CO-OP MINING COMPANY

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Huntington, Utah 84528

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October 3, 1995

Peter Hess
Utah Division of Oil, Gas & Mining
C.E.U. Box 169, 451 East 400 North
Price, Utah 84501-2699

Mr. Hess,

Re: Tipple Structure Amendment, D-10D Modification, Bear Canyon Mine, ACT/015/025, Emery County, Utah

Enclosed are 8 finalized copies of the text and plates for the Tipple Structure Amendment (95G), which was approved per Division letter dated 9/12/95, and the Ditch D-10D Route Modification (95J), which was approved per Division letter dated 9/18/95. Finalized copies have been combined since several of the Plates were involved in both amendments.

If you have any questions, please call Charles Reynolds at (801) 687-2450.

Thank You,

Wendell Owen

Wendell Owen,
Resident Agent

Enclosure(s)
cr

3.6.8 Reclamation Bonding

BOND

CO-OP MINING COMPANY

BEAR CANYON MINE

ACT/015/025, EMERY COUNTY, UTAH

3.6.8.1 Detailed Timetable for Completion of Major Reclamation Processes

The following schedule of reclamation is proposed to be initiated within 90 days (weather permitting) of final abandonment of the mining operation:

		Accumulated Time
a.	Seal Portals - 1.5 weeks	1.5 weeks
b.	Remove Structures - 8.3 weeks	9.8 weeks
c.	Soil Replacement and Ripping - 8.6 weeks	18.4 weeks
d.	Channel Restoration - 2.2 weeks	20.6 weeks
e.	Revegetation - 1 week	21.6 weeks

The above reclamation tasks can, therefore, be completed within 21.6 weeks following the start of reclamation activities.

Summary of Reclamation Cost Estimate

a.	Seal Portals and Backfill	$ 45,500.00
b.	Removal of Structures	$ 66,639.36
c.	Soil Placement and Ripping	$ 76,398.32
d.	Channel Restoration	$ 51,045.00
e.	Revegetation	$ 44,119.78
f.	Monitor Well Plugging	$ 114.32
g.	Maintenance and Monitoring of Subsidence, Vegetation and Erosion (10 yr bond liability Period)	$ 39,143.20
h.	Hydrology Monitoring (10 yr bond liability period)	$ 29,630.00
i.	Supervision (21.6 weeks)	$ 15,275.52
j.	Mobilization and Demobilization	$ 2,500.00
		$ 370,365.50
	5.1% Reclamation Management Cost	$ 18,888.64
	10 pct contingency (1990 dollars)	$ 37,036.55
		$ 426,290.69

Escalated Values	Escalation Factor
1991 - 431,705	1.27% (actual)
1992 - 441,245	2.21% (actual)
1993 - 452,453	2.54% (actual)
1994 - 461,547	2.01% (est)
1995 - 470,824	2.01% (est)
1996 - 480,288	2.01% (est)
1997 - 489,942	2.01% (est)
1998 - 499,789	2.01% (est)
1999 - 509,835	2.01% (est)
2000 - $520,083	2.01% (est)

Bond will be posted in accordance with R645-301-820.

Reclamation Costs

a. **Seal and Backfill Portals**

AMR Costs-$3,500/seal including backfill x 13 seals $ 45,500.00

b. **Removal Structures**

All estimates with 10 digit numbers are from 1990 Means Site Work cost Data. Utah adjustment factor = 0.923. Most of the steel and equipment will be salvaged for scrap or reuse. M&P Enterprises in Huntington, Utah will pick up and pay $40.00/ton for scrap iron & equipment if placed in 30 cu yd (8ft wide x 20 ft long x 5 ft high) dumpsters or loaded with crane on their trucks.

Sales-Receiving-Scale House Complex

020-604-0700 (Wood Building, includes disposal)
Volume = (40 ft)(80 ft)(20 ft) = 64,000 cu ft
Cost = (0.923)(0.16/cu ft)(64,000 cu ft) = $9,451.52
Time = 64,000 cu ft/(14,800 cu ft) = 4.32 days

Cost Subtotal $9,451.52
Time Subtotal 4.32 days

Shower House

020-604-0700 (Wood Portion, includes disposal)
Volume = (92 ft)(50 ft)(8 ft) = 36,800 cu ft
Cost = (0.923)(0.16/cu ft)(36,800 cu ft) = $5,434.62
Time = 36,800 cu ft/(14,800 cu ft/day) = 2.49 days

