

**PERMIT TRACKING FORM**

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

Permit Number	ACT/015/019	Title of Proposal:	<del>W</del> Cottonwood Waste Rock
Permit Change Number	BR98-1	Description:	Site Bond Release
Permittee	PacifiCorp		
Mine Name	Cottonwood/ Wilberg	# of Copies Required:	7
		# of Copies Received:	3

Permit Change Application Sent to SLC: \_\_\_\_\_ Transmittal Letter to Permittee: \_\_\_\_\_  
 Notice of Affidavit of Publication. (If change is a Significant Revision, New Permit, or Permit Transfer.)  
 Dates Published: \_\_\_\_\_ Date Received at DOGM: \_\_\_\_\_

**REVIEW TRACKING**

ROUND 1				ROUND 2			
DATE RECEIVED:				DATE RECEIVED: 3/9/99			
	Reviewer:	Date Due:	Date Done:		Reviewer:	Date Due:	Date Done:
<input checked="" type="checkbox"/> Project Lead	PGL	2/19		<input checked="" type="checkbox"/> Project Lead			
<input type="checkbox"/> Administrative				<input type="checkbox"/> Administrative			
<input type="checkbox"/> Land Use/ AQ				<input type="checkbox"/> Land Use/ AQ			
<input type="checkbox"/> Biology				<input type="checkbox"/> Biology			
<input checked="" type="checkbox"/> Engineering	Wayne	2/19	1/14/99	<input type="checkbox"/> Engineering	W.S.C		
<input type="checkbox"/> Geology				<input type="checkbox"/> Geology			
<input checked="" type="checkbox"/> Soils	Bob	2/19	1/31/99	<input checked="" type="checkbox"/> Soils	Bob	3/30/99	
<input type="checkbox"/> Hydrology				<input type="checkbox"/> Hydrology			

ROUND 1	TA Review Due:	Date Compiled:	Permittee Response Due:	Date Received:
ROUND 2	TA Review Due:	Date Compiled:	Permittee Response Due:	Date Received:

Coordinated Reviews:	Round 1		Round 2		Comments Received: Y/N	Additional Tracking	Date:
	Sent	Due	Sent	Due			
<input type="checkbox"/> OSM						Public Hearing	
<input type="checkbox"/> BLM						Letter from Compliance Super.	
<input type="checkbox"/> US Forest Service						AVS Completed	
<input type="checkbox"/> Wildlife Resources						Approval Effective Date	
<input type="checkbox"/> Water Rights						Approved Copy to File	
<input type="checkbox"/> DEQ						Approved Copy to Permittee	
<input type="checkbox"/> SITLA						Approved Copy to PFO/ SLO	
						Approved Copy to Agencies	
						CHIA Modified	
						Update Master TA	

COMMENTS: Inspection on 5/13/99 To BLM (submitted) To OSM (12/8/99 3/5)



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

Michael O. Leavitt  
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Kathleen Clarke  
Executive Director  
Lowell P. Braxton  
Division Director

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PO Box 145801  
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801-359-3940 (Fax)  
801-538-7223 (TDD)

April 19, 1999

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

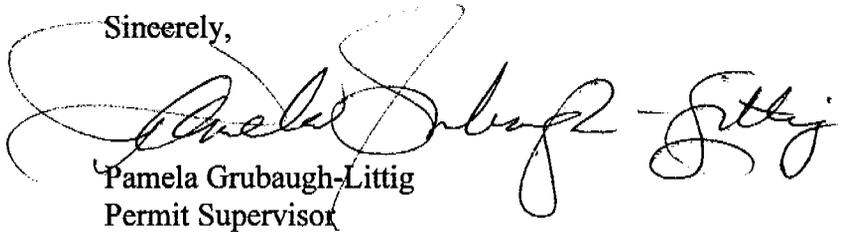
Re: Cottonwood Waste Rock Phase I Bond Release, Cottonwood/Wilberg Mine, PacifiCorp,  
ACT/015/019 - BR98, Folder #2, Emery County, Utah

Dear Mr. Semborski:

You are invited to attend a Phase I bond release inspection at the Cottonwood Waste Rock Site on Thursday, May 13, 1999 commencing at 10:00 a.m. conducted by the Division.

If you have any questions, please call me.

Sincerely,



Pamela Grubaugh-Littig  
Permit Supervisor

tam

cc: Wayne Western  
Bill Malencik  
Bob Davidson

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April 19, 1999

Richard Manus  
Bureau of Land Management  
Price Field Office  
125 South 600 West  
Price, Utah 84501

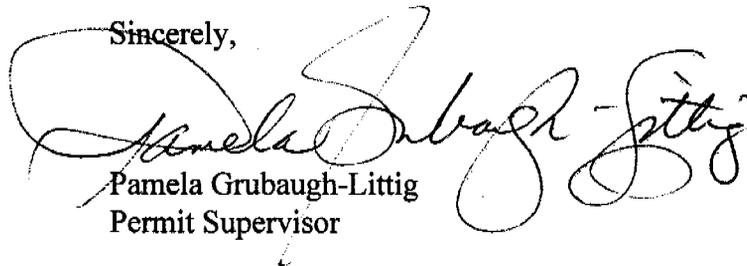
Re: Cottonwood Waste Rock Phase I Bond Release, Cottonwood/Wilberg Mine, PacifiCorp, ACT/015/019 - BR98, Folder #2, Emery County, Utah

Dear Mr. Manus:

You are invited to attend a Phase I bond release inspection at the Cottonwood Waste Rock Site on Thursday, May 13, 1999 commencing at 10:00 a.m. conducted by the Division.

If you have any questions, please call me.

