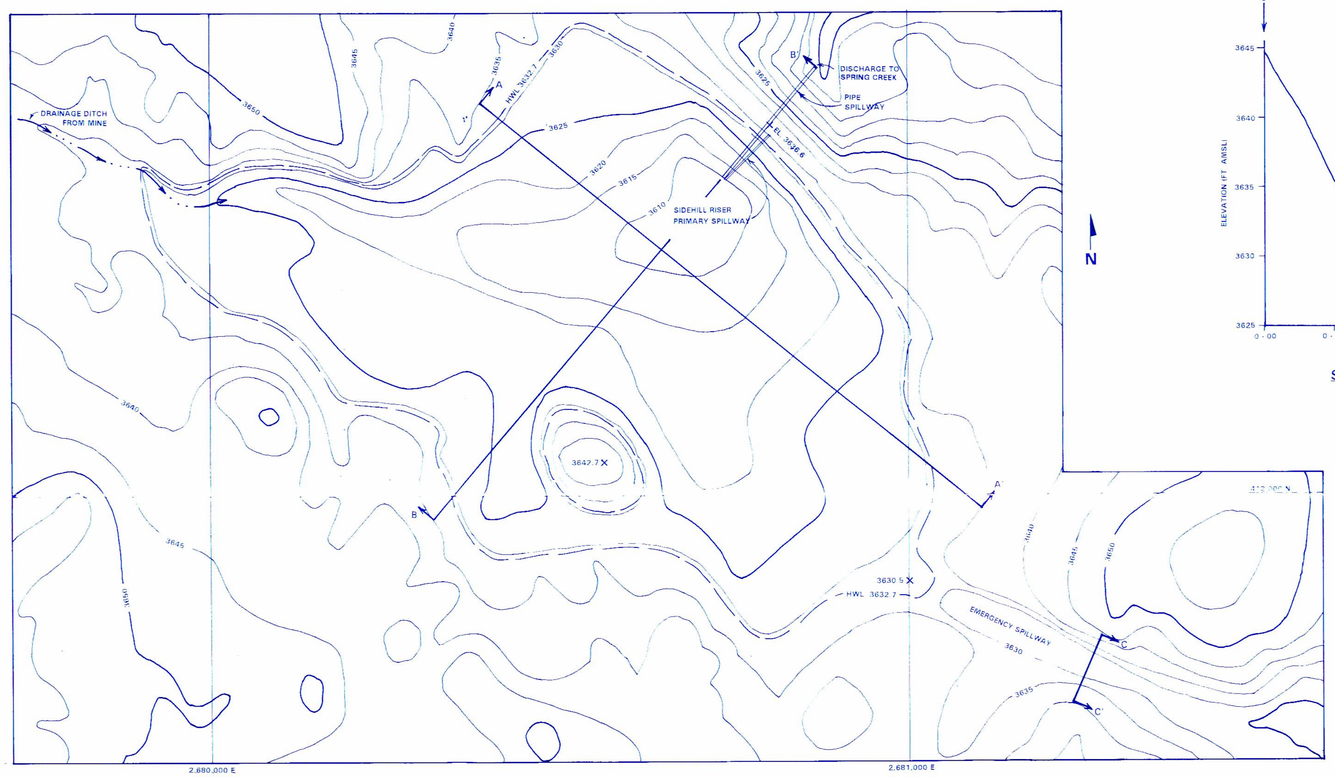
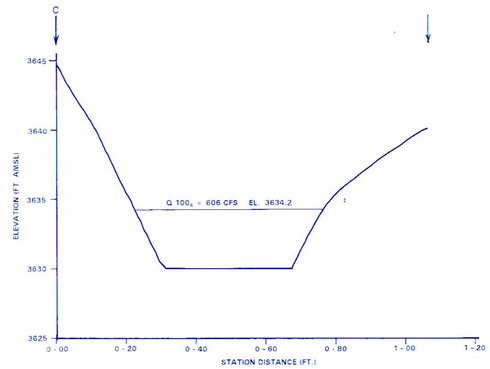


PLAN VIEW
SCALE 1" = 100'
Contour Interval 5'
LOCATED: 412,400N , 2,680,700E



SPILLWAY TYPICAL CROSS SECTION C - C'
SCALE: Hor. 1" = 20'
Vert. 1" = 5'

POND 1 AREA CAPACITY TABLE

ELEVATION ft. amsl	STAGE ft.	AREA acres	CUMMULATIVE CAPACITY acre-ft.	
3610.0	0.0	0.47	0.00	
3615.0	5.0	1.72	5.15	INACTIVE CAPACITY SEDIMENT STORAGE 63.0 acre-ft.
3620.0	10.0	3.84	18.70	
3625.0	15.0	7.52	46.59	
3630.0	20.0	11.89	94.70	ACTIVE CAPACITY POLLUTION CONTOL 42.0 acre-ft.
3630.5	20.5	12.38	100.77	
3632.7	22.7	13.25	129.52	INACTIVE CAPACITY FREEBOARD 24.5 acre-ft.

TOTAL AVAILABLE CAPACITY TO CREST OF SPILLWAY = 100.77 ACRE-FT.