020-604-0650 (Masonry Portion, includes disposal)
Volume = (92 ft)(50 ft)(8 ft) = 36,800 cu ft
Cost = (0.923)(0.16/cu ft)(36,800 cu ft) = $5,434.62
Time = 36,800 cu ft/(14,800 cu ft/day) = 2.49 days

Cost Subtotal $10,869.24
Time Subtotal 4.98 days

Shop

020-604-0500 (Steel Building, includes disposal)
Volume = (40 ft)(93 ft)(18 ft) = 66,960 cu ft
Cost = (0.923)(0.16/cu ft)(66,960 cu ft) = $9,888.65
Time = 66,960 cu ft/(14,800 cu ft/day) = 4.52 days

Cost Subtotal $9,888.65
Time Subtotal 4.52 days

Machine Shop

020-604-0500 (Steel Building, includes disposal)
Volume = (30 ft)(40 ft)(12 ft) = 14,400 cu ft
Cost = (0.923)(0.16/cu ft)(14,400 cu ft) = $2,126.59
Time = 14,400 cu ft/(14,800 cu ft/day) = 0.97 days

Cost Subtotal $2,126.59
Time Subtotal 0.97 days

Coal Processing/Crusher Facility (Tipple)

27 ft x 52 ft Approx.
(25% is 25 ft high, 50% is 17 ft high, and 25% is 8 ft high.)
Secondary Structure = 20' X 30' X 51' high

020-604-0500 (Steel Building, includes disposal)
$Volume_1 = (27ft)(52ft)[(.25)(25ft)+(.50)(17ft)+(.25)(8ft)] = 23,517ft^3$
$Volume_2 = (20\ ft)\ (30\ ft)\ (51\ ft) = 30,600\ ft^3$
Cost = (0.923)(0.16/cu ft)(54,117 cu ft) = $7,992.00
Time = 54,117 cu ft/(14,800 cu ft/day) = 3.66 days

020-604-0700 (Control House, Wood, includes disposal)
Volume = (12 ft)(20 ft)(10ft) = 2,400 cu ft
Cost = (0.923)(0.16/cu ft)(2,400 cu ft) = $354.43
Time = 2,400 cu ft/(14,800 cu ft/day) = 0.16 days

Cost Subtotal $8,346.43
Time Subtotal 3.82 days

Water Tanks

Two tanks approx. 14 ft diam. x 10 ft high and one tank approx. 10 ft diam. x 20 ft high with average 3 in diam. x ¼ in pipe top and bottom.
Cut pipes top & bottom, load on truck.
approx. cut length = (3 tanks)(2 pipes)(pi)(3 in) = 4.7 ft

020-730-0010 (Torch cutting, 1 in plate)
Equivalent length (for 1 in plate)=(0.25)(4.7 ft)= 1.2 ft
Cutting Cost = (0.923)(2.65/ft)(1.2 ft) = $2.93
Cutting Time = 1.2 ft/(95 ft/day) = 0.01 days

Assume each tank takes 1 hr to load.

Labor = (2 men)(3 hrs)($15.83/hr) =	$ 94.98
Crane + operator = (3 hrs)($78.25/hr)=	$ 234.75
	$ 329.73

Time = 0.38 days

Cost Subtotal & 332.66
Time Subtotal 0.39 days

Fuel Storage and Stoker Oil Tanks

(2) Tanks approx 13.5 ft diam. x 10 ft high
(1) Tank approx 11.5 ft diam. x 23 ft high
(2) Tanks approx 9 ft diam. x 19 ft high
(1) Tank approx 4 ft diam. x 11 ft long
(1) Tank approx 7 ft diam x 7 ft high w/9.5 ft diam x 5 ft high outer tank
(7) Tanks - Total

Similar to water tanks.
Approx pipe cutting length = (7 tanks)(2 pipes)(pi)(3 in) = 11 ft

020-730-0010 (Torch Cutting, 1 in Plate)
Equivalent length (for 1 in plate) = 0.25(11 ft) = 2.75 ft
Cutting Cost = (0.923)(2.65/ft)(2.75 ft) = $6.73
Cutting Time = 2.75 ft/(95 ft/day) = 0.03 days

Assume each tank takes 1 hr to load.

Labor = (2 men)(7 tanks)(1 hr)($15.83/hr) =	$ 221.62
Crane + operator = (7 hrs)($78.25/hr) =	$ 547.75
	$ 769.37

Time = 0.88 days

Cost Subtotal $776.10
Time Subtotal 0.91 days

Structures and Conveyors (Including Loadouts)

Below are approx average dimensions used to estimate all conveyors and support towers.

