PERMIT TRACKING FORM

☐ Permit Amendment ☐ Exploration ☐ NOV Abatement ☐ Division Order ☐ Permit Transfer ☐ New Permit
☐ Incidental Boundary Change ☐ Permit Midterm ☐ Permit Renewal ☐ Significant Revision ☐ Bond Release

Permittee	PacifiCorp	Title of Proposal:	**Reclamation Activities at the Miller Canyon Portals**
Mine Name	Cottonwood/ Wilberg Mine		
Permit Number	ACT/015/019		
Permit Change #	AM99B	Copies Required: 7	Received: 2

REVIEW TRACKING

Date Received:

	Reviewer	Due Date	Date Done	Coordinated Reviews	Date Sent	Comments Rcvd.
☒ Project Lead	PAUL			☐ OSM		
☐ Administrative				☐ BLM		
☒ Land Use/ AQ	~~WAYNE~~			☐ US Forest Service		
☒ Biology	PAUL	6/16		☐ Wildlife Resources		
☐ Engineering + BONDING	WAYNE	6/16 ?		☐ Water Rights		
☐ Geology	DAVE	6/16		☐ DEQ		
☒ Soils	~~BOB~~ PRISCILLA	6/15		☐ PFO		
☒ Hydrology	~~DAVE~~ DAVE	6/16	6/16			

Review Comments:

INTERAGENCY TRACKING

	Date	Comments
☒ Secretary to Permit Supervisor	6/9	
☒ Permit Supervisor Notifies Review Staff	6/9	

Tracking Comments

Wayne has the copy
NOC, C.2 forms provided. only 2 CC's received.

Reclamation will be accomplished utilizing helicopter support for transporting materials from the staging area in Cottonwood Canyon to the portal areas in Miller Canyon. The staging area in Cottonwood Canyon is located approximately 2 miles from the junction of State Highway 29 on Emery County Road 506. The Emery County road department occasionally uses this area as a road chip storage area. A road encroachment application has been submitted to Emery County and verbally approved as of June 2, 1999.

The following gives an overview of the reclamation that will be conducted at these portal sites according to the Utah Coal Regulations R645-100 through R645-301-800.

R645-301-100: General

All requirements in this section have been met and can be found in the Cottonwood/Wilberg MRP, Volume 1, pages 1-1 through 1-66.

R645-301-200: Soils

Soil from the Cottonwood/Wilberg waste rock site storage area will be utilized to establish a vegetative cover over the backfilled openings. Attachment #2 shows the location of the soil piles within the old Cottonwood/Wilberg waste rock site. Soil pile "B" will be utilized for reclamation. This soil was excavated in 1995 from the Cottonwood Fan Portal (CFP) area. It was to be used for final reclamation of the fan portal area, but was not needed since a sufficient amount of soil was stored at the CFP site. Samples were taken from piles "A", "B", and "C" and sent to InterMountain Laboratory in Sheridan, Wyoming for analysis. These soils were found to be fair to good when compared to the soil suitability criteria in Appendix A of the *Guidelines for Management of Topsoil and overburden for Underground and Surface Coal Mining – 1988*. The analysis report is found in Attachment #2.

The soil from the CFP site was transported to the old Cottonwood/Wilberg waste rock site and stored in a fenced area as depicted in the figure in Attachment #2. The soil was then covered with curlex blanketing to protect it from wind and water erosion. An approved vegetative seed mix was used on the soil piles to promote biotic growth and provide erosion control.

R645-301-300: Biology

Following backfilling and grading, an approved final seed mixture will be placed on the reclaim site. This seed mixture is identical to the mixture used at the CFP reclamation site and discussed below. Revegetation techniques are as follows:

- After soil is unloaded by helicopter at the portals, the area will be hand raked to ensure that all disturbed slopes are adequately covered with approximately 18" of soil material.

- The surface will be roughened to control runoff and erosion. A straw mulch with netting will be used to sufficently cover the reclaimed area. Litter material (rocks and tree branches) will be placed on top of the netting to secure it protect against erosion.

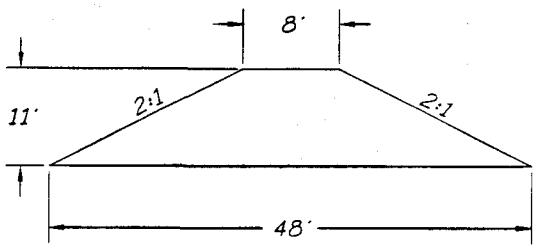
- The seed mixture will be broadcast by hand onto the reclaimed slopes.

- The soil surface will then be turned lightly by hand raking to cover the seeds.

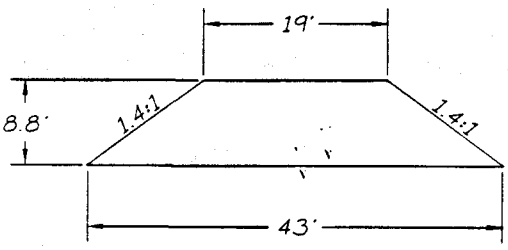
Seed Mixture - Final Revegetation for the Miller Canyon Portal Breakouts

Common Name	Scientific Name	Lbs/Acre PLS*
Grasses		
Western wheatgrass	Agropyron smithii	3
Bluebunch wheatgrass	Agropyron spicatum	3
Indian ricegrass	Oryzposis hymenoides	3
Needle and thread grass	Stipa comata	1
Thickspike wheatgrass	Agropyron dasystachyum	1
Great Basin wildrye	Elymus ciaereus	2
Forbs		
Blueleaf aster	Aster glaucodes	.5
Utah sweet vetch	Hedysarum boreale	1
Lewis flax	Linum lewisii	1
Globemallow	Sphaeralcea coccinea	.5
Yarrow	Achillea millefolius	.5
Palmer penstemon	Penstemon palmeri	1
	Total	**17.5**
Shrubs		
Serviceberry	Amelanchier alnifolia	1
Fourwing saltbush	Atriplex canescens	2
Green Mormon tea	Ephedra viridis	1
Wyoming big sagebrush	Artemesia wyoningensis	5
Big white rabbitbrush	Chrysothamunus nauseosus var. albicaulis	5
	Total	**5**

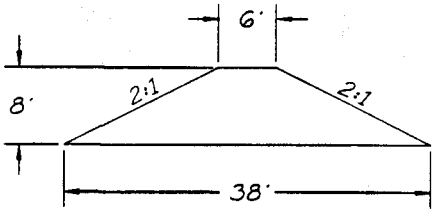
CROSS SECTIONS
SCALE: 1"=20'



TYPICAL CROSS SECTION
THRU PILE A



TYPICAL CROSS SECTION
THRU PILE B



TYPICAL CROSS SECTION
THRU PILE C

PROPERTY BOUNDARY

FENCE

POND

INCORPORATED
EFFECTIVE
JUL 17 1999
UTAH DIVISION OIL, GAS AND MINING

6790

6780

FENCE

SOIL PILES C

75'

ROCK STORAGE PILE

SOIL PILE A

180'

SOIL PILE B

34'

6800

DRAINAGE DITCH

6820

ACCESS ROAD

WILBERG MINE HAUL ROAD

PROPERTY BOUNDARY

SUPERSEDED
EFFECTIVE:

CAD FILE NAME/DISK#: F:\USERS\KJL\CW\KS1517A

PILE A AND **PILE C** ARE NATIVE SOILS FOR THE OVERLAND CONVEYOR RECLAMATION

PILE B IS SUBSOIL FOR MILLER CANYON PORTALS AND COTTONWOOD RECLAMATION

* DISTANCE WILL VARY DEPENDING ON EXACT QUANTITY STOCKPILED.

ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528

COTTONWOOD MINE
OVERLAND CONVEYOR
SUBSOIL & NATIVE SOIL STORAGE

DRAWN BY:	K. LARSEN	KS1517A	
SCALE:	1" =100'	DRAWING #:	
DATE:	DEC. 15, 1994	SHEET 1 OF 1	REV. ---

Cottonwood/Wilberg Waste Rock Site Soil Pile Quantities.

Pile B (see location map)	Cubic Feet
Volume Before Reclamation of Miller Canyon Portals	230.13
Volume After Reclamation of Miller Canyon Portals	Approx. 209.13

Reclamation of Miller Canyon portals will require approximately 7 cu. yd. of soil material from the Cottonwood/Wilberg waste rock site soil pile storage. This soil will be used to cover rock material backfill. A filter liner will segregate the two fill materials.

APPENDICES

I - Coal Lithologic Logs
  a. Drill Hole EM-23C
  b. Drill Hole EM-12C
  c. Drill Hole A-25
  d. Drill Hole B-124
II - Field Data For the Vegetation Reference Areas
III - Groundwater Hydrology
IV - Cottonwood/Wilberg Facility Final Reclamation Earthwork Quantities, Cross-Sections and Stability Analysis
V - Report of Engineering Geology Study (Dames & Moore)
VI - Overburden Analysis
VII - Underground Development Waste Plan
VIII - Drainage Systems
  Dwgs. 7704-C70A, C71A, C81A, C89A and C90A
IX - Road Plans and Cross-Sections
  Dwgs. 7704-C50 thru C64
X - Road Construction Variance
XI - Geotechnical Study - Stacking Tube
XII - Blasting Plan
XIII - Hydrologic Analysis of Disturbed Area Runoff Control Cottonwood/Wilberg Mine Portal Site

  and

  Hydrologic Analysis of Undisturbed and Disturbed Area Runoff Control Cottonwood Canyon Fan Portal Site.
  (Hansen, Allen & Luce, Inc.)
XIV - Photographs of Existing Structures
XV - Hydrologic Procedures and Calculations with Drainage Map CM-10379-EM Final Reclamation.
XVI - Subsidence Monitoring Plan
XVII - Safety Factor Calculations for Road and Impoundment Embankments
XVIII - Stability Report - Cottonwood Fan Portal
XIX - Hydrological Calculations - Cottonwood Fan Portal
XX - UP&L Mining Division, Mine Permit Hydrologic Section (See Volume 9)
XXI - Waste Rock Storage Facility (See Volume 10)

MILLER CANYON INTAKE PORTALS

The Miller Canyon intake portals were developed in October of 1981. This facility consists of three (3) portals (8 ft. x 20 ft.) on 100 ft. centers. The portals were used for intake purposes until the Wilberg Mine fire in December 1984. At that time they were temporarily sealed. The portals were subsequently sealed permanently in 1987.

The seal in the east portal is provided with a water monitoring pipe. Intermittent small quantity discharges occur at this point. The discharges are monitored in accordance with stipulations of NPDES UT-0022896-04.

COTTONWOOD CANYON DIESEL AND TUBE CONVEYOR PORTALS

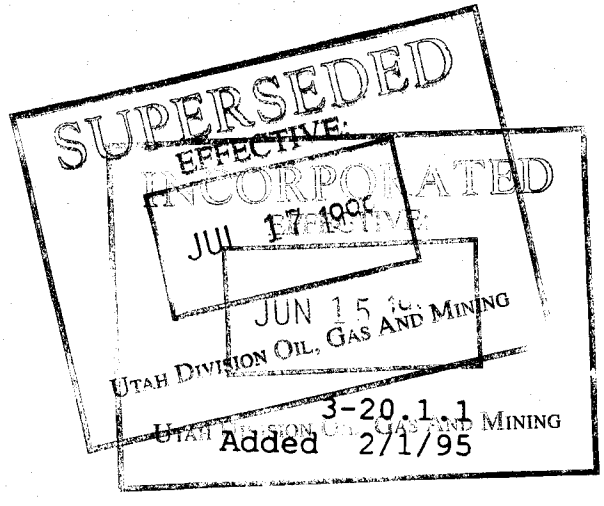
The Cottonwood Canyon diesel and tube conveyor portals were developed in 1994-1995. The portals are used for underground travel and conveyance of coal from the Trail Mountain Mine to the Cottonwood Mine surface facilities. (See Appendix III for reclamation cross-sections, soil, vegetation reports and culvert size calculations.) Reclamation of this area will use the same seed mixture listed in Part 4 of this plan. (See Figure 5 for Soil Storage Location.)

All surface drainage will be directed and treated through a silt fence before entering an eighteen inch (18") corrugated metal pipe (cmp) that will be placed under the concrete pad to allow surface flow from the existing road ditch to continue. The conveyor pad will be constructed of dirt and gravel with a dirt berm. All surface

drainage will be directed and treated through a silt fence before entering a six inch (6") corrugated metal pipe (cmp) which will direct the flow down the slope from the pad and into an existing thirty-six inch (36") undisturbed inlet.

COTTONWOOD FAN PORTAL

In addition to the intake breakouts in Channel Canyon, which



distance of approximately 700 feet. The existing road will be cleared of rubble and extended 600 feet to provide service access to the fan portal and equipment. The majority of the access road has a grade between 1% and 8%. Approximately 85 feet of the road has an existing grade of 17%. This will be regraded to provide a maximum of 8%. See Drawing CM-10322-CP and CM-10348-CP. The road will not be surfaced.

The existing sedimentation basins, located on the east side of Cottonwood Canyon road will be used to reduce suspended solids loading of storm runoff water from the disturbed portal area. The sedimentation basins were constructed during exploratory excavations. See Drawing 8029-L1.

The North Pond is located south of the stockpile area and will collect the runoff from these two piles until revegetation has been established in this area (Drawing CM-10353-CP).

The South Pond is located at the northwest corner of the disturbed portal area and will collect runoff from the portal site (Drawing CM-10351-CP).

In addition, an existing diversion ditch, constructed above the exploratory excavation at the same time as the temporary sedimentation basins will be used to

divert runoff around the disturbed portal area. The diversion ditch runs in a north-south direction for a distance of 600 feet beginning at an elevation of 7,450 feet at its north end and declining to 7,375 feet at its southern extremity.

Portal Facilities

Proposed portal facilities include the mine ventilation fan, fan drive and enclosure, fuel oil storage tank, service road, incoming power line, and electrical power transformer. Drawings 8029-L2 and CM-10335-CP.

The mine ventilation fan will be an axial fan with 500,000 cfm capacity. The fan will be oriented such that the exhaust will be directed down canyon (south). The fan will normally be driven by a 600 hp, 900 rpm electric motor. A diesel engine with automatic start will also be provided for emergency backup drive capability.

The fan and its drives will be supported on and anchored to concrete foundations. Drive components will be enclosed in a steel building.

A suitable ventilation duct will be installed between the fan intake and the mine portal.

Electrical power for the fan will be supplied from an existing 25 kv line paralleling the canyon road, via pole-mounted lines to a 4160 v, three-phase transformer located on a ten foot square concrete pad.

The fuel tank for the backup diesel engine will be located above the fan portal on level ground approximately 100 feet from the ventilation fan and situated to provide gravity feed. Fuel oil capacity will be 1,000 gallons stored in a single horizontal cylindrical steel tank with surrounding berm sufficient to contain contents if ruptured.

The fan pad will be constructed by cutting and filling to create a bench approximately 150 feet long and 80 feet wide at its widest point. Fill material will be spread and compacted in layers approximately one foot thick. Maximum side slope will be 1v:1.5h. Minimum static safety factor for slopes throughout the project site will equal or exceed 1.5. OSM noted that the May 12, 1980 Rollins report indicated a triaxial shear test would be useful in verifying the shear strength and suggested that the test be conducted. The tests were conducted and the results are included. The results verify the 1.5 safety factor. (Ref: Appendix XVIII, Rollins engineering report.) Cut and fill quantities will balance for the fan pad and the service access road. See Drawing 8029-L2 for general layout.

Upon approval and prior to construction, applicable construction permits will be obtained from Emery County. NPDES Permit No. UT-0022896 has been issued for the Wilberg Mine and includes the sedimentation ponds at the Cottonwood Canyon Portal. By letter dated November 3, 1981, the Utah

Department of Health, Division of Environmental Health has certified its compliance with State Water Quality Standards.

Water

No fresh water will be required in the operation of the proposed Cottonwood Canyon Portal nor will any waste water be generated or discharged. Measures to protect the hydrologic balance will take the form of diversions, ditches and sedimentation ponds.

Mine Water

There will be no mine water discharge from the Cottonwood Canyon fan portal.

COTTONWOOD CANYON FAN PORTAL

HYDROLOGICAL DESIGN

The present disturbed area resulted as an action approved under a division exploratory license and subsequently included in the Cottonwood/Wilberg coal mining permit. Drainage control for the area is accomplished using diversion ditches, culverts, sediment basins and rock gabion pooling basins.

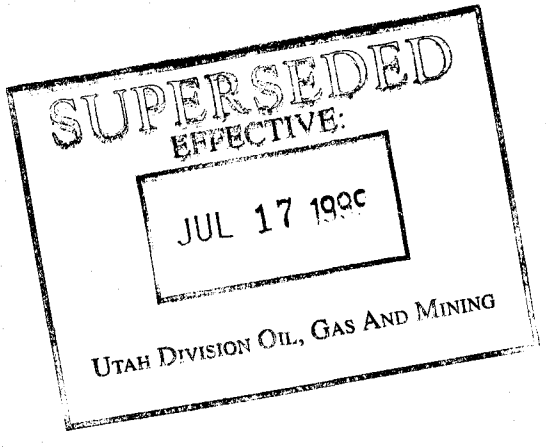
Map 2 Appendix XIII shows the general layout of the drainage system. The undisturbed drainage ditches are labeled UD-1, UD-2 and UD-3. There are three areas that are diverted past the disturbed area: UA-1, UA-2, and UA-3.

Drainage from the disturbed area DA-1 is treated by the North Sediment Basin. Drainage from disturbed areas DA-2 and DA-3 area treated by the South Sediment Basin.

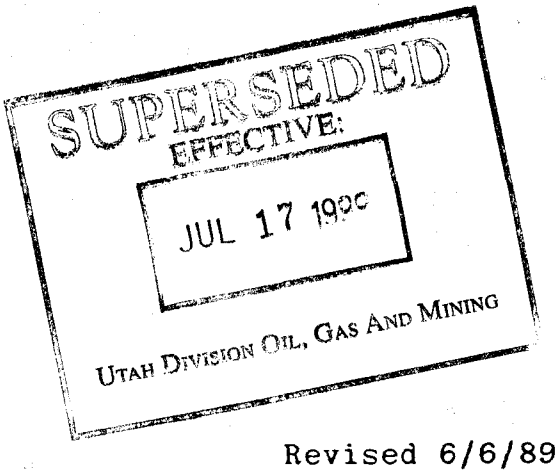
Drainage from the disturbed area DA-4 is treated by a series of 4-each rock gabion sediment basins equally spaced along the toe of the disturbed slope. This method of treatment was agreed to during construction of the county road to Trail Mountain Coal Mine.

The sediment basins are cleaned when sediment reaches the 60% level of the one-year sediment volume. The sediment level is determined during quarterly inspections. The rock gabion basins are cleaned as needed.

See Appendix XIII for calculations and details of the designs for the drainage system.



Pages 3-27 through 3-30B have been deleted.



RECLAMATION PLAN

Structure Removal

Once mining has ceased, estimated 2022, the surface facilities will be dismantled and removed from the permit area.

Starting at the mine portals, all belt lines, crushing and screening systems, electrical systems, truck laded surface building and fan installations will be torn down and hauled from the permit area.

The concrete silo will be torn down, broken up and buried against the east highway cut in the lower parking lot. All other concrete foundations that would be above final grade will be removed and buried with the silo material.

Portal Sealing

Final stages of mining (second mining), as pillars are extracted near the portal entrances inside, office and warehouse facilities will be dismantled and portal sealing will begin. Wilberg's portal entries are all updip of the extracted seam and require no drains or special hydrological containment seals. (see Protection of the Hydrological Balance section). Seals are proposed as shown on Figure 1.

Because of their remote and inaccessible location from the surface, the following portals and breakouts will have to be completed from inside the mine: Channel Canyon , 7th West "Miller Canyon", Cottonwood Canyon diesel and tube conveyor portals. The Channel Canyon portals were reclaimed in August of 1997 and Phase III Bond Release for the area was approved by the Division on March 26, 1998. The Miller Canyon portals were sealed from inside the mine in 1987 and will be reclaimed sometime in the near future. The Cottonwood Canyon diesel and tube conveyor portals are presently utilized and will also be sealed sometime in the future.

ENERGY WEST Mining Co.
PO Box 310
Huntington, Utah 84528

June 4, 1999

Utah Coal Program
Utah Division of Oil, Gas, and Mining
Price Field Office
College of Eastern Utah
457 East 400 North
Price, Utah 84501

Attn: Bill Malencik

Re: Notice to Conduct Reclamation Activities at the Miller Canyon Portals, PacifiCorp, Cottonwood/Wilberg Mine, ACT/015/019, Emery County, Utah

PacifiCorp, by and through its wholly-owned subsidiary, Energy West Mining Company ("Energy West") as mine operator, hereby submits a notice of intent to reclaim the portal breakouts in Miller Canyon. Reclamation will begin during the week of June 21, 1999 and progress until the work is completed. Energy West estimates that the project will take approximately three days to complete.

The Miller Canyon portals were developed as intake portals in October of 1981 (refer to location and plan view drawing in Attachment #1). This facility consist of three 8 ft. x 16 ft. portals on 100 ft. centers. The portals were used for intake purposes until the Wilberg Mine fire in December 1984. At that time they were temporarily sealed. The portal furthest east (# 1 portal) was reopened in 1985 for exploration purposes after the mine fire. The portals were subsequently sealed permanently (MSHA approved) in 1987.

The #1 portal is provided with a 2 inch water monitoring pipe. Small quantity discharges occur at this point. The discharges are monitored in accordance with stipulations in the UPDES Permit, UT-0022896-004. No discharges have been recorded at site 004 since 1996.

A recent field investigation of the portals revealed that there has been some caving of the portal openings. The pipe in the #1 portal has been pinched off allowing mine discharge water to flow freely over the rock ledge to the canyon floor. The total disturbance of these portals is approximately 0.02 acres. There is currently no reclamation plan for the Miller Canyon breakouts in the approved MRP.

