C/015/009 Incoming
cc: Keenan

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May 6, 2016

Mr. Daron Haddock
Environmental Manager, Coal Program
Utah Division of Oil, Gas and Mining
Department of Natural Resources
1594 West North Temple, Suite 1210
Salt lake City, UT 84116

RE: Fossil Rock Resources, LLC Permit #C0150009, Waste Rock Site Ditch Evaluation and Request to Terminate NOV #21173

Dear Mr. Haddock:

Bowie Resource Holdings, LLC (BRH) purchased the Trail Mountain Mine and the Cottonwood Waste Rock site from PacifiCorp in 2015 and consolidated these properties under the company name Fossil Rock Resources, LLC, (FRR) as a subsidiary of Canyon Fuel Company, LLC, itself a subsidiary of Bowie Resource Partners, LLC (BRP) and BRH. Prior to that purchase, PacifiCorp had performed maintenance on the waste rock site ditches in an effort to clear debris from the ditches and re-establish other drainage controls at the site following a significant rainfall event. As part of the maintenance activities, Ditch DA was cleared using a trackhoe to clear or re-establish the ditch throughout most of its length. That maintenance work resulted in a ditch geometry that no longer retained the shape of the original ditch designs contained in the mining and reclamation plan.

On April 14, 2015, Fossil Rock Resources LLC received a Notice of Violation (NOV) from the Utah Division of Oil, Gas and Mining (Division or DOGM) at the Fossil Rock waste rock site for not properly maintaining diversions as they are designed in the mine permit. There were a total of three non-compliance issues specifically noted. The NOV was issued based on an Office of Surface Mining (OSM) oversite inspection performed on 3/08/2016. Initially, FRR intended to have the site immediately brought back into compliance by reconstructing the diversions to their original designs with a mini-excavator. After reviewing the site it was clear that although the ditches have been reconstructed to dimensions that are not shown on the drawings, the perceived compliance issues do not inhibit the designed surface flows from reaching the sediment pond as intended in the permit.

Instead of re-establishing the ditches and diversions to their original designs, FRR proposes to submit new ditch designs based on what will actually work in the field for this site based on the site configuration, access to ditches and sediment controls for maintenance work, and the stability characteristics of native and fill materials at the site. However, prior to FRR submitting new ditch designs, the company wants to present the Division with the information contained in this letter that demonstrates the ditches are constructed in such a manner as to convey runoff with appropriate flow capacities to the sediment pond as required by the permit and that there is no danger of creating off-site impacts if the ditches are allowed to remain in their current state until the new designs are submitted and approved. FRR requests the Division terminate the NOV based on the information contained within this letter.

Observations

On April 25th, BRP employees Art Etter, Vicky Miller and Chris Hansen visited the site to evaluate the issues identified in the Division's NOV #21173. Each of the three compliance issues noted in the NOV were observed and the findings made are as follows.

1. The NOV states that ditch DA was not maintained in the configuration as originally designed. The original design is a v-ditch with side slopes of 2.5:1. The ditch has been maintained as a box ditch. Both the original design and existing dimensions are shown on the attached drawing. One

of the tasks to be completed during the site visit was to verify the capacity of the existing ditch at least equaled the original design flow of 18.9 cubic feet per second. After inspection it was clear the existing ditch dimensions will function with a flow capacity of at least 23 cubic feet per second, a far greater capacity than originally designed (see calculations in Flow Capacity section). A box configuration will require more maintenance because of the steep side slope and the increased propensity for erosion of the side slopes during high flow events. However, at this site the nature of the native soils and fill material as well as access for equipment to perform ditch maintenance currently favor a geometry other than a "V"-shape. See the drawings in the Flow Capacity section for dimensions of Ditch DA at four locations that were deemed representative of the configuration of the existing ditch.

Photo 1: Ditch DA

Photo 2: Ditch DA

2. The NOV states that, "ditch DB is not-existent… and an access road has been constructed in its place." During our site visit we found the ditch is indeed in place though there is evidence of previous equipment access in the area and the access area had been roughened, see Photo 3. Two cross sections of ditch DB were measured where the ditch is the smallest. The actual flow capacities are presented in the Flow Capacities section of this report. The original design flow is 2.52 cubic feet per second, with a flow depth of 4 inches. It should be noted that the entirety of ditch DB shows no evidence that the ditch has ever conveyed the 2.52 cubic-feet-per-second design flow.