Sincerely,



Pamela Grubaugh-Littig  
Permit Supervisor

tam

cc: Wayne Western  
Bill Malencik  
Bob Davidson

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801-538-7223 (TDD)

April 19, 1999

James Fulton, Chief  
Office of Surface Mining  
1999 Broadway, Suite 3320  
Denver, Colorado 80202

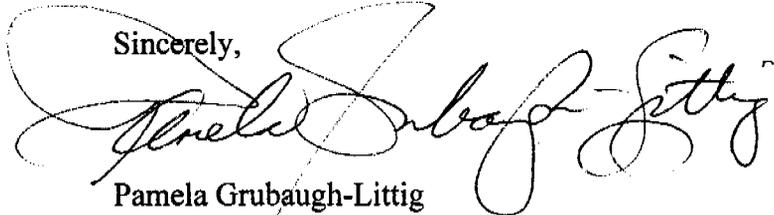
Re: Cottonwood Waste Rock Phase I Bond Release, Cottonwood/Wilberg Mine, PacifiCorp,  
ACT/015/019 - BR98, Folder #2, Emery County, Utah

Dear Mr. Fulton:

You are invited to attend a Phase I bond release inspection at the Cottonwood Waste Rock Site on Thursday, May 13, 1999 commencing at 10:00 a.m. conducted by the Division.

If you have any questions, please call me.

Sincerely,



Pamela Grubaugh-Littig  
Permit Supervisor

tam

cc: Wayne Western  
Bill Malencik  
Bob Davidson

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April 8, 1999

TO: File

THRU: Joe Helfrich, Permit Supervisor *JH*

THRU: Pam Grubaugh-Littig, Permit Supervisor *PG*

FROM: Robert Davidson, Senior Reclamation Specialist *RAD*

RE: Phase I Bond Release Application for the Old Cottonwood/Wilberg Waste Rock Site, PacifiCorp, Cottonwood/ Wilberg Mine, ACT/015/019-BR98-1, File #2, Emery County, Utah

**SUMMARY:**

On December 17, 1998, Energy West requested Phase I bond release for the Old Cottonwood/Wilberg waste rock site. The site is located alongside Highway 57 and is 1.8 miles from the Cottonwood Mine (Township 17 S Range 7 E Section 34, NE1/4 SE1/4). The Division responded on February 9, 1999. The original submittal did not state the volumes or average depth of soil materials covering the waste rock. On March 9, 1999, Energy West responded with additional information to supplement the original Appendices A and B. This memorandum provides the Technical Analysis of the March 9, 1999 submittal in conjunction with the original Phase I bond submittal.

**Analysis:**

The Old Cottonwood/Wilberg waste rock site is located alongside Highway 57 and is 1.8 miles from the Cottonwood Mine (Township 17 S Range 7 E Section 34, NE1/4 SE1/4). The waste rock site consists of seven cells. Waste rock was placed in the first cell in 1983 and the last cell was reclaimed in 1993.

On October 14, 1998, Robert Davidson and Dennis Oakley visited the site. The site was observed from the northwest corner of the site, standing on top of the rock storage pile. The best vegetation was observed on the berms. Cells 1, 2, 6, and 3 appeared to have better vegetation establishment when compared to cells 5, 4 and 7. Cell 7 has the least amount of vegetation establishment. Discussion focused on soil quality for supporting vegetation in terms of salinity and SAR (Sodium Adsorption Ratio). Visual observation seems to indicate that in areas where salts were allowed to leach, vegetation establishment is the best (e.g., berms, upper drainage areas, etc.).

The Permittee seeks to have Phase I bond release on 15 acres at the Old Cottonwood/Wilberg waste rock site. PHASE I bond release may be considered only after the Division is satisfied that all the reclamation requirements for PHASE I have been met. The requirements for PHASE I reclamation are completion of backfilling and regrading (**which may include the replacement of topsoil**); and, completion of drainage control in accordance with the requirements of the approved reclamation plan.

General requirements for backfilling and grading, which may include topsoil replacement, include the following (**note: topsoil related issues are bolded text**):

- A map illustrating the "as-built" topography if different than the most recently approved plan.
- Pre- and Post-mining Contour Topographic Maps (no smaller than 1"=500') showing:
  - a. Permit Area
  - b. Areas Previously Released
  - c. Areas Proposed for Release
  - d. Post-mining Topography
  - e. Post-mining Hydrologic Features, including drainage, ponds, and monitoring sites
  - f. Cross-sections, including but not limited to, Approximate Original Contour (AOC), drainage systems, ponds, roads, etc.
  - g. Dates of Backfilling and Grading Activities
  - h. **Dates of Topsoil Replacement**
  - i. **Topsoil Replacement Depths**
- Results of overburden chemical analysis with discussion on how overburden will not adversely affect plant growth or water quality.
- Evaluation of **topsoil or substitute soil** including analyses and **replacement depths**.
- Evaluation of **subsoil** including analyses and **replacement depths**.
- Any field designs, modifications or changes to the mining and reclamation plan which occurred in conjunction with the reclamation activities.
- A brief history of mining and reclamation activities indicating when mining operations began and ended, when earthwork and topsoil distribution began and ended.

In the letter dated December 17, 1998 from Energy West, the Permittee has recorded the dates when each of the cells were reclaimed, and the number of monitoring years as follows:

1. Cell 1, seeded in 1983, monitored - 13 years
2. Cell 2, seeded in 1984, monitored - 12 years
3. Cell 3, seeded in 1985, monitored - 11 years
4. Cell 4, seeded in 1986, monitored - 10 years
5. Cell 5, seeded in 1989, reseeded in 1993, monitored - 4 years
6. Cell 6, seeded in 1989, reseeded in 1993, monitored -4 years
7. Cell 7, seeded in 1993, monitored - 4 years.

The letter explains that as the cells were filled to their capacity, they were backfilled and graded as outlined in the MRP. The letter states that sufficient subsoil material was used to cover the waste rock along with 12" of topsoil. Furthermore, the letter states that the depth of total soil cover varies throughout the waste rock site.

The March 9, 1999, submittal provides information and analysis concerning topsoil replacement depth and volumes. The December 17, 1998 submittal provides cross sections showing original, excavated and final surface configurations; the March 9, 1999 submittal supplements Appendix A showing cross sections areas and calculated volumes of soil between each cross section. The total excavated volume of soil was calculated at 106,907 cubic yards. The volume of soil remaining and stored in the berms is calculated at 27,056 cubic yards. Therefore, the total cover volume of soil is calculated by subtracting the calculated berm volume from the total excavated volume which equals 79,851 cubic yards. The average cover depth for the 15 acre Waste Rock Site equals 3.3 ft. An auger core was taken from Cell 7 to check on soil replacement depth. The depth of the core was approximately 3 ft., which is consistent with the average depth of the entire site. The location of the cored site is found in Appendix C, map drawing dated March 5, 1999. Since the application indicates that soil cover varies throughout the site, the above analysis allows the Division enough information to make a finding on soil replacement depths as they actually occur or currently exist.

