department of The Interior
Bureau Of Land Management
Eastern States
7450 Boston Boulevard
Springfield, Virginia 22153

Re: Application for Emergency Coal Lease
Pen Coal Corporation
P.O. Box 191
Dunlow, WV 25511

43 CFR 3425.1-2 Federal Lands Applied For Per Subpart 3471

A Description, as taken from maps and information provided by Army Corps of Engineers, of the US Government lands (herein referred to as "Federal Reserve"), within the Coalburg seam, being applied for is as follows. Said reserve is within the watersheds of the East Lynn Lake and the surface is governed by the Corp of Engineers, Huntington District, Cabell County, West Virginia. Both a 1" = 800' plat and a 1"=2,000' topo map with the reserve boundary are attached.

TRACT "C"

Beginning at Boundary Monument 2600-21 (Iron Pin set by a Hickory on 1/10/69). This being a common corner of Tracts 2602, 2606 and 2600. Thence leaving tract 2602 and continuing with tract 2606 and 2600 S 84° 43' 59" W 155.68' Feet to Monument 2600-22; Thence N 77° 14' 20" W 217.04' Feet to Monument 2600-23; Thence N 73° 22' 59" W 208.76' Feet to Monument 2600-24; Thence S 65° 08' 02" W 263.93' Feet to Monument 2600-25; Thence S 60° 45' 07" W 523.74' Feet to Monument 2600-26; Thence S 66° 31' 55" W 42.21' Feet to Monument 2600-27; Thence N 89° 49' 37" W 125.66' Feet to Monument 2600-28; Thence N 86° 49' 44" W 106.85' Feet to Monument 2600-29; Thence S 73° 12' 07" W 90.90' Feet to Monument 2600-39; Thence leaving tract 2606 and continuing down the hill to the Coalburg outcrop S 72° 20' 03 W 292.03' Feet to Monument 2601-7; Thence N 06 24' 20" W 116.97' Feet to Monument 2601-6; Thence N 00 39' 29" E 148.03' Feet to Monument 2601-5; Thence N 17 04' 24" E 160.36' Feet to Monument 2601-4; Thence N 27 08' 39 E 199.53' Feet to Monument 2601-3; N 81 58' 54" E 42.01' Feet to Monument 2601-2; N 15 20' 20" E 127.93' Feet; N 03 52' 06" E 326.14' Feet; N 10° 23' 34" E 177.64' Feet; N 30° 25' 14" W 388.36' Feet; N 54° 22' 43" W 310.00' Feet; N 81° 10' 58" W 427.47' Feet; S 88° 00' 25" W 460.57' Feet; S 85° 32' 57" W 356.49' Feet; N 85° 24' 06" W 127.13' Feet; N 20° 48' 05" W 123.05' Feet; N 05° 22' 23" E 171.11' Feet; N 03° 53' 09" W 236.42' Feet; N 08° 36' 23" W 399.09' Feet; N 32° 21' 26" W 103.42' Feet; N 67° 06' 07" W 224.53' Feet; N 75° 15' 59" W 160.67' Feet; S 71° 34' 17" W 161.74' Feet; N 63° 01' 42" W 563.67' Feet; N 24° 20' 01" W 146.30' Feet; S 84° 28' 28" W 113.79' Feet; N 67° 58' 16" W 165.53' Feet; S 86° 30' 15" W 329.43' Feet; N 71° 49' 42" W 128.82' Feet; N 00° 00' 00" E 379.82' Feet; N 05° 34' 56" E 319.25' Feet; N 17° 28' 51" W 310.15' Feet; N 48° 01' 25" W 245.72' Feet; N 78° 41' 39" W 158.35' Feet; S 84° 45' 06" W 339.37' Feet; S 74° 30' 38" W 191.46' Feet; N 90° 00' 00" W 378.14' Feet; N 88° 24' 34" W 328.94' Feet; N 77° 45' 29" W 241.14' Feet; N 79° 11' 24" W 165.52' Feet; N 52° 31' 04" W 168.05' Feet; N 00° 00' 00" E 102.26' Feet; N 12° 10' 33" E 95.27' Feet; N 57° 15' 22' E 340.99' Feet; N 72° 22' 41" E 205.09' Feet; N 69° 39' 33" E 294.19' Feet; N 48° 24' 37" E 261.34' Feet; N 06° 31' 20" E 257.32' Feet; N 10° 33' 54" W 219.19' Feet;

N 13^{o} 02’ 36” E 178.07’ Feet; N 45^{o} 20’ 59” E 218.26’ Feet; N 16^{o} 23’ 43” E 32.36’ Feet; N 32^{o} 10’ 51” W 133.77’ Feet; S 65^{o} 44’ 01” W 102.19’ Feet; N 87^{o} 03’ 56” W 214.01’ Feet; N 45^{o} 00’ 39” W 131.73’ Feet; N 77^{o} 08’ 38” W 410.35’ Feet; N 40^{o} 47’ 00” W 595.68’ Feet; N 10^{o} 08’ 40” W 228.17’ Feet; N 29^{o} 19’ 47” E 458.71’ Feet; N 76^{o} 48’ 28” E 149.67’ Feet; S 86^{o} 45’ 45” E 278.60’ Feet; S 80^{o} 32’ 38” E 63.85’ Feet; N 39^{o} 34’ 42” E 156.51’ Feet; N 43^{o} 10’ 16” E 230.12’ Feet; N 34^{o} 06’ 47” E 105.88’ Feet; N 23^{o} 49’ 12” E 194.92’ Feet; N 21^{o} 35’ 03” E 242.53’ Feet; N 02^{o} 43’ 41” E 110.26’ Feet; N 22^{o} 23’ 36” W 192.86’ Feet; N 10^{o} 57’ 40” E 165.61’ Feet; N 16^{o} 09’ 16” E 207.49’ Feet; N 43^{o} 44’ 45” E 166.98’ Feet; N 42^{o} 39’ 56” E 271.04’ Feet; N 39^{o} 49’ 27” E 245.84’ Feet; N 25^{o} 25’ 20” E 232.28’ Feet; N 09^{o} 28’ 06” E 191.42’ Feet; N 11^{o} 19’ 02” W 160.46’ Feet; N 29^{o} 45’ 40” W 169.16’ Feet; N 37^{o} 53’ 36” W 119.63’ Feet; N 03^{o} 34’ 43” W 84.08’ Feet; N 51^{o} 21’ 31” E 134.38’ Feet; N 69^{o} 27’ 23” E 224.18’ Feet; N 83^{o} 39’ 50” E 285.14’ Feet; N 90^{o} 00’ 00” E 57.73’ Feet; S 02^{o} 36’ 15” W 115.50’ Feet; S 16^{o} 28’ 13” W 240.64’ Feet; S 03^{o} 59’ 37” W 226.07’ Feet; S 04^{o} 50’ 01” E 373.70’ Feet; S 39^{o} 18’ 28” E 149.12’ Feet; S 30^{o} 16’ 22” E 145.75’ Feet; S 50^{o} 43’ 45” E 298.28’ Feet; S 21^{o} 48’ 52” E 112.98’ Feet; S 82^{o} 52’ 47” E 126.93’ Feet; S 56^{o} 19’ 38” E 245.94’ Feet; S 65^{o} 52’ 07” E 166.77’ Feet; S 83^{o} 53’ 19” E 147.79’ Feet; N 86^{o} 49’ 20” E 189.22’ Feet; N 70^{o} 55’ 05” E 144.39’ Feet; S 79^{o} 13’ 21” E 112.19’ Feet; S 06^{o} 29’ 11” E 103.71’ Feet; S 08^{o} 08’ 07” W 482.12’ Feet; S 02^{o} 20’ 20” W 257.20’ Feet; S 26^{o} 34’ 48” W 164.21’ Feet; S 56^{o} 19’ 38” E 132.43’ Feet; S 70^{o} 55’ 05” E 144.39’ Feet; S 79^{o} 42’ 06” E 58.67’ Feet; N 69^{o} 09’ 29” E 117.93’ Feet; N 87^{o} 57’ 21” E 147.04’ Feet; N 90^{o} 00’ 00” E 146.95’ Feet; S 81^{o} 15’ 34” E 207.08’ Feet; S 75^{o} 58’ 21” E 129.83’ Feet; S 53^{o} 45’ 51” E 97.60’ Feet; N 86^{o} 49’ 20” E 94.61’ Feet; N 48^{o} 45’ 09” E 179.44’ Feet; N 79^{o} 59’ 55” E 90.60’ Feet; S 88^{o} 29’ 37” E 399.00’ Feet; N 90^{o} 00’ 00” E 220.42’ Feet; N 87^{o} 02’ 28” E 304.80’ Feet; S 72^{o} 39’ 24” E 87.97’ Feet; S 58^{o} 41’ 17” E 141.29’ Feet to a point in a small drain; N 08^{o} 22’ 17” E 180.24’ Feet; N 22^{o} 04’ 52” E 209.41’ Feet; N 58^{o} 09’ 03” E 228.60’ Feet; N 62^{o} 25’ 05” E 260.53’ Feet; N 72^{o} 02’ 31” E 204.13’ Feet; N 83^{o} 29’ 04” E 184.88’ Feet; N 85^{o} 14’ 22” E 126.39’ Feet; S 87^{o} 42’ 39” E 262.62’ Feet; S 80^{o} 32’ 38” E 95.77’ Feet; S 41^{o} 50’ 20” E 133.75’ Feet; N 79^{o} 30’ 55” E 144.11’ Feet; N 70^{o} 21’ 29” E 78.01’ Feet to a point in Kiah Creek; Thence N 28^{o} 18’ 59” E 77.45’ Feet; Thence S 89 51’ 48” E 5,123.63’ Feet; Thence S 34 53’ 00” E 910.00’ Feet to Monument 2501-1; S 63 36’ 00” E 179.00’ Feet to Monument 2504-1; S 22 43’ 00” W 326.00’ Feet to Monument 2504-2; S 66 10’ 00” W 733.00’ Feet to Monument 2503-1; S 00 16’ 00” E 253.33’ Feet to Monument 2501-11; S 48 06’ 00” E 335.22’ Feet; S 48 06’ 00 E 700.00’ Feet; S 27 16’ 00” E 397.00’ Feet; S 03 48’ 00” W 302.00’ Feet; S 02 17’ 00” E 326.00’ Feet; S 19 13’ 00” E 261.00’ Feet; S 08 56’ 00” E 90.00’ Feet; S 43 36’ 00” E 203.00’ Feet; S 01 17’ 00” E 179.00’ Feet; S 27 56’ 00 E 205.00’ Feet; S 11 05’ 00” E 146.00’ Feet; S 30 34’ 00” E 173.00’ Feet; S 51 13’ 00” E 209.00 Feet; S 60 11’ 00” E 267.00’ Feet; S 88 59’ 00” E 338.00’ Feet; S 81 47’ 00” E 259.00’ Feet; S 56 11’ 00” E 252.00’ Feet; S 36 00’ 00” 131.00’ Feet; N 00 21’ 30” W 55.95’ Feet; N 46 22’ 09” E 101.22’ Feet; N 56 25’ 39” E 60.78’ Feet; S 03 20’ 21” E 52.88’ Feet; S 40 26’ 35” W 60.07’ Feet; S 07 09’ 58” E 90.02’ Feet; S 43 08’ 05” E 165.98’ Feet; S 32 18’ 36” E 130.01’ Feet; S 44 31’ 36” E 160.03’ Feet; S 55 49’17” E 202.96’ Feet; S 52 49’ 34” E 135.69’ Feet; S 38 22’ 04” E 91.65’ Feet; S 38 22’ 00” W 91.00’ Feet; S 52 20’ 00” W 216.00’ Feet; S 59 47’ 00” W 195.00’ Feet; N 13 40’ 48” W 65.66’ Feet: N 51 57’ 55” E 89.91’ Feet; N 44 57’ 17” E 285.70’ Feet; N 57 36’ 54” W 32.64’ Feet; N 64 22’ 35” W 217.20’ Feet; N 59 57’ 26” W 105.20’ Feet to Monument 2704-2; N 49 31’ 05” W 132.85’ Feet; to Monument 2704-3; N 57 04’ 15” W 272.09’ Feet to Monument 2704-4; N 57 33’ 10” W 149.11’ Feet to Monument 2704-5; N 63 52’ 02” W 944.66’ Feet to Monument 2707-1; N 86 43’ 59” W 94.11’ Feet to Monument 2707-2; N 45 00’ 00” W 110.00’ Feet to Monument 2707-3; N 57 30’ 00” W 147.00’ Feet to Monument 2707-4; N 53 18’ 00” 144.00’ Feet to Monument 2502-1-1; N 51 16’ 00” W 179.00’ Feet to Monument 2502-1-2; S 73 00’ 00” W 229.94’ Feet to Monument 2502-1-3; N 27 17’ 59” E 239.99’ Feet to Monument 2502-1-4; N 20 49’09” W 812.31’ Feet to Monument 2502-1-3; N 02 15’ 33” W 423.02’ Feet to Monument 2501-11; N 23 37’ 11” W 1966.89’ Feet to Monument 2502-2-2; N 63 37’ 08” E 96.10’ Feet to Monument 2501-12; N 68 39’ 35” W 521.58’ Feet to Monument 2501-13; N 68 39’ 36” W 1,029.97’ Feet to Monument 2501-14; N 68 39’ 34 W 650.00’ Feet to Monument 2412-1;S 53 50’03” W 585.44’Feet to Monument 2412-2; N 63 09’09”W 702.46’Feet to Monument2412-3;S 51 25’40”W 648.99’ Feet to Monument2408-1; S 11 46’00”E 123.00’ Feet;S13 25’00”134.00’ Feet; S 35 08’00” 106.00’ Feet; S 24 18’00”E 136.00’Feet; S03 53’00”E 133.00’Feet;S46 14’00”W 98.00’ Feet;S36

02’00”E 109.00’Feet;S 18 49’00”W 139.00’Feet;S24 51’00”W 150.00’ Feet; S 47 35’00”W 141.00’ Feet; S17 32’00”W 182.00’ Feet; S29 41’00”E 115.00’ Feet; S42 57’00”E 138.00’ Feet; S 09 56’00”E 170.00’ Feet; S 06 56’00”E 297.00’ Feet;S01 30’00”W 76.00’ Feet; S50 27’00”W 112.00’ Feet; S 23 29’00”W 108.00’ Feet to Monument 2408-2; S 41 07’05”W 231.24’ Feet to Monument 2408-3; S 12 13’52”E 335.12’Feet to Monument 2408-4; S 12 13’52”E 735.20’ Feet to Monument 2408-5; S 80 47’52”W 443.34’ Feet to Monument 2414-1; S66 31’41”E 454.55’Feet to Monument 2412-2;S08 58’34”W 183.95’ Feet to Monument 2414-3; S44 23’20”W 330.65’ Feet to Monument 2414-4;S28 15’14”W 181.65’ Feet to Monument 2414-5; S33 41’24”E 140.58’ Feet to Monument 2600-31;N64 16’18”E 377.58’ Feet to Monument 2600-32; S68 56’46”E 671.99’ Feet to Monument 2600-33; S 84 11’45”E 159.41’ Feet to Monument 2600-34; N 52 17’30” 370.54’ Feet to Monument 2600-35; N 73 55’16”E 179.16’ Feet to Monument 2600-36; N 76 57’43”E 76.02’ Feet to Monument 2600-1; N86 49’41”E 112.95’ Feet to Monument 2600-2; S 78 04’19”E 146.70’ Feet to Monument 2600-3; S60 36’40”E 134.72’ Feet to Monument 2600-4; S 34 17’42”E 124.09’ Feet to Monument 2600-5; S02 43’42”E 101.82’ Feet to Monument 2600-6; S 15 51’00”E 70.33’ Feet to Monument 2600-7; S 02 33’43”E 92.82’ Feet to Monument 2600-8; S 02 43’42”E 511.03’ Feet to Monument 2600-9; S 62 48’07”W 991.90’ Feet to Monument 2600-10; S 36 16’52”E 258.78’ Feet to Monument 2600-11; S 70 20’02”W 428.47’ Feet to Monument 2600-12; S 79.33’47”W 85.90’ Feet to Monument 2600-13; S 60 59’53”W 83.26’ Feet to Monument 2600-14;S 77 53’10”W 275.99’ Feet to Monument 2600-15; S 57 46’55”W 268.02’ Feet to Monument 2600-16; N 84 27’58”W 269.00’ Feet to Monument 2600-17; S 80 14’53”W 199.43’ Feet to Monument 2600-18; N 80 02’13”W 183.80’ Feet to Monument 2600-19; S 65 41’35”W 523.79’ Feet to Monument 2600-20; S 36 13’37”W 199.96’ Feet to Monument 2600-21; S 84 43’ 59”W 155.68’ Feet to Monument 2600-22 Point of Beginning. Containing +/-1430.63 acres

APPENDIX B

REASONABLY FORESEEABLE DEVELOPMENT SCENARIO

EAST LYNN LAKE COAL LEASE
REASONABLY FORESEEABLE DEVELOPMENT SCENARIO
Revised February 14, 2008

Introduction

Coal as an Energy Source
Energy analysts agree that the domestic and international demand for coal will increase for decades to come. Projections out to 2030 show coal consumption increasing by about 1.5 percent per year with most of this usage occurring as electrical-power generation. As an energy source, coal possesses the largest reserves, and is generally the most economic source of power in the United States. New technologies have rendered coal as a cleaner source of energy.

