



State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt  
Governor  
Ted Stewart  
Executive Director  
Lowell P. Braxton  
Division Director

1594 West North Temple, Suite 1210  
PO Box 145801  
Salt Lake City, Utah 84114-5801  
801-538-5340  
801-359-3940 (Fax)  
801-538-7223 (TDD)

July 22, 1998

TO: File  
THRU: Daron Haddock, Permit Supervisor *10074*  
FROM: Sharon Falvey, Reclamation Hydrologist *SKF*  
RE: Permit Application Package, West Ridge Resources, Inc., West Ridge Mine, PRO/007/041, Folder #2, Carbon County, Utah.

**SUMMARY:**

West Ridge Resources, Inc., has submitted a permit application package to mine in the area southwest of West Ridge and north of East Carbon. Surface facilities are located in C Canyon. The application includes an experimental practice proposal to bury, rather than salvage, topsoil in part of the proposed disturbed area. The applicant is also proposing a potential topsoil borrow site about one mile from the surface facilities.

**ANALYSIS:**

**ENVIRONMENTAL RESOURCE INFORMATION**

**CLIMATOLOGICAL RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 783.18; R645-301-724.

**Analysis:**

Information on climatic resources can be found in chapters, 2, 4, and 7 and is summarized below. The plan meets the minimum regulatory requirements.

The mean annual air temperature 45-47 degrees F and the average frost free period is 80 to 120 days. Average annual precipitation is 12-14 inches with the majority occurring from October to March (chapter 2, pg. 2-1).

Daily Climatic information is collected at the National Weather Service Station in Sunnyside, Utah. Average annual precipitation is about-13 inches at the Sunnyside, Utah station. Snow accumulations ranged from 0-21 inches at Whitmore Canyon (6,750 ft). Pan

evaporation for this site is 0.69 (chapter 4). Average annual wind speed in Dragerton, Utah south east of the site are 6.2 mph and predominately flow from the north-north east (section 724.412).

The site is located within the Region 6 and Region 7, Palmer Hydrologic Drought Index boundaries.

**Findings:**

The applicant has met the minimum regulatory requirements for this section. It is recommended that an onsite climatic station be installed for the operational and reclamation period.

**HYDROLOGIC RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

**Analysis:**

**Surface-water information.**

Surface water information is provided in Appendix 7-1. Discharge from Bear Canyon was characterized as ephemeral yet, it is also stated that the headwaters are intermittent. Characteristics for flows observed at Bear Canyon need to be specifically identified and addressed in the text in relation to timing of use for the water rights issued for this drainage.

**Baseline cumulative impact area information.**

No discussion on the flow characteristic at Whitmore Canyon and Grassy Trail Reservoir are provided in the section discussing surface water however, information is provided in Appendix 7-1.

Map 5-4B shows anticipated mining. To contemplate all anticipated potential coal mining impacts, future baseline information should include a water balance analyses for Grassy Trail Reservoir. Storage relationships, inflow, precipitation, evaporation rates and ground water losses should be determined. Wells should be installed to characterize the alluvium hydrology at Whitmore Canyon and Grassy Trail Creek below the reservoir.

**Alternative water source information.**

No alternative water source information was prepared by the applicant. Their PHC indicates no contamination, diminution or interruption of groundwater and surface water will

Page 3  
PRO/007/041  
July 17, 1998

occur in the proposed or adjacent area.

**Findings:**

**R645-301- 724.** Characteristics for flows observed at Bear Canyon need to be specifically identified and addressed in the plan in relation to timing of use for the water rights issued for the Bear Canyon drainage. Conflicting information regarding intermittent and ephemeral portions needs to be clarified and flow and water quality characteristic need to be described.

**MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

**Analyses:**

Analyses of these maps will be completed following response to the requirements identified in this Technical Analyses.

**Findings:**

A findings will be conducted on this information following response to the requirements identified in this Technical Analyses.

## **OPERATION PLAN**

### **HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

#### **Analysis:**

##### **Surface-water monitoring.**

All monitoring locations identified are not included in Table 7-1, such as Monitoring Bear Creek.