The application includes discussion and information concerning soil sampling and analysis. Analyses include pH, EC, Ca, Mg, Na, SAR, Se, and B. An excellent summary for analyses is given both in the letter and application, with comparison charts for each cell comparing soil characteristics between 1986 and 1994 sampling periods. However, in order to correlate analyses with soil replacement quality, the depth of soil replacement was needed to help rectify if analyses are for topsoil, subsoil, substitute topsoil, overburden, or refuse.

A general statement in the December 17, 1998 letter is given for soil classification within the waste rock site. Soils range from a sandy loam type on the northern end of the site to sandy clay loam/loam type on the southern most end of the site. The March 5, 1999 submittal provides additional information on soil texture and depths where coal and/or refuse was encountered. Appendix B supplemental material provides the original soil sample reports from the 1989 sampling period and includes analysis from cells 2, 4, 5, and 6. In review of the 1989 data, the majority of the soils in the reclaimed waste rock area have a textural class rating of sandy loam from 0 to 3 feet in depth. The exception is site 6, where clay loam and sandy clay loam were

encountered between 2 and 5 feet in depth. The following table summarizing the 1989 data was provided in the March 5, 1999 submittal which lists the sample sites where coal was detected at the reported sampling depth:

Cell #	1989 Sample Location *	Depth (ft.)
2	I	2
2	I	3
2	J	4
4	A	2
4	B	3
4	C	3
5	B	4
6	A	2

\*Reference Appendix A in the Dec. 17, 1998 submittal for sample locations.

**Finding:**

Information provided in the application is considered adequate to meet the requirements of this section of the regulations.



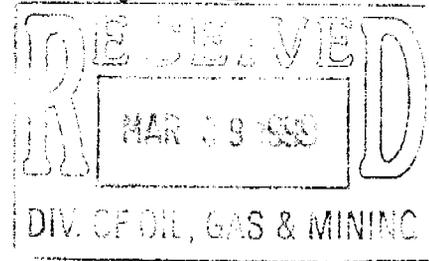
March 5, 1999

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: Pam Grubaugh-Littig

Re: **Response to Phase I Bond Release for the Old Cottonwood/Wilberg Waste Rock Site, PacifiCorp, Cottonwood/Wilberg Mine, ACT/015/019-BR98-1, File #2, Emery County, Utah.**

Copy Letter to Bob



PacifiCorp, by and through its wholly owned subsidiary, Energy West Mining Company ("Energy West") as mine operator, hereby submits a response regarding the Division findings to the Phase I bond release application for the old Cottonwood/Wilberg waste rock site (WRS). The original submittal, dated December 17, 1998, did not state the actual volumes of fill material covering the waste rock. The volumes of the WRS are given in the following responses.

Listed below are the Divisions *Findings* (Italics) and Energy West's **Response** (Bold) in regards to the Phase I submittal.

*Engineering calculations and records should provide information needed to calculate and report the depths and volumes of soil excavated for use during reclamation. Excavated volumes need to be based on acreage and depth of excavation; likewise, replacement volumes need to be based on replacement depths and acreage.*

**The total excavated and cover volumes for the WRS has been calculated and can be reviewed in Appendix A. The total excavated volume of 106,915.6 cu. yds. was calculated using the cross-sections of the four As-Built drawings (KS1142E) originally submitted December 17, 1998. The area between the excavated line and the natural ground line represents the volume of excavated soil material.**

**Total cover volume was calculated by subtracting the calculated berm volume (Appendix A) from the excavated volume. The cover volume equals 79,859.6 cu. yds. Average cover depth throughout the WRS equals approximately 3.4 ft.**

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

As requested by Mr. Bob Davidson, Energy West took a sample core in cell 7. The depth of the core (approx. 3-ft.) was consistent with the average depth of the entire WRS. The location of the cored site is found in Appendix B.

*Soil texture and type of material need to be provided for each sampling depth increment for identifying soil replacement depth and whether the material was soil or refuse.*

Texture of the soils within the Cottonwood WRS were disclosed in the December 17, 1998 submittal (page 4, Discussion of Soil Analysis) and will again be reviewed. Attached in Appendix C are the soil sample analysis reports from the 1989 sampling exercise and include analysis from cells 2, 4, 5 and 6. Note that the majority of the soils in the waste rock area are of moderately coarse textured sandy loams from 0 – 3 feet in depth. All analysis found sandy loams between 0 and 1 foot. Cell 6 found sandy clay loams and clay loams between 2 and 5 feet in depth. The sample sites listed below detected coal at the reported depth interval:

Cell #	Sample Location*	Depth (ft.)
2	I	2
2	I	3
2	J	3
4	A	2
4	B	3
4	C	3
5	B	4
6	A	2

\*Reference Appendix A in the December 17, 1998 submittal for the locations of the above sample sites.

**All analyzed samples were of soil type material with the exception of the samples in the above table at their specified depth.**

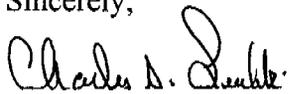
Based on the above research conducted by Energy West, all issues regarding the Division's findings have been explained to the fullest extent and/or are included in the following appendices. Three copies of this submittal are included for your inspection. If you have any questions or concerns, please contact Dennis Oakley at 435-687-4825.

