



RECEIVED

APR 25 2012

Energy West Mining Company  
P. O. Box 310  
15 No. Main Street  
Huntington, UT 84528

DIV OF OIL, GAS, & MINING

April 25, 2012

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

**Re: Submittal of Annual and Hydrology Reports for 2011, PacifiCorp, Trail Mountain Mine, C/015/009, Cottonwood Mine, C/015/019, Deer Creek Mine, C/015/018, Des-Bee-Dove, C/015/017, Emery County, Utah.**

PacifiCorp, by and through its wholly-owned subsidiary, Energy West Mining Company as mine operator, herewith submits the Annual and Hydrology Reports for 2011.

Note that two (2) CD's are included for this submittal. The first CD contains the Annual Report forms and supporting information, and the Annual Hydrologic Report. The second CD contains the 2011 Confidential Raptor Data. This CD is marked as "CONFIDENTIAL".

If there are any questions or concerns please call Dennis Oakley at 687-4825.

Sincerely,

Ken Fleck  
Geology and Environmental Affairs Manager

cc: (File)

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# Annual Report

This Annual Report shows information the Division has for your mine. Submit the completed document and any additional information identified in the Appendices to the Division by **March 30, 2012**. During a complete inspection an inspector will check and verify the information.

## GENERAL INFORMATION

Company Name	Energy West Mining Company	Mine Name	Cottonwood/Wilberg
Permit Number	C/015/0019	Permit expiration Date	July 6, 2014
Operator Name	Energy West Mining Company	Phone Number	+1 (435) 687-9821
Mailing Address	P.O. Box 310	Email	ken.fleck@pacificcorp.com
City	Huntington		
State	Utah	Zip Code	84528

## DOGM File Location or Annual Report Location

Excess Spoil Piles	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	
Refuse Piles	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	
Impoundments	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required	Annual Report - General Information - Attachment A
Other:	none	

## OPERATOR COMMENTS

## REVIEWER COMMENTS

Met Requirements       Did Not meet Requirements

# REPORTING OF OTHER TECHNICAL DATA

Please list other technical data or information that was not included in the form above, but is required under the approved plan, which must be periodically submitted to the Division.

Please list attachments:

Attachment A - Refuse Pile Sampling Reports, Pond Reports  
Attachment B - Vegetation Monitoring Report  
Attachment C - Update of mine workings to 12/31/2011  
Confidential Attachment - Raptor Monitoring  
Subsidence Volume - Subsidence Monitoring Report  
Hydrology Volume - Hydrology Monitoring Report

Reviewer Comments

# MAPS

Copies of mine maps, current and up-to-date through at least December 31, 2011, are to be provided to the Division as an attachment to this report in accordance with the requirements of R645-301-525.240. The map copies shall be made in accordance with 30 CFR 75.1200 as required by MSHA. Mine maps are not considered confidential.

Map Name	Map Number	Included		Confidential	
		Yes	No	Yes	No
None - Mine in cessation since 2001	none	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Reviewer Comments  Met Requirements  Did Not Meet Requirements

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# Annual Report

This Annual Report shows information the Division has for your mine. Submit the completed document and any additional information identified in the Appendices to the Division by **March 30, 2012**. During a complete inspection an inspector will check and verify the information.

## GENERAL INFORMATION

Company Name	Energy West Mining Company	Mine Name	Deer Creek Mine
Permit Number	C/015/0018	Permit expiration Date	February 7, 2016
Operator Name	Energy West Mining Company	Phone Number	+1 (435) 687-9821
Mailing Address	P.O. Box 310	Email	ken.fleck@pacificcorp.com
City	Huntington		
State	Utah	Zip Code	84528

## DOGM File Location or Annual Report Location

Excess Spoil Piles	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	
Refuse Piles	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required	Annual Report - General Information - Attachment A
Impoundments	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required	Annual Report - General Information - Attachment A
Other:	None	

## OPERATOR COMMENTS

Energy West Mining submits that refuse (or waste rock site) reports on a quarterly basis. However to keep information intact, that data will be included with the 2011 Annual Report.

## REVIEWER COMMENTS

Met Requirements  Did Not meet Requirements

# COMMITMENTS AND CONDITIONS

The Permittee is responsible for ensuring annual technical commitments in the Mining and Reclamation Plan and conditions accepted with the permit are completed throughout the year. The Division has identified these commitments below and has provided space for you to report what you have done during the past year for each commitment. If additional written response is required, it should be filed as an attachment to this report.

## **Title: RAPTORS**

**Objective:** To document the location and activity of nests that could be affected by mining.

**Frequency:** annually

**Status:** Ongoing

**Reports:** Submit annually in annual report.

**Citation:** MRP, Section 322, Subsection Terrestrial Species.

Operator Comments

Refer to "Confidential" packet submittal with this annual report.

Reviewer Comments  Met Requirements  Did Not Meet Requirements

## **Title: SUBSIDENCE MONITORING REPORT**

**Objective:** To Determine the effects of subsidence

**Frequency:** Annually

**Status:** Ongoing

**Reports:** Submit in annual report

**Citation:** MRP, Volume 3, Appendix X

Operator Comments

Subsidence reported in a separate binder called " 2011 Annual Subsidence Report "

Reviewer Comments  Met Requirements  Did Not Meet Requirements

**Title: ROOF, FLOOR, AND MID-SEAM MATERIAL IN ACTIVE SECTIONS TO BE SAMPLED ANNUALLY.**

**Objective:** Transport and dispose of waste rock in a controlled manner.

**Frequency:** Annually in active sections

**Status:** Ongoing during mining

**Reports:** Annual report

**Citation:** MRP, Part 3, Estimated Waste Rock Volumes, R645-301-536, page 75

Operator Comments

Reported in Attachment A.

Reviewer Comments    Met Requirements                       Did Not Meet Requirements

**Title: WASTE ROCK SITE OPERATIONAL SAMPLING**

**Objective:** Monitor chemical quality of waste at waste rock site.

**Frequency:** Grab samples upon completion of each two foot lift. Parameters as described.

**Status:** Ongoing during mining.

**Reports:** Annual Report

**Citation:** MRP, Volume 10, Chapter 7, page 7-4 to 7-5

Operator Comments

Reported in Attachment A.

Reviewer Comments    Met Requirements                       Did Not Meet Requirements

**Title: DEMONSTRATION OF SELECTED OVERBURDEN AS BEST AVAILABLE MATERIAL IN THE PERMIT AREA FOR USE AS SUBSTITUTE TOPSOIL.**

**Objective:** Monitor chemical quality of identified substitute topsoil to show reduction in sodicity.

**Frequency:** Sampling will occur once within each permit term until such time as the soils are found acceptable for substitute topsoil use. The last sample, collected in 2010, did not show suitability. The current permit term is 2011-2016.

**Status:** To be conducted once in current permit term (2011-Feb 2016).

**Reports:** Annual Report

**Citation:** MRP, Volume 2, Part 4, section R645-301-233, page 2-3

Operator Comments

Not performed in 2011.

Reviewer Comments    Met Requirements                       Did Not Meet Requirements

# FUTURE COMMITMENTS AND CONDITIONS

The following commitments are not required for the current annual report year, but will be required by the permittee in the future as indicated by the "status" field. These commitments are included for information only, and do not currently require action. If you feel that the commitment is no longer relevant or needs to be revised, please contact the Division.

**Title: WILDLIFE**

**Objective:** Adhere to wildlife exclusionary periods.

**Frequency:** Ongoing

**Status:** Ongoing during Rilda portal reclamation

**Reports:** Not required

**Citation:** MRP, Section 322, page 10; Section 330, page 16 #14; Section 342, page 32, #7

**Title: SUBSOIL TESTING**

**Objective:** Regraded subsoil will be sampled on 500 ft intervals to a depth of four feet (three or four samples for the 2,000 linear feet in the facilities area). The samples will be analyzed on site for pH and EC. Problem areas will be further sampled and sent to a laboratory of analysis.

**Frequency:** At final regrading

**Status:** Ongoing at reclamation

**Reports:** Laboratory analysis to be provided to the Division

**Citation:** MRP, Volume 11, Section R645-301-231.300

**Title: TOPSOIL HANDLING TESTING PLAN**

**Objective:** Three composite samples will be taken from the facilities area and sediment pond. Samples will be analyzed for parameters to be compared with baseline information and to determine the need for amendments, including fertilizer.

**Frequency:** Final Reclamation

**Status:** Ongoing

**Reports:** Analysis to be provided to the Division

**Citation:** MRP, Volume 11, Section R645-301-242

**Title: WASTE ROCK SITE RECLAMATION SAMPLING**

**Objective:** Monitor chemical quality of upper four feet of final waste reclaimed surface at waste rock site.

**Frequency:** Grab samples within four feet of final elevation at a rate of two samples per acre per lift. Parameters as described.

**Status:** At final reclamation of waste rock cell.

**Reports:** Annual report

**Citation:** MRP, Volume 10, Chapter 7, page 7-5

**Title: SOIL SAMPLING ON FINAL GRADED SURFACE**

**Objective:** Monitor chemical quality of reclaimed substitute topsoil.

**Frequency:** Grab samples for pH and SAR as described.

**Status:** At final reclamation of mine facilities

**Reports:** Annual Report

**Citation:** MRP, Volume 2, Part 4, section 645-301-233.

**Title: MACROINVERTEBRATE MONITORING**

**Objective:** Monitor the macroinvertebrates in Rilda Creek

**Frequency:** Spring/fall two years prior to and spring/fall one year immediately following start of construction. Spring every three years during operations and reclamation.

**Status:** Construction complete in fall 2008. Spring and Fall 2009 surveys complete. Spring 2012 is the anticipated date for the first of the three-year monitoring surveys.

**Reports:** Annual Report

**Citation:** MRP, Section 330, page 26.

**Title: FISH SURVEYS**

**Objective:** DWR will monitor fish in Rilda Creek as part of annual surveys.

**Frequency:** Spring/fall two years prior to and spring/fall one year immediately following start of construction. Spring every three years during operations and reclamation.

**Status:** Construction complete in Fall 2008. Spring and Fall 2009 surveys complete. Spring 2012 is the anticipated date for the first of the three-year surveys.

**Reports:** Annual Report

**Citation:** MRP, Section 330, page 26

**OPERATOR COMMENTS (OPTIONAL)**

**REVIEWER COMMENTS**

# REPORTING OF OTHER TECHNICAL DATA

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Subsidence Volume - Subsidence Monitoring Report  
Hydrology Volume - Hydrology Monitoring Report

Reviewer Comments



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# Annual Report

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## GENERAL INFORMATION

Company Name	Energy West Mining Company	Mine Name	Des Bee Dove Mine
Permit Number	C/015/0017	Permit expiration Date	August 30, 2015
Operator Name	Energy West Mining Company	Phone Number	+1 (435) 687-9821
Mailing Address	P.O. Box 310	Email	ken.fleck@pacificcorp.com
City	Huntington		
State	Utah	Zip Code	84528

## DOGM File Location or Annual Report Location

Excess Spoil Piles	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	
Refuse Piles	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	
Impoundments	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	
Other:		

## OPERATOR COMMENTS

Mine in 9th year of reclamation responsibility.