##### **Acid and toxic-forming materials.**

#### **Hydrocarbons:**

The plan calls for retaining the gravel borrow fill in the rock outcrop/rubbleland. Protection from contamination by hydrocarbons or other toxic and hazardous wastes to this fill needs to be addressed. The Spill Prevention and Control Countermeasure Plan should be included in the mining and reclamation permit to describe the steps to be taken to minimize disturbance to the hydrologic balance and to meet applicable federal and Utah water quality laws and regulations.

#### **Other Chemicals**

Gravel areas will be sprayed with a chemical surface stabilizer such as potassium chloride, or water control (Chapter 4, pg 4-8). *Using these chemicals was not specifically addressed. Using these chemicals could affect water quality discharged from the mine area.*

A plan for longwall mining fluid emergency spills needs to be addressed. A list of all chemical to be used and stored in the mining operations needs to be contemplated in the PHC.

##### **Discharges into an underground mine.**

The potential for intercepting waters accumulating in the old Sunnyside Mine workings has not been contemplated.

**Gravity discharges.**

No gravity discharges are expected from the mine. The formation dips to the 3 to 8 degrees to the north northeast. *However, sumping and pumping operations could promote seeps along coal outcrop locations.*

**Water quality standards and effluent limitations.**

Currently no UPDS permits are granted. The applicant commits to obtain a permit. A copy of the issued permit should be incorporated in the plan.

**Diversions.**

*Design Information*

Diversions are sized for the 10 yr-24 hr event using the SCS - TR55 method for Type II storms. However, in general the CN used are smaller than those expected for a site with a lot of exposed rock. The following table indicates the hydrologic group for the soil unit according to the SCS Soil Survey information. The Hydrologic groups used by the applicant in the CN determination did not reflect inclusions in complexes or rock outcrop locations.

**Soil Hydrologic Group**

Soil (unit#)	Components	% inclusion	SCS Hydrologic group	Hydrologic group used
Midfork Comodor Complex (61)	Midfork Bouldery Loam	50%	B	B
	Commodore Bouldery Loam	30%	D	
	Other	30%		
Rock Outcrop (96)	Rubble Land	30%	NA (impervious)	D
	Rock Outcrop	30%	NA (impervious)	
	Travessilla	25%	D	
	Other	10%		
Croydon (21)	Croydon Loam	100%	B	B
Beje-Trag Complex Plateaus (7)	Beje Loam	55%	D	C
	Trag Clay Loam	20%	C	
Beje Complex - Mountain Ridge Tops (5)	Beje very gravelly fine sandy loam		D	C
	Beje fine sandy loam		D	

---

---

**Soil Hydrologic Group**

---

---

Other

20%

Source: Soil Survey of Carbon County Area, Utah, UDA SCS June, 1988

If the applicant wishes to justify the Hydrologic Group used to determine the CN increased detail on soils and rock outcrops and rubble land inclusions would be necessary, otherwise the applicant should adjust the CN as appropriate.

*Bypass Culvert*

The plan states that all undisturbed area culverts are sized to pass the 50 yr - 24 hr precipitation event. Bypass Culvert receives drainage from an area 687.8 acres and is greater than a square mile therefore by definition it is intermittent and it is required to be designed for a 100 yr - 6 hr precipitation event. Not the 10 yr- 6 hr event as indicated in the plan. However, the 50 yr -24 hour precipitation event exceeds the required 100 yr - 6 hr event. Unfortunately the CN's used do not appear accurate. In order to determine whether the applicant meets minimum requirements additional information supporting the values provided for CN determination is necessary.

The outlet to the Bypass Culvert will be equipped with a rip-rap apron. *Because this channel has a large rock component it is recommended the applicant determine whether the proposed location for the outlet is of competent material which would not require riprap. Riprap on competent bedrock generally is washed downstream.*

Undisturbed drainage culverts will have trash racks and, inlets will be protected with riprap.

*Road Drainage*

A culvert should be designed for the road drainage in the disturbed area that is at the southwest most portion of the disturbed area. *The drainage from area UAZ-b needs to contemplate potential inflows from the side drainage. The basin below at the culvert outlet should consider potential drainage from this site if necessary.* Maps show the basin is above potential inflows from the side drainage.

*Drainage associated with ASCA's*

Watershed map, watershed areas, calculations and associated drainage plans need to be corrected at ASCA's X and Y.

**Stream buffer zones.**

By regulatory definition the drainage in C canyon is considered intermittent and requires buffer zone signs. No discussion was found in the text.