Photo 3: Equipment Access in Background

After a review of the permit documents, specifically Appendix C, the design flow for ditch DB was designed based on a watershed of 3.4 acres. FRR is not currently aware why the original design watershed was so large. The actual watershed is 1.1 acres in size. This is likely the reason why there is no evidence that ditch DB has undergone the permitted design flows. The two watershed boundaries are shown in the attached drawing. See Photos 4 and 5 for pictures of the two cross sections measured.

Photo 4: Ditch DB Cross Sections

Photo 5: Ditch DB Cross Section E

3. The NOV states, "ASCA, southern end of Subsoil Stock Pile… there is no clear runoff flow path on southern end… that directs water to the silt fence." During our site visit we found that there is a clearly defined flow path. Similar to ditch DB, the flow path is reduced in size because the size of its watershed source is very small. See Photos 6 and 7. A cloth tape was laid in the center of the flow path to more easily distinguish the path in the photos.

Photo 6: Upper Flow Path

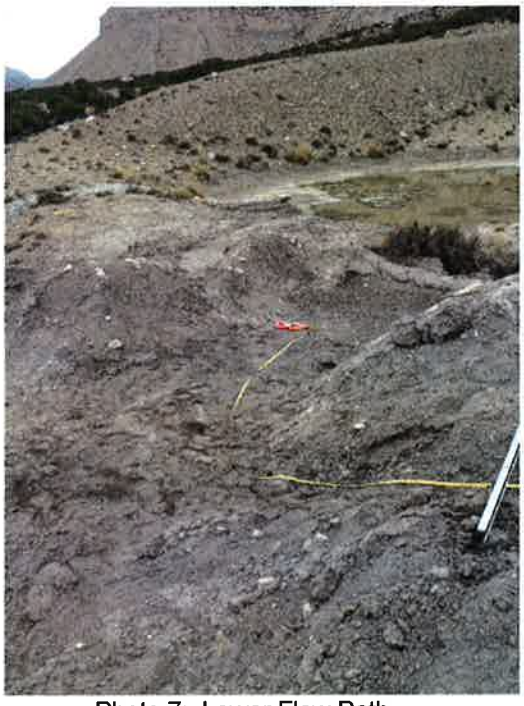

Photo 7: Lower Flow Path

Flow Capacities

The flow capacities for ditches DA and DB are calculated based on the existing ditch dimensions and original design methodologies. The original methodology is used so a fair comparison between the designed and existed ditch configurations can be made. Manning's equation is used to determine if the existing ditches are able to pass the design flows.

$$Q = A * V$$

where: Q = discharge or flow, ft^3/s
A = cross-sectional area of flow, ft^2

V = mean cross-sectional velocity, ft/s

For a given depth of flow in an open channel with steady, uniform flow, the mean velocity is computed with Manning's equation.

$$V = \frac{1.486}{n} * R^{2/3} * S^{1/2}$$

where: n = Manning's roughness coefficient
R = hydraulic radius = A/P, ft
P = wetted perimeter, ft
S = channel slope, ft/ft

For a trapezoidal shaped open channel as shown in Figure 8, the area, hydraulic radius and wetted perimeter are calculated as follows. See the figure 8 below.

$$A = y * (B + y * z)$$
$$P = B + 2 * y\sqrt{(1 + z^2)}$$
$$R = A/P$$

where: y = height of flow, ft
B = width of base, ft
z = side slope, ft/ft

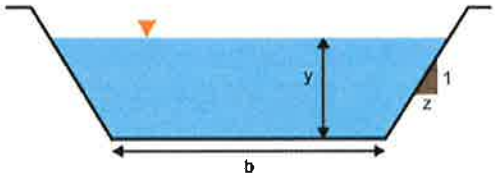

Figure 8: Ditch Section View

The original design required the mean velocity to be a maximum of 5 feet per second in order to reduce the potential for erosion. The original design used a Manning's coefficient of 0.035 and channel slopes of 2% and 12% for ditches DA and DB, listed respectively.

The remaining as-built ditch dimensions used to determine capacities are shown in Table 1. The dimensions and approximate section locations are shown on the attached drawing.

Section Location	Height of Existing Ditch	Side Slope	Channel Base	Channel Slope
	y (in)	z	B (ft)	S (ft/ft)
Section A - Ditch DA	36.0	0.14	4.83	0.02
Section B - Ditch DA	33.0	0.30	4.75	0.02
Section C - Ditch DA	32.0	0.53	3.83	0.02
Section D - Ditch DA	30.0	0.22	4.75	0.02
Section E - Ditch DB	5.0	2.00	2.33	0.12
Section F - Ditch DB	9.0	2.30	3.00	0.12

Table 1: Ditch Dimensions

The capacities of the existing ditches are calculated two ways. The first calculation is made to show the ditches can pass the design flows of 18.9 cfs and 2.52 cfs for ditches DA and DB, listed respectively, with mean velocities less than the maximum value of 5 feet per second. This is shown by calculating the height of the design flow and verifying it is less than the height of the existing ditches. See table 2.

