



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

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

January 2, 1998

TO: File

THRU: Daron Haddock, Permit Supervisor *DH*

FROM: Wayne H. Western, Senior Reclamation Specialist *WHW*

RE: Bullet List of Deficiencies, Canyon Fuel Company, LLC, Dugout Canyon Mine, PRO/007/039, File #2, Carbon County, Utah

512 Certification

512.100 Cross Sections and Maps (Page 5-1 to 5-3)

- **Previously Mined Areas.** On page 5-1 through page 5-3 the Applicant gives a history of coal mine in Dugout Canyon. That information is not relevant to map certification and should be moved to a section of the PAP that deals with perviously mined areas (Section 521.111) (clear and concise)

513.400 Refuse Pile (Page 5-7)

- The Applicant states "The short-term nature of this storage precludes the need for special precautions related to spontaneous combustion of the sorted materials." Some Utah coal will ignite due to spontaneous combustion within 24 hours of exposure to air. The Division does not agree with that statement. The Applicant must either demonstrate that spontaneous combustion will not occur or remove that statement.

Existing Surface and Subsurface Facilities and Features (Page 5-11)

- Change "in accordance with R645-301-521.123 and R645-301-124" to "in accordance with R645-301-521.121 and R645-301-521.122." The Applicant could also remove the sentence "Hence, a map of these non-existent facilities is not provided in accordance with R645-301-521.123 and R645-301-124. (Clear and concise)
- Other existing roads within the disturbed area and permit area are privately owned and maintained roads (see Plate 4-1). The general locations of roads within and adjacent to the permit area are shown on Plate 5-5.

- Plate 5-5 does not identify public roads (roads are not identified as public or private).
- Plate 5-5 does not show the mine access road continuing past the disturbed area boundary.
- Why site Plate 4-1 and then Plate 5-5 when both plates contain the same information? Siting one plate avoids confusion.
- The Applicant does not show on any map the location of where debris encountered during construction would be disposed.

Mining Sequence and Planned Subsidence (Page 5-13)

- Plate 5-5 shows the general areas to be mined, but does not show details such as main entries and panels. The Applicant needs to provide the Division with a detailed map of the proposed mine plan.
- In conversations with the Division the Applicant stated that they will use longwall mining methods. The mine plan shown on Plate 5-5 is for room-and-pillar mining. If the Applicant plans on using longwall mining then they must revise the mine maps.

Land Surface Configuration (Page 5-14)

- Plate 5-2C

The plate must contain a legend for each line type. In the upper right-hand corner of Plate 5-2C there is a wide black line that is not clearly marked.

The assumed pre-SMCRA boundaries should be clearly labeled as such. The term pre-1980 is confusing. The boundary could be labeled assumed pre-SMCRA boundaries as map in 1980.

The Applicant needs to clarify if the areas labeled "areas of disturbance pre-1996" is a pre or post SMCRA disturbance.

Plate 5-2C must show the location of all culverts and diversions.

- On page 5-16 the Applicant describes how refuse is be disposed, petroleum spill response and eliminating wet concrete from entering a stream channel. That information does not directly relate to requirements of R645-301-521.160 (Maps and Cross Sections of the Proposed Features of the Proposed Permit Area). That information should be removed

from this section of the PAP and placed in sections that deal with those subjects.

Transportation Facilities (Page 5-17)

In the PAP the Applicant states that Figure 5-2 shows a typical cross section of the primary roads. There are several areas where the typical cross section does not represent on site conditions. For example there are areas where the slope between the road and the stream is almost vertical instead of a 2 to 1 slope.

- The Applicant needs to supply the Division with cross sections that show different slope conditions that are associated with the main haul road.

Coal Recovery (Page 5-19)

- State Lands wants a general commitment that mining will be conducted so that access to the Gilson Seam is protected.

Mining Methods (Page 5-20)

- The Applicant states in the PAP that mining will be done using room-and-pillar methods. In conversations with the Division the Applicant has stated that they intend to use longwall methods. Incorporating longwall methods will require a change to the MRP. If the Applicant is planning on using longwall methods then they should incorporate that mining method into the PAP.

Anticipated Effects of Subsidence (Page 5-28)

- The locations of three active raptor nests in Section 16 are shown on Plate 3-2. Plates 5-5 shows that mining will be conducted within 500 feet of the nests in 2001. Plate 6-4 shows the overburden thickness in that area is 800 feet. The Applicant assumes that the angle-of-draw will be 35°. The area of potential subsidence is projected to include the raptor nest. **The Applicant needs to address how subsidence damage to the raptor nests will be controlled.**

526 Mine Facilities (Page 5-30)

- The Applicant is required by R645-301-526.100 to include a narrative explaining the construction of the mine structures and facilities. That information was not included in the PAP.

