APPENDIX 11-BB

CHINDE ARROYO POST-MINE HYDROLOGY& SEDIMENTOLOGY

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Chinde Arroyo Post-mine Hydrology and Sedimentology

The hydrology model and drainage subdivisions are presented on Exhibit 11-75. The design data for the Chinde Permanent Diversion is presented in the Interim Permit.

Revised Sept 2006

LR

BHP Navajo Coal Company
PO Box 1717
Fruitland, NM
87416

General Information

Storm Information:

Storm Type:	Type II-60
Design Storm:	2 yr - 6 hr
Rainfall Depth:	0.800 inches

Particle Size Distribution:

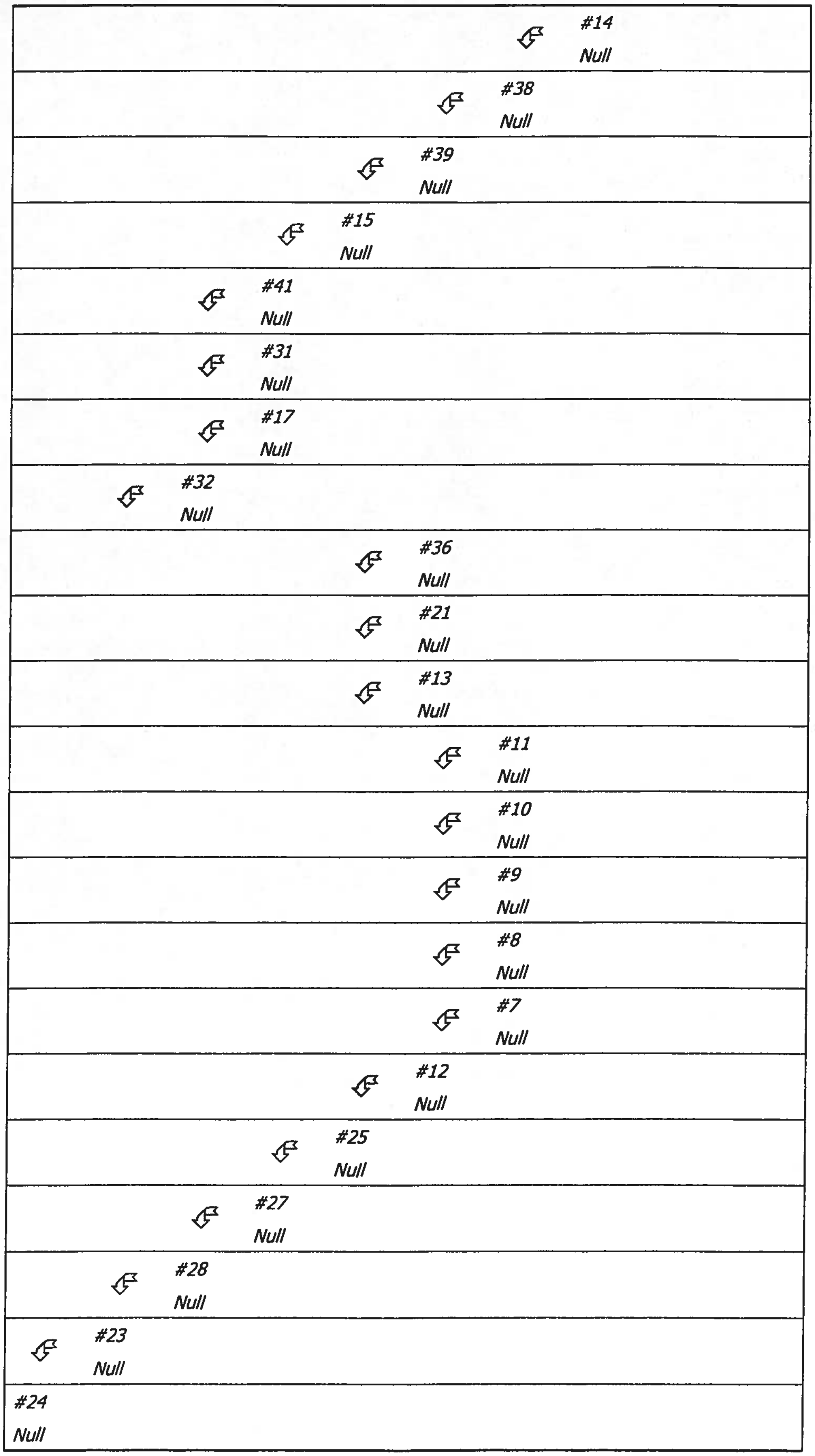
Size (mm)	PostMine-LoamySand	PreMine-LoamySand	PreMine-Badlands	LoamySand Postmining
2.0000	100.000%	100.000%	100.000%	0.000%
0.1000	26.500%	30.000%	83.500%	0.000%
0.0500	14.000%	17.000%	77.000%	0.000%
0.0020	11.000%	11.000%	56.000%	0.000%
0.0010	0.000%	0.000%	0.000%	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#42	1.386	0.156	
Null	#3	==>	#5	0.000	0.000	
Null	#4	==>	#5	0.000	0.000	
Null	#5	==>	#6	0.778	0.334	
Null	#6	==>	#40	1.118	0.289	
Null	#7	==>	#12	0.389	0.341	
Null	#8	==>	#12	0.213	0.373	
Null	#9	==>	#12	0.203	0.370	
Null	#10	==>	#12	0.122	0.381	
Null	#11	==>	#12	0.071	0.392	
Null	#12	==>	#25	0.584	0.301	
Null	#13	==>	#25	0.320	0.368	
Null	#14	==>	#38	0.749	0.206	
Null	#15	==>	#41	0.000	0.000	
Null	#16	==>	#38	0.043	0.404	
Null	#17	==>	#32	0.000	0.000	
Null	#18	==>	#41	0.076	0.313	
Null	#19	==>	#33	0.000	0.000	
Null	#21	==>	#25	0.188	0.334	
Null	#22	==>	#30	0.621	0.218	
Null	#23	==>	#24	0.494	0.312	
Null	#24	==>	End	0.000	0.000	
Null	#25	==>	#27	0.354	0.297	
Null	#26	==>	#29	0.144	0.211	
Null	#27	==>	#28	0.450	0.301	
Null	#28	==>	#23	0.101	0.361	
Null	#29	==>	#40	0.653	0.305	
Null	#30	==>	#33	0.000	0.000	
Null	#31	==>	#32	0.274	0.297	
Null	#32	==>	#23	0.403	0.327	
Null	#33	==>	#18	0.349	0.315	
Null	#34	==>	#38	0.601	0.202	
Null	#35	==>	#23	0.080	0.367	
Null	#36	==>	#25	0.212	0.367	
Null	#37	==>	#4	1.717	0.316	
Null	#38	==>	#39	0.165	0.329	Doby Channel
Null	#39	==>	#15	0.342	0.321	Doby Permanent Imp.
Null	#40	==>	#41	0.000	0.000	
Null	#41	==>	#32	0.307	0.299	

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#42	==>	#3	1.479	0.221	
Null	#43	==>	#30	0.479	0.208	

#35 Null
#26 Null
#29 Null
#37 Null
#4 Null
#1 Null
#42 Null
#3 Null
#5 Null
#6 Null
#40 Null
#43 Null
#22 Null
#30 Null
#19 Null
#33 Null
#18 Null
#34 Null
#16 Null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Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	5. Nearly bare and untilled, and alluvial valley fans	0.60	23.00	3,844.22	0.77	1.386
#1	**Muskingum K:**					**1.386**
#5	8. Large gullies, diversions, and low flowing streams	1.30	124.00	9,554.00	3.41	0.778
#5	**Muskingum K:**					**0.778**
#6	8. Large gullies, diversions, and low flowing streams	0.61	57.00	9,384.26	2.33	1.118
#6	**Muskingum K:**					**1.118**
#7	8. Large gullies, diversions, and low flowing streams	1.47	75.00	5,095.00	3.63	0.389
#7	**Muskingum K:**					**0.389**
#8	8. Large gullies, diversions, and low flowing streams	2.75	105.00	3,815.00	4.97	0.213
#8	**Muskingum K:**					**0.213**
#9	8. Large gullies, diversions, and low flowing streams	2.60	92.00	3,541.00	4.83	0.203
#9	**Muskingum K:**					**0.203**
#10	8. Large gullies, diversions, and low flowing streams	3.32	80.00	2,413.00	5.46	0.122
#10	**Muskingum K:**					**0.122**
#11	8. Large gullies, diversions, and low flowing streams	4.23	67.00	1,584.00	6.16	0.071
#11	**Muskingum K:**					**0.071**
#12	8. Large gullies, diversions, and low flowing streams	0.74	40.00	5,411.00	2.57	0.584
#12	**Muskingum K:**					**0.584**
#13	8. Large gullies, diversions, and low flowing streams	2.48	135.00	5,438.00	4.72	0.320
#13	**Muskingum K:**					**0.320**
#14	5. Nearly bare and untilled, and alluvial valley fans	1.43	46.00	3,212.06	1.19	0.749
#14	**Muskingum K:**					**0.749**
#16	8. Large gullies, diversions, and low flowing streams	5.68	64.00	1,127.00	7.14	0.043
#16	**Muskingum K:**					**0.043**
#18	8. Large gullies, diversions, and low flowing streams	0.90	7.00	780.00	2.84	0.076
#18	**Muskingum K:**					**0.076**
#21	8. Large gullies, diversions, and low flowing streams	1.29	30.00	2,320.00	3.41	0.188
#21	**Muskingum K:**					**0.188**
#22	5. Nearly bare and untilled, and alluvial valley fans	1.74	51.00	2,930.02	1.31	0.621
#22	**Muskingum K:**					**0.621**