Huntington Office:
(435) 687-9821
Fax (435) 687-2695
Purchasing Fax (435) 687-9092

Deer Creek Mine:
(435) 687-2317
Fax (435) 687-2285

Trail Mountain Mine:
(435) 748-2140
Fax (435) 748-5125

Reclamation will be accomplished utilizing helicopter support for transporting materials from the staging area in Cottonwood Canyon to the portal areas in Miller Canyon. The staging area in Cottonwood Canyon is located approximately 2 miles from the junction of State Highway 29 on Emery County Road 506. The Emery County road department occasionally uses this area as a road chip storage area. A road encroachment application has been submitted to Emery County and verbally approved as of June 2, 1999.

The following gives an overview of the reclamation that will be conducted at these portal sites according to the Utah Coal Regulations R645-100 through R645-301-800.

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The soil from the CFP site was transported to the old Cottonwood/Wilberg waste rock site and stored in a fenced area as depicted in the figure in Attachment #2. The soil was then covered with curlex blanketing to protect it from wind and water erosion. An approved vegetative seed mix was used on the soil piles to promote biotic growth and provide erosion control.

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Seed Mixture - Final Revegetation for the Miller Canyon Portal Breakouts

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Yarrow	Achillea millefolius	.5
Palmer penstemon	Penstemon palmeri	1
	Total	**17.5**
Shrubs		
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Fourwing saltbush	Atriplex canescens	2
Green Mormon tea	Ephedra viridis	1
Wyoming big sagebrush	Artemesia wyoningensis	.5
Big white rabbitbrush	Chrysothamunus nauseosus var. albicaulis	.5
	Total	**5**

The total disturbance is approximately 0.02 acres. This equates to approximately 0.5 lbs. of pure live seed to complete revegetation at the Miller Canyon portals.

Fish and Wildlife

Fish and wildlife information is provided on pages 2-159 through 2-174 in Volume 2 of the Cottonwood/Wilberg MRP.

A raptor survey was conducted in May 1999 of the Miller Canyon area. One active eagle nest was located in the canyon approximately ½ mile west of the portals and 1000 feet higher in elevation. Chris Colt (Division of Wildlife Resources – Price District) has been informed of the reclamation activities to be conducted in the canyon. Refer to Attachment #1 for nest location.

Through the establishment of a mine discharge in portal #1, a riparian habitat has formed. Final reclamation of the portals consist of establishing french drains in each of the portals. A french drain will conduct mine discharge from the portals to the rock ledge directly outby the portals. Mine discharge will flow freely down the rock face to the canyon floor. Historically the discharge dissipates completely within approximately 100 feet down the canyon. The mine discharge has been a good water source for wildlife that occupies the area in and around Miller Canyon. Typical springtime discharge quantities are less than approximately 2.0 gpm and decrease as the year progresses. A water sample of the discharge was taken in May 1999 and found that it meets drinking water standards for TDS. The water analysis is found in Attachment #3. Historical records of baseline and operational sampling is included in this attachment. Minimum, maximum, and mean values of various parameters are displayed in these reports. A Bioassay toxicity testing report from 1995 and 1996 is also included. Water quality is presented in more detail in the R645-301-700: Hydrology Section.

R645-301-400: Land Use and Air Quality

Post-mining land use for the Cottonwood mine is grazing and wildlife. Given the fact that the portals are located on steep (nearly vertical) rock outcrops, this area is only considered for wildlife. It is highly unlikely that cattle could access the steep ledges in and around the portal areas. Recent site visits found no signs of any cattle grazing in the immediate area.

R645-301-500: Engineering

As stated earlier, backfilling and grading will be conducted utilizing helicopter support. A staging area will be located along side County Road 506 in Cottonwood Canyon. Rock and soil material stored at this area will be lifted out by helicopter using a long-line belly-dump and/or cargo net to haul this material. The material will be dumped at each of the three portals.

Approximately 48 yds^3 of total material (soil and rock) will be needed at each portal. Of this material, it is estimated that 41 yds^3 will be rock material of various sizes. Larger rock material will be used first. Smaller material will be used to fill in the voids of the larger material. The idea is to create a french drain that will enable mine discharge to flow from the portal area. Refer to the typical cross-section in Attachment #4.

After the helicopter dumps its load at the portal, the rock material will be moved by hand to insure all areas of the portal are covered. The rock material will be pushed back into the portal as far as possible for complete closure.

After the rock material backfill is in place, a filter liner will be laid down over the top of it. The filter material is used as a barrier so soil cannot infiltrate the rock material. Infiltration of soil will eventually clog the french drain, possibly causing discharges in undesired locations. Soil material will be laid down to a thickness of approximately 18". Litter material will be placed on the newly graded soil that will guard against erosion. The area will be revegetated as outlined in R645-301-300: Biology. A digital rendition of the reclamation sequences is displayed in Attachment #5.

Lastly, the 2 inch water monitoring pipe that runs in excess of 500 feet down the canyon will be removed. The pipe will be removed by helicopter and disposed.

R645-301-600: Geology

This section provides useful geologic information for understanding ground water and surface water resources in the area. These resources are dependent on the geology of East Mountain. Refer to the following hydrology section for a full discussion of water related resources.

Stratigraphy of the Miller Canyon Portal Area.

The rock formations exposed in the Miller Canyon Portal area are restricted to the Upper Cretaceous period. The formations, in ascending order, Star Point Sandstone, Blackhawk. The Star Point Sandstone, which is a prominent cliff former, consists of several eastward thinning marine sandstone tongues of medial Campanian age (Clark, 1928). Westward thinning wedges of the Masuk Shale interfinger with the basal tongues of the Star Point Sandstone. The three members are the basal Panther Sandstone, the middle Storrs Sandstone, and the upper Spring Canyon Sandstone. These sandstone units are generally separated from each other by westward projecting tongues of Mancos Shale. The basal Panther Sandstone is approximately 100 feet thick and consists of massive, well indurated, crossbedded delta front sandstones. The Storrs Sandstone is located about 120 feet above the top of the Panther Member and consists of 50 feet of soft, friable sandstone. The Spring Canyon is located about 80 feet above the top of the Storrs Member and consist of 100 feet of massive, fine to medium grain, crossbedded delta front sandstones. Even though the Star Point formation exists

throughout the entire East Mountain property, the low permeability and lack of recharge limit its usefulness as a water producing aquifer. Permeability and the limiting factors of recharge, i.e., very little outcrop exposure and limited vertical groundwater migration, are caused by the mudstone layers of the upper formations.

The Blackhawk Formation overlies the Star Point Sandstone and is 625-800 feet thick in the Miller Canyon Portal area. The Blackhawk consists of alternating sandstones, siltstones, shales and coal deposited in a deltaic environment. Although coal is generally found throughout the Blackhawk Formation, the economic seams are restricted to the lower 150 feet of the formation. The Hiawatha seam was naturally exposed prior to development mining at the Miller Canyon. The seam is approximately seven and half (7 ½) feet thick and consist of several mudstone splits in the upper portion of the seam. The sandstones contained within the Blackhawk Formation are fluvial and increase in number in the upper portions of the formation. Many of the tabular sandstone channels form local perched water tables. Several small seeps occur along the boundary of the Blackhawk and Star Point Sandstone formations.

Structure – Miller Canyon Portal Area.

There are no identified faults or major folds within the Miller Canyon Portal area. The axis of the Straight Canyon Syncline lies to the northwest of the Miller Canyon Portal area (See Volume 8 Structural Contour Map - Hiawatha Seam). The Hiawatha seam in the Miller Canyon area has a dip of approximately 2° to the northwest.

R645-301-700: Hydrology

This section provides a detailed description of the hydrology, including groundwater and surface water of the Miller Canyon area.

To provide necessary ventilation to the western portion of the Wilberg Mine, entries were developed in 1981 from the 3rd South Mains to Miller Canyon. Ventilation breakouts in Miller Canyon consist of 3 portals in the Hiawatha Seam located near the head of Miller Canyon approximately one hundred and fifty (150) feet above the canyon floor. Topography in the area is extremely steep and access is limited. During development of 7th West and 4th South, several sandstone channel systems were encountered which produced minor quantities of groundwater (<20 gpm). Earth berms were constructed at the portal locations to prevent the discharge of

intercepted groundwater. PacifiCorp (Utah Power & Light Company) applied for additional NPDES (UPDES) discharge point (location 004) in 1982 and started reporting in the first quarter of 1983. Discharge from the portals was initiated after the sealing in 1984. Due to the steep topography, a

2" discharge pipe was installed to assist in sample collection. Discharge from the Miller Canyon breakouts average less than 20 gpm and steadily decreased from 1994 to 1996 to less than 5 gpm. No discharge has been reported from the portals since August 1996. Field investigations conducted in May 1999 identified minor seeps at portals two and three, and discharge from portal one was estimated at less than 3 gpm. Flow from portal area reaches the canyon floor, but dissipates within 100 feet from the portal area.

Groundwater Resources - Seeps

The characteristics and usefulness of a groundwater resource are dependent upon the geology of the water-bearing strata and on the geology and hydrology of the recharge area. Groundwater movement and storage characteristics are dependent on the characteristics of the substratum. To facilitate an understanding of groundwater of the East Mountain property including the Miller Canyon area refer to Volume 9 - Hydrologic Section for a complete discussion of pertinent regional hydrologic and geologic features.

Groundwater resources of the Miller Canyon area are limited to a series of seeps located near the formational contact between the Blackhawk and Star Point Sandstone formations and the gravity discharge from the old mine workings. The source of the groundwater seeps is from the winter snowpack which melts and infiltrates the lower Blackhawk Formation through vertical fractures. The groundwater flows down vertically until it intersects mudstone layers above and below the Hiawatha seam. Groundwater flow continues horizontally downdip through the permeable sandstone channels located above the Hiawatha seam and the upper member of the Star Point Sandstone Formation until it intersects the land surface in the form of seeps. Flow from the seeps is insufficient for quantity and quality determination. During reclamation, to facilitate post mine gravity discharge from the portals, french drains will be installed to prevent slope failure due to saturation of the fill (refer to Attachment #4 for a typical of a french drain). Construction of the french drain will consist of a layer of rock material to a depth of at least 6" to cover the affected area. A filter fabric will be placed over the drain rock to prevent contamination of the drain system. The size of the drain systems will be dependent upon topographic constraints along with size of the seep.

Post Mine Gravity Discharge

Gravity discharge from intercepted groundwater in the Wilberg Mine will occur as seeps from the individual portals. As mentioned early, several small seeps occur along the formational boundary between the Blackhawk and Star Point formations. Flow from the formational seeps is insufficient for sample collection. Surface Water Resources

The PacifiCorp permit area including the Miller Canyon portal area is located in the headwater region of the San Rafael River Basin. The surface drainage system of the Miller Canyon area is

confined exclusively to the Cottonwood Canyon Creek drainage system (refer to Vol. 9 - Hydrologic Section: Map HM-1). For a complete discussion of the surface water systems of the East Mountain property including the Miller Canyon refer to Volume 9 - Hydrologic Section.

The Miller Canyon area consists of approximately 0.02 acres located on a south-facing slope in the Miller Canyon drainage. Surface flow prior to the mine development in 1981 consisted of sheet flow downslope until intersecting Miller Canyon drainage system.

Surface Water Quality

Miller Canyon is an ephemeral drainage which flows to Cottonwood Canyon Creek. The portals are located approximately one half (1/2) mile from the confluence of Miller Canyon and Cottonwood Canyon Creek. In 1983 the portal location was incorporated into the Wilberg/Cottonwood UPDES permit: UT-0022896, as outfall location 004. Discharge water quality from the portal area is monitored according to UPDES permit stipulations. Discharge has not occurred from the portal area since 1996. Water quality and quantity of the receiving stream - Cottonwood Canyon Creek, is monitored above and below the Miller Canyon at site SW-2 and SW-3 as specified in Appendix A of Volume 9 - Hydrologic Section . Results of the monitoring including hydrographs and water quality statistics are reported in the Annual Hydrologic Report.

Sampling and Analysis

Water quality sampling and analysis of samples collected by PacifiCorp were done according to the "Standard Methods for the Examination of Water and Wastewater." Attachment #3 consists of historic water quality data for the Miller Canyon discharge. Also within Attachment #3 is a resent quality sample analysis. This sample compared well with the historical data, which suggests a stabilization of water quality from the mine water discharge.

In addition to the routine water quality sampling, PacifiCorp conducted bioassay sampling to satisfy the UPDES permit. Samples collected from Miller Canyon passed the fifty (50) percent mortality certieria established in the permit. This information is also found in Attachment #3.

R645-301-800: Bonding and Insurance

Currently, the Cottonwood/Wilberg Mine reclamation bond is $2,071,098.00. Costs associated with this project will not affect the bond liability. Insurance is provided for and was updated in February 1999.

Based on extensive research by Energy West, all parameters necessary to this reclamation project have been covered and are included in the preceding text. If you have any questions or concerns regarding this notice to conduct reclamation operations, please contact myself at 435-687-4720 or Dennis Oakley at 435-687-4825.

Sincerely,

Chuck Semborski
Geology/Permitting Supervisor

Enclosures

DCO/dco/cas

Cc: Jeff DeFreest – USFS - Price District
Chris Colt - DWR – Price District
Joe Helfrich – DOGM – Salt Lake City
Blake Webster – IMC w/o Attachments
Carl Pollastro – EWMC w/o Attachments
File

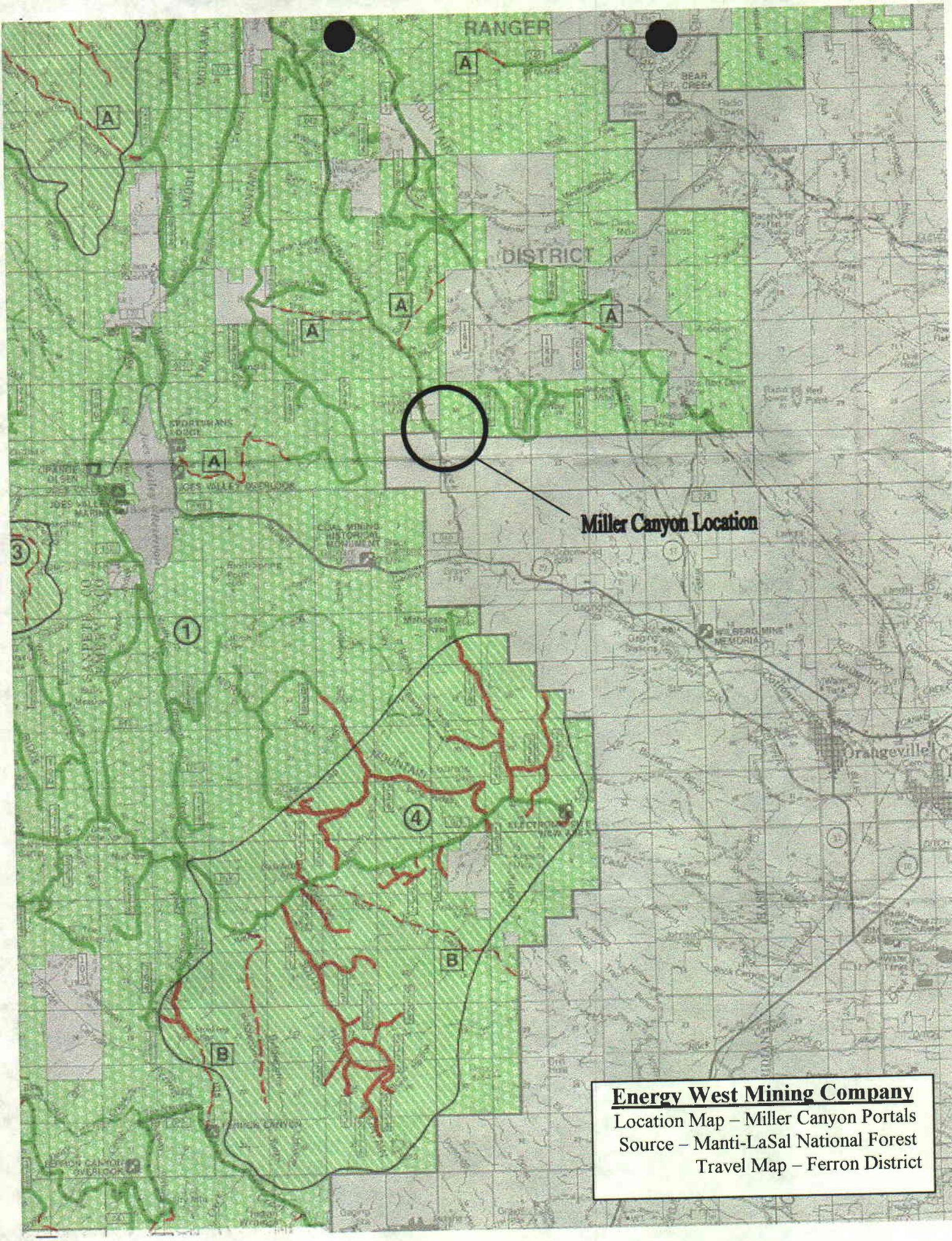
PacifiCorp

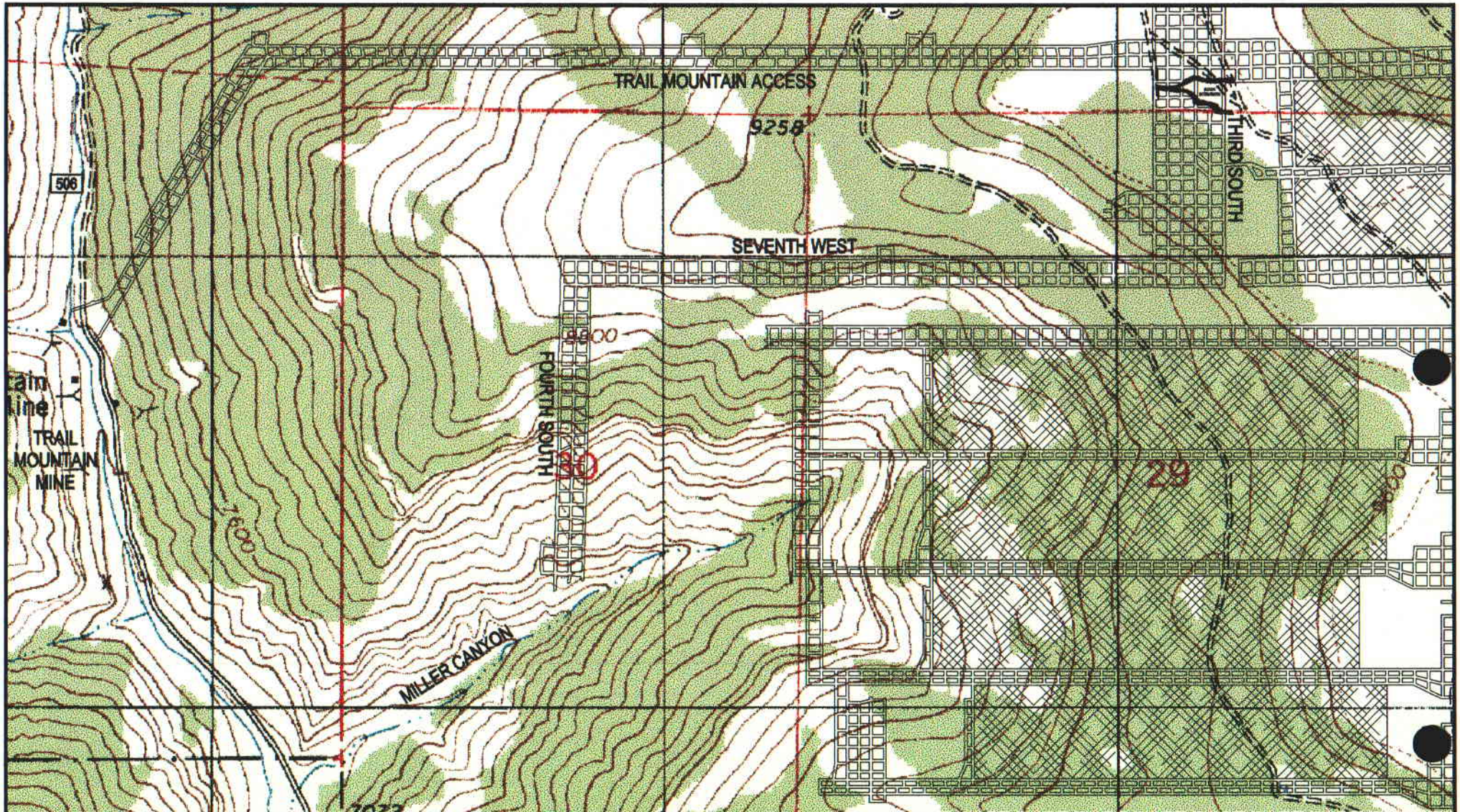
Cottonwood/Wilberg Mine

ACT/015/019

Miller Canyon Reclamation

Attachment #1


RANGER
DISTRICT
Miller Canyon Location
Orangeville
Energy West Mining Company
Location Map – Miller Canyon Portals
Source – Manti-LaSal National Forest
Travel Map – Ferron District