Coal is a hard, black, sedimentary rock formed over time from the remains of plant material. Heat and pressure convert the plant matter to coal, which is mainly carbon, but contains hydrogen, oxygen, nitrogen and sulfur as well, and may contain other elements in trace quantities. Coal is ranked according to its level of alteration by heat and pressure, increasing in rank from lignite to bituminous to anthracite. As the ranking increases, so does the coal's carbon and energy content. The coal reserves under application at East Lynn Lake are bituminous.

Proposed Action
Argus Energy LLC (Argus) and Rockspring Development (Rockspring), referred to as the Applicants, have filed lease applications to mine approximately 13,089.55 acres of federal coal underlying federal land acquired by U.S. Army Corps of Engineers (USACE) at the East Lynn Lake Project, Wayne County, West Virginia. East Lynn Lake is an impoundment project, created by the damming of the East Fork of Twelvepole Creek, and is part of a Developed Recreation Area. Before the competitive leasing process can be initiated, coal-mining issues will be analyzed in a Land Use Analysis/Environmental Impact Statement (LUA/EIS). In the event that the Proposed Action is selected, the competitive leasing process would be implemented. The successful bidder(s) would access the federal coal from existing, permitted mines located under private land that adjoin the proposed lease tracts. Extraction would be accomplished by underground mining methods by cutting drifts from existing operations. No surface mining would occur.

To adequately assess the effects of the Proposed Action, and to supplement other critical elements of the LUA/EIS, this Reasonably Foreseeable Development Scenario (RFDS) has been prepared, and is presented here. An RFDS is a report which estimates anticipated development, production, and reclamation activities that would accompany the implementation of the Proposed Action.

Lease-By-Application
In November of 1999, the forerunner of Argus, the Pen Coal Corporation, submitted to the BLM an application for federal coal reserves underlying WVES-50556. Argus Energy became the applicant of record for WVES-50556 in February of 2003 when the Pen Coal Corporation sold

its coal-mining assets in West Virginia to them. Argus has approximately 7,624.60 acres under application for lease, bordering a portion of the southern shore of East Lynn Lake. Rockspring made an initial application for their lease in 1999, and resubmitted a revised application in 2004, increasing the acreage to 5,449.92 from 1,832.12, positioned on the northern side of the lake. Rockspring made an adjustment to the permit boundary in September 2007 that did not increase the acreage. The permit boundary used for the original version of this RFDS is provided on figure 1. The new permit boundary, as of September 2007, is shown on figure 2.

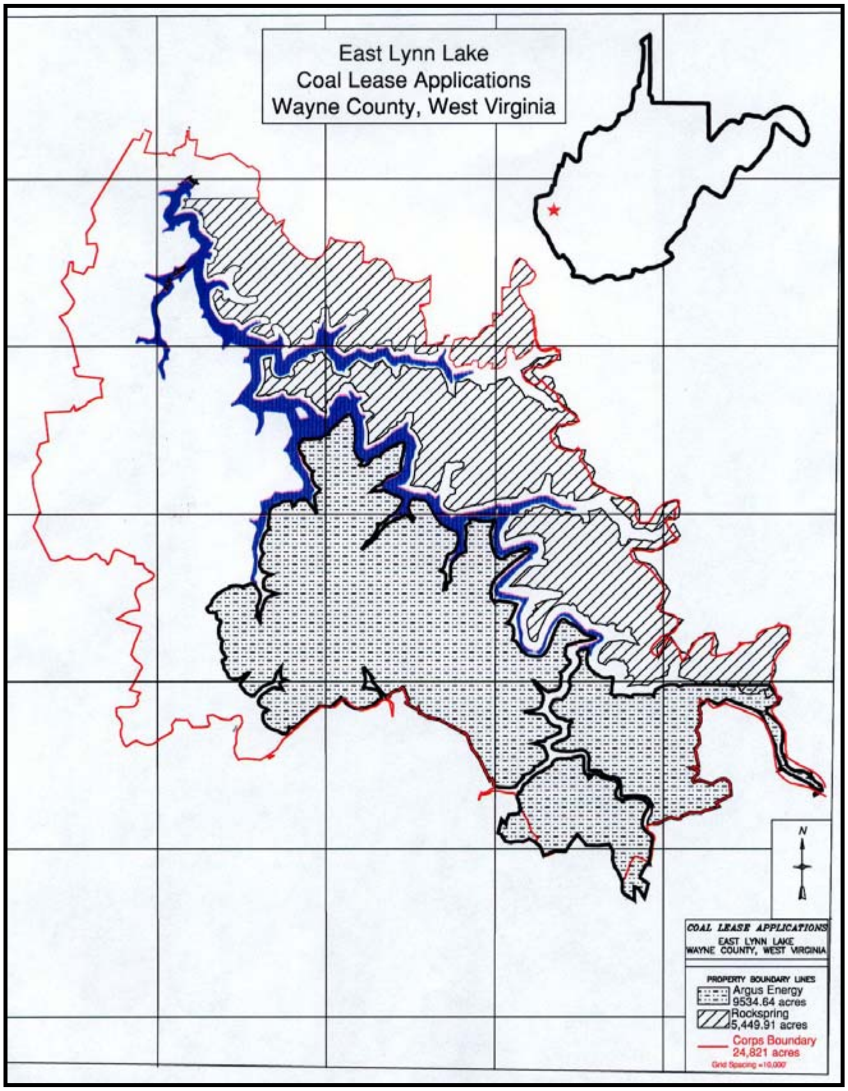


Figure 1: Permit Boundary of the Original RFDS (April 19, 2007)

The Argus and Rockspring applications have been serialized WVES-50556 and WVES-50560, respectively. The coal rights covered by the applications were acquired by the USACE under condemnation authority in the early 1970s. The *Water Resources Development Act* of 1999 effectively removed from the USACE all coal-mining consent authority, and placed that authority with the BLM.

Argus' lease application is divided into three sections, which represent extensions of existing logical mining units, designated as areas “A,” “B,” and “C.” Rockspring’s application is divided into six logical mining unit extensions. A logical mining unit is an area that can be mined in an efficient and economical manner (typically by a single mining operation without the need to move equipment twice). Figure 1 shows a general overview of all the individual lease tracts, their sizes, and their placement along the north and south shores of East Lynn Lake (Rockspring and Argus, respectively).

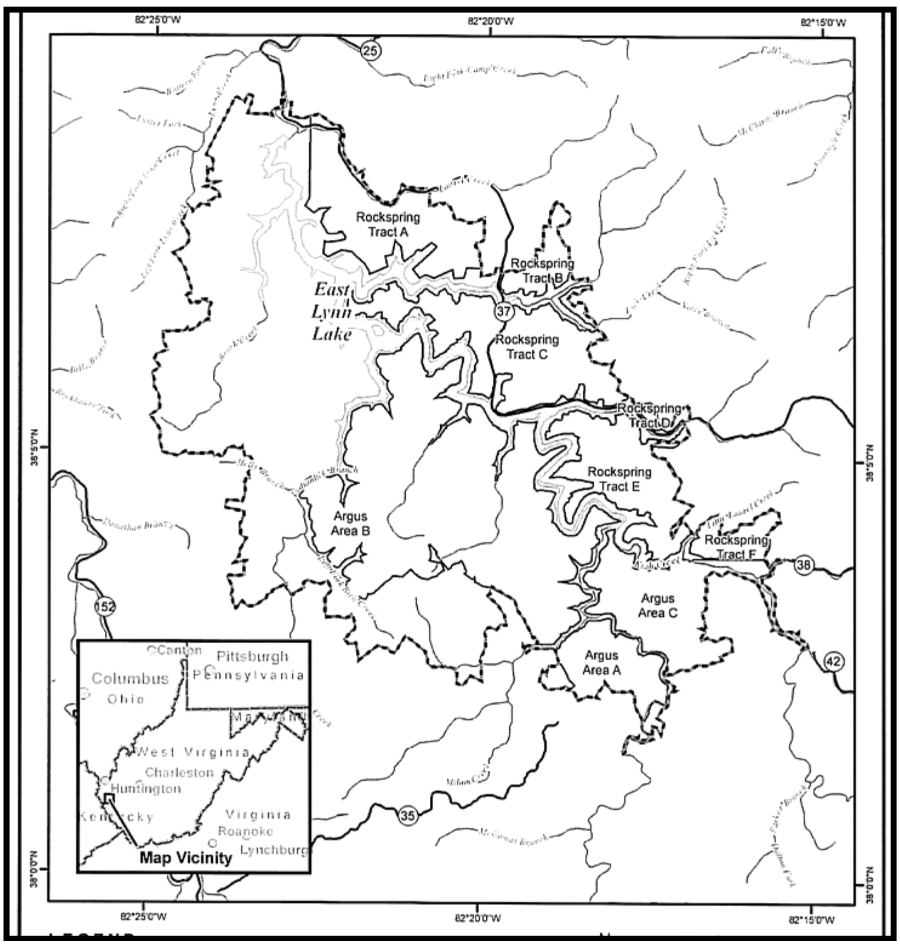


Figure 2: Adjusted Permit Boundary, September 12, 2007

Along with their lease applications, the Applicants provided summaries addressing mining plans, geologic and hydrologic issues, subsidence, property descriptions, and statements of qualifications. Based on recent and historical exploratory coal drilling data, and data from the existing mines, the Applicants have compiled recoverable reserves figures for the federal coal underlying the application tracts.

Current Mining Activities Under Private Lands Next to the Proposed Lease Tracts
The Applicants conduct active mining operations adjacent to the proposed federal lease tracts. Rockspring's Camp Creek Mine is located to the northeast of the East Lynn Lake Reservoir, and consists of underground mine workings, a coal preparation plant, and a coal refuse disposal facility. The Camp Creek Mine produces approximately 3 million clean tons of coal per year by means of room-and-pillar extraction. Production occurs principally from the Coalburg/Winifrede coal seam. The Coalburg/Winifrede reserves typically are low in sulfur, and high in British Thermal Units (BTU), used principally for clean electric generation. The Camp Creek Mine operates at an average depth of roughly 250 feet below the surface, and employs approximately three hundred people. If Rockspring were selected as a successful bidder, the federal coal would be extracted over a period of about 10 years.

Argus owns and operates two active mines and one inactive underground mine; three active mines and one inactive surface mine; and one preparation plant, all located south of the East Lynn Lake Reservoir. The surface operation produces from the No. 5 Block coal seam while the underground operations extract from the Coalburg/Winifrede and the No. 5 Block seams. Argus' underground workings operate at an average depth of 200-250 feet. Current operations produce about 2 million tons of clean coal per year. If Argus were selected as a successful bidder, the federal coal reserves within the Coalburg/Winifrede coal seam would be accessed from Argus' currently inactive No.3 mine and the active No. 8 mine. Presently, there are 277 people employed by Argus with an additional 175 contract workers at their mining complex. If Argus were selected as a successful bidder, the addition of the federal coal reserves would extend Argus' mine life by an anticipated 15 years.

Each company runs two shifts per day, a morning shift and an evening shift. The morning crews start at about 6:30 a.m. and go until approximately 2:30 p.m. The evening shift works from about 2:30 p.m. until 10:30 p.m. with some overlap between the shifts.

In the event that the BLM issues the proposed federal coal leases for competitive bid, and in the event that Rockspring and Argus are selected as the successful bidders, neither Applicant anticipates the need for additional hiring or surface construction. The federal coal reserves would be mined using the existing staff and infrastructure at each mine.

Both Applicants are proposing only primary mining. Coal extraction would occur by underground mining using modern, continuous-miner, room-and-pillar methods. No secondary or pillar recovery mining is proposed by either Applicant. All future production from the proposed federal leases would be processed and shipped from permitted facilities already present on private ground. Each Applicant justifies the issuance of proposed federal leases on the basis that the federal coal resources would be lost if not developed from their adjacent operations.

In the event that the Applicants are not the successful bidders, the successful bidders would be required to mine in substantial compliance with this RFDS in order to use the NEPA evaluation conducted for this proposed lease.

Geology In the Vicinity of the Proposed Lease Tracts
Regional bedrock consists of sedimentary rocks of the Pennsylvanian period. The Pennsylvanian is well developed in West Virginia, underlying approximately 55 percent of the entire state. A description of the Pennsylvanian section underlying the area is identified below.

Surficial deposits within the area consist of alluvium and colluvium, composed principally of sand and gravel with lesser amounts of silt and clay. Surface rocks belong chiefly to the Pennsylvanian Conemaugh group; although in this part of the state it is only the basal portion that remains. Immediately subjacent to the Conemaugh is the Allegheny formation, also of Pennsylvanian age.

The Allegheny formation is bound by the top of the Upper Freeport coal seam and extends down to the top of the Homewood sandstone. Within the proposed lease area, the Allegheny Formation is represented by the Upper Freeport coal seam, the Lower Freeport coal seam, the East Lynn sandstone, and the No. 5 Block (Lower Kittanning) coal seam. The Upper and Lower Freeport coal seams are sporadically present locally, and therefore are not considered commercially minable.

The East Lynn sandstone is a prominent member of the Allegheny Formation in the permit area, exhibiting channel-sand characteristics. This channeling has extended downward to the upper beds of the No. 5 Block coal seam. The East Lynn sandstone is coarse grained, massive, gray, and often contains quartz pebbles. The average thickness of the East Lynn sandstone is 50 feet, but can be as thick as 150 feet.

The No. 5 Block coal seam is usually multiple bedded in the permit area, consisting of up to five mappable coal benches. Sandy shales, silty shales, homogeneously layered shales, and fireclays often cap, and underlie the benches of the No. 5 Block coal seam. Over much of the application area, part of the No. 5 Block coal (the “A” split) has been eroded during the deposition of the East Lynn sandstone.

Occurring approximately 10 feet below the "A" split, is the No. 5 Block "B" Rider. The "B" Rider attains a maximum thickness of 4.72 feet locally, containing some shale and bone. Occurring from 10 to 23 feet below the "B" Rider are the "B" and "C" splits of the No. 5 Block coal seam. Within the proposed lease area, the "B" and "C" splits are combined, and so are often considered a single seam. The combined thickness of the "B" and "C" splits ranges from 1.4 feet to 8.7 feet. Occurring from 10 to 15 feet below the base of the "C" split is the "D" split of the No. 5 Block. The "D" split reaches a maximum thickness of 4.35 feet thick in the proposed lease area.

Immediately below the Allegheny is the Pennsylvanian Kanawha formation. In Wayne County, the Kanawha represents about 800 feet of sandstone (approximately 50 percent of the formation), shale, siltstone, and coal measures. The Kanawha Formation extends from the top of the Homewood sandstone, to the top of the Nuttall sandstone. There are some marine zones contained within the Kanawha formation, consisting of calcareous, silty shales, and impure limestone. The majority of the Kanawha is positioned below stream level within the proposed lease area.

Stratigraphic units of the Kanawha formation present within the proposed lease area consist of the Homewood sandstone, the Stockton coal seam, Upper Coalburg sandstone and Winifrede (Coalburg) coal seam. The following is a brief description of the lithologies of these rock units:

Homewood Sandstone
The Homewood is massive, gray sandstone frequently displaying cross-bedding. Core drillings in areas surrounding the proposed area indicates the sandstone ranging from 40 to 60 feet thick.

Stockton Coal Seam
The Stockton coal seam is represented by two benches in the area. The Stockton "A" coal seam is found immediately to10 feet below the Homewood sandstone, separated from the Homewood sandstone by a shale unit, where it is not overlain by the sandstone. The average elevation of the Stockton "A" coal seam within the proposed lease area is around 745 feet. The Stockton coal seam is positioned approximately 5 to 10 feet below the Stockton "A" coal seam. The Stockton coal seam is poorly developed and occurs sporadically within the proposed lease area, and therefore is not considered commercially minable.

Upper Coalburg Sandstone
The Upper Coalburg sandstone is approximately 55 feet thick in the proposed lease area, and occurs from 0 to 10 feet below the Stockton coal seam with shales and underclays occupying the interval between. This sandstone is massive, coarse-grained, and gray in color. The Upper Coalburg sandstone is positioned immediately above the Winifrede (Coalburg) coal seam where this seam is present.

Coalburg/Winifrede Coal Seam
Known variously by both names, the Coalburg/Winifrede seam is multiply bedded in the proposed lease area. This seam is represented by six coal benches which are inconsistently present across the proposed lease area. The total thickness of the Winifrede varies according to the presence or absence of the various benches. The coal benches individually range from 0.5 to 2 feet with individual parting thickness exceeding 4 feet. Across the proposed lease area, total seam thickness averages 57.03 inches with total sulfur content averaging about 0.56 percent.

Thin underclays usually underlie the coal seams in the section, representing bioturbated soil which supported vegetation growth, and now exhibit highly impermeable characteristics. These clays are largely composed of illite, kaolinite, and silica dust derived from the erosion of quartzose sand. The expandable lattice of the clay minerals allows swelling of these units as moisture is introduced, thus these units tend to form relatively impermeable boundaries to the vertical migration of groundwater.

Description of Proposed Mining and Reserve Estimates
Both Applicants propose to mine the federal coal reserves from the Coalburg/Winifrede seam by underground mining methods accessed from their existing operations.

Argus has expressed an interest in mining the small reserves of No. 5 Block coal that exist on the proposed lease tracts. However, Argus has no immediate interest. Argus' existing lease application and this LUA/EIS process do not involve mining of the No. 5 Block. If Argus would want to mine the No. 5 Block seam on the proposed lease tracts, the company would follow appropriate procedures related to requesting to lease the area and performing NEPA-compliant environmental analyses, and other geotechnical and hydrologic analyses associated with planning and permitting.