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#23	8. Large gullies, diversions, and low flowing streams	0.88	44.00	5,006.00	2.81	0.494
#23	**Muskingum K:**					**0.494**
#25	8. Large gullies, diversions, and low flowing streams	0.69	22.00	3,178.00	2.49	0.354
#25	**Muskingum K:**					**0.354**
#26	5. Nearly bare and untilled, and alluvial valley fans	1.55	10.00	646.03	1.24	0.144
#26	**Muskingum K:**					**0.144**
#27	8. Large gullies, diversions, and low flowing streams	0.74	31.00	4,188.00	2.58	0.450
#27	**Muskingum K:**					**0.450**
#28	8. Large gullies, diversions, and low flowing streams	2.16	35.00	1,618.00	4.41	0.101
#28	**Muskingum K:**					**0.101**
#29	8. Large gullies, diversions, and low flowing streams	0.80	50.00	6,282.00	2.67	0.653
#29	**Muskingum K:**					**0.653**
#31	8. Large gullies, diversions, and low flowing streams	0.69	17.00	2,459.00	2.49	0.274
#31	**Muskingum K:**					**0.274**
#32	8. Large gullies, diversions, and low flowing streams	1.14	53.00	4,654.00	3.20	0.403
#32	**Muskingum K:**					**0.403**
#33	8. Large gullies, diversions, and low flowing streams	0.93	34.00	3,640.25	2.89	0.349
#33	**Muskingum K:**					**0.349**
#34	5. Nearly bare and untilled, and alluvial valley fans	1.32	33.00	2,492.07	1.15	0.601
#34	**Muskingum K:**					**0.601**
#35	8. Large gullies, diversions, and low flowing streams	2.44	33.00	1,354.01	4.68	0.080
#35	**Muskingum K:**					**0.080**
#36	8. Large gullies, diversions, and low flowing streams	2.45	88.00	3,593.00	4.69	0.212
#36	**Muskingum K:**					**0.212**
#37	5. Nearly bare and untilled, and alluvial valley fans	1.35	55.00	4,071.00	1.16	0.974
	8. Large gullies, diversions, and low flowing streams	1.49	146.00	9,792.00	3.66	0.743
#37	**Muskingum K:**					**1.717**
#38	8. Large gullies, diversions, and low flowing streams	1.19	23.00	1,938.00	3.26	0.165
#38	**Muskingum K:**					**0.165**
#39	8. Large gullies, diversions, and low flowing streams	1.04	39.00	3,758.00	3.05	0.342
#39	**Muskingum K:**					**0.342**

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#41	8. Large gullies, diversions, and low flowing streams	0.71	20.00	2,800.00	2.53	0.307
#41	**Muskingum K:**					**0.307**
#42	5. Nearly bare and untilled, and alluvial valley fans	1.84	132.00	7,189.15	1.35	1.479
#42	**Muskingum K:**					**1.479**
#43	5. Nearly bare and untilled, and alluvial valley fans	1.48	31.00	2,090.07	1.21	0.479
#43	**Muskingum K:**					**0.479**

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)
#35	105.000	105.000	4.90	0.48	14.3	41,359	24.05	15.54
#26	217.200	217.200	50.03	4.13	255.1	83,684	3.68	2.44
#29	90.200	307.400	56.36	5.84	296.5	70,020	1.49	0.97
#37	3,024.600	3,024.600	7.51	4.74	12.8	3,321	1.23	0.94
#4	2,965.700	5,990.300	28.61	12.51	51.9	5,719	2.46	1.60
#1	755.100	755.100	4.06	1.42	5.4	4,455	1.96	1.53
#42	2,360.600	3,115.700	13.07	7.50	20.5	3,267	1.20	0.86
#3	1,550.000	4,665.700	28.02	16.39	57.7	5,202	1.69	1.03
#5	0.000	10,656.000	51.77	28.91	109.7	5,430	2.03	1.28
#6	2,008.700	12,664.700	76.97	42.47	499.9	51,898	3.81	0.83
#40	155.400	13,127.500	80.00	48.40	796.7	127,859	6.92	0.84
#43	817.400	817.400	8.68	3.19	19.0	7,161	2.51	1.92
#22	163.500	163.500	28.86	2.81	149.7	71,043	0.65	0.44
#30	138.800	1,119.700	32.65	8.38	192.7	56,032	2.64	0.99
#19	452.600	452.600	23.82	4.38	108.0	30,780	15.34	11.22
#33	0.000	1,572.300	55.67	12.77	300.6	45,385	9.49	4.49
#18	119.500	1,691.800	54.79	12.84	300.1	46,487	9.66	4.42
#34	235.300	235.300	0.19	0.07	0.1	2,582	1.59	1.22
#16	1,570.700	1,570.700	1.75	0.71	1.5	2,532	1.43	1.10
#14	6,695.200	6,695.200	24.81	15.16	101.2	16,593	6.94	2.53
#38	0.000	8,501.199	25.03	15.94	102.9	16,221	6.82	2.46
#39	0.000	8,501.199	24.97	15.94	102.9	16,232	6.83	2.47
#15	600.300	9,101.499	25.92	16.31	104.6	15,901	6.74	2.47
#41	0.000	23,920.800	115.63	77.55	1,201.4	50,381	6.28	1.80
#31	120.200	120.200	0.32	0.07	0.5	7,347	4.67	4.00
#17	939.500	939.500	7.36	1.38	16.3	21,711	12.26	6.04
#32	168.000	25,148.500	117.92	79.11	1,214.9	49,197	6.34	1.85
#36	14.200	14.200	7.28	0.27	18.1	77,948	20.24	12.58
#21	90.300	90.300	24.61	1.71	125.5	100,935	7.35	4.76
#13	23.300	23.300	6.85	0.44	15.2	48,076	4.11	2.63
#11	154.900	154.900	41.93	2.94	189.6	89,291	6.40	4.14
#10	32.500	32.500	8.11	0.62	33.7	74,738	4.32	2.83
#9	15.000	15.000	7.69	0.28	18.9	76,861	19.96	12.40
#8	58.800	58.800	30.13	1.12	91.1	93,846	24.37	15.17
#7	204.800	204.800	38.30	3.57	201.6	75,690	1.37	0.92
#12	75.500	541.500	101.43	9.97	596.3	88,816	7.83	4.58
#25	359.300	1,028.600	118.19	16.35	892.1	244,818	18.50	3.63

	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)
#27	697.300	1,725.900	112.40	16.78	875.0	893,819	54.08	2.78
#28	533.700	2,259.600	108.45	17.11	865.2	1,651,710	86.68	2.34
#23	192.200	27,705.300	205.75	96.82	2,093.6	91,395	9.14	2.01
#24	548.700	28,254.000	207.24	101.91	2,147.6	115,192	11.87	2.06

Particle Size Distribution(s) at Each Structure

Structure #35:

Size (mm)	In/Out
2.0000	100.000%
0.1000	57.164%
0.0500	32.393%
0.0020	20.960%
0.0010	0.000%

Structure #26:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	87.624%
0.0010	0.000%

Structure #29:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	94.019%
0.0010	0.000%

Structure #37:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	63.880%
0.0020	41.334%

Size (mm)	In/Out
0.0010	0.000%

Structure #4:

Size (mm)	In/Out
2.0000	100.000%
0.1000	93.648%
0.0500	54.871%
0.0020	35.505%
0.0010	0.000%

Structure #1:

Size (mm)	In/Out
2.0000	100.000%
0.1000	94.354%
0.0500	53.467%
0.0020	34.596%
0.0010	0.000%

Structure #42:

Size (mm)	In/Out
2.0000	100.000%
0.1000	96.653%
0.0500	64.381%
0.0020	41.659%
0.0010	0.000%

Structure #3:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	70.828%
0.0020	45.830%
0.0010	0.000%

Structure #5:

Size (mm)	In/Out
2.0000	100.000%
0.1000	96.992%
0.0500	63.271%
0.0020	40.940%
0.0010	0.000%

Structure #6:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	93.122%
0.0020	87.944%
0.0010	0.000%

Structure #40:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	95.657%
0.0020	90.188%
0.0010	0.000%

Structure #43:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	66.959%
0.0020	43.326%
0.0010	0.000%

Structure #22:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	97.420%

Size (mm)	In/Out
0.0010	0.000%

Structure #30:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	96.747%
0.0020	90.785%
0.0010	0.000%

Structure #19:

Size (mm)	In/Out
2.0000	100.000%
0.1000	78.978%
0.0500	44.754%
0.0020	28.958%
0.0010	0.000%

Structure #33:

Size (mm)	In/Out
2.0000	100.000%
0.1000	92.450%
0.0500	78.075%
0.0020	68.582%
0.0010	0.000%

Structure #18:

Size (mm)	In/Out
2.0000	100.000%
0.1000	92.695%
0.0500	78.259%
0.0020	68.740%
0.0010	0.000%

Structure #34:

Size (mm)	In/Out
2.0000	100.000%
0.1000	48.039%
0.0500	27.222%
0.0020	17.614%
0.0010	0.000%

Structure #16:

Size (mm)	In/Out
2.0000	100.000%
0.1000	61.241%
0.0500	34.703%
0.0020	22.455%
0.0010	0.000%

Structure #14:

Size (mm)	In/Out
2.0000	100.000%
0.1000	93.952%
0.0500	56.716%
0.0020	36.699%
0.0010	0.000%

Structure #38 (Doby Channel):

Size (mm)	In/Out
2.0000	100.000%
0.1000	93.413%
0.0500	56.355%
0.0020	36.465%
0.0010	0.000%

Structure #39 (Doby Permanent Imp.):

Size (mm)	In/Out
2.0000	100.000%
0.1000	93.413%
0.0500	56.355%
0.0020	36.465%

Size (mm)	In/Out
0.0010	0.000%

Structure #15:

Size (mm)	In/Out
2.0000	100.000%
0.1000	92.669%
0.0500	55.844%
0.0020	36.196%
0.0010	0.000%

Structure #41:

Size (mm)	In/Out
2.0000	100.000%
0.1000	97.537%
0.0500	87.845%
0.0020	80.129%
0.0010	0.000%

Structure #31:

Size (mm)	In/Out
2.0000	100.000%
0.1000	42.799%
0.0500	22.611%
0.0020	17.765%
0.0010	0.000%

Structure #17:

Size (mm)	In/Out
2.0000	100.000%
0.1000	61.558%
0.0500	34.598%
0.0020	22.931%
0.0010	0.000%

Structure #32:

Size (mm)	In/Out
2.0000	100.000%
0.1000	97.313%
0.0500	87.351%
0.0020	79.560%
0.0010	0.000%

Structure #36:

Size (mm)	In/Out
2.0000	100.000%
0.1000	83.500%
0.0500	77.000%
0.0020	56.000%
0.0010	0.000%

Structure #21:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	79.749%
0.0010	0.000%

Structure #13:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	76.408%
0.0010	0.000%

Structure #11:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	80.047%

Size (mm)	In/Out
0.0010	0.000%

Structure #10:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	83.790%
0.0010	0.000%

Structure #9:

Size (mm)	In/Out
2.0000	100.000%
0.1000	83.500%
0.0500	77.000%
0.0020	56.000%
0.0010	0.000%

Structure #8:

Size (mm)	In/Out
2.0000	100.000%
0.1000	83.500%
0.0500	77.000%
0.0020	56.000%
0.0010	0.000%

Structure #7:

Size (mm)	In/Out
2.0000	100.000%
0.1000	100.000%
0.0500	100.000%
0.0020	94.909%
0.0010	0.000%

Structure #12:

Size (mm)	In/Out
2.0000	100.000%
0.1000	96.959%
0.0500	95.760%
0.0020	80.526%
0.0010	0.000%

Structure #25:

Size (mm)	In/Out
2.0000	100.000%
0.1000	97.647%
0.0500	96.714%
0.0020	82.851%
0.0010	0.000%

Structure #27:

Size (mm)	In/Out
2.0000	100.000%
0.1000	99.781%
0.0500	98.732%
0.0020	84.571%
0.0010	0.000%

Structure #28:

Size (mm)	In/Out
2.0000	100.000%
0.1000	99.795%
0.0500	99.712%
0.0020	85.601%
0.0010	0.000%

Structure #23:

Size (mm)	In/Out
2.0000	100.000%
0.1000	98.128%
0.0500	92.132%
0.0020	81.699%

Size (mm)	In/Out
0.0010	0.000%

Structure #24:

Size (mm)	In/Out
2.0000	100.000%
0.1000	96.988%
0.0500	91.965%
0.0020	81.036%
0.0010	0.000%

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)
#35	1	105.000	0.255	0.000	0.000	82.400	M	4.90	0.485
	Σ	**105.000**						**4.90**	**0.485**
#26	1	217.200	0.311	0.000	0.000	91.000	M	50.03	4.125
	Σ	**217.200**						**50.03**	**4.125**
#29	1	90.200	0.179	0.000	0.000	91.000	M	25.88	1.713
	Σ	**307.400**						**56.36**	**5.838**
#37	1	3,024.600	5.355	0.000	0.000	78.100	M	7.51	4.738
	Σ	**3,024.600**						**7.51**	**4.738**
#4	1	654.900	1.236	0.423	0.345	79.900	M	6.65	1.710
	2	699.700	1.092	0.423	0.345	78.500	M	4.80	1.240
	3	547.300	0.989	0.423	0.345	78.100	M	3.40	0.857
	4	1,063.800	1.498	0.000	0.000	81.400	M	14.60	3.969
	Σ	**5,990.300**						**28.61**	**12.514**
#1	1	755.100	2.032	0.000	0.000	78.700	M	4.06	1.420
	Σ	**755.100**						**4.06**	**1.420**
#42	1	1,327.100	2.923	3.078	0.144	77.200	M	3.61	1.532
	2	894.200	3.620	0.000	0.000	82.100	M	8.24	3.879
	3	139.300	1.214	0.000	0.000	82.600	M	2.88	0.670
	Σ	**3,115.700**						**13.07**	**7.502**
#3	1	1,550.000	2.670	0.000	0.000	83.500	M	23.67	8.890
	Σ	**4,665.700**						**28.02**	**16.391**
#5	Σ	**10,656.000**						**51.77**	**28.906**
#6	1	505.100	2.338	0.620	0.328	76.200	M	1.03	0.392
	2	638.400	4.585	0.478	0.304	78.800	M	2.20	1.236
	3	557.000	2.219	0.000	0.000	88.100	M	22.42	6.929
	4	308.200	0.485	0.478	0.304	89.900	M	47.16	5.004
	Σ	**12,664.700**						**76.97**	**42.467**
#40	1	155.400	1.202	0.000	0.000	75.700	M	0.31	0.096
	Σ	**13,127.500**						**80.00**	**48.402**
#43	1	817.400	2.463	0.000	0.000	81.600	M	8.68	3.187
	Σ	**817.400**						**8.68**	**3.187**
#22	1	163.500	0.425	0.000	0.000	90.300	M	28.86	2.812