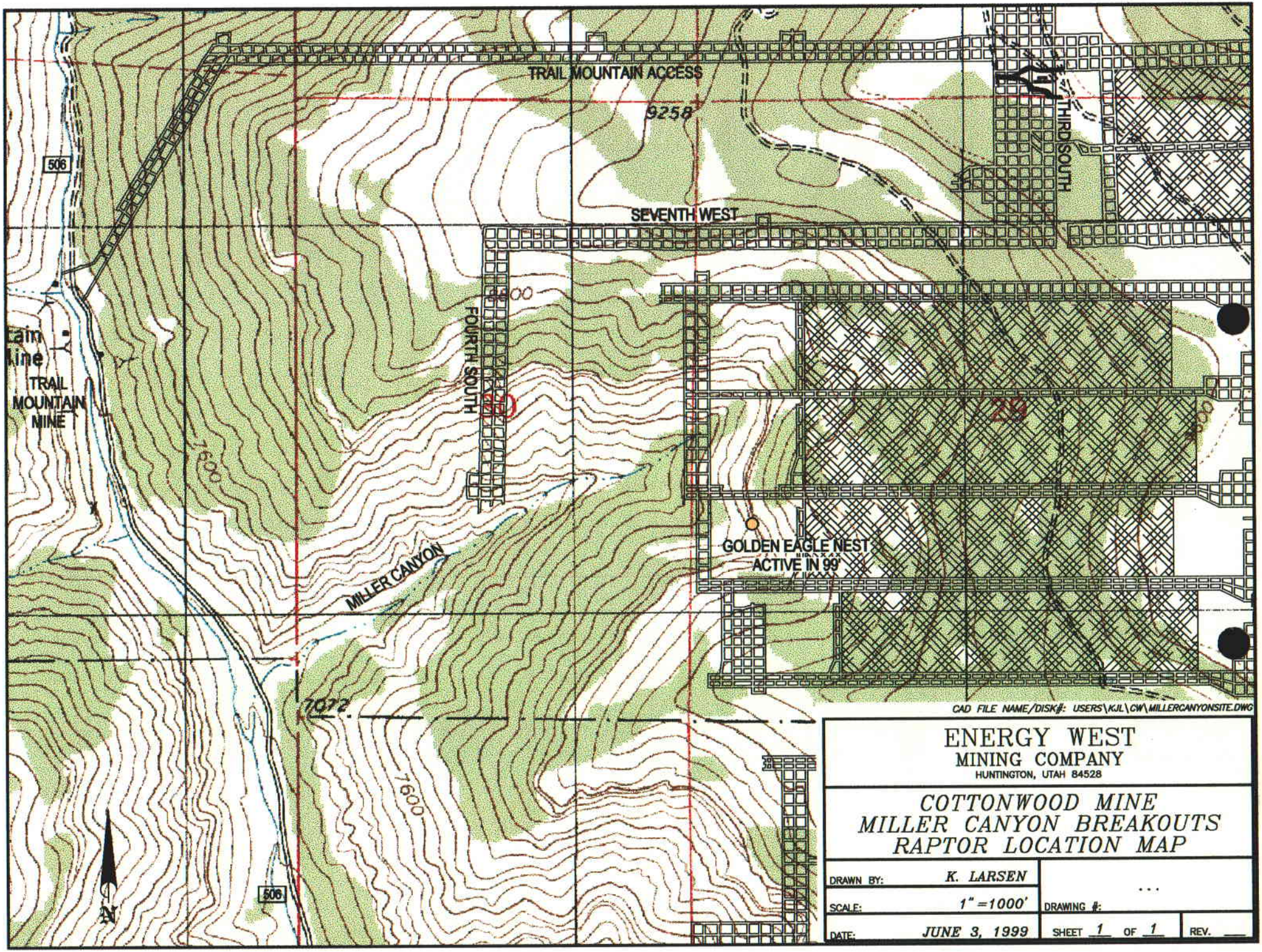


CAD FILE NAME/DISK#: USERS\KJL\CW\MILLERCANYONSITE.DWG

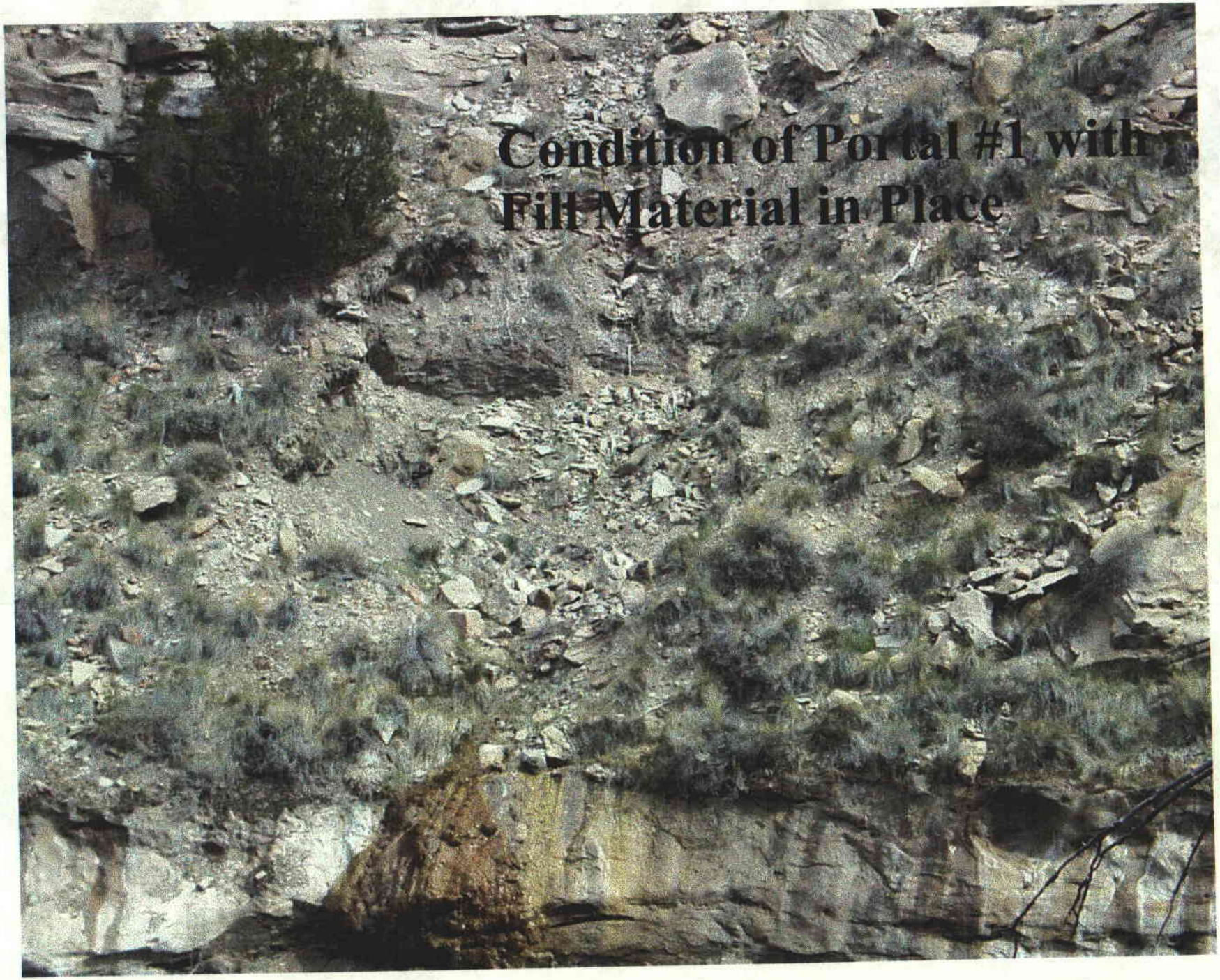
ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528

COTTONWOOD MINE
MILLER CANYON BREAKOUTS
GENERAL LOCATION MAP

DRAWN BY:	K. LARSEN	...	
SCALE:	1" =1000'	DRAWING #:	
DATE:	JUNE 3, 1999	SHEET 1 OF 1	REV. ___


TRAIL MOUNTAIN ACCESS
9258
THIRD SOUTH
SEVENTH WEST
506
FOURTH SOUTH
TRAIL MOUNTAIN MINE
7600
MILLER CANYON
GOLDEN EAGLE NEST
ACTIVE IN 99
29
7072
7600
506
N
CAD FILE NAME/DISK#: USERS\KJL\CW\MILLERCANYONSITE.DWG
ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528
COTTONWOOD MINE
MILLER CANYON BREAKOUTS
RAPTOR LOCATION MAP
DRAWN BY: K. LARSEN
SCALE: 1" =1000'
DRAWING #: ...
DATE: JUNE 3, 1999
SHEET 1 OF 1
REV.


Present Condition of
Portal #1


Condition of Portal #1 with
Fill Material in Place


Condition of Portal #1 with
Soil Material in Place


Condition of Portal #1 with
Litter Material in Place and
Mature Vegetation

PacifiCorp

Cottonwood/Wilberg Mine

ACT/015/019

Miller Canyon Reclamation

Attachment #2

Inter-Mountain Laboratories, Inc.
1633 Terra Avenue
Sheridan, Wyoming 82801
Tel. (307) 672-8945

ENERGY WEST MINING COMPANY
HUNTINGTON, UTAH

April 24, 1995

Lab No.	Location	Depths	pH	EC mmhos/cm @ 25°C	Saturation %	Calcium meq/l	Magnesium meq/l	Sodium meq/l	SAR	Sand %	Silt %	Clay %	Texture
119907	CTW0195		7.3	4.69	37.0	13.6	31.2	21.6	4.56	40.4	41.6	18.0	LOAM
119908	CTW0295		7.6	3.47	35.7	9.03	24.1	11.2	2.74	36.4	42.6	21.0	LOAM
119909	CTW0395		7.5	3.60	34.7	8.88	23.1	14.0	3.49	32.4	44.6	23.0	LOAM

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, Exch= Exchangeable, Avail= Available

imL

Inter-Mountain Laboratories, Inc.

1633 Terra Avenue

Sheridan, Wyoming 82801

Tel. (307) 672-8945

ENERGY WEST MINING COMPANY
HUNTINGTON, UTAH

April 24, 1995

Lab No.	Location	Depths	Total Organic Carbon %	Total Sulfur %	T.S. AB t/1000t	Neut. Pot. t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyrS AB t/1000t	PyrS ABP t/1000t
119907	CTW0195		14.0	0.09	2.81	391.	388.					
119908	CTW0295		9.2	0.05	1.56	403.	402.					
119909	CTW0395		9.5	0.04	1.25	382.	381.					

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neut. Pot.= Neutralization Potential

imi
Inter-Mountain Laboratories, Inc.
1633 Terra Avenue
Sheridan, Wyoming 82801
Tel. (307) 672-8945

ENERGY WEST MINING COMPANY
HUNTINGTON, UTAH

April 24, 1995

Lab No.	Location	Depths	P ppm	K ppm	Boron ppm	Selenium ppm	Total Kjeldahl Nitrogen %	1/3 bar	15 bar
119907	CTW0195		<0.01	130.	0.64	<0.02	0.26	11.9	11.0
119908	CTW0295		<0.01	256.	0.81	<0.02	0.22	10.8	8.8
119909	CTW0395		<0.01	126.	0.75	<0.02	0.20	10.9	8.6

PacifiCorp

Cottonwood/Wilberg Mine

ACT/015/019

Miller Canyon Reclamation

Attachment #3

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 310-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-4600 FAX: 630-953-8906
SINCE 1939
SGS Member of the SGS Group (Société Générale de Surveillance)
ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020
HUNTINGTON, UT 84528
TEL: (435) 653-2311
FAX: (435) 653-2436

June 1, 1999

PACIFICORP FIELD OFFICE
P.O. Box 1005
Huntington UT 84528

Sample identification by
PACIFICORP FIELD OFFICE

Kind of sample reported to us: Water

Sample taken at: Cottonwood Mine

Sample taken by: Energy West/Dennis Oakley

Date sampled: May 17, 1999

Date received: May 17, 1999

COTTONWOOD MINE
MILLER CANYON DISCHARGE AT PORTAL #3
Rec'd 1430 hr.
Sampled 1145 hr.
FIELD MEASUREMENTS
Flow 3 GPM

Analysis report no. 59-19864

Parameter	Result	MRL	Units	Method	Analyzed Date/Time/Analyst
Conductivity	1349	1	umhos/cm	SM2510-B	05-19-1999 0820 SC
Iron, Dissolved	<0.1	0.1	mg/l	EPA 236.1	05-26-1999 1200 SC
Iron, Total	0.1	0.1	mg/l	EPA 236.1	05-26-1999 1200 SC
pH	7.70	----	pH units	EPA 150.1	05-18-1999 1100 MK
Solids, Total Dissolved	961	10	mg/l	EPA 160.1	05-19-1999 0800 KP
Solids, Total Suspended	8	5	mg/l	EPA 160.2	05-19-1999 0800 KP

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To	From
Co.	Co.
Dept.	Phone #
Fax #	Fax #

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Huntington Laboratory

MEMBER ACIL

Water Quality Report: Operational

02-Jun-99

LOCATION GROUP: WIL-DIS

LOCATION: MILLER CANYON HISTORICAL DATA FOR DATE: 19770101 THROUGH 19990601

PARAMETER	MAXIMUM	MINIMUM	AVERAGE	# ANALYSES	SUM
BICARB:	543	267	408.67	79	32285
CALCIUM:	250.7	71.5	156.28	79	12346
CARBONATE:	10	0.1	1.3463	67	90.2
CHLORIDE:	155	10	22.139	77	1704.7
CONDUCT:	1900	480	1216.4	81	98531
DISS_OXY:	12.3	2.4	5.525	72	397.8
FLOW:	78	2.5	19.413	97	1883.0
HARDNESS:	997	366	721.01	79	56960
IRON_TOT:	1.38	0.01	0.2351	79	18.57
IRON_DISS:				0	
MAGNESIUM:	99.4	45.31	81.153	78	6329.9
MANG_DISS:				0	
MANGANESE:	0.52	0.01	0.0612	73	4.47
OIL_GREASE:	7.2	0.1	2.1324	71	151.4
PH:	8.83	6.4	7.2951	81	590.9
POTASSIUM:	9.1	1.83	5.7899	79	457.4
SET_SOLIDS:	1	0.1	0.5125	8	4.1
SODIUM:	158	13.58	36.568	79	2888.9
SULFATE:	680	200	419.29	79	33124
SUSPENDED:	32	0.1	4.7716	109	520.1
TEMP_WATE	70.34	11.7	49.605	63	3125.1
TDS:	1182	413	925.69	81	74981
DEPTH:				0	

Water Quality Report: Baseline only

02-Jun-99

LOCATION GROUP: WIL-DIS

LOCATION: MILLER CANYON HISTORICAL DATA FOR DATE: 19770101 THROUGH 19990601

PARAMETER	MAXIMUM	MINIMUM	AVERAGE	# ANALYSES	Std. Deviaton
ACIDITY:	100	0.1	22.451	72	19.629
ALUMINIUM:	0.01	0.01	0.01	1	
AMMONIA:	0.08	0.08	0.08	1	
ARSENIC:	0.002	0.002	0.002	1	
BORON:	0.4	0.4	0.4	1	
CADMIUM:	0.002	0.002	0.002	1	
COPPER:	0.01	0.01	0.01	1	
LEAD:	0.05	0.05	0.05	1	
MOLY:	0.1	0.1	0.1	1	
NITRITE:	0.01	0.01	0.01	2	0
NITRATE:	0.17	0.05	0.11	2	0.0849
ORTH_PHOS:				0	
SELENIUM:	0.009	0.009	0.009	1	
ZINC:	0.04	0.04	0.04	1	

REGION VIII GUIDANCE FOR ACUTE WHOLE EFFLUENT REPORTING

PERMIT NAME Wilberg Mine NPDES No UT002896 OUTFALL NO. 004

50% MORTALITY TEST: XX PASS _____ FAIL LC50 >100 %

Test Animal/Age P.promelas 5 days Sample type/Time/Date Grab/1045/5-15-95

Analysis Time & Date: Begin 0940/5-17-95 End 1105/5-21-95

Dilutions (% Effluent) *

NUMBER ALIVE	0%	6.25%	12.5%	25%	50%	75%	100%
Start of Test	20		20	20	20	20	20
After 24 hrs	20		20	20	20	20	20
After 48 hrs	20		20	20	20	20	20
After 72 hrs	20		20	20	20	20	20
After 96 hrs	20		20	20	20	20	20

* normally, a minimum of five plus control(0%)

Dilutions (% Effluent)

MAX/MIN VALUES	0%	6.25%	12.5%	25%	50%	75%	100%
Dis. Oxygen	8.4/6.4	-/-	7.8/6.5	7.6/6.7	7.2/6.7	7.6/6.7	8.6/6.8
Temp °C	20/19	-/-	20/19	20/19	20/19	20/19	20/19

Receiving Water Used For Dilution (Y or N)? yes

Hardness: Receiving Water 525 Effluent 750 Recon Water(if used) ____

Initial Total Residual Cl2 in 100% Effluent: <0.10

Initial NH3 (as N) in 100% Effluent: <1.0

pH in 100% Effluent: Initial 7.4 After 24 Hours: 8.6

pH in 0% Control: Initial 8.3 After 24 Hours: 8.5

COMMENTS _____

ANALYST'S NAME Donald Barton

LABORATORY Commercial Testing & Engin. SIGNATURE/DATE Donald Barton 5-30-95

REGION VIII GUIDANCE FOR ACUTE WHOLE EFFLUENT REPORTING

PERMIT NAME PacifiCorp-Wilberg Mine NPDES No UT002896 OUTFALL NO. 004

50% MORTALITY TEST: XX PASS _____ FAIL LC50 >100 %

Test Animal/Age C.dubia/<24h Sample type/Time/Date Grab/1110/6-6-95

Analysis Time & Date: Begin 6-7-95/1645 End 6-9-95/1430

Dilutions (% Effluent) *

NUMBER ALIVE	0%	6.25%	12.5%	25%	50%	75%	100%
Start of Test	20	---	20	20	20	20	20
After 24 hrs	20	---	20	20	20	20	20
After 48 hrs	18	---	19	17	20	20	20
After 72 hrs							
After 96 hrs							

* normally, a minimum of five plus control(0%)

Dilutions (% Effluent)

MAX/MIN VALUES	0%	6.25%	12.5%	25%	50%	75%	100%
Diss. Oxygen	7.2/6.0	-/-	7.5/6.1	7.3/5.9	7.5/6.0	7.4/6.2	8.1/6.4
Temp °C	20/20	-/-	20/20	20/20	20/20	20/20	20/20

Receiving Water Used For Dilution (Y or N)? NO

Hardness: Receiving Water____ Effluent 582 Recon Water(if used) 140

Initial Total Residual Cl2 in 100% Effluent: <0.10

Initial NH3 (as N) in 100% Effluent: <1.0

pH in 100% Effluent: Initial 8.1 After 24 Hours: 8.4

pH in 0% Control: Initial 8.4 After 24 Hours: 8.5

COMMENTS _____

ANALYST'S NAME Donald Barton

LABORATORY Commercial Testing & Engin. SIGNATURE/DATE Donald Barton

REGION VIII GUIDANCE FOR ACUTE WHOLE EFFLUENT REPORTING

PERMIT NAME PacifiCorp-Wilberg Mine NPDES No UT002896 OUTFALL NO. 004

50% MORTALITY TEST: XX PASS _____ FAIL LC50 >100 %

Test Animal/Age C.dubia/<24h Sample type/Time/Date Grab/1011/7-17-95

Analysis Time & Date: Begin 7-18-95/1600 End 7-20-95/1530

Dilutions (% Effluent) *

NUMBER ALIVE	0%	6.25%	12.5%	25%	50%	75%	100%
Start of Test	20	---	20	20	20	20	20
After 24 hrs	20	---	20	20	20	20	20
After 48 hrs	20	---	20	20	20	20	19
After 72 hrs							
After 96 hrs							

* normally, a minimum of five plus control(0%)

Dilutions (% Effluent)

MAX/MIN VALUES	0%	6.25%	12.5%	25%	50%	75%	100%
Diss. Oxygen	7.5/6.9	-/-	7.4/6.9	7.7/7.1	7.6/6.9	7.7/7.1	8.1/7.2
Temp °C	20/20	-/-	20/20	20/20	20/20	20/20	20/20

Receiving Water Used For Dilution (Y or N)? YES

Hardness: Receiving Water 269 Effluent 382 Recon Water(if used) _____

Initial Total Residual Cl2 in 100% Effluent: <0.10

Initial NH3 (as N) in 100% Effluent: <1.0

pH in 100% Effluent: Initial 8.1 After 24 Hours: 8.3

pH in 0% Control: Initial 8.5 After 24 Hours: 8.4

COMMENTS _____

ANALYST'S NAME Donald Barton

LABORATORY Commercial Testing & Engin. SIGNATURE/DATE Donald Barton 7-25-95

REGION VIII GUIDANCE FOR ACUTE WHOLE EFFLUENT REPORTING

PERMIT NAME PacifiCorp-Wilberg Mine NPDES No UT002896 OUTFALL NO. 004

50% MORTALITY TEST: XX PASS _____ FAIL LC50 >100 %

Test Animal/Age P.promelas 3days Sample type/Time/Date Grab/1205/10-23-95

Analysis Time & Date: Begin 10-24-95/1520 End 10-28-95/1030

Dilutions (% Effluent) *

NUMBER ALIVE	0%	6.25%	12.5%	25%	50%	75%	100%
Start of Test	20		20	20	20	20	20
After 24 hrs	20		20	20	20	20	20
After 48 hrs	20		20	20	20	20	13
After 72 hrs	18		20	20	19	20	13
After 96 hrs	17		20	20	19	20	12

* normally, a minimum of five plus control(0%)

Dilutions (% Effluent)

MAX/MIN VALUES	0%	6.25%	12.5%	25%	50%	75%	100%
Diss. Oxygen	8.5/7.4	-/-	8.9/7.5	8.5/7.6	8.1/7.3	8.1/6.2	8.0/6.7
Temp °C	20/19	-/-	20/19	20/19	20/19	20/19	20/19

Receiving Water Used For Dilution (Y or N)? YES

Hardness: Receiving Water 245 Effluent 710 Recon Water(if used) _____

Initial Total Residual Cl2 in 100% Effluent: <0.10

Initial NH3 (as N) in 100% Effluent: <1.0

pH in 100% Effluent: Initial 7.4 After 24 Hours: 8.6

pH in 0% Control: Initial 8.4 After 24 Hours: 8.9

COMMENTS 15% mortality in receiving water control due to broken glassware killing 10% of the organisms. The Control using reconstituted lab water experienced a 5% mortality.