Typical conveyor truss approx 5 ft x 5 ft x 40 ft long sections with angles at corners and bar or angle cross members with 2 ft wide walkway.

Cut trusses into 40 ft lengths for reuse or salvage and load on truck.
Trusses:

Conveyor length = 1,660 ft
Number of cuts = 1,660 ft/40 ft = 42 cuts
For each cut, assume (10)(L4x4x½)(conservative)
Truss cut length = (10)(8 in)(42 cuts) = 280 ft
(Truss) equivalent cut length for 1 in plate =(½)(280 ft)= 140 ft

Typical conveyor Tower.
(4) 8 in diam. x ½ in pipe x 60 ft high legs (average) spaced 6 ft apart with 6 in diam. x ½ in pipe cross members at approx 45° angle.

Cut towers into 20 ft lengths and load in dumpster.
Towers:

Number of towers = 12
Cut into 12 pieces/tower
Number of cuts/tower for 8 in pipe = 3 cuts(4 legs)
Number of cuts/tower for 6 in pipe = 4 cuts(12 cross members) = 48 cuts
Length of cut for each 8 in pipe = pi(8 in) = 2.09 ft
Length of cut for each 6 in pipe = pi(6 in) = 1.57 ft
Tower cut length = (12 towers)[(12 cuts)(2.09ft)+(48 cuts)(1.57 ft)] = 1,165.0 ft
Equivalent cut length for 1 in plate = (½)(1,104.8 ft) = 291.2 ft

020-730-0010 (Torch Cutting, 1 in plate)

Equivalent cut length =140 ft +291.2 ft =431.2 ft
Cost = (0.923)(2.65/ft)(431.2 ft) = $1,054.69
Time = 431.2 ft/(95 ft/day) = 4.54 days/4 crews = 1.13 days

Assume each truss section takes 30 min. average and each tower piece 10 min. average to load.
Crane Time = (42 trusses)(½hr)+(12 pieces)(12 towers)(0.17 hr) = 45.5 hrs
Labor = (2 men)(45.5 hrs)($15.83/hr) $1,440.53
Crane + operator = (45.5 hrs)($78.25) $3,560.38
$5,000.91

Time = 5.69 days

020-554-5200 (Reinforced Concrete)

Volume = (12 towers)(4)(3ft)(3ft)(1ft) = 432 cu ft/27 = 16.0 cu yd
Cost = (0.932)(86.00/cu yd)(16.0 cu yd) = $1,282.43
Time = 16.0 cu yd/(25 cu yd/day) = 0.64 days

020-554-5550 (Concrete Disposal on Site)

Volume = 16.0 cu yd
Cost = (0.923)(4.64/cu yd)(16.0 cu yd) = $68.52
Time = 16.0 cu yd/(232 cu yd/day) = 0.07 days

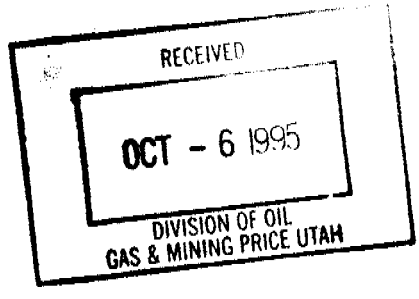
Cost Subtotal $7,406.55
Time Subtotal 7.53 days

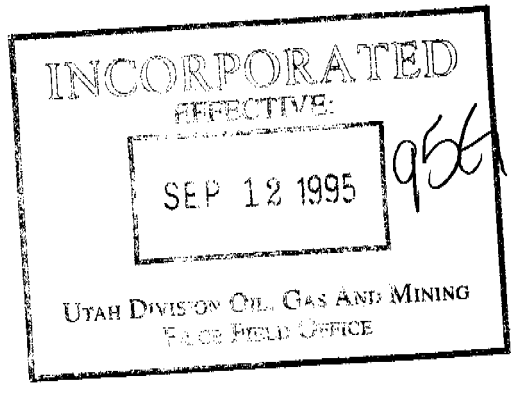
Building Enclosure for Tank Seam Belt Portal

020-604-0500 (Steel Building, includes disposal)
Volume = (12 ft)(12 ft)(12 ft) = 1,728 cu ft
Cost = (0.923)(0.16/cu ft)(1,728 cu ft) = $255.19
Time = 1,728 cu ft/(14,800 cu ft/day) = 0.12 days

Cost Subtotal $255.19
Time Subtotal 0.12 days

Remove Structures Cost Total = $66,639.36
Remove Structures Time Total = 41.5 days





RCP Culverts:

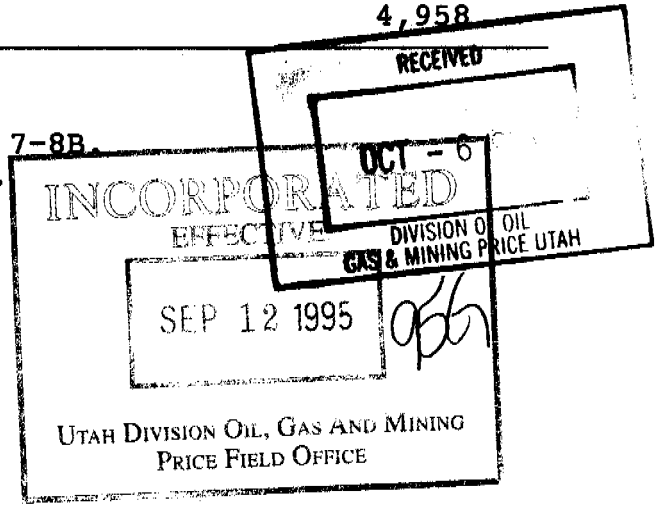
020-554-5200 (Reinforced Concrete)
Volume = pi(5 ft)(4/12)(140 ft) = 733 cu ft/27 = 27.15 cu yd
Cost = (0.923)(86.00/cu yd)(27.15 cu yd) = $2,155.11
Time = 27.15 cu yd/(25 cu yd/day) = 1.09 days

020-554-5550 (Concrete Disposal on Site)
Volume = 27.15 cu yd
Cost = (0.923)(4.64/cu yd)(27.15 cu yd) = $116.28
Time = 27.15 cu yd/(232 cu yd/day) = 0.12 days

RIP RAP VOLUME SUMMARY

Reclaimed Channel	Reclaimed Length[1] (ft)	Rip Rap Area [2] (sq ft)	Rip Rap Volume (cu yd)
RC1	As built - adequate for reclamation		
RC2	640	50.5	1,197
RC3	1,030	50.5	1,926
RC4	160	32	190
RC5	165	28	171
RC6	25	32	30
RC7	30	13	14
RC8	120	13	58
RC9	190	30	211
RC10	190	165	1,161
Total			4,958

Notes:
1 See plates 7-8A, 7-8B.
2 See appendix 7-H.



e. Revegetation

Drill Seeding (Section 9.5)		
16 acres x $891.00/acre		$14,256.00
Hydroseeding (Section 9.5)		
9.7 acres x $1,667.00/acre		$16,169.90
Riparian Area Planting (Section 9.5)		
1 acre x $2,210.00/acre		$ 2,210.00
Install Matting (Section 9.5)		
3.7 acres x $3,103.75/acre		$11,483.88
	Cost Total	$44,119.78

f. Monitor Well Plugging

Approx. 4 in diam x 40 ft deep		
1 yds cement @ $51.00/yd		$ 51.00
4 hrs labor @ $15.83/hr		$ 63.32
	Cost Total	$ 114.32

g. Maintenance and/or Monitoring for Vegetation, Erosion, and Subsidence

(Bond for 10-year bond liability period)

Vegetation - field survey, sampling, analysis and report writing @ $1,000.000/day + $80.00/day vehicle expense (Mt. Nebo Scientific), 3 days/yr		$3,240.00/yr
Erosion - 1 day to field survey @ $141.44/day		141.44/yr
Subsidence		
2 day field survey @ $141.44/day		
1 day certified surveyor @ $250/day		532.88/yr
	Subtotal	$3,914.32/yr
Cost Total	10 yrs x $3,914.32 =	$39,143.20

h. Hydrology Monitoring, Quarterly

Labor - 4 days annually @ $126.64/day		$ 506.56/yr
Laboratory work - per Commercial Testing and Engineering Co. Huntington, Utah ($87.73/sample)(7 samples) - $614.11/quarter x 4		2,456.44/yr
	Subtotal	$2,963.00/yr
Cost Total	10 yrs x $2,963.00 =	$29,630.00

i. Supervision - 21.6 weeks @ $707.20/week $15,275.52

j. Mobilization and Demobilization of 5 pieces of equipment @ $500 each $ 2,500.00

The above listed costs include reclamation costs added between 1985 and the latest modification.

EXISTING STRUCTURES

Table 3A-1 lists each structure and construction dates. Reclamation is expected in 2012.