526.100 Mine Structures and Facilities (Page 5-30)

- The Applicant states “No buildings exist at the mine surface, therefore no buildings will be used in connection with or to facilitate this proposed coal mining and reclamation operation.” The sentence states that no buildings will be constructed or used at the mine site, which is false. The Applicant should rewrite the paragraph so that it states that the only existing structure at the site is a UP&L distribution line that will be upgraded. The Applicant must state how the distribution line will be upgrade to meet the performance standards.
- An existing UP&L distribution line exists at the site. The Applicant must state how the power line will be modified.
- The Applicant states “A description of the location of the existing county road within the permit area is provided in Section 521.100 of this M&RP. It is unknown when this road was initially constructed. This road is currently an unimproved dirt road which will be modified by the County (see Section 527.200).” R645-301-526.116 deals with protecting the public when mining occurs within 100 feet of a public road or when a public road will be relocated. The information in this section does not address those two points. This section should be rewritten. The Applicant should state that no mining will occur within 100 feet of a public road expect where the mine access road joins the right-of-way and that the Applicant will not relocate a public road. All information not relevant to this section should be removed.

527 Transportation Facilities

527.100 Road Classification

- The Applicant must state that dirt roads that are in the permit area and will be used only for monitoring activities will not be classified.
- Design information such as grade roads should be place in Section 527.200. Placing the information in Section 527.200 make the plan clear and concise.

527.200 Description of Transportation Facilities (page 5-32)

- A detailed description of the conveyors at the mine site must be included. R635-301-527.200

Road Specifications (Page 5-32)

- Include a cross section that is parallel to the mine road. That cross section must show the grade and distance of each section of the mine road. R645-301-527.200

- Cross sections that show the road and the culverts. R645-301-527.200
- The last paragraph of this section deals with the dirt roads in the permit area that will be used for data collection and monitoring. This paragraph should be moved to Section 527.100 since it deals with road classification. (clear and concise)

Drainage way Alterations

- The Applicant states that the culverts are needed to allow coal trucks to enter and leave the site. The Applicant needs to state why the culverts are needed for truck transportation. Earlier plans did not require culverts for truck access (clear and concise)

528.300 Spoil, Coal Processing Waste, Non-Coal, and Mine Development Waste

Burning and Burned Waste Utilization (Page 5-37)

- The Applicant states "Due to the temporary nature of this storage, there will be no significant potential for this waste to spontaneously combust." Some Utah coals are subject to spontaneous combust in less than 24 hours from being exposed to the atmosphere. The Applicant must either show that the coal will not be subject to spontaneous combustion or remove that phase from the PAP.

Non-coal Mine Waste (Page 5-37)

- The Applicant states "No non-coal (non-waste rock) waste other than durable, non-acid and toxic forming, rock-type construction materials (e.g. cinder blocks) will be permanently disposed of within the permit area. Such waste will not be permanently disposed of in the permit area, but will be temporarily stored either in a dumpster or in the temporary waste-rock storage area. (Clear and concise) Does such waste refer to cinder blocks or non-coal waste that will be shipped to a landfill?"

532 Sediment Control (Page 5-40)

- The Applicant states "Contemporaneously reclaiming areas suitable for such reclamation." The Applicant needs to state what areas will be contemporaneously reclaimed.

534.300 Primary Roads (Page 5-44)

- The Applicant states that the haul road has a minimum safety factor of 1.3 and then sites the slope stability study done for the sediment pond. The slope stability study was done for the sediment pond and not for the haul road. The failure circles are from the slope's toe to the pond. The Applicant needs to look at failure surfaces that are from the road to

the slope's toe. That investigation needs to be included into Appendix 5-4.

540 Reclamation Plan

542.200 Plan for Backfilling, Soil Stabilization, Compacting and Grading (Page 5-53)

- The Applicant states "Backfilling to remove highwalls to the extent possible within the objectives noted above (cut and fill balance, site stability, and erosion control)." The term "to the extent possible" is confusing and should be eliminated. (Clear and concise)

Building Demolition

- The Applicant states "If foundations will not interfere with regrading activities, they will be left in place for on-site burial." The Applicant must show what foundations will be left in place. (Clear and concise)

542.800 Estimated Cost of Reclamation

- The Division is not able to verify the Applicant's reclamation cost estimate.
 - The Applicant has not provided the Division with cross section of adequate detail for the Division to determine cut and fill quantities.
 - The Applicant did not provide the Division with a detailed plan that shows how material from the cut areas will be transported to fill areas. The Division is unable to determine where cut material in cross section Z-Z' will be transported to and where the fill material in cross section Z-Z' will come from. That information is needed to determine haul distances and grades.
 - Attached are copies of worksheets that the Division uses to calculate earthwork costs. The Applicant needs to supply the Division with enough information to fill out the work sheets.