Section Location	Design Discharge	Resulting Flow Data					Height of Existing Ditch	Free-Board
		Cross - Sectional Area	Wetted Perimeter	Hydraulic Radius	Mean Velocity	Water Height		
	Q (cfs)	A (ft^2)	P (ft)	R (ft)	V (ft/s)	y (in)	y (in)	y (in)
Section A - Ditch DA	18.90	4.22	6.55	0.64	**4.5**	**10.2**	36.0	**25.8**
Section B - Ditch DA	18.90	4.21	6.51	0.65	**4.5**	**10.1**	33.0	**22.9**
Section C - Ditch DA	18.90	4.06	5.96	0.68	**4.7**	**11.3**	32.0	**20.7**
Section D - Ditch DA	18.90	4.21	6.49	0.65	**4.5**	**10.2**	30.0	**19.8**
Section E - Ditch DB	2.52	0.56	3.24	0.17	**4.5**	**2.4**	5.0	**2.6**
Section F - Ditch DB	2.52	0.60	3.88	0.15	**4.2**	**2.1**	9.0	**6.9**

Table 2: Ditch Capacities Based on Design Flow

Table 2 shows that adequate 'free-board' remains at each of the ditch cross-sections. For example, design flow height at section A is 10.2 inches while the actual height of the ditch is 36 inches.

A second capacity calculation is presented to show that each of the ditches in their current configurations have additional capacities above what the original design requires. The discharges are determined with the maximum mean velocity of 5 feet per second. The results are presented in table 3.

Description	Maximum Mean Flow Velocity	Resulting Flow Data					Design Discharge
		Cross - Sectional Area	Wetted Perimeter	Hydraulic Radius	Water Height	Calc'd Discharge	
	V (ft/s)	A (ft^2)	P (ft)	R (ft)	y (in)	Q (cfs)	Q (cfs)
Section A - Ditch DA	**5.0**	5.31	6.98	0.76	**12.8**	**26.54**	18.90
Section B - Ditch DA	**5.0**	5.26	6.92	0.76	**12.5**	**26.29**	18.90
Section C - Ditch DA	**5.0**	4.78	6.28	0.76	**13.0**	**23.88**	18.90
Section D - Ditch DA	**5.0**	5.25	6.91	0.76	**12.7**	**26.25**	18.90
Section E - Ditch DB	**5.0**	0.67	3.40	0.20	**2.9**	**3.37**	2.52
Section F - Ditch DB	**5.0**	0.83	4.17	0.20	**2.8**	**4.14**	2.52

Table 3: Ditch Capacities Based on Maximum Velocity

Table 3 shows that the actual calculated discharge capacities at the ditch sections are greater than the design discharges. It should be noted that ditch discharge capacities would be significantly larger if the mean flow velocity were allowed to increase beyond 5.0 feet per second.

Summary

The results presented in both Tables 2 and 3 clearly show that the discharge capacities of the existing ditches exceeds the original design capacities outlined in the permit.

The upper segment of ditch DA has not been maintained to the dimensions originally specified in the permit dimensions. It has been shown that there is adequate discharge capacity within the ditch, to ensure the immediate watershed adequately drains into the sediment pond.

Ditch DB has been maintained with dimensions close enough to the original design and should be considered compliant. Discharge capacities currently exist that exceed the design capacities.

The south end of the subsoil pile adequately drains to the sediment pond through the installed silt fencing.

All ditch discharges are contained within the project site and terminate in the sediment pond. The sediment pond appears to be properly maintained with sediment excavated from the pond being stored in the waste rock disposal area.

As stated previously, we request the Division terminate this NOV based on the information provided in this letter. We are willing and available to accompany a Division employee on site to discuss the reasons why we believe the ditches in their current state will function adequately to convey and control runoff at the site. Bowie Resource Partners, LLC, through Fossil Rock Resources, LLC, will submit new designs as a permit modification to address the changes in ditch geometry.

Sincerely,

Chris D. Hansen
Director of Regulatory Compliance and Government Relations
Bowie Resource Partners, LLC