Table 3A-1 Existing Structures

Existing Structure	Construction Dates Starting	Completion	Photo #
Fuel Tanks	10/83	6/84	2
Truck Loading Facility	9/82	4/83	3
Shop - Bathhouse - Warehouse	10/83	9/84	4
Added Machine Shop	11/89	12/89	5
Oil Slack Loading Facility	4/83	7/83	3
Storage & Stacking Facility	6/80	4/84	3
Coal Processing Facility	4/80	12/85	6
Non-Coal Storage Yard	3/80	9/84	7
Transformer Sub-Station	4/80	6/80	8
Conveyor Structures	3/80	6/80	3
Cross Conveyor	7/89	9/89	9
Sales Receiving-Scale Office	6/84	10/87 (Phase I) 10/92 (Phase II)	Fig 3A-1 1
Coal Storage Bins	4/85	10/85	11
Powder Magazine	9/82	containerized	7
Lump Coal Facility	10/83	12/85	6
Water Tanks & System	8/82	11/82	13
Mine Fan	9/82	11/82	14
Lump Coal Storage Pad	8/92	10/92	15
Equipment Wash Pad	8/92	10/92	16
Shower House	under construction		17
Antifreeze Storage Tank	12/93	1/94	18
Tank Seam Fan	under construction		19
Tank Seam Borehole Structure	under construction		

16. Removed

17. Water Tanks. Surge tanks - part of bathhouse water supply system. See Photo #13.

18. Mine Fan. Mine Ventilation fan - MSHA approved has safety guards in place. See Photo #14.

19. Lump Coal Storage Pad. Consists of a concrete pad and misc. concrete retaining walls. See Photo #15

20. Equipment Wash Pad. Consists of a concrete pad with a grease and oil trap.

21. Shower House. Consists of a two story masonry block structure that houses employee showers, training classrooms and offices. See Photo #16. The waste disposal system is discussed in Appendix 3-J.

22. Antifreeze Storage Tank. Consists of 2,000 gal storage tank. Antifreeze solution is used to spray truck hoppers during periods of cold weather to prevent coal from freezing in transit. Tank is enclosed by a metal structure to hold entire capacity of tank in the event of a spillage.

23. Tank Seam Fan. Tank Seam Ventilation Fan - MSHA approved, has safety guards in place. See photo #18.

24. Tank Seam Borehole Structure. Metal structure fully enclosing borehole and conveyor - conveys coal from Tank Seam mine to the Blind Canyon Seam Mine. See photo #19.