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
	Σ	**163.500**						**28.86**	**2.812**
#30	1	138.800	0.282	0.000	0.000	90.300	M	30.12	2.387
	Σ	**1,119.700**						**32.65**	**8.385**
#19	1	452.600	1.009	0.000	0.000	86.500	M	23.82	4.382
	Σ	**452.600**						**23.82**	**4.382**
#33	Σ	**1,572.300**						**55.67**	**12.767**
#18	1	119.500	0.376	0.000	0.000	75.700	M	0.31	0.074
	Σ	**1,691.800**						**54.79**	**12.841**
#34	1	235.300	2.496	0.000	0.000	74.400	M	0.19	0.069
	Σ	**235.300**						**0.19**	**0.069**
#16	1	1,570.700	2.944	0.000	0.000	75.100	M	1.75	0.710
	Σ	**1,570.700**						**1.75**	**0.710**
#14	1	2,999.900	5.968	5.461	0.261	77.600	M	5.81	3.987
	2	1,855.400	3.914	1.286	0.322	78.800	M	7.12	3.593
	3	730.800	1.418	0.000	0.000	85.400	M	24.81	5.895
	4	1,109.100	2.763	1.418	0.312	78.000	M	4.06	1.683
	Σ	**6,695.200**						**24.81**	**15.158**
#38	Σ	**8,501.199**						**25.03**	**15.937**
#39	Σ	**8,501.199**						**24.97**	**15.937**
#15	1	600.300	1.116	0.000	0.000	75.700	M	1.23	0.371
	Σ	**9,101.499**						**25.92**	**16.308**
#41	Σ	**23,920.800**						**115.63**	**77.550**
#31	1	120.200	0.344	0.000	0.000	75.700	M	0.32	0.074
	Σ	**120.200**						**0.32**	**0.074**
#17	1	823.800	0.930	0.713	0.220	75.700	M	1.77	0.509
	2	115.700	0.456	0.000	0.000	85.000	M	7.36	0.871
	Σ	**939.500**						**7.36**	**1.380**
#32	1	118.100	0.555	0.108	0.329	75.700	M	0.28	0.073
	2	49.900	0.493	0.000	0.000	75.700	M	0.12	0.031
	Σ	**25,148.500**						**117.92**	**79.109**
#36	1	14.200	0.048	0.000	0.000	91.000	M	7.28	0.270
	Σ	**14.200**						**7.28**	**0.270**
#21	1	90.300	0.204	0.000	0.000	91.000	M	24.61	1.715

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
	Σ	**90.300**						**24.61**	**1.715**
#13	1	23.300	0.162	0.000	0.000	91.000	M	6.85	0.443
	Σ	**23.300**						**6.85**	**0.443**
#11	1	154.900	0.208	0.000	0.000	91.000	M	41.93	2.942
	Σ	**154.900**						**41.93**	**2.942**
#10	1	32.500	0.258	0.000	0.000	91.000	M	8.11	0.617
	Σ	**32.500**						**8.11**	**0.617**
#9	1	15.000	0.099	0.000	0.000	91.000	M	7.69	0.285
	Σ	**15.000**						**7.69**	**0.285**
#8	1	58.800	0.116	0.000	0.000	91.000	M	30.13	1.117
	Σ	**58.800**						**30.13**	**1.117**
#7	1	204.800	0.394	0.000	0.000	90.400	M	38.30	3.572
	Σ	**204.800**						**38.30**	**3.572**
#12	1	75.500	0.172	0.024	0.428	91.000	M	21.98	1.434
	Σ	**541.500**						**101.43**	**9.967**
#25	1	359.300	0.731	0.038	0.403	87.300	M	27.09	3.951
	Σ	**1,028.600**						**118.19**	**16.345**
#27	1	697.300	1.721	0.000	0.000	75.700	M	1.27	0.431
	Σ	**1,725.900**						**112.40**	**16.776**
#28	1	533.700	0.612	0.000	0.000	75.700	M	1.24	0.330
	Σ	**2,259.600**						**108.45**	**17.105**
#23	1	192.200	0.380	0.000	0.000	75.700	M	0.49	0.119
	Σ	**27,705.300**						**205.75**	**96.817**
#24	1	341.800	0.456	0.000	0.000	86.700	M	30.77	3.418
	2	72.600	0.247	0.479	0.310	86.300	M	8.50	0.680
	3	134.300	0.224	0.023	0.370	84.900	M	12.40	0.994
	Σ	**28,254.000**						**207.24**	**101.909**

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)
#35	1	0.220	125.00	9.30	0.3080	1.0000	2	14.3	41,359	24.05	15.54
	Σ							**14.3**	**41,359**	**24.05**	**15.54**
#26	1	0.209	75.00	12.70	0.3940	1.0000	3	255.1	83,684	3.68	2.44
	Σ							**255.1**	**83,684**	**3.68**	**2.44**
#29	1	0.210	150.00	7.20	0.3990	1.0000	3	71.3	57,882	4.71	3.02
	Σ							**296.5**	**70,020**	**1.49**	**0.97**
#37	1	0.150	400.00	2.00	0.3220	1.0000	2	12.8	3,321	1.23	0.93
	Σ							**12.8**	**3,321**	**1.23**	**0.94**
#4	1	0.160	400.00	2.00	0.3320	1.0000	2	7.5	5,219	2.36	1.82
	2	0.130	200.00	3.50	0.3070	1.0000	2	5.3	4,985	2.53	1.99
	3	0.147	200.00	3.70	0.2900	1.0000	2	4.0	5,397	2.92	2.31
	4	0.121	175.00	4.20	0.2900	1.0000	2	22.4	6,829	2.87	2.19
	Σ							**51.9**	**5,719**	**2.46**	**1.60**
#1	1	0.147	300.00	2.80	0.3070	1.0000	2	5.4	4,455	1.96	1.53
	Σ							**5.4**	**4,455**	**1.96**	**1.53**
#42	1	0.142	300.00	2.10	0.3360	1.0000	2	4.3	3,344	1.79	1.38
	2	0.167	400.00	1.20	0.3480	1.0000	2	9.4	2,942	0.83	0.63
	3	0.180	400.00	1.60	0.3370	1.0000	2	2.6	4,741	2.12	1.60
	Σ							**20.5**	**3,267**	**1.20**	**0.86**
#3	1	0.179	300.00	2.00	0.3420	1.0000	2	40.4	5,506	1.87	1.42
	Σ							**57.7**	**5,202**	**1.69**	**1.03**
#5	Σ							**109.7**	**5,430**	**2.03**	**1.28**
#6	1	0.170	200.00	3.30	0.3350	1.0000	2	1.6	4,721	2.60	2.04
	2	0.176	200.00	3.70	0.3370	1.0000	2	5.3	5,225	1.69	1.28
	3	0.196	100.00	10.70	0.3770	1.0000	3	183.7	32,279	0.00	0.00
	4	0.203	100.00	10.60	0.3800	1.0000	3	239.2	61,904	0.00	0.00
	Σ							**499.9**	**51,898**	**3.81**	**0.83**
#40	1	0.190	175.00	4.40	0.3150	1.0000	1	0.6	6,650	4.05	3.38
	Σ							**796.7**	**127,859**	**6.92**	**0.84**
#43	1	0.183	200.00	3.30	0.3520	1.0000	2	19.0	7,161	2.51	1.92
	Σ							**19.0**	**7,161**	**2.51**	**1.92**
#22	1	0.205	100.00	11.40	0.3870	1.0000	3	149.7	71,043	0.65	0.44
	Σ							**149.7**	**71,043**	**0.65**	**0.44**
#30	1	0.207	200.00	3.70	0.2070	1.0000	3	24.0	14,141	0.66	0.43

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)
	Σ							**192.7**	**56,032**	**2.64**	**0.99**
#19	1	0.187	150.00	7.70	0.3940	1.0000	2	108.0	30,780	15.34	11.22
	Σ							**108.0**	**30,780**	**15.34**	**11.22**
#33	Σ							**300.6**	**45,385**	**9.49**	**4.49**
#18	1	0.190	175.00	4.30	0.3150	1.0000	1	0.5	6,973	4.41	3.81
	Σ							**300.1**	**46,487**	**9.66**	**4.42**
#34	1	0.109	300.00	2.60	0.3650	1.0000	2	0.1	2,582	1.59	1.22
	Σ							**0.1**	**2,582**	**1.59**	**1.22**
#16	1	0.120	400.00	1.70	0.3520	1.0000	2	1.5	2,532	1.43	1.10
	Σ							**1.5**	**2,532**	**1.43**	**1.10**
#14	1	0.175	400.00	1.30	0.3310	1.0000	2	8.4	2,587	1.16	0.89
	2	0.175	300.00	2.00	0.3170	1.0000	2	11.2	3,792	1.33	1.01
	3	0.189	175.00	4.70	0.3530	1.0000	2	79.7	16,594	7.43	5.56
	4	0.256	300.00	2.10	0.3050	1.0000	2	7.9	5,568	2.63	2.04
	Σ							**101.2**	**16,593**	**6.94**	**2.53**
#38	Σ							**102.9**	**16,221**	**6.82**	**2.46**
#39	Σ							**102.9**	**16,232**	**6.83**	**2.47**
#15	1	0.190	200.00	3.30	0.3150	1.0000	1	1.8	5,263	3.22	2.70
	Σ							**104.6**	**15,901**	**6.74**	**2.47**
#41	Σ							**1,201.4**	**50,381**	**6.28**	**1.80**
#31	1	0.190	175.00	4.43	0.3150	1.0000	1	0.5	7,347	4.67	4.00
	Σ							**0.5**	**7,347**	**4.67**	**4.00**
#17	1	0.190	200.00	3.20	0.3150	1.0000	1	2.5	5,367	3.31	2.81
	2	0.197	150.00	6.30	0.2820	1.0000	2	14.1	21,711	12.16	8.30
	Σ							**16.3**	**21,711**	**12.26**	**6.04**
#32	1	0.190	300.00	3.00	0.3150	1.0000	1	0.3	4,657	2.91	2.53
	2	0.190	300.00	2.40	0.3150	1.0000	1	0.1	3,430	2.15	1.88
	Σ							**1,214.9**	**49,197**	**6.34**	**1.85**
#36	1	0.210	75.00	12.20	0.3990	1.0000	3	18.1	77,948	20.24	12.58
	Σ							**18.1**	**77,948**	**20.24**	**12.58**
#21	1	0.210	75.00	14.40	0.3990	1.0000	3	125.5	100,935	7.35	4.76
	Σ							**125.5**	**100,935**	**7.35**	**4.76**