The successful bidder(s) would develop room-and-pillar operations using a machine called a "continuous miner," a remotely-operated vehicle which advances forward through the coal seam, mechanically breaking the coal and rock by means of a large, rotating drum-head studded with carbide teeth. The broken coal and refuse would then drop onto a built-in conveyor for loading onto waiting shuttles. Roof support would then be installed, the ventilation would be extended and the coal face would be ready for the next advance. The roof would be supported with mechanical or resin-grout bolts or a combination of the two. In most cases, a single pass would remove a 10.5 to 11.5-foot swath of coal.

The room-and-pillar configuration would be developed as crosscuts are driven at 90-degree angles off the main entries. The mains and panels (rooms) generally would consist of a 9-entry system projected on 60 feet by 80 feet centers. However, pillar sizes may vary in accordance with the U.S. Bureau of Mines' Analysis of Retreat Mining Pillar Stability (ARMPS) modeling method, and appropriate pillar stability factors, which would be described in required roof control plans. Crosscuts would facilitate ventilation to allow fresh air to pass through intake entries and be expelled through return entries. The average mining height of the Coalburg/Winifrede seam is about six feet. The federal coal reserves are anticipated to be mined at a 50 percent recovery rate. The following table shows a breakdown of the estimated federal coal reserves present in the Coalburg/Winifrede coal seam under the proposed lease tracts.

Estimated Federal Coal Reserves in the Coalburg/Winifrede Seam under the Proposed Lease Tracts

Applicant	Application Number	Tons In-Place	Tons Clean Recoverable
Rockspring	WVES-50560	40,978,177	11,275,874
Argus	WVES-50556	35,000,000	15,000,000

Potential Impacts
Impacts to the area from the proposed mining that may occur include subsidence of the surface, and impacts to ground and surface waters. Impacts that would occur include:

- economic impact to the area, including continued revenues from mining royalties to the local governments, and
- refuse processing and disposal.

Revenues

Coal prices determine the revenue received by the federal government from coal mining operations. A royalty rate of 8 percent of the coal sold from underground mines is due the U. S. Minerals Management Service; 75 percent of this revenue is then transferred through the State of West Virginia to local governments.

Should all the recoverable coal be mined at the current price of about $43/ton, then state, and local governments would receive approximately $29 million over a period of 10 years and $39 million over a period of 15 years.

Refuse Disposal

Refuse is non-coal rock that would be generated as the coal, and non-coal portions of the seam are mined. Refuse makes up about 50% of the seam, thus the volume of refuse generated by mining would be the same as the recovered coal. However, since the refuse density is double that of the coal's density, the tonnages would be twice as much as the coal's. This operation could generate roughly 53 million tons of refuse if mining is permitted, which would be disposed in authorized facilities on private land.

Subsidence

Ground subsidence over coal mines (underground) may occur as a result of inadequate pillar thickness for the depth of the mine, the thickness of the seam removed, and the thickness, and lithologies of the roof rock. Extensive fracture systems or faults may intensify the effects of subsidence.

Pillar density of 50 percent, and ground cover or roof thickness of the proposed underground operations is expected to be about 200 to 300 feet with one to three thick, massive, sandstones layers within that cover. These factors indicate surface subsidence is unlikely.

Hydrology

The proposed lease area is drained principally by the East Fork of Twelvepole Creek, and its tributaries. Stream valleys are covered with Quaternary-aged alluvium consisting primarily of sand and silt with lesser amounts of clay and gravel. The physical characteristics allow these deposits to function as aquifers which both store and transport groundwater. These alluvial aquifers are present along the stream valleys of the proposed lease area, and vary in elevation from 800 to 950 feet (AMSL) within the proposed lease area. The thickness of these unconsolidated deposits is estimated at 20 feet. Alluvial aquifers tend to capture a portion of water derived from precipitation, which would otherwise leave the area as surface runoff. Water stored in the alluvium contributes recharge to underlying bedrock aquifers, and may recharge streams, thereby sustaining base flows.

The groundwater occurs in both unconsolidated alluvial materials and consolidated bedrock. Availability and movement of the water is controlled by both primary and secondary permeability features. Primary permeability is related to intergranular pore space of a lithologic unit. Secondary permeability consists of open fractures within, and across lithologic units, providing groundwater migration. The primary permeability of the Pennsylvanian strata present in the proposed lease area is generally too low for development as a water source. Water wells completed in strata absent of fractures generally produce inadequate water supply. Currently there are domestic water wells producing from the Pennsylvanian strata in the area.

Natural fractures occur in rock units as a result of erosion, and removal of overlying rock layers, resulting in compressional stress loss. These stress-relief fractures are generally vertical along valley walls, and are generally horizontal under valley floors. The presence and development of stress-relief fractures provides vertical and horizontal groundwater migration. Furthermore, stress-relief fracture development allows for the interconnection of perched aquifers with underlying bedrock and alluvial aquifers. As a result, the perched aquifers recharge water to underlying aquifers.

The groundwater in the proposed lease area moves toward the north-northwest, parallel to the local dip. Two local geologic structures, the Doane Anticline and the Queen’s Ridge Syncline, exert some influence on groundwater, although topography may be more influencing than the structure. Additionally, re-direction of groundwater flow due to natural jointing systems, and stress-relief fractures present in the rocks is possible. These fractures and jointing patterns may be modified, and enhanced as a result of coal mining.

In the event that mining occurs within the proposed lease area, the local groundwater regime might be affected. Underground mining of the Coalburg/Winifrede and/or the No. 5 Block seams may open existing fractures and jointing systems in the overlying strata, which in turn, may produce dewatering of overlying perched aquifers. Since all the aquifers may be affected by the proposed mining operation are classified as perched aquifers, water recharge is a direct result of seasonal precipitation. Consequently, the variation in seasonal precipitation rates will directly influence the amount of water present in the perched aquifers. Potential perched aquifers within the proposed lease area include the various splits of the No. 5 Block coal seam, and Stockton coal seam. The Coalburg/Winifrede coal seam may also act as a perched aquifer.

Upon abandonment, wet seals would be constructed at the entries, allowing the movement of water through the seals, and accumulation within the mined area. Outcrop seepage along the outcrop barriers in the down dip portions of the mined areas would be analyzed if it occurs.

Acid Mine Drainage

Sulfur Fractionation analyses have been performed on the Coalburg/Winifrede seam in the proposed mining area. Sulfur may be found in coal and coal-bearing strata as organic sulfur, sulfate sulfur, and pyritic sulfur. Organic sulfur is generally believed to be organically bound within the coal. Organic sulfur is not reactive, and is not believed to affect the acid-producing potential of a coal seam.

Sulfate sulfur is produced as a result of weathering and oxidation of sulfide sulfur. Being a product of weathering, sulfate sulfur is not prone to acid production by oxidation.

Pyritic sulfur, however, has been associated with the potential acidity of strata, and in consequence, is the form of sulfur connected to acid mine drainage. The Coalburg/Winifrede coal seam contains a total sulfuric content of about 0.56 percent within the proposed lease area. Pyritic sulfur content for the Coalburg/Winifrede seam shows an overall weighted average of 0.05%, which is the limit of detection. In mining of the private coal adjacent to the federal lands, alkaline waters have been measured.

Mine-Avoidance Area

Safety zones or buffers would be established around, and underneath certain surface structures to safeguard the integrity of those structures during mining. There are a variety of federal and state laws which the successful bidders would need to comply with. Within the proposed lease area, existing and future gas wells and the East Lynn Lake Reservoir will have the greatest effect on potential mining.

Private Oil and Gas Development on the Proposed Lease Tracts

When the East Lynn Lake Project was acquired by the Department of the Army in the late 1960s, the majority of the surface and mineral rights, including the coal deposits, were conveyed to the Department of Defense. The oil and gas rights remained vested in private ownership. As a result, if the Proposed Action is selected and this RFDS is implemented, the successful bidder(s) would encounter about 144 in-place gas wells which must be avoided by a buffer zone. Both state and federal regulations control the buffer to be left in order to safely isolate the two extractive operations; West Virginia requires a permit from a coal operator if the mine approaches within 200 feet of a gas well, while the Department of Labor's Mine Safety and Health Administration (MSHA) would require permits if mining were planned to advance within150 feet of a gas well. Substantial tonnages of coal may be removed from a mining reserve base by wells – a 200-foot buffer around a single gas well in the proposed lease area would remove about 7,800 tons of coal from production. In addition to an estimated 144 wells existing on the minable portions of the East Lynn Lake property, applications to drill four gas wells within one of the application areas were recently submitted to the West Virginia Office of Oil and Gas. This conflict could be an issue within the proposed lease area in the future, but the actual tonnage of coal lost to gas wells appears to be a function of mine design.

The establishment of buffer zones around and under the East Lynn Lake reservoir would be in accordance with state and federal regulations and guidelines. The Department of Labor's Mine

Safety and Health Administration has regulatory oversight regarding the establishment of safety zones beneath bodies of water. The Applicants have proposed setting up buffers around the perimeter of the impoundment, extending outward a distance of 200 feet in all directions, creating a zone of no extraction beneath the reservoir. Additionally, outcrop barriers of about 150 feet would be established between the mine and those areas where the coal seam outcrops at the surface.

Additional information on the proposed private oil and gas development on the proposed lease tracts is presented in the *Reasonably Foreseeable Development Scenario for Private Oil and Gas Ownership Associated with Lands of the East Lynn Lake Project Area,* which is an attachment to this document.

Attachment 1

REASONABLY FORESEEABLE DEVELOPMENT SCENARIO FOR PRIVATE OIL AND GAS OWNERSHIP ASSOCIATED WITH LANDS OF THE EAST LYNN LAKE PROJECT AREA

June 8, 2007

Introduction

Oil and natural gas resources have been produced from sandstone, limestone and shale reservoirs underlying the U.S. Army Corps of Engineers' (USACE) East Lynn Lake project area (ELL), Wayne County, West Virginia since before 1930.

In 1937, the USACE was authorized to construct flood-control facilities along the valley of the East Fork of Twelvepole Creek, but the land acquisition for the project was not completed until 1970. The USACE's acquisition strategy included purchase of surface and all mineral rights other than oil and gas, because acquisition of the producing oil and gas leases would have been prohibitively expensive. Roughly 1800 acres of oil and gas rights were purchased around the dam site to avoid conflicts with dam and reservoir operations.

The State of West Virginia has records of at least 144 wells drilled to various depths throughout the proposed coal lease area. Seventy of these wells are reported to be plugged and abandoned, but it is likely that other wells were drilled on the property before state regulation of wells took effect.

One of the current oil and gas leaseholders of record, Chesapeake Energy Corporation (CEC), has applied for state permits to drill at least four more wells within the coal leasing request area. The impacts of the new development as well as the impacts of the existing active wells must be taken into account for an accurate assessment of cumulative impacts to the environment to be made.

Background

CEC, the primary proponent of the natural gas development in the prospective lease area, has not informed BLM of their development plans beyond the current permit applications. However, the current state of development on the property allows broad projections of activity to be made.

Drilling on the property has been taking place since at least the early 1920s, when the "East Lynn" gas field was depicted on a state map of producing areas. This map also showed small oil-producing areas, probably reservoirs in Pennsylvanian or upper Mississippian sandstones.

At least six different gas-productive zones are known to occur in the area, including the Big Lime, Big Injun, Squaw, Berea, and two or three zones within the Devonian shale (drillers' terms for these productive zones are used to match the IHS/PI reference cards used for this study). The shallower productive zones have been produced extensively for many years. The Devonian shale zones have more recently been added to the natural gas producing zones; wells have been drilled outside the proposed lease area since the mid-90s to produce from the shales.

Shale Gas Systems

Devonian shale gas reservoirs are considered unconventional sources of natural gas, because they differ from traditional reservoirs in several important ways. Shale gas accumulations are continuous on a regional scale, are neither structure-dependent nor density-stratified, and do not have a water base. In order to establish production from the shales using conventional production methods, at least three reservoir characteristics must be present:

- high quantities of kerogen in the black-shale source rocks
- appropriate thermal maturation, and
- natural fracture systems to provide permeability.

Devonian shales in the region consist of varying proportions of gray shales and siltstones interbedded with brown or black, highly organic shales. Natural gas is generated as the kerogen in the black shales is heated during diagenesis (burial, dewatering, regional stress, exothermic chemical reactions). The gas is held (adsorbed) within the clays by weak chemical bonds. As adsorption sites are filled, free gas is generated and distributed into voids and permeability channels within the shales. At some point the free gas must migrate out of the shale or gas generation ceases due to increased pressure.

Gas migrates along pressure gradients from the organic shales to reservoir rocks through small fractures and other permeability channels, then is distributed through and trapped within the reservoirs. When equilibrium conditions are reached, gas formation within the system ceases, but much of the gas generated in the shales is unavailable for production.

Where organic shales (or interbedded siltstones and shales) form reservoirs, gas generated in the shales is concentrated within the reservoir and migrates directly to the well. For this reason productive shale-gas systems are more efficient than typical source-migration-reservoir systems.

The western Appalachian Basin contains thick black shales of sufficient thermal maturity to generate hydrocarbons, but natural fractures are also necessary to create shale reservoirs. Natural fracture systems are caused by stresses in rocks. In this area of the central Appalachians, stress factors include:

(1) Compression related to the Alleghenian orogeny,

(2) Incipient compression associated with spreading along the Mid-Atlantic Ridge.

Should gas be encountered in the conventional reservoirs above the Devonian shale sequence, it can be co-produced with shale gas.

Production volumes: Information available from the West Virginia Department of Environmental Protection, which regulates mineral extraction activities in the state, indicates that productive capacities of wells in this area vary widely. Dry holes are rarely drilled, but some wells may produce as little as 50 million cubic feet of gas prior to plugging, while others may produce 500 million cubic feet or more. The production figures are skewed somewhat due to the many old wells which have been repeatedly deepened and recompleted; state production records generally don't go back beyond 1985.

Description of the Proposed Action

Based on a 1500-foot distance between wells (roughly 40 acre spacing, typical in the area), about 325 wells could be drilled in the proposed lease area. Clearly, this number of wells is far beyond the actual number likely to be drilled, due to the depletion of the conventional reservoirs and the greater spacing anticipated for wells producing from fracture zones. CEC has planned for drilling four wells this year. Should these wells be successful, it is likely that more wells will be drilled, probably at the rate of 2-4 wells per year, or a five-year total of 12-20 wells. It is unlikely that more than 20 wells will be drilled in the proposed lease area. Well lives in this area may exceed 20 years.

Drilling and Completion Operations: A typical well will be drilled within 1000 feet of existing roads or trails. In order to avoid steep slopes and difficult terrain, wells are likely to be drilled along ridge crests. Drilling pads and access roads will be cleared by bulldozer and the topsoil removed and stored for use during reclamation. Cleared timber will be sold. An average well will involve the clearing of one to two acres of drilling pad and up to one acre of road surface, assuming a road width of 40 feet. The USACE will be consulted prior to the conduct of any surface operations in order to ensure that surface resources and uses are not compromised.

Wells will be drilled to depths of about 4000 feet, generating roughly 2500 cubic feet of rock debris known as well cuttings. Several pits lined with plastic sheeting will be dug within the well pad to store well cuttings and any drilling fluid that may be used during the drilling. In this area, wells are often drilled with compressed air or air and mist. A typical drilling operation will last for up to ten days, and the well will be shut-in until well completion equipment can be brought to the site. Often several wells will be drilled in sequence and completion of all will be done when completion equipment is available. Drilling operations are conducted around-the-clock by three drilling crews.

Well completion involves hydrofracture, the high-pressure pumping of fluids or gases down the wellbore to the productive zone, which is isolated from the rest of the wellbore. Fine sand-like particles are forced into the voids created, propping the voids open to increase the permeability of the productive zone. "Fraccing" a well allows impermeable (“tight”) reservoirs to produce commercially. Depending on the nature of the natural fractures, the engineer may determine that such completion techniques are unnecessary.

Assuming that the well is productive, production equipment is installed at the well head and a pipeline installed in the access road. Because this area has produced gas for many decades, there is an existing pipeline infrastructure into which the line may be tied.

Reclamation: Reclamation of the site begins shortly after well completion, when portions of the well pad are recontoured with topsoil and reseeded with native plants. Areas to be used for production are stabilized and may be graveled. If required, protective fencing is installed around the site. About ½ the original well pad is reclaimed in this manner.

If the well is dry, or as the production in the well ceases, the well is plugged. The exact plugging method may vary, but in general the hole is filled with concrete, the wellhead equipment is removed and the casing is cut off below ground level. All surface equipment is removed from the site and the remainder of the site is recontoured and replanted. In some instances the reclaimed site can be used for recreational purposes (campgrounds, picnic areas, playgrounds).

Projected Impacts

It is important to note that all wells drilled are drilled under state law. Because the Federal government does not own the oil and gas rights, Federal standards for drilling, production and reclamation cannot be imposed on the operator.

The drilling and production of 12 to 20 gas wells on the proposed lease tract would result in short-term (up to six weeks) disturbance of 24 to 60 acres of land and long-term (20 years) disturbance of 12 to 40 acres. Each well would render roughly 7800 tons of coal unminable, for a total of 94,000 to 156,000 tons.