## REVIEWER COMMENTS

Met Requirements       Did Not meet Requirements

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Reviewer Comments

# MAPS

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Map Name	Map Number	Included		Confidential	
		Yes	No	Yes	No
None - Final Reclamation Completed in 2003		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Reviewer Comments  Met Requirements  Did Not Meet Requirements

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## GENERAL INFORMATION

Company Name	Energy West Mining Company	Mine Name	Trail Mountain Mine
Permit Number	C/015/0009	Permit expiration Date	February 21, 2015
Operator Name	Energy West Mining Company	Phone Number	+1 (435) 687-9821
Mailing Address	P.O. Box 310	Email	ken.fleck@pacificcorp.com
City	Huntington		
State	Utah	Zip Code	84528

## DOG M File Location or Annual Report Location

Excess Spoil Piles	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	
Refuse Piles	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required	
Impoundments	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required	
Other:		

## OPERATOR COMMENTS

## REVIEWER COMMENTS

Met Requirements       Did Not meet Requirements

# REPORTING OF OTHER TECHNICAL DATA

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Map Name	Map Number	Included		Confidential	
		Yes	No	Yes	No
None - Mine in cessation since 2001		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Reviewer Comments  Met Requirements  Did Not Meet Requirements

IMPOUNDMENT INSPECTION AND CERTIFIED REPORT		Page 1 of 2	
Permit Number	C/015/0019	Report Date	APRIL 12, 2011
Mine Name	Cottonwood/Wilberg		
Company Name	PacifiCorp		
Impoundment Name...	North Pond	South Pond	Waste Rock Pond
Impoundment Number.			
UPDES Permit Number		UT 0022896-003A	UT 0022896-005
MSHA ID NUMBER.....	1211-UT-09-02052-02	1211-UT-09-02052-03	

**IMPOUNDMENT INSPECTION**

Inspection Date	March 7, 2011
Inspected By	Rick Cullum/ John Christensen
	1st Quarter Inspection 2011

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.

North Pond: No instabilities or weaknesses observed.

South Pond: No instabilities or weaknesses observed.

Waste Rock Site Pond: No instabilities observed.

Required for an impoundment which functions as a SEDIMENTATION POND.	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.			
		<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock</u>
	<u>Pond</u>			
	60% Design Storage Capacity	.34 A.F. at 7351.0 ft.	.19 A.F. at 7322.3 ft.	1.45 A.F. at 6761.5 ft.
	100% Sediment Capacity	.56 A.F. at 7354.83 ft.	.32 A.F. at 7325.33 ft.	2.42 A.F. at 6765.3 ft.
	Principle and emergency spillway elevations.			
		<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock Pond</u>
	Principal Spillway Elevation	7354.83	7325.33	6766.3
	Emergency Spillway Elevation	7363.33	7334.2	6770.0

**Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities

associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

	<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock Pond</u>
Water Elevation	Small amount frozen Recent storms	7321.36	6762.02
Discharging	NO	NO	No
Inlet/Outlet Condition	Good	Good	Good
Slope conditions	Good	Good	Good

\*See "Hydrologic Monitoring Data" report submitted to DOGM quarterly for monitoring information.

**Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

	<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock Pond</u>
Sediment Volume	0.10 AF @7348 ft.	0.00 AF	1.31 AF @6760.7 ft.
Remaining Sediment Storage Capacity	0.24 AF	0.19 AF	.14 AF
Water Impounded	0.0 AF	0.05 AF	0.21 AF

**Changes, Comments,**

THE COTTONWOOD MINE WAS IDLED IN 2001, SO THE ONLY WATER THAT REPORTS TO THE PONDS are RUN-OFF DURING A STORM EVENT. REPAIRS TO THE BASE OF THE STANDPIPE AREA IS SCHEDULED.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: John Christensen

Date: 4/12/11

Signature: Richard Carlsson

Date: 4/13/11



IMPOUNDMENT INSPECTION AND CERTIFIED REPORT		Page 1 of 2	
Permit Number	C/015/0019	Report Date	June 27, 2011
Mine Name	Cottonwood/Wilberg		
Company Name	PacifiCorp		
Impoundment Name...	North Pond	South Pond	Waste Rock Pond
Impoundment Number.			
UPDES Permit Number		UT 0022896-003A	UT 0022896-005
MSHA ID NUMBER.....	1211-UT-09-02052-02	1211-UT-09-02052-03	

**IMPOUNDMENT INSPECTION**

Inspection Date	June 17, 2011
Inspected By	Rick Cullum/ John Christensen
	2nd Quarter Inspection 2011

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.

North Pond: No instabilities or weaknesses observed.

South Pond: No instabilities or weaknesses observed.

Waste Rock Site Pond: No instabilities observed.

Required for an impoundment which functions as a SEDIMENTATION POND.	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.			
	<u>Pond</u>	<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock</u>
	60% Design Storage Capacity	.34 A.F. at 7351.0 ft.	.19 A.F. at 7322.3 ft.	1.45 A.F. at 6761.5 ft.
	100% Sediment Capacity	.56 A.F. at 7354.83 ft.	.32 A.F. at 7325.33 ft.	2.42 A.F. at 6765.3 ft.
	Principle and emergency spillway elevations.			
		<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock Pond</u>
	Principal Spillway Elevation	7354.83	7325.33	6766.3
	Emergency Spillway Elevation	7363.33	7334.2	6770.0

**Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities

associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

	<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock Pond</u>
Water Elevation	7347.45	DRY	DRY
Discharging	NO	NO	No
Inlet/Outlet Condition	Good	Good	Good
Slope conditions	Good	Good	Good

\*See "Hydrologic Monitoring Data" report submitted to DOGM quarterly for monitoring information.

**Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

	<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock Pond</u>
Sediment Volume	0.10 AF @7348 ft.	0.00 AF	1.31 AF @6760.7 ft.
Remaining Sediment Storage Capacity	0.24 AF	0.19 AF	.14 AF
Water Impounded	0.0 AF	0.00 AF	0.00 AF

**Changes, Comments,**

THE COTTONWOOD MINE WAS IDLED IN 2001, SO THE ONLY WATER THAT REPORTS TO THE PONDS ARE RUN-OFF DURING A STORM EVENT. REPAIRS TO THE BASE OF THE STANDPIPE AREA WERE COMPLETED.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



IMPOUNDMENT INSPECTION AND CERTIFIED REPORT		Page 1 of 2	
Permit Number	C/015/0019	Report Date	Sept. 27, 2011
Mine Name	Cottonwood/Wilberg		
Company Name	PacifiCorp		
Impoundment Name...	North Pond	South Pond	Waste Rock Pond
Impoundment Number.			
UPDES Permit Number		UT 0022896-003A	UT 0022896-005
MSHA ID NUMBER.....	1211-UT-09-02052-02	1211-UT-09-02052-03	

**IMPOUNDMENT INSPECTION**

Inspection Date	Sept. 23, 2011
Inspected By	Rick Cullum/ John Christensen
	3rd Quarter Inspection 2011

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.

North Pond: No instabilities or weaknesses observed.

South Pond: No instabilities or weaknesses observed.

Waste Rock Site Pond: No instabilities observed.

Required for an impoundment which functions as a SEDIMENTATION POND.	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.			
		<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock</u>
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	60% Design Storage Capacity	.34 A.F. at 7351.0 ft.	.19 A.F. at 7322.3 ft.	1.45 A.F. at 6761.5 ft.
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**Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities

associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

	<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock Pond</u>
Water Elevation	7347.85	DRY	6762.27
Discharging	NO	NO	No
Inlet/Outlet Condition	Good	Good	Good
Slope conditions	Good	Good	Good

\*See "Hydrologic Monitoring Data" report submitted to DOGM quarterly for monitoring information.

**Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

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Sediment Volume	0.10 AF @7348 ft.	0.00 AF	1.31 AF @6760.7 ft.
Remaining Sediment Storage Capacity	0.24 AF	0.19 AF	.14 AF
Water Impounded	0.0 AF	0.00 AF	0.24 AF

**Changes, Comments,**

THE COTTONWOOD MINE WAS IDLED IN 2001, SO THE ONLY WATER THAT REPORTS TO THE PONDS ARE RUN-OFF DURING A STORM EVENT. REPAIRS TO THE BASE OF THE STANDPIPE AREA WERE COMPLETED.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.



Signature: John Christensen Date: 10/20/11  
 Signature: Richard Cullum Date: 11/11/11

IMPOUNDMENT INSPECTION AND CERTIFIED REPORT		Page 1 of 2	
Permit Number	C/015/0019	Report Date	DEC. 27, 2011
Mine Name	Cottonwood/Wilberg		
Company Name	PacifiCorp		
Impoundment Name...	North Pond	South Pond	Waste Rock Pond
Impoundment Number.			
UPDES Permit Number		UT 0022896-003A	UT 0022896-005
MSHA ID NUMBER.....	1211-UT-09-02052-02	1211-UT-09-02052-03	

### IMPOUNDMENT INSPECTION

Inspection Date	DEC. 16, 2011
Inspected By	Rick Cullum/ John Christensen
4th Quarter Inspection 2011	

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.

North Pond: No instabilities or weaknesses observed.

South Pond: No instabilities or weaknesses observed.

Waste Rock Site Pond: No instabilities observed.

Required for an impoundment which functions as a SEDIMENTATION POND.	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.			
		<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock</u>
	<u>Pond</u>			
	60% Design Storage Capacity	.34 A.F. at 7351.0 ft.	.19 A.F. at 7322.3 ft.	1.45 A.F. at 6761.5 ft.
	100% Sediment Capacity	.56 A.F. at 7354.83 ft.	.32 A.F. at 7325.33 ft.	2.42 A.F. at 6765.3 ft.
	Principle and emergency spillway elevations.			
		<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock Pond</u>
	Principal Spillway Elevation	7354.83	7325.33	6766.3
	Emergency Spillway Elevation	7363.33	7334.2	6770.0

**Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities

associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

	<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock Pond</u>
Water Elevation	7346.95 ice	DRY	6762.07 ice
Discharging	NO	NO	No
Inlet/Outlet Condition	Good	Good	Good
Slope conditions	Good	Good	Good

\*See "Hydrologic Monitoring Data" report submitted to DOGM quarterly for monitoring information.

**Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

	<u>North Pond</u>	<u>South Pond</u>	<u>Waste Rock Pond</u>
Sediment Volume	0.10 AF @7348 ft.	0.00 AF	1.31 AF @6760.7 ft.
Remaining Sediment Storage Capacity	0.24 AF	0.19 AF	.14 AF
Water Impounded	0.0 AF	0.00 AF	0.24 AF

**Changes, Comments,**

THE COTTONWOOD MINE WAS IDLED IN 2001, SO THE ONLY WATER THAT REPORTS TO THE PONDS ARE RUN-OFF DURING A STORM EVENT. REPAIRS TO THE BASE OF THE STANDPIPE AREA WERE COMPLETED.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.



Signature: John Christensen Date: 1/20/12  
 Signature: Richard Cullen Date: 1/31/12



Energy West Mining Company  
P. O. Box 310  
15 No Main Street  
Huntington, UT 84528

April 12, 2011

Mr. Darron Haddock  
Permit Supervisor  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801

Dear Mr. Haddock:

I am enclosing for submittal the 1st. Quarter 2011 Engineering Inspection Reports for Cottonwood/Wilberg/Des Bee Dove Waste Rock Site and the old Waste Rock Site. Also, the Deer Creek Waste Rock Site and Elk Canyon/Original Site are enclosed.