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)
#13	1	0.210	150.00	6.90	0.3990	1.0000	3	15.2	48,076	4.11	2.63
	Σ							**15.2**	**48,076**	**4.11**	**2.63**
#11	1	0.204	75.00	12.80	0.3960	1.0000	3	189.6	89,291	6.40	4.14
	Σ							**189.6**	**89,291**	**6.40**	**4.14**
#10	1	0.210	75.00	13.10	0.3990	1.0000	3	33.7	74,738	4.32	2.83
	Σ							**33.7**	**74,738**	**4.32**	**2.83**
#9	1	0.210	100.00	10.60	0.3990	1.0000	3	18.9	76,861	19.96	12.40
	Σ							**18.9**	**76,861**	**19.96**	**12.40**
#8	1	0.210	75.00	12.40	0.3990	1.0000	3	91.1	93,846	24.37	15.17
	Σ							**91.1**	**93,846**	**24.37**	**15.17**
#7	1	0.211	100.00	11.10	0.3920	1.0000	3	201.6	75,690	1.37	0.92
	Σ							**201.6**	**75,690**	**1.37**	**0.92**
#12	1	0.201	150.00	8.00	0.3940	1.0000	3	61.6	59,669	5.00	3.20
	Σ							**596.3**	**88,816**	**7.83**	**4.58**
#25	1	0.186	100.00	10.46	0.3770	1.0000	3	137.0	44,361	0.00	0.00
	Σ							**892.1**	**244,818**	**18.50**	**3.63**
#27	1	0.190	150.00	6.70	0.3150	1.0000	1	4.1	10,725	6.42	5.19
	Σ							**875.0**	**893,819**	**54.08**	**2.78**
#28	1	0.190	175.00	5.90	0.3150	1.0000	1	3.3	10,601	6.61	5.73
	Σ							**865.2**	**1,651,710**	**86.68**	**2.34**
#23	1	0.190	150.00	6.70	0.3150	1.0000	1	1.2	10,359	6.55	5.67
	Σ							**2,093.6**	**91,395**	**9.14**	**2.01**
#24	1	0.229	150.00	7.70	0.2470	1.0000	2	83.2	32,803	18.79	12.75
	2	0.237	75.00	13.40	0.2440	1.0000	2	26.0	51,210	31.24	20.96
	3	0.241	100.00	10.30	0.2770	1.0000	2	38.0	54,820	33.28	20.91
	Σ							**2,147.6**	**115,192**	**11.87**	**2.06**

Subwatershed Time of Concentration 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	4.45	103.00	2,312.00	2.110	0.304
		8. Large gullies, diversions, and low flowing streams	2.03	110.00	5,414.45	4.270	0.352

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		5. Nearly bare and untilled, and alluvial valley fans	1.57	97.00	6,194.12	1.250	1.376
#1	**1**	**Time of Concentration:**					**2.032**
#3	1	5. Nearly bare and untilled, and alluvial valley fans	1.32	140.00	10,633.45	1.140	2.590
		8. Large gullies, diversions, and low flowing streams	5.53	113.00	2,042.00	7.050	0.080
#3	**1**	**Time of Concentration:**					**2.670**
#4	1	5. Nearly bare and untilled, and alluvial valley fans	1.72	60.00	3,483.10	1.310	0.738
		8. Large gullies, diversions, and low flowing streams	1.45	94.00	6,477.39	3.610	0.498
#4	**1**	**Time of Concentration:**					**1.236**
#4	2	5. Nearly bare and untilled, and alluvial valley fans	5.90	110.00	1,863.01	2.420	0.213
		8. Large gullies, diversions, and low flowing streams	1.43	163.00	11,361.26	3.590	0.879
#4	**2**	**Time of Concentration:**					**1.092**
#4	3	5. Nearly bare and untilled, and alluvial valley fans	5.81	100.00	1,722.00	2.400	0.199
		8. Large gullies, diversions, and low flowing streams	2.04	248.00	12,174.16	4.280	0.790
#4	**3**	**Time of Concentration:**					**0.989**
#4	4	5. Nearly bare and untilled, and alluvial valley fans	4.95	105.00	2,123.01	2.220	0.265
		8. Large gullies, diversions, and low flowing streams	1.96	366.00	18,657.28	4.200	1.233
#4	**4**	**Time of Concentration:**					**1.498**
#6	1	5. Nearly bare and untilled, and alluvial valley fans	1.36	125.00	9,201.32	1.160	2.203
		8. Large gullies, diversions, and low flowing streams	3.46	94.00	2,715.03	5.580	0.135
#6	**1**	**Time of Concentration:**					**2.338**
#6	2	5. Nearly bare and untilled, and alluvial valley fans	0.88	130.00	14,813.12	0.930	4.424
		8. Large gullies, diversions, and low flowing streams	4.76	181.00	3,801.00	6.540	0.161
#6	**2**	**Time of Concentration:**					**4.585**
#6	3	5. Nearly bare and untilled, and alluvial valley fans	0.70	35.00	5,028.01	0.830	1.682
		8. Large gullies, diversions, and low flowing streams	2.49	228.00	9,161.04	4.730	0.537
#6	**3**	**Time of Concentration:**					**2.219**
#6	4	5. Nearly bare and untilled, and alluvial valley fans	4.17	73.00	1,752.02	2.040	0.238
		8. Large gullies, diversions, and low flowing streams	3.61	183.00	5,073.04	5.690	0.247
#6	**4**	**Time of Concentration:**					**0.485**

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#7	1	8. Large gullies, diversions, and low flowing streams	3.49	195.00	5,587.07	5.600	0.277
		5. Nearly bare and untilled, and alluvial valley fans	4.84	45.00	930.00	2.190	0.117
#7	**1**	**Time of Concentration:**					**0.394**
#8	1	8. Large gullies, diversions, and low flowing streams	4.91	123.00	2,506.06	6.640	0.104
		5. Nearly bare and untilled, and alluvial valley fans	38.04	105.00	276.00	6.160	0.012
#8	**1**	**Time of Concentration:**					**0.116**
#9	1	5. Nearly bare and untilled, and alluvial valley fans	8.33	45.00	540.00	2.880	0.052
		8. Large gullies, diversions, and low flowing streams	5.57	67.00	1,203.00	7.070	0.047
#9	**1**	**Time of Concentration:**					**0.099**
#10	1	5. Nearly bare and untilled, and alluvial valley fans	4.68	83.00	1,775.02	2.160	0.228
		5. Nearly bare and untilled, and alluvial valley fans	20.83	105.00	504.00	4.560	0.030
#10	**1**	**Time of Concentration:**					**0.258**
#11	1	8. Large gullies, diversions, and low flowing streams	4.55	190.00	4,176.00	6.390	0.181
		5. Nearly bare and untilled, and alluvial valley fans	12.60	45.00	357.00	3.550	0.027
#11	**1**	**Time of Concentration:**					**0.208**
#12	1	8. Large gullies, diversions, and low flowing streams	4.07	120.00	2,950.07	6.050	0.135
		5. Nearly bare and untilled, and alluvial valley fans	10.05	43.00	428.00	3.160	0.037
#12	**1**	**Time of Concentration:**					**0.172**
#13	1	5. Nearly bare and untilled, and alluvial valley fans	3.65	30.00	823.00	1.900	0.120
		8. Large gullies, diversions, and low flowing streams	5.15	53.00	1,030.00	6.800	0.042
#13	**1**	**Time of Concentration:**					**0.162**
#14	1	5. Nearly bare and untilled, and alluvial valley fans	1.01	216.00	21,486.12	1.000	5.968
#14	**1**	**Time of Concentration:**					**5.968**
#14	2	5. Nearly bare and untilled, and alluvial valley fans	1.41	235.00	16,630.10	1.180	3.914
#14	**2**	**Time of Concentration:**					**3.914**
#14	3	5. Nearly bare and untilled, and alluvial valley fans	2.19	43.00	1,966.00	1.470	0.371
		8. Large gullies, diversions, and low flowing streams	1.60	105.00	6,562.00	3.790	0.480
		5. Nearly bare and untilled, and alluvial valley fans	1.08	23.00	2,124.12	1.040	0.567
#14	**3**	**Time of Concentration:**					**1.418**