The wells would add incrementally to an already partly-industrialized rural area. Movement of personnel and equipment would increase traffic on the roads and trails of the East Lynn Lake facility during periods when drilling and completion is taking place; production-related traffic would continue at a reduced level after the completion of these activities as well maintenance and workovers take place.

Crews for drilling, dirt work and pipeline installation might include local workers, and local providers may be utilized for supplies and equipment, increasing local economic activity. Some recreational users of East Lynn Lake may be put off by the activity and decide to use other facilities for their recreational opportunities.

Wildlife use of drilling areas will decrease during active drilling and completion activities. As wells are completed and put on line, reduced noise and human presence will allow wildlife to reoccupy the areas.

In many gas fields, reservoir brines are produced in small amounts with the produced gas. Separators and storage tanks may be used to collect the brines, which are removed during well maintenance; state law permits surface spreading of brines as well as treated liquid pit contents.

Sediment control is an important part of dirt work and drilling; sediment control fencing and fabrics are required to be used in sediment control. In some cases the construction of sediment ponds may be required. Access roads may require baffles and other barriers to allow runoff without creating gullies or other erosional features.

APPENDIX C

PHOTOGRAPHS

Description	Photographs
C-1 **Surface view within the USACE East Lynn Lake Project boundary**	
C-2 **View of East Lynn Lake from Dam (facing south)**	
C-3 **USACE East Lynn Lake Project Recreation Facility**	

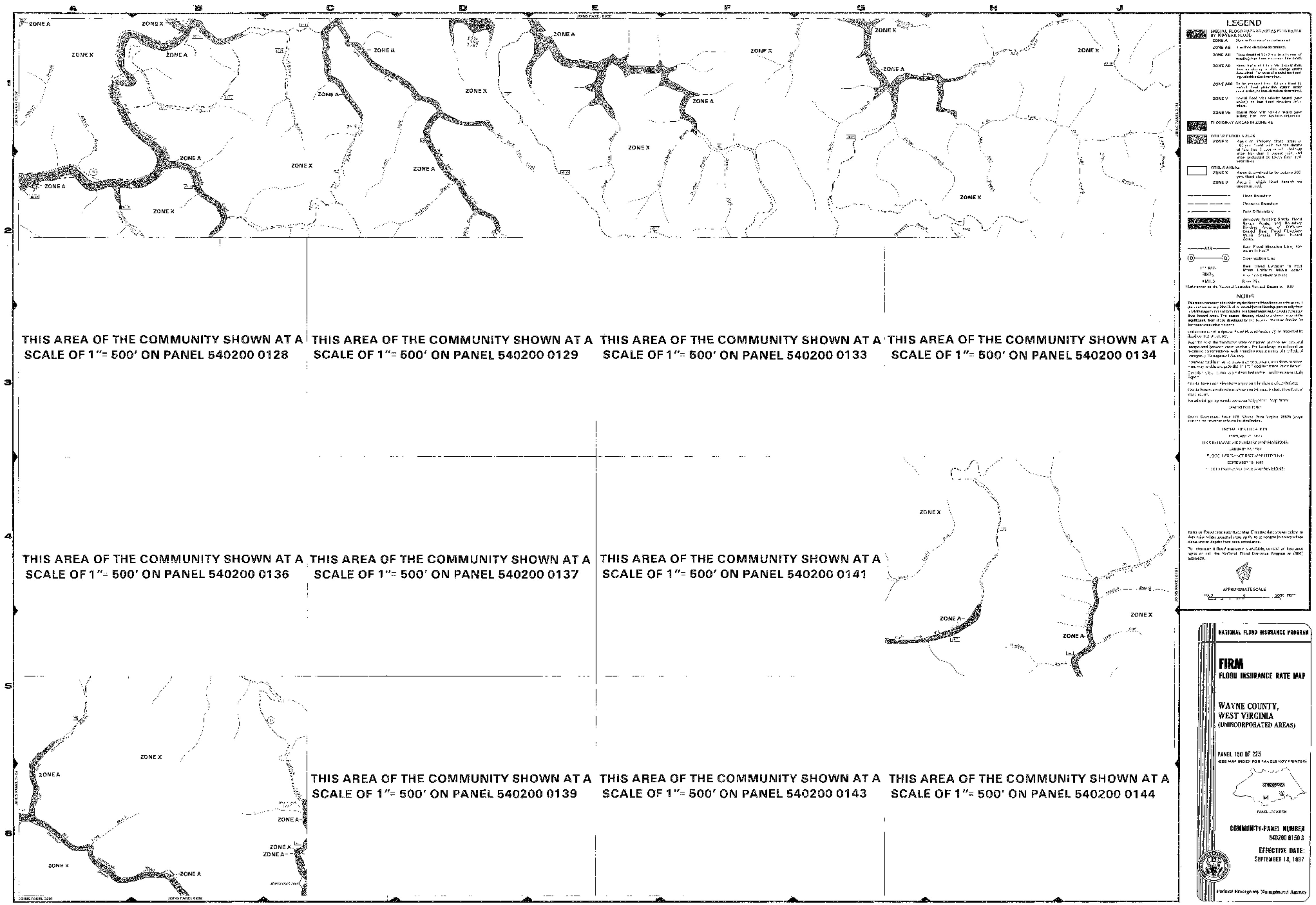
Description	Photographs
C-4 **USACE East Lynn Lake Project taken from Ferguson Branch Road (CR 52/21)**	
C-5 **View of Rich Creek on East Lynn Lake Project, showing typical disturbance from ORVs**	
C-6 **USACE East Lynn Lake Project (facing south)**	

Description	Photographs
C-7 **Continuous Miner**	
C-8 **Roof Bolter**	
C-9 **Conveyor**	

Description	Photographs
C-10 Existing forested conditions over active, underground, room-and-pillar mine	
C-11 Family Cemetery in the East Lynn Lake Area (facing north)	
C-12 Route 37 near USACE East Lynn Lake Dam, and typical roadside geology	

APPENDIX D

FEMA FLOOD MAPS



REFERENCE

FEMA Flood Insurance Rate Map (1997)

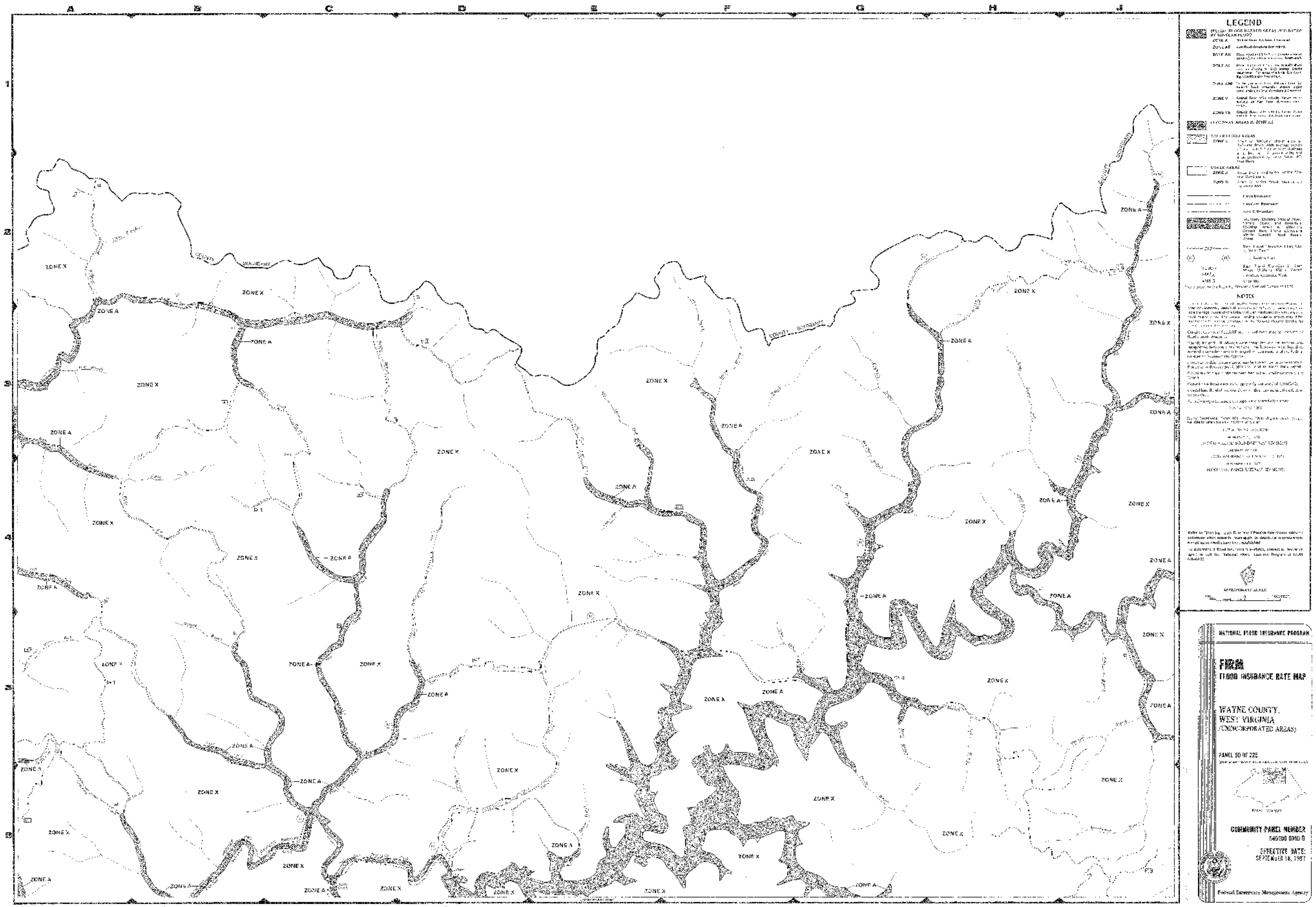
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

FEMA FLOOD MAP, WESTERN PORTION

FILE 11x17_ELL_EIS_FloodControl2.mxd
DATE IJH 11/02/2007

FIGURE D-1



REFERENCE

FEMA Flood Insurance Rate Map (1997)

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

FEMA FLOOD MAP, EASTERN PORTION

FILE	11x17_ELLFloodControl1.mxd	FIGURE D-2
DATE	IJH 11/02/2007	

APPENDIX E

UNDERGROUND MINING AND SUBSIDENCE

Appendix E
Underground Mining and Subsidence

Underground mining can be performed using one of several methods. Long-wall mining and room-and-pillar mining are two common types. Long-wall mining removes all of the coal in a large panel, leaving only panel-separating barrier pillars in place. Room-and-pillar mining removes coal from areas known as "rooms," and leaves coal between the rooms in pillars which support the roof. Room-and-pillar mining with low extraction removes coal from "rooms" on the way into a mine–a process known as "first mining"–and leaves these pillars in place. Total extraction room-and-pillar mining removes coal from the rooms on the way into the mine, and then removes coal from some or all of the "pillars," on the way out of a mine–a process known as "second mining" or "retreat mining."

Vertical Movement

Deformation of the roof is reflected on the surface as subsidence, which can have negative surface effects in terms of vertical movement and horizontal strains. The area defined by the surface vertical movement is sometimes referred to as the subsidence bowl. The subsidence bowl is defined by planes connecting the edges of the subsidence to the edge of mining. The angle that these planes make to the vertical is known as the angle of draw. The area of the subsidence bowl is always larger than the area of the mined opening. As the depth to the mined seam increases, the vertical extent of subsidence tends to decrease, due to this spreading out effect. Vertical movement accompanying subsidence can cause changes in surface drainage patterns and lead to the development or expansion of flood-prone areas, can disrupt the flow in surface streams.

Most of the vertical movement that causes damaging subsidence occurs above total-extraction operations, such as long-wall mining, or above high extraction room-and-pillar operations. In a long-wall mine, roof collapse occurs behind the point where the active coal mining is occurring within a panel, known as the mining face. This roof collapse often leads to surface subsidence. In a room-and-pillar mine with high extraction, the small pillars collapse soon after mining is completed. This collapse often causes roof collapse and can cause surface subsidence. In a room-and-pillar mine with low extraction, the larger pillars often provide long-term support and stability to the roof, preventing or delaying collapse and eliminating or minimizing subsidence. In the absence of second mining, coal companies often are able to leave pillars large enough to support the overburden.

Pillar stresses can be calculated to determine the stability of the pillars and the size needed to support the overburden. However, even if pillars are adequately sized, the overburden can be subjected to various degrees of movement. If the floor is weak, pillars can be pushed down into that floor, an event known as pillar punching. The exposed roof rock could fracture or cave into the mine.

Horizontal Strain

Collapse of the roof above a mined opening leads to vertical movement which can be seen on the surface as subsidence, as well as horizontal movements which accompany the uneven lowering of the land surface. These horizontal movements, and the tilting at the edges of the subsidence bowl usually cause the greatest damage. Figure E-1 shows typical subsidence bowls, and the horizontal strains associated with them. The upper diagram on figure E-1 shows the development of strains for a smaller underground opening, the lower ones for a larger “super-critical” one. These strains occur because the land surface is stretched (under tensile strain) at the edges of the bowl and shortened (under compression strain) in the center to accommodate the vertical subsidence movements. The tensile strains near the edge can lead to cracks being developed on the surface, which can lead to damage to road surfaces, dislocation of dam structures, lake containment features, recreational facilities and cemeteries. Compression near the center of the bowl can lead to damage to roads, and buildings. In addition to these surface strains, the tilt associated with the lowering of the land surface at the center of the subsidence bowl can affect stream flow.

In table E-1, the “tolerable range” of horizontal strain refers to those strains (or surface extensions) above which noticeable damage may occur. Noticeable damage might include surface fractures allowing drainage of wetlands or other water bodies into the underground, or displacements leading to newly developed scarps on the surface or damage to surface structures.

Table E-1

Horizontal Strain Tolerance Levels

Surface Features	Tolerable Range	
	Horizontal Strain (inches/inch)	Slope (feet/foot)
Pasture, woodland, range, or wildlife food and cover	$5.0 – 10.0 \times 10^{-3}$	$250 – 660 \times 10^{-3}$
Wetlands	5.0×10^{-3}	$30 – 80 \times 10^{-3}$
Lakes, ponds, marshes, rivers, streams	$5.0 – 10.0 \times 10^{-3}$	

Source: National Coal Board 1975

Assessing Severity of Damage

The severity of damage to surface structures is commonly classified using the criteria specified in table E-2. The severity is rated from slight to very severe and is based on the characteristics of cracks found in basement walls or on the floor slabs (Peng 1992).

Table E-2

Subsidence Damage Classification, North Appalachian Coalfield

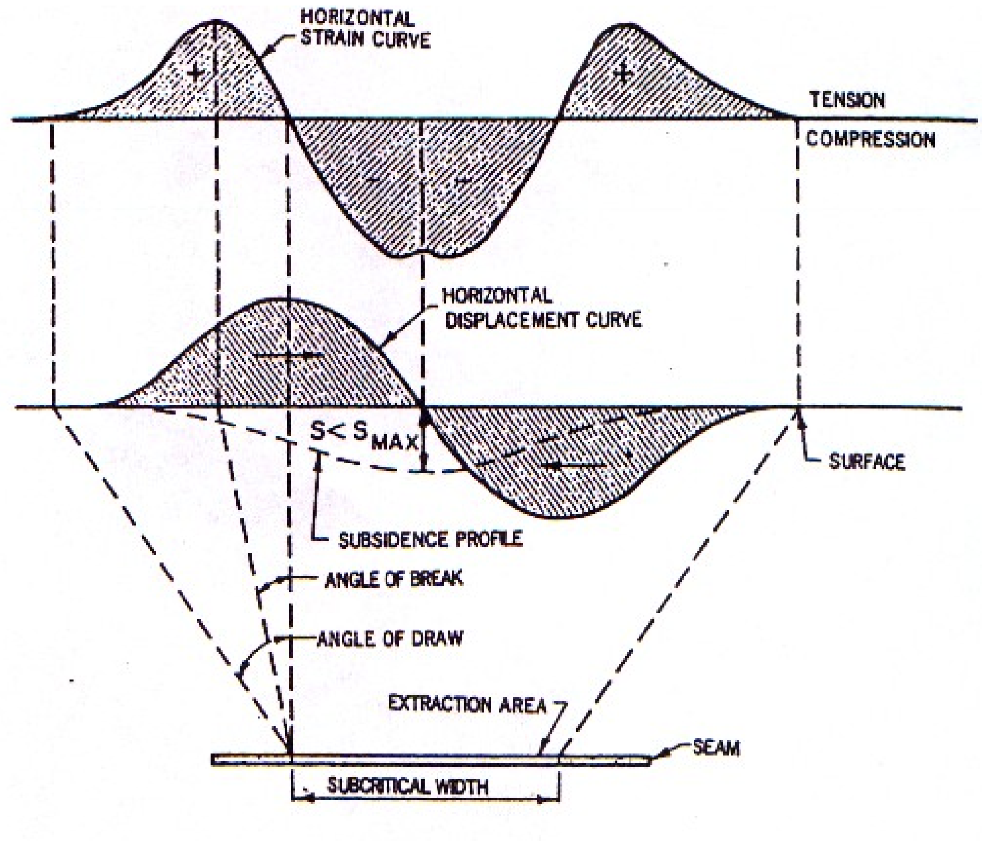
Class	Characteristic Basement Damage	Severity Index
I Slight	• Hairline cracks in one or more basement walls and possibly floor slab. • Some cracks in perimeter walls causing loss of water tightness. • Repointing required in some or all walls.	0 1
II Moderate	• Cracks in one or more basement walls and floor slab. • Some wall/footing reconstruction and floor slab replacement required, as well as local repointing.	1 2
III Severe	• Crack in one or more basement walls and floor slabs. • Possible wall instability and loss of superstructure support, requiring shoring and bracing. • Extensive repair work involving wall/footing reconstruction and floor slab replacement.	2 4
IV Very Severe	• Cracks typically in all basement walls, as well as floor slab. • Possible instability of several walls and loss of superstructure support, requiring extensive shoring and bracing. • Possible significant tilt to home. • General reconstruction of basement walls, footings and floor slab required.	4 5