Sincerely,

A handwritten signature in black ink that reads "John Christensen". The signature is fluid and cursive, with the first name being particularly prominent.

John Christensen, P.E.  
Sr. Construction Engineer

Encls.

INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE		Page 1 of 1	
Permit Number	ACT/015/017/ACT/015/019	Report Date	March 24, 2011
Mine Name	Cottonwood/Wilberg/Des-Bee-Dove/Trail Mountain		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse Pile I.D.	File Name	Cottonwood Waste Rock Site	
	File Number	1211-UT-09-01211-03	
Inspection Date	March 7, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	2011 1st Quarter Inspection		
	Attachments to Report?	x No	Yes
Field Evaluation			
Foundation preparation, including the removal of all organic material and topsoil.			
Foundation was prepared according to the approved plan.			
Placement of underdrains and protective filter systems.			
Not applicable.			
Installation of final surface drainage systems.			
The out slopes of the containment berms are at their final configuration and have been revegetated. The inlet ditch to the pond has been lined with rip rap and is extended as the pile changes elevation.			
Placement and compaction of fill materials.			
The Trail Mountain Mine has ceased production. Mine refuse will no longer be hauled to this site. The site will remain active to accommodate future pond cleanings at Trail Mountain and Cottonwood Mines.			
Final grading and revegetation of fill.			
The outlopes of each containment/lift berm have had final grading and vegetation completed.			
Appearances of instability, structural weakness, and other hazardous conditions.			
None seen.			
Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.			
The total storage capacity of the site is a 784,000 cubic yards. The elevation of the current lift varies with the required drainage slope. The surveyed elevation at the center of the active lift is 6,803.31 ft. The final design elevation will be 6,850 ft. The entire site is approximately 36% capacity. The useable area of the present lift is approximately 97%. The site was partially covered with snow.			
Certification Statement	<p>I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.</p> <p>By: <u>John Christensen, Sr. Construction Engineer</u> (Full Name and Title)</p> <p>Signature: <u><i>John Christensen</i></u> Date: <u>4/12/11</u></p> <p>P.E. Number &amp; State: <u>165651, Utah</u></p>		



Permit Number	ACT/015/0017/ACT/015/019	March 24, 2011
Mine Name	Cottonwood/Wilberg/Des-Bee-Dove	
Company Name	Energy West Mining Company	
Excess Spoil Pile or Refuse Pile Identification	File Name	Old Waste Rock Site
	File Number	
	MSHA ID Number	
Inspection Date	March 7, 2011	
Inspected By	John Christensen/Rick Cullum	

**Reason for Inspection**  
(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)

2011 First Quarter Inspection

Attachments to Report?     No     Yes

**Field Evaluation**

Foundation preparation, including the removal of all organic material and topsoil.  
Constructed according to plan.

Placement of underdrains and protective filter systems.  
Not applicable.

Installation of final surface drainage systems.  
All surfaces are at their final configuration and drainage established.

Placement and compaction of fill materials.  
This site is complete and at capacity.

Final grading and revegetation of fill.  
Site is complete and vegetation has been established.

Appearances of instability, structural weakness, and other hazardous conditions.  
None observed.

Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

The site will continued to be inspected until MSHA confirms the Refuse site has been abandoned.

**Certification Statement** I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: John Christensen, Sr. Construction Engineer  
(Full Name and Title)

Signature: *John Christensen*

Date: 4/12/11

P.E. Number & State: 165651, Utah





Energy West Mining Company  
P. O. Box 310  
15 No Main Street  
Huntington, UT 84528

JUNE 27, 2011

Mr. Darron Haddock  
Permit Supervisor  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801

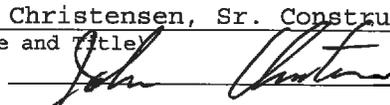
Dear Mr. Haddock:

I am enclosing for submittal the 2nd. Quarter 2011 Engineering Inspection Reports for Cottonwood/Wilberg/Des Bee Dove Waste Rock Site and the old Waste Rock Site. Also, the Deer Creek Waste Rock Site and Elk Canyon/Original Site are enclosed.

Sincerely,

John Christensen, P.E.  
Sr. Construction Engineer

Encls.

INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE		Page 1 of 1	
Permit Number	ACT/015/017/ACT/015/019	Report Date	June 27, 2011
Mine Name	Cottonwood/Wilberg/Des-Bee-Dove/Trail Mountain		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse File I.D.	File Name	Cottonwood Waste Rock Site	
	File Number	1211-UT-09-01211-03	
Inspection Date	June 17, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	2011 2nd Quarter Inspection		
	Attachments to Report?	x No	Yes
<b>Field Evaluation</b>			
Foundation preparation, including the removal of all organic material and topsoil.			
Foundation was prepared according to the approved plan.			
Placement of underdrains and protective filter systems.			
Not applicable.			
Installation of final surface drainage systems.			
The out slopes of the containment berms are at their final configuration and have been revegetated. The inlet ditch to the pond has been lined with rip rap and is extended as the pile changes elevation.			
Placement and compaction of fill materials.			
The Trail Mountain Mine has ceased production. Mine refuse will no longer be hauled to this site. The site will remain active to accommodate future pond cleanings at Trail Mountain and Cottonwood Mines.			
Final grading and revegetation of fill.			
The outslopes of each containment/lift berm have had final grading and vegetation completed.			
Appearances of instability, structural weakness, and other hazardous conditions.			
None seen.			
Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse File structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.			
The total storage capacity of the site is a 784,000 cubic yards. The elevation of the current lift varies with the required drainage slope. The surveyed elevation at the center of the active lift is 6,803.31 ft. The final design elevation will be 6,850 ft. The entire site is approximately 36% capacity. The useable area of the present lift is approximately 97%.			
Certification Statement	<p>I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.</p> <p>By: <u>John Christensen, Sr. Construction Engineer</u> (Full Name and Title)</p> <p>Signature: <u></u> Date: <u>7/19/11</u></p> <p>P.E. Number &amp; State: <u>165651, Utah</u></p>		

<b>Permit Number</b>	ACT/015/0017/ACT/015/019	June 27, 2011
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**Mine Name** Cottonwood/Wilberg/Des-Bee-Dove

**Company Name** Energy West Mining Company

<b>Excess Spoil Pile or Refuse Pile Identification</b>	<b>Pile Name</b>	Old Waste Rock Site
	<b>Pile Number</b>	
	<b>MSHA ID Number</b>	

**Inspection Date** June 17, 2011

**Inspected By** John Christensen/Rick Cullum

<b>Reason for Inspection</b> <small>(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)</small>	2011 Second Quarter Inspection
<b>Attachments to Report?</b>	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes

**Field Evaluation**

Foundation preparation, including the removal of all organic material and topsoil.  
Constructed according to plan.

Placement of underdrains and protective filter systems.  
Not applicable.

Installation of final surface drainage systems.  
All surfaces are at their final configuration and drainage established.

Placement and compaction of fill materials.  
This site is complete and at capacity.

Final grading and revegetation of fill.  
Site is complete and vegetation has been established.

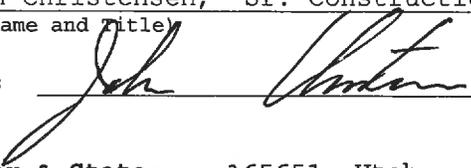
Appearances of instability, structural weakness, and other hazardous conditions.  
None observed.

**Other Comments.** Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

The site will continued to be inspected until MSHA confirms the Refuse site has been abandoned.

**Certification Statement** I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

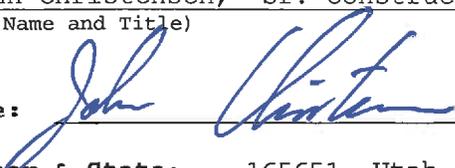
By: John Christensen, Sr. Construction Engineer  
(Full Name and Title)

Signature:  Date: 7/14/11

P.E. Number & State: 165651, Utah



INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE		Page 1 of 1	
Permit Number	ACT/015/017/ACT/015/019	Report Date	Sept. 27, 2011
Mine Name	Cottonwood/Wilberg/Des-Bee-Dove/Trail Mountain		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse File I.D.	File Name	Cottonwood Waste Rock Site	
	File Number	1211-UT-09-01211-03	
Inspection Date	Sept. 23, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	2011 3rd Quarter Inspection		
	Attachments to Report?	x No	Yes
<b>Field Evaluation</b>			
Foundation preparation, including the removal of all organic material and topsoil. Foundation was prepared according to the approved plan.			
Placement of underdrains and protective filter systems. Not applicable.			
Installation of final surface drainage systems. The out slopes of the containment berms are at their final configuration and have been revegetated. The inlet ditch to the pond has been lined with rip rap and is extended as the pile changes elevation.			
Placement and compaction of fill materials. The Trail Mountain Mine has ceased production. Mine refuse will no longer be hauled to this site. The site will remain active to accommodate future pond cleanings at Trail Mountain and Cottonwood Mines.			
Final grading and revegetation of fill. The outslopes of each containment/lift berm have had final grading and vegetation completed.			
Appearances of instability, structural weakness, and other hazardous conditions. None seen.			
Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period. The total storage capacity of the site is a 784,000 cubic yards. The elevation of the current lift varies with the required drainage slope. The surveyed elevation at the center of the active lift is 6,803.31 ft. The final design elevation will be 6,850 ft. The entire site is approximately 36% capacity. The useable area of the present lift is approximately 97%.			
Certification Statement	I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.		
	By: <u>John Christensen, Sr. Construction Engineer</u> (Full Name and Title)		
	Signature: <u><i>John Christensen</i></u>		Date: <u>10/20/11</u>
	P.E. Number & State: <u>165651, Utah</u>		

INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PL.		Page 1 of 1
Permit Number	ACT/015/0017/ACT/015/019	Sept. 27, 2011
Mine Name	Cottonwood/Wilberg/Des-Bee-Dove	
Company Name	Energy West Mining Company	
Excess Spoil Pile or Refuse Pile Identification	Pile Name	Old Waste Rock Site
	Pile Number	
	MSHA ID Number	
Inspection Date	Sept. 23, 2011	
Inspected By	John Christensen/Rick Cullum	
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	2011 Third Quarter Inspection	
	Attachments to Report?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes
<b>Field Evaluation</b>		
Foundation preparation, including the removal of all organic material and topsoil. Constructed according to plan.		
Placement of underdrains and protective filter systems. Not applicable.		
Installation of final surface drainage systems. All surfaces are at their final configuration and drainage established.		
Placement and compaction of fill materials. This site is complete and at capacity.		
Final grading and revegetation of fill. Site is complete and vegetation has been established.		
Appearances of instability, structural weakness, and other hazardous conditions. None observed.		
Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.		
The site will continued to be inspected until MSHA confirms the Refuse site has been abandoned.		
<b>Certification Statement</b> I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.		
By: <u>John Christensen, Sr. Construction Engineer</u> (Full Name and Title)		
Signature: 	Date:	
P.E. Number & State:	165651, Utah	



Energy West Mining Company  
P. O. Box 310  
15 No Main Street  
Huntington, UT 84528

January 20, 2012

Mr. Darron Haddock  
Permit Supervisor  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801

Dear Mr. Haddock:

I am enclosing for submittal the 4th. Quarter 2011 Engineering Inspection Reports for Cottonwood/Wilberg/Des Bee Dove Waste Rock Site and the old Waste Rock Site. Also, the Deer Creek Waste Rock Site and Elk Canyon/Original Site are enclosed.