ANALYST'S NAME Donald Barton

LABORATORY Commercial Testing & Engin. SIGNATURE/DATE Donald Barton 11-2-95

REGION VIII GUIDANCE FOR ACUTE WHOLE EFFLUENT REPORTING

PERMIT NAME PacifiCorp-Wilberg Mine NPDES No UT0022896 OUTFALL NO. 004

50% MORTALITY TEST: XX PASS _____ FAIL LC50 >100 %

Test Animal/Age C.dubia/<24h Sample type/Time/Date Grab/0745/5-13-96

Analysis Time & Date: Begin 5-14-96/1215 End 5-16-96/1130

Dilutions (% Effluent) *

NUMBER ALIVE	0%	6.25%	12.5%	25%	50%	75%	100%
Start of Test	20	---	20	20	20	20	20
After 24 hrs	20	---	20	18	18	20	20
After 48 hrs	19	---	19	18	17	18	17
After 72 hrs							
After 96 hrs							

* normally, a minimum of five plus control(0%)

Dilutions (% Effluent)

MAX/MIN VALUES	0%	6.25%	12.5%	25%	50%	75%	100%
Diss. Oxygen	7.3/6.5	-/-	7.3/6.5	7.3/6.5	7.4/6.5	7.2/6.4	7.4/7.2
Temp °C	20/20	-/-	20/20	20/20	20/20	20/20	20/20

Receiving Water Used For Dilution (Y or N)? NO

Hardness: Receiving Water _____ Effluent 580 Recon Water(if used) 140

Initial Total Residual Cl2 in 100% Effluent: <0.10

Initial NH3 (as N) in 100% Effluent: <1.0

pH in 100% Effluent: Initial 7.9 After 24 Hours: 8.5

pH in 0% Control: Initial 8.6 After 24 Hours: 8.7

COMMENTS _____

ANALYST'S NAME Donald Barton

LABORATORY Commercial Testing & Engin. SIGNATURE/DATE Donald Barton 5-17-96

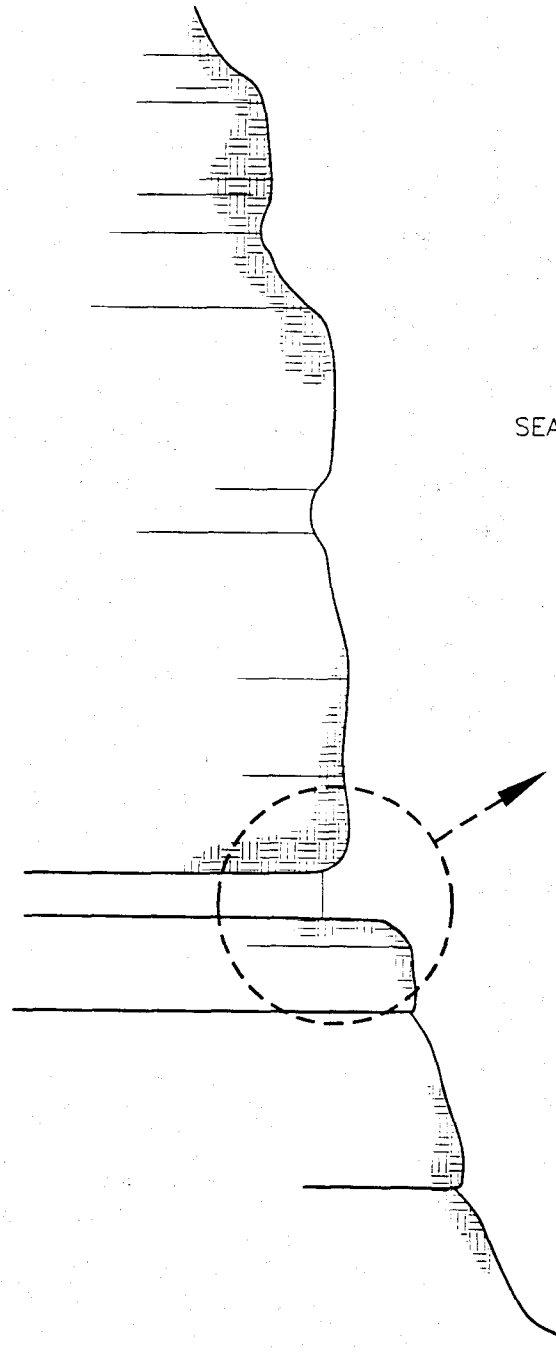
PacifiCorp

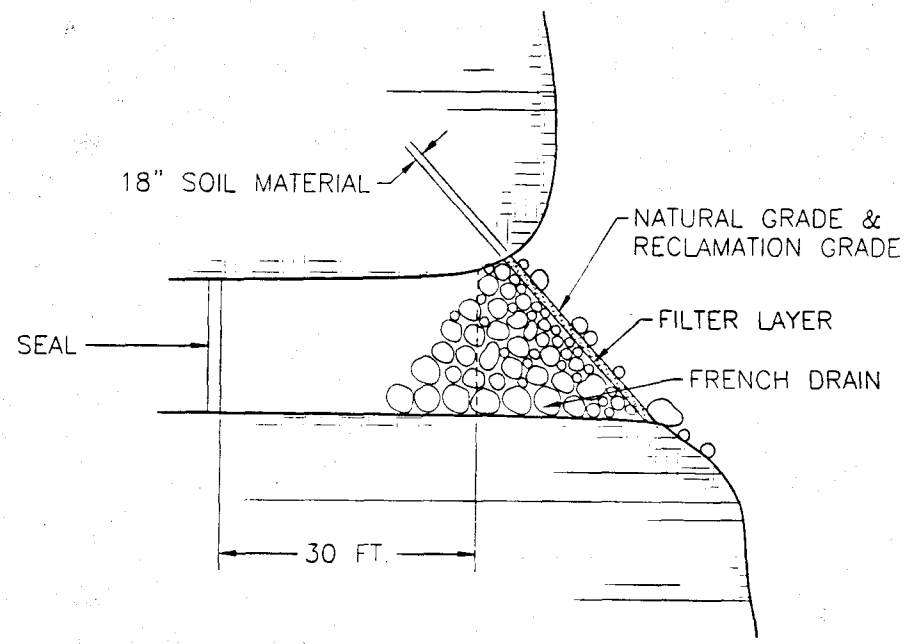
Cottonwood/Wilberg Mine

ACT/015/019

Miller Canyon Reclamation

Attachment #4





CAD FILE NAME/DISK#: USERS\KJL\CW\MILLERCANYON.DWG

ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528

COTTONWOOD MINE
MILLER CANYON BREAKOUTS
RECLAMATION CROSS SECTION

DRAWN BY:	K. LARSEN		
SCALE:	NONE	DRAWING #:	....
DATE:	JUNE 2, 1999	SHEET 1 OF 1	REV. ---

PacifiCorp

Cottonwood/Wilberg Mine

ACT/015/019

Miller Canyon Reclamation

Attachment #5

ENERGY WEST Mining Co.
PO Box 310
Huntington, Utah 84528

June 18, 1999

ACT/015/019 #2
Copy Daron

Utah Coal Program
Utah Division of Oil, Gas, and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Attn: Joe Helfrich

Re: Response to Deficiencies to the Miller Canyon Reclamation Plan, PacifiCorp, Cottonwood/Wilberg Mine, ACT/015/019, 99B, DOGM File #2, Emery County, Utah

PacifiCorp, by and through its wholly-owned subsidiary, Energy West Mining Company ("Energy West") as mine operator, hereby responds to the deficiencies received from the Division of Oil, Gas and Mining (DOGM) for the reclamation of the Miller Canyon portals of the Cottonwood Mine.

The format of this document will be DOGM's findings in **bolded** text, followed by Energy West's responses in *italics*.

1. **The information provided by the applicant indicates that gravity flow still exists. The mine water discharge information does not draw conclusions to future discharge potentials at the portals. It is recommended that the applicant commit to conduct annual surveys of the portal area throughout the reclamation period to determine if mine discharge is continued or increasing. If any measurable flows appear the applicant should take samples to ensure acid and toxic contamination does not occur.**

   PacifiCorp is currently required to monitor the discharge from Miller Canyon monthly as part of UPDES permit #UT-0022896-004. Monitoring will continue as it has in the past.

Huntington Office:
(435) 687-9821
Fax (435) 687-2695
Purchasing Fax (435) 687-9092

Deer Creek Mine:
(435) 687-2317
Fax (435) 687-2285

Trail Mountain Mine:
(435) 748-2140
Fax (435) 748-5125

2. **The permittee must provide the following, prior to approval, in accordance with the requirements of :**

   R64-301-223, R645-301-120 and R645-301-130, Please provide Attachment #2 and Attachment #3 as described on page 2 of the submittal and discussed above.

   In 1995, PacifiCorp had soil analysis conducted on the soil piles as indicated in the reclamation plan. The plan did not state which analysis went with which soil pile. Analysis # CTW0195 is the analytical result of soil pile "B".

   The location map of the soil piles at the Cottonwood/Wilberg waste rock site was inadvertently excluded from Attachment #2. The reclamation plan will be revised to include this map.

   An obvious error was found by the Division on page 2 of the reclamation plan, under **R645-301-200: Soils**. *The plan states that the soil analysis report of the soil piles at the Cottonwood/Wilberg waste rock site can be found in Attachment #3. It should have stated Attachment #2. This error will be corrected. See attachments included at the end of this document.*

3. **The permittee must provide the following, prior to approval, in accordance with the requirements of :**

   R645-301-231 and R645-301-120, Please provide a tally in tabular form of the remaining soil stockpiled at the Cottonwood/Wilberg waste rock site.

   A table which outlines the volumes of available soil stored at the Cottonwood/Wilberg waste rock site before and after the Miller Canyon reclamation project will be included in Attachment #2 of the reclamation plan. See attachments included at the end of this document.

4. **The permittee must provide the following, prior to approval, in accordance with the requirements of:**

   R645-301-355, Please add mulching to the reclamation steps described on page 3 of the submittal.

   R645-301-354, Please indicate that seeding will be conducted again in late autumn.

   PacifiCorp commits to include mulch and netting to sufficiently cover the reclaimed area. Litter will be placed on top to keep the netting in place and also to control erosion. PacifiCorp also commits to conduct seeding again in late autumn. The seed mixture will be identical to the present mix.

Attached are revised pages 2 and 3 and the required inserts for Attachment #2 for the Miller Canyon Reclamation Plan. Upon verbal approval seven (7) clean copies will immediately be submitted so this plan can be incorporated into the Cottonwood/Wilberg MRP.

Unless an unforeseen item has been neglected, all parameters to the Miller Canyon project deficiency response have been covered and are complete. If you have any questions please feel free to contact myself at 435-687-4720 or Dennis Oakley at 435-687-4825.

Sincerely,

Dennis Oakley

for Chuck Semborski
Geology/Permitting Supervisor

DCO/dco/cas

Attachments Included

Cc: Blake Webster
Carl Pollastro
file

Attachments

Replace pages in reclamation plan

Reclamation will be accomplished utilizing helicopter support for transporting materials from the staging area in Cottonwood Canyon to the portal areas in Miller Canyon. The staging area in Cottonwood Canyon is located approximately 2 miles from the junction of State Highway 29 on Emery County Road 506. The Emery County road department occasionally uses this area as a road chip storage area. A road encroachment application has been submitted to Emery County and verbally approved as of June 2, 1999.

The following gives an overview of the reclamation that will be conducted at these portal sites according to the Utah Coal Regulations R645-100 through R645-301-800.

R645-301-100: General

All requirements in this section have been met and can be found in the Cottonwood/Wilberg MRP, Volume 1, pages 1-1 through 1-66.

R645-301-200: Soils

Soil from the Cottonwood/Wilberg waste rock site storage area will be utilized to establish a vegetative cover over the backfilled openings. Attachment #2 shows the location of the soil piles within the old Cottonwood/Wilberg waste rock site. Soil pile "B" will be utilized for reclamation. This soil was excavated in 1995 from the Cottonwood Fan Portal (CFP) area. It was to be used for final reclamation of the fan portal area, but was not needed since a sufficient amount of soil was stored at the CFP site. Samples were taken from piles "A", "B", and "C" and sent to InterMountain Laboratory in Sheridan, Wyoming for analysis. These soils were found to be fair to good when compared to the soil suitability criteria in Appendix A of the *Guidelines for Management of Topsoil and overburden for Underground and Surface Coal Mining – 1988*. The analysis report is found in Attachment ~~#3~~ #2.

The soil from the CFP site was transported to the old Cottonwood/Wilberg waste rock site and stored in a fenced area as depicted in the figure in Attachment #2. The soil was then covered with curlex blanketing to protect it from wind and water erosion. An approved vegetative seed mix was used on the soil piles to promote biotic growth and provide erosion control.

R645-301-300: Biology

Following backfilling and grading, an approved final seed mixture will be placed on the reclaim site. This seed mixture is identical to the mixture used at the CFP reclamation site and discussed below. Revegetation techniques are as follows:

- After soil is unloaded by helicopter at the portals, the area will be hand raked to ensure that all disturbed slopes are adequately covered with approximately 18" of soil material.

- The surface will be roughened to control runoff and erosion. A straw mulch with netting will be used to sufficently cover the reclaimed area. Litter material (rocks and tree branches) will ~~also~~ be placed on top of the netting to secure it and ~~incorporated into the slope to~~ protect against erosion.

- The seed mixture will be broadcast by hand onto the reclaimed slopes.

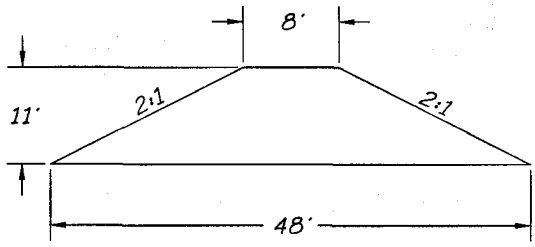
- The soil surface will then be turned lightly by hand raking to cover the seeds.

Seed Mixture - Final Revegetation for the Miller Canyon Portal Breakouts

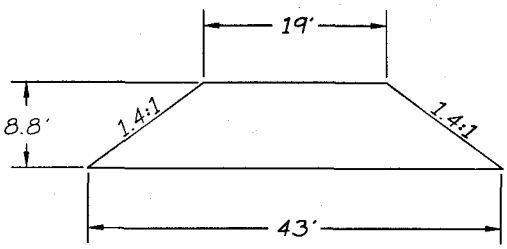
Common Name	Scientific Name	Lbs/Acre PLS*
Grasses		
Western wheatgrass	Agropyron smithii	3
Bluebunch wheatgrass	Agropyron spicatum	3
Indian ricegrass	Oryzposis hymenoides	3
Needle and thread grass	Stipa comata	1
Thickspike wheatgrass	Agropyron dasystachyum	1
Great Basin wildrye	Elymus ciaereus	2
Forbs		
Blueleaf aster	Aster glaucodes	.5
Utah sweet vetch	Hedysarum boreale	1
Lewis flax	Linum lewisii	1
Globemallow	Sphaeralcea coccinea	.5
Yarrow	Achillea millefolius	.5
Palmer penstemon	Penstemon palmeri	1
	Total	**17.5**
Shrubs		
Serviceberry	Amelanchier alnifolia	1
Fourwing saltbush	Atriplex canescens	2
Green Mormon tea	Ephedra viridis	1
Wyoming big sagebrush	Artemesia wyoningensis	.5
Big white rabbitbrush	Chrysothamunus nauseosus var. albicaulis	.5
	Total	**5**

Insert in Attachment #2

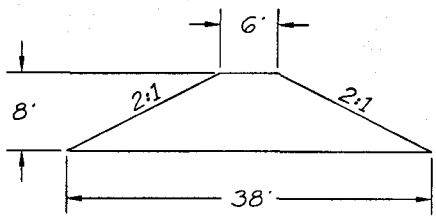
CROSS SECTIONS
SCALE: 1"=20'



TYPICAL CROSS SECTION
THRU PILE A



TYPICAL CROSS SECTION
THRU PILE B



TYPICAL CROSS SECTION
THRU PILE C

PROPERTY BOUNDARY
FENCE
POND
6790
6780
FENCE
SOIL PILES C
75'
ROCK STORAGE PILE
SOIL PILE A
180'
SOIL PILE B
34'
6800
DRAINAGE DITCH
6820
ACCESS ROAD
WILBERG MINE HAUL ROAD
PROPERTY BOUNDARY

PILE A AND **PILE C** ARE NATIVE SOILS
FOR THE OVERLAND CONVEYOR RECLAMATION

PILE B IS SUBSOIL FOR MILLER CANYON PORTALS
AND COTTONWOOD RECLAMATION

* DISTANCE WILL VARY DEPENDING ON
EXACT QUANTITY STOCKPILED.

CAD FILE NAME/DISK#: F:\USERS\KJL\CW\KS1517A

ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528

COTTONWOOD MINE
OVERLAND CONVEYOR
SUBSOIL & NATIVE SOIL STORAGE

DRAWN BY:	K. LARSEN	KS1517A	
SCALE:	1" =100'	DRAWING #:	
DATE:	DEC. 15, 1994	SHEET 1 OF 1	REV. ___

Cottonwood/Wilberg Waste Rock Site Soil Pile Quantities.

Pile B (see location map)	Cubic Feet
Volume Before Reclamation of Miller Canyon Portals	230.13
Volume After Reclamation of Miller Canyon Portals	Approx. 209.13

Reclamation of Miller Canyon portals will require approximately 7 cu. yd. of soil material from the Cottonwood/Wilberg waste rock site soil pile storage. This soil will be used to cover rock material backfill. A filter liner will segregate the two fill materials.

ENERGY WEST Mining Co.
PO Box 310
Huntington, Utah 84528

June 4, 1999

Utah Coal Program
Utah Division of Oil, Gas, and Mining
Price Field Office
College of Eastern Utah
457 East 400 North
Price, Utah 84501

Attn: Bill Malencik

Re: Notice to Conduct Reclamation Activities at the Miller Canyon Portals, PacifiCorp, Cottonwood/Wilberg Mine, ACT/015/019, Emery County, Utah

PacifiCorp, by and through its wholly-owned subsidiary, Energy West Mining Company ("Energy West") as mine operator, hereby submits a notice of intent to reclaim the portal breakouts in Miller Canyon. Reclamation will begin during the week of June 21, 1999 and progress until the work is completed. Energy West estimates that the project will take approximately three days to complete.

The Miller Canyon portals were developed as intake portals in October of 1981 (refer to location and plan view drawing in Attachment #1). This facility consist of three ft. x 16 ft. portals on 100 ft. centers. The portals were used for intake purposes until the Wilberg Mine fire in December 1984. At that time they were temporarily sealed. The portal furthest east (# 1 portal) was reopened in 1985 for exploration purposes after the mine fire. The portals were subsequently sealed permanently (MSHA approved) in 1987.

The #1 portal is provided with a 2 inch water monitoring pipe. Small quantity discharges occur at this point. The discharges are monitored in accordance with stipulations in the UPDES Permit, UT-0022896-004. No discharges have been recorded at site 004 since 1996.

A recent field investigation of the portals revealed that there has been some caving of the portal openings. The pipe in the #1 portal has been pinched off allowing mine discharge water to flow freely over the rock ledge to the canyon floor. The total disturbance of these portals is approximately 0.02 acres. There is currently no reclamation plan for the Miller Canyon breakouts in the approved MRP.

Huntington Office:
(435) 687-9821
Fax (435) 687-2695
Purchasing Fax (435) 687-9092

Deer Creek Mine:
(435) 687-2317
Fax (435) 687-2285

Trail Mountain Mine:
(435) 748-2140
Fax (435) 748-5125

Reclamation will be accomplished utilizing helicopter support for transporting materials from the staging area in Cottonwood Canyon to the portal areas in Miller Canyon. The staging area in Cottonwood Canyon is located approximately 2 miles from the junction of State Highway 29 on Emery County Road 506. The Emery County road department occasionally uses this area as a road chip storage area. A road encroachment application has been submitted to Emery County and verbally approved as of June 2, 1999.

The following gives an overview of the reclamation that will be conducted at these portal sites according to the Utah Coal Regulations R645-100 through R645-301-800.

R645-301-100: General

All requirements in this section have been met and can be found in the Cottonwood/Wilberg MRP, Volume 1, pages 1-1 through 1-66.

R645-301-200: Soils

Soil from the Cottonwood/Wilberg waste rock site storage area will be utilized to establish a vegetative cover over the backfilled openings. Attachment #2 shows the location of the soil piles within the old Cottonwood/Wilberg waste rock site. Soil pile "B" will be utilized for reclamation. This soil was excavated in 1995 from the Cottonwood Fan Portal (CFP) area. It was to be used for final reclamation of the fan portal area, but was not needed since a sufficient amount of soil was stored at the CFP site. Samples were taken from piles "A", "B", and "C" and sent to InterMountain Laboratory in Sheridan, Wyoming for analysis. These soils were found to be fair to good when compared to the soil suitability criteria in Appendix A of the *Guidelines for Management of Topsoil and overburden for Underground and Surface Coal Mining – 1988*. The analysis report is found in Attachment #3.

The soil from the CFP site was transported to the old Cottonwood/Wilberg waste rock site and stored in a fenced area as depicted in the figure in Attachment #2. The soil was then covered with curlex blanketing to protect it from wind and water erosion. An approved vegetative seed mix was used on the soil piles to promote biotic growth and provide erosion control.

R645-301-300: Biology

Following backfilling and grading, an approved final seed mixture will be placed on the reclaim site. This seed mixture is identical to the mixture used at the CFP reclamation site and discussed below. Revegetation techniques are as follows:

- After soil is unloaded by helicopter at the portals, the area will be hand raked to ensure that all disturbed slopes are adequately covered with approximately 18" of soil material.

- The surface will be roughened to control runoff and erosion. Litter material (rocks and tree branches) will also be incorporated into the slope to protect against erosion.

- The seed mixture will be broadcast by hand onto the reclaimed slopes.

- The soil surface will then be turned lightly by hand raking to cover the seeds.

Seed Mixture - Final Revegetation for the Miller Canyon Portal Breakouts

Common Name	Scientific Name	Lbs/Acre PLS*
Grasses		
Western wheatgrass	Agropyron smithii	3
Bluebunch wheatgrass	Agropyron spicatum	3
Indian ricegrass	Oryzposis hymenoides	3
Needle and thread grass	Stipa comata	1 (2)
Thickspike wheatgrass	Agropyron dasystachyum	1
Great Basin wildrye	Elymus ciaereus	2
Forbs		
Blueleaf aster	Aster glaucodes	.5
Utah sweet vetch	Hedysarum boreale	1
Lewis flax	Linum lewisii	1
Globemallow	Sphaeralcea coccinea	.5
Yarrow	Achillea millefolius	.5
Palmer penstemon	Penstemon palmeri	1
	Total	**17.5**
Shrubs		
Serviceberry	Amelanchier alnifolia	1
Fourwing saltbush	Atriplex canescens	2
Green Mormon tea	Ephedra viridis	1
Wyoming big sagebrush	Artemesia wyoningensis	.5
Big white rabbitbrush	Chrysothamunus nauseosus var. albicaulis	.5 ?
	Total	**5**

The total disturbance is approximately 0.02 acres. This equates to approximately 0.5 lbs. of pure live seed to complete revegetation at the Miller Canyon portals.

