National Coal of Alabama, Inc.
Poplar Springs North Mine
P-3886, Revision R-6
Sediment Basin 035 & 035A & 034
Phase 2

10 Year 24 Hour Event

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General Information

Storm Information:

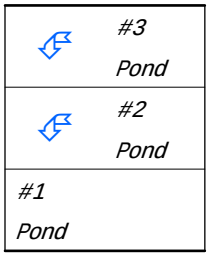
Storm Type:	drn58
Design Storm:	10 yr - 24 hr
Rainfall Depth:	5.900 inches

Particle Size Distribution:

Size (mm)	Topsoil	Spoil Material
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%
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 035
Pond	#2	==>	#1	0.000	0.000	Basin 035A
Pond	#3	==>	#1	0.000	0.000	Basin 034



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)
#3	In	21.800	21.800	28.08	7.14	1,545.2	257,235	197.01	113.09
	Out			3.06	7.14	26.9	4,229	0.00	0.00
#2	In	127.200	127.200	135.63	36.97	4,777.9	174,391	133.53	74.52
	Out			114.14	36.69	152.3	5,000	0.01	0.00
#1	In	41.900	190.900	167.67	57.18	2,990.7	156,909	112.97	32.91
	Out			156.35	55.74	288.1	11,659	0.08	0.00

Particle Size Distribution(s) at Each Structure

Structure #3 (Basin 034):

Size (mm)	In	Out
3.0000	100.000%	100.000%
2.0000	92.000%	100.000%
1.0000	78.000%	100.000%
0.5000	54.000%	100.000%
0.3000	43.000%	100.000%
0.2000	34.000%	100.000%
0.1000	22.000%	100.000%
0.0500	15.000%	100.000%
0.0300	9.000%	100.000%
0.0200	5.000%	100.000%
0.0100	4.000%	100.000%
0.0050	3.000%	100.000%
0.0030	2.500%	100.000%
0.0010	2.000%	100.000%
0.0001	0.001%	0.057%

Structure #2 (Basin 035A):

Size (mm)	In	Out
3.0000	100.000%	100.000%
2.0000	92.011%	100.000%
1.0000	78.032%	100.000%
0.5000	54.066%	100.000%
0.3000	43.082%	100.000%
0.2000	34.094%	100.000%
0.1000	22.099%	100.000%
0.0500	15.072%	100.000%
0.0300	9.056%	100.000%
0.0200	5.047%	100.000%
0.0100	4.021%	100.000%
0.0050	3.005%	94.298%
0.0030	2.504%	78.571%

Size (mm)	In	Out
0.0010	2.001%	62.785%
0.0001	0.001%	0.031%

Structure #1:

Size (mm)	In	Out
3.0000	100.000%	100.000%
2.0000	92.482%	100.000%
1.0000	79.326%	100.000%
0.5000	56.773%	100.000%
0.3000	46.435%	100.000%
0.2000	37.976%	100.000%
0.1000	26.695%	100.000%
0.0500	20.109%	100.000%
0.0300	14.465%	100.000%
0.0200	10.703%	100.000%
0.0100	9.757%	100.000%
0.0050	8.523%	88.484%
0.0030	7.252%	75.288%
0.0010	5.977%	62.056%
0.0001	0.003%	0.032%

Structure Detail:

Structure #3 (Pond)

Basin 034

Pond Inputs:

Initial Pool Elev:	644.90
Initial Pool:	2.30 ac-ft
*Sediment Storage:	2.18 ac-ft
Dead Space:	20.00 %

**Sediment capacity calculated from 0.100 times disturbed acres*

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
647.00	20.00	2.00:1	2.00:1	10.00

Fixed Siphon

Crest Elev	Inlet Elev	Outlet Elev	Diameter (in)	Length (ft)	Manning's n
645.00	644.90	640.00	6.00	100.00	0.0140

Pond Results:

Peak Elevation:	647.23
H'graph Detention Time:	11.48 hrs
Pond Model:	CSTRS
Dewater Time:	1.18 days
Trap Efficiency:	98.26 %

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)	
642.93	0.895	0.000	0.000		Top of Sed. Storage
643.00	0.912	0.060	0.000		
643.50	1.046	0.549	0.000		
644.00	1.189	1.107	0.000		
644.50	1.342	1.739	0.000		
644.90	1.470	2.301	0.000		

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
645.00	1.502	2.450	1.842	0.98*	Spillway #2
645.50	1.565	3.216	1.937	4.90	
646.00	1.628	4.014	2.028	4.90	
646.50	1.694	4.845	2.116	4.85	
647.00	1.760	5.708	2.200	4.85	Spillway #1
647.20	1.769	6.061	2.966	5.30	
647.23	1.770	6.107	3.064	2.60	Peak Stage
647.50	1.783	6.594	4.113		
648.00	1.806	7.491	27.844		
648.50	1.829	8.400	56.343		
649.00	1.853	9.321	95.548		
649.50	1.876	10.253	144.557		
650.00	1.900	11.197	203.628		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation	Emergency Spillway (cfs)	Fixed Siphon (cfs)	Combined Total Discharge (cfs)
642.93	0.000	0.000	0.000
643.00	0.000	0.000	0.000
643.50	0.000	0.000	0.000
644.00	0.000	0.000	0.000
644.50	0.000	0.000	0.000
644.90	0.000	0.000	0.000
645.00	0.000	1.842	1.842
645.50	0.000	1.937	1.937
646.00	0.000	2.028	2.028
646.50	0.000	2.116	2.116
647.00	0.000	2.200	2.200
647.20	0.732	2.233	2.966
647.50	1.830	2.282	4.113
648.00	25.483	2.361	27.844
648.50	53.905	2.438	56.343
649.00	93.036	2.513	95.548
649.50	141.972	2.586	144.557
650.00	200.972	2.657	203.628