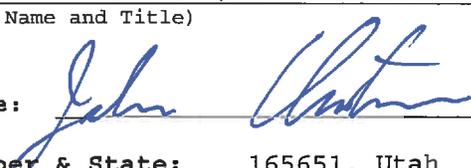
Sincerely,

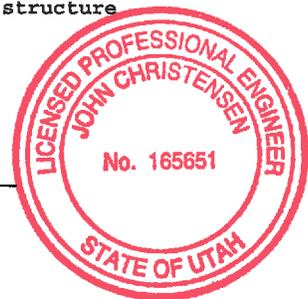
A handwritten signature in black ink, appearing to read "John Christensen".

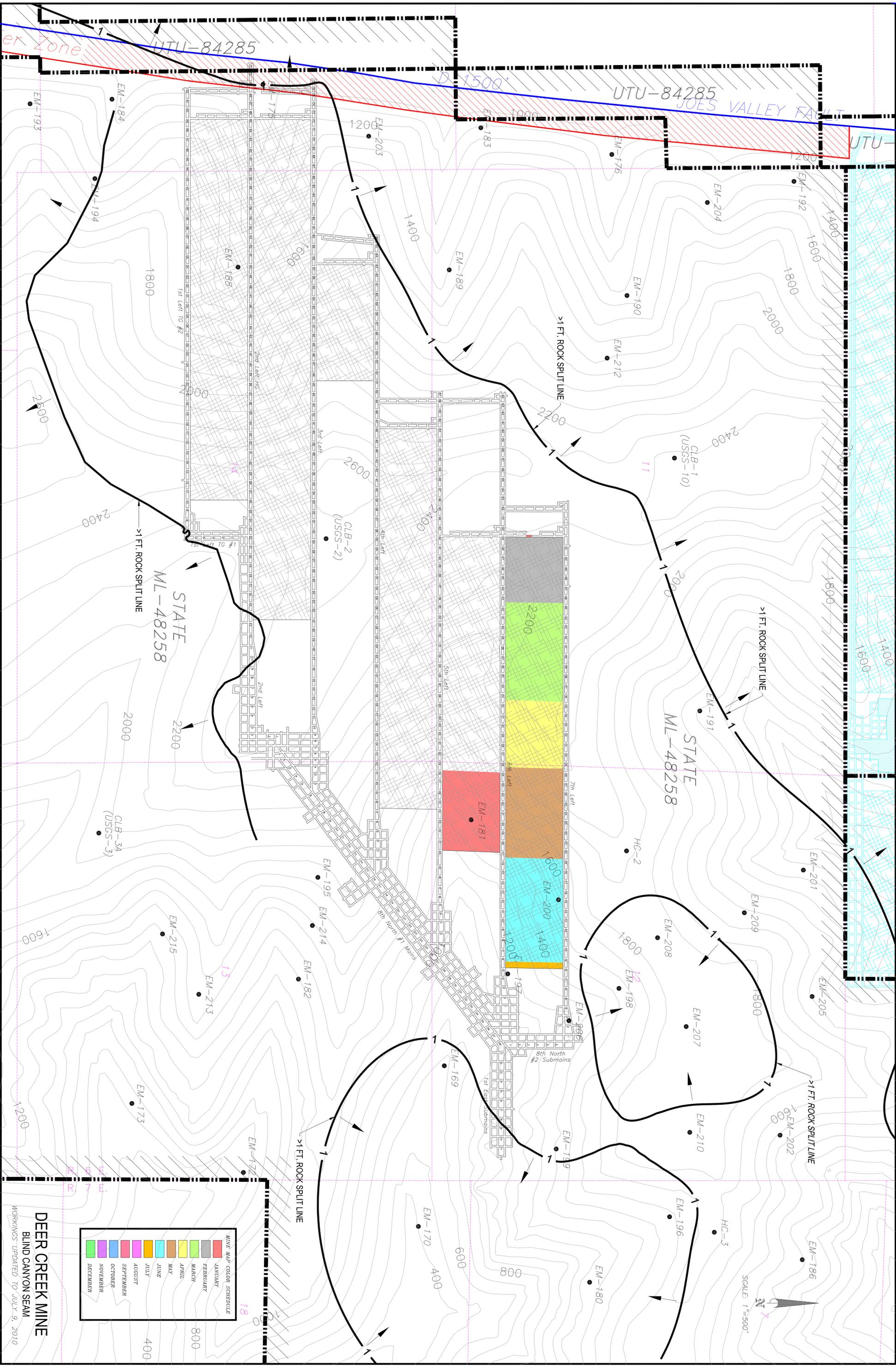
John Christensen, P.E.  
Principle Mine Engineer

Encls.

INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE		Page 1 of 1	
Permit Number	ACT/015/017/ACT/015/019	Report Date	DEC. 27, 2011
Mine Name	Cottonwood/Wilberg/Des-Bee-Dove/Trail Mountain		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse Pile I.D.	File Name	Cottonwood Waste Rock Site	
	File Number	1211-UT-09-01211-03	
Inspection Date	DEC. 16, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	2011 4th Quarter Inspection		
	Attachments to Report?    x No    Yes		
<b>Field Evaluation</b>			
Foundation preparation, including the removal of all organic material and topsoil. Foundation was prepared according to the approved plan.			
Placement of underdrains and protective filter systems. Not applicable.			
Installation of final surface drainage systems. The out slopes of the containment berms are at their final configuration and have been revegetated. The inlet ditch to the pond has been lined with rip rap and is extended as the pile changes elevation.			
Placement and compaction of fill materials. The Trail Mountain Mine has ceased production. Mine refuse will no longer be hauled to this site. The site will remain active to accommodate future pond cleanings at Trail Mountain and Cottonwood Mines.			
Final grading and revegetation of fill. The out slopes of each containment/lift berm have had final grading and vegetation completed.			
Appearances of instability, structural weakness, and other hazardous conditions. None seen.			
Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period. The total storage capacity of the site is a 784,000 cubic yards. The elevation of the current lift varies with the required drainage slope. The surveyed elevation at the center of the active lift is 6,803.31 ft. The final design elevation will be 6,850 ft. The entire site is approximately 36% capacity. The useable area of the present lift is approximately 97%. The site was partially covered with snow at the time of inspection.			
Certification Statement	I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.		
	By: <u>John Christensen, Sr. Construction Engineer</u> (Full Name and Title)		
	Signature: <u><i>John Christensen</i></u>		Date: <u>1/20/12</u>
	P.E. Number & State: <u>165651, Utah</u>		

INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PL.		Page 1 of 1	
Permit Number	ACT/015/0017/ACT/015/019	Report Date	DEC. 27, 2011
Mine Name	Cottonwood/Wilberg/Des-Bee-Dove		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse Pile Identification	Pile Name	Old Waste Rock Site	
	Pile Number		
	MSHA ID Number		
Inspection Date	DEC. 16, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		2011 Fourth Quarter Inspection	
		Attachments to Report?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes
<b>Field Evaluation</b>			
Foundation preparation, including the removal of all organic material and topsoil. Constructed according to plan.			
Placement of underdrains and protective filter systems. Not applicable.			
Installation of final surface drainage systems. All surfaces are at their final configuration and drainage established.			
Placement and compaction of fill materials. This site is complete and at capacity.			
Final grading and revegetation of fill. Site is complete and vegetation has been established.			
Appearances of instability, structural weakness, and other hazardous conditions. None observed.			
Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.			
The site will continued to be inspected until MSHA confirms the Refuse site has been abandoned.			
<b>Certification Statement</b> I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.			
By: <u>John Christensen, Sr. Construction Engineer</u> (Full Name and Title)			
Signature: <u></u>	Date: <u>1/20/12</u>		
P.E. Number & State: <u>165651, Utah</u>			

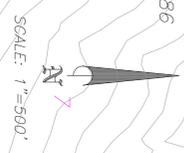


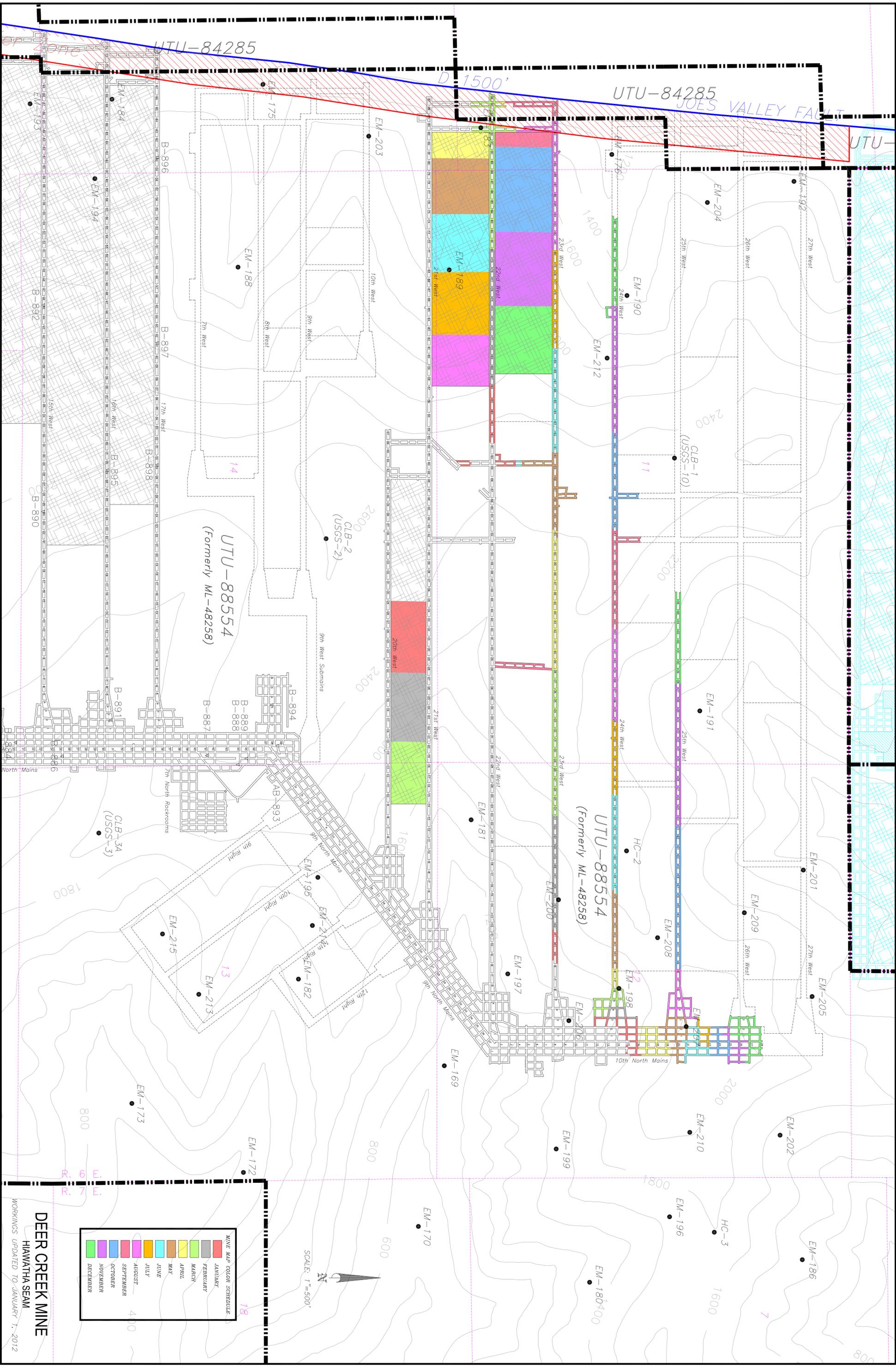


**MINE MAP COLOR SCHEDULE**

Red	JANUARY
Orange	FEBRUARY
Yellow	MARCH
Light Green	APRIL
Green	MAY
Light Blue	JUNE
Blue	JULY
Dark Blue	AUGUST
Purple	SEPTEMBER
Pink	OCTOBER
Light Purple	NOVEMBER
Dark Purple	DECEMBER