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#14	4	5. Nearly bare and untilled, and alluvial valley fans	1.08	112.00	10,345.00	1.040	2.763
#14	**4**	**Time of Concentration:**					**2.763**
#15	1	5. Nearly bare and untilled, and alluvial valley fans	1.51	43.00	2,851.08	1.220	0.649
		8. Large gullies, diversions, and low flowing streams	2.54	42.00	1,652.04	4.780	0.096
		8. Large gullies, diversions, and low flowing streams	1.03	42.00	4,065.04	3.040	0.371
#15	**1**	**Time of Concentration:**					**1.116**
#16	1	5. Nearly bare and untilled, and alluvial valley fans	1.30	105.00	8,103.10	1.130	1.991
		8. Large gullies, diversions, and low flowing streams	0.15	6.00	3,981.42	1.160	0.953
#16	**1**	**Time of Concentration:**					**2.944**
#17	1	5. Nearly bare and untilled, and alluvial valley fans	3.69	75.00	2,032.00	1.920	0.293
		8. Large gullies, diversions, and low flowing streams	1.58	137.00	8,651.00	3.770	0.637
#17	**1**	**Time of Concentration:**					**0.930**
#17	2	5. Nearly bare and untilled, and alluvial valley fans	4.36	149.00	3,419.07	2.080	0.456
#17	**2**	**Time of Concentration:**					**0.456**
#18	1	5. Nearly bare and untilled, and alluvial valley fans	3.11	25.00	804.01	1.760	0.126
		8. Large gullies, diversions, and low flowing streams	1.41	45.00	3,196.02	3.550	0.250
#18	**1**	**Time of Concentration:**					**0.376**
#19	1	5. Nearly bare and untilled, and alluvial valley fans	4.92	45.00	914.00	2.210	0.114
		8. Large gullies, diversions, and low flowing streams	2.64	185.00	7,019.00	4.870	0.400
		5. Nearly bare and untilled, and alluvial valley fans	1.12	21.00	1,872.15	1.050	0.495
#19	**1**	**Time of Concentration:**					**1.009**
#21	1	5. Nearly bare and untilled, and alluvial valley fans	8.40	63.00	750.00	2.890	0.072
		8. Large gullies, diversions, and low flowing streams	4.57	140.00	3,064.06	6.410	0.132
#21	**1**	**Time of Concentration:**					**0.204**
#22	1	5. Nearly bare and untilled, and alluvial valley fans	4.15	54.00	1,300.01	2.030	0.177
		8. Large gullies, diversions, and low flowing streams	3.22	155.00	4,807.09	5.380	0.248
#22	**1**	**Time of Concentration:**					**0.425**
#23	1	5. Nearly bare and untilled, and alluvial valley fans	6.91	43.00	622.00	2.620	0.065
		8. Large gullies, diversions, and low flowing streams	2.65	147.00	5,545.07	4.880	0.315

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#23	**1**	**Time of Concentration:**					**0.380**
#24	1	5. Nearly bare and untilled, and alluvial valley fans	5.30	55.00	1,038.01	2.300	0.125
		8. Large gullies, diversions, and low flowing streams	3.06	191.00	6,252.04	5.240	0.331
#24	**1**	**Time of Concentration:**					**0.456**
#24	2	5. Nearly bare and untilled, and alluvial valley fans	4.80	62.00	1,291.02	2.190	0.163
		8. Large gullies, diversions, and low flowing streams	5.86	130.00	2,217.03	7.260	0.084
#24	**2**	**Time of Concentration:**					**0.247**
#24	3	5. Nearly bare and untilled, and alluvial valley fans	9.91	145.00	1,463.00	3.140	0.129
		8. Large gullies, diversions, and low flowing streams	4.59	101.00	2,199.09	6.420	0.095
#24	**3**	**Time of Concentration:**					**0.224**
#25	1	5. Nearly bare and untilled, and alluvial valley fans	3.33	55.00	1,653.04	1.820	0.252
		8. Large gullies, diversions, and low flowing streams	2.90	256.00	8,816.03	5.110	0.479
#25	**1**	**Time of Concentration:**					**0.731**
#26	1	5. Nearly bare and untilled, and alluvial valley fans	9.72	75.00	772.00	3.110	0.068
		8. Large gullies, diversions, and low flowing streams	3.54	175.00	4,938.06	5.640	0.243
#26	**1**	**Time of Concentration:**					**0.311**
#27	1	5. Nearly bare and untilled, and alluvial valley fans	3.55	49.00	1,380.00	1.880	0.203
		8. Large gullies, diversions, and low flowing streams	0.75	106.00	14,154.00	2.590	1.518
#27	**1**	**Time of Concentration:**					**1.721**
#28	1	5. Nearly bare and untilled, and alluvial valley fans	5.97	125.00	2,095.00	2.440	0.238
		8. Large gullies, diversions, and low flowing streams	1.61	83.00	5,141.00	3.810	0.374
#28	**1**	**Time of Concentration:**					**0.612**
#29	1	8. Large gullies, diversions, and low flowing streams	3.73	105.00	2,814.03	5.790	0.135
		5. Nearly bare and untilled, and alluvial valley fans	2.15	5.00	233.00	1.460	0.044
#29	**1**	**Time of Concentration:**					**0.179**
#30	1	5. Nearly bare and untilled, and alluvial valley fans	16.59	38.00	229.00	4.070	0.015
		8. Large gullies, diversions, and low flowing streams	1.79	69.00	3,856.04	4.010	0.267
#30	**1**	**Time of Concentration:**					**0.282**
#31	1	5. Nearly bare and untilled, and alluvial valley fans	2.13	26.00	1,218.02	1.460	0.231
		9. Small streams flowing bankfull	0.97	35.00	3,606.01	8.860	0.113

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#31	**1**	**Time of Concentration:**					**0.344**
#32	1	5. Nearly bare and untilled, and alluvial valley fans	5.14	35.00	681.00	2.260	0.083
		8. Large gullies, diversions, and low flowing streams	2.98	88.00	2,957.08	5.170	0.158
		5. Nearly bare and untilled, and alluvial valley fans	1.83	28.00	1,528.05	1.350	0.314
#32	**1**	**Time of Concentration:**					**0.555**
#32	2	5. Nearly bare and untilled, and alluvial valley fans	2.41	31.00	1,284.00	1.550	0.230
		8. Large gullies, diversions, and low flowing streams	0.71	17.00	2,394.02	2.520	0.263
#32	**2**	**Time of Concentration:**					**0.493**
#34	1	5. Nearly bare and untilled, and alluvial valley fans	1.50	164.00	10,964.76	1.220	2.496
#34	**1**	**Time of Concentration:**					**2.496**
#35	1	8. Large gullies, diversions, and low flowing streams	3.24	144.00	4,442.11	5.400	0.228
		5. Nearly bare and untilled, and alluvial valley fans	8.78	26.00	296.00	2.960	0.027
#35	**1**	**Time of Concentration:**					**0.255**
#36	1	5. Nearly bare and untilled, and alluvial valley fans	6.55	15.00	229.00	2.550	0.024
		8. Large gullies, diversions, and low flowing streams	8.56	66.00	771.00	8.770	0.024
#36	**1**	**Time of Concentration:**					**0.048**
#37	1	5. Nearly bare and untilled, and alluvial valley fans	1.16	240.00	20,629.19	1.070	5.355
#37	**1**	**Time of Concentration:**					**5.355**
#40	1	5. Nearly bare and untilled, and alluvial valley fans	2.78	20.00	720.00	1.660	0.120
		8. Large gullies, diversions, and low flowing streams	0.62	57.00	9,200.00	2.360	1.082
#40	**1**	**Time of Concentration:**					**1.202**
#42	1	5. Nearly bare and untilled, and alluvial valley fans	3.45	93.00	2,694.01	1.850	0.404
		8. Large gullies, diversions, and low flowing streams	2.37	100.00	4,211.05	4.620	0.253
		5. Nearly bare and untilled, and alluvial valley fans	1.17	103.00	8,811.70	1.080	2.266
#42	**1**	**Time of Concentration:**					**2.923**
#42	2	5. Nearly bare and untilled, and alluvial valley fans	0.62	63.00	10,166.21	0.780	3.620
#42	**2**	**Time of Concentration:**					**3.620**
#42	3	5. Nearly bare and untilled, and alluvial valley fans	1.24	60.00	4,853.19	1.110	1.214
#42	**3**	**Time of Concentration:**					**1.214**
#43	1	5. Nearly bare and untilled, and alluvial valley fans	1.12	93.00	8,290.98	1.050	2.193