Project _____

Date _____

WORKSHEET NO. 12

PRODUCTIVITY AND HOURS REQUIRED FOR MOTORGRADER USE--GRADING

Earthmoving Activity:

Task defined in Worksheet 3.

Characterization of Grader Used (type, size capacity, etc.):

Most practicable equipment.

Description of Grader Route (push distance, % grade, blade effective length, operating speed, etc.):

Productivity Calculations:

Contour Grading:

$$\text{Hourly Production} = \frac{\text{p. 136}}{\text{speed}} \text{ mi/hr} \times \frac{\text{p. 134-135}}{\text{eff. blade width}} \text{ ft} \times 5280 \text{ ft/mi} \times 1 \text{ ac}/43,560 \text{ ft}^2 \times$$

$$\frac{\text{p. 65}}{\text{work hour factor}} = \text{_____ ac/hr}$$

Scarification:

$$\text{Hourly Production} = \frac{1}{\text{work speed}} \text{ mi/hr} \times \frac{\text{p. 86}}{\text{scarifier width}} \text{ ft} \times 5280 \text{ ft/mi} \times 1 \text{ ac}/43,560 \text{ ft}^2 \times$$

$$\frac{\text{p. 65}}{\text{work hour factor}} = \text{_____ ac/hr}$$

$$\text{Hours Required} = \text{_____ ac} \div \text{_____ ac/hr} = \text{_____ hrs}$$

Data Sources: Cat Handbook, 20th ed.

Project _____

Date _____

WORKSHEET NO. 11

PRODUCTIVITY FOR SCRAPER USE

Earthmoving Activity:

Task defined on Worksheet 3.

Characterization of Scraper Used (type, capacity, etc.):

Most practicable equipment

Description of Scraper Route (haul distance, % grade, etc.):

Effective grade.

$$\text{Cycle time} = \frac{\text{p. 373}}{\text{load time}} \text{ min} + \frac{\text{p. 389-391}}{\text{loaded trip time}} \text{ min} + \frac{\text{p. 373}}{\text{maneuver and spread time}} \text{ min} + \frac{\text{p. 389-391}}{\text{p. 397-399}} \frac{\text{p. 389-391}}{\text{p. 397-399}} \text{ min} = \text{_____ min}$$

$$\text{Cycles/Hour} = \frac{50 \text{ min/hr}}{\text{work hour factor}} \div \text{_____ min/cycle} = \text{_____ cycles/hr}$$

$$\text{Hourly Production} = \frac{\text{p. 363}}{\text{load}} \text{ yd}^3 \times \text{_____ cycles/hr} = \text{_____ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{\text{_____ yd}^3}{\text{volume to be handled}} \div \frac{\text{_____ yd}^3/\text{hr}}{\text{net hourly production}} = \text{_____ hrs}$$

For pusher-scraper combinations, see CAT Handbook p. 802, #8

Data Sources: Cat Handbook, 20th ed.

Project _____

Date _____

WORKSHEET NO. 10

PRODUCTIVITY FOR HYDRAULIC EXCAVATOR USE (BACKHOE OR POWER SHOVEL)

Earthmoving Activities:

Task defined on Worksheet 3

Characterization of the Excavator Used (type, size, etc.):

Smallest practicable equipment.

Description of Excavator Used (loading geometry, materials, etc.):

Productivity Calculations:

$$\text{Net bucket capacity} = \frac{\text{p. 138}}{\text{p. 278}} \text{ yd}^3 \times \frac{\text{p. 234}}{\text{p. 288}} = \text{_____ yd}^3$$

heaped bucket capacity fill factor

$$\text{Net Hourly Production} = \frac{\text{_____ yd}^3}{\text{net bucket capacity}} \times \frac{\text{_____ min/hr}}{\text{work hour factor}} \div \frac{\text{p. 303 min}}{\text{cycle time}} = \text{_____ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{\text{_____ yd}^3}{\text{volume to be handled}} \div \frac{\text{_____ yd}^3/\text{hr}}{\text{net hourly production}} = \text{_____ hrs}$$

Data Sources: Cat Handbook, 20th ed.

Project _____

Date _____

WORKSHEET NO. 9

PRODUCTIVITY AND HOURS REQUIRED FOR TRUCK USE

Earthmoving Activity:

Task defined on Worksheet 3

Characterization of Truck Used (type, size, etc.):

Match equipment with loader; consider volume of material to be handled.