**DEER CREEK MINE**  
**BLIND CANYON SEAM**  
 WORKINGS UPDATED TO JULY 9, 2010





**MINE MAP COLOR SCHEDULE**

Red	JANUARY
Orange	FEBRUARY
Yellow	MARCH
Light Green	APRIL
Green	MAY
Light Blue	JUNE
Blue	JULY
Dark Blue	AUGUST
Purple	SEPTEMBER
Pink	OCTOBER
Light Purple	NOVEMBER
Light Pink	DECEMBER

**DEER CREEK MINE**  
**HAWATHA SEAM**  
 WORKINGS UPDATED TO JANUARY 1, 2012

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>		<b>Page 1 of 2</b>	
<b>Permit Number</b>	C/015/0018	<b>Report Date</b>	March 24, 2011
<b>Mine Name</b>	Deer Creek Mine		
<b>Company Name</b>	Energy West Mining		
<b>Impoundment Identification</b>	<b>Impoundment Name</b>	<b>Mine Site Pond:</b>	<b>Waste Rock Pond:</b>
	<b>Impoundment Number</b>		
	<b>UPDES Permit Number</b>	UT-0023604-001	
	<b>MSHA ID Number</b>	N/A	N/A
0			
<b>Inspection Date</b>	3/8/11	<b>Waste Rock Pond</b> 3/10/11	
<b>Inspected By</b>	Rick Cullum / John Christensen		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		1st Quarter 2011 Inspection	
1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.			
		<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
<b>Conditions, Comments Etc.</b>	No hazards observed.		No hazards observed.
Required for an impoundment which functions as a <b>SEDIMENTATION POND.</b>	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.		
		<u>Mine Site Pond:</u>	<u>Waste Rock Pond:</u>
	<b>60% Design</b>		
	<b>Storage Capacity</b>	1.87 A.F. at 7213.1 ft.	.59 A.F. at 6312.7 ft.
	<b>100% Sediment</b>		
	<b>Capacity</b>	3.12 A.F. at 7216.0 ft.	.98 A.F. at 6313.45 ft.
Principle and emergency spillway elevations.			
		<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
	<b>Principle Spillway</b>		
	<b>Elevation (F.A.S.L.):</b>	7218.64	6318.0
	<b>Emergency Spillway</b>		
	<b>Elevation</b>	7232.03	6318.0

**Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
Water Elevation	7222.90	None
Discharging	Yes	Never
Inlet, Outlet, Spillway Conditions	Good	Good
Out slope Conditions	No Change	No Change

\*See "Hydrologic Monitoring Data" report submitted quarterly to DOGM for monitoring information.

	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
Sediment Volume	1.58 A.F. @ 7211.94	None
Remaining Sediment	.29 A.F.	0.59 A.F.
Water impounded	7.20 A.F.	

Changes, Comments, etc. Pond was partially frozen at the time of inspection.

**Qualification Statement**



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: John Christensen  
 Signature: Richard Cullum

Date: 4/12/11  
 Date: 4/13/11

IMPOUNDMENT INSPECTION AND CERTIFICATION REPORT

Permit Number	C/015/0018	Report Date	March 24, 2011
Mine Name	Deer Creek Mine		
Company Name	Energy West Mining		
Impoundment Identification	Impoundment Name	Rilda Canyon Pond	
	Impoundment Number		
	UPDES Permit Number	N/A	
	MSHA ID Number	N/A	N/A

Inspection Date	March 9, 2011
Inspected By	Rick Cullum / John Christensen

Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction) 1st Quarter 2011 Inspection

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition. Conditions, Comments Etc. POND No hazards observed. Snow covered the site.

Required for an impoundment which functions as a SEDIMENTATION POND.	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment. <u>POND:</u> 60% Design Storage Capacity ----- .076 A.F. 100% Sediment Capacity ----- .126 A.F.
	Principle and emergency spillway elevations. <u>POND</u> Principle Spillway Elevation (F.A.S.L.): 7516.5 Emergency Spillway Elevation 7516.5

Field Information. Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

<u>POND</u>	
Water Elevation	Dry
Discharging	no
Inlet, Outlet, Spillway Conditions	Good
Out slope Conditions	Good

Sediment A. Volume	0.00 A.F.
Remaining Sediment Storage Capacity	.126 A.F.
Water impounded	0.0 A.F.

Changes, Comments, etc. The construction of the pond was completed in early 4<sup>th</sup> quarter 2008. The pond is functioning as designed.

Qualification Statement



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: John Christensen Date: 4/12/11  
 Signature: Richard Cullum Date: 4/13/11

IMPOUNDMENT INSPECTION AND CERTIFIED REPORT		Page 1 of 2	
Permit Number	C/015/0018	Report Date	June 24, 2011
Mine Name	Deer Creek Mine		
Company Name	Energy West Mining		
Impoundment Identification	Impoundment Name	Mine Site Pond:	Waste Rock Pond:
	Impoundment Number		
	UPDES Permit Number	UT-0023604-001	
	MSHA ID Number	N/A	N/A
0			
Inspection Date	6/21/11	Waste Rock Pond 6/21/11	
Inspected By	Rick Cullum / John Christensen		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	2nd Quarter 2011 Inspection		
1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.			
	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>	
Conditions, Comments Etc.	No hazards observed.	No hazards observed.	
Required for an impoundment which functions as a SEDIMENTATION POND.	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.		
		<u>Mine Site Pond:</u>	<u>Waste Rock Pond:</u>
60% Design Storage Capacity	1.87 A.F. at 7213.1 ft. ft.	.59 A.F. at 6312.7 ft.	
100% Sediment Capacity	3.12 A.F. at 7216.0 ft. ft.	.98 A.F. at 6313.45 ft.	
Principle and emergency spillway elevations.			
	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>	
Principle Spillway Elevation (F.A.S.L.):	7218.64	6318.0	
Emergency Spillway Elevation	7232.03	6318.0	

**Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on outslopes of embankments, etc.

	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
Water Elevation	7222.75	None
Discharging	Yes	Never
Inlet, Outlet, Spillway Conditions	Good	Good
Out slope Conditions	No Change	No Change

\*See "Hydrologic Monitoring Data" report submitted quarterly to DOGM for monitoring information.

	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
Sediment Volume	2.13 A.F. @ 7214.1	None
Remaining Sediment	.0 A.F.	0.59 A.F.
Water impounded	4.57 A.F.	

**Changes, Comments, etc.** Pond will be scheduled to be cleaned during the 3<sup>rd</sup> Quarter.

**Qualification Statement**



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: John Christensen  
 Signature: Richard Cullen

Date: 7/14/11  
 Date: 7/09/11

**IMPOUNDMENT INSPECTION AND CERTIFICATION REPORT**

Permit Number	C/015/0018	Report Date	June 24, 2011
Mine Name	Deer Creek Mine		
Company Name	Energy West Mining		
Impoundment Identification	Impoundment Name	Rilda Canyon Pond	
	Impoundment Number		
	UPDES Permit Number	N/A	
	MSHA ID Number	N/A	N/A

Inspection Date	June 21, 2011
Inspected By	Rick Cullum / John Christensen

Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction) 2nd Quarter 2011 Inspection

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.  
POND  
 Conditions, Comments Etc. No hazards observed. Snow covered the site.

Required for an impoundment which functions as a <b>SEDIMENTATION POND.</b>	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment. <u>POND:</u> 60% Design Storage Capacity ----- .076 A.F. 100% Sediment Capacity ----- .126 A.F.
	Principle and emergency spillway elevations. <u>POND</u> Principle Spillway Elevation (F.A.S.L.): 7516.5 Emergency Spillway Elevation 7516.5

Field Information. Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

	<u>POND</u>
Water Elevation	Dry
Discharging	no
Inlet, Outlet, Spillway Conditions	Good
Out slope Conditions	Good

Sediment A. Volume Remaining Sediment Storage Capacity	0.00 A.F.
Water impounded	.126 A.F.
Changes, Comments, etc. The construction of the pond was completed in early 4 <sup>th</sup> quarter 2008. The pond is functioning as designed.	0.0 A.F.

<b>Qualification Statement</b> 	I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.
	Signature: <u>John Christensen</u> Date: <u>7/14/11</u> Signature: <u>Richard Cullum</u> Date: <u>7/29/11</u>

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>		Page 1 of 2	
<b>Permit Number</b>	C/015/0018	<b>Report Date</b>	Sept. 24, 2011
<b>Mine Name</b>	Deer Creek Mine		
<b>Company Name</b>	Energy West Mining		
<b>Impoundment Identification</b>	<b>Impoundment Name</b>	<b>Mine Site Pond:</b>	<b>Waste Rock Pond:</b>
	<b>Impoundment Number</b>		
	<b>UPDES Permit Number</b>	UT-0023604-001	
	<b>MSHA ID Number</b>	N/A	N/A
0			
<b>Inspection Date</b>	9/22/11	<b>Waste Rock Pond</b> 9/22/11	
<b>Inspected By</b>	Rick Cullum / John Christensen		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	3rd Quarter 2011 Inspection		
1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.			
<b>Conditions, Comments Etc.</b>	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>	
	No hazards observed.	No hazards observed.	
Required for an impoundment which functions as a <b>SEDIMENTATION POND.</b>	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.		
		<u>Mine Site Pond:</u>	<u>Waste Rock Pond:</u>
	60% Design Storage Capacity	1.87 A.F. at 7213.1 ft.	.59 A.F. at 6312.7 ft.
	100% Sediment Capacity	3.12 A.F. at 7216.0 ft.	.98 A.F. at 6313.45 ft.
Principle and emergency spillway elevations.			
		<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
	Principle Spillway Elevation (F.A.S.L.):	7218.64	6318.0
	Emergency Spillway Elevation	7232.03	6318.0

**Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
Water Elevation	7224.71	None
Discharging	Yes	Never
Inlet, Outlet, Spillway Conditions	Good	Good
Out slope Conditions	No Change	No Change

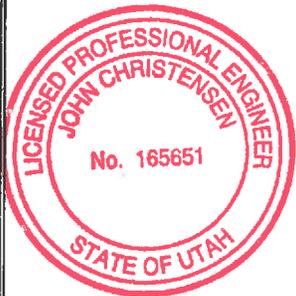
\*See "Hydrologic Monitoring Data" report submitted quarterly to DOGM for monitoring information.

