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Southern Utah Fuel Company
P.O. Box P
Salina, Utah 84654
(801) 529-7428
(801) 637-4880 (Mine)

Subsidiary of
Coastal States
Energy Company

& MRP's.
Copy to Sue,
Dave D., Rick
JIM

September 21, 1983

Mr. Jim Smith
Division of Oil, Gas and Mining
4241 State Office Building
Salt Lake City, Utah 84114

RE: DOC/TD Mining Plan Review--Supplemental Submittal

Dear Mr. Smith:

Additional information requested by your office to further address the requirements of UMC 817.43 is enclosed. The information documents the anticipated runoff volumes and diversion structure capacities for the areas adjoining the disturbed area of our minesite facilities.

The six pages numbered 41h-1 through 41h-6 should be inserted immediately behind page 41h in Volume 8 of your M & RP copies. In addition to the seven copies submitted to your office herein, we are sending sets of this supplement to the agencies shown below.

If you have any further questions regarding this information, please call either Wess Sorensen or me at (801) 637-4880.

Yours very truly,
SOUTHERN UTAH FUEL COMPANY

Kerry A. Frame

Kerry A. Frame
Chief Engineer

KAF:dlj

xc: Fishlake National Forest (1)
Supervisor's Office
c/o Darrel Hintze

Manti-LaSal National Forest (1)
Ferron District Office
c/o Steve Robinson

Manti-LaSal National Forest (1)
Supervisor's Office
c/o Reed Christensen

Office of Surface Mining (3)
c/o Ron Naton in Denver

Sevier County (1)
c/o Beth Curtis--Recorder

Utah Department of Health (1)
c/o Steve McNeal

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams:

Response:

The following assumptions and input calculations are supplied for the determination of the peak flow for the 10-year, 24-hour storm event for items 5, 7, 8 and 10 of the DOC/TD-July 1983 submittal, Volume 8:

ASSUMPTIONS AND INPUT CALCULATIONS

Area	Acres	CN	Length	Change In Elevation	Tc*	Qp (cfs)
CBE Substation Bypass Culvert	16.07	72	1,250	630	0.121	4.09
Substation Pad	0.39	90	285	10	0.08	0.40
South End Parking Lot	0.97	92	365	55	0.052	1.10
Area North of ATOF Part A	1.8	79	900	425	0.112	0.91
Part B	18.4	79	1,850	745	0.167	3.78
Area Upslope of Substation Pad Undisturbed Drainage Ditch	6.9	72	820	390	0.117	0.96
CBW Draining to Pipe #5	11.48	79	1,450	794	0.121	5.81

*Calculated as mean of four methods: Kirpitch's, Kent's, USBR/Kirpitch and Hathaways.

The design calculations for the above diversions follow:

A. Item #5, p. 41e

1. CBE Substation Bypass Culvert

Qp = 4.09 cfs

Qp x 1.5 S.F. = 6.14 cfs

Design flow used was 6.2 cfs Volume 8, p. 37. Therefore, this diversion design is adequate with Q = 10.39 cfs for the 18" culvert.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams:

Response: (Cont'd)

2. Substation Pad

Qp = 0.40 cfs

Qp x 1.5 S.F. = 0.6 cfs

The added runoff from the substation pad (0.6 cfs) combined with the CBE runoff (6.2 cfs Merrick and Company East Side Road Volume 2, Exh. 9) has the combined total of 6.8 cfs which is still under the 7.1 cfs design sizing for the diversion interception ditch (Merrick and Company Volume 2), the 10.39 cfs sizing for the 18" substation Bypass Culvert (Vol. 8, p. 38) and the East Road Continuance Diversion sizing for 8.73 cfs (Vol. 8, p. 41d).