Utah Coal Program

Page 3

March 5, 1999

Sincerely,



Chuck Semborski

Geology/Permitting Supervisor

Appendices Enclosed

DCO/dco/cas

Cc Blake Webster IMC (w/o appendices)  
Carl Pollastro EWMC (w/o appendices)  
Dennis Oakley EWMC (w/appendices)  
file



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

Michael O. Leavitt  
Governor  
Ted Stewart  
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1594 West North Temple, Suite 1210  
PO Box 145801  
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801-538-7223 (TDD)

March 1, 1999

Chuck Semborski, Environmental Supervisor  
Energy West Mining Company  
P. O. Box 310  
Huntington, Utah 84526

Re: Phase I Bond Release for the Old Cottonwood/Wilberg Waste Rock Site, PacifiCorp, Cottonwood/Wilberg Mine, ACT/015/009-BR98-1, File #2, Emery County, Utah

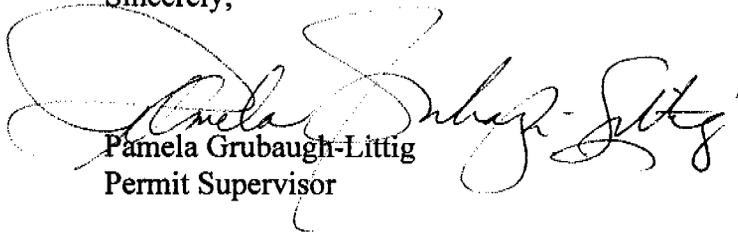
Dear Mr. Semborski:

The Division has completed its review of the Phase I bond release application for the Cottonwood Waste Rock Site. The topsoil portion of the application is deficient and requires more information (see attached memo from Robert Davidson, dated February 9, 1999).

Upon submittal and a determination that the application is technically adequate, the Phase I bond release inspection will be scheduled.

If you have any questions, please call me.

Sincerely,



Pamela Grubaugh-Littig  
Permit Supervisor

tam  
Enclosure  
cc: PFO  
OA015019.CWWFINALPHASEIDE.WPD



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

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February 9, 1999

TO: Pamela Grubaugh-Littig, Permit Supervisor *PL*

THRU: Joe Helfrich, Permit Supervisor *JH*

FROM: Robert Davidson, Senior Reclamation Specialist *RAD*

RE: Topsoil. Phase I Bond Release for the Old Cottonwood/Wilberg Waste Rock Site, PacifiCorp. Cottonwood/ Wilberg Mine. ACT/015/019-BR98-1, File #2, Emery County, Utah

**SUMMARY:**

In a letter dated December 17, 1998, Energy West requested Phase I bond release for the Old Cottonwood/Wilberg waste rock site. The site is located alongside Highway 57 and is 1.8 miles from the Cottonwood Mine (Township 17 S Range 7 E Section 34, NE1/4 SE1/4).

**Analysis:**

The Old Cottonwood/Wilberg waste rock site is located alongside Highway 57 and is 1.8 miles from the Cottonwood Mine (Township 17 S Range 7 E Section 34, NE1/4 SE1/4). The waste rock site consists of seven cells. Waste rock was placed in the first cell in 1983 and the last cell was reclaimed in 1993.

On October 14, 1998, Robert Davidson and Dennis Oakley visited the site. The site was observed from the northwest corner of the site, standing on top of the rock storage pile. The best vegetation was observed on the berms. Cells 1, 2, 6, and 3 appeared to have better vegetation establishment when compared to cells 5, 4 and 7. Cell 7 has the least amount of vegetation establishment. Discussion focused on soil quality for supporting vegetation in terms of salinity and SAR (Sodium Adsorption Ratio). Visual observation seems to indicate that in areas where salts were allowed to leach, vegetation establishment is the best (e.g., berms, upper drainage areas, etc.).

The Permittee seeks to have Phase I bond release on 15± acres at the Old Cottonwood/Wilberg waste rock site. Bond release for PHASE I may be considered only after the Division is satisfied that all the reclamation requirements for PHASE I have been met. The requirements for PHASE I reclamation are completion of backfilling and regrading (**which may include the replacement of topsoil**); and, completion of drainage control in accordance with the requirements of the approved reclamation plan.

General requirements for backfilling and grading, which may include topsoil replacement, include the following (**note: topsoil related issues are bolded text**):

- A map illustrating the "as-built" topography if different than the most recently approved plan.
- Pre- and Post-mining Contour Topographic Maps (no smaller than 1"=500') showing:
  - a. Permit Area
  - b. Areas Previously Released
  - c. Areas Proposed for Release
  - d. Post-mining Topography
  - e. Post-mining Hydrologic Features, including drainage, ponds, and monitoring sites
  - f. Cross-sections, including but not limited to, Approximate Original Contour (AOC), drainage systems, ponds, roads, etc.
  - g. Dates of Backfilling and Grading Activities
  - h. Dates of Topsoil Replacement
  - i. **Topsoil Replacement Depths**
- Results of overburden chemical analysis with discussion on how overburden will not adversely affect plant growth or water quality.
- Evaluation of **topsoil or substitute soil** including analyses and **replacement depths**.
- Evaluation of **subsoil** including analyses and **replacement depths**.
- Any field designs, modifications or changes to the mining and reclamation plan which occurred in conjunction with the reclamation activities.
- A brief history of mining and reclamation activities indicating when mining operations began and ended, when earthwork and topsoil distribution began and ended.

In the letter dated December 17, 1998 from Energy West the Permittee has recorded the dates when each of the cells were reclaimed, and the number of monitoring years as follows:

1. Cell 1, seeded in 1983, monitored - 13 years
2. Cell 2, seeded in 1984, monitored - 12 years
3. Cell 3, seeded in 1985, monitored - 11 years
4. Cell 4, seeded in 1986, monitored - 10 years
5. Cell 5, seeded in 1989, reseeded in 1993, monitored - 4 years
6. Cell 6, seeded in 1989, reseeded in 1993, monitored -4 years

7. Cell 7, seeded in 1993, monitored - 4 years.

The letter explains that as the cells were filled to their capacity, they were backfilled and graded as outlined in the MRP. Sufficient subsoil material was used to cover the waste rock along with 12" of topsoil. Furthermore, the letter states that the depth of total soil cover varies throughout the waste rock site. No further information is added in the letter or the accompanying application as to soil volumes and soil replacement depths. *Since the application indicates that soil cover varies throughout the site, the above information is inconclusive at best and does not allow the Division to make a finding on soil replacement depths as they actually occurred or currently exist.*

