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File

STATE OF UTAH
NATURAL RESOURCES & ENERGY
Oil, Gas & Mining

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Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Cleon B. Feight, Division Director

Blazon Co. 12-11-81
Agrees with stipulations 1-7.
J. K. Harvey Pres.

December 1, 1981

Mr. Kirk Harvey
Blazon Company
Clear Creek Star Route
Helper, Utah 84526

RE: Waste Disposal in the
Clear Creek Strip Pit
Blazon No. 1 Mine
ACT/007/021
Carbon County, Utah

Dear Mr. Harvey:

The Division has reviewed Blazon's proposed waste disposal plan and hereby gives approval with the following stipulations. Prior to disposing of any material in the Clear Creek Strip Pit, Blazon must supply the Division with written permission from the land owners and commit in writing to accept the stipulations as outlined below.

Stipulation 11-81-1

Pursuant to UMC 817.71, Underground Development Waste from Blazon No. 1 Mine is not required to meet backfilling and grading requirements of UMC 817.101-.102. Waste shall be hauled to the Clear Creek Strip Pit disposal area.

The applicant will dispose on the solid (cut) portion of the bench.

The waste shall be deposited and compacted in lifts not to exceed four feet.

The applicant shall maintain the overall slope of the fill extending from the toe to the highwall at a grade not to exceed 1v:2.8h (36 percent).

The final configuration of the fill must conform and blend into adjacent contours.

The applicant shall grade the outslope of the fill along contour to minimize erosion.

The applicant may, if added capacity is required, increase the outslope grade not to exceed 1v:1.5h after, inspection and certification by a qualified registered professional engineer demonstrating that a safety factor of 1.5 will be achieved.

Stipulation 11-81-2

The applicant shall agree to improve and maintain the existing haul road to standards of UMC 817.160-.165 and reclaim the road in accordance with UMC 817.166 after Division approval. The applicant agrees to provide the Division with a location map, x-sections, and drainage plans showing compliance with Class II Standards, or a justification of any variances required, within 90 days.

Stipulation 11-81-3

The applicant will provide to the Division within 60 days of this approval a topographic map showing the permit area delineated as the disposal site, but no larger than 1"=100', with final contours dashed in.

Stipulation 11-81-4

The applicant will delineate, on-site, the perimeter of the disposal area with perimeter markers prior to depositing any waste, and not more than 30 days from approval.

Stipulation 11-81-5

The applicant must provide within 60 days methods and supporting calculations demonstrating that the berm-containment structure is designed to contain the 10-year, 24-hour precipitation event and that the spillway is designed to safely pass the 25-year, 24-hour event. A map delineating the watershed area used in the calculations must also be provided. Information must be provided showing that the berm will be designed according to UMC 817.46 concerning height, width, side slopes, fill material and that it will be constructed according to sound engineering practices.

An alternative to reduce runoff to the pond may be accomplished by construction of a diversion along the base of the highwall. This would require recontouring on each consecutive lift. Use of the diversion would diminish the size of the disturbed runoff area. In this case designs for sizing the diversion to handle the 25-year, 24-hour event must be supplied in accordance with UMC 817.43 in addition to the sizing requirements for the volume of runoff from the 10-year, 24-hour event from that portion of the disturbed area not being diverted. See the attached appendix for sizing of sediment ponds and diverions.

Stipulation 11-81-6

The pond and berm will be maintained until vegetation has established on the fill. This will require removal of sediment buildup to maintain containment capacity and repair to the berm and diversion to ensure stability.

The applicant should make application to State Health (EPA) for a variance to the effluent standards for discharges in excess of the 10-year, 24-hour event. This variance may be issued under Blazon's existing NPDES permit(s), thus negating the need for another permit per se.

Stipulation 11-81-7

The applicant is responsible for establishing diverse, effective, and permanent vegetative cover on the waste pile at the end of project life (UMC 817.111). Since this will be considered interim reclamation, only one or a few species need to be used for revegetation, and the seed list may include introduced species (UMC 817.114(c)).