Fish and Wildlife

Fish and wildlife information is provided on pages 2-159 through 2-174 in Volume 2 of the Cottonwood/Wilberg MRP.

A raptor survey was conducted in May 1999 of the Miller Canyon area. One active eagle nest was located in the canyon approximately ½ mile west of the portals and 1000 feet higher in elevation. Chris Colt (Division of Wildlife Resources – Price District) has been informed of the reclamation activities to be conducted in the canyon. Refer to Attachment #1 for nest location.

Through the establishment of a mine discharge in portal #1, a riparian habitat has formed. Final reclamation of the portals consist of establishing french drains in each of the portals. A french drain will conduct mine discharge from the portals to the rock ledge directly outby the portals. Mine discharge will flow freely down the rock face to the canyon floor. Historically the discharge dissipates completely within approximately 100 feet down the canyon. The mine discharge has been a good water source for wildlife that occupies the area in and around Miller Canyon. Typical springtime discharge quantities are less than approximately 2.0 gpm and decrease as the year progresses. A water sample of the discharge was taken in May 1999 and found that it meets drinking water standards for TDS. The water analysis is found in Attachment #3. Historical records of baseline and operational sampling is included in this attachment. Minimum, maximum, and mean values of various parameters are displayed in these reports. A Bioassay toxicity testing report from 1995 and 1996 is also included. Water quality is presented in more detail in the R645-301-700: Hydrology Section.

R645-301-400: Land Use and Air Quality

Post-mining land use for the Cottonwood mine is grazing and wildlife. Given the fact that the portals are located on steep (nearly vertical) rock outcrops, this area is only considered for wildlife. It is highly unlikely that cattle could access the steep ledges in and around the portal areas. Recent site visits found no signs of any cattle grazing in the immediate area.

R645-301-500: Engineering

As stated earlier, backfilling and grading will be conducted utilizing helicopter support. A staging area will be located along side County Road 506 in Cottonwood Canyon. Rock and soil material stored at this area will be lifted out by helicopter using a long-line belly-dump and/or cargo net to haul this material. The material will be dumped at each of the three portals.

Approximately 48 yds^3 of total material (soil and rock) will be needed at each portal. Of this material, it is estimated that 41 yds^3 will be rock material of various sizes. Larger rock material will be used first. Smaller material will be used to fill in the voids of the larger material. The idea is to create a french drain that will enable mine discharge to flow from the portal area. Refer to the typical cross-section in Attachment #4.

After the helicopter dumps its load at the portal, the rock material will be moved by hand to insure all areas of the portal are covered. The rock material will be pushed back into the portal as far as possible for complete closure.

After the rock material backfill is in place, a filter liner will be laid down over the top of it. The filter material is used as a barrier so soil cannot infiltrate the rock material. Infiltration of soil will eventually clog the french drain, possibly causing discharges in undesired locations. Soil material will be laid down to a thickness of approximately 18". Litter material will be placed on the newly graded soil that will guard against erosion. The area will be revegetated as outlined in R645-301-300: Biology. A digital rendition of the reclamation sequences is displayed in Attachment #5.

Lastly, the 2 inch water monitoring pipe that runs in excess of 500 feet down the canyon will be removed. The pipe will be removed by helicopter and disposed.

R645-301-600: Geology

This section provides useful geologic information for understanding ground water and surface water resources in the area. These resources are dependent on the geology of East Mountain. Refer to the following hydrology section for a full discussion of water related resources.

Stratigraphy of the Miller Canyon Portal Area.

The rock formations exposed in the Miller Canyon Portal area are restricted to the Upper Cretaceous period. The formations, in ascending order, Star Point Sandstone, Blackhawk. The Star Point Sandstone, which is a prominent cliff former, consists of several eastward thinning marine sandstone tongues of medial Campanian age (Clark, 1928). Westward thinning wedges of the Masuk Shale interfinger with the basal tongues of the Star Point Sandstone. The three members are the basal Panther Sandstone, the middle Storrs Sandstone, and the upper Spring Canyon Sandstone. These sandstone units are generally separated from each other by westward projecting tongues of Mancos Shale. The basal Panther Sandstone is approximately 100 feet thick and consists of massive, well indurated, crossbedded delta front sandstones. The Storrs Sandstone is located about 120 feet above the top of the Panther Member and consists of 50 feet of soft, friable sandstone. The Spring Canyon is located about 80 feet above the top of the Storrs Member and consist of 100 feet of massive, fine to medium grain, crossbedded delta front sandstones. Even though the Star Point formation exists

throughout the entire East Mountain property, the low permeability and lack of recharge limit its usefulness as a water producing aquifer. Permeability and the limiting factors of recharge, i.e., very little outcrop exposure and limited vertical groundwater migration, are caused by the mudstone layers of the upper formations.

The Blackhawk Formation overlies the Star Point Sandstone and is 625-800 feet thick in the Miller Canyon Portal area. The Blackhawk consists of alternating sandstones, siltstones, shales and coal deposited in a deltaic environment. Although coal is generally found throughout the Blackhawk Formation, the economic seams are restricted to the lower 150 feet of the formation. The Hiawatha seam was naturally exposed prior to development mining at the Miller Canyon. The seam is approximately seven and half (7 ½) feet thick and consist of several mudstone splits in the upper portion of the seam. The sandstones contained within the Blackhawk Formation are fluvial and increase in number in the upper portions of the formation. Many of the tabular sandstone channels form local perched water tables. Several small seeps occur along the boundary of the Blackhawk and Star Point Sandstone formations.

Structure – Miller Canyon Portal Area.

There are no identified faults or major folds within the Miller Canyon Portal area. The axis of the Straight Canyon Syncline lies to the northwest of the Miller Canyon Portal area (See Volume 8 Structural Contour Map - Hiawatha Seam). The Hiawatha seam in the Miller Canyon area has a dip of approximately 2° to the northwest.

R645-301-700: Hydrology

This section provides a detailed description of the hydrology, including groundwater and surface water of the Miller Canyon area.

To provide necessary ventilation to the western portion of the Wilberg Mine, entries were developed in 1981 from the 3rd South Mains to Miller Canyon. Ventilation breakouts in Miller Canyon consist of 3 portals in the Hiawatha Seam located near the head of Miller Canyon approximately one hundred and fifty (150) feet above the canyon floor. Topography in the area is extremely steep and access is limited. During development of 7th West and 4th South, several sandstone channel systems were encountered which produced minor quantities of groundwater (<20 gpm). Earth berms were constructed at the portal locations to prevent the discharge of

intercepted groundwater. PacifiCorp (Utah Power & Light Company) applied for additional NPDES (UPDES) discharge point (location 004) in 1982 and started reporting in the first quarter of 1983. Discharge from the portals was initiated after the sealing in 1984. Due to the steep topography, a

2" discharge pipe was installed to assist in sample collection. Discharge from the Miller Canyon breakouts average less than 20 gpm and steadily decreased from 1994 to 1996 to less than 5 gpm. No discharge has been reported from the portals since August 1996. Field investigations conducted in May 1999 identified minor seeps at portals two and three, and discharge from portal one was estimated at less than 3 gpm. Flow from portal area reaches the canyon floor, but dissipates within 100 feet from the portal area.

Groundwater Resources - Seeps

The characteristics and usefulness of a groundwater resource are dependent upon the geology of the water-bearing strata and on the geology and hydrology of the recharge area. Groundwater movement and storage characteristics are dependent on the characteristics of the substratum. To facilitate an understanding of groundwater of the East Mountain property including the Miller Canyon area refer to Volume 9 - Hydrologic Section for a complete discussion of pertinent regional hydrologic and geologic features.

Groundwater resources of the Miller Canyon area are limited to a series of seeps located near the formational contact between the Blackhawk and Star Point Sandstone formations and the gravity discharge from the old mine workings. The source of the groundwater seeps is from the winter snowpack which melts and infiltrates the lower Blackhawk Formation through vertical fractures. The groundwater flows down vertically until it intersects mudstone layers above and below the Hiawatha seam. Groundwater flow continues horizontally downdip through the permeable sandstone channels located above the Hiawatha seam and the upper member of the Star Point Sandstone Formation until it intersects the land surface in the form of seeps. Flow from the seeps is insufficient for quantity and quality determination. During reclamation, to facilitate post mine gravity discharge from the portals, french drains will be installed to prevent slope failure due to saturation of the fill (refer to Attachment #4 for a typical of a french drain). Construction of the french drain will consist of a layer of rock material to a depth of at least 6" to cover the affected area. A filter fabric will be placed over the drain rock to prevent contamination of the drain system. The size of the drain systems will be dependent upon topographic constraints along with size of the seep.

Post Mine Gravity Discharge

Gravity discharge from intercepted groundwater in the Wilberg Mine will occur as seeps from the individual portals. As mentioned early, several small seeps occur along the formational boundary between the Blackhawk and Star Point formations. Flow from the formational seeps is insufficient for sample collection. Surface Water Resources

The PacifiCorp permit area including the Miller Canyon portal area is located in the headwater region of the San Rafael River Basin. The surface drainage system of the Miller Canyon area is

confined exclusively to the Cottonwood Canyon Creek drainage system (refer to Vol. 9 - Hydrologic Section: Map HM-1). For a complete discussion of the surface water systems of the East Mountain property including the Miller Canyon refer to Volume 9 - Hydrologic Section.

The Miller Canyon area consists of approximately 0.02 acres located on a south-facing slope in the Miller Canyon drainage. Surface flow prior to the mine development in 1981 consisted of sheet flow downslope until intersecting Miller Canyon drainage system.

Surface Water Quality

Miller Canyon is an ephemeral drainage which flows to Cottonwood Canyon Creek. The portals are located approximately one half (1/2) mile from the confluence of Miller Canyon and Cottonwood Canyon Creek. In 1983 the portal location was incorporated into the Wilberg/Cottonwood UPDES permit: UT-0022896, as outfall location 004. Discharge water quality from the portal area is monitored according to UPDES permit stipulations. Discharge has not occurred from the portal area since 1996. Water quality and quantity of the receiving stream - Cottonwood Canyon Creek, is monitored above and below the Miller Canyon at site SW-2 and SW-3 as specified in Appendix A of Volume 9 - Hydrologic Section . Results of the monitoring including hydrographs and water quality statistics are reported in the Annual Hydrologic Report.

Sampling and Analysis

Water quality sampling and analysis of samples collected by PacifiCorp were done according to the "Standard Methods for the Examination of Water and Wastewater." Attachment #3 consists of historic water quality data for the Miller Canyon discharge. Also within Attachment #3 is a resent quality sample analysis. This sample compared well with the historical data, which suggests a stabilization of water quality from the mine water discharge.

In addition to the routine water quality sampling, PacifiCorp conducted bioassay sampling to satisfy the UPDES permit. Samples collected from Miller Canyon passed the fifty (50) percent mortality certieria established in the permit. This information is also found in Attachment #3.

R645-301-800: Bonding and Insurance

Currently, the Cottonwood/Wilberg Mine reclamation bond is $2,071,098.00. Costs associated with this project will not affect the bond liability. Insurance is provided for and was updated in February 1999.

Based on extensive research by Energy West, all parameters necessary to this reclamation project have been covered and are included in the preceding text. If you have any questions or concerns regarding this notice to conduct reclamation operations, please contact myself at 435-687-4720 or Dennis Oakley at 435-687-4825.

Sincerely,

Chuck Semborski
Geology/Permitting Supervisor

Enclosures

DCO/dco/cas

Cc: Jeff DeFreest – USFS - Price District
Chris Colt - DWR – Price District
Joe Helfrich – DOGM – Salt Lake City
Blake Webster – IMC w/o Attachments
Carl Pollastro – EWMC w/o Attachments
File

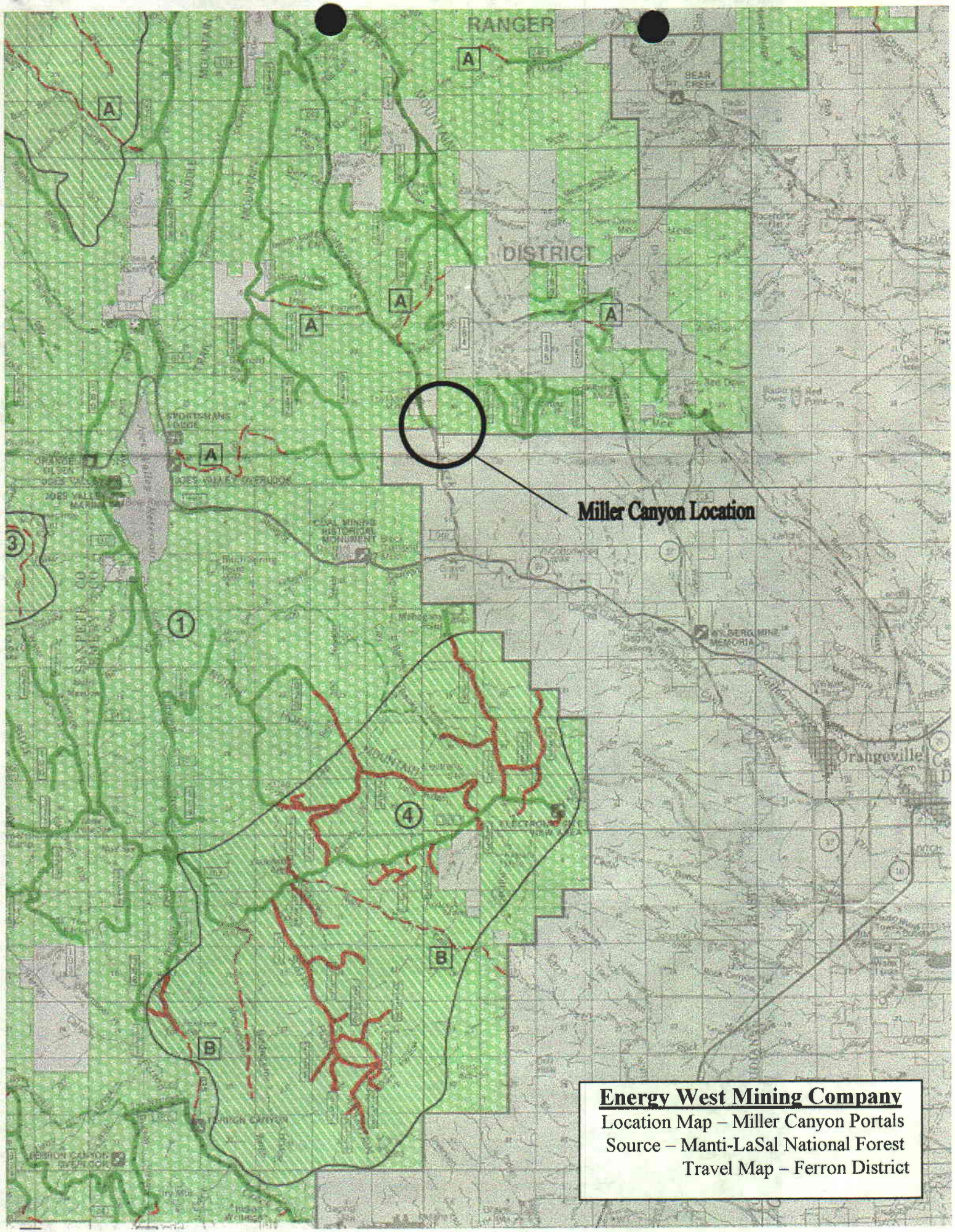
PacifiCorp

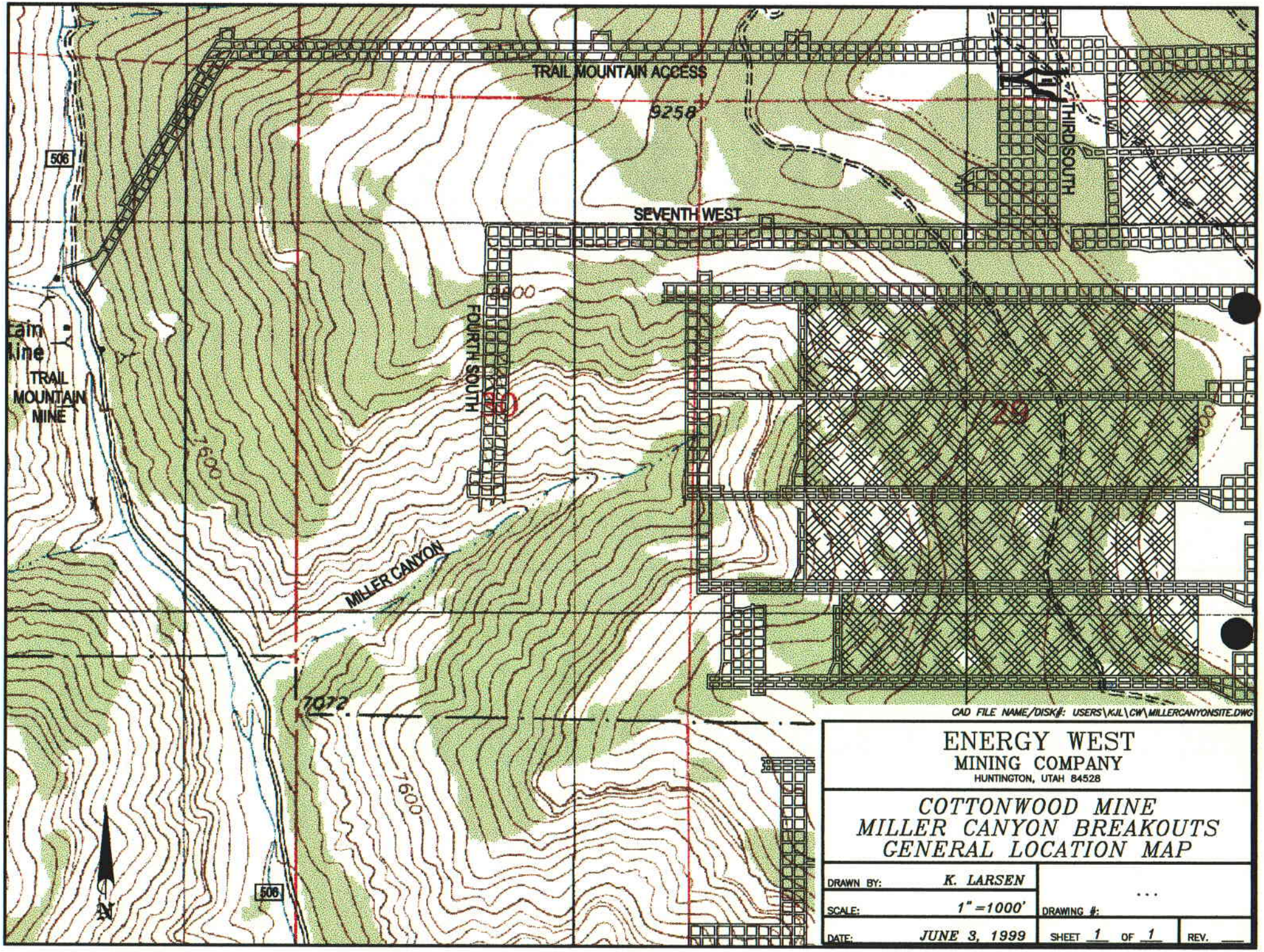
Cottonwood/Wilberg Mine

ACT/015/019

Miller Canyon Reclamation

Attachment #1


RANGER
DISTRICT
Miller Canyon Location
Energy West Mining Company
Location Map – Miller Canyon Portals
Source – Manti-LaSal National Forest
Travel Map – Ferron District

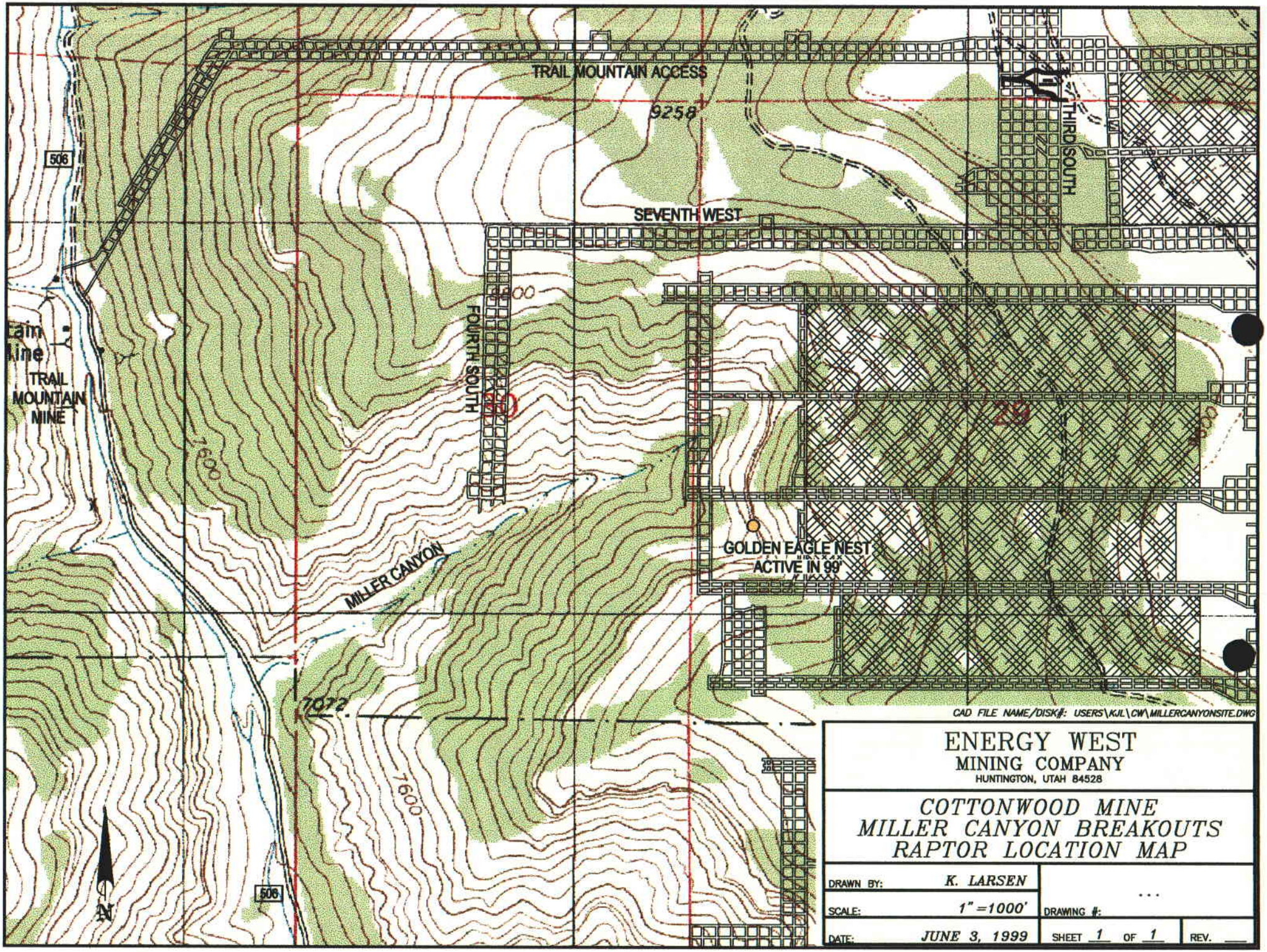


CAD FILE NAME/DISK#: USERS\KJL\CW\MILLERCANYONSITE.DWG

ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528

COTTONWOOD MINE
MILLER CANYON BREAKOUTS
GENERAL LOCATION MAP

DRAWN BY:	K. LARSEN		
SCALE:	1" =1000'	DRAWING #:	...
DATE:	JUNE 3, 1999	SHEET 1 OF 1	REV.