Source: Bruhn and others 1983 in Peng 1992

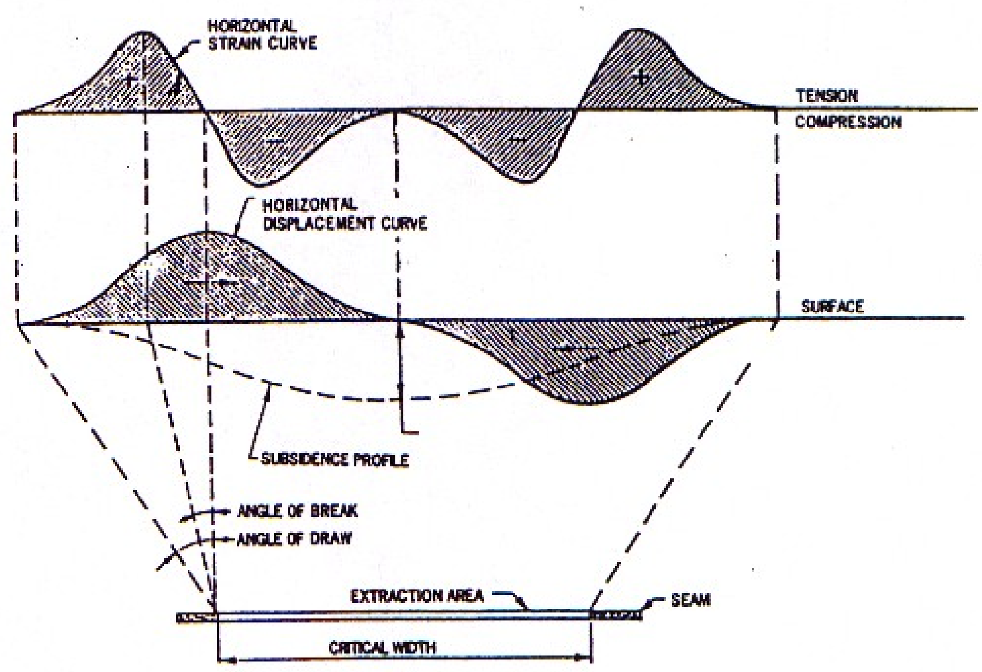
<u>References</u>

National Coal Board (NCB). 1975.
Subsidence Engineers' Handbook.. London UK: National Coal Board, Mining Department.

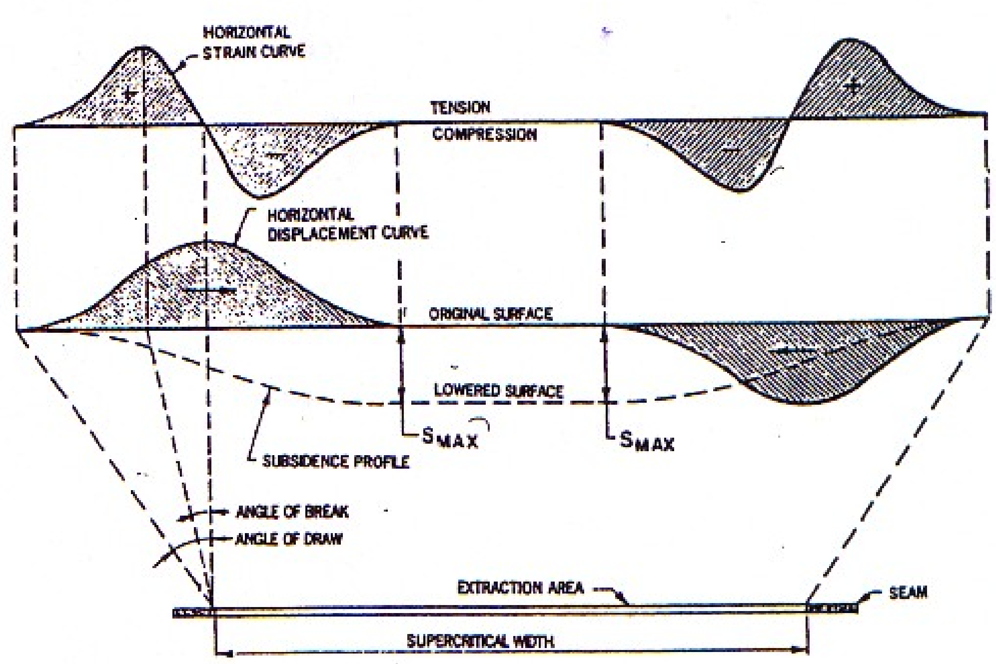
Peng, Syd. 1992.
Surface and Subsidence Engineering. Littleton, CO: Society for Mining, Metallurgy, and Exploration.



(a)



(b)



REFERENCE

National Coal Board 1975

SCALE: N.T.S.

BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

SCHEMATICS OF DISPLACEMENT AND STRAIN CURVES FOR VARIOUS WORKING WIDTHS

FILE 11x17_ELL_EIS_StrainCurve.mxd
DATE IJH 11/05/2007

FIGURE E-1

APPENDIX F

OUTCROP SEEPAGE CALCULATION

Appendix F
Outcrop Seepage Calculation

A simple calculation using Darcy's Law was used to estimate flows across coal barriers (Freeze and Cherry 1979):

$Q = KiA$,

Where,

Q = total flow into or out of the coal seam (ft^3/day)
K = hydraulic conductivity (ft/day)
i_h = horizontal hydraulic gradient across the coal barrier (ft/ft)
A = surface area of coal in outcrop (ft^2)

Discussion of terms:

The hydraulic conductivity (K) describes the rate at which a fluid can flow through that rock or soil unit. The K of a sandy gravel is much greater than the K of a clay material.

The horizontal hydraulic gradient (i_h) is the net water pressure exerted across the coal barrier, which is either 150 ft in width (outcrop barrier) or 200 ft in width (lake barrier). This parameter is calculated by the amount of head in feet that is exerted on the barrier, divided by the width of the coal barrier. The values used are presented in the attached tables.

The area in this case is the cross sectional area of the coal. For this calculation, a coal outcrop length of 100 feet is used, and the coal is assumed to be 6 ft high. Thus the cross sectional area used is 600 square feet (sq ft).

Values of K provided by others:

The following values of K have been provided in various references. The values presented by McCoy et al. are for in-place coal barriers.

Range of Horizontal Hydraulic Conductivity (ft/day)	Source	
0.01 to 0.1	Rockspring	MMA, Modification Area No. 2, Attachment J-11.1
1.0	Argus	Attachment J-6 of Application for Competitive Lease, 1999
0.12 - 0.59	McCoy, Donovan, & Leavitt, 2006	Isotropic Model - Pittsburg Coal Basin
0.24 - 1.1		Face Cleat Anisotropy Model - Pittsburg Coal Basin
.072 - 0.32		Butt Cleat Anisotropy Model - Pittsburg Coal Basin

McCoy, Donovan & Leavitt, August 2006.
Environmental and Engineering Geoscience v 12(3) p. 273-282.

The horizontal hydraulic conductivity (K) of the coal in-place has been estimated at a range of 0.01 to 0.1 ft/day by Rockspring in a number of their permit application documents (MM&A, Mod 1, Mod 2 and Mod 9), citing the anticipated hydraulic conductivity of in-place lignite coal. Argus used a value of 1 ft/day as an estimate in the Application for Competitive Lease document. Research by McCoy et al. is specifically for coal barriers in underground coal mines, and is particularly relevant here. The range considered in this analysis spans two orders of magnitude, from 0.01 to 1.1 ft/day.

Outcrop Seepage Calculation Results:

The calculations included here are estimates of seepage across the proposed coal barrier. Where the outcrop would be adjacent to East Lynn Lake, the 200-ft wide barrier width is considered. Where the outcrop would be upstream of the lake, the 150-ft barrier width is used.

Seepage Out of the Outcrop (Mining Down Dip):

First the horizontal flow of water from within the proposed mine toward the outcrop face, which is exposed at the ground surface of a drainage, or along the lake front. The extent of the outcrop in plan view is shown on figure F-1. A schematic cross section of this scenario is illustrated on figure F-2.

The results of the calculation are provided below:

	Horizontal Seepage from Outcrop-- Area B South Side of East Lynn Lake		
	Low	**High**	**comments**
Horizontal K (ft)	0.01	1	Refer to K values provided by Argus, Rockspring, and literature.
Head difference (ft/day)	50	215	Assumes between 50 and 215 ft of maximum head accumulates behind the coal barrier.
Distance (ft)	200	150	Outcrop barrier and East Lynn Lake barrier widths
Horizontal hydraulic gradient (ft/ft)	0.33	1	Note: Horizontal hydraulic gradient cannot exceed 1
Cross sectional area of outcrop (sq. ft)	600	600	100 feet of outcrop with an average seam height of 6 ft
Outcrop seepage (gpm/100 ft of mine face)	0.01	3.1	sum of water seeping from 100 ft of outcrop

Notes: The length of the outcrop along the lake shore is 14.2 miles
The length of the outcrop along the drainage upgradient from the lakeshore is 18.4 miles

The highest end of the seepage range amounts to roughly a quart of water per minute, spread out over a 10-ft long stretch of outcrop. This water would make the rock outcrop wet, and moisture might present itself at the base of the outcrop. Less than 4% of the total outcrop length adjacent to the lake shore is within 20 ft of the 662-ft elevation of the lake (total length = 0.55 miles, shown in green in figure F-3). Of the 18 miles of outcrop upstream of the lake, 24% of the outcrop is within 20 ft of the stream bank or creek bed (total length = 4.46 miles, shown in red in figure F-3, attached). A significant percentage of the water would infiltrate into the soil at the base of the outcrop, although some would evaporate from the rock surface. A small percentage of the seepage is likely to report directly to the lake or stream.

Seepage Into the Outcrop from East Lynn Lake (Mining Up Dip):

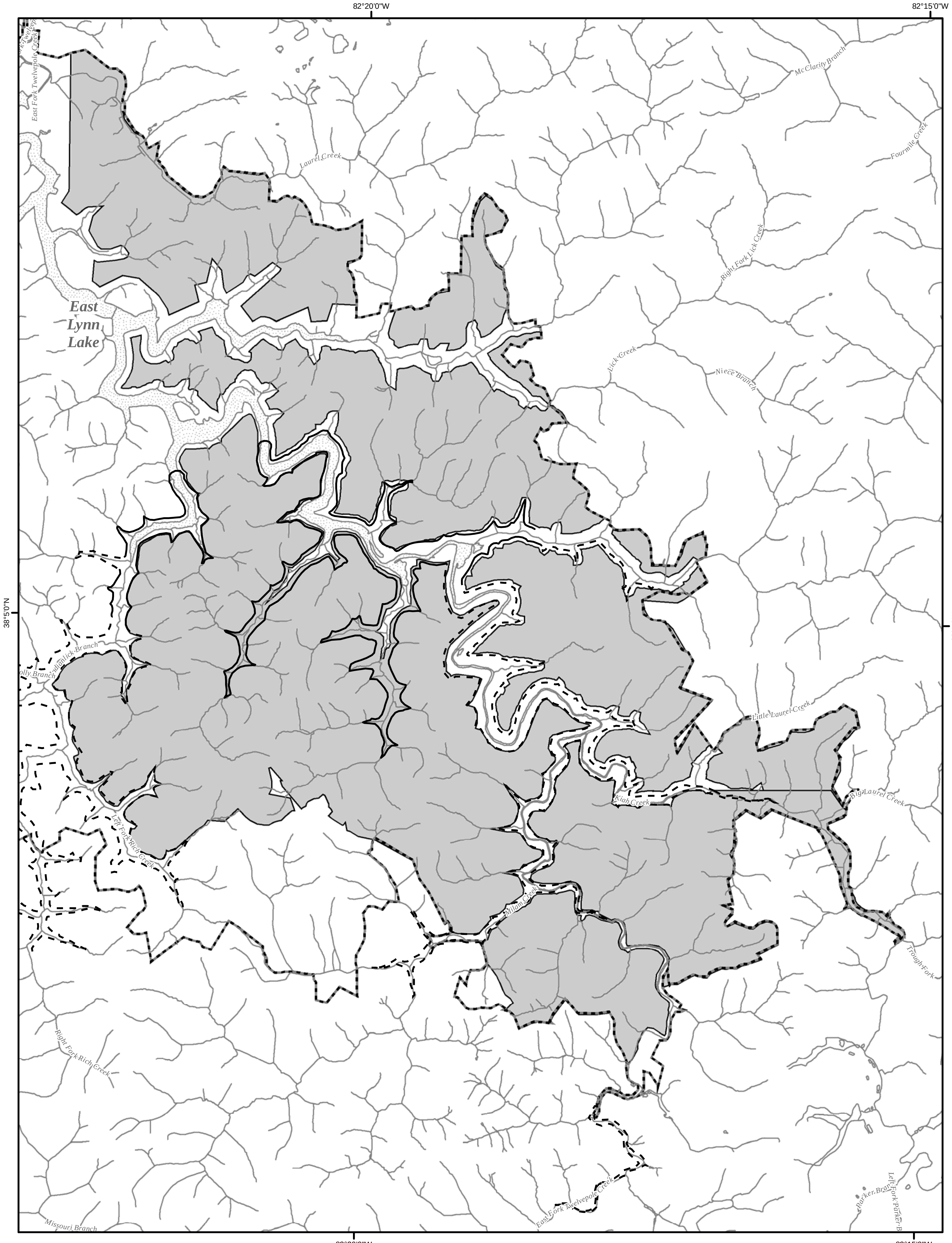
The second case addresses flow of water from the lake into the outcrop when mining up dip. A plan view map of coal outcropping below the mean summer lake level is shown on figure F-4, and illustrated in cross section on figure F-5.

A relatively short section of coal outcrops below the average summer lake level of 662 ft. Water levels above 662 ft are limited in duration, and were not considered. The calculation results are as follows:

	Horizontal Seepage into the Outcrop - North Side of East Lynn Lake		
	Low	**High**	**comments**
Horizontal K (ft/day)	0.01	1	Refer to K values provided by Argus, Rockspring, and literature.
Head difference (ft)	27	27	Assumes coal outcrop is on lake bottom with avg. depth of 17 ft., and that the coal dips at 5% (10 ft of head)
Distance (ft)	200	200	Outcrop barrier and East Lynn Lake barrier widths
Horizontal hydraulic gradient (ft/ft)	0.135	0.135	Note: Horizontal hydraulic gradient cannot exceed 1
Area of mine face in cross section (sq. ft)	600	600	100 feet of outcrop with an average seam height of 6 ft
Seepage into mine (gpm/100 ft of mine face)	0.004	0.42	sum of water seeping into 100 lateral ft of the mine

The length of the outcrop below the lake level of 662 ft is 0.21 miles, or 1114 ft.

Ultimately, seepage rates into the mine void from the lake would be very low, and should be considered negligible relative to the other flow components of the lake (evaporation, outflow, inflow, and net infiltration).



