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CANE CREEK MINING, LLC
PRATT NO. 1 MINE, P-3972
Modification Plans for Coarse Refuse Area No. 1
Diversion 11-10

100 yr, 6hr rainfall event

Robert W. Usher, P.E.

General Information

Storm Information:

Storm Type:	SCS 6 Hour
Design Storm:	100 yr - 6 hr
Rainfall Depth:	6.000 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	End	0.000	0.000	Diversion 11-10

#1
Null

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	4.220	4.220	12.71	1.29

Structure Detail:

Structure #1 (Null)

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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	4.220	0.304	0.000	0.000	81.000	F	12.71	1.285
	$\sum$	**4.220**						**12.71**	**1.285**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	6. Grassed waterway	0.30	2.70	900.00	0.820	0.304
#1	**1**	**Time of Concentration:**					**0.304**

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Material: Grass mixture

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Retardance Classes	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
5.00	2.0:1	2.0:1	0.3	D, B	0.50			5.0

	Stability Class D w/o Freeboard	Stability Class D w/ Freeboard	Capacity Class B w/o Freeboard	Capacity Class B w/ Freeboard
Design Discharge:	12.71 cfs		12.71 cfs	
Depth:	1.25 ft	1.75 ft	2.19 ft	2.69 ft
Top Width:	9.98 ft	11.98 ft	13.75 ft	15.75 ft
Velocity:	1.36 fps		0.62 fps	
X-Section Area:	9.34 sq ft		20.50 sq ft	
Hydraulic Radius:	0.883 ft		1.387 ft	
Froude Number:	0.25		0.09	
Roughness Coefficient:	0.0551		0.1637	

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Diversion 11-10 for any sections in fill

Material: Riprap

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
5.00	2.0:1	2.0:1	0.3	0.50		

Simons/OSM Method - Mild Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	12.71 cfs	
Depth:	1.01 ft	1.51 ft
Top Width:	9.05 ft	11.05 ft
Velocity:	1.78 fps	
X-Section Area:	7.12 sq ft	
Hydraulic Radius:	0.747 ft	
Froude Number:	0.35	
Manning's n:	0.0377	
Dmin:	2.00 in	
D50:	9.00 in	
Dmax:	12.00 in	

Diversion 11-10 5.92%

Material: Tall fescue

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Retardance Classes	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
5.00	2.0:1	2.0:1	5.9	D, B	0.50			6.0

	Stability Class D w/o Freeboard	Stability Class D w/ Freeboard	Capacity Class B w/o Freeboard	Capacity Class B w/ Freeboard
Design Discharge:	4.22 cfs		4.22 cfs	
Depth:	0.32 ft	0.82 ft	0.62 ft	1.12 ft
Top Width:	6.28 ft	8.28 ft	7.48 ft	9.48 ft
Velocity:	2.34 fps		1.09 fps	
X-Section Area:	1.80 sq ft		3.87 sq ft	
Hydraulic Radius:	0.281 ft		0.498 ft	
Froude Number:	0.77		0.27	
Roughness Coefficient:	0.0663		0.2085	