**Sediment control measures.**

*General Construction plan*

Information that affects hydrology and related sediment control issues identified for the construction plan are:

- No sediment control measures or drainage control is identified for the early phases of construction. Sedimentation pond construction commences once the culvert installation progresses approximately 500 ft up canyon. Drainage for the site will not be installed until pad levels are constructed and roads are installed. **Interim sediment control measures were not presented for construction phases. A means for runoff from all disturbed areas to report to the sedimentation ponds needs to be identified or other sediment control measures provided.**
- Installing bypass Culvert with geotextile bolders will be moved out of the channel and placed on the bank. The channel bottom will be prepared and the geotextile material will be installed followed by fill and culvert placement. The preparation to be conducted on the channel prior to placing the geotextile was described as having a 10 - 12 foot bottom section with 2:1 side slopes. Channel bottom will be regraded and bedding materials will be laid down prior to laying the fabric to preserve the existing geomorphology. **It is not clear how regrading the channel preserves the existing channel geomorphology. Specific information should be provided to show how the existing channel geomorphology will be preserved. This information conflicts with statements in chapter 7.**
- When installing the bypass culvert without geotextile construction bolders will be moved out of the channel and placed on the bank. Channel bottom will be regraded and bedding materials will be laid down. The area where the pond is to be located will be keyed into the embankment these areas will change the geomorphologic characteristics and determine the postmining configuration and channel gradient. Bolders that are placed back into the channel need to be embedded into the embankment or channel bottom. **During bypass culvert construction the applicant should consider methods to increase roughness and bed slope changes within the channel. A survey to identify areas of competent bedrock (grade control) for the reclamation channel should be mapped and details in the reclamation plan can be adjusted as appropriate.**

- Geotextile manufacturing specifications and specifications for construction must be supplied for all fabrics to be used.
- Topsoil salvage will be hauled to designated topsoil areas which are to be located over the bypass culvert (pg. 2-10). Topsoil will be removed and stockpiled prior to construction activities (section 232.600). The plan contemplates starting at the south end of the site, building the culvert and sedimentation ponds simultaneously. Should any topsoil be salvaged prior to the upstream culvert construction a temporary storage location would be necessary.

#### *Top Soil Substitute Area.*

This area is proposed to be utilized only if needed during final reclamation. No further discussion on proposed configuration and sediment controls is provided. Calculations and quantities for bond estimations assuming the worst case scenario are available in the plan.

#### *Additional Measures*

The text says additional sediment control measures may be taken. The applicant should provide design information regarding these measures. Where, when and how they will be used etc.

#### **Alternate Sediment Control Measures**

Topsoil stockpiles ASCA X and Y will use the following sediment control measures; contour furrows, pocking (also referred to as irregular pitted surfaces), silt fencing around the perimeter, seeding (following placement and after September 15), berm and ditch configuration at the base of the pile (section 222.100, pg 2-8 and section 231.400 2-10). See Map 2-4. Information conflict in the mine plan text between section 200 and appendix 7-4 in regard to the sediment control measures to be applied at the topsoil piles.

Maintenance practices include; monitoring for excessive erosion, reseeding, maintenance of ditches and/or silt fence (chapter 2).

ASCA-Z is the proposed parking lot. Because it is at the downstream end of the site it is not designed to report to the sedimentation ponds. This parking area should be moved above the sedimentation ponds or demonstrate that is BTCA. The outslope should utilize erosion control matting or other erosion control practices to minimize erosion at the site.

ASCA - X and Y watershed areas contributing to the pond and those areas that will drain to the bypass culvert need to be corrected.

**Siltation structures.**

The siltation structures are sedimentation ponds. See the following discussion.

**Sedimentation ponds.**

Three sedimentation ponds in series will be constructed at this site. The two upper ponds have open channel spillways. The lower pond has a riser with an oil skimmer that will lead to the bypass culvert. A method must be available to obtain a discharge sample from the pond outlet prior to discharge to the bypass culvert.

Appendix 5-5 states that all open channel spillways will be constructed to pass the 10 yr-24 hr storm event. The lower pond will have an emergency spillway that handles the 25 yr-6 hr storm event. The regulations require the open channel spillways for the proposed ponds to pass the 25 yr - 6 hr event. The 10 yr-24 hr storm event exceeds required design criteria.