The applicant must submit an appropriate revegetation plan to the Division, for approval, within 60 days of this approval.

Test plots to determine the suitability of different species under the conditions of the waste rock may be set up with the help of the Division. These could be used to determine the final seed mix.

If you have any questions, please call.

Sincerely,

JAMES W. SMITH, JR.
COORDINATOR OF MINED LAND DEVELOPMENT

JWS/GLH:te

cc: Robert Hagen, O.S.M.

POND SIZING

Precipitation - P in inches

Disturbed Watershed - W in acres

Curve No.: CN 90 for disturbed area.
75 for undisturbed area.

Area Runoff: $Q(in) = (P-0.2S)^2/(P+0.8S)$

$S = (1,000/CN) - 10$

Volume to contain = W x Q(in. ft.) = acre-feet

velocity does not exceed the values of permissible velocity shown in Table 3.2.

Table 3.2 Limiting Velocities and Tractive Forces for Open Channels (Straight after Aging)

Material	n	For Clear Water		Water Transporting Colloidal Silts	
		Velocity, fps	Tractive Force, psf	Velocity, fps	Tractive Force, psf
Fine sand colloidal	0.020	1.50	0.027	2.50	0.075
Sandy loam noncolloidal	0.020	1.75	0.037	2.50	0.075
Silt loam noncolloidal	0.020	2.00	0.048	3.00	0.110
Alluvial silts noncolloidal	0.020	2.00	0.048	3.50	0.150
Ordinary firm loam	0.020	2.50	0.075	3.50	0.150
Volcanic ash	0.020	2.50	0.075	3.50	0.150
Stiff clay very colloidal	0.025	3.75	0.260	5.00	0.460
Alluvial silts colloidal	0.025	3.75	0.260	5.00	0.460
Shales and hardpans	0.025	6.00	0.670	6.00	0.670
Fine gravel	0.020	2.50	0.075	5.00	0.320
Graded loam to cobbles when noncolloidal	0.030	3.75	0.380	5.00	0.660
Graded silts to cobbles when colloidal	0.030	4.00	0.430	5.50	0.800
Coarse gravel noncolloidal	0.025	4.00	0.300	6.00	0.670
Cobbles and shingles	0.035	5.00	0.910	5.50	1.100

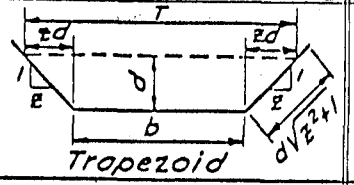
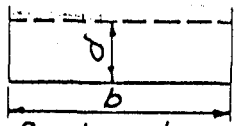
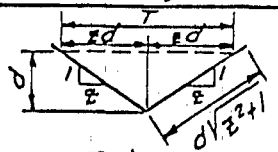
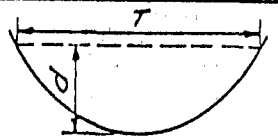
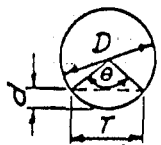
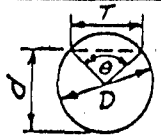
From Lane (1955).

When using the limiting tractive force concept, a channel with adequate capacity and having an average shear stress τ given by equation 3.18 that is less than the values tabulated in Table 3.2 is sought. For channels in noncohesive materials, the particles on the channel sides may move due to the combined force exerted by the flowing water and the weight component of the particles down the side of the channel. Chow (1959) should be referred to for a treatment of tractive force considerations and noncohesive materials. In cohesive materials, the cohesion generally is much greater than the gravity component so that average shear based on equation 3.18 can be used in design.