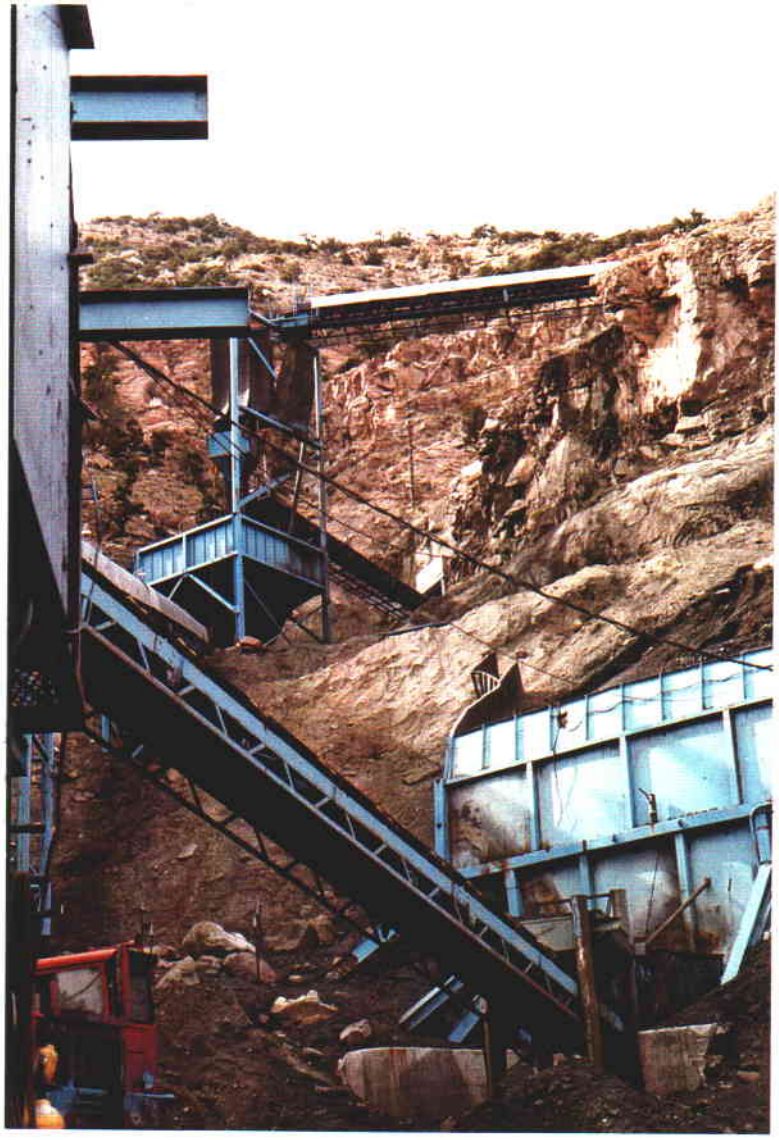


Photo #11 Coal Recovery Bin

Removed

Photo #12

LIST OF FIGURES

Table 7.2-10 Summary of Diversion Ditch Calculations

DITCH	BOTTOM WIDTH (FT)	TOP WIDTH (FT)	DEPTH (FT)	TYP SIDE SLOPE H:V	MEASURED SLOPE %	CONTRIBUTING WATERSHED	REQ'D AV. RIP-RAP SIZE (IN.)
D-1D	0	1.33	0.67	1:1	2 Min 11 Max	AD-3A	Soil
D-2D	0	1.33	0.67	1:1	6 Min 20 Max	AD-3A, AD-5	Bedrock
D-3D	0	2	1	1:1	2 Min 6 Av. 18 Max	AD-3A, AD-5 AD-7	Soil Soil Grouted
D-4D	0	2	1	1:1	2 Min 6 Av. 17 Max	AD-14	Soil Soil D_{50} 6"
D-5D	0	1.33	0.67	1:1	4 Min 10 Max	AD-9	Soil
D-6D	0	3	1.5	1:1	2 Min 4 Max	AD-3A,AD-5,AD-7, AD-9, AD-10, AD-12, AD-14	Soil
D-7D	2	3.5	0.75	1.5:1	2 Min 6 Av. 55 Max	AD-1A,AD-1B,AD- 2A,AD-2B,AD-2C, AD-3B,AD-4,AD-6, AD-8	Soil Soil D_{50} 6"
D-8D	0	2	1	1:1	2 Min 7 Max	AD-13	Soil
D-8D Water Bar	0	2.67	0.67	2:1	3 Av.	AD-13	Soil
D-9D	0	2	1	1:1	4 Min 10 Max	AD-15	Soil
D-10D	1	3.33	0.67	1.5:1	7 Min 50 Max	AD-6,AD-3B,(part) AD-2B, AD-2C	D_{50}4" Bedrock
D-11D	0	1	0.5	1:1	41 Min Near Vert	TIPPLE WASH HOSE	Grouted Ri
D-12D	0	1	0.5	1:1	81 Av.	TIPPLE WASH HOSE	Soil
D-13D Water Bar	0	6	0.5	10:1 2:1	0.5 Av.	AD-6 Partial	
D-14D	0	1.33	0.67	1.5:1	0.05 Av	AU-4A	

Notes:
1. Dimensions given indicate minimum requirements. Actual dimensions may vary. Minimum required cross section will be maintained.
2. The use of riprap to line drainage ditches is required when flow velocities exceed approximately 5 feet per second. Rip-rap may be installed where not required.

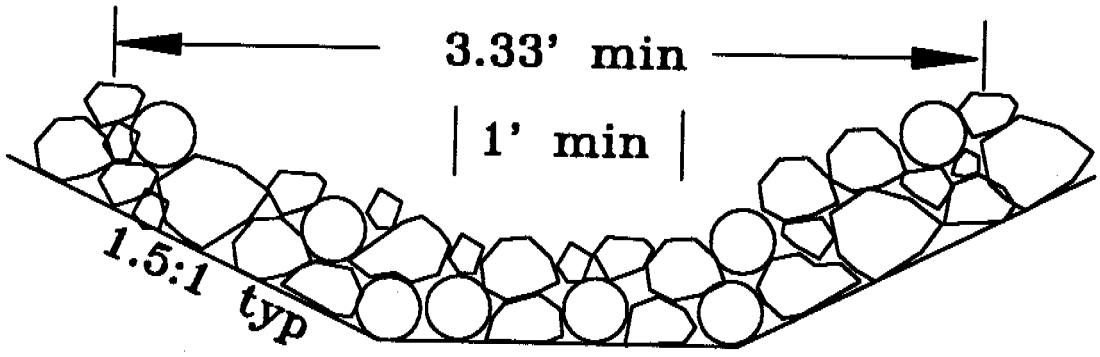
Additional Control for Hiawatha Seam Mining