L E G E N D

- Coalburg/Winifrede Seam Outcrop - Near Lake
- Coalburg/Winifrede Seam Outcrop - Near Stream
- Stream
- Lake
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary

N

0.5 0.25 0 0.5 Miles

SCALE 1:48,000
WHEN PRODUCED AT 11X17IN

R E F E R E N C E S

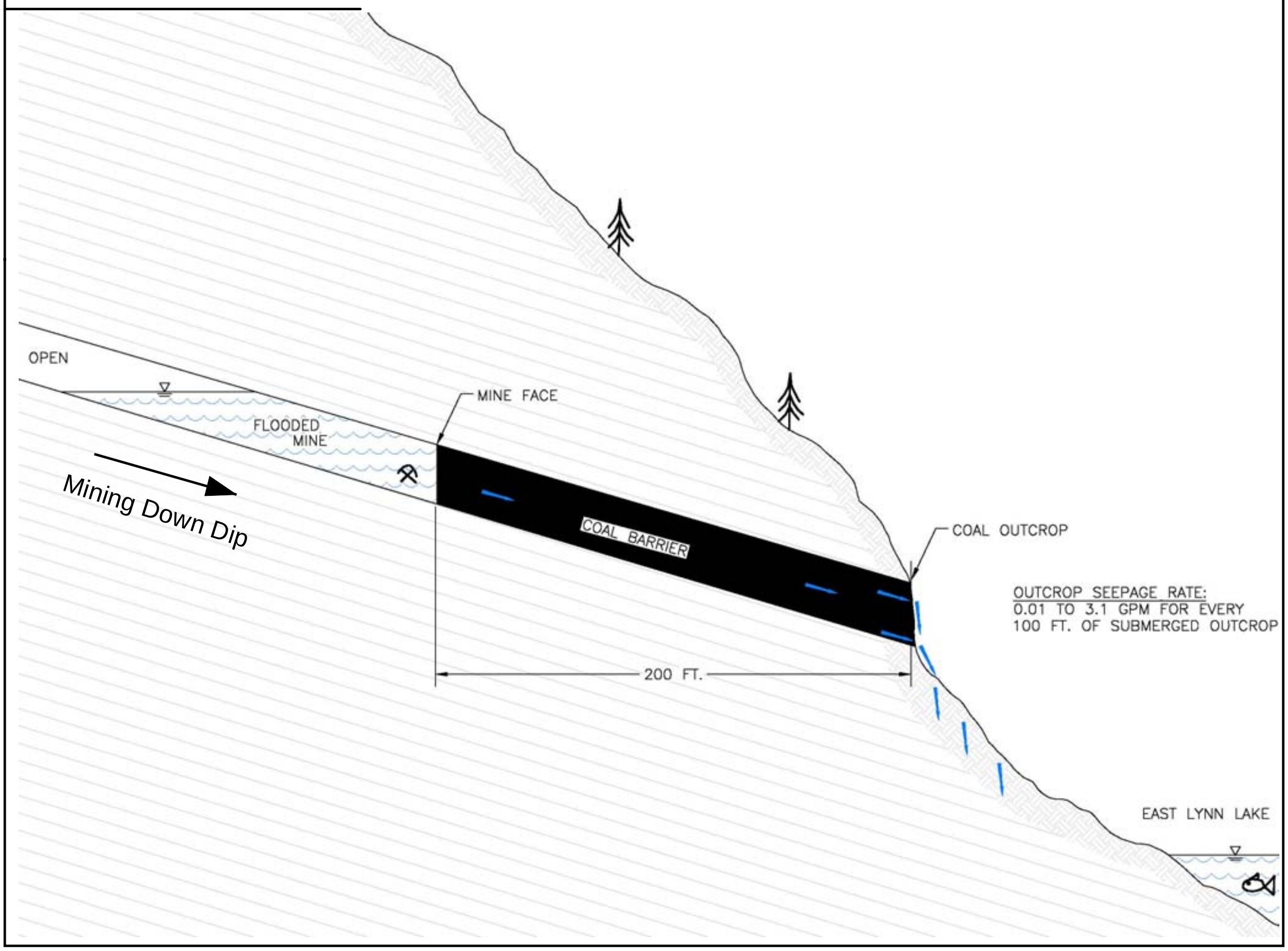
Coalburg seam outcrop: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
Waterbodies: USGS (2007a)
Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
USACE ownership boundary: Maptech (1998)
Projection: State Plane NAD 83 West Virginia South (feet)

BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

COALBURG/WINIFREDE SEAM OUTCROP

FILE 11x17_ELL_EIS_GWOutcrop.mxd
DATE IJH 11/05/2007

FIGURE F-1



REFERENCES

Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
USACE ownership boundary: Maptech (1998)
Projection: State Plane NAD 83 West Virginia South (feet)

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

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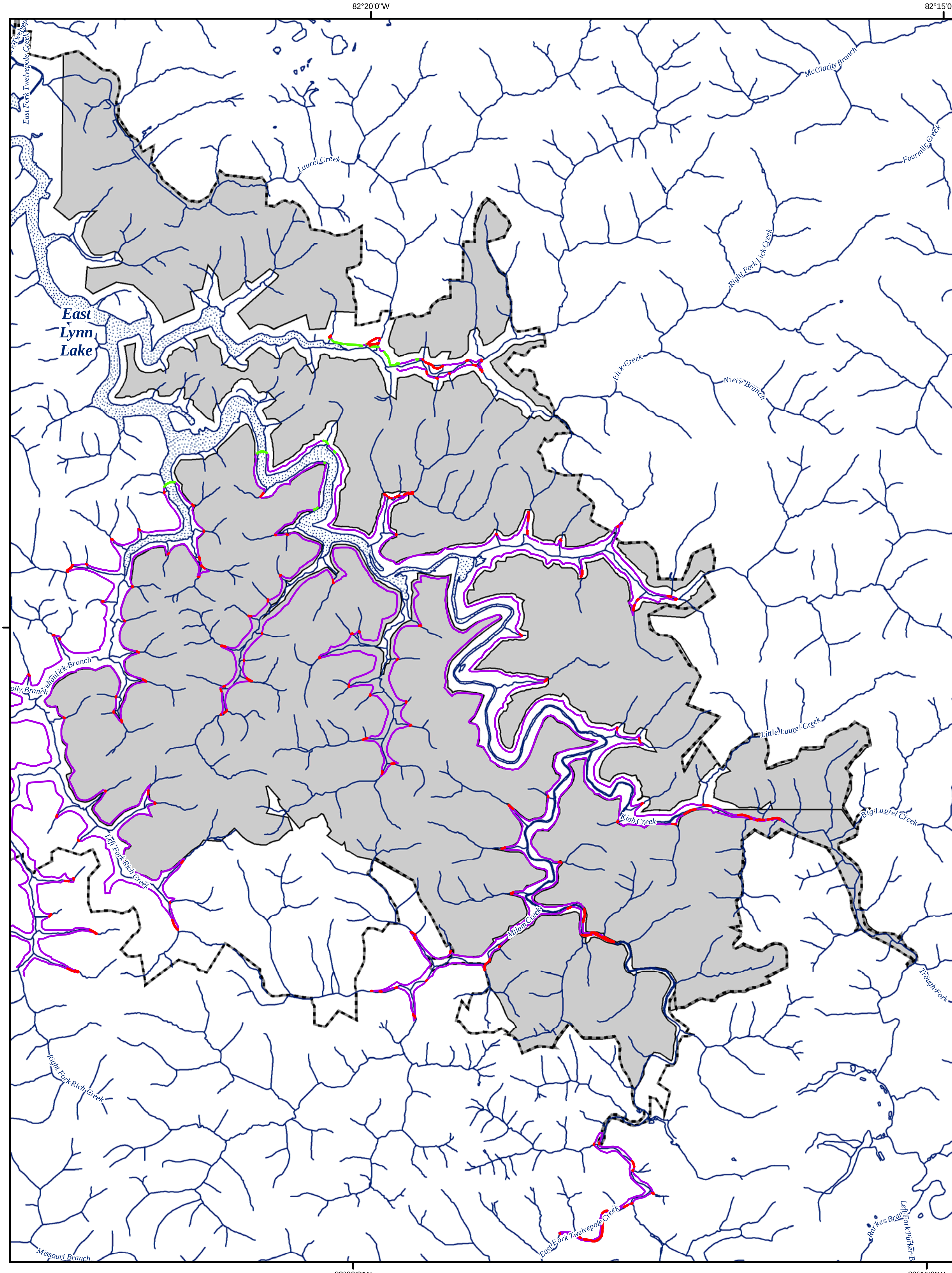
WAYNE COUNTY, WV

MINING DOWN DIP

FILE8-5x11_ELL_EIS_MiningDownDip.mxd
DATE AJ 02/15/2008

FIGURE F-2



LEGEND

- Coalburg/Winifrede Seam Outcrop
- Coalburg/Winifrede Seam Outcrop Within 20ft of Lake
- Coalburg/Winifrede Seam Outcrop Within 20ft of Stream
- Stream
- Lake
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary

N

0.5 0.25 0 0.5 Miles

SCALE 1:48,000
WHEN PRODUCED AT 11X17IN

REFERENCES

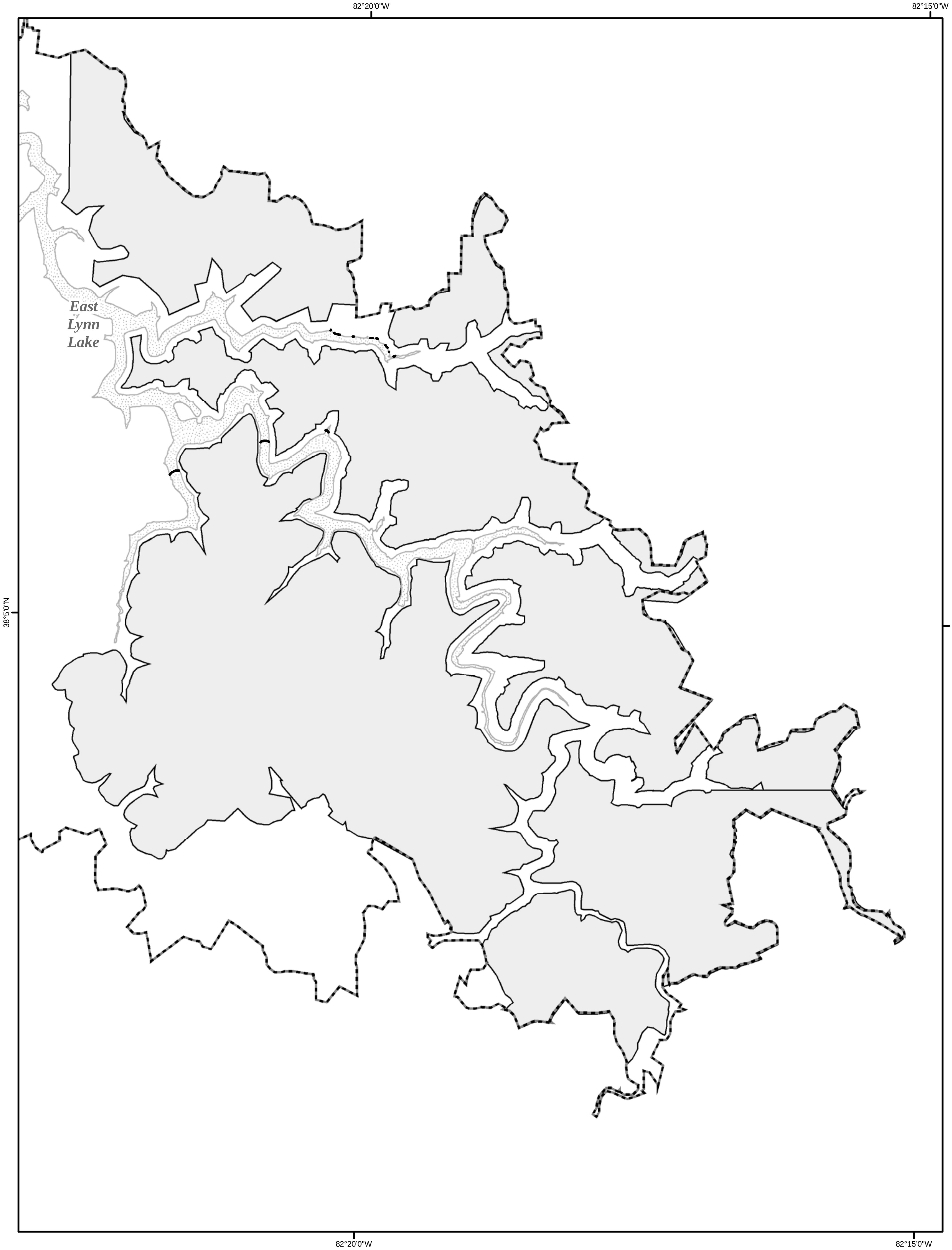
Coalburg/Winifrede seam outcrop: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
Waterbodies: USGS (2007a)
Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
USACE ownership boundary: Maptech (1998)
Projection: State Plane NAD 83 West Virginia South (feet)

BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

SECTIONS OF COAL SEAM OUTCROP WITHIN 20 LATERAL FEET OF LAKE SHORE OR STREAM BANK

FILE 11x17_ELL_EIS_GWOutcrop20ft.mxd
DATE IJH 11/05/2007

FIGURE F-3



LEGEND

- Coalburg/Winifrede Seam Outcrop Below Summer Pool Lake Level (662ft)
- Summer Pool Lake Level (662ft)
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary

N

0.5 0.25 0 0.5 Miles

SCALE 1:48,000
WHEN PRODUCED AT 11X17IN

REFERENCES

Coalburg/Winifrede seam outcrop: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
Waterbodies: USGS (2007a)
Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
USACE ownership boundary: Maptech (1998)
Projection: State Plane NAD 83 West Virginia South (feet)

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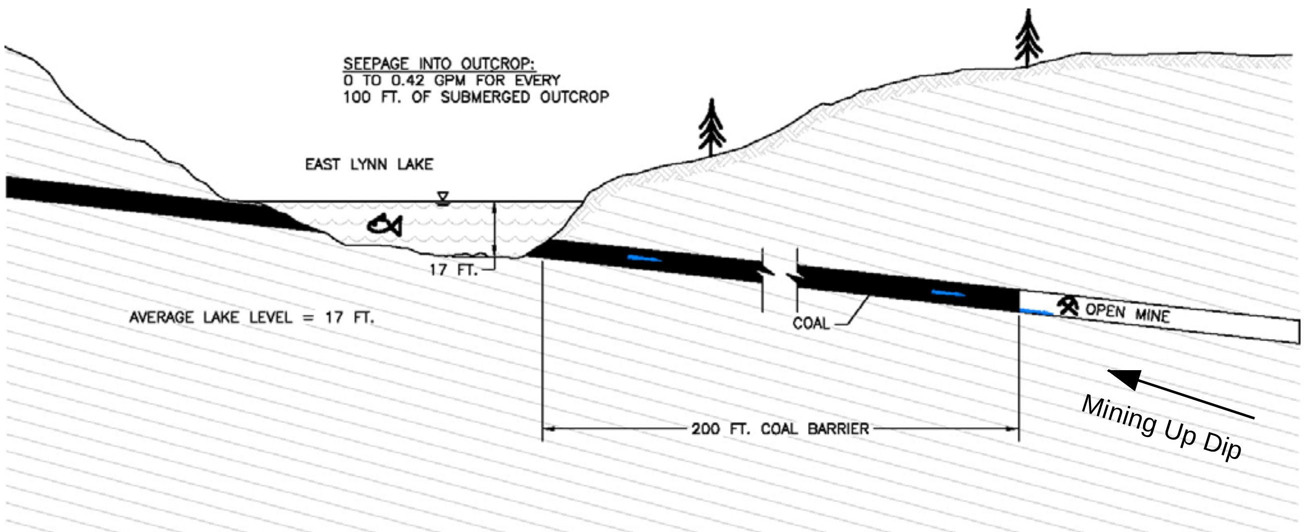
BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

COALBURG/WINIFREDE SEAM OUTCROP BELOW THE 662-FT SUMMER POOL LAKE LEVEL

FILE 11x17_ELL_EIS_OutcropLake.mxd
DATE IJH 11/05/2007

FIGURE F-4



REFERENCES

Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
USACE ownership boundary: Maptech (1998)
Projection: State Plane NAD 83 West Virginia South (feet)

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

MINING UP DIP

FILE 8-5x11_ELL_EIS_MiningUpDip.mxd
DATE AJ 02/15/2008

FIGURE F-5

APPENDIX G

EVALUATION OF ROCKSPRING ACID-BASE ANALYSIS DATA

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Lakewood, CO USA 80228
Telephone: (303) 980-0540
Fax: (303) 985-2080

Appendix G

Technical Memorandum

TO:	Paul Williams & Beth Duvall	**DATE:**	February 13, 2008
CC:	File	**OUR REF:**	063-2239
FR:	Jacob Waples		
RE:	**ABA AND WATER QUALITY DATA FROM ROCKSPRING AND ARGUS MINES ASSOCIATED WITH THE COALBURG/WINIFREDE SEAM**		

INTRODUCTION

Golder Associates Inc. (Golder) examined data from existing and closed mines associated with the Coalburg/Winifrede seam for acid mine drainage (AMD) potential. The potential for AMD exists when sulfides oxidize, and this potential is generally associated with coal seams or other strata (ADTI 2000). However, whether AMD will actually occur is dependent on a number of complex factors (Nordstrom and Alpers, 1999), and may include rock type, mineralogy, weathering rates, reduction-oxidation conditions, rate of groundwater inundation or flushing, or other conditions within the mine.

Golder examined data for AMD potential. Rockspring provided data collected from their Camp Creek Mine and Argus provided data collected data from their No. 3, No. 6, and No. 8 mines.. These data included acid base accounting (ABA) data, geologic logs, and water quality samples.

AVAILABLE DATA

Data provided to Golder and examined for this AMD potential evaluation are listed below:

- ABA analyses for 29 samples, including the immediate roof, the immediate floor, and the coal seam for the Coalburg/Winifrede seam collected by Rockspring. These analyses have been performed on samples as part of previous permit application efforts and are reported in MM&A (2002).

- Geologic logs and ABA analyses by strata for seven boreholes intercepting the Coalburg/Winefrede seam, collected by Rockspring. Includes the following boreholes: LIN6-92, LCC-5-95, MERRITT-1, MINOR-1, REYNOLDS-2, RSD-1-99, and RSD-2-99.

- Geologic logs and ABA analyses by strata for two boreholes intercepting the Coalburg/Winefrede seam, collected by Argus. Includes boreholes ARG-WV-

03-18 and ARG-W-04-01 associated with Mine No. 8 (Permit U-5023-92 Revision No. 5).

- Water quality data from Rockspring's Camp Creek Mine.

- Water quality data for Argus's Deep Mine No. 3, Deep Mine No. 6, and Deep Mine No. 8.

ACID BASE ACCOUNTING

Background

In the eastern coal mining regions, the net neutralization potential (NNP) is generally used for interpretation of ABA data (Mills 2008) and to classify samples into one of three categories. These categories include "potentially acid generating" (PAG), "uncertain" with respect to acid generation, or "non-acid generating" (NAG).