The December 17, 1998 letter states that enough soil material was stock piled for the construction of a berm around the cell with the berm providing enough backfilling and cover for each cell as they were completed. The Division therefore assumes that soil was obtained from the berms. No further information is provided to show the amounts of soil stock piled in the berms or the volumes of soil used to reclaim each site. *Cross sections are provided showing original, excavated and final surface configurations, but do not indicate volumes. Engineering calculations and records should provide information needed to calculate and report the depths and volumes of soil excavated for use during reclamation. Excavated volumes should be based on acreage and depth of excavation; likewise, replacement volumes need to be based on replacement depths and acreage.*

The application includes discussion and information concerning soil sampling and analysis. Analyses include pH, EC, Ca, Mg, Na, SAR, Se, and B. An excellent summary for analyses is given both in the letter and application, with comparison charts for each cell comparing soil characteristics between 1986 and 1994 sampling periods. *However, in order to correlate analyses with soil replacement quality, the depth of soil replacement is needed to help rectify if analyses are for topsoil, subsoil, substitute topsoil, overburden, or refuse.*

A general statement in the letter is given for soil classification within the waste rock site. Soils range from a sandy loam type on the northern end of the site to sandy clay loam/loam type on the southern most end of the site. No further information is given for actual soil types by depth within each sampling location and cell. *Sampling depth increments are stated and shown for each set of analyses, but soil texture and type of material are not given which would help identify soil replacement depth and whether the material was soil or refuse.*

**Finding:**

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

**R645-301-880.320, R645-301-120, and R645-301-250,** Since the application indicates that soil cover varies throughout the site, information provided in the application

is inconclusive and does not allow the Division to make a finding on soil replacement volumes and depths as they actually occurred or currently exist:

- Engineering calculations and records should provide information needed to calculate and report the depths and volumes of soil excavated for use during reclamation. Excavated volumes need to be based on acreage and depth of excavation; likewise, replacement volumes need to be based on replacement depths and acreage.
- Soil texture and type of material need to be provided for each sampling depth increment for identifying soil replacement depth and whether the material was soil or refuse.



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January 14, 1999

TO: File

THRU: Daron Haddock, Permit Supervisor *DH*

THRU: Pam Grubaugh-Littig, Permit Supervisor *PGL*

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

RE: Review of Energy West's Request for Phase I Bond Release for the Old Cottonwood/Wilberg Waste Rock Site, PacifiCorp, Cottonwood/ Wilberg Mine, ACT/015/019-BR98-1, File #2, Emery County, Utah

**SUMMARY:**

In a letter dated December 17, 1998, Energy West requested Phase I bond release for the Old Cottonwood/Wilberg waste rock site. The site is located alongside Highway 57 and is 1.8 miles from the Cottonwood Mine (Township 17 S Range 7 E Section 34, NE1/4 SE1/4).

**Background:**

The Old Cottonwood/Wilberg waste rock site is located alongside Highway 57 and is 1.8 miles from the Cottonwood Mine (Township 17 S Range 7 E Section 34, NE1/4 SE1/4). The waste rock site consisted of seven cells. Waste rock was placed in a cell until it was filled, the cell would then be graded according to the reclamation plan, topsoil would be placed and the area seeded. Waste rock was placed in the first cell in 1983 and the last cell was reclaimed in 1993. The site has been monitored since. Some tension cracks were noticed in the last cell after it was graded and topsoil. The tension cracks have since filled with sediment.

On October 2, 1992, Jesse Kelley inspected the site and stated the following in his inspection report:

Cell #7 of the old waste rock disposal site is now being graded and covered with topsoil, as specified in the plan. The site will be seeded later this fall.

On April 20, 1993, Bill Malencik inspected the site and stated in following in his inspection report:

The lower inactive site is still pending complete reclamation. Additional small areas need to be covered before final reclamation can get underway.

On June 30, 1993, Bill Malencik inspected the site and stated in following in his inspection report:

The lower inactive refuse pile has been topsoiled and will be reseeded with fall.

On June 29, 1994, Gary Fritz conducted an OSM oversight inspection of Cottonwood Mine, in his report he stated on page 3:

The one (old waste rock site) on the east side of the mine access road has been reclaimed. The lower cell for the area was resoiled and planted with permanent cover during the last year.

On September 14, 1998, Bill Malencik and Pam Grubaugh-Littig inspected the site. Bill Malencik stated the following in his inspection report:

Conducted a partial inspection. The reclaimed waste rock site was the area inspected. The permittee is interested in and requested a meeting with the Division to discuss the possibilities of filing a surety bond relinquishment.

The area lies east of the road and contains three cells embracing a total of 15 acres ±. The southerly cell contains about seven acres and the area was seeded about 13 years ago. The northerly cell containing about seven acres was seeded about four years ago. The third cell, containing about an acre has not been seeded. The area is being utilized to store topsoil and reclamation material.

The extreme northerly position of the original BLM/ROW and DOGM permit was conveyed to Texaco together with Texaco assuming the liability for the undisturbed diversion and Texaco road. The area has been deleted from PacifiCorp's DOGM permit.

Sediment control on the three areas include a berm around the exterior and silt fences in key area on the easterly and southerly areas.

The area seeded last has more woody species; the lower more grass species.

The Permittee stated since none of the reclaimed area has been covered by a Phase I bond release application they would consider two options. Option I. Phase I bond release on the 14 acres. Cover all except the 1 acre active soil/material storage area. Option II. Same as above plus Phase II application on the area that

exceeds the 10-year revegetation criterion.

In the letter dated December 17, 1998 from Energy West the Permittee states the date that the cells were reclaimed. The dates as follow:

1. Cell 1, seeded in 1983, monitored - 13 years
2. Cell 2, seeded in 1984, monitored - 12 years
3. Cell 3, seeded in 1985, monitored - 11 years
4. Cell 4, seeded in 1986, monitored - 10 years
5. Cell 5, seeded in 1989, reseeded in 1993, monitored - 4 years
6. Cell 6, seeded in 1989, reseeded in 1993, monitored -4 years
7. Cell 7, seeded in 1993, monitored - 4 years.