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		8. Large gullies, diversions, and low flowing streams	3.42	185.00	5,404.14	5.550	0.270
#43	**1**	**Time of Concentration:**					**2.463**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	1	8. Large gullies, diversions, and low flowing streams	1.61	93.00	5,787.18	3.800	0.423
#4	**1**	**Muskingum K:**					**0.423**
#4	2	8. Large gullies, diversions, and low flowing streams	1.61	93.00	5,787.18	3.800	0.423
#4	**2**	**Muskingum K:**					**0.423**
#4	3	8. Large gullies, diversions, and low flowing streams	1.61	93.00	5,787.00	3.800	0.423
#4	**3**	**Muskingum K:**					**0.423**
#6	1	8. Large gullies, diversions, and low flowing streams	1.16	84.00	7,218.35	3.230	0.620
#6	**1**	**Muskingum K:**					**0.620**
#6	2	8. Large gullies, diversions, and low flowing streams	0.77	35.00	4,531.33	2.630	0.478
#6	**2**	**Muskingum K:**					**0.478**
#6	4	8. Large gullies, diversions, and low flowing streams	0.77	35.00	4,531.33	2.630	0.478
#6	**4**	**Muskingum K:**					**0.478**
#12	1	8. Large gullies, diversions, and low flowing streams	11.40	100.00	877.00	10.130	0.024
#12	**1**	**Muskingum K:**					**0.024**
#14	1	5. Nearly bare and untilled, and alluvial valley fans	0.99	153.00	15,503.09	0.990	4.349
		8. Large gullies, diversions, and low flowing streams	1.65	125.00	7,564.29	3.850	0.545
		5. Nearly bare and untilled, and alluvial valley fans	1.08	23.00	2,124.12	1.040	0.567
#14	**1**	**Muskingum K:**					**5.461**
#14	2	8. Large gullies, diversions, and low flowing streams	1.65	125.00	7,564.29	3.850	0.545
		5. Nearly bare and untilled, and alluvial valley fans	1.46	11.00	755.02	1.200	0.174
		5. Nearly bare and untilled, and alluvial valley fans	1.08	23.00	2,124.12	1.040	0.567
#14	**2**	**Muskingum K:**					**1.286**
#14	4	5. Nearly bare and untilled, and alluvial valley fans	2.19	43.00	1,966.00	1.470	0.371
		8. Large gullies, diversions, and low flowing streams	1.60	105.00	6,562.00	3.790	0.480

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
		5. Nearly bare and untilled, and alluvial valley fans	1.08	23.00	2,124.00	1.040	0.567
#14	**4**	**Muskingum K:**					**1.418**
#17	1	5. Nearly bare and untilled, and alluvial valley fans	1.80	62.00	3,443.10	1.340	0.713
#17	**1**	**Muskingum K:**					**0.713**
#24	2	8. Large gullies, diversions, and low flowing streams	0.86	41.00	4,786.36	2.770	0.479
#24	**2**	**Muskingum K:**					**0.479**
#24	3	8. Large gullies, diversions, and low flowing streams	2.63	11.00	419.01	4.860	0.023
#24	**3**	**Muskingum K:**					**0.023**
#25	1	8. Large gullies, diversions, and low flowing streams	5.58	55.00	986.00	7.080	0.038
#25	**1**	**Muskingum K:**					**0.038**
#32	1	8. Large gullies, diversions, and low flowing streams	1.18	15.00	1,268.00	3.260	0.108
#32	**1**	**Muskingum K:**					**0.108**
#42	1	5. Nearly bare and untilled, and alluvial valley fans	0.48	37.00	7,646.20	0.690	3.078
#42	**1**	**Muskingum K:**					**3.078**

General Information

Storm Information:

Storm Type:	Type II-60
Design Storm:	10 yr - 6 hr
Rainfall Depth:	1.300 inches

Particle Size Distribution:

Size (mm)	PostMine-LoamySand	PreMine-LoamySand	PreMine-Badlands	LoamySand Postmining
2.0000	100.000%	100.000%	100.000%	0.000%
0.1000	26.500%	30.000%	83.500%	0.000%
0.0500	14.000%	17.000%	77.000%	0.000%
0.0020	11.000%	11.000%	56.000%	0.000%
0.0010	0.000%	0.000%	0.000%	0.000%

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)
#35	105.000	105.000	28.70	2.22	90.1	57,223	35.43	22.69
#26	217.200	217.200	128.93	10.51	732.1	91,657	6.11	4.14
#29	90.200	307.400	150.69	14.88	870.3	78,307	4.07	2.72
#37	3,024.600	3,024.600	63.35	38.87	137.8	4,373	0.89	0.68
#4	2,965.700	5,990.300	215.68	85.95	459.5	7,969	3.11	1.86
#1	755.100	755.100	34.73	10.45	54.6	6,395	2.55	1.93
#42	2,360.600	3,115.700	78.08	46.92	161.5	4,396	1.33	0.97
#3	1,550.000	4,665.700	125.07	83.62	332.7	6,565	1.99	1.12
#5	0.000	10,656.000	303.12	169.58	792.3	7,420	2.62	1.50
#6	2,008.700	12,664.700	401.52	217.76	2,241.4	56,657	7.76	1.28
#40	155.400	13,127.500	405.61	234.09	3,124.8	76,170	8.73	1.39
#43	817.400	817.400	47.22	15.82	120.3	9,321	3.60	2.71
#22	163.500	163.500	79.01	7.43	453.6	79,919	3.09	2.12
#30	138.800	1,119.700	95.18	29.56	645.2	59,943	6.39	2.12
#19	452.600	452.600	87.25	14.44	435.6	38,157	20.46	14.75
#33	0.000	1,572.300	176.47	44.00	1,080.8	49,288	13.78	6.26
#18	119.500	1,691.800	176.61	45.11	1,092.4	48,889	13.80	6.23
#34	235.300	235.300	4.97	1.81	5.7	3,790	1.32	1.01
#16	1,570.700	1,570.700	33.26	13.43	40.2	3,624	1.16	0.89
#14	6,695.200	6,695.200	106.99	97.20	554.7	20,932	7.56	2.12
#38	0.000	8,501.199	128.43	112.45	600.6	16,701	5.99	1.95
#39	0.000	8,501.199	128.02	112.45	600.6	16,735	6.00	1.95
#15	600.300	9,101.499	137.62	118.05	643.2	15,925	5.84	2.03
#41	0.000	23,920.800	588.04	397.25	4,860.4	49,664	9.22	2.11
#31	120.200	120.200	10.34	1.12	16.4	20,026	11.94	7.94
#17	939.500	939.500	44.43	10.87	115.9	27,809	14.58	5.33
#32	168.000	25,148.500	601.96	410.81	4,988.6	44,393	8.60	2.18
#36	14.200	14.200	16.44	0.69	48.4	75,619	19.63	13.14
#21	90.300	90.300	61.20	4.37	353.0	106,664	9.47	6.38
#13	23.300	23.300	16.97	1.13	42.7	50,632	5.13	3.42
#11	154.900	154.900	104.37	7.50	533.5	94,468	8.30	5.59
#10	32.500	32.500	20.60	1.57	95.9	80,715	6.27	4.23
#9	15.000	15.000	17.36	0.73	50.4	74,564	19.36	12.95
#8	58.800	58.800	68.07	2.85	242.8	91,061	23.64	15.84
#7	204.800	204.800	103.78	9.39	605.4	84,652	3.88	2.65
#12	75.500	541.500	257.68	25.69	1,700.5	88,478	9.08	5.88
#25	359.300	1,028.600	323.63	44.25	2,663.1	962,704	79.86	4.38

	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)
#27	697.300	1,725.900	331.94	50.76	2,757.0	987,773	94.33	4.58
#28	533.700	2,259.600	332.58	55.73	2,802.3	88,789	8.76	4.39
#23	192.200	27,705.300	702.95	470.56	7,911.4	65,158	10.83	2.57
#24	548.700	28,254.000	705.14	487.61	8,159.2	77,099	13.24	2.65

General Information

Storm Information:

Storm Type:	Type II-60
Design Storm:	25 yr - 6 hr
Rainfall Depth:	1.600 inches

Particle Size Distribution:

Size (mm)	PostMine-LoamySand	PreMine-LoamySand	PreMine-Badlands	LoamySand Postmining
2.0000	100.000%	100.000%	100.000%	0.000%
0.1000	26.500%	30.000%	83.500%	0.000%
0.0500	14.000%	17.000%	77.000%	0.000%
0.0020	11.000%	11.000%	56.000%	0.000%
0.0010	0.000%	0.000%	0.000%	0.000%

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)
#35	105.000	105.000	47.96	3.64	158.6	60,407	37.86	24.59
#26	217.200	217.200	182.36	14.88	1,079.9	94,547	7.03	4.81
#29	90.200	307.400	217.57	21.06	1,300.2	82,065	5.27	3.54
#37	3,024.600	3,024.600	116.77	70.82	271.5	4,743	1.07	0.81
#4	2,965.700	5,990.300	393.32	152.63	886.5	8,791	3.60	2.11
#1	755.100	755.100	64.65	18.73	107.3	7,060	2.96	2.22
#42	2,360.600	3,115.700	136.37	82.26	301.0	4,769	1.48	1.07
#3	1,550.000	4,665.700	204.80	141.20	581.5	7,051	2.16	1.17
#5	0.000	10,656.000	530.65	293.83	1,468.0	8,188	3.01	1.66
#6	2,008.700	12,664.700	688.55	369.65	3,768.0	58,004	9.64	1.53
#40	155.400	13,127.500	691.40	393.57	5,098.3	77,955	11.08	1.66
#43	817.400	817.400	80.99	26.42	216.9	10,119	4.10	3.06
#22	163.500	163.500	114.13	10.63	681.0	83,368	4.06	2.79
#30	138.800	1,119.700	140.89	46.07	1,004.4	61,091	7.85	2.55
#19	452.600	452.600	135.76	21.96	705.5	40,641	22.23	16.02
#33	0.000	1,572.300	266.79	68.03	1,709.9	50,635	15.25	6.89
#18	119.500	1,691.800	268.23	70.23	1,719.7	49,874	14.97	6.70
#34	235.300	235.300	10.72	3.75	13.1	4,273	1.55	1.17
#16	1,570.700	1,570.700	69.12	27.02	89.6	4,044	1.37	1.03
#14	6,695.200	6,695.200	191.10	171.55	997.3	22,412	8.05	2.13
#38	0.000	8,501.199	223.99	202.31	1,100.0	16,718	5.98	1.97
#39	0.000	8,501.199	223.86	202.31	1,100.0	16,765	5.99	1.97
#15	600.300	9,101.499	240.26	213.33	1,180.2	15,832	5.76	2.03
#41	0.000	23,920.800	1,005.18	677.12	7,998.2	49,723	10.38	2.28
#31	120.200	120.200	22.99	2.21	37.4	23,502	14.43	9.48
#17	939.500	939.500	91.26	20.09	230.4	29,570	15.94	5.72
#32	168.000	25,148.500	1,028.99	702.50	8,266.0	43,292	9.48	2.38
#36	14.200	14.200	22.21	0.97	69.6	74,743	19.41	13.34
#21	90.300	90.300	85.94	6.19	518.7	109,243	10.39	7.09
#13	23.300	23.300	23.60	1.60	62.5	51,379	5.77	3.91
#11	154.900	154.900	146.84	10.61	784.6	96,937	9.16	6.24
#10	32.500	32.500	29.05	2.23	141.2	83,041	7.04	4.80
#9	15.000	15.000	23.47	1.03	72.4	73,700	19.13	13.16
#8	58.800	58.800	91.98	4.03	349.1	90,013	23.37	16.09
#7	204.800	204.800	149.26	13.42	906.0	88,046	4.87	3.34
#12	75.500	541.500	363.07	36.49	2,505.6	88,427	9.60	6.46
#25	359.300	1,028.600	467.85	63.81	3,983.1	332,838	28.67	4.72

	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)
#27	697.300	1,725.900	496.38	76.60	4,189.8	341,121	35.83	5.08
#28	533.700	2,259.600	503.38	86.39	4,284.8	84,620	9.24	4.80
#23	192.200	27,705.300	1,108.29	796.06	12,782.5	61,492	11.64	2.79
#24	548.700	28,254.000	1,110.46	822.11	13,215.9	73,211	14.35	2.91

General Information

Storm Information:

Storm Type:	Type II-60
Design Storm:	100 yr - 6 hr
Rainfall Depth:	2.000 inches

Particle Size Distribution:

Size (mm)	PostMine-LoamySand	PreMine-LoamySand	PreMine-Badlands	LoamySand Postmining
2.0000	100.000%	100.000%	100.000%	0.000%
0.1000	26.500%	30.000%	83.500%	0.000%
0.0500	14.000%	17.000%	77.000%	0.000%
0.0020	11.000%	11.000%	56.000%	0.000%
0.0010	0.000%	0.000%	0.000%	0.000%

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)
#35	105.000	105.000	76.96	5.84	269.3	62,775	39.70	26.24
#26	217.200	217.200	256.67	21.06	1,588.4	97,274	7.90	5.46
#29	90.200	307.400	313.35	29.81	1,939.7	85,870	6.61	4.47
#37	3,024.600	3,024.600	204.93	123.03	506.8	5,110	1.27	0.96
#4	2,965.700	5,990.300	683.90	260.25	1,626.4	9,551	4.07	2.37
#1	755.100	755.100	114.80	32.15	200.2	7,735	3.40	2.52
#42	2,360.600	3,115.700	230.03	139.02	544.2	5,114	1.67	1.19
#3	1,550.000	4,665.700	328.09	231.92	999.5	7,535	2.38	1.26
#5	0.000	10,656.000	900.05	492.17	2,625.9	8,910	3.43	1.85
#6	2,008.700	12,664.700	1,147.75	610.26	6,200.1	59,383	11.33	1.75
#40	155.400	13,127.500	1,147.23	645.30	8,202.0	79,613	13.23	1.91
#43	817.400	817.400	134.88	42.97	378.9	10,928	4.63	3.44
#22	163.500	163.500	163.63	15.19	1,017.6	86,549	4.98	3.45
#30	138.800	1,119.700	208.08	71.04	1,554.7	61,972	9.25	2.97
#19	452.600	452.600	208.50	33.08	1,128.5	43,137	24.04	17.31
#33	0.000	1,572.300	399.69	104.12	2,683.2	52,063	16.70	7.52
#18	119.500	1,691.800	403.47	108.14	2,703.4	50,266	16.06	7.28
#34	235.300	235.300	21.01	7.10	27.4	4,734	1.82	1.37
#16	1,570.700	1,570.700	132.12	50.28	182.3	4,449	1.60	1.20
#14	6,695.200	6,695.200	327.69	291.49	1,739.5	23,858	8.61	2.18
#38	0.000	8,501.199	385.73	348.87	1,949.2	16,808	6.07	2.03
#39	0.000	8,501.199	385.53	348.87	1,949.2	16,863	6.09	2.03
#15	600.300	9,101.499	406.63	369.07	2,083.5	15,731	5.72	2.05
#41	0.000	23,920.800	1,670.99	1,122.50	12,988.9	49,799	11.44	2.46
#31	120.200	120.200	45.27	4.04	76.7	26,311	16.50	10.84
#17	939.500	939.500	173.00	35.38	435.2	31,075	17.19	6.15
#32	168.000	25,148.500	1,710.85	1,167.58	13,510.5	42,468	10.28	2.59
#36	14.200	14.200	30.01	1.38	100.0	73,979	19.21	13.55
#21	90.300	90.300	120.46	8.76	761.1	111,942	11.49	7.92
#13	23.300	23.300	32.74	2.26	91.1	52,113	6.38	4.39
#11	154.900	154.900	205.85	15.02	1,151.5	99,363	10.05	6.92
#10	32.500	32.500	40.79	3.15	207.4	85,244	7.77	5.35
#9	15.000	15.000	31.70	1.45	104.1	72,946	18.94	13.36
#8	58.800	58.800	124.26	5.70	501.8	89,098	23.13	16.33
#7	204.800	204.800	213.17	19.14	1,349.7	91,161	5.80	4.01
#12	75.500	541.500	510.94	51.79	3,682.6	88,578	10.13	7.03
#25	359.300	1,028.600	673.67	91.82	5,937.1	90,602	8.09	5.06

	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)
#27	697.300	1,725.900	740.91	115.28	6,355.6	85,802	9.92	5.64
#28	533.700	2,259.600	758.29	133.24	6,534.2	80,762	9.71	5.24
#23	192.200	27,705.300	1,800.08	1,313.12	20,467.9	58,479	12.33	3.02
#24	548.700	28,254.000	1,793.13	1,352.50	21,180.2	66,341	14.46	3.15