	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
Sediment Volume	2.13 A.F. @ 7214.1	None
Remaining Sediment	.0 A.F.	0.59 A.F.
Water impounded	5.57 A.F.	

**Changes, Comments,  
etc.**

The pond dewatering process started the last week in September in preparation for cleaning of the sediment.

**Qualification  
Statement**



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: John Christensen Date: 10/20/11

Signature: Richard Cullum Date: 11/11/11

IMPOUNDMENT INSPECTION AND CERTIFICATE		REPORT	
Permit Number	C/015/0018	Report Date	Sept. 27, 2011
Mine Name	Deer Creek Mine		
Company Name	Energy West Mining		
Impoundment Identification	Impoundment Name	Rilda Canyon Pond	
	Impoundment Number		
	UPDES Permit Number	N/A	
	MSHA ID Number	N/A	N/A

Inspection Date	Sept. 22, 2011		
Inspected By	Rick Cullum / John Christensen		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	3rd Quarter 2011 Inspection		

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.  
POND  
 Conditions, Comments Etc. No hazards observed. Snow covered the site.

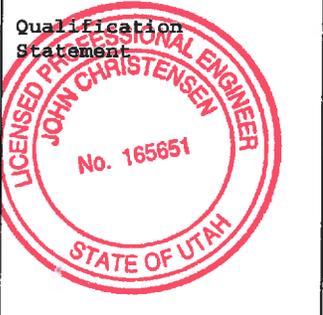
Required for an impoundment which functions as a SEDIMENTATION POND.	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment. <u>POND:</u> 60% Design Storage Capacity ----- .076 A.F. 100% Sediment Capacity ----- .126 A.F.
	Principle and emergency spillway elevations. <u>POND</u> Principle Spillway Elevation (F.A.S.L.): 7516.5 Emergency Spillway Elevation 7516.5

Field Information. Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on outslopes of embankments, etc.

<u>POND</u>	
Water Elevation	Dry
Discharging	no
Inlet, Outlet, Spillway Conditions	Good
Out slope Conditions	Good

Sediment A. Volume	0.00 A.F. -
Remaining Sediment Storage Capacity	.126 A.F.
Water impounded	0.08 A.F.

Changes, Comments, etc. The construction of the pond was completed in early 4<sup>th</sup> quarter 2008. The pond is functioning as designed.



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: John Christensen Date: 10/20/11  
 Signature: Rickard Cullum Date: 11/11/11

IMPOUNDMENT INSPECTION AND CERTIFIED REPORT		Page 1 of 2	
Permit Number	C/015/0018	Report Date	DEC. 27, 2011
Mine Name	Deer Creek Mine		
Company Name	Energy West Mining		
Impoundment Identification	Impoundment Name	Mine Site Pond:	Waste Rock Pond:
	Impoundment Number		
	UPDES Permit Number	UT-0023604-001	
	MSHA ID Number	N/A	N/A
0			
Inspection Date	12/16/11	Waste Rock Pond	12/16/11
Inspected By	Rick Cullum / John Christensen		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	4th Quarter 2011 Inspection		
1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.			
	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>	
Conditions, Comments Etc.	No hazards observed.	No hazards observed.	
Required for an impoundment which functions as a SEDIMENTATION POND.	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.		
		<u>Mine Site Pond:</u>	<u>Waste Rock Pond:</u>
	60% Design Storage Capacity	1.87 A.F. at 7213.1 ft. ft.	.59 A.F. at 6312.7 ft.
	100% Sediment Capacity	3.12 A.F. at 7216.0 ft. ft.	.98 A.F. at 6313.45 ft.
	Principle and emergency spillway elevations.		
		<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
	Principle Spillway Elevation (F.A.S.L.):	7218.64	6318.0
	Emergency Spillway Elevation	7232.03	6318.0

**Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on outslopes of embankments, etc.

	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
Water Elevation	7225.71 Top of ice	None
Discharging	Yes	Never
Inlet, Outlet, Spillway Conditions	Good	Good
Out slope Conditions	No Change	No Change

\*See "Hydrologic Monitoring Data" report submitted quarterly to DOGM for monitoring information.

	<u>Mine Site Pond</u>	<u>Waste Rock Pond</u>
Sediment Volume	A.F. (see Note)	None
Remaining Sediment	.0 A.F.	0.59 A.F.
Water impounded	8.4 A.F.	

**Changes, Comments,  
etc.**

The pond was cleaned in the 4<sup>th</sup> quarter and will be surveyed as soon as ice breaks.

**Qualification  
Statement**



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: John Christensen

Date: 1/20/12

Signature: Richard Cullum

Date: 1/31/12

IMPOUNDMENT INSPECTION AND CERTI		REPORT	
Permit Number	C/015/0018	Report Date	DEC. 27, 2011
Mine Name	Deer Creek Mine		
Company Name	Energy West Mining		
Impoundment Identification	Impoundment Name	Rilda Canyon Pond	
	Impoundment Number		
	UPDES Permit Number	N/A	
	MSHA ID Number	N/A	N/A
Inspection Date	DEC. 16, 2011		
Inspected By	Rick Cullum / John Christensen		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	4th Quarter 2011 Inspection		
1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.			
<u>POND</u>			
Conditions, Comments Etc.	No hazards observed. Snow covered the site.		
Required for an impoundment which functions as a SEDIMENTATION POND.	Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.		
	<u>POND:</u>		
	60% Design Storage Capacity -----	.076 A.F.	7503 FASL
	100% Sediment Capacity -----	.126 A.F.	7504 FASL
	Principle and emergency spillway elevations.		
	<u>POND</u>		
	Principle Spillway Elevation (F.A.S.L.):	7516.5	
	Emergency Spillway Elevation	7516.5	
Field Information. Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.			
<u>POND</u>			
Water Elevation	Small amount of ice (7500.7)		
Discharging	no		
Inlet, Outlet, Spillway Conditions	Good		
Out slope Conditions	Good		
Sediment A. Volume Remaining Sediment Storage Capacity Water impounded Changes, Comments, etc. The construction of the pond was completed in early 4 <sup>th</sup> quarter 2008. The pond is functioning as designed.			
Sediment A. Volume Remaining Sediment Storage Capacity Water impounded		0.00 A.F. .126 A.F. 0.08 A.F.	7500.7 (Aprx. Pond Bottom)
Qualification Statement	I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.		
	Signature: <u>John Christensen</u>	Date: <u>1/20/12</u>	
	Signature: <u>Richard Cullum</u>	Date: <u>1/31/12</u>	



Energy West Mining Company  
P. O. Box 310  
15 No Main Street  
Huntington, UT 84528

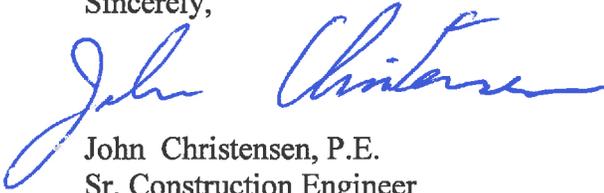
April 12, 2011

Mr. Darron Haddock  
Permit Supervisor  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801

Dear Mr. Haddock:

I am enclosing for submittal the 1st. Quarter 2011 Engineering Inspection Reports for Cottonwood/Wilberg/Des Bee Dove Waste Rock Site and the old Waste Rock Site. Also, the Deer Creek Waste Rock Site and Elk Canyon/Original Site are enclosed.

Sincerely,



John Christensen, P.E.  
Sr. Construction Engineer

Encls.

INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE		Page 1 of 2	
Permit Number	ACT/015/018	Report Date	March 24, 2011
Mine Name	Deer Creek		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse Pile Identification	File Name	Waste Rock Disposal Site	
	File Number		
	MSHA ID Number	1211-UT-09-00121-02	
Inspection Date	March 10, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	2011 First Quarter Inspection		
	Attachments to Report? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		
<b>Field Evaluation</b>			
<p>1.Foundation preparation, including the removal of all organic material and topsoil.</p> <p>All construction was done according to the permitted, professional engineered design specifications.</p>			
<p>2.Placement of underdrains and protective filter systems.</p> <p>An under-drain was installed when the site was constructed in 1989. The drain had a small amount of flow coming through it at the time of the inspection.</p>			
<p>3.Installation of final surface drainage systems.</p> <p>All interim slopes are maintained at their proper grade. The final slopes are surveyed to assure they are correct. Also the two final designed rip-rap ditches were installed as per the permitted plan and are extended as more lifts are added.</p>			
<p>4.Placement and compaction of fill materials.</p> <p>The site is leveled as they reach capacity. Trash and extraneous material are removed from the piles shortly after they are placed.</p>			
<p>5.Final grading and revegetation of fill.</p> <p>See No. 3.</p> <p>The sub-soil berm surrounding the site was seeded shortly after construction. The total capacity of Phase I is 468,215 yd<sup>3</sup>, this includes both cells 1 and 2.</p>			

6. Appearances of instability, structural weakness, and other hazardous conditions.  
No weakness or instabilities are evident at this time.

7. Other Comments.

Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

CELL	ELEVATION *	DESIGN ELEV.	CAPACITY**
1 (Upper, northern)	6367.04	6369.2	87%
2 (Lower, southern)	6337.46	6369.2	44%

\*The elevations are taken on top of the last compacted lift. The elevation of the dumped piles will not be surveyed until the active lift is compacted and leveled. The survey location is approximately the center of each cell.

\*\* The capacity is based on the last survey elevation compared to available height of waste rock in each cell. To figure the available height an approximate elevation of the original ground was determined based on pre-construction ground contours. The capacity will be updated when a new elevation is survey. The capacity is not based on material hauled to site, as described below.

As of March 1, 2011 there were 5001.48 cu yd3 of material hauled YTD. This estimate is based on invoices from the trucking company of truckloads hauled to the site. Each truckload is assumed to be full at 15 tons and a density of 88 pcf. This estimate could lag actual haul dates by 1 to 3 months, depending of invoicing and accounting.

**Certification Statement**



I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: John Christensen, Sr. Construction Engineer  
(Full Name and Title)

Signature: \_\_\_\_\_

Date: 4/12/11

P.E. Number & State: 165651, Utah

**INSPECTION AND CERTIFIED REPORT  
ON EXCESS SPOIL PILE OR REFUSE PILE**

<b>Permit Number</b>	ACT/015/018	<b>Report Date</b>	March 24, 2011
<b>Mine Name</b>	Deer Creek		
<b>Company Name</b>	Energy West Mining Company		
<b>Excess Spoil File or Refuse File I.D.</b>	<b>Pile Name</b>	ELK CANYON/ORIGINAL SITE	
	<b>Pile Number</b>		
	<b>MSHA ID Number</b>	1211-UT-09-00121-01	
<b>Inspection Date</b>	March 8, 2011		
<b>Inspected By</b>	John Christensen/Rick Cullum		
<b>Reason for Inspection</b> <small>(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)</small>	2011 1 <sup>st</sup> Quarter Inspection		
	<b>Attachments to Report?</b> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		

**Field Evaluation**

Foundation preparation, including the removal of all organic material and topsoil.  
The construction of both sites have been complete for some time in excess of 18 years. The foundations appear to be stable.