PRIMARY SPILLWAY[1]
Discharge Computation

$Q = 2.417H^{1.2}$
where:
Q = Discharge (cfs)
C = pipe/weir coefficient (.35)
L = Length (ft)
H = Head (ft)

Sidehill Riser Height	= 23 ft.
Barrel Diameter	= 18.0 in.
Barrel Length	= 210.0 ft.
Barrel Slope	= 0.002 ft/ft
Pipe Spillway Elevation	= 3633.0
Discharge @ Max. Head	= 39.1 cfs

EMERGENCY SPILLWAY

Shape	= Trapezoidal	Top Width	= 54 ft.
Discharge	= 606.0 cfs	Velocity	= 3.02 fps.
Slope	= 0.001 ft./ft.	XS Area	= 200.75 sq. ft.
Sideslopes	= 3:1	Hydraulic Radius	= 3.36
Bottom Width	= 37 ft.	Mannings *n*	= 0.035

SEDIMENT VOLUME[1]

A = RKLSCP

A = Gross Erosion, tons/acre/yr.
R = Annual Rainfall Factor = 30
K = Soil Erodibility Factor = 0.36
LS = Length Slope Factor = 0.30 to 14.0
CP = Cover/Control Practice = 1.00 disturbed
= 0.40 undisturbed
Assume sediment unit weight of 90lb./ft³
A = Gross erosion = 21.0 acre-ft./yr.
Sediment delivery ratio = 1.0
Net erosion = 21.0 acre-ft./yr
3 Year accumulation = 63.0 acre-ft.
Use 0.035 acre-ft/acre disturbance per ARM 26.4.639(1)(c)(ii)
Minimum Required Sediment Storage Volume = 63.35 acre-ft.

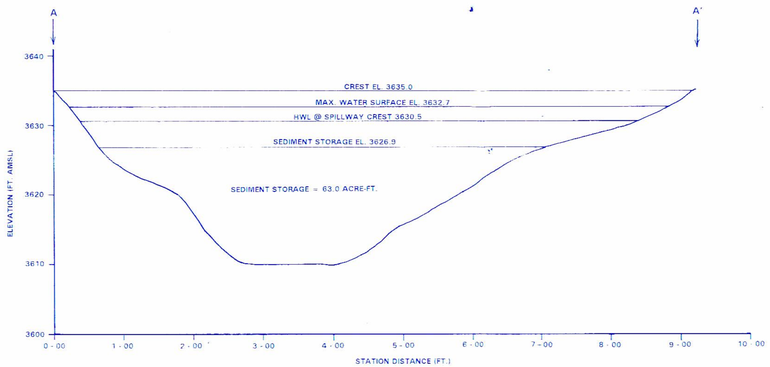
AREA RUNOFF ESTIMATES[1]
(SCS Triangular Hydrograph Method)

Rainfall Distribution		=	SCS Type II
Recurrance Interval		=	10 yr. - 24 hr.
		=	100yr. - 24 hr.
Precipitation	$P_{10\text{-}24}$	=	2.19 in.
	$P_{100\text{-}24}$	=	3.35 in.
Peak Q	$Q_{10\text{-}24}$	=	272 cfs.
	$Q_{100\text{-}24}$	=	660 cfs.
Volume	$V_{10\text{-}24}$	=	42 acre-ft.
	$V_{100\text{-}24}$	=	102 acre-ft.

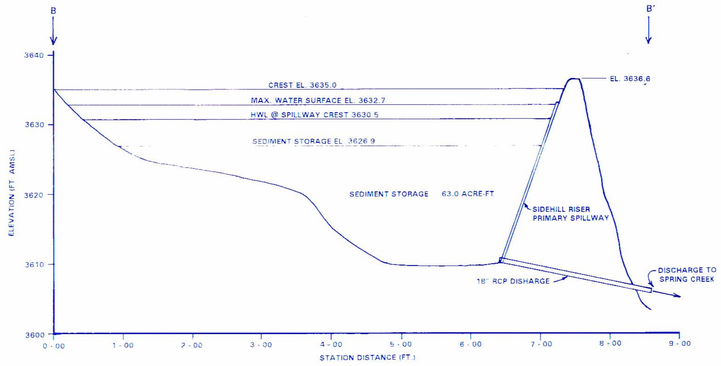
DRAINAGE DATA[1]

Drainage Area	= 1810 acres
Minimum Infiltration	= 0.15 in./hr.
Runoff Curve Number	= 79

Notes:
1) The information presented in this table was extracted from the design drawings and documentation of Woodward-Clyde Consultants, Sept., 1979, Appendix H-6.



POND CROSS SECTION A - A'
SCALE Hor. 1" = 100'
Vert. 1" = 10'



POND CROSS SECTION B - B'
SCALE Hor. 1" = 100'
Vert. 1" = 10'

I, Bruce N. Nelson of Sheridan, Wyoming, hereby certify that these maps and drawings were prepared under my supervision on topographic maps prepared for Spring Creek Coal by Horizons Inc. based on photography dated 5/01/82 and that they correctly represent the existing facilities. Further, I hereby certify that this map is correct and shows to the best of my knowlege and belief all the information required by the mining laws of this state.

4-7-94
Date

Bruce N. Nelson

MONTANA — BRUCE N. NELSON — 08663PE — REGISTERED PROFESSIONAL ENGINEER

SPRING CREEK COAL CO.
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DECKER, MONTANA 59025
(406) 757 - 2581

DATE	BY	REVISIONS

Spring Creek Coal Co.

POND NO. 1
AS-BUILT DETAILS

DESIGN BNN DRAWN BLN DATE 1/94
SCALE AS SHOWN FILE NUMBER