On January 14, 1999, Wayne Western and Dennis Oakley visited the site. The berm was intact and there was no evidence that untreated runoff was leaving the site. The areas that were backfilled were stable and blended into the surrounding landscape. There were no problems at the site associated with the backfilling and grading, and drainage controls.

**Analysis:**

The Permittee seeks to have Phase I bond release on 15± acres at the Old Cottonwood/Wilberg waste rock site. The requirements for Phase I bond release are that the operator completes backfilling and grading (which may include the replacement topsoil), and drainage control for the area.

The general backfilling and grading requirements are:

- **Achieve the Approximate Original Contour:** The area meets the AOC requirements because it resembles the topography of the surrounding area and blends in with the existing drainage patterns.
- **Slope Stability:** The slopes have a maximum grade of 7%. The Division usually considers slopes gentler than 50% (2V to 1H) to be stable. In the ten years since the backfilling and grading was completed there have been no signs of slope instability.
- **Minimize Erosion:** The area has a total containment berm that should stop any sediment from moving off site. The area was last reseeded in 1993 and since that time there has not been any significant on site erosion.

The specific requirements for reclaiming a refuse pile (waste rock site) are:

- **Suitable for Postmining Land use:** The area was reclaimed according to the approved reclamation plan. I have not been able to find specific mention about how the reclaimed waste rock site would meet the approved postmining land use. However, I did assume that the reclamation plan would not be approved unless the reclaimed site would meet the

postmining land use.

- **Cover Requirements:** R645-301-553.252 requires the permittee to place 4 feet of cover over a refuse pile unless alternative cover requirements are approved by the Division. The information in the MRP, inspection reports and the December 17, 1998 submittal shows that in some areas less than four feet of topsoil was placed over the cell and 12 inches of soil on the berms. **I could not find a statement in the MRP that the Division ever approved the Permittee to cover the waste rock site with less than 4 feet of cover.** However, the information in the MRP and inspection reports shows that the Division approved how much cover was placed on the waste rock site.

The Permittee has met all the reclamation requirements in the R645-500 regulations with the possible exception of the four-foot cover requirement (R645-301-553.252) at the Old Cottonwood/Wilberg waste rock site. Since the four feet of cover requirement is based on the soil and biology regulations (R645-301-244.200 and R645-301-353 through R645-301-357) the finding that the topsoil cover is adequate should be made by a soil scientist and a biologist.

Finding:

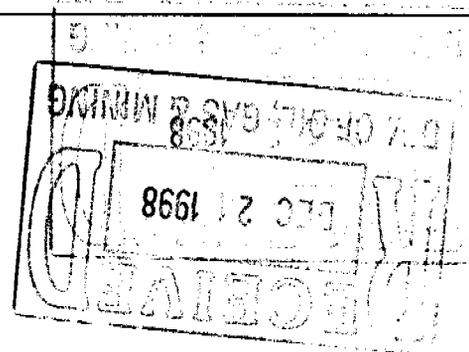
The Permittee met the minimum requirements of the engineering regulations for Phase I bond release.



ACT/015/019 #2  
Pam, Daron

December 17, 1998

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



**Re: Application for Phase I Bond Release of the Cottonwood Waste Rock Site,  
PacifiCorp, Cottonwood Mine, ACT/015/019, Emery County, Utah**

**Attn:** Pam Grubaugh-Littig

PacifiCorp, by and through its wholly-owned subsidiary, Energy West Mining Company ("Energy West"), as mine operator, hereby submits an application for Phase I bond release of the Cottonwood/Wilberg Mine Waste Rock Site. The said area, located in Township 17 South, Range 7 East, Section 34, NE1/4 SE1/4 and Section 35, E1/2 SW1/4, has met the regulations of the R645 Utah Coal Rules in regards to Phase I bond release (R645-301-880.310).

### Introduction

The (Old) Cottonwood/Wilberg Waste Rock Site is located approximately 1.8 miles from the Cottonwood Mine and alongside Highway 57. The site was initially planned and developed for containment of waste material from the Des-Bee-Dove and Wilberg mine sites. The waste containment area was started in 1983 by excavating the first of seven cells. Enough material was stock piled for the construction of a berm around the cell. The berm not only provided containment of storm runoff waters up to and including the 10 year/24 hour event, it also provided backfilling and cover for each cell as they were completed. Each cell was backfilled and graded according to the Mine Reclamation Plan, Append Part 1, Appendix VII, sections 817.17 (a) and 784.13 (b). At the completion of each cell, the area was seeded with an approved mixture as outlined in the Final Reclamation Plan, Volume II, Part 4, beginning on page 19. Final backfilling and grading was completed in 1992-93 as cell seven reached its capacity. The waste rock area, including the surrounding berms, consists of approximately 16 acres.

On September 10, 1998, Pam Grubaugh-Littig and Bill Malencik performed a pre-release inspection. Bob Willey and Dennis Oakley were present during this inspection. No suggestions or comments were made to Energy West Mining Company in regards to additional information needed to be included with this application.

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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

### **Requirements for Phase I Bond Release**

Bond release for Phase I may be considered only after the Division is satisfied that all the reclamation requirements (taken from the Draft Policy for Bond Release Information) for Phase I have been met. The requirements are:

1. Completion of backfilling and regrading.
2. Completion of drainage control in accordance with the requirements of the approved reclamation plan.

Information included with item 1 above includes results and discussion of soil samples (overburden and topsoil) taken within the release area, dates of reclamation, supportive maps (areas to be released, pre- and post-mining cross-sections).

Item 2, includes a short discussion of drainage control structures devised to control runoff at and above the waste rock site. Maps are provided to illustrate the location of these structures. These draft requirements are discussed in the following sections below beginning with Reclamation of Cells. A discussion of soil suitability and vegetation monitoring of the site is provided which summarizes the condition of the soil and potential impacts to plant growth.