The NNP is calculated by neutralization potential (NP) minus acid potential (AP). There are numerous documents providing guidance on interpretation of these values. EPA (1994) notes a classification where NNP values between -20 and 20 $tCaCO_3/kt$ are considered uncertain, values above 20 $tCaCO_3/kt$ are classified as NAG, and values below -20 $tCaCO_3/kt$ are classified as PAG. Another classification scheme, applicable to the Appalachian region, has been provided by the Acid Drainage Technology Initiative (ADTI, 2000) for surface coal mines. This classification scheme is based on research performed or data collected in West Virginia and the coal mining areas of the Appalachians. Under the classification system noted by ADTI (2000), NNP values between 0 and 12 $tCaCO_3/kt$ are classified as uncertain, above 12 $tCaCO_3/kt$ are classified as NAG, and below 0 $tCaCO_3/kt$ are classified as PAG.

Pyritic sulfur values have been used to calculate AP, when available. If not available, total sulfur was used. However, there is generally a discrepancy between total sulfur and pyritic sulfur, indicating the presence of sulfur forms other than sulfides, such as gypsum (calcium sulfate) or organically bound sulfur. For example, for the floor, roof, and coal samples from Rockcreek, both pyritic and total sulfur were measured in six samples. In five of these samples, there is a large discrepancy between the two values (greater than 45%). Similar trends are observed in the Argus data, with pyritic sulfur representing 5.6 to 54.3% of the total sulfur (Permit No. U-5023-92 Revision No. 5). Therefore, use of total sulfur values is conservative, as it likely overestimates the potential acidity.

Available Data

The ABA data collected for samples from each strata in the seven Rockspring and two Argus boreholes indicates a wide range of NNP values, with samples classified as NAG, PAG, and uncertain. In general, strata associated with the coal or shales have a deficiency of NP.

Given that only those strata in direct contact with the Coalburg/Wininfrede seam are expected to be disturbed by mining, Golder focused on the following:

- ABA data for 29 samples from the immediate floor, immediate roof, and seam of the Coalburg/Winifrede collected by Rockspring (data presented in Table 1); and

- ABA data for 20 samples from the Coalburg/Winifrede seam collected from two boreholes by Argus (data presented in Table 2).

Table 1 provides NNP values for the Rockspring data. Based on the classification provided in EPA (1994), one sample is classified as NAG and 28 samples are classified as uncertain. Based on the NNP and using the classification scheme of ADTI (2000), 2 samples are classified as NAG, 16 of the samples are classified as uncertain, and 11 are classified as PAG.

Table 2 provides NNP values for the Argus data. Based on the classification provided in EPA (1994), no samples are classified as NAG, 19 samples are classified as uncertain, and one sample is classified as PAG. Based on the NNP and using the classification scheme of ADTI (2000), no samples are classified as NAG, 10 of the samples are classified as uncertain, and 10 are classified as PAG.

Discussion

Examination of the NNP values using either the classification from EPA (1994) or ADTI (2000) indicates the majority of the Rockspring samples are classified as uncertain. An uncertain classification indicates that the materials should be examined further and other factors or testing should be taken into account during evaluation of the materials. In the absence of further testing of the materials, such as kinetic testing, Golder further examined the NP, the sulfur content, and the water quality data associated with the materials.

The presence of NP has been shown by some researchers to be important for evaluation of ABA potential in the Appalachian regions. At least 21 to 30 $tCaCO_3$/kt are necessary to ensure alkaline drainage (Perry and Brady 1995; and diPretoro and Rauch 1988), respectively, in ADTI (2000)). All of the Argus coal samples have NP values below 10. With the exception of three sandstone samples from the immediate roof, Rockspring sample NP values are also below 10 $tCaCO_3$/kt. This indicates that if any acid generation occurs, it is uncertain if there is sufficient NP for neutralization. However, water chemistry associated with the Coalburg/Winifrede seam (discussed below) indicates that significant alkalinity may be present (up to 700 mg/L as $CaCO_3$).

Despite the above classifications and lack of neutralization potential, sulfur values for the materials are generally low, indicating limited acid formation. Price (1997) considers pyritic sulfur values greater than 0.3% to be of concern for generating significant acidity. Only one pyritic sulfur value is greater than 0.3 % for the Rockspring samples and only 10 of 29 are above 0.1 %. For the Argus coal samples, two samples have sulfur greater than 0.3 % and 8 of 20 samples have pyritic sulfur greater than 0.1 %.

Furthermore, calculation of a weighted pyritic sulfur value for the Coalburg/Winifrede seam is possible using the Argus data for each borehole. Weighted pyritic sulfur is 0.16 % for ARG-WV-03-18 and 0.10% for ARG-WV-04-01. Weighted pyritic sulfur values are applicable because they consider the entire coal seam, rather than individual samples. These weighted pyritic sulfur values are also below the 0.3% value that Price (1997) indicates as a concern.

Overall, ABA data indicate that the majority of the materials are classified as uncertain (EPA, 1994; ADTI, 2000), indicating other data should be considered. While the NP values are generally low, so are sulfide contents. Thus, while the potential for acidic conditions exists, the actual acidity generated will likely be low, as a majority of samples have pyritic sulfur less than 0.3% (Price 1997) and many also have less than 0.1 % pyritic sulfur. Furthermore, the weighted pyritic sulfur calculations for the Argus boreholes have a range of 0.1 to 0.16 %, again well below the 0.3% value specified by Price (1997) as a concern.

WATER QUALITY

Water quality data provided by Argus and Rockspring that are associated with the Coalburg/Winifrede seam have been compiled in Table 3. Only chemistry data relevant to AMD issues and available for most samples have been included (e.g., analysis for volatile organic compounds have not been included).

Groundwater samples were collected from a variety of mines. A brief description of each mine and sampling conditions is provided below.

- Argus Deep Mine No. 3: This mine has been inactive since 2001. A single sample (After T) collected in June 2006 was provided by Argus

- Argus Deep Mine No. 6: This mine has been reclaimed. The mine was in the Coalburg/Winifrede seam, but was located about 200 feet below an abandoned and flooded mine in the 5-Block seam. A variety of water samples were collected from inside the mine and outflows between 2001 and 2003.

- Argus Deep Mine No. 8: This mine in the Coalburg/Winifrede seam is currently active. Water is pumped out of the mine as a part of operation. Water samples have been collected from the underground sump (Sump #2) and at the pumped outlet (Outlet 002). Golder understands the water samples represent water coming off the different coal facies being mined through time, from January 2001 through December 2007.

- Rockspring Camp Creek Mine: Three water quality samples were collected from a 1000-acre sealed area in 2001.

These data represent water quality associated with the Coalburg/Winifrede seam, whether water quality of runoff from an actively mined face or water quality that would exist in post-mining conditions, up to 5 years following mining (After T sample for Deep Mine No. 3).

Water quality samples associated with the Coalburg/Winifrede seam generally do not indicate AMD issues. The pH values range from 6.18 to 9.21, but are generally around a value of 8, with an average of 7.81 (n = 62 samples) for the available data. All water samples had measurable alkalinity (average of 154 mg/L as $CaCO_3$ for 53 samples), in some cases significant alkalinity up to 736 mg/L as $CaCO_3$. Sulfate concentrations, which would be expected to be elevated following the oxidation of sulfides, are generally below 500 mg/L (average 267 mg/L), though values do reach as high as 1,107 mg/L. Metals, such as iron and aluminum, are slightly elevated, with average concentrations of 2.88 and 7.23 mg/L, respectively. However, elevated metals, such as iron, are expected in the area (Table 3.3-1, MM&A 2002). In addition, other trace metals, as measured in the Deep Mine No. 3 After T sample, are generally below detection limits. Exceptions include barium and zinc, which were detected at 0.142 and 0.0137 mg/L, respectively. Both of these concentrations are at least an order of magnitude below applicable EPA primary or secondary drinking water standards for these constituents.

Overall, the available Argus and Rockspring water quality data associated with the Coalburg/Winifrede seam do not indicate impacts from AMD. While some oxidation of sulfides may be occurring, which would result in elevated sulfate and iron concentrations, any acidity being generated is likely being neutralized given the alkaline pH values and measurable alkalinity. The Argus and Rockspring geologic logs indicate that several strata have significant neutralizing potential, and elevated alkalinity in the water quality samples indicates that this neutralization potential is available.

REFERENCES

ADTI. 2000. *Prediction of Water Quality at Surface Coal Mines, Acid Drainage Technology Initiative,* edited by R.L.P. Kleinmann. Morgantown, West Virginia: The National Mine Land Reclamation Center.

EPA. 1994. *Acid Mine Drainage Prediction; Technical Document*. (EPA-530-R-94-036; Available NTIS PB94-201829). Washington, D.C. : U.S. Environmental Protection Agency, Office of Solid Waste.

Mills, Chris. 2008. ABA discussion [Web page]. Vancouver, BC: Infomine. Online: http://technology.infomine.com/enviromine/ard/Acid-Base%20Accounting/ABAdiscussion.htm (accessed February 12, 2008).

Price, W.A.. 1997. *Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia.* British Columbia Ministry of Energy and Mines, Energy and Minerals Division. 158p.

TABLE G-1
ACID BASE ACCOUNTING DATA
ROCKSPRING DATA

Sample ID	Lithology	Paste pH	Pyritic Sulfur	Total Sulfur	Potential Acidity		Neutralization Potential	NNP *(NP-AP)*	APR *(NP/AP)*
					Pyritic-S	Total-S			
		(s.u.)	(%)	(%)	(tCaCO3/kt)	(tCaCO3/kt)	(tCaCO3/kt)	(tCaCO3/kt)	--
immediate roof	shale	9.3	na	0.02	--	0.63	8.63	8.01	13.8
immediate roof	shale	8.9	na	0.15	--	4.69	8.3	3.61	1.8
immediate roof	sandstone	7.8	na	0.02	--	0.63	6.85	6.23	11.0
immediate roof	sandstone	7.9	na	0.04	--	1.25	6.98	5.73	5.6
immediate roof	sandstone	7.9	na	0.005	--	0.16	16.84	16.68	107.8
immediate roof	sandstone	7.9	na	0.005	--	0.16	28.84	28.68	184.6
immediate roof	shale	9	na	0.17	--	5.31	11	5.69	2.1
immediate roof	shale	8.6	0.24	na	7.50	--	6.73	-0.77	0.9
immediate roof	shale	7.1	0.81	na	25.31	--	5.56	-19.75	0.2
immediate roof	shale	7.1	na	0.08	--	2.50	3.92	1.42	1.6
Immediate floor	Carb shale	8.3	0.09	0.38	2.81	11.88	0.58	-2.23	0.2
Immediate floor	mudstone	9.5	na	0.005	--	0.16	3.53	3.37	22.6
Immediate floor	mudstone	8	0.22	0.35	6.88	10.94	-2.38	-9.26	-0.3
Immediate floor	mudstone	8.4	na	0.005	--	0.16	4.63	4.47	29.6
Immediate floor	mudstone	7.9	na	0.04	--	1.25	3.7	2.45	3.0
Immediate floor	ss/mudstone	8.5	0.19	na	5.94	--	3.68	-2.26	0.6
Immediate floor	mudstone	9	na	0.18	--	5.63	2.48	-3.15	0.4
Immediate floor	shale	5.2	0.04	na	1.25	--	-1.76	-3.01	-1.4
Immediate floor	shale	6.1	na	0.06	--	1.88	-0.88	-2.76	-0.5
seam	coal	6.4	0.04	na	1.25	--	-1.76	-3.01	-1.4
seam	coal/shale	6.3	0.03	na	0.94	--	1.01	0.07	1.1
seam	coal/ss	8.4	0.01	0.33	0.31	10.31	2.48	2.17	7.9
seam	coal	6.2	0.01	0.8	0.31	25.00	-0.5	-0.81	-1.6
seam	shale	8.6	na	0.09	--	2.81	4.95	2.14	1.8
seam	coal	5	0.15	0.88	4.69	27.50	-2	-6.69	-0.4
seam	carb shale	9.3	na	0.09	--	2.81	5.13	2.32	1.8
seam	coal	8.2	0.02	0.54	0.63	16.88	12	11.38	19.2
seam	carb shale	9.3	na	0.11	--	3.44	5.58	2.14	1.6
seam	coal	7.2	0.11	0.81	3.44	25.31	3.53	0.09	1.0

Notes:
Source of data: Rockspring's *Modification No. 9, Attachment J-6, Table J-6.1* (MM&A nd).
-NNP and APR calculated using pyritic sulfur when available, total sulfur if not
-One-half the sulfur detection limit used for calculations

TABLE G-2
ACID BASE ACCOUNTING DATA
ARGUS COALBURG SEAM DATA

Sample ID	Interval	Lithology	Thickess (in.)	Paste pH (s.u.)	Pyritic Sulfur (%)	Total Sulfur (%)	Potential Acidity		Neutralization Potential (tCaCO3/kt)	NNP *(NP-AP)* (tCaCO3/kt)
							Pyritic-S (tCaCO3/kt)	Total-S (tCaCO3/kt)		
ARG-WV-03-18	409.99-410.91	Coal	11.04	4.80	0.62	1.26	19.38	39.38	1.99	-17.39
ARG-WV-03-18	410.91-411.5	Coal	7.08	7.40	0.02	0.35	0.63	10.94	2.65	2.02
ARG-WV-03-18	411.5-412.42	Coal	11.04	6.10	0.14	0.69	4.38	21.56	3.75	-0.63
ARG-WV-03-18	412.42-413.12	Coal	8.40	7.60	0.06	0.91	1.88	28.44	2.87	0.99
ARG-WV-03-18	413.12-413.3	Coal	2.16	7.50	0.05	0.30	1.56	9.38	5.08	3.52
ARG-WV-03-18	413.3-415.03	Coal	20.76	3.80	0.06	0.75	1.88	23.44	-0.88	-2.76
ARG-WV-03-18	415.03-416.3	Coal	15.24 [1]	7.50	na	0.06	na	1.88	2.65	0.77
ARG-WV-03-18	416.3-416.6	Coal	3.60	2.70	0.76	1.68 [2]	23.75	52.50	-3.53	-27.28
ARG-WV-03-18	416.6-417.31	Coal	8.52	7.70	na	0.07	na	2.19	4.20	2.01
ARG-WV-03-18	417.31-417.78	Coal	5.64	4.90	0.13	0.65	4.06	20.31	1.10	-2.96
ARG-WV-03-18	Weighted Average				0.16 [3]	0.63				
ARG-WV-04-01	157.42-157.6	Coal	2.16	na	0.18	1.38	5.63	43.13	-3.00	-8.63
ARG-WV-04-01	157.6-157.95	Sandstone/Shale	4.20	na	0.01	0.05	0.31	1.56	4.05	3.74
ARG-WV-04-01	157.95-159.4	Coal	17.40	na	0.21	1.15	6.56	35.94	-0.95	-7.51
ARG-WV-04-01	159.4-160.09	Shale	8.28	na	0.24	0.56	7.50	17.50	1.53	-5.97
ARG-WV-04-01	160.09-161.2	Coal	13.32	na	0.15	0.69	4.69	21.56	1.48	-3.21
ARG-WV-04-01	161.2-161.68	Shale	5.76	na	0.02	0.06	0.63	1.88	6.10	5.48
ARG-WV-04-01	161.68-162.74	Coal	12.72	na	0.07	0.56	2.19	17.50	2.08	-0.11
ARG-WV-04-01	162.74-163.5	Shale	9.12	na	0.02	0.10	0.63	3.13	5.13	4.51
ARG-WV-04-01	163.5-163.68	Coal/Shale	2.16	na	0.04	0.31	1.25	9.69	4.90	3.65
ARG-WV-04-01	163.68-165.24	Coal	18.72	na	<0.01	0.70	0.16	21.88	0.45	0.29
ARG-WV-04-01	Weighted Average				0.10	0.63				

Notes
-One-half the detection limit used for calculations when value below detection limit
-NNP calculated using pyritic sulfur when available, total sulfur if not
1- thickness of unit reported as 3.60 inches on Argus permit
2- value reported as 1.60 on Argus permit
3- When no pyritic value given, total sulfur used for calculation