The downstream pond, Pond C, has two emergency spillways. One open channel spillway dumps into the culvert. This method has the potential to impound water on the parking lot if the culvert plugged. Water and oil accumulating in the pad has the potential to be discharged off site. Though the discharge structures meet R645-301-742.223 the design does not meet 742.311: all diversions will be designed to minimize adverse impacts within the permit and adjacent area.

Decanting the pond will consist of a portable pump with an inverted inlet. And a 100 gpm pumping capacity.

The lower pond has 1 foot of freeboard between the primary spillway 6902 ft and the emergency spillway 6903 ft. However the text (pg. 7-25) indicates the primary spillway will carry the peak flow with 1.05 ft of head over the pipe. This means the secondary spillway will also be required to safely pass the peak event. Although the flow to be carried is minor, it is not a standard engineering procedure.

**Other treatment facilities.**

No other treatment facilities are proposed for this site.

**Exemptions for siltation structures.**

No exemptions for siltation structures were requested or granted with this application.

**Discharge structures.**

Spillways will have a bottom width of 5 ft. Freeboard of 2 ft and 2:1 side slopes

(Appendix 5-5, pg.12) and are designed to reduce erosion.

### **Impoundments.**

All impoundments are sedimentation ponds. See the discussion above.

### **Findings:**

**R645-301-731.220.** The water monitoring Table 7-1. Does not include all water monitoring locations referenced within the plan. The water monitoring plan is not clear and accurate. A method must be described how a discharge sample will be obtained from the pond outlet prior to discharge to the bypass culvert.

**R645-301-731.** The Spill Prevention and Control Countermeasure Plan should be included in the mining and reclamation permit to describe the steps to be taken to minimize disturbance to the hydrologic balance and to meet applicable federal and Utah water quality laws and regulations. The UPDES permit should be issued and incorporated into this plan prior to PAP approval. A plan for longwall mining fluid emergency spills needs to be addressed. A list of all chemical to be used and stored in the mining operations needs to be contemplated in the PHC.

**R645-301-731.513.** The mine plan needs to contemplate the potential for intercepting water potentially accumulating in the old Sunnyside Mine workings.

**R645-301-740.** The applicant must adjust or justify the CN used in the calculations provided for runoff. Detail on soils, rock outcrops and rubbleland inclusions would be needed to justify the soil hydrologic group chosen for soil types.

**R645-301-742.400.** The applicant must provide a culvert design for the road drainage area that is within the southwest end of the disturbed area. The drainage from area UAZ-b needs to contemplate potential inflows from the side drainage. Geotextile manufacturing specifications and specifications for construction must be supplied for all fabrics to be used.

**R645-301-742.300.** Watershed maps, watershed calculations and associated drainage plans need to be corrected in regard to errors in the drainage plan for ASCA- X and Y.

**R645-301-731.600.** By regulatory definition the drainage in C canyon is considered intermittent and requires buffer zone signs. Provide a statement recognizing place buffer zone signs are required, within the text. The text needs to correctly

identifies the 100 yr - 6 hr event as the minimum design required for the bypass culvert.

**R645-301-742.** 1) Interim sediment control measures and drainage need to be contemplated for construction phases. 2) The construction plan needs to contemplate a temporary topsoil storage location and sediment control measures. 3) Designs for the potential top soil substitute area should include: sediment control measures and drainage plans. 4) The plan contemplates additional sediment control measures in chapter 7: design criteria for these measures must be provided. 5) Conflicting information in the plan pertaining to topsoil sediment control measures needs to be clarified.

**R645-301-742.110.** The ASCA-Z needs to incorporate BTCA. The area should be designed to report to a sedimentation pond unless BTCA is demonstrated. A designed erosion control measure needs to be provided for the pad outslope.

**R645-301-741.** The plan must include the specific measures used to preserve the existing channel geomorphology where it is referred to in Appendix 5-5. Conflicting information provided in chapter 7 needs to be clarified.

**R645-301-742.311.** The emergency spillway on Pond C discharges into the bypass culvert. The details for discharge structure and culvert inlet needs to be designed to minimize adverse impacts within the permit and adjacent area.

## **MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

### **Analyses:**

Complete analyses of these maps will be conducted following response to the requirements identified in this Technical Analyses.

### **Findings:**

A findings will be completed on this information following response to the requirements identified in this Technical Analyses.