Birmingham Coal & Coke Company, Inc.
Old Union #2 Mine, P-3962
Detailed Design Plans Basin 001

4.8 Inches, 25 Year - 6 Hour,

SCS 6 Hour

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General Information

Storm Information:

Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.1680
1.00	0.3840
1.50	0.6480
2.00	1.1040
2.50	2.8800
3.00	3.3600
3.50	3.7440
4.00	4.0080
4.50	4.2480
5.00	4.4400
5.50	4.6320
6.00	4.8000

Peak 30-minute Intensity: 3.522 in/hr

Particle Size Distribution:

Size (mm)	Topsoil	Spoil
3.0000	100.000%	100.000%
2.0000	98.000%	92.000%
1.0000	96.000%	78.000%
0.5000	94.000%	54.000%
0.3000	88.000%	43.000%
0.2000	80.000%	34.000%
0.1000	68.000%	22.000%
0.0500	49.000%	15.000%
0.0300	36.000%	9.000%
0.0200	28.000%	5.000%
0.0100	14.000%	4.000%
0.0050	5.000%	3.000%
0.0030	4.000%	2.500%
0.0010	2.000%	2.000%

Size (mm)	Topsoil	Spoil
0.0001	0.001%	0.001%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	Basin 001

#1
Pond

Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	26.239	26.239	55.41	5.28	645.5	150,760	115.44	66.38
	Out			10.73	5.28	20.8	5,583	0.01	0.01

Particle Size Distribution(s) at Each Structure

Structure #1:

Size (mm)	In	Out
3.0000	100.000%	100.000%
2.0000	92.009%	100.000%
1.0000	78.024%	100.000%
0.5000	54.049%	100.000%
0.3000	43.061%	100.000%
0.2000	34.071%	100.000%
0.1000	22.070%	100.000%
0.0500	15.052%	100.000%
0.0300	9.040%	100.000%
0.0200	5.033%	100.000%
0.0100	4.015%	100.000%
0.0050	3.004%	93.297%
0.0030	2.503%	77.740%
0.0010	2.001%	62.141%
0.0001	0.001%	0.031%

Structure Detail:

Structure #1 (Pond)

Basin 001

Pond Inputs:

Initial Pool Elev:	613.00 ft
Initial Pool:	0.76 ac-ft
*Sediment Storage:	1.53 ac-ft
Dead Space:	20.00 %

**Sediment capacity calculated from 0.100 times disturbed area*

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Entrance Loss Coefficient	Tailwater Depth (ft)
18.00	130.00	2.00	0.0240	613.00	0.90	0.00

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
617.40	20.00	2.00:1	2.00:1	12.00

Pond Results:

Peak Elevation:	617.39 ft
H'graph Detention Time:	2.20 hrs
Pond Model:	CSTRS
Dewater Time:	0.77 days
Trap Efficiency:	96.78 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
610.89	0.313	0.000	0.000		Top of Sed. Storage
611.00	0.317	0.035	0.000		
611.50	0.339	0.199	0.000		
612.00	0.361	0.374	0.000		
612.30	0.375	0.484	0.000		
612.50	0.384	0.560	0.000		

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
613.00	0.408	0.758	0.000		Spillway #1
613.50	0.433	0.969	1.111	12.35	
614.00	0.458	1.191	3.142	1.40	
614.50	0.484	1.427	5.206	0.70	
615.00	0.511	1.675	7.934	0.45	
615.50	0.542	1.939	8.772	0.40	
616.00	0.575	2.218	9.326	0.35	
616.50	0.608	2.514	9.852	0.40	
617.00	0.643	2.826	10.351	0.80	
617.30	0.664	3.022	10.645	0.90	
617.39	0.670	3.082	10.727	0.80	Peak Stage
617.40	0.671	3.089	10.736		Spillway #2
617.50	0.678	3.156	12.785		
617.75	0.696	3.328	17.910		
618.00	0.714	3.504	23.034		
618.50	0.751	3.870	47.575		
619.00	0.789	4.255	83.296		
619.50	0.828	4.660	130.685		
620.00	0.868	5.084	188.705		

Detailed Discharge Table

Elevation (ft)	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
610.89	0.000	0.000	0.000
611.00	0.000	0.000	0.000
611.50	0.000	0.000	0.000
612.00	0.000	0.000	0.000
612.30	0.000	0.000	0.000
612.50	0.000	0.000	0.000
613.00	0.000	0.000	0.000
613.50	(3)>1.111	0.000	1.111
614.00	(3)>3.142	0.000	3.142
614.50	(2)>5.206	0.000	5.206
615.00	(5)>7.934	0.000	7.934
615.50	(6)>8.772	0.000	8.772
616.00	(6)>9.326	0.000	9.326
616.50	(6)>9.852	0.000	9.852
617.00	(6)>10.351	0.000	10.351
617.30	(6)>10.645	0.000	10.645

Elevation (ft)	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
617.40	(6)>10.736	0.000	10.736
617.50	(6)>10.827	1.958	12.785
617.75	(6)>11.054	6.856	17.910
618.00	(6)>11.281	11.753	23.034
618.50	(6)>11.724	35.852	47.575
619.00	(6)>12.140	71.155	83.296
619.50	(6)>12.557	118.128	130.685
620.00	(6)>12.945	175.760	188.705

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	9.790	0.135	0.044	0.305	70.000	M	11.74	1.252
	2	15.269	0.057	0.000	0.000	81.000	F	40.87	3.556
	3	1.180	0.001	0.000	0.000	100.000	F	4.23	0.470
	Σ	**26.239**						**55.41**	**5.279**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	200.00	8.50	0.0030	1.0000	1	0.7	650	0.43	0.27
	2	0.240	200.00	10.00	0.9000	1.0000	2	644.8	199,953	153.14	96.15
	3	0.001	20.00	0.01	0.0001	1.0000	1	0.0	0	0.00	0.00
	Σ							**645.5**	**150,760**	**115.44**	**66.38**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	1. Forest with heavy ground litter	8.35	25.00	299.50	0.730	0.113
		7. Paved area and small upland gullies	9.23	45.00	487.41	6.110	0.022
#1	**1**	**Time of Concentration:**					**0.135**
#1	2	5. Nearly bare and untilled, and alluvial valley fans	18.28	69.00	377.51	4.270	0.024
		8. Large gullies, diversions, and low flowing streams	2.57	15.00	584.56	4.800	0.033
#1	**2**	**Time of Concentration:**					**0.057**
#1	3	5. Nearly bare and untilled, and alluvial valley fans	17.49	45.00	257.32	4.180	0.017
#1	**3**	**Time of Concentration:**					**0.001**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	7.10	30.00	422.32	2.660	0.044
#1	**1**	**Muskingum K:**					**0.044**