TABLE G-3
GROUNDWATER QUALITY DATA ASSOCIATED WITH THE COALBURG SEAM

Company & Mine		Sample ID	Sample Date	pH	Alkalinity as CaCO3	SO4	TDS	Al	Fe	Mn	Na	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Ni	Se	Ag	Th	Zn	Hg	Cl	F	NO3 as N	NO2 as N
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Argus	Mine No. 3	After T	6/13/2006	7.95	488	21	<0.05	0.097	0.101	0.022	227	<0.001	<0.005	0.142	<0.002	<0.001	<0.005	<0.05	<0.005	<0.01	<0.005	<0.005	<0.001	0.0137	<0.001	21.3	1.27	<0.1	<0.5
	Deep Mine No. 6	DM-6 Sump #3	7/30/2003	7.51	150	660	1100	73.2	15.09	0.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Deep Mine 6 No. 3 Head	2/28/2003	9.21	180	350	800	3.45	7.04	<0.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Deep Mine 6 No. 3 Head	4/30/2003	8.27	110	452	920	2.44	0.29	0.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Deep Mine 6 No. 3 Head	5/9/2003	8.64	120	890	970	199	30	0.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Deep Mine No. 6	6/25/2001	6.97	89	264	610	<0.07	0.07	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM-6 1st Left Panel	2/11/2002	7.43	100	96	420	0.19	0.52	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM6-003	12/19/2000	7.41	64	191	240	0.19	0.21	0.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM6-003	2/1/2002	7.03	53	229	470	0.26	0.04	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM6-003	2/11/2002	7.56	52	250	820	0.17	0.07	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM6-003	3/1/2002	7.82	40	400	700	0.02	0.05	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM6-003	3/11/2002	8	54	510	580	0.08	<0.025	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM6-003	5/5/2003	7.14	61	326	510	0.9	0.27	0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM-6 Sump at 3-Head	1/21/2002	7.84	120	222	480	0.6	0.22	<0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM-6 Sump at 3-Head	2/9/2002	8.44	110	494	650	10	11.8	0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM-6 Sump at 3-Head	2/21/2002	8.14	99	311	750	0.2	0.04	<0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM-6 Sump at 3-Head	3/7/2002	8.33	97	472	1000	11.1	5.2	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM-6 Sump at 5-Head	1/21/2002	8.51	270	2	750	11	0.05	0.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM-6 Sump at 5-Head	2/9/2002	8.57	230	56	320	1.75	0.97	<0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM-6 Sump at 5-Head	2/21/2002	8.71	240	36	470	0	1.29	<0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		DM-6 Sump at 5-Head	3/7/2002	8.5	200	38	350	4.57	1.19	<0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Mine No. 8	Sump #2 Head	1/17/2005	7.72	98	62	450	1.56	1.24	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	2/4/2005	7.99	146	70	426	4.14	1.26	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	3/29/2005	7.77	92	55	376	1.10	0.22	<0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	5/5/2005	7.67	84	145	377	0.15	0.25	0.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	6/14/2005	7.59	140	10	325	0.65	0.49	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	7/31/2005	7.60	114	330	710	1.88	1.17	0.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	8/26/2005	7.41	126	310	650	1.52	1.31	0.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	9/29/2005	7.10	126	320	700	1.56	1.47	0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	11/7/2005	7.60	140	300	710	1.29	1.26	0.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	2/27/2006	7.80	160	210	720	0.22	<0.03	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	3/13/2006	8.11	142	200	710	0.08	0.05	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	3/31/2006	7.97	120	260	760	0.90	7.97	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	4/27/2006	7.66	110	200	810	1.07	2.75	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	6/29/2006	8.11	120	260	700	2.78	0.37	<0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	7/29/2006	8.23	120	210	860	0.45	0.05	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	8/22/2006	7.81	126	260	750	0.31	0.11	<0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	9/27/2006	7.62	110	210	760	0.19	0.01	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	10/31/2006	7.61	110	188	634	24.22	24.90	0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	11/29/2006	8.00	22	485	710	0.55	0.07	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	12/14/2006	8.33	120	140	547	0.85	0.62	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	1/31/2007	7.27	120	100	415	0.67	0.22	<.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	2/26/2007	7.98	184	210	1183	6.04	6.28	0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	3/30/2007	8.04	142	150	345	14.21	5.05	0.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	4/14/2007	8.00	126	140	520	*	*	*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	5/30/2007	7.14	120	130	439	0.58	0.27	0.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	8/30/2007	7.70	248	150	650	6.11	5.60	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	9/28/2007	7.70	248	189	545	9.79	9.67	0.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	10/31/2007	7.80	158	160	509	0.09	<0.07	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	11/7/2007	7.60	162	147	516	0.64	0.74	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Sump #2 Head	12/31/2007	7.60	232	1107	193	16.61	7.50	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Outlet 002	2/26/2007	8.01	--	--	--	0.70	0.11	<0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Outlet 002	6/30/2007	8.15	--	--	--	1.82	0.38	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Outlet 002	7/9/2007	8.10	--	--	--	1.17	3.21	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Outlet 002	7/19/2007	7.74	--	--	--	1.54	0.74	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Outlet 002	7/31/2007	8.09	--	--	--	0.36	<0.03	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Outlet 002	9/28/2007	6.80	--	--	--	0.20	0.08	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Outlet 002	10/29/2007	7.90	--	--	--	0.14	0.08	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Outlet 002	11/2/2007	8.00	--	--	--	0.17	0.18	0.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rockspring	Camp Creek	Mine Seal No. 8 from Trap	5/30/2001	7.41	736	873	1220	0.80	0.61	0.21	739.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<1	--	<0.5	--
		Mine Seal No. 8 from Trap	9/27/2001	7.27	480	289	925	0.40	0.30	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Mine Seal No. 8 from Trap	na	6.18	104	253	1464	na	na	na	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			Minimum	***6.18***	***22***	***2***	***193***	***0***	***0.01***	***0.02***																			
			Average	***7.81***	***154***	***267***	***651***	***7.23***	***2.88***	***0.09***																			
			Maximum	***9.21***	***736***	***1107***	***1464***	***199***	***30***	***0.37***																			
			Count (n)	*62*	*54*	*54*	*53*	*59*	*56*	*49*																			

Notes:
-All metals are TOTAL
-* Reported values of 1259.13, 408.81, and 3.47 for Al, Fe, and Mn, respectively, appear anomolously high given the historic trends, sample pH, and measured TDS. Therefore, these values not used in analysis

APPENDIX H

REPORTING OF HAZARDOUS MATERIAL RELEASES AND PETROLEUM PRODUCT SPILLS

Appendix H

REPORTING OF HAZARDOUS MATERIAL RELEASES AND PETROLEUM PRODUCT SPILLS

Under the federal *Comprehensive Environmental Response, Compensation, and Liability Act* of 1980 (CERCLA), “CERCLA hazardous substances” are defined in terms of those substances either specifically designated as hazardous under CERCLA, otherwise known as the Superfund law, or those substances identified under other laws, including:

- The federal *Clean Water Act* (CWA), Sections 307 and 311
- The *Resource Conservation and Recovery Act* (RCRA), Section 3001
- The *Clean Air Act* (CAA), Section 112
- The *Toxic Substances Control Act* (TSCA), Section 7

More than 800 substances are designated as hazardous, and many more are identified as potentially hazardous due to their characteristics and the circumstances of their release. Under CERCLA, the terms "hazardous substance" and "pollutant or contaminant" do not include petroleum or natural gas. Oil spills are addressed under the USEPA’s Oil Program, and the USEPA’s Emergency Response Program coordinates response to hazardous substance releases or oil spills (USEPA 2007l).

The federal government has established Superfund reportable quantities (RQs) to define reporting requirements for releases of hazardous substances. If a hazardous substance is released to the environment in an amount that equals or exceeds its RQ, the release must be reported to the National Response Center within 24 hours so that emergency response teams can evaluate whether a response action is needed. Other federal notification requirements may also be required (USEPA 2007l). Release of a reportable quantity of a hazardous material, as defined in the West Virginia *Emergency Response and Community Right-to-know Act* (HB 2382 and 15 WVC 5A), must be reported immediately to the Local Emergency Planning Committee’s emergency reporting number and also to the West Virginia Division of Homeland Security and Emergency Management’s State Emergency Response Commission, as required by the State Emergency Response Commission Emergency Planning and Community Right-to-know rules (State of West Virginia Regulations Title 55 Series 1-1). Any person who may cause or be responsible for any spill or accidental discharge of a pollutant to waters of the state must immediately notify the Office of Water Resources’ emergency notification number, as required by the Special Rules established by the Office of Water Resources (State of West Virginia Regulations Title 47 Series 11).

APPENDIX I

OUTGRANTS

Appendix I
OUTGRANTS

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OUTGRANTS **BIG SANDY, EAST LYNN LAKE** **HUNTINGTON** **12 OCT 2006**

TYPE OF NSTRUMENT	CONTRACT NUMBER	GRANTEE NAME	OUTGRANT DESCRIPTION	PURPOSE CATEGORY	EXPIRATION
LEASE	DACW69-1-06-1035	LAKESIDE MARINA	MARINA AT EAST LYNN LAKE	RECR, COMM	31-MAR-2031
LEASE	DACW69-1-73-0287	CABOT OIL AND GAS CORPORATION	BLM NO. 36940-OIL AND GAS -	INDUST	INDEF
LEASE	DACW69-1-76-0158	CABOT OIL AND GAS CORPORATION	BLM NO. 36941-OIL AND GAS - FRANK E MATTHEWSON FARM	INDUST	INDEF
LEASE	DACW69-1-85-0049	CABOT OIL AND GAS CORPORATION	OIL AND GAS - E.R. PRITCHARD WELL	INDUST	INDEF
LEASE	DACW69-1-88-0214	COLUMBIA NATURAL	BLM NO. 39018-OIL AND GAS	INDUST	INDEF
LEASE	DACW69-1-98-0022	STATE OF WV DIVISION OF FORESTRY	DWELLING FOR AN OFFICE	OTHER	14-OCT-2007
EASEMENT	DACW69-2-01-1058	AMERICAN ELECTRIC POWER	INSTALLATION OF	RIGHT-OF-WAY	24-JAN-2026
EASEMENT	DACW69-2-02-1001	LAUREL CREEK COMPANY	ROAD	RIGHT-OF-WAY	INDEF
EASEMENT	DACW69-2-03-1070	TOWN OF WAYNE	6 INCH WATERLINE, CHANGE LOCATION OF LINE	RIGHT-OF-WAY	30-NOV-2052
EASEMENT	DACW69-2-03-1110	ROCKSPRING DEVELOPMENT,	CONSTRUCT AND MAINTAIN A POWERLINE	RIGHT-OF-WAY	31-MAY-2028
EASEMENT	DACW69-2-05-1045	CRANBERRY PIPELINE CORPORATION	A PUMPING STATION FOR A GAS	OTHER	04-MAR-2035
EASEMENT	DACW69-2-05-1046	CRANBERRY PIPELINE CORPORATION	PUMPING STATION FOR A GAS	OTHER	31-MAR-2035
EASEMENT	DACW69-2-68-0489	CITIZENS TELECOM	TELEPHONE LINE AND FACILITIES PURSUANT TO RC	RIGHT-OF-WAY	INDEF
EASEMENT	DACW69-2-69-0300	CABOT OIL AND GAS CORPORATION	GASLINE PURSUANT TO RC DA-	RIGHT-OF-WAY	INDEF
EASEMENT	DACW69-2-70-0147	AMERICAN ELECTRIC POWER	POWERLINE PURSUANT TO RC DA-46-022-CIVENG-66-77	RIGHT-OF-WAY	INDEF
EASEMENT	DACW69-2-70-0371	WEST VIRGINIA DEPARTMENT OF	WEST VIRGINIA ST. ROUTE 37 PURSUANT TO RC DA-46-	RIGHT-OF-WAY	INDEF
EASEMENT	DACW69-2-71-0321	CABOT OIL & GAS	PIPELINE	RIGHT-OF-WAY	INDEF
EASEMENT	DACW69-2-71-0332	AMERICAN ELECTRIC POWER	POWERLINE PURSUANT TO RC DACW69-67-C-0026	RIGHT-OF-WAY	INDEF
EASEMENT	DACW69-2-72-0406	AMERICAN ELECTRIC POWER	POWERLINE	RIGHT-OF-WAY	22-JUN-2022
EASEMENT	DACW69-2-73-0108	CITIZENS TELECOM	TELEPHONE TRANSMISSION PURSUANT TO RC DACW69-70-C-0006	RIGHT-OF-WAY	INDEF
EASEMENT	DACW69-2-74-0024	CABOT OIL & GAS	GAS PIPELINE PURSUANT TO RC	RIGHT-OF-WAY	INDEF
EASEMENT	DACW69-2-74-0244	COLUMBIA GAS TRANSMISSION CORPORATION	GAS PIPELINES	RIGHT-OF-WAY	INDEF
EASEMENT	DACW69-2-74-0261	COLUMBIA GAS TRANSMISSION CORPORATION	GAS PIPELINE PURSUANT TO RC	RIGHT-OF-WAY	INDEF

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OUTGRANTS BIG SANDY, EAST LYNN LAKE HUNTINGTON 12 OCT 2006

TYPE OF INSTRUMENT	CONTRACT NUMBER	GRANTEE NAME	OUTGRANT DESCRIPTION	PURPOSE CATEGORY	EXPIRATION	Y/N
EASEMENT	DACW69-2-75-0341	AMERICAN ELECTRIC POWER	ELECTRIC POWER OR COMM LINE PURSUANT TO RC DACW69-69-C-0054	RIGHT-OF-WAY	INDEF	
EASEMENT	DACW69-2-76-0169	AMERICAN ELECTRIC POWER	ELECTRIC POWER OR COMMN LINES PURSUANT TO RC DACW69-73-C-0107	RIGHT-OF-WAY	INDEF	
EASEMENT	DACW69-2-77-0153	COLUMBIA GAS TRANSMISSION CORPORATION	CATHODIC PROTECTION FACILITIES	RIGHT-OF-WAY	05-MAY-2027	
EASEMENT	DACW69-2-79-0277	WEST VIRGINIA DEPARTMENT OF	ROAD. PURSUANT TO RC DACW69-67-C-0091	RIGHT-OF-WAY	INDEF	
EASEMENT	DACW69-2-83-0034	CITIZENS TELECOM	TELEPHONE LINES	RIGHT-OF-WAY	21-DEC-2032	
EASEMENT	DACW69-2-83-0060	CITIZENS TELECOM	TELEPHONE SWITCHING FACILITY	RIGHT-OF-WAY	20-JAN-2033	
EASEMENT	DACW69-2-84-0169	WEST VIRGINIA DEPARTMENT OF	ROAD	RIGHT-OF-WAY	INDEF	
EASEMENT	DACW69-2-87-0022	COLUMBIA GAS TRANSMISSION CORPORATION	ACCESS ROADS PURSUANT TO RC	RIGHT-OF-WAY	INDEF	
EASEMENT	DACW69-2-87-0226	TOWN OF WAYNE	WATERLINE	RIGHT-OF-WAY	28-JUN-2037	
EASEMENT	DACW69-2-87-0273	CRANBERRY PIPELINE CORPORATION	CATHODIC PROTECTION UNIT	RIGHT-OF-WAY	16-AUG-2012	
EASEMENT	DACW69-2-87-0274	CRANBERRY PIPELINE CORPORATION	CATHODIC PROTECTION UNIT	RIGHT-OF-WAY	16-AUG-2012	
EASEMENT	DACW69-2-87-0275	CRANBERRY PIPELINE CORPORATION	CATHODIC PROTECTION UNIT	RIGHT-OF-WAY	16-AUG-2012	
EASEMENT	DACW69-2-87-0276	CRANBERRY PIPELINE CORPORATION	CATHODIC PROTECTION UNIT	RIGHT-OF-WAY	16-AUG-2012	
EASEMENT	DACW69-2-90-0004	AMERICAN ELECTRIC POWER	POWERLINE - RELOCATE PORTION OF THE EASEMENT ON TRS. NOS. 2005	RIGHT-OF-WAY	16-OCT-2039	
EASEMENT	DACW69-2-91-0009	CRANBERRY PIPELINE CORPORATION	CATHODIC PROTECTION UNIT	RIGHT-OF-WAY	23-SEP-2015	
EASEMENT	DACW69-2-91-0178	WEST VIRGINIA DEPARTMENT OF	ROAD	RIGHT-OF-WAY	INDEF	
EASEMENT	DACW69-2-93-0219	AMERICAN ELECTRIC POWER	7.2 KV DISTRIBUTION POWERLINE	RIGHT-OF-WAY	18-JUL-2018	
EASEMENT	DACW69-2-99-1019	AMERICAN ELECTRIC POWER	POWERLINE	RIGHT-OF-WAY	30-JUN-2048	
LICENSE	DACW69-3-00-1009	PARSONS, MALCHOM AND	ACCESS ROAD-MOD #1 EXTEND	OTHER	02-DEC-2009	
LICENSE	DACW69-3-03-1023	DAVIS, DELANO	ACCESS ROAD	RIGHT-OF-WAY	10-AUG-2005	
LICENSE	DACW69-3-06-1048	DELANO DAVIS	ACCESS ROAD ON TRACT NO. 242	OTHER	10-AUG-2025	
LICENSE	DACW69-3-84-0011	WEST VIRGINIA DEPARTMENT OF	FISH, WILDLIFE, AND FOREST	FISH-WILDLIFE	31-OCT-2080	
CONSENT	DACW69-3-85-0225	CRANBERRY PIPELINE CORPORATION	CATHODIC PROTECTION UNIT	OTHER	INDEF	

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OUTGRANTS **BIG SANDY, EAST LYNN LAKE** **HUNTINGTON** **12 OCT 2006**

TYPE OF NSTRUMENT	CONTRACT NUMBER	GRANTEE NAME	OUTGRANT DESCRIPTION	PURPOSE CATEGORY	EXPIRATION
CONSENT	DACW69-3-89-0078	CABOT OIL AND GAS CORPORATION	HOWARD BALDWIN WELL A-6	INDUST	INDEF
CONSENT	DACW69-3-89-0374	P & C BITUMINOUS COAL, INCORPORATED	BRIDGE	OTHER	INDEF
CONSENT	DACW69-3-89-0564	P & C BITUMINOUS COAL, INCORPORATED	SEDIMENT DAM AND POND & ROAD	OTHER	INDEF
CONSENT	DACW69-3-94-0068	PEN COAL CORPORATION	CONVEYOR, CONVEYOR SUPPORT & TEMP. FILL FOR A DRAINAGE BERM & SEDIMENT	OTHER	INDEF

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