TRAIL MOUNTAIN ACCESS
9258
506
THIRD SOUTH
SEVENTH WEST
FOURTH SOUTH
TRAIL MOUNTAIN MINE
1600
MILLER CANYON
GOLDEN EAGLE NEST
ACTIVE IN 99'
7072
7600
N
506
CAD FILE NAME/DISK#: USERS\KJL\CW\MILLERCANYONSITE.DWG
ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528
COTTONWOOD MINE
MILLER CANYON BREAKOUTS
RAPTOR LOCATION MAP
DRAWN BY: K. LARSEN
SCALE: 1" =1000'
DRAWING #: ...
DATE: JUNE 3, 1999
SHEET 1 OF 1
REV.

PacifiCorp

Cottonwood/Wilberg Mine

ACT/015/019

Miller Canyon Reclamation

Attachment #2

iml

Inter-Mountain Laboratories, Inc.

1633 Terra Avenue Sheridan, Wyoming 82801 Tel. (307) 672-8945

ENERGY WEST MINING COMPANY
HUNTINGTON, UTAH

April 24, 1995

$SAR = \frac{Na^+}{[Ca + Mg]/2}$

Lab No.	Location	Depths	pH	EC mmhos/cm @ 25°C	Saturation %	Calcium meq/l	Magnesium meq/l	Sodium meq/l	SAR	Sand %	Silt %	Clay %	Texture
119907	CTW0195		7.3	4.69	37.0	13.6	31.2	21.6	4.56	40.4	41.6	18.0	LOAM
119908	CTW0295		7.6	3.47	35.7	9.03	24.1	11.2	2.74	36.4	42.6	21.0	LOAM
119909	CTW0395		7.5	3.60	34.7	8.88	23.1	14.0	3.49	32.4	44.6	23.0	LOAM

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, Exch= Exchangeable, Avail= Available

imL

Inter-Mountain Laboratories, Inc.

1633 Terra Avenue Sheridan, Wyoming 82801 Tel. (307) 672-8945

ENERGY WEST MINING COMPANY
HUNTINGTON, UTAH

April 24, 1995

Lab No.	Location	Depths	Total Organic Carbon %	Total Sulfur %	T.S. AB t/1000t	Neut. Pot. t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyrS AB t/1000t	PyrS ABP t/1000t
119907	CTW0195		14.0	0.09	2.81	391.	388.					
119908	CTW0295		9.2	0.05	1.56	403.	402.					
119909	CTW0395		9.5	0.04	1.25	382.	381.					

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neut. Pot.= Neutralization Potential

iml

Inter-Mountain Laboratories, Inc.

1633 Terra Avenue Sheridan, Wyoming 82801 Tel. (307) 672-8945

ENERGY WEST MINING COMPANY
HUNTINGTON, UTAH

April 24, 1995

Lab No.	Location	Depths	P ppm	K ppm	Boron ppm	Selenium ppm	Total Kjeldahl Nitrogen %	1/3 bar	15 bar
119907	CTW0195		<0.01	130.	0.64	<0.02	0.26	11.9	11.0
119908	CTW0295		<0.01	256.	0.81	<0.02	0.22	10.8	8.8
119909	CTW0395		<0.01	126.	0.75	<0.02	0.20	10.9	8.6

PacifiCorp

Cottonwood/Wilberg Mine

ACT/015/019

Miller Canyon Reclamation

Attachment #3

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-1600 FAX: 630-953-1604
SINCE 1939
SGS Member of the SGS Group (Société Générale de Surveillance)
ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020
HUNTINGTON, UT 84528
TEL: (435) 653-2311
FAX: (435) 653-2436

June 1, 1999

PACIFICORP FIELD OFFICE
P.O. Box 1005
Huntington UT 84528

Sample identification by
PACIFICORP FIELD OFFICE

COTTONWOOD MINE
MILLER CANYON DISCHARGE AT PORTAL #3
Rec'd 1430 hr.
Sampled 1145 hr.
FIELD MEASUREMENTS
Flow 3 GPM

Kind of sample reported to us: Water

Sample taken at: Cottonwood Mine

Sample taken by: Energy West/Dennis Oakley

Date sampled: May 17, 1999

Date received: May 17, 1999

Analysis report no. 59-19864

Parameter	Result	MRL	Units	Method	Analyzed Date/Time/Analyst
Conductivity	1349	1	umhos/cm	SM2510-B	05-19-1999 0820 SC
Iron, Dissolved	<0.1	0.1	mg/l	EPA 236.1	05-26-1999 1200 SC
Iron, Total	0.1	0.1	mg/l	EPA 236.1	05-26-1999 1200 SC
pH	7.70	----	pH units	EPA 150.1	05-18-1999 1100 MK
Solids, Total Dissolved	961	10	mg/l	EPA 160.1	05-19-1999 0800 KP
Solids, Total Suspended	8	5	mg/l	EPA 160.2	05-19-1999 0800 KP

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To	From
Co.	Co.
Dept.	Phone #
Fax #	Fax #

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Huntington Laboratory

MEMBER ACIL

Water Quality Report: Operational

02-Jun-99

LOCATION GROUP: WIL-DIS

LOCATION: MILLER CANYON HISTORICAL DATA FOR DATE: 19770101 THROUGH 19990601

PARAMETER	MAXIMUM	MINIMUM	AVERAGE	# ANALYSES	SUM
BICARB:	543	267	408.67	79	32285
CALCIUM:	250.7	71.5	156.28	79	12346
CARBONATE:	10	0.1	1.3463	67	90.2
CHLORIDE:	155	10	22.139	77	1704.7
CONDUCT:	1900	480	1216.4	81	98531
DISS_OXY:	12.3	2.4	5.525	72	397.8
FLOW:	78	2.5	19.413	97	1883.0
HARDNESS:	997	366	721.01	79	56960
IRON_TOT:	1.38	0.01	0.2351	79	18.57
IRON_DISS:				0	
MAGNESIUM:	99.4	45.31	81.153	78	6329.9
MANG_DISS:				0	
MANGANESE:	0.52	0.01	0.0612	73	4.47
OIL_GREASE:	7.2	0.1	2.1324	71	151.4
PH:	8.83	6.4	7.2951	81	590.9
POTASSIUM:	9.1	1.83	5.7899	79	457.4
SET_SOLIDS:	1	0.1	0.5125	8	4.1
SODIUM:	158	13.58	36.568	79	2888.9
SULFATE:	680	200	419.29	79	33124
SUSPENDED:	32	0.1	4.7716	109	520.1
TEMP_WATE	70.34	11.7	49.605	63	3125.1
TDS:	1182	413	925.69	81	74981
DEPTH:				0	

Water Quality Report: Baseline only

02-Jun-99

LOCATION GROUP: WIL-DIS

LOCATION: MILLER CANYON HISTORICAL DATA FOR DATE: 19770101 THROUGH 19990601

PARAMETER	MAXIMUM	MINIMUM	AVERAGE	# ANALYSES	Std. Deviaton
ACIDITY:	100	0.1	22.451	72	19.629
ALUMINIUM:	0.01	0.01	0.01	1	
AMMONIA:	0.08	0.08	0.08	1	
ARSENIC:	0.002	0.002	0.002	1	
BORON:	0.4	0.4	0.4	1	
CADMIUM:	0.002	0.002	0.002	1	
COPPER:	0.01	0.01	0.01	1	
LEAD:	0.05	0.05	0.05	1	
MOLY:	0.1	0.1	0.1	1	
NITRITE:	0.01	0.01	0.01	2	0
NITRATE:	0.17	0.05	0.11	2	0.0849
ORTH_PHOS:				0	
SELENIUM:	0.009	0.009	0.009	1	
ZINC:	0.04	0.04	0.04	1	

REGION VIII GUIDANCE FOR ACUTE WHOLE EFFLUENT REPORTING

PERMIT NAME Wilberg Mine NPDES No UT002896 OUTFALL NO. 004

50% MORTALITY TEST: XX PASS _____ FAIL LC50 >100 %

Test Animal/Age P.promelas 5 days Sample type/Time/Date Grab/1045/5-15-95

Analysis Time & Date: Begin 0940/5-17-95 End 1105/5-21-95

Dilutions (% Effluent) *

NUMBER ALIVE	0%	6.25%	12.5%	25%	50%	75%	100%
Start of Test	20		20	20	20	20	20
After 24 hrs	20		20	20	20	20	20
After 48 hrs	20		20	20	20	20	20
After 72 hrs	20		20	20	20	20	20
After 96 hrs	20		20	20	20	20	20

* normally, a minimum of five plus control(0%)

Dilutions (% Effluent)

MAX/MIN VALUES	0%	6.25%	12.5%	25%	50%	75%	100%
Dis. Oxygen	8.4/6.4	-/-	7.8/6.5	7.6/6.7	7.2/6.7	7.6/6.7	8.6/6.8
Temp °C	20/19	-/-	20/19	20/19	20/19	20/19	20/19

Receiving Water Used For Dilution (Y or N)? yes

Hardness: Receiving Water 525 Effluent 750 Recon Water(if used) ____

Initial Total Residual Cl2 in 100% Effluent: <0.10

Initial NH3 (as N) in 100% Effluent: <1.0

pH in 100% Effluent: Initial 7.4 After 24 Hours: 8.6

pH in 0% Control: Initial 8.3 After 24 Hours: 8.5

COMMENTS _____

ANALYST'S NAME Donald Barton

LABORATORY Commercial Testing & Engin. SIGNATURE/DATE Donald Barton 5-30-95

REGION VIII GUIDANCE FOR ACUTE WHOLE EFFLUENT REPORTING

PERMIT NAME PacifiCorp-Wilberg Mine NPDES No UT002896 OUTFALL NO. 004

50% MORTALITY TEST: XX PASS _____ FAIL LC50 >100 %

Test Animal/Age C.dubia/<24h Sample type/Time/Date Grab/1110/6-6-95

Analysis Time & Date: Begin 6-7-95/1645 End 6-9-95/1430

Dilutions (% Effluent) *

NUMBER ALIVE	0%	6.25%	12.5%	25%	50%	75%	100%
Start of Test	20	---	20	20	20	20	20
After 24 hrs	20	---	20	20	20	20	20
After 48 hrs	18	---	19	17	20	20	20
After 72 hrs							
After 96 hrs							

* normally, a minimum of five plus control(0%)

Dilutions (% Effluent)

MAX/MIN VALUES	0%	6.25%	12.5%	25%	50%	75%	100%
Diss. Oxygen	7.2/6.0	-/-	7.5/6.1	7.3/5.9	7.5/6.0	7.4/6.2	8.1/6.4
Temp °C	20/20	-/-	20/20	20/20	20/20	20/20	20/20

Receiving Water Used For Dilution (Y or N)? NO

Hardness: Receiving Water____ Effluent 582 Recon Water(if used) 140

Initial Total Residual Cl2 in 100% Effluent: <0.10

Initial NH3 (as N) in 100% Effluent: <1.0

pH in 100% Effluent: Initial 8.1 After 24 Hours: 8.4

pH in 0% Control: Initial 8.4 **After 24 Hours:** 8.5

COMMENTS _____

ANALYST'S NAME Donald Barton

LABORATORY Commercial Testing & Engin. SIGNATURE/DATE Donald Barton

REGION VIII GUIDANCE FOR ACUTE WHOLE EFFLUENT REPORTING

PERMIT NAME PacifiCorp-Wilberg Mine NPDES No UT002896 OUTFALL NO. 004

50% MORTALITY TEST: XX PASS _____ FAIL LC50 >100 %

Test Animal/Age C.dubia/<24h Sample type/Time/Date Grab/1011/7-17-95

Analysis Time & Date: Begin 7-18-95/1600 End 7-20-95/1530

Dilutions (% Effluent) *

NUMBER ALIVE	0%	6.25%	12.5%	25%	50%	75%	100%
Start of Test	20	---	20	20	20	20	20
After 24 hrs	20	---	20	20	20	20	20
After 48 hrs	20	---	20	20	20	20	19
After 72 hrs							
After 96 hrs							

* normally, a minimum of five plus control(0%)

Dilutions (% Effluent)

MAX/MIN VALUES	0%	6.25%	12.5%	25%	50%	75%	100%
Diss. Oxygen	7.5/6.9	-/-	7.4/6.9	7.7/7.1	7.6/6.9	7.7/7.1	8.1/7.2
Temp °C	20/20	-/-	20/20	20/20	20/20	20/20	20/20

Receiving Water Used For Dilution (Y or N)? YES

Hardness: Receiving Water 269 Effluent 382 Recon Water(if used) _____

Initial Total Residual Cl2 in 100% Effluent: <0.10

Initial NH3 (as N) in 100% Effluent: <1.0

pH in 100% Effluent: Initial 8.1 After 24 Hours: 8.3

pH in 0% Control: Initial 8.5 After 24 Hours: 8.4

COMMENTS _____

ANALYST'S NAME Donald Barton

LABORATORY Commercial Testing & Engin. SIGNATURE/DATE Donald Barton 7-25-95

REGION VIII GUIDANCE FOR ACUTE WHOLE EFFLUENT REPORTING

PERMIT NAME PacifiCorp-Wilberg Mine NPDES No UT002896 OUTFALL NO. 004

50% MORTALITY TEST: XX PASS _____FAIL LC50 >100 %

Test Animal/Age P.promelas 3days Sample type/Time/Date Grab/1205/10-23-95

Analysis Time & Date: Begin 10-24-95/1520 End 10-28-95/1030

Dilutions (% Effluent) *

NUMBER ALIVE	0%	6.25%	12.5%	25%	50%	75%	100%
Start of Test	20		20	20	20	20	20
After 24 hrs	20		20	20	20	20	20
After 48 hrs	20		20	20	20	20	13
After 72 hrs	18		20	20	19	20	13
After 96 hrs	17		20	20	19	20	12

* normally, a minimum of five plus control(0%)

Dilutions (% Effluent)

MAX/MIN VALUES	0%	6.25%	12.5%	25%	50%	75%	100%
Diss. Oxygen	8.5/7.4	-/-	8.9/7.5	8.5/7.6	8.1/7.3	8.1/6.2	8.0/6.7
Temp °C	20/19	-/-	20/19	20/19	20/19	20/19	20/19

Receiving Water Used For Dilution (Y or N)? YES

Hardness: Receiving Water 245 Effluent 710 Recon Water(if used)_____

Initial Total Residual Cl2 in 100% Effluent: <0.10

Initial NH3 (as N) in 100% Effluent: <1.0

pH in 100% Effluent: Initial 7.4 After 24 Hours: 8.6

pH in 0% Control: Initial 8.4 After 24 Hours: 8.9

COMMENTS 15% mortality in receiving water control due to broken glassware killing 10% of the organisms. The Control using reconstituted lab water experienced a 5% mortality.

ANALYST'S NAME Donald Barton

LABORATORY Commercial Testing & Engin. SIGNATURE/DATE Donald Barton 11-2-95

REGION VIII GUIDANCE FOR ACUTE WHOLE EFFLUENT REPORTING

PERMIT NAME PacifiCorp-Wilberg Mine NPDES No UT0022896 OUTFALL NO. 004

50% MORTALITY TEST: XX PASS _____ FAIL LC50 >100 %

Test Animal/Age C.dubia/<24h Sample type/Time/Date Grab/0745/5-13-96

Analysis Time & Date: Begin 5-14-96/1215 End 5-16-96/1130

Dilutions (% Effluent) *

NUMBER ALIVE	0%	6.25%	12.5%	25%	50%	75%	100%
Start of Test	20	---	20	20	20	20	20
After 24 hrs	20	---	20	18	18	20	20
After 48 hrs	19	---	19	18	17	18	17
After 72 hrs							
After 96 hrs							

* normally, a minimum of five plus control(0%)

Dilutions (% Effluent)

MAX/MIN VALUES	0%	6.25%	12.5%	25%	50%	75%	100%
Diss. Oxygen	7.3/6.5	-/-	7.3/6.5	7.3/6.5	7.4/6.5	7.2/6.4	7.4/7.2
Temp °C	20/20	-/-	20/20	20/20	20/20	20/20	20/20

