

J. E. STOVER & ASSOCIATES, INC.

2352 NORTH 7TH STREET, UNIT B
GRAND JUNCTION, COLORADO 81501
PHONE: (970) 245-4101

MINE ENGINEERING
MINE RECLAMATION

CIVIL ENGINEERING
CONST. MANAGEMENT

October 3, 2024

Rob Zuber
Division of Reclamation, Mining & Safety
1313 Sherman St., Room 215
Denver, CO 80203

Re: Bowie Resources, LLC, Bowie No. 1 Mine
MR-141, Sedimentation Control at the Loadout during
Removal a portion of the Farmers ditch culvert
Amendment – changes will be italicized
Permit C-1981-038

Dear Mr. Zuber:

On behalf of Bowie Resources, LLC, (BRL), enclosed is an application for a minor revision for the design of the sedimentation control during the removal of the Farmers Culvert approved under Technical Revision No. 66. This revision will be followed up with a Technical Revision that will provide a design for the permanent sedimentation control that will be put in place after the removal of the first 300' of the Farmers Ditch Culvert.

Sedimentation control will be in place before removal of the culvert begins. Since this revision is part of reclamation, there is not an increase in the reclamation bond. *After a site visit on October 1st, it was apparent that there is more cover on the upland areas that previously incorporated into the SedCad design, so the design has been updated to reflect a lower curve number. In addition, there are two additional areas that will flow into the sediment basin that were not accounted for in the initial design that have now been incorporated, please see Map-07B.* The design incorporates 1) a small sediment basin with a berm that directs the flow into the basin, and 2) *at least two silt fence or wattle(s) to capture runoff from the lower ditch area. (See Map-07B for Location of proposed silt fence/wattle locations).*

Attachments for this revision include:

- Map-07B (Sedimentation control during Farmers Ditch Culvert Removal)
- Sediment Basin Design (pages SAE-10 through SAE-18)
- *Removed silt fence/wattle design (due to temporary nature of project)*

Please let me know if you have any questions.

Sincerely,

Tamme Bishop

Tamme Bishop, P.E.
Consulting Engineer

Cc: Basil Bear


Temporary Sediment Control
PROTECTION OF THE HYDROLOGIC BALANCE
BOWIE NO.1 MINE
Farmers Ditch Culvert Removal Area

Notes for Calculations:

1. Pages SAE 11 through 12 present a spread sheet calculation of the required capacity of the sediment basin based on the 10 year, 24-hour. Page SAE-16 is the SedCad structure summary for the sediment basin which verifies the runoff calculated in excel on page SAE-12. The sediment basin shown on Map-07B provides 0.21 acre-feet of water storage and 0.04 acre-feet of sediment storage for a total capacity of 0.25 acre-feet.
2. Design points and upland drainage areas are shown on Map-07B.
3. Sediment Control structures (sediment basin and wattle/silt fence) will be installed before removal of the culvert begins. The purpose of these BMPs is to reduce runoff and sediment load during the removal of the Farmers Ditch Culvert. See the proposed locations on Map-07B.

ENGINEER'S CERTIFICATION

The calculations and information presented on the following pages were prepared by me during the month of September 2024 and the information presented is true and correct to the best of my knowledge and belief.


Tanner K. Stover-Bishop, P.E.
Registered Professional Engineer
State of Colorado No. 43402

10-3-24
Date

**PROTECTION OF THE HYDROLOGIC BALANCE
TEMPORARY SEDIMENT BASIN
BOWIE LOADOUT**

STORM EVENTS

10 YEAR 24 HOUR EVENT	1.8 INCHES
25 YEAR 24 HOUR EVENT	2.1 INCHES
100 YEAR 24 HOUR EVENT	2.6 INCHES

The runoff curve numbers are developed based upon vegetation and soil types. Vegetation data is shown in Volume 7, on Map-02, and Soils data are shown on Map-03.

CURVE NUMBERS

Undisturbed

Table 2-2d-Runoff curve numbers for arid and semiarid rangelands

Cover Type - Herbaceous-mixture of grass, weeds and brush	
Hydrologic Condition	Good
Soil Type - Loam	C
Curve Number	74

Disturbed-Poor

Table 2-2d-Runoff curve numbers for urban areas

Cover Type - Impervious, parking lots, roofs, driveways	
Hydrologic Condition	Poor
Soil Type - Loam	C
Curve Number	98

Disturbed-Fair

Table 2-2d-Runoff curve numbers for urban areas

Cover Type - Herbaceous-mixture of grass, weeds and brush	
Hydrologic Condition	Poor
Soil Type - Loam	C
Curve Number	79

RUN-OFF VOLUME - - Sediment Basin (NRCS/SCS Runoff Equation)

Area	Acres	Curve #	Precip Amount	Direct Run-off	Run-off Vol A-F *
Disturbed-Fair	3.31	79	1.8	0.41	0.11
Undisturbed-Good	1.58	74	1.8	0.26	0.03
Disturbed-Poor	0.47	98	1.8	1.58	0.06
TOTAL	5.36				0.21
TOTAL REQUIRED WATER VOLUME - - A-F					0.21
					<i>*SedCad calculated</i> 0.19

SEDIMENT VOLUME

Use the universal soil loss equation.

$A = R K L S C P$

R = rainfall factor 30.00

K = soil erodibility factor 0.37

LS = combined length slope factor 1300' - 4% 0.89

C = cropping management factor 1.00

P = erosion control practice factor 1.00

A = sediment, tons/acre/year 9.88

Two Year Sediment Volume - Acre-Feet 0.04

5.36 ACRES - 115 #/CF

Total Required Sediment Pond Capacity - Acre-Feet 0.25

MR-141

Temporary Sediment Control during removal of Farmers Ditch Culvert

Tamme Bishop

J.E. Stover & Associates, Inc.
2352 N. 7th Street, Unit B
Grand Junction, CO 81501

Phone: 970-245-4101
Email: tamme.jestover@bresnan.net


General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	1.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.000	0.000	Sediment Basin
Null	#2	==>	End	0.000	0.000	

	#1 <i>Pond</i>
	#2 <i>Null</i>

Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1*	In	5.360	5.360	2.09	0.19
	Out			0.00	0.00
#2		0.000	5.360	2.09	0.00

**Denotes structures with incomplete design parameters. Results for these structures have not been evaluated, and may affect downstream structures.*

Structure Detail:

Structure #1 (Pond)

Sediment Basin

Structure design parameters are not specified. No results to show.

Structure #2 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	3.310	0.182	0.000	0.000	79.000	F	1.17	0.108
	2	0.050	0.100	0.000	0.000	74.000	F	0.01	0.000
	3	0.470	0.062	0.000	0.000	98.000	F	0.63	0.060
	4	0.750	0.100	0.000	0.000	74.000	F	0.22	0.012
	5	0.780	0.100	0.000	0.000	74.000	TR55	0.23	0.013
	6	0.000	0.000	0.000	0.000	1.000	0.00	0.000	
	Σ	5.360						2.09	0.193
#2	Σ	5.360						2.09	0.000

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	4.18	56.00	1,339.00	2.040	0.182
#1	1	Time of Concentration:					0.182
#1	3	5. Nearly bare and untilled, and alluvial valley fans	4.55	22.00	483.00	2.130	0.062
#1	3	Time of Concentration:					0.062