Placement of underdrains and protective filter systems.  
None

Installation of final surface drainage systems.  
The slopes of both sites have no rills, gullies or sloughage present.

Placement and compaction of fill materials.  
No fill material is being placed at either site, since both are at their designed capacity. The Elk Canyon site contains approximately 24,000 yd<sup>3</sup> original site 90,000 yd<sup>3</sup> of fill material.

Final grading and revegetation of fill.  
The sites are at capacity. The final grades are established and are re-vegetated.

Appearances of instability, structural weakness, and other hazardous conditions.  
None were observed.

**Other Comments.** Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

There was approximately 2000 tons of coal temporarily stacked at the Elk Canyon pad at the time of inspection. Snow partially covered the site.

**Certification Statement**    I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: John Christensen, Sr. Construction Engineer

(Full Name and Title)

Signature: *John Christensen*

Date: 4/12/11

P.E. Number & State: 165651, Utah





Energy West Mining Company  
P. O. Box 310  
15 No Main Street  
Huntington, UT 84528

JUNE 27, 2011

Mr. Darron Haddock  
Permit Supervisor  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801

Dear Mr. Haddock:

I am enclosing for submittal the 2nd. Quarter 2011 Engineering Inspection Reports for Cottonwood/Wilberg/Des Bee Dove Waste Rock Site and the old Waste Rock Site. Also, the Deer Creek Waste Rock Site and Elk Canyon/Original Site are enclosed.

Sincerely,

John Christensen, P.E.  
Sr. Construction Engineer

Encls.

INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE		Page 1 of 2	
Permit Number	ACT/015/018	Report Date	June 27, 2011
Mine Name	Deer Creek		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse Pile Identification	Pile Name	Waste Rock Disposal Site	
	Pile Number		
	MSHA ID Number	1211-UT-09-00121-02	
Inspection Date	June 21, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		2011 Second Quarter Inspection	
		Attachments to Report? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	
<b>Field Evaluation</b>			
<p>1.Foundation preparation, including the removal of all organic material and topsoil.</p> <p>All construction was done according to the permitted, professional engineered design specifications.</p>			
<p>2.Placement of underdrains and protective filter systems.</p> <p>An under-drain was installed when the site was constructed in 1989. The drain had a small amount of flow coming through it at the time of the inspection.</p>			
<p>3.Installation of final surface drainage systems.</p> <p>All interim slopes are maintained at their proper grade. The final slopes are surveyed to assure they are correct. Also the two final designed rip-rap ditches were installed as per the permitted plan and are extended as more lifts are added.</p>			
<p>4.Placement and compaction of fill materials.</p> <p>The site is leveled as they reach capacity. Trash and extraneous material are removed from the piles shortly after they are placed.</p>			
<p>5.Final grading and revegetation of fill.</p> <p>See No. 3.</p> <p>The sub-soil berm surrounding the site was seeded shortly after construction. The total capacity of Phase I is 468,215 yd<sup>3</sup>, this includes both cells 1 and 2.</p>			

6. Appearances of instability, structural weakness, and other hazardous conditions.  
No weakness or instabilities are evident at this time.

7. Other Comments.

Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

CELL	ELEVATION *	DESIGN ELEV.	CAPACITY**
1 (Upper, northern)	6367.04	6369.2	87%
2 (Lower, southern)	6337.46	6369.2	44%

\*The elevations are taken on top of the last compacted lift. The elevation of the dumped piles will not be surveyed until the active lift is compacted and leveled. The survey location is approximately the center of each cell.

\*\* The capacity is based on the last survey elevation compared to available height of waste rock in each cell. To figure the available height an approximate elevation of the original ground was determined based on pre-construction ground contours. The capacity will be updated when a new elevation is survey. The capacity is not based on material hauled to site, as described below.

As of June 1, 2011 there were 7186.47 cu yd3 of material hauled YTD. This estimate is based on invoices from the trucking company of truckloads hauled to the site. Each truckload is assumed to be full at 15 tons and a density of 88 pcf. This estimate could lag actual haul dates by 1 to 3 months, depending of invoicing and accounting.

**Certification Statement**



I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: John Christensen, Sr. Construction Engineer  
(Full Name and Title)

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

P.E. Number & State: 165651, Utah

INSPECTION AND CERTIFIED REPORT  
ON EXCESS SPOIL PILE OR REFUSE PILE

Permit Number	ACT/015/018	Report Date	June 24, 2011
Mine Name	Deer Creek		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse Pile I.D.	File Name	ELK CANYON/ORIGINAL SITE	
	File Number		
	MSHA ID Number	1211-UT-09-00121-01	
Inspection Date	June 21, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection <small>(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)</small>	2011 2nd Quarter Inspection		
	Attachments to Report? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		

**Field Evaluation**

Foundation preparation, including the removal of all organic material and topsoil.  
The construction of both sites have been complete for some time in excess of 18 years. The foundations appear to be stable.

Placement of underdrains and protective filter systems.  
None

Installation of final surface drainage systems.  
The slopes of both sites have no rills, gullies or sloughage present.

Placement and compaction of fill materials.  
No fill material is being placed at either site, since both are at their designed capacity. The Elk Canyon site contains approximately 24,000 yd<sup>3</sup> original site 90,000 yd<sup>3</sup> of fill material.

Final grading and revegetation of fill.  
The sites are at capacity. The final grades are established and are re-vegetated.

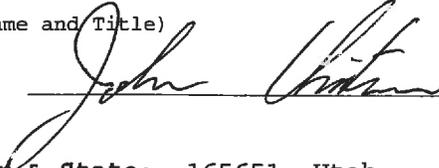
Appearances of instability, structural weakness, and other hazardous conditions.  
None were observed.

**Other Comments.** Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

There was no coal temporarily stacked at the Elk Canyon pad at the time of inspection.

**Certification Statement** I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: John Christensen, Sr. Construction Engineer  
(Full Name and Title)

Signature: 

Date: 7/19/11

P.E. Number & State: 165651, Utah





Energy West Mining Company  
P. O. Box 310  
15 No Main Street  
Huntington, UT 84528

October 20, 2011

Mr. Darron Haddock  
Permit Supervisor  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801

Dear Mr. Haddock:

I am enclosing for submittal the 3rd. Quarter 2011 Engineering Inspection Reports for Cottonwood/Wilberg/Des Bee Dove Waste Rock Site and the old Waste Rock Site. Also, the Deer Creek Waste Rock Site and Elk Canyon/Original Site are enclosed.

Sincerely,

John Christensen, P.E.  
Principle Mine Engineer

Encls.

INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE		Page 1 of 2	
Permit Number	ACT/015/018	Report Date	Sept. 27, 2011
Mine Name	Deer Creek		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse Pile Identification	Pile Name	Waste Rock Disposal Site	
	Pile Number		
	MSHA ID Number	1211-UT-09-00121-02	
Inspection Date	Sept. 22, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		2011 Third Quarter Inspection	
		Attachments to Report? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	
<b>Field Evaluation</b>			
<p>1.Foundation preparation, including the removal of all organic material and topsoil.</p> <p>All construction was done according to the permitted, professional engineered design specifications.</p>			
<p>2.Placement of underdrains and protective filter systems.</p> <p>An under-drain was installed when the site was constructed in 1989. The drain had a small amount of flow coming through it at the time of the inspection.</p>			
<p>3.Installation of final surface drainage systems.</p> <p>All interim slopes are maintained at their proper grade. The final slopes are surveyed to assure they are correct. Also the two final designed rip-rap ditches were installed as per the permitted plan and are extended as more lifts are added.</p>			
<p>4.Placement and compaction of fill materials.</p> <p>The site is leveled as they reach capacity. Trash and extraneous material are removed from the piles shortly after they are placed.</p>			
<p>5.Final grading and revegetation of fill.</p> <p>See No. 3.</p> <p>The sub-soil berm surrounding the site was seeded shortly after construction. The total capacity of Phase I is 468,215 yd<sup>3</sup>, this includes both cells 1 and 2.</p>			

6. Appearances of instability, structural weakness, and other hazardous conditions.  
No weakness or instabilities are evident at this time.

7. Other Comments.

Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

CELL	ELEVATION *	DESIGN ELEV.	CAPACITY**
1 (Upper, northern)	6365.72	6369.2	87%
2 (Lower, southern)	6337.58	6369.2	44%

\*The elevations are taken on top of the last compacted lift. The elevation of the dumped piles will not be surveyed until the active lift is compacted and leveled. The survey location is approximately the center of each cell.

\*\* The capacity is based on the last survey elevation compared to available height of waste rock in each cell. To figure the available height an approximate elevation of the original ground was determined based on pre-construction ground contours. The capacity will be updated when a new elevation is survey. The capacity is not based on material hauled to site, as described below.

As of Aug. 1, 2011 there were 9030.45 cu yd<sup>3</sup> of material hauled YTD. This estimate is based on invoices from the trucking company of truckloads hauled to the site. Each truckload is assumed to be full at 15 tons and a density of 88 pcf. This estimate could lag actual haul dates by 1 to 3 months, depending of invoicing and accounting.

Berms were constructed to hold pond cleaning sediment from the Deer Creek Mine.

**Certification Statement**



I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: John Christensen, Sr. Construction Engineer  
(Full Name and Title)

Signature: *John Christensen*

Date: 10/20/11

P.E. Number & State: 165651, Utah

**INSPECTION AND CERTIFIED REPORT  
ON EXCESS SPOIL PILE OR REFUSE PILE**

<b>Permit Number</b>	ACT/015/018	<b>Report Date</b>	Sept. 24, 2011
<b>Mine Name</b>	Deer Creek		
<b>Company Name</b>	Energy West Mining Company		
<b>Excess Spoil Pile or Refuse Pile I.D.</b>	<b>Pile Name</b>	ELK CANYON/ORIGINAL SITE	
	<b>Pile Number</b>		
	<b>MSHA ID Number</b>	1211-UT-09-00121-01	
<b>Inspection Date</b>	Sept. 22, 2011		
<b>Inspected By</b>	John Christensen/Rick Cullum		
<b>Reason for Inspection</b> <small>(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)</small>	2011 3rd Quarter Inspection		
	<b>Attachments to Report?</b> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		

**Field Evaluation**

Foundation preparation, including the removal of all organic material and topsoil.  
The construction of both sites have been complete for some time in excess of 18 years. The foundations appear to be stable.

Placement of underdrains and protective filter systems.  
None

Installation of final surface drainage systems.  
The slopes of both sites have no rills, gullies or sloughage present.

Placement and compaction of fill materials.  
No fill material is being placed at either site, since both are at their designed capacity. The Elk Canyon site contains approximately 24,000 yd<sup>3</sup> original site 90,000 yd<sup>3</sup> of fill material.

Final grading and revegetation of fill.  
The sites are at capacity. The final grades are established and are re-vegetated.

Appearances of instability, structural weakness, and other hazardous conditions.  
None were observed.

**Other Comments.** Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

There was no coal temporarily stacked at the Elk Canyon pad at the time of inspection.