Discharge Capacity (cfs) $= \frac{1.486}{n} A R^{2/3} S^{1/2}$ Velocity $= V = \frac{Q}{A}$ " Check with table 3.2

$A = ft^2$, $R = ft$, $S = \frac{rise}{run}$

HYDRAULIC ELEMENTS OF CHANNEL SECTIONS

Section	Area a	Wetted Perimeter p	Hydraulic Radius r	Top Width T
 Trapezoid	$bd + zd^2$	$b + 2d\sqrt{z^2+1}$	$\frac{bd+zd^2}{b+2d\sqrt{z^2+1}} = \frac{a}{p}$	$b + 2zd$
 Rectangle	bd	$b + 2d$	$\frac{bd}{b+2d}$	b
 Triangle	zd^2	$2d\sqrt{z^2+1}$	$\frac{zd}{2\sqrt{z^2+1}}$	$2zd$
 Parabola	$\frac{2}{3} dT$	$T + \frac{8d^2}{3T}$ [1]	$\frac{2dT^2}{3T^2+8d^2}$ [1]	$\frac{3a}{2d}$
 Circle - $< \frac{1}{2}$ full [2]	$\frac{D^2}{8}\left(\frac{\pi\theta}{180} - \sin\theta\right)$	$\frac{\pi D\theta}{360}$	$\frac{45D}{\pi\theta}\left(\frac{\pi\theta}{180} - \sin\theta\right)$	$D \sin\frac{\theta}{2}$ or $2\sqrt{d(D-d)}$
 Circle - $> \frac{1}{2}$ full [3]	$\frac{D^2}{8}\left(2\pi - \frac{\pi\theta}{180} + \sin\theta\right)$	$\frac{\pi D(360-\theta)}{360}$	$\frac{45D}{\pi(360-\theta)}\left(2\pi - \frac{\pi\theta}{180} + \sin\theta\right)$	$D \sin\frac{\theta}{2}$ or $2\sqrt{d(D-d)}$

[1] Satisfactory approximation for the interval $0 < \frac{d}{T} \leq 0.25$
When $d/T > 0.25$, use $p = \frac{1}{2}\sqrt{16d^2+T^2} + \frac{T^2}{8d} \sinh^{-1}\frac{4d}{T}$

[2] $\theta = 4\sin^{-1}\sqrt{d/D}$
[3] $\theta = 4\cos^{-1}\sqrt{d/D}$
} Insert θ in degrees in above equations

REFERENCE

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. Bennett, Chief
ENGINEERING STANDARDS UNIT

STANDARD DWG. NO. ES-33
SHEET 1 OF 1
DATE 6-6-50

ESTIMATED RETURN PERIODS FOR SHORT DURATION PRECIPITATION
(inches)

Station: Clear Creek Summit
Latitude: 39° 39'

Elevation: 9630
Longitude: 111° 12'

RETURN PERIOD (years)	DURATION									
	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hr	3 Hr	6 Hr	12 Hr	24 Hr
1	.10	.16	.20	.28	.35	.46	.57	.84	1.08	1.33
2	.12	.19	.25	.34	.43	.57	.70	1.04	1.34	1.65
5	.16	.24	.31	.43	.54	.72	.90	1.34	1.73	2.14
10	.19	.29	.37	.51	.65	.86	1.06	1.55	1.99	2.45
25	.24	.38	.48	.66	.84	1.08	1.31	1.88	2.39	2.92
50	.25	.38	.48	.67	.85	1.13	1.40	2.07	2.67	3.29
100	.27	.42	.53	.73	.93	1.24	1.54	2.29	2.96	3.65

Station: Cottonwood Weir
Latitude: 40° 37'

Elevation: 4950
Longitude: 111° 47'

RETURN PERIOD (years)	DURATION									
	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hr	3 Hr	6 Hr	12 Hr	24 Hr
1	.11	.17	.21	.29	.37	.50	.63	.94	1.22	1.51
2	.14	.22	.27	.38	.48	.63	.78	1.14	1.46	1.80
5	.19	.29	.36	.51	.64	.82	.99	1.42	1.80	2.20
10	.21	.33	.42	.58	.74	.94	1.14	1.63	2.07	2.52
25	.26	.40	.51	.70	.89	1.13	1.35	1.92	2.42	2.95
50	.29	.45	.57	.79	1.00	1.26	1.52	2.15	2.71	3.30
100	.33	.51	.64	.89	1.13	1.42	1.69	2.38	2.99	3.63