### **Reclamation of Cells**

As the cells were filled to their capacity, they were backfilled and graded as outlined in the MRP. Sufficient subsoil material was used to cover the waste rock along with 12" of topsoil. Depth of total soil cover varies throughout the waste rock site. Dates of backfilling and grading coincide with final reclamation since it was completed simultaneously. Vegetation monitoring of the site has been performed by Dr. Patrick Collins of Mt. Nebo Scientific Inc. and has been ongoing since 1983. Each cell within the site is numbered and listed below. Duration of monitoring is also given. Refer to Drawing KS1650D in Appendix C for 1997 Vegetation Monitoring Map.

1. Cell 1, seeded in 1983, monitored- 13 years.
2. Cell 2, seeded in 1984, monitored- 12 years.
3. Cell 3, seeded in 1985, monitored- 11 years.
4. Cell 4, seeded in 1986, monitored- 10 years.
5. Cell 5, seeded in 1989, reseeded in 1993, monitored- 4 years.
6. Cell 6, seeded in 1989, reseeded in 1993, monitored- 4 years.
7. Cell 7, seeded in 1993, monitored- 4 years.

Also included with this application are drawings KS1142E (Appendix C). These four drawings feature pre and post-mining cross-sections.

Initial soil sampling and analysis was performed in 1986. Additional sampling was conducted in 1989 and 1994. As discussed in the MRP (Append Part 1, Appendix VII, page 12), the analysis found possible concerns with Sodium Absorption Ratio (SAR), selenium and boron in cells 2, 4, and 5. Sampling of those problem cells has occurred every five years. Cells 1,3, and 6 were not resampled in 1994 since no quality problems were identified. The raw soil analysis data from 1986 and 1994 are found in Appendix B. These data have been converted from the original lab reports to an EXCEL spreadsheet.

In September of 1997, Dr. Collins was retained to sample the "problem" cells with concerns that soil problems could affect the establishment of vegetation. It was postulated that upward migration of certain constituents may even have a greater impact on plant growth over time. This report, *Comparison of Vegetation Data of Selective Reclaimed Cells at the Cottonwood Old Waste Rock Site, 1997*, is included as an attachment and found in Appendix F. This report is also summarized later in this document.

Charts comparing the soil characteristics in each of the problem cells for the sample years 1986 and 1994 are found in Appendix A. Suitability is determined using the criteria set forth in the *Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining* (Leatherman and Duce, 1988). The soil parameters compared from this document consist of pH, Electrical Conductivity (EC), Calcium (Ca), Magnesium (Mg), Sodium (Na), SAR, selenium and boron. The latter two parameters were only analyzed for in the 1994 sampling. The selenium values from these samples do not show up on the charts since the values are below detectable limits. Refer to the raw data in Appendix A.

On the charts in Appendix B, soil parameters are positioned on the x-axis with their corresponding values on the y-axis. The soil parameters have varying units and are, thus, not included on the chart. The units of the soil parameters are as follows; pH (SI), EC (mmhos/cm @ 25 °C), Ca (meq/l), Mg (meq/l), Na (meq/l), SAR (unitless), Se (mg/kg), and B (mg/kg). Soil depths are color coded and grouped according to the year the sample was taken. Depths of samples range from 0.0 feet to 3.0 feet. Refer to the keyed chart in Appendix A.

### Discussion of Soil Analysis

Soil sampling at the waste rock site was performed in 1986, 1989, and 1994. Only the samples of the problem cells 2, 4, and 5 that were taken in '86 and '94 are discussed. At least three samples were taken at various depths at each sample location; 0-1 feet, 1-2 feet, and 2-3 feet. Classification of these soils range from a sandy loam type on the northern end of the site to sandy clay loam/loam type on the southern most end of the site. The soil analysis from cells 1, 6, and 7 has been reviewed and were determined as suitable for vegetation growth. These data can be reviewed in the Cottonwood/Wilberg Mine Reclamation Plan, Append Part 1, Appendix VII.

#### *Analysis of Cell 2*

Eight sample locations were examined in Cell 2. Salinity of these soils ranged from non-saline (0-1') to moderately saline (1-3') in 1986. These values increased as depth of soil increased. Salinity was determined using Table 1 below. Na, Ca, and Mg levels were elevated in all sample sites that contributed to high salinity.

Class	Electrical Conductivity (mmhos/cm)
0 Non-Saline	0-2
1 Very Slightly Saline	2-4
2 Moderately Saline	4-8
3 Strongly Saline	8-16
4	>16

Table 1: Standard classification of the salinity of soils. Electrical conductivity is the standard measure of salinity.

In 1994, salinity was dramatically reduced but followed the same trend. Salinity increased as depth of soil increased. These soils ranged from non-saline (0-2') to very slightly saline (2-3') during this sampling period.

SAR values in 1986 were random where very little or no leaching occurred. Soil at all sample depths rated "poor" to "unacceptable" during this time period (Leatherman and Duce, 1988). This was probably due to the high Na content of these soils with respect to very moderate levels of Ca and Mg.

The 1994 samples found that the SAR values had decreased. These values increased as depth of the sample increased. The SAR values in the topsoil (0-1' in depth) of this cell fell below 5.0, which is considered "good" suitable soil.

The pH values in 1986 ranged from 7.01 to 8.24 and averaged about 7.6 throughout the depths of samples. These soils are neutral to moderately alkaline. The samples in 1994 show a slight increase in pH with an average of approximately 7.9. Soils with higher pH values are more alkaline but are still considered highly suitable for vegetative growth.

Selenium and Boron values in cell 2 were found not to be a problem. Most values of Selenium were at or below the detectable limit of 0.01 mg/kg. Boron values were well below 5.0 mg/kg. This value is considered the highest limit for the suitability of topsoil. Values greater than 5.0 mg/kg are considered unacceptable.

In general, the quality of soils in cell 2 have increased over time when analyzing the given parameters. Topsoil (0-1') of the area rates as "good" suitable soil for vegetative growth. Overall, subsoil quality is good but decreases in quality as soil depth increases.