**Certification Statement** I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: John Christensen, Sr. Construction Engineer

(Full Name and Title)

Signature: *John Christensen*

Date: \_\_\_\_\_

P.E. Number & State: 165651, Utah





Energy West Mining Company  
P. O. Box 310  
15 No Main Street  
Huntington, UT 84528

January 20, 2012

Mr. Darron Haddock  
Permit Supervisor  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801

Dear Mr. Haddock:

I am enclosing for submittal the 4th. Quarter 2011 Engineering Inspection Reports for Cottonwood/Wilberg/Des Bee Dove Waste Rock Site and the old Waste Rock Site. Also, the Deer Creek Waste Rock Site and Elk Canyon/Original Site are enclosed.

Sincerely,

John Christensen, P.E.  
Principle Mine Engineer

Encls.

INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE		Page 1 of 2	
Permit Number	ACT/015/018	Report Date	DEC. 27, 2011
Mine Name	Deer Creek		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse Pile Identification	Pile Name	Waste Rock Disposal Site	
	Pile Number		
	MSHA ID Number	1211-UT-09-00121-02	
Inspection Date	DEC. 16, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		2011 Fourth Quarter Inspection	
		Attachments to Report? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	
<b>Field Evaluation</b>			
<p>1.Foundation preparation, including the removal of all organic material and topsoil.</p> <p>All construction was done according to the permitted, professional engineered design specifications.</p>			
<p>2.Placement of underdrains and protective filter systems.</p> <p>An under-drain was installed when the site was constructed in 1989. The drain had a small amount of flow coming through it at the time of the inspection.</p>			
<p>3.Installation of final surface drainage systems.</p> <p>All interim slopes are maintained at their proper grade. The final slopes are surveyed to assure they are correct. Also the two final designed rip-rap ditches were installed as per the permitted plan and are extended as more lifts are added.</p>			
<p>4.Placement and compaction of fill materials.</p> <p>The site is leveled as they reach capacity. Trash and extraneous material are removed from the piles shortly after they are placed.</p>			
<p>5.Final grading and revegetation of fill.</p> <p>See No. 3.</p> <p>The sub-soil berm surrounding the site was seeded shortly after construction. The total capacity of Phase I is 468,215 yd<sup>3</sup>, this includes both cells 1 and 2.</p>			

6. Appearances of instability, structural weakness, and other hazardous conditions.  
No weakness or instabilities are evident at this time.

7. Other Comments.

Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

CELL	ELEVATION *	DESIGN ELEV.	CAPACITY**
1 (Upper, northern)	6365.72	6369.2	87%
2 (Lower, southern)	6337.58	6369.2	44%

\*The elevations are taken on top of the last compacted lift. The elevation of the dumped piles will not be surveyed until the active lift is compacted and leveled. The survey location is approximately the center of each cell.

\*\* The capacity is based on the last survey elevation compared to available height of waste rock in each cell. To figure the available height an approximate elevation of the original ground was determined based on pre-construction ground contours. The capacity will be updated when a new elevation is survey. The capacity is not based on material hauled to site, as described below.

As of DEC. 1, 2011 there were 12150.06 cu yd3 of material hauled YTD. This estimate is based on invoices from the trucking company of truckloads hauled to the site. Each truckload is assumed to be full at 15 tons and a density of 88 pcf. This estimate could lag actual haul dates by 1 to 3 months, depending of invoicing and accounting.

Berms were constructed to hold pond cleaning sediment from the Deer Creek Mine. These berms and sediment will be spread over the site after it has dried out.

**Certification Statement**



I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: John Christensen, Sr. Construction Engineer  
(Full Name and Title)

Signature: \_\_\_\_\_

Date: 1/20/12

P.E. Number & State: 165651, Utah

INSPECTION AND CERTIFIED REPORT  
ON EXCESS SPOIL PILE OR REFUSE PILE

Permit Number	ACT/015/018	Report Date	DEC. 27, 2011
Mine Name	Deer Creek		
Company Name	Energy West Mining Company		
Excess Spoil Pile or Refuse Pile I.D.	Pile Name	ELK CANYON/ORIGINAL SITE	
	Pile Number		
	MSHA ID Number	1211-UT-09-00121-01	
Inspection Date	DEC. 16, 2011		
Inspected By	John Christensen/Rick Cullum		
Reason for Inspection <small>(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)</small>	2011 4th Quarter Inspection		
	Attachments to Report? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		

**Field Evaluation**

Foundation preparation, including the removal of all organic material and topsoil.  
The construction of both sites have been complete for some time in excess of 18 years. The foundations appear to be stable.

Placement of underdrains and protective filter systems.  
None

Installation of final surface drainage systems.  
The slopes of both sites have no rills, gullies or sloughage present.

Placement and compaction of fill materials.  
No fill material is being placed at either site, since both are at their designed capacity. The Elk Canyon site contains approximately 24,000 yd<sup>3</sup> original site 90,000 yd<sup>3</sup> of fill material.

Final grading and revegetation of fill.  
The sites are at capacity. The final grades are established and are re-vegetated.

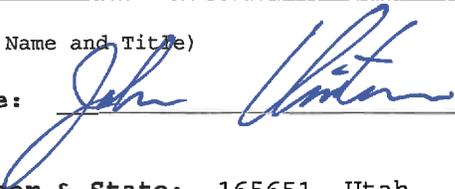
Appearances of instability, structural weakness, and other hazardous conditions.  
None were observed.

Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

There was approximately 2000 tons coal temporarily stacked at the Elk Canyon pad at the time of inspection.

**Certification Statement** I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: John Christensen, Sr. Construction Engineer  
(Full Name and Title)

Signature:  Date: 1/20/12

P.E. Number & State: 165651, Utah



IMPOUNDMENT INSPECTION AND CERTIFIED REPORT		Page 1 of 2	
Permit Number	C/015/0009	Report Date	March 24, 2011
Mine Name	Trail Mountain Mine		
Company Name	Energy West Mining Company		
Impoundment Identification	Impoundment Name	Trail Mountain Mine Pond:	
	Impoundment Number		
	UPDES Permit Number	UT-G04003-001	
	MSHA ID Number	N/A	
<b>IMPOUNDMENT INSPECTION</b>			
Inspection Date	March 7, 2011		
Inspected By	John Christensen / Rick Cullum		
		1st Quarter 2011 Inspection	
<p>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</p> <p>No unstable or structural weaknesses found.</p>			
Required for an impoundment which functions as a SEDIMENTATION POND.	<p>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</p> <p>60% Design Storage Capacity            0.282 A.F. at 7182</p> <p>100% Sediment Capacity                        0.47 A.F. at 7183.6</p>		
	<p>3. Principle and emergency spillway elevations.</p> <p>Principle Spillway Elevation (F.A.S.L.):            7186.6</p> <p>Emergency Spillway Elevation:(F.A.S.L.):            7194.6</p>		

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

Water Elevation 7182.94

Discharging No

Inlet, Outlet Conditions Good

Slope conditions Good

\*See "Hydrologic Monitoring Data" report submitted quarterly to DOGM for monitoring information.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

Sediment Volume 0.25 A.F.  
@7181.9 ft.

Remaining Sediment Storage Capacity 0.03 A.F.

Water Impounded 0.22 A.F. top of ice

Changes, comments, etc. Mining has seized at Trail Mtn. operations, only storm run off will run into the pond. The pond was cleaned in 4th Quarter 2005.

Qualification Statement



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: John Christensen  
Signature: Richard Cullum

Date: 4/12/11  
Date: 4/13/11

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			Page 1 of 2
Permit Number	C/015/0009	Report Date	June 27, 2011
Mine Name	Trail Mountain Mine		
Company Name	Energy West Mining Company		
Impoundment Identification	Impoundment Name	Trail Mountain Mine Pond:	
	Impoundment Number		
	UPDES Permit Number	UT-G04003-001	
	MSHA ID Number	N/A	

**IMPOUNDMENT INSPECTION**

Inspection Date	June 17, 2011
Inspected By	John Christensen / Rick Cullum
	2nd Quarter 2011 Inspection

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.  
 No unstable or structural weaknesses found.

Required for an impoundment which functions as a SEDIMENTATION POND.

2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.

60% Design  
 Storage Capacity                      0.282 A.F. at 7182

100% Sediment  
 Capacity                                      0.47 A.F. at 7183.6

3. Principle and emergency spillway elevations.

Principle Spillway  
 Elevation (F.A.S.L.):                      7186.6

Emergency Spillway  
 Elevation: (F.A.S.L.):                      7194.6



<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			Page 1 of 2
Permit Number	C/015/0009	Report Date	Sept. 27, 2011
Mine Name	Trail Mountain Mine		
Company Name	Energy West Mining Company		
Impoundment Identification	Impoundment Name	Trail Mountain Mine Pond:	
	Impoundment Number		
	UPDES Permit Number	UT-G04003-001	
	MSHA ID Number	N/A	
<b>IMPOUNDMENT INSPECTION</b>			
Inspection Date	Sept. 20, 2011		
Inspected By	John Christensen / Rick Cullum		
		3rd Quarter 2011 Inspection	
<p>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</p> <p>No unstable or structural weaknesses found.</p>			
Required for an impoundment which functions as a SEDIMENTATION POND.	<p>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</p> <p>60% Design Storage Capacity            0.282 A.F. at 7182</p> <p>100% Sediment Capacity                        0.47 A.F. at 7183.6</p>		
	<p>3. Principle and emergency spillway elevations.</p> <p>Principle Spillway Elevation (F.A.S.L.):            7186.6</p> <p>Emergency Spillway Elevation: (F.A.S.L.):            7194.6</p>		

**4. Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

Water Elevation 7182.34

Discharging No

Inlet, Outlet Conditions Good

Slope conditions Good

\*See "Hydrologic Monitoring Data" report submitted quarterly to DOGM for monitoring information.

**5. Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

Sediment Volume 0.25 A.F.  
@7181.9 ft.

Remaining Sediment Storage Capacity 0.03 A.F.

Water Impounded 0.15

Changes, comments, etc. Mining has seized at Trail Mtn. operations, only storm run off will run into the pond. The pond was cleaned in 4th Quarter 2005.

Qualification Statement



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: John Christensen Date: 10/20/11

Signature: Richard Cullum Date: 11/11/11

Permit Number	C/015/ 3	Report Date	DEC. 27, 2011
Mine Name	Trail Mountain Mine Company Name: Energy West Mining		
Impoundment Identification	Impoundment Name	Trail Mountain Mine Pond:	
	Impoundment Number		
	UPDES Permit Number	UT-G04003-001	
	MSHA ID Number	N/A	

**IMPOUNDMENT INSPECTION 4<sup>th</sup> Quarter 2011 Inspection**

Inspection Date	DEC. 16, 2011
Inspected By	John Christensen / Rick Cullum

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.  
 No unstable or structural weaknesses found.

Required for an impoundment which functions as a SEDIMENTATION POND.	2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.
	60% Design Storage Capacity            0.282 A.F. at 7182 100% Sediment Capacity                        0.47 A.F. at 7183.6

3. Principle and emergency spillway elevations.
Principle Spillway Elevation (F.A.S.L.):            7186.6
Emergency Spillway Elevation: (F.A.S.L.):           7194.6

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on outslopes of embankments, etc.

Water Elevation	DRY
Discharging	No
Inlet, Outlet Conditions	Good
Slope conditions	Good

\*See "Hydrologic Monitoring Data" report submitted quarterly to DOGM for monitoring information.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

Sediment