Receiving Water Used For Dilution (Y or N)? NO

Hardness: Receiving Water _____ Effluent 580 Recon Water(if used) 140

Initial Total Residual Cl2 in 100% Effluent: <0.10

Initial NH3 (as N) in 100% Effluent: <1.0

pH in 100% Effluent: Initial 7.9 After 24 Hours: 8.5

pH in 0% Control: Initial 8.6 After 24 Hours: 8.7

COMMENTS _____

ANALYST'S NAME Donald Barton

LABORATORY Commercial Testing & Engin. SIGNATURE/DATE Donald Barton 5-17-96

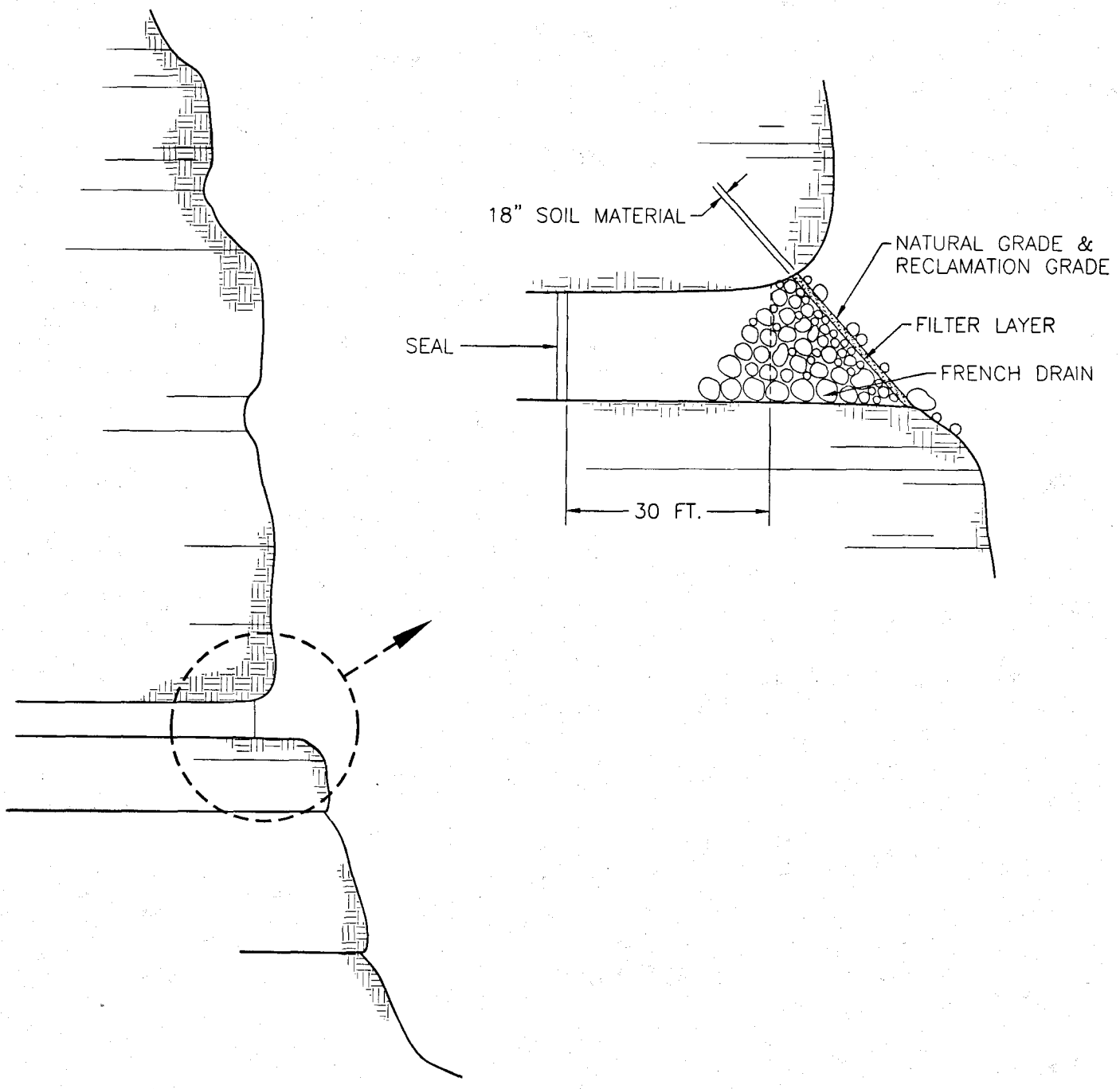
PacifiCorp

Cottonwood/Wilberg Mine

ACT/015/019

Miller Canyon Reclamation

Attachment #4



CAD FILE NAME/DISK#: USERS\KJL\CW\MILLERCANYON.DWG

ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528

COTTONWOOD MINE
MILLER CANYON BREAKOUTS
RECLAMATION CROSS SECTION

DRAWN BY:	K. LARSEN	....	
SCALE:	NONE	DRAWING #:	
DATE:	JUNE 2, 1999	SHEET 1 OF 1	REV. ___

PacifiCorp

Cottonwood/Wilberg Mine

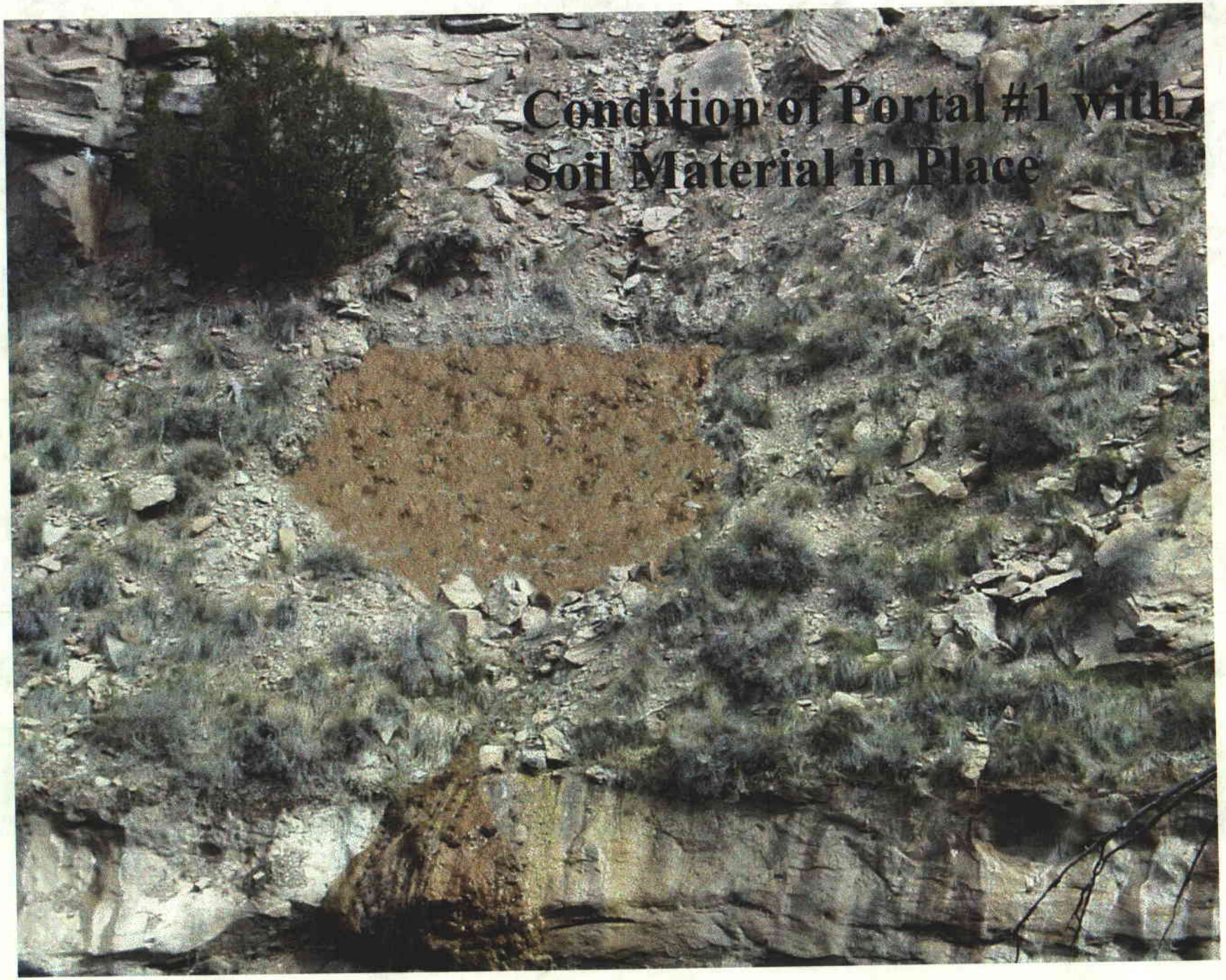
ACT/015/019

Miller Canyon Reclamation

Attachment #5


Present Condition of
Portal #1


Condition of Portal #1 with
Fill Material in Place


Condition of Portal #1 with
Soil Material in Place


Condition of Portal #1 with
Litter Material in Place and
Mature Vegetation

ENERGY WEST Mining Co.
PO Box 310
Huntington, Utah 84528

June 18, 1999

ACT/015/019 #2
Copy Daron

Utah Coal Program
Utah Division of Oil, Gas, and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Attn: Joe Helfrich

Re: Response to Deficiencies to the Miller Canyon Reclamation Plan, PacifiCorp, Cottonwood/Wilberg Mine, ACT/015/019, 99B, DOGM File #2, Emery County, Utah

PacifiCorp, by and through its wholly-owned subsidiary, Energy West Mining Company ("Energy West") as mine operator, hereby responds to the deficiencies received from the Division of Oil, Gas and Mining (DOGM) for the reclamation of the Miller Canyon portals of the Cottonwood Mine.

The format of this document will be DOGM's findings in **bolded** text, followed by Energy West's responses in *italics*.

1. **The information provided by the applicant indicates that gravity flow still exists. The mine water discharge information does not draw conclusions to future discharge potentials at the portals. It is recommended that the applicant commit to conduct annual surveys of the portal area throughout the reclamation period to determine if mine discharge is continued or increasing. If any measurable flows appear the applicant should take samples to ensure acid and toxic contamination does not occur.**

   PacifiCorp is currently required to monitor the discharge from Miller Canyon monthly as part of UPDES permit #UT-0022896-004. Monitoring will continue as it has in the past.

Huntington Office:
(435) 687-9821
Fax (435) 687-2695
Purchasing Fax (435) 687-9092

Deer Creek Mine:
(435) 687-2317
Fax (435) 687-2285

Trail Mountain Mine:
(435) 748-2140
Fax (435) 748-5125

2. **The permittee must provide the following, prior to approval, in accordance with the requirements of :**

   R64-301-223, R645-301-120 and R645-301-130, Please provide Attachment #2 and Attachment #3 as described on page 2 of the submittal and discussed above.

   In 1995, PacifiCorp had soil analysis conducted on the soil piles as indicated in the reclamation plan. The plan did not state which analysis went with which soil pile. Analysis # CTW0195 is the analytical result of soil pile "B".

   The location map of the soil piles at the Cottonwood/Wilberg waste rock site was inadvertently excluded from Attachment #2. The reclamation plan will be revised to include this map.

   An obvious error was found by the Division on page 2 of the reclamation plan, under **R645-301-200: Soils**. *The plan states that the soil analysis report of the soil piles at the Cottonwood/Wilberg waste rock site can be found in Attachment #3. It should have stated Attachment #2. This error will be corrected. See attachments included at the end of this document.*

3. **The permittee must provide the following, prior to approval, in accordance with the requirements of :**

   R645-301-231 and R645-301-120, Please provide a tally in tabular form of the remaining soil stockpiled at the Cottonwood/Wilberg waste rock site.

   A table which outlines the volumes of available soil stored at the Cottonwood/Wilberg waste rock site before and after the Miller Canyon reclamation project will be included in Attachment #2 of the reclamation plan. See attachments included at the end of this document.

4. **The permittee must provide the following, prior to approval, in accordance with the requirements of:**

   R645-301-355, Please add mulching to the reclamation steps described on page 3 of the submittal.

   R645-301-354, Please indicate that seeding will be conducted again in late autumn.

   PacifiCorp commits to include mulch and netting to sufficiently cover the reclaimed area. Litter will be placed on top to keep the netting in place and also to control erosion. PacifiCorp also commits to conduct seeding again in late autumn. The seed mixture will be identical to the present mix.

Attached are revised pages 2 and 3 and the required inserts for Attachment #2 for the Miller Canyon Reclamation Plan. Upon verbal approval seven (7) clean copies will immediately be submitted so this plan can be incorporated into the Cottonwood/Wilberg MRP.

Unless an unforeseen item has been neglected, all parameters to the Miller Canyon project deficiency response have been covered and are complete. If you have any questions please feel free to contact myself at 435-687-4720 or Dennis Oakley at 435-687-4825.

Sincerely,

Dennis Oakley

for Chuck Semborski
Geology/Permitting Supervisor

DCO/dco/cas

Attachments Included

Cc: Blake Webster
Carl Pollastro
file

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

Michael O. Leavitt
Governor
Kathleen Clarke
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)

June 17, 1999

TO: File

THRU: Joe Helfrich, Permit Supervisor

THRU: Daron Haddock, Permit Supervisor

FROM: David Darby, Senior Reclamation Specialist

RE: Miller Canyon Reclamation, PacifiCorp, Cottonwood /Wilberg Mine, ACT/015/019-99B, File #2, Emery County, Utah

SUMMARY:

A proposal was received was by PacifiCorp on June 7, 1999 to reclaim the portal breakouts in Miller. The applicant submitted information indicating that some groundwater has been discharging from the portals, but in the past few years reduced in flow to only a few gallons per minute. The portals were developed in 1981 to supply air to the Wilberg Mine.

TECHNICAL ANALYSIS:

RECLAMATION PLAN

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: R645-301-521

Analysis:

The applicant submitted a set of maps in Attachments 1, 4 and 5 depicting the location, setting and condition of the portal site.

Findings:

The applicant has submitted sufficient information to address this issue.

HYDROLOGIC INFORMATION

Regulatory Reference: R645-301-761.

Analysis:

The applicant discussed the method of sealing the portals in a way to allow gravity discharge of mine water. French drains (rock and gravel bottoms) of backfill material will ensure drainage of small amounts of water from the mine.

Regulations require that mine closures prevent acid or other toxic drainage from entering ground or surface waters.

The applicant points out that Miller Creek is ephemeral and that the portals are 150 feet from the canyon floor. Water discharging from the mine is reduced before it reaches the channel.

The applicant indicates through water monitoring information that monitoring has been conducted since 1977. A summary of the monitoring data shows the average levels of several parameters. Throughout the monitoring history flow has sometimes been as high as 78 gpm and has recently reduced through inactive mining. Oil and grease have been identified during monitoring. Reduced flows have made it difficult to collect samples.

Findings:

The information provided by the applicant indicates that gravity flows still exists. The mine water discharge information does not draw conclusions to future discharge potential at the portals. It is recommended that the applicant commit to conduct annual surveys of the portal area throughout the reclamation period to determine if mine discharge is continued or increasing. If any measurable flows appear the applicant should take samples to ensure acid and toxic contamination does not occur.

Regulatory Reference: R645-301-763.

RECOMMENDATION

It is recommended that this amendment not be approved until the information is received from the applicant.

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

Michael O. Leavitt
Governor
Kathleen Clarke
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)

June 15, 1999

Chuck Semborski, Environmental Supervisor
Energy West
P. O. Box 310
Huntington, Utah 84528

Re: Reclamation Activities at the Miller Canyon Portals, PacifiCorp, Cottonwood/Wilberg Mine, ACT/015/019-99~~A~~B, Folder #3, Emery County, Utah

Dear Mr. Semborski:

The Division anticipates completing the review of your proposal regarding the reclamation of the two intake portals in Miller Canyon by June 16, 1999. It is my understanding that your reclamation activities will include the use of a helicopter to transport topsoil and materials to the portal areas, and that there is only a short window of opportunity for the use of the helicopter. With that in mind we are committed to an expeditious review. Copies of the proposal will be available for review at the Salt Lake and Price Offices.

If you have any questions regarding the status of your proposal, please call.

Sincerely,

Joseph C. Helfrich

Joseph C. Helfrich
Permit Supervisor

tam
cc: Ranvir Singh, OSM
Richard Manus, BLM
Janette S. Kaiser, USFS
Mark Page, Water Rights
Dave Ariotti, DEQ
Bill Bates, DWR
Price Field Office
O:\015019.CWW\FINAL\TRANS99B.LTR

ENERGY WEST Mining Co.
PO Box 310
Huntington, Utah 84528

June 4, 1999

Utah Coal Program
Utah Division of Oil, Gas, and Mining
Price Field Office
College of Eastern Utah
457 East 400 North
Price, Utah 84501

Attn: Bill Malencik

Copy Joe -

Re: Notice to Conduct Reclamation Activities at the Miller Canyon Portals, PacifiCorp, Cottonwood/Wilberg Mine, ACT/015/019, Emery County, Utah

#2

PacifiCorp, by and through its wholly-owned subsidiary, Energy West Mining Company ("Energy West") as mine operator, hereby submits a notice of intent to reclaim the portal breakouts in Miller Canyon. Reclamation will begin during the week of June 21, 1999 and progress until the work is completed. Energy West estimates that the project will take approximately three days to complete.

The Miller Canyon portals were developed as intake portals in October of 1981 (refer to location and plan view drawing in Attachment #1). This facility consist of three ft. x 16 ft. portals on 100 ft. centers. The portals were used for intake purposes until the Wilberg Mine fire in December 1984. At that time they were temporarily sealed. The portal furthest east (# 1 portal) was reopened in 1985 for exploration purposes after the mine fire. The portals were subsequently sealed permanently (MSHA approved) in 1987.

The #1 portal is provided with a 2 inch water monitoring pipe. Small quantity discharges occur at this point. The discharges are monitored in accordance with stipulations in the UPDES Permit, UT-0022896-004. No discharges have been recorded at site 004 since 1996.

A recent field investigation of the portals revealed that there has been some caving of the portal openings. The pipe in the #1 portal has been pinched off allowing mine discharge water to flow freely over the rock ledge to the canyon floor. The total disturbance of these portals is approximately 0.02 acres. There is currently no reclamation plan for the Miller Canyon breakouts in the approved MRP.

Huntington Office:
(435) 687-9821
Fax (435) 687-2695
Purchasing Fax (435) 687-9092

Deer Creek Mine:
(435) 687-2317
Fax (435) 687-2285

Trail Mountain Mine:
(435) 748-2140
Fax (435) 748-5125

Reclamation will be accomplished utilizing helicopter support for transporting materials from the staging area in Cottonwood Canyon to the portal areas in Miller Canyon. The staging area in Cottonwood Canyon is located approximately 2 miles from the junction of State Highway 29 on Emery County Road 506. The Emery County road department occasionally uses this area as a road chip storage area. A road encroachment application has been submitted to Emery County and verbally approved as of June 2, 1999.

The following gives an overview of the reclamation that will be conducted at these portal sites according to the Utah Coal Regulations R645-100 through R645-301-800.

R645-301-100: General

All requirements in this section have been met and can be found in the Cottonwood/Wilberg MRP, Volume 1, pages 1-1 through 1-66.

R645-301-200: Soils

Soil from the Cottonwood/Wilberg waste rock site storage area will be utilized to establish a vegetative cover over the backfilled openings. Attachment #2 shows the location of the soil piles within the old Cottonwood/Wilberg waste rock site. Soil pile "B" will be utilized for reclamation. This soil was excavated in 1995 from the Cottonwood Fan Portal (CFP) area. It was to be used for final reclamation of the fan portal area, but was not needed since a sufficient amount of soil was stored at the CFP site. Samples were taken from piles "A", "B", and "C" and sent to InterMountain Laboratory in Sheridan, Wyoming for analysis. These soils were found to be fair to good when compared to the soil suitability criteria in Appendix A of the *Guidelines for Management of Topsoil and overburden for Underground and Surface Coal Mining – 1988*. The analysis report is found in Attachment #3.

The soil from the CFP site was transported to the old Cottonwood/Wilberg waste rock site and stored in a fenced area as depicted in the figure in Attachment #2. The soil was then covered with curlex blanketing to protect it from wind and water erosion. An approved vegetative seed mix was used on the soil piles to promote biotic growth and provide erosion control.

R645-301-300: Biology

Following backfilling and grading, an approved final seed mixture will be placed on the reclaim site. This seed mixture is identical to the mixture used at the CFP reclamation site and discussed below. Revegetation techniques are as follows:

- After soil is unloaded by helicopter at the portals, the area will be hand raked to ensure that all disturbed slopes are adequately covered with approximately 18" of soil material.

- The surface will be roughened to control runoff and erosion. Litter material (rocks and tree branches) will also be incorporated into the slope to protect against erosion.

- The seed mixture will be broadcast by hand onto the reclaimed slopes.

- The soil surface will then be turned lightly by hand raking to cover the seeds.

Seed Mixture - Final Revegetation for the Miller Canyon Portal Breakouts

Common Name	Scientific Name	Lbs/Acre PLS*
Grasses		
Western wheatgrass	Agropyron smithii	3
Bluebunch wheatgrass	Agropyron spicatum	3
Indian ricegrass	Oryzposis hymenoides	3
Needle and thread grass	Stipa comata	1
Thickspike wheatgrass	Agropyron dasystachyum	1
Great Basin wildrye	Elymus ciaereus	2
Forbs		
Blueleaf aster	Aster glaucodes	.5
Utah sweet vetch	Hedysarum boreale	1
Lewis flax	Linum lewisii	1
Globemallow	Sphaeralcea coccinea	.5
Yarrow	Achillea millefolius	.5
Palmer penstemon	Penstemon palmeri	1
	Total	**17.5**
Shrubs		
Serviceberry	Amelanchier alnifolia	1
Fourwing saltbush	Atriplex canescens	2
Green Mormon tea	Ephedra viridis	1
Wyoming big sagebrush	Artemesia wyoningensis	.5
Big white rabbitbrush	Chrysothamunus nauseosus var. albicaulis	.5
	Total	**5**

The total disturbance is approximately 0.02 acres. This equates to approximately 0.5 lbs. of pure live seed to complete revegetation at the Miller Canyon portals.

Fish and Wildlife

Fish and wildlife information is provided on pages 2-159 through 2-174 in Volume 2 of the Cottonwood/Wilberg MRP.

A raptor survey was conducted in May 1999 of the Miller Canyon area. One active eagle nest was located in the canyon approximately ½ mile west of the portals and 1000 feet higher in elevation. Chris Colt (Division of Wildlife Resources – Price District) has been informed of the reclamation activities to be conducted in the canyon. Refer to Attachment #1 for nest location.

Through the establishment of a mine discharge in portal #1, a riparian habitat has formed. Final reclamation of the portals consist of establishing french drains in each of the portals. A french drain will conduct mine discharge from the portals to the rock ledge directly outby the portals. Mine discharge will flow freely down the rock face to the canyon floor. Historically the discharge dissipates completely within approximately 100 feet down the canyon. The mine discharge has been a good water source for wildlife that occupies the area in and around Miller Canyon. Typical springtime discharge quantities are less than approximately 2.0 gpm and decrease as the year progresses. A water sample of the discharge was taken in May 1999 and found that it meets drinking water standards for TDS. The water analysis is found in Attachment #3. Historical records of baseline and operational sampling is included in this attachment. Minimum, maximum, and mean values of various parameters are displayed in these reports. A Bioassay toxicity testing report from 1995 and 1996 is also included. Water quality is presented in more detail in the R645-301-700: Hydrology Section.

R645-301-400: Land Use and Air Quality

Post-mining land use for the Cottonwood mine is grazing and wildlife. Given the fact that the portals are located on steep (nearly vertical) rock outcrops, this area is only considered for wildlife. It is highly unlikely that cattle could access the steep ledges in and around the portal areas. Recent site visits found no signs of any cattle grazing in the immediate area.

R645-301-500: Engineering

As stated earlier, backfilling and grading will be conducted utilizing helicopter support. A staging area will be located along side County Road 506 in Cottonwood Canyon. Rock and soil material stored at this area will be lifted out by helicopter using a long-line belly-dump and/or cargo net to haul this material. The material will be dumped at each of the three portals.

Approximately 48 yds^3 of total material (soil and rock) will be needed at each portal. Of this material, it is estimated that 41 yds^3 will be rock material of various sizes. Larger rock material will be used first. Smaller material will be used to fill in the voids of the larger material. The idea is to create a french drain that will enable mine discharge to flow from the portal area. Refer to the typical cross-section in Attachment #4.

After the helicopter dumps its load at the portal, the rock material will be moved by hand to insure all areas of the portal are covered. The rock material will be pushed back into the portal as far as possible for complete closure.

After the rock material backfill is in place, a filter liner will be laid down over the top of it. The filter material is used as a barrier so soil cannot infiltrate the rock material. Infiltration of soil will eventually clog the french drain, possibly causing discharges in undesired locations. Soil material will be laid down to a thickness of approximately 18". Litter material will be placed on the newly graded soil that will guard against erosion. The area will be revegetated as outlined in R645-301-300: Biology. A digital rendition of the reclamation sequences is displayed in Attachment #5.

Lastly, the 2 inch water monitoring pipe that runs in excess of 500 feet down the canyon will be removed. The pipe will be removed by helicopter and disposed.

R645-301-600: Geology

This section provides useful geologic information for understanding ground water and surface water resources in the area. These resources are dependent on the geology of East Mountain. Refer to the following hydrology section for a full discussion of water related resources.

Stratigraphy of the Miller Canyon Portal Area.

The rock formations exposed in the Miller Canyon Portal area are restricted to the Upper Cretaceous period. The formations, in ascending order, Star Point Sandstone, Blackhawk. The Star Point Sandstone, which is a prominent cliff former, consists of several eastward thinning marine sandstone tongues of medial Campanian age (Clark, 1928). Westward thinning wedges of the Masuk Shale interfinger with the basal tongues of the Star Point Sandstone. The three members are the basal Panther Sandstone, the middle Storrs Sandstone, and the upper Spring Canyon Sandstone. These sandstone units are generally separated from each other by westward projecting tongues of Mancos Shale. The basal Panther Sandstone is approximately 100 feet thick and consists of massive, well indurated, crossbedded delta front sandstones. The Storrs Sandstone is located about 120 feet above the top of the Panther Member and consists of 50 feet of soft, friable sandstone. The Spring Canyon is located about 80 feet above the top of the Storrs Member and consist of 100 feet of massive, fine to medium grain, crossbedded delta front sandstones. Even though the Star Point formation exists

throughout the entire East Mountain property, the low permeability and lack of recharge limit its usefulness as a water producing aquifer. Permeability and the limiting factors of recharge, i.e., very little outcrop exposure and limited vertical groundwater migration, are caused by the mudstone layers of the upper formations.