Structure #2 (Pond)

Basin 035A

Pond Inputs:

Initial Pool Elev:	646.00
Initial Pool:	4.99 ac-ft
*Sediment Storage:	8.85 ac-ft
Dead Space:	20.00 %

**Sediment capacity calculated from 0.100 times disturbed acres*

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
647.00	20.00	2.00:1	2.00:1	10.00

Fixed Siphon

Crest Elev	Inlet Elev	Outlet Elev	Diameter (in)	Length (ft)	Manning's n
646.50	646.00	640.00	6.00	100.00	0.0140

Pond Results:

Peak Elevation:	649.19
H'graph Detention Time:	3.23 hrs
Pond Model:	CSTRS
Dewater Time:	1.36 days
Trap Efficiency:	96.81 %

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)	
644.00	2.401	0.000	0.000		Top of Sed. Storage
644.50	2.449	1.202	0.000		
645.00	2.499	2.439	0.000		
645.50	2.547	3.701	0.000		
646.00	2.596	4.987	0.000		
646.50	2.645	6.297	2.116	7.49*	Spillway #2
647.00	2.694	7.631	2.200	7.50	Spillway #1
647.50	2.744	8.991	4.113	5.40	
648.00	2.794	10.375	27.844	9.95	
648.50	2.845	11.785	56.343	1.55	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
649.00	2.896	13.220	95.548	0.65	
649.19	2.916	13.774	114.140	0.20	Peak Stage
649.50	2.948	14.681	144.557		
650.00	3.000	16.168	203.628		
650.50	3.050	17.681	273.090		
651.00	3.101	19.218	353.301		
651.50	3.152	20.781	444.632		
652.00	3.203	22.370	547.456		
652.50	3.255	23.984	662.139		
653.00	3.307	25.625	789.047		
653.50	3.360	27.291	928.534		
654.00	3.413	28.985	1,080.948		
654.50	3.466	30.704	1,246.629		
655.00	3.520	32.451	1,425.905		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation	Emergency Spillway (cfs)	Fixed Siphon (cfs)	Combined Total Discharge (cfs)
644.00	0.000	0.000	0.000
644.50	0.000	0.000	0.000
645.00	0.000	0.000	0.000
645.50	0.000	0.000	0.000
646.00	0.000	0.000	0.000
646.50	0.000	2.116	2.116
647.00	0.000	2.200	2.200
647.50	1.830	2.282	4.113
648.00	25.483	2.361	27.844
648.50	53.905	2.438	56.343
649.00	93.036	2.513	95.548
649.50	141.972	2.586	144.557
650.00	200.972	2.657	203.628
650.50	270.364	2.726	273.090
651.00	350.507	2.794	353.301
651.50	441.772	2.860	444.632
652.00	544.530	2.925	547.456
652.50	659.150	2.989	662.139
653.00	785.996	3.051	789.047

Elevation	Emergency Spillway (cfs)	Fixed Siphon (cfs)	Combined Total Discharge (cfs)
653.50	925.421	3.113	928.534
654.00	1,077.775	3.173	1,080.948
654.50	1,243.396	3.233	1,246.629
655.00	1,422.614	3.291	1,425.905

Structure #1 (Pond)

Basin 035

Pond Inputs:

Initial Pool Elev:	604.20
Initial Pool:	1.37 ac-ft
*Sediment Storage:	3.58 ac-ft
Dead Space:	20.00 %

**Sediment capacity calculated from 0.100 times disturbed acres*

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
607.00	20.00	2.00:1	2.00:1	10.00

Fixed Siphon

Crest Elev	Inlet Elev	Outlet Elev	Diameter (in)	Length (ft)	Manning's n
606.00	604.20	585.00	6.00	160.00	0.0150

Pond Results:

Peak Elevation:	609.59
H'graph Detention Time:	1.46 hrs
Pond Model:	CSTRS
Dewater Time:	1.77 days
Trap Efficiency:	90.37 %