As shown on Plate 7-1C, the out-slope of the proposed Hiawatha Seam portal pad encroaches upon the ephemeral channel between D-1D and D-2D. A 15 in. flexible culvert (C-1D and C-2D) and drainage ditch (D-10D), as shown on Plate~~s~~ 7-1C, is installed to convey the drainage from the upper areas of the channel beneath the pad to the coal storage pad below. Installation details are shown in Figures 7.2-8 (Downspout Structure), 7.2-9 (Collection Box), 7.2-10 (Ditch D-10D Cross-Section), 7.2-11 (Buried Cross Sections), 7.2-12 (Exposed Section Anchor) and 7.2-13 (Outlet Protection). Rip-rap specifications will be adhered to as specified in Table 7.2-10 and Table 7.2-11.

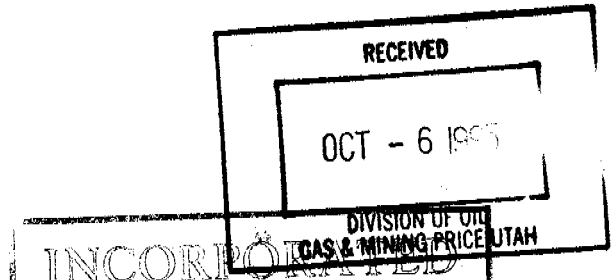
Prior to September, 1995, the flexible culvert was used to convey the drainage the entire length of the slope. A storm event which exceeded the design peak flow of the culvert destroyed a section of the flexible culvert from the uppermost belt tower below the coal storage bin to the coal processing pad. To reduce maintenance, this section will be replaced by a drainage channel as shown in Figure 7.2-10 and on Plate 7-1C.

DITCH D-10D

Typical Cross-Section



Minimum channel depth = 0.67'



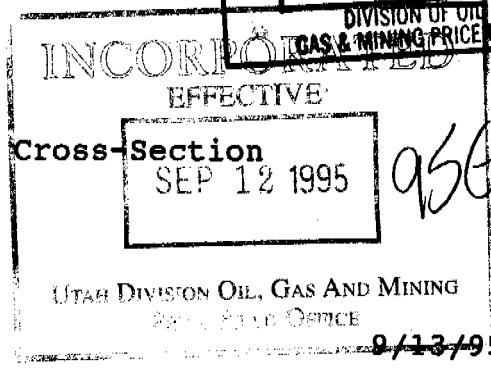


Figure 7.2-10 Ditch D-10D Cross-Section

The drainage channel is protected by 4 in. M.D. riprap. When the drainage reaches the Coal Processing pad, it will be conveyed into the lower flexible culvert C-2D (Plate 7-1C). Ditch designs are shown in Appendix 7-G.

The ditch in this area has been measured, and a typical post-mining section is shown in Appendix 7-H as cross-section RC-3. The ditch profile is shown on Plate 7-8A as Profile RC-3.

DRAINAGE CONTROL SYSTEM BEAR CANYON NO. 1 MINE

LOWER SEAM PORTAL AREA

a. Upper Pad. Drainage from the disturbed area on the upper pad from the sub-station to culvert C-1D, will continue to flow into culvert C-1D, as approved; the outlet location of the flexible culvert was moved approx 20 ft to the west of the original location to direct runoff onto the rock ledge above the Lower Seam (Hiawatha) portals; water then flows over the rock ledge to the portal pad below;

b. Portal Pad. The northeast corner of the bin is bermed a min of 30 in. high over to the highwall. Runoff water from the upper pad flows into Ditch D-10D. Runoff from under the bin flows into a collection box at the edge of the portal pad area; the pad is sloped to flow to the box;

c. Flexible Culvert. The collection box at the portal pad discharges into a 15 in. flexible culvert, which discharges into Ditch D-10D adjacent to the uppermost conveyor support;

d. Conveyor Support Area and Slope. Ditch D-10D is [illegible] to weave across this area as shown on Plate 7-1C until it reaches the Coal Processing Pad area, where it drains into the lower flexible culvert.

e. Coal Processing Pad. This pad is also sloped to drain to the culvert; water is then conveyed down to the lower (Lump Coal) pad area;

f. Lump Coal Pad. The flexible culvert parallels the conveyor down to the lump coal bin, passes beneath the bin supports, and empties into a catch basin/energy dissipater just south of the bin; runoff then flows south into ditch D-7D and passes into Sediment Pond "A."