3. South End of Parking Lot

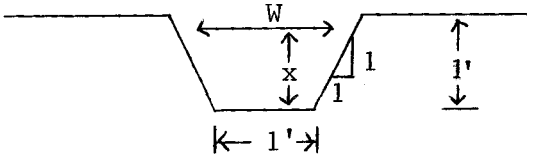
Qp = 1.1 cfs

Qp x 1.5 S.F. = 1.65 cfs

$Q = \frac{1.49}{n} AR^{2/3} S^{1/2}$ from Manning

S = 5%

n = 0.045



X	W	A	R	Q cfs	v fps
.4	1.8	0.56	0.26	1.68	3.0

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams:

Response: (Cont'd)

Therefore, this diversion is adequate to handle the runoff with a freeboard of 0.3 feet. The rip rap size required is 1½" as determined using the rip rap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7.

B. Item 7, p. 41f - Pipe #5 Diversion

Qp = 5.81 cfs

Qp x 1.5 S.F. = 8.71 cfs

S = 2%

n = 0.024

$Q = \frac{1.49}{n} AR^{2/3} S^{1/2}$ from Manning

Size	A	R	Q cfs	v fps
18"	1.767	0.375	8.05	
21"	2.405	0.437	12.13	5.04

Use 21" corrugated metal pipe.

The rip rap size required for outlet with 5.04 fps velocity is 4" as determined using the rip rap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7.

C. Item 8, p. 41g - Area North of ATOF

1. Part A of the Area North of ATOF flow (Q = 0.91 cfs) is diverted to the Main Mine Fan Diversion (Q = 0.176 Vol. 8). This total combined flow of 1.086 cfs is less than the design flow of Q = 1.26 cfs for the 6" pipe from Volume 8, p. 41.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams:

Response: (Cont'd)

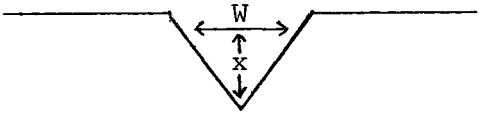
For the diversion ditch design and cross section to the 6" pipe.

Qp = 0.91

S = 4%

n = 0.045

$Q = \frac{1.49}{n} AR^{2/3} S^{1/2}$ from Manning



W	X	A	R	Q	v
1.5	0.7	0.525	0.255	1.39	2.65

Therefore, a diversion ditch 1.5 feet wide and one foot deep is adequate to handle the runoff (Q = 1.39 cfs) with a freeboard of 0.3 feet. The rip rap size required for v = 2.65 fps is 1" as determined using the rip rap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7.

2. Part B of the Area North of ATOF runoff flow (Q = 3.78 cfs) is diverted with a diversion ditch to Mud Spring Hollow Bypass Culvert.

Qp = 3.78 cfs

Qp x 1.5 S.F. = 5.67 cfs

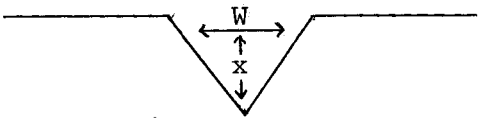
S = 4%

n = 0.045

$Q = \frac{1.49}{n} AR^{2/3} S^{1/2}$ from Manning

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams:

Response: (Cont'd)



W	X	A	R	Q	v
2.5	1.2	1.5	0.434	5.68	3.79

Therefore, a diversion ditch 2.5 feet wide and 1.5 feet deep is adequate to handle the runoff with a freeboard of 0.3 feet. The rip rap size required for v = 3.79 fps is 2" as determined using the rip rap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7.

D. Item 10, p. 41g - Area Upslope of Substation Pad Undisturbed Drainage Ditch

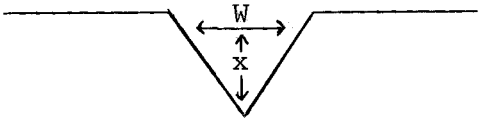
Qp = 0.96 cfs

Qp x 1.5 S.F. = 1.44 cfs

S = 2%

$Q = \frac{1.49}{n} AR^{2/3} S^{1/2}$ from Manning

n = 0.045



W	X	A	R	Q	v
2	1	1.0	0.35	2.3	2.3
2	.8	.8	0.313	1.72	2.15

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams:

Response: (Cont'd)

Therefore, a diversion ditch 2 feet wide and 1.1 feet deep is adequate to handle the runoff with a freeboard of 0.3 feet. The rip rap size required for v = 2.15 fps is 1" as determined using the rip rap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7.