

0049

**KAISER  
COAL**

**KAISER COAL CORPORATION**  
Sunnyside Coal Mines  
P.O. Box D  
Sunnyside, Utah 84539  
Telephone (801) 888-4421

May 23, 1986

**RECEIVED**  
MAY 27 1986

**DIVISION OF  
OIL, GAS & MINING**

Mr. John J. Whitehead  
Division of Oil, Gas, & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84140-1203

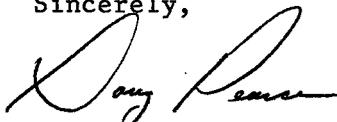
Dear Mr. Whitehead:

Re: Icelander Wash Pond Reclamation  
Sunnyside Mines, ACT/007/007

As requested in your letter of April 24, 1986, we are submitting additional material which defines the longitudinal streambed profile and locations for loose rock check dams. Check dams were added in the design to limit water velocity.

The large boulders in the streambed will be removed during the regrading operations. One of the check dams will be placed within a few feet downstream of boulder location.

Sincerely,



Doug Pearce  
Mine Engineer

DP:th

Enclosures

## ICELANDER WASH POND RECLAMATION

### PLAN

Sunnyside Mines ACT/007/007

May 23, 1986, Revision

#### Present Conditions

Icelander Wash Pond was constructed by creating a depression at the inside of an oxbow in the Icelander Wash stream channel. The oxbow is located (see Drawing D5-0134) above a six-foot concrete culvert under a historic railroad fill. A riprapped channel around the northwest corner of the pond embankment was provided to decant water from the structure. During several years of use, the pond depression filled with sediment to within several inches of the embankment crest. In a series of storms, the runoff overtopped the embankment and eroded the outslope fill. To prevent further damage, the stream channel was diverted around the pond.

#### Stream Channel Restoration

The original stream channel plan view is shown on Drawing D5-0134. The disturbed area is located between an abandoned railroad fill with a six-foot cement culvert and the confluence of an ephemeral and an intermittent drainage. The intermittent stream is characterized by a shallow meandering streambed (see Section A-A) with a well vegetated flood plain. The ephemeral drainage is characterized by steep side slopes and a very rough channel bottom.

A new channel bypassing the pond on the south side was constructed after the embankment breached. The new channel is characterized by a solid rock (Mandos Shale) bottom and a shallow meandering streambed (see Typical Cross Section, Drawing D5-0134). A longitudinal streambed profile is also shown with the location of three check dams. The check dams will be used to slow water velocity in the channel from a maximum of 6.9 feet per second to 2.5 feet per second. The stream channel slope with check dams was assumed to be 0.10 percent. Rocks grouted together will form the dams. Several large boulders will be removed from the stream channel during side-slope reconstruction prior to building the check dams.

#### Slope Reconstruction

The pond embankment will be contoured to blend with the surrounding terrain. The immediate stream banks on the north side of the wash will be contoured to 2:1 slopes approximately 2.5 feet high as shown on Drawing D5-0134.

#### Reclamation

Revegetation will be accomplished as outlined in Chapter III and IX of the Sunnyside Permit. The Pinyon-Juniper/Grass seed mix shown on Table III-17 will be used at broadcast rates. Narrowleaf willows cuttings will be placed every four feet along the north side of the stream

channel at the soil-rock interface. Willows cuttings will be placed along the south side of the stream channel where sufficient soil is available for growth.

Runoff and Flow Depth Calculations

Runoff was calculated using a storm hydrograph computer program written by Richard H. Hawkins and Kim A. Marshall at Utah State University, Logan, Utah. An average CN (curve number) of 70 was calculated using the following information assuming good conditions:

<u>Soil</u>	<u>Description</u>	<u>Soil Group</u>	<u>CN</u>	<u>Area</u>
IGC	Ildefonso Very Stony Loam 3-8%	B	61	183.2
IEE	Ildefonso Very Stony Loam 8-30%	B	61	73.0
MRG	Menefee - Rock Outcrop	D	80	138.8
MUE	Cabba - Podo - Patmos Complex	C	74	105.6
NJF2	Shingle - Ildefonso Badland Com.	D	80	52.8
KXH	Podo - Rock Outcrop Complex	D	80	24.8

INPUT SUMMARY  
FOR W.S.: ICELANDER POND

<u>STORM:</u>		<u>WATERSHED:</u>	
DISTRIBUTION	= SCS TYPE 2	LAND SLOPE	= 15.8000 PCT
PRECIP. DEPTH	= 2.66 IN	CURVE NUMBER	= 70.00
DURATION	= 24.00 HR	CHANNEL LENGTH	= 10000 FT
NUMBER OF LINES	= 176	TIME ON CONC.	= 1.1219 HR
		AREA	= 576.20 AC
		D	= .1496 HR

OUTPUT SUMMARY

RUNOFF DEPTH	= .5338 IN		
INITIAL ABSTRACTION	= .8571 IN		
PEAK FLOW	= 107.98 CFS	(.1859 IPH)	

Depth of flow (3.7 feet) and velocity (2.5 ft/sec) in the open channel were calculated using the CHEZY-MANNING EQUATION and the following assumptions:

Slope	0.10%
Bottom Width	4.0 Feet
Side Slopes	2:1
n	.03

Headwater depth (4.5 feet) was taken from a 1962 Portland Cement culvert capacity chart for circular concrete pipe (Figure 7A.lb., Page 9 of Culvert and Pond - Size and Outlet Protection in Appendix III-1, Sunnyside Permit). Assumptions used were as follows:

Slope	1.0%
Diameter	6 Feet
Discharge (CFS)	108 CFS