Description of Truck Use (origin, destination, grade, haul distance, truck capacity, etc.):
Effective overall grade (rolling resistance + grade resistance)

Productivity Calculations:

$$\text{Cycle time} = \frac{\text{p. 432-462}}{\text{haul time}} + \frac{\text{p. 432-462}}{\text{return time}} + \frac{*}{\text{total loading time}} + \frac{\text{p. 430}}{\text{dump and maneuver time}} = \text{_____ min}$$

$$\text{Number of Trucks Required} = \frac{\text{_____}}{\text{truck cycle time}} \div \frac{\text{_____}}{\text{total loading time}} = \text{_____}$$

$$\text{Production Rate} = \frac{\text{p. 422}}{\text{truck capacity}} \text{ yd}^3 \times \frac{\text{_____}}{\text{\# of trucks}} \div \frac{\text{_____}}{\text{cycle time}} \text{ min} = \text{_____ yd}^3/\text{min}$$

$$\text{Hourly Production} = \frac{\text{_____}}{\text{production rate}} \text{ yd}^3/\text{min} \times \frac{50 \text{ min/hr}}{\text{work hour factor}} = \text{_____ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{\text{_____}}{\text{volume to be moved}} \text{ yd}^3 \div \frac{\text{_____}}{\text{hourly production}} \text{ yd}^3/\text{hr} = \text{_____ hrs}$$

Data Sources: Cat Handbook, 20th ed.

$$* \frac{\text{truck}}{\text{loader}} = \# \text{ loads} \times \text{time/load}$$

Project _____

Date _____

WORKSHEET NO. 8

PRODUCTIVITY AND HOURS REQUIRED FOR LOADER USE

Earthmoving Activity:

Task defined on Worksheet 3

Characterization of Loader Used (type, size, etc.):

Match with truck and/or dozer; consider volume of material to be handled.

Description of Loader Use (origin, destination, grade, haul distance, etc.):
Data needed if loader is also hauling.

Productivity Calculations:

$$\text{Cycle time} = \frac{\text{p. 557-566}}{\text{haul time (loaded)}} + \frac{\text{p. 557-566}}{\text{return time (empty)}} + \frac{\text{p. 543}}{\text{basic cycle time}} = \text{_____ min}$$

$$\text{Net Bucket Capacity} = \frac{\text{p. 532-534}}{\text{heaped bucket capacity}} \text{ yd}^3 \times \frac{\text{p. 544}}{\text{bucket fill factor}} = \text{_____ yd}^3$$

$$\text{Net Hourly Production} = \frac{\text{net bucket capacity}}{\text{net bucket capacity}} \text{ yd}^3 \div \frac{\text{cycle time}}{\text{cycle time}} \text{ min} \times \frac{50 \text{ min/hr}}{\text{work hour factor}} = \text{_____ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{\text{volume to be moved}}{\text{volume to be moved}} \text{ yd}^3 \div \frac{\text{net hourly production}}{\text{net hourly production}} \text{ yd}^3/\text{hr} = \text{_____ hrs}$$

Data Sources: Cat Handbook, 20th ed.

Project _____

Date _____

WORKSHEET NO. 7

PRODUCTIVITY AND HOURS REQUIRED FOR RIPPER-EQUIPPED DOZER USE

Ripping Activity:

Task defined on Worksheet 4; volume is always in bank cubic yards

Characterization of Dozer and Ripper Used:

Smallest equipment practicable

Description of Ripping (ripping depth, cut spacing, cut length, and material to be ripped):

Depth is 20"-24"; spacing is 10'-13'; material is not considered.

Productivity Calculations:

$$\text{Cycle time} = \left(\frac{\text{p. } * \text{ ft}}{\text{cut length}} \div \frac{88 \text{ fpm}}{\text{speed}} \right) + \frac{\text{p. } 88}{\text{turn time}} = \text{_____ min/pass}$$

$$\text{Passes/hour} = \frac{\text{p. } 65 \text{ min/hr}}{\text{work hour factor}} \div \text{cycle time} = \text{_____ passes/hr}$$

$$\text{Volume cut per pass} = \left(\frac{\text{p. } 80-81 \text{ ft}}{\text{tool penetration}} \times \frac{** \text{ ft}}{\text{cut spacing}} \times \frac{\text{_____ ft}}{\text{cut length}} \right) \div \frac{27 \text{ ft}^3}{\text{yd}^3} = \text{_____ bank yd}^3/\text{pass}$$

$$\text{Ripping Production} = \text{_____ bank yd}^3/\text{pass} \times \text{_____ passes/hr} = \text{_____ bank yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{\text{_____ bank yd}^3}{\text{volume to be ripped}} \div \frac{\text{_____ bank yd}^3/\text{hr}}{\text{hourly production}} = \text{_____ hrs}$$

Calculate separate dozer hauling of ripped material in each lift on Worksheet No. 5, using material factor to account for swell.

Data Sources: Cat Handbook, 20th ed.

* Cut length from plans

** Cut spacing = number of pockets x pocket spacing

Project _____

Date _____

WORKSHEET NO. 6

PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE--GRADING

Earthmoving Activity:

Task defined on Worksheet 1 and/or 4

Characterization of Dozer Used (type, size, etc.):

Usually the same equipment used for backfilling.

Description of Dozer Use (push distance, % grade, blade effective length, operating speed, etc.):

WCF same as that for spoil

Productivity Calculations:

$$\begin{aligned} \text{Operating Adjustment Factor} &= \frac{\text{p. 65}}{\text{operator factor}} \times \frac{\text{p. 65}}{\text{material factor}} \times \frac{\text{p. 65}}{\text{work hour factor}} \times \frac{\text{p. 65}}{\text{grade factor}} \times \frac{\text{p. 61/888}}{\text{weight correction factor}} \times \frac{\text{p. 65}}{\text{production method/blade factor}} \\ &= \frac{\text{p. 65}}{\text{visibility}} \times \frac{\text{p. 65}}{\text{elevation}} \times \frac{\text{p. 65}}{\text{direct drive transmission}} = \end{aligned}$$

$$\text{Hourly Production} = \frac{\text{p. 28}}{\text{speed}} \text{ mi/hr} \times \frac{\text{p. 53-56}}{\text{eff. blade width}} \text{ ft} \times 5280 \text{ ft/mi} \times 1 \text{ ac/43,560 ft}^2 = \text{_____ ac/hr}$$

$$\text{Net Hourly Production} = \text{_____ ac/hr} \times \frac{\text{_____}}{\text{op. adj. factor}} = \text{_____ ac/hr}$$

$$\text{Hours Required} = \text{_____ ac} \div \text{_____ ac/hr} = \text{_____ hrs}$$

Data Sources: Cat Handbook, 20th ed.

Project _____

Date _____

WORKSHEET NO. 5

PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE

Earthmoving Activity:

Task is defined on Worksheet 3

Characterization of Dozer Used (type, size, etc.):

D9,U Consider volume of material; matching to truck/loader time;
distance of push

Description of Dozer Use (origin, destination, grade, haul distance, material, etc.):

Grade affected by type of material, transport method.
WCF developed from type/condition of material.

Productivity Calculations:

$$\begin{aligned} \text{Operating Adjustment Factor} &= \frac{\text{p. 65}}{\text{operator factor}} \times \frac{\text{p. 65}}{\text{material factor}} \times \frac{\text{p. 65}}{\text{work hour factor}} \times \frac{\text{p. 65}}{\text{grade factor}} \times \frac{\text{p. 61/888}}{\text{weight correction factor}} \times \frac{\text{p. 65}}{\text{production method/blade factor}} \times \\ &\frac{\text{p. 65}}{\text{visibility}} \times \frac{\text{p. 65}}{\text{elevation}} \times \frac{\text{p. 65}}{\text{direct drive transmission}} = \end{aligned}$$

$$\text{Net Hourly Production} = \frac{\text{p. 62-64}}{\text{normal hourly production}} \text{ yd}^3/\text{hr} \times \frac{\text{operating adjustment factor}}{\text{operating adjustment factor}} = \text{yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{\text{volume to be moved}}{\text{volume to be moved}} \text{ yd}^3 \div \frac{\text{net hourly production}}{\text{net hourly production}} \text{ yd}^3/\text{hr} = \text{hrs}$$

Data Sources: Cat Handbook, 20th ed.

Project _____

Date _____

WORKSHEET NO. 3
MATERIAL HANDLING PLAN SUMMARY SHEET

Listing of All Earthmoving Activities:

<u>Description</u>	<u>Volume</u>	<u>Origin</u>	<u>Destination</u>	<u>Haul Distance</u>	<u>Grade</u>	<u>Equipment to be Used</u>
1) _____						
2) _____						
3) _____						
4) _____						
5) _____						
6) _____						
7) _____						
8) _____						
9) _____						
10) _____						

Describes fundamental data of earthmoving tasks defined on Worksheet 1; data for each dozer task, loader task, etc. Each item on separate worksheet 5-12. Equipment selection based upon Appendix C and practice.