#### *Analysis of Cell 4*

Four sample locations were examined in Cell 2. In 1986, salinity of these soils ranged from very slightly saline (0-1') to moderately saline (2-3'). Salinity was fairly consistent from depths 0 through 3 feet only varying at most 1.33 mmhos/cm. As in cell 2, Na, Ca, and Mg levels were elevated in all samples. These parameters contributed to the high salinity found.

In 1994, salinity declined in the topsoil and increased as depth increased. These soils ranged from non-saline (0-1') to moderately saline (2-3'). Highest values were observed at the deepest sampling points.

SAR values from samples taken at 0-1 foot ranged between 1.5 and 9.1 in 1986. These values are considered suitably "fair" to "good" when comparing them to the suitability criteria. Interestingly though, except for sample site 4D, SAR values decreased as soil depth increased. In 1994, however, these values showed an opposite trend. At 0-1 foot, SAR values ranged from 0.76 to 1.61 and increased at depth. This is probably due to the leaching that occurred during the eight-year period between 1986 and 1994.

The pH values of all samples were fairly consistent throughout both sampling periods. In 1986, the average pH was 7.7 at all depths, whereas, the pH rose slightly in 1994 to an

average of 7.8 which indicate these soils as being slightly alkaline. These values generally reflect the presence of carbonates and exchangeable sodium in soils.

Selenium and boron samples were not taken in 1984. The 1994 values indicate that selenium was below the detectable limit and boron values were well below suitability criteria of 5.0 mg/kg.

The soil in cell 4 is considered "good" at depths up to one foot. These soils decrease slightly in quality as depth increases. Salinity affects the quality of the cell, but should improve as salts are continually leached out.

#### *Analysis of Cell 5*

Four sample locations were examined in cell 5. Salinity of the soils ranged from very slightly saline to off the chart (>16) in 1986. Salinity was not consistent throughout the depths sampled. This is probably due to mixing of the sub-soil during final reclamation activities. In 1994, however, salinity ranged from non-saline (0-1') to moderately saline (1-3'). As indicated, salinity increased as depth of soil increased.

SAR values in cell 5 were similar to the values observed in cell 2 from the 1986 data set. Soil at all sample depths rated "good" to "unacceptable" during this sampling period. In 1994, sample sites 5A and 5B indicated a dramatic reduction in SAR values. These values were below 2.0 at both sites, but slightly increased as soil depth increased. Sample site 5C was abnormally high at 19.0 (0-1') in '94, but decreased at increasing depths. Unusually large amounts of sodium were indicated throughout the sampling depths. Sample site 5D shown low values of SAR but increased as depth increased. This problem is indicative of the sample sites nearing the southern end of the waste rock site.

The pH values in cell 5 were consistent with the rest of the sampling sites. The soil is slightly alkaline as pH values averaged 7.7 in both 1986 and 1984.

Selenium was found to be below the detectable limit at all sample sites of cell 5. Boron values were found to lie in the acceptable range (<5.0 mg/kg). The only problem noted in this cell was at the 2-3 foot level at site 5C where boron was 6.54 mg/kg.

The soils in cell 5 were of good quality mostly in the northern end of the cell. Samples indicated decreasing quality towards the southern end of the cell. Further leaching and enhanced plant growth on the southern end will probably improve the quality of this soil over time.

### **Vegetation Monitoring**

In September of 1997, Dr. Patrick Collins, Mt. Nebo Scientific, Inc., compared quantitative data between of cells 2, 4, and 5. He compared the total living cover, lifeform composition, and woody species density of each site between several sample years. Generally, his comparison found that all cells appear to have a positive trend that should lead to successful vegetative plant growth. The results in cell 2 found generous success in all categories compared. Grasses seemed to dominate in cell 4 but shrubs had increased significantly. Although numbers/acre are somewhat low, there is a positive trend in all categories. Cell 5 stayed fairly consistent throughout the period of comparison. Shrub density showed the largest increase in this cell. Refer to Collin's report in Appendix F.

The vegetation monitoring seemed to show a direct correlation against the soil analysis. This makes sense because the two are so closely related. There seems to be no upward migration of waste rock constituents in any of the cells at the site. Impacts to vegetative growth are minor and decreasing over time. It is Energy West's opinion, based on the data presented, that a positive trend of both soil quality and vegetative growth, especially in the southern most cells, will continue in the future.

### **Drainage Controls**

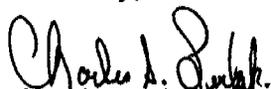
A berm was constructed around the waste rock site to retain a 10 yr./24hr. precipitation event (see page 4 and figures 1 and 2 in Cottonwood MRP, Append Part 1, Appendix VII for calculated SCS curve numbers). The water is retained in the site until it evaporates or seeps into the subsurface. Also, a diversion ditch was constructed to direct runoff offsite, it occurs up-grade of the waste rock site and directs runoff around the east side of the site into the Grimes Wash. Drawing CM-10361-WB in Appendix C is provided which illustrates the berm and diversion ditch.

The information included with this bond release is a requirement of the *Draft Policy for Bond Release Information*. This draft policy was acquire from the Division of Oil, Gas, and Mining and used with the idea that the *draft* document would become a *final* document in the near future. The information submitted includes legal description of the site (Appendix D), notice letters (Appendix E), Drawing CM-10361-WB identifies drainage control devices and release information (Appendix C). A photo essay is included in Appendix G which depicts each cell within the waste rock site.

Utah Coal Program  
Phase I Bond Release  
December 17, 1998  
Page 8

All information that is submitted with this application for Phase I Bond Release is accurate and complete to the best of our knowledge. Upon approval of Phase I Bond Release, Energy West intends to submit an amendment to the Cottonwood/Wilberg MRP reflecting changes that will occur due to this approval. Three (3) copies of this application is included with this submittal. If you have any questions or concerns regarding this application, please feel free to contact Dennis Oakley at (435) 687-4825.

Sincerely,

  
Chuck Semborski

Environmental/Geology Supervisor

Enclosures

DCO/dco/cas

Cc: Carl Pollastro, EWMC, w/o Appendices  
Dennis Oakley, EWMC, w/Appendices  
Blake Webster, IMC, w/o Appendices  
Bill Malencik, DOGM – Price Office, w/Appendices