Drainage is shown on Plate 7-1. Detailed drawings of the various drainage controls are shown in the attached typical details.

Ditch D-7D, Catch Basin

In order to reduce sediment loading at the low sloped portion of ditch D-7D a catch basin will be constructed at the north west corner of the bath house and shop. This basin will catch sediment which has previously tended to block flow in the ditch behind the bath house and shop. The basin will not be designed for full containment but will be installed to provide this additional control. The basin is easily accessed and will be maintained routinely as required. See Plate 7-1C.

Tipple Wash Drainage 1992

Water is directed down the slope under the Tipple during cleaning. To control erosion during this washing, a drainage channel (D-11D) will be rip-rapped and grouted down the slope as shown on Plate 7-1C. Grouting is required due to the steepness of the slope (see calcs App. 7-G). Drainage will then be directed into an existing culvert (C-10D) that crosses the Coal Storage Pad. This culvert was installed during construction of the pad for possible future use. From the outlet the flow will pass down another ditch, D-12D, and into ditch D-3D.

This controlled source of water is estimated at 50 gpm (0.11 cfs). Culvert and channel designs were made using 0.25 cfs (112 gpm). This will result in a conservative design. Ditch D-3D is designed for a flow of 2.36 cfs (see App. 7-G). The Tipple will not be washed during a hydrologic event, so the design flow and the wash flow will not be combined. No alterations to downstream drainage control structures are required and none are proposed.

complete. Areas in which the vegetation is not successful, or where rules and gullies develop shall be repaired and revegetated.

In addition, all dams and embankments shall be routinely maintained during the mining operation. Any vegetative growth will be cut where necessary to facilitate inspection and repairs. Ditches and spillways shall be cleaned as needed. Any combustible materials present on the surface shall be removed and all other appropriate maintenance procedures followed.

Sediment ponds will be cleaned out when they reach the 60 pct clean out level. Sediment material from the sedimentation ponds will be placed in the sediment pond waste area (Plate 2-4C) and is discussed in Appendix 3-K.

Quarterly Inspections. Quarterly inspections will be made of all sediment ponds and submitted to DOGM with the quarterly Water Monitoring Report. If any inspection disloses that a potential hazard exists, Co-Op will notify the Division immediately as required by R645-301-515.200.

Annual Inspections. Annual inspections will be made by a qualified registered professional engineer of all sediment ponds and a certified report will be submitted to the Division with the annual report. The report will include a discussion of items noted in R645-301-514.312. Copies of the reports will be placed in Appendix 7-I.

DITCH CHARACTERISTICS

DITCH	CHANNEL SLOPE %	CONTRIBUTING WATERSHED	PEAK Q(cfs)	BANK AND BOTTOM DESC.	MANNING'S $\eta^{(a)}$
D-1D	2 Min, 11 Max	AD-3A	0.23	Rocky Soil	0.03
D-2D	6 Min, 20 Max	AD-3A, AD-5	0.53	Rocky Soil, Bedrock	0.03
D-3D	2 Min, 6 Av 14 Max	AD-3A, AD-5, AD-7	2.36	Soil, grouted half round culvert	0.03
D-4D	2 Min, 7 Av 17 Max	AD-14	0.05	Soil	0.03
D-5D	4 Min, 10 Max	AD-9	0.23	Soil	0.03
D-6D	2 Min, 4 Max	AD-3A, AD-5, AD-7,AD-9,AD-10 AD-12, AD-14	3.61	Rocky Soil	0.03
D-7D	2 Min, 6 Av 55 Max	AD-1A, AD-1B, AD-2A, AD-2B, AD-2C, AD-3B, AD-4,AD-6,AD-8	4.46	Soil, D_{50}≈3"	0.03, 0.033
D-8D	2 Min, 7 Max	AD-13	1.23	Soil	0.03
D-8D Water Bar	3 Av.	AD-13	1.23	Soil	0.03
D-9D	4 Min, 10 Max	AD-15	1.25	Soil	0.03
D-10D	7 Min, 50 Max	AD-6, AD-3B, AD-2C	0.93	D_{50}≈4"	0.033
D-11D	41 Min, Near Vertical Max	TIPPLE WASH HOSE	0.25	Grouted rip-rap	0.035
D-12D	81 Av.	TIPPLE WASH HOSE	0.25	Grouted	0.03
D-13D Water Bar	0.5 Av.	AD-6 Partial	0.23	Soil	0.03
D-14D	0.05 Av.	AU-4A	0.54	Soil	0.03

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