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)	
602.20	0.608	0.000	0.000		Top of Sed. Storage
602.50	0.631	0.184	0.000		
603.00	0.671	0.510	0.000		
603.50	0.712	0.855	0.000		
604.00	0.755	1.222	0.000		
604.20	0.772	1.375	0.000		
604.50	0.798	1.610	3.122	0.91*	
605.00	0.843	2.020	3.165	1.57*	
605.20	0.855	2.190	3.181	0.65*	
605.50	0.874	2.450	3.206	0.98*	
606.00	0.905	2.894	3.248	1.66*	Spillway #2
606.30	0.925	3.169	3.272	1.20	
606.40	0.931	3.262	3.280	0.45	
606.50	0.937	3.355	3.289	0.40	
607.00	0.970	3.832	3.329	3.35	Spillway #1
607.50	1.016	4.328	5.199	16.15	
608.00	1.064	4.848	28.892	10.55	
608.50	1.112	5.392	57.353	3.10	
609.00	1.162	5.961	96.522	0.95	
609.50	1.212	6.554	145.497	0.50	
609.59	1.222	6.668	156.350	0.10	Peak Stage
610.00	1.264	7.173	204.534		
610.50	1.303	7.815	273.964		
611.00	1.342	8.476	354.145		
611.50	1.381	9.157	445.447		
612.00	1.421	9.857	548.242		
612.50	1.462	10.578	662.898		
613.00	1.504	11.320	789.780		
613.50	1.546	12.082	929.241		
614.00	1.588	12.865	1,081.630		
614.50	1.631	13.670	1,247.286		
615.00	1.675	14.497	1,426.539		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation	Emergency Spillway (cfs)	Fixed Siphon (cfs)	Combined Total Discharge (cfs)
602.20	0.000	0.000	0.000
602.50	0.000	0.000	0.000
603.00	0.000	0.000	0.000
603.50	0.000	0.000	0.000
604.00	0.000	0.000	0.000
604.20	0.000	0.000	0.000
604.50	0.000	3.122*	3.122
605.00	0.000	3.165*	3.165
605.20	0.000	3.181*	3.181
605.50	0.000	3.206*	3.206
606.00	0.000	3.248	3.248
606.30	0.000	3.272	3.272
606.40	0.000	3.280	3.280
606.50	0.000	3.289	3.289
607.00	0.000	3.329	3.329
607.50	1.830	3.369	5.199
608.00	25.483	3.409	28.892
608.50	53.905	3.448	57.353
609.00	93.036	3.486	96.522
609.50	141.972	3.525	145.497
610.00	200.972	3.563	204.534
610.50	270.364	3.601	273.964
611.00	350.507	3.638	354.145
611.50	441.772	3.675	445.447
612.00	544.530	3.712	548.242
612.50	659.150	3.748	662.898
613.00	785.996	3.784	789.780
613.50	925.421	3.820	929.241
614.00	1,077.775	3.855	1,081.630
614.50	1,243.396	3.890	1,247.286
615.00	1,422.614	3.926	1,426.539

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)
#3	1	20.400	0.080	0.000	0.000	81.000	F	25.92	6.448
	2	1.400	0.010	0.000	0.000	100.000	F	2.17	0.688
	Σ	**21.800**						**28.08**	**7.136**
#2	1	37.800	0.070	0.000	0.000	79.000	F	46.19	11.310
	2	50.700	0.100	0.000	0.000	81.000	F	64.42	16.024
	3	34.400	0.150	0.090	0.320	70.000	S	20.02	7.815
	4	1.400	0.060	0.090	0.320	77.000	S	1.64	0.396
	5	2.900	0.010	0.000	0.000	100.000	F	4.49	1.426
	Σ	**127.200**						**135.63**	**36.971**
#1	1	2.500	0.130	0.000	0.000	70.000	S	1.46	0.568
	2	3.600	0.080	0.000	0.000	77.000	S	4.22	1.018
	3	34.800	0.100	0.000	0.000	81.000	F	44.21	10.999
	4	1.000	0.010	0.000	0.000	100.000	F	1.55	0.492
	Σ	**190.900**						**167.67**	**57.183**

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)
#3	1	0.240	200.00	17.00	0.9000	1.0000	2	1,545.2	276,342	211.65	124.35
	2	0.240	200.00	0.01	0.0010	1.0000	2	0.0	2	0.00	0.00
	Σ							**1,545.2**	**257,235**	**197.01**	**113.09**
#2	1	0.240	200.00	17.00	0.1500	1.0000	2	487.6	54,745	41.93	23.93
	2	0.240	200.00	17.00	0.9000	1.0000	2	4,283.5	304,355	233.10	137.46
	3	0.320	200.00	17.00	0.0030	1.0000	1	6.6	1,605	1.04	0.60
	4	0.320	200.00	17.00	0.0030	1.0000	1	0.3	1,024	0.70	0.39
	5	0.240	200.00	0.00	0.0010	1.0000	2	0.0	2	0.00	0.00
	Σ							**4,777.9**	**174,391**	**133.53**	**74.52**
#1	1	0.320	200.00	17.00	0.0030	1.0000	1	0.4	1,174	0.76	0.44
	2	0.320	200.00	17.00	0.0030	1.0000	1	0.9	1,129	0.77	0.43
	3	0.240	200.00	17.00	0.9000	1.0000	2	2,810.3	292,491	224.02	131.90
	4	0.240	200.00	0.01	0.0010	1.0000	2	0.0	2	0.00	0.00
	Σ							**2,990.7**	**156,909**	**112.97**	**32.91**