The Blackhawk Formation overlies the Star Point Sandstone and is 625-800 feet thick in the Miller Canyon Portal area. The Blackhawk consists of alternating sandstones, siltstones, shales and coal deposited in a deltaic environment. Although coal is generally found throughout the Blackhawk Formation, the economic seams are restricted to the lower 150 feet of the formation. The Hiawatha seam was naturally exposed prior to development mining at the Miller Canyon. The seam is approximately seven and half (7 ½) feet thick and consist of several mudstone splits in the upper portion of the seam. The sandstones contained within the Blackhawk Formation are fluvial and increase in number in the upper portions of the formation. Many of the tabular sandstone channels form local perched water tables. Several small seeps occur along the boundary of the Blackhawk and Star Point Sandstone formations.

Structure – Miller Canyon Portal Area.

There are no identified faults or major folds within the Miller Canyon Portal area. The axis of the Straight Canyon Syncline lies to the northwest of the Miller Canyon Portal area (See Volume 8 Structural Contour Map - Hiawatha Seam). The Hiawatha seam in the Miller Canyon area has a dip of approximately 2° to the northwest.

R645-301-700: Hydrology

This section provides a detailed description of the hydrology, including groundwater and surface water of the Miller Canyon area.

To provide necessary ventilation to the western portion of the Wilberg Mine, entries were developed in 1981 from the 3rd South Mains to Miller Canyon. Ventilation breakouts in Miller Canyon consist of 3 portals in the Hiawatha Seam located near the head of Miller Canyon approximately one hundred and fifty (150) feet above the canyon floor. Topography in the area is extremely steep and access is limited. During development of 7th West and 4th South, several sandstone channel systems were encountered which produced minor quantities of groundwater (<20 gpm). Earth berms were constructed at the portal locations to prevent the discharge of

intercepted groundwater. PacifiCorp (Utah Power & Light Company) applied for additional NPDES (UPDES) discharge point (location 004) in 1982 and started reporting in the first quarter of 1983. Discharge from the portals was initiated after the sealing in 1984. Due to the steep topography, a

2" discharge pipe was installed to assist in sample collection. Discharge from the Miller Canyon breakouts average less than 20 gpm and steadily decreased from 1994 to 1996 to less than 5 gpm. No discharge has been reported from the portals since August 1996. Field investigations conducted in May 1999 identified minor seeps at portals two and three, and discharge from portal one was estimated at less than 3 gpm. Flow from portal area reaches the canyon floor, but dissipates within 100 feet from the portal area.

Groundwater Resources - Seeps

The characteristics and usefulness of a groundwater resource are dependent upon the geology of the water-bearing strata and on the geology and hydrology of the recharge area. Groundwater movement and storage characteristics are dependent on the characteristics of the substratum. To facilitate an understanding of groundwater of the East Mountain property including the Miller Canyon area refer to Volume 9 - Hydrologic Section for a complete discussion of pertinent regional hydrologic and geologic features.

Groundwater resources of the Miller Canyon area are limited to a series of seeps located near the formational contact between the Blackhawk and Star Point Sandstone formations and the gravity discharge from the old mine workings. The source of the groundwater seeps is from the winter snowpack which melts and infiltrates the lower Blackhawk Formation through vertical fractures. The groundwater flows down vertically until it intersects mudstone layers above and below the Hiawatha seam. Groundwater flow continues horizontally downdip through the permeable sandstone channels located above the Hiawatha seam and the upper member of the Star Point Sandstone Formation until it intersects the land surface in the form of seeps. Flow from the seeps is insufficient for quantity and quality determination. During reclamation, to facilitate post mine gravity discharge from the portals, french drains will be installed to prevent slope failure due to saturation of the fill (refer to Attachment #4 for a typical of a french drain). Construction of the french drain will consist of a layer of rock material to a depth of at least 6" to cover the affected area. A filter fabric will be placed over the drain rock to prevent contamination of the drain system. The size of the drain systems will be dependent upon topographic constraints along with size of the seep.

Post Mine Gravity Discharge

Gravity discharge from intercepted groundwater in the Wilberg Mine will occur as seeps from the individual portals. As mentioned early, several small seeps occur along the formational boundary between the Blackhawk and Star Point formations. Flow from the formational seeps is insufficient for sample collection. Surface Water Resources

The PacifiCorp permit area including the Miller Canyon portal area is located in the headwater region of the San Rafael River Basin. The surface drainage system of the Miller Canyon area is

confined exclusively to the Cottonwood Canyon Creek drainage system (refer to Vol. 9 - Hydrologic Section: Map HM-1). For a complete discussion of the surface water systems of the East Mountain property including the Miller Canyon refer to Volume 9 - Hydrologic Section.

The Miller Canyon area consists of approximately 0.02 acres located on a south-facing slope in the Miller Canyon drainage. Surface flow prior to the mine development in 1981 consisted of sheet flow downslope until intersecting Miller Canyon drainage system.

Surface Water Quality

Miller Canyon is an ephemeral drainage which flows to Cottonwood Canyon Creek. The portals are located approximately one half (1/2) mile from the confluence of Miller Canyon and Cottonwood Canyon Creek. In 1983 the portal location was incorporated into the Wilberg/Cottonwood UPDES permit: UT-0022896, as outfall location 004. Discharge water quality from the portal area is monitored according to UPDES permit stipulations. Discharge has not occurred from the portal area since 1996. Water quality and quantity of the receiving stream - Cottonwood Canyon Creek, is monitored above and below the Miller Canyon at site SW-2 and SW-3 as specified in Appendix A of Volume 9 - Hydrologic Section . Results of the monitoring including hydrographs and water quality statistics are reported in the Annual Hydrologic Report.

Sampling and Analysis

Water quality sampling and analysis of samples collected by PacifiCorp were done according to the "Standard Methods for the Examination of Water and Wastewater." Attachment #3 consists of historic water quality data for the Miller Canyon discharge. Also within Attachment #3 is a resent quality sample analysis. This sample compared well with the historical data, which suggests a stabilization of water quality from the mine water discharge.

In addition to the routine water quality sampling, PacifiCorp conducted bioassay sampling to satisfy the UPDES permit. Samples collected from Miller Canyon passed the fifty (50) percent mortality certieria established in the permit. This information is also found in Attachment #3.

R645-301-800: Bonding and Insurance

Currently, the Cottonwood/Wilberg Mine reclamation bond is $2,071,098.00. Costs associated with this project will not affect the bond liability. Insurance is provided for and was updated in February 1999.

Based on extensive research by Energy West, all parameters necessary to this reclamation project have been covered and are included in the preceding text. If you have any questions or concerns regarding this notice to conduct reclamation operations, please contact myself at 435-687-4720 or Dennis Oakley at 435-687-4825.

Sincerely,

Chuck Semborski
Geology/Permitting Supervisor

Enclosures

DCO/dco/cas

Cc: Jeff DeFreest – USFS - Price District
Chris Colt - DWR – Price District
Joe Helfrich – DOGM – Salt Lake City
Blake Webster – IMC w/o Attachments
Carl Pollastro – EWMC w/o Attachments
File

ENERGY WEST Mining Co.
PO Box 310
Huntington, Utah 84528

Pascella
FYI Joe

FAX TRANSMITTAL MEMO

Date 6-18-99

PLEASE DELIVER TELECOPY TO: Joe Helfrich

LOCATION: DOGM - Salt Lake City

FROM: Dennis Oakley

NUMBER OF PAGES, INCLUDING THIS PAGE: _____

COMMENTS: This fax is for your review. The orginal is in the mail. Let me know what you think asap.

Thanks

Dennis - 687-4825

Huntington Office:
(435) 687-9821
Fax (435) 687-2695
Purchasing Fax (435) 687-9092

Deer Creek Mine:
(435) 687-2317
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Trail Mountain Mine:
(435) 748-2140
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ENERGY WEST Mining Co.
PO Box 310
Huntington, Utah 84528

June 18, 1999

Utah Coal Program
Utah Division of Oil, Gas, and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Attn: Joe Helfrich

Re: Response to Deficiencies to the Miller Canyon Reclamation Plan, PacifiCorp, Cottonwood/Wilberg Mine, ACT/015/019, 99B, DOGM File #2, Emery County, Utah

PacifiCorp, by and through its wholly-owned subsidiary, Energy West Mining Company ("Energy West") as mine operator, hereby responds to the deficiencies received from the Division of Oil, Gas and Mining (DOGM) for the reclamation of the Miller Canyon portals of the Cottonwood Mine.

The format of this document will be DOGM's findings in **bolded** text, followed by Energy West's responses in *italics*.

1. **The information provided by the applicant indicates that gravity flow still exists. The mine water discharge information does not draw conclusions to future discharge potentials at the portals. It is recommended that the applicant commit to conduct annual surveys of the portal area throughout the reclamation period to determine if mine discharge is continued or increasing. If any measurable flows appear the applicant should take samples to ensure acid and toxic contamination does not occur.**

   PacifiCorp is currently required to monitor the discharge from Miller Canyon monthly as part of UPDES permit #UT-0022896-004. Monitoring will continue as it has in the past.

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Purchasing Fax (435) 687-9092

Deer Creek Mine:
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Trail Mountain Mine:
(435) 748-2140
Fax (435) 748-5125

2. **The permittee must provide the following, prior to approval, in accordance with the requirements of :**
   R64-301-223, R645-301-120 and R645-301-130, Please provide Attachment #2 and Attachment #3 as described on page 2 of the submittal and discussed above.

   In 1995, PacifiCorp had soil analysis conducted on the soil piles as indicated in the reclamation plan. The plan did not state which analysis went with which soil pile. Analysis # CTW0195 is the analytical result of soil pile "B".

   The location map of the soil piles at the Cottonwood/Wilberg waste rock site was inadvertently excluded from Attachment #2. The reclamation plan will be revised to include this map.

   An obvious error was found by the Division on page 2 of the reclamation plan, under **R645-301-200: Soils**. *The plan states that the soil analysis report of the soil piles at the Cottonwood/Wilberg waste rock site can be found in Attachment #3. It should have stated Attachment #2. This error will be corrected. See attachments included at the end of this document.*

3. **The permittee must provide the following, prior to approval, in accordance with the requirements of :**
   R645-301-231 and R645-301-120, Please provide a tally in tabular form of the remaining soil stockpiled at the Cottonwood/Wilberg waste rock site.

   A table which outlines the volumes of available soil stored at the Cottonwood/Wilberg waste rock site before and after the Miller Canyon reclamation project will be included in Attachment #2 of the reclamation plan. See attachments included at the end of this document.

4. **The permittee must provide the following, prior to approval, in accordance with the requirements of:**
   R645-301-355, Please add mulching to the reclamation steps described on page 3 of the submittal.

   R645-301-354, Please indicate that seeding will be conducted again in late autumn.

   PacifiCorp commits to include mulch and netting to sufficiently cover the reclaimed area. Litter will be placed on top to keep the netting in place and also to control erosion. PacifiCorp also commits to conduct seeding again in late autumn. The seed mixture will be identical to the present mix.

Attached are revised pages 2 and 3 and the required inserts for Attachment #2 for the Miller Canyon Reclamation Plan. Upon verbal approval seven (7) clean copies will immediately be submitted so this plan can be incorporated into the Cottonwood/Wilberg MRP.

Unless an unforeseen item has been neglected, all parameters to the Miller Canyon project deficiency response have been covered and are complete. If you have any questions please feel free to contact myself at 435-687-4720 or Dennis Oakley at 435-687-4825.

Sincerely,

Dennis Oakley

for Chuck Semborski
Geology/Permitting Supervisor

DCO/dco/cas

Attachments Included

Cc: Blake Webster
Carl Pollastro
file

Attachments

Replace pages in reclamation plan

Reclamation will be accomplished utilizing helicopter support for transporting materials from the staging area in Cottonwood Canyon to the portal areas in Miller Canyon. The staging area in Cottonwood Canyon is located approximately 2 miles from the junction of State Highway 29 on Emery County Road 506. The Emery County road department occasionally uses this area as a road chip storage area. A road encroachment application has been submitted to Emery County and verbally approved as of June 2, 1999.

The following gives an overview of the reclamation that will be conducted at these portal sites according to the Utah Coal Regulations R645-100 through R645-301-800.

R645-301-100: General

All requirements in this section have been met and can be found in the Cottonwood/Wilberg MRP, Volume 1, pages 1-1 through 1-66.

R645-301-200: Soils

Soil from the Cottonwood/Wilberg waste rock site storage area will be utilized to establish a vegetative cover over the backfilled openings. Attachment #2 shows the location of the soil piles within the old Cottonwood/Wilberg waste rock site. Soil pile "B" will be utilized for reclamation. This soil was excavated in 1995 from the Cottonwood Fan Portal (CFP) area. It was to be used for final reclamation of the fan portal area, but was not needed since a sufficient amount of soil was stored at the CFP site. Samples were taken from piles "A", "B", and "C" and sent to InterMountain Laboratory in Sheridan, Wyoming for analysis. These soils were found to be fair to good when compared to the soil suitability criteria in Appendix A of the *Guidelines for Management of Topsoil and overburden for Underground and Surface Coal Mining – 1988*. The analysis report is found in Attachment ~~#3~~ [redacted].

The soil from the CFP site was transported to the old Cottonwood/Wilberg waste rock site and stored in a fenced area as depicted in the figure in Attachment #2. The soil was then covered with curlex blanketing to protect it from wind and water erosion. An approved vegetative seed mix was used on the soil piles to promote biotic growth and provide erosion control.

R645-301-300: Biology

Following backfilling and grading, an approved final seed mixture will be placed on the reclaim site. This seed mixture is identical to the mixture used at the CFP reclamation site and discussed below. Revegetation techniques are as follows:

- After soil is unloaded by helicopter at the portals, the area will be hand raked to ensure that all disturbed slopes are adequately covered with approximately 18" of soil material.

- The surface will be roughened to control runoff and erosion. [redacted]. Litter material (rocks and tree branches) will ~~also~~ be placed on top of the netting to secure it and ~~incorporated into the slope to~~ protect against erosion.

- The seed mixture will be broadcast by hand onto the reclaimed slopes.

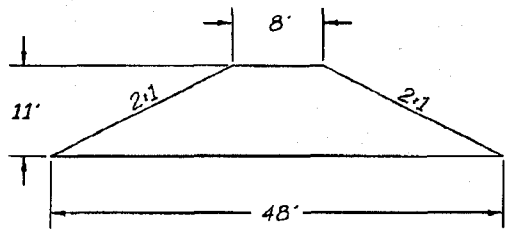
- The soil surface will then be turned lightly by hand raking to cover the seeds.

Seed Mixture - Final Revegetation for the Miller Canyon Portal Breakouts

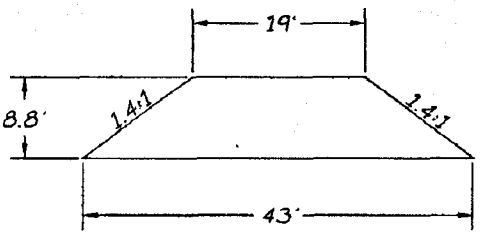
Common Name	Scientific Name	Lbs/Acre PLS*
Grasses		
Western wheatgrass	Agropyron smithii	3
Bluebunch wheatgrass	Agropyron spicatum	3
Indian ricegrass	Oryzposis hymenoides	3
Needle and thread grass	Stipa comata	1
Thickspike wheatgrass	Agropyron dasystachyum	1
Great Basin wildrye	Elymus ciaereus	2
Forbs		
Blueleaf aster	Aster glaucodes	.5
Utah sweet vetch	Hedysarum boreale	1
Lewis flax	Linum lewisii	1
Globemallow	Sphaeralcea coccinea	.5
Yarrow	Achillea millefolius	.5
Palmer penstemon	Penstemon palmeri	1
	Total	**17.5**
Shrubs		
Serviceberry	Amelanchier alnifolia	1
Fourwing saltbush	Atriplex canescens	2
Green Mormon tea	Ephedra viridis	1
Wyoming big sagebrush	Artemcsia wyoningensis	.5
Big white rabbitbrush	Chrysothamunus nauseosus var. albicaulis	.5
	Total	**5**

Insert in Attachment #2

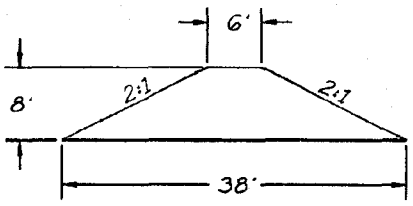
CROSS SECTIONS
SCALE: 1"=20'



TYPICAL CROSS SECTION
THRU PILE A



TYPICAL CROSS SECTION
THRU PILE B



TYPICAL CROSS SECTION
THRU PILE C

CAD FILE NAME/DISK#: F:\USERS\KJL\CW\KS1517A

PILE A AND **PILE C** ARE NATIVE SOILS FOR THE OVERLAND CONVEYOR RECLAMATION

PILE B IS SUBSOIL FOR MILLER CANYON PORTALS AND COTTONWOOD RECLAMATION

* DISTANCE WILL VARY DEPENDING ON EXACT QUANTITY STOCKPILED.

ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528

COTTONWOOD MINE
OVERLAND CONVEYOR
SUBSOIL & NATIVE SOIL STORAGE

DRAWN BY:	K. LARSEN	KS1517A	
SCALE:	1" = 100'	DRAWING #:	
DATE:	DEC. 15, 1994	SHEET 1 OF 1	REV.

Cottonwood/Wilberg Waste Rock Site Soil Pile Quantities.

Pile B (see location map)	Cubic Feet
Volume Before Reclamation of Miller Canyon Portals	230.13
Volume After Reclamation of Miller Canyon Portals	Approx. 209.13

Reclamation of Miller Canyon portals will require approximately 7 cu. yd. of soil material from the Cottonwood/Wilberg waste rock site soil pile storage. This soil will be used to cover rock material backfill. A filter liner will segregate the two fill materials.

APPENDICES

I Coal Lithologic Logs
  a. Drill Hole EM-23C
  b. Drill Hole EM-12C
  c. Drill Hole A-25
  d. Drill Hole B-124

II Field Data For the Vegetation Reference Areas

gH_2O Hydrology III Cottonwood/Trail Mountain Overland Tube Conveyor Reclamation Cross-Sections, Vegetation and Soils of the Cottonwood/Trail Mountain Portal Area and Culvert Size Calculations

IV Cottonwood/Wilberg Facility Final Reclamation Earthwork Quantities, Cross-Sections and Stability Analysis

V Report of Engineering Geology Study (Dames & Moore)

VI Overburden Analysis

VII Underground Development Waste Plan

VIII Drainage Systems
  Dwgs. 7704-C70A, C71A, C81A, C89A and C90A

IX Road Plans and Cross-Sections
  Dwgs. 7704-C50 thru C64

X Road Construction Variance

XI Geotechnical Study - Stacking Tube

XII Blasting Plan

XIII Hydrologic Analysis of Disturbed Area Runoff Control Cottonwood/Wilberg Mine Portal Site and
  Hydrologic Analysis of Undisturbed and Disturbed Area Runoff Control Proposed Cottonwood Canyon Fan Portal Site.
  (Hansen, Allen & Luce, Inc.)

XIV Photographs of Existing Structures

XV Hydrologic Procedures and Calculations with Drainage Map CM-10379-EM Final Reclamation

XVI Subsidence Monitoring Plan

XVII Safety Factor Calculations of Road and Impoundment Embankments

XVIII Stability Report - Proposed Cottonwood Fan Portal

XIX Hydrological Calculations - Proposed Cottonwood Fan Portal

XX UP&L Mining Division, Mine Permit Hydrologic Section (See Volume 9)

XXI Waste Rock Storage Facility (See Volume 10)

XXII Miller Canyon Reclamation

PDF FROM CHUCK
RE: FORMAT PROPOSAL
GJR 6/17

MILLER CANYON INTAKE PORTALS

The Miller Canyon intake portals were developed in October of 1981. This facility consists of three (3) portals (8 ft. x 20 ft.) on 100 ft. centers. The portals were used for intake purposes until the Wilberg Mine fire in December 1984. At that time they were temporarily sealed. The portals were subsequently sealed permanently in 1987. Final reclamation was completed in June ,1999 (refer to Appendix XXII).

The seal in the east portal is provided with a water monitoring pipe. Intermittent small quantity discharges occur at this point. The discharges are monitored in accordance with stipulations of UPDES UT-0022896-04.

COTTONWOOD CANYON DIESEL AND TUBE CONVEYOR PORTALS

The Cottonwood Canyon diesel and tube conveyor portals were developed in 1994-1995. The portals are used for underground travel and conveyance of coal from the Trail Mountain Mine to the Cottonwood Mine surface facilities. (See Appendix III for reclamation cross-sections, soil, vegetation reports and culvert size calculations.) Reclamation of this area will use the same seed mixture listed in Part 4 of this plan. (See Figure 5 for Soil Storage Location.)

All surface drainage will be directed and treated through a silt fence before entering an eighteen inch (18") corrugated metal pipe (cmp) that will be placed under the concrete pad to allow surface flow from the existing road ditch to continue. The conveyor pad will be constructed of dirt and gravel with a dirt berm. All surface drainage will be directed and treated through a silt fence before entering a six inch (6") corrugated metal pipe (cmp) which will direct the flow down the slope from the pad and into an existing thirty-six inch (36") undisturbed inlet.

RECLAMATION PLAN

Structure Removal

Once mining has ceased, estimated 2022, the surface facilities will be dismantled and removed from the permit area.

Starting at the mine portals, all belt lines, crushing and screening systems, electrical systems, truck laded surface building and fan installations will be torn down and hauled from the permit area.

The concrete silo will be torn down, broken up and buried against the east highway cut in the lower parking lot. All other concrete foundations that would be above final grade will be removed and buried with the silo material.

Portal Sealing

Final stages of mining (second mining), as pillars are extracted near the portal entrances inside, office and warehouse facilities will be dismantled and portal sealing will begin. Wilberg's portal entries are all updip of the extracted seam and require no drains or special hydrological containment seals (see Protection of the Hydrological Balance section). Seals are proposed as shown on Figure 1.

Because of their remote and inaccessible location from the surface, the following portals and breakouts will have to be completed from inside the mine: Channel Canyon , 7th West "Miller Canyon", Cottonwood Canyon diesel and tube conveyor portals. The Channel Canyon portals were reclaimed in August of 1997 and Phase III Bond Release for the area was approved by the Division on March 26, 1998. The Miller Canyon portals were sealed from inside the mine in 1987 and final reclamation was completed in June 1999 (refer to Appendix XXII). The Cottonwood Canyon diesel and tube conveyor portals are presently utilized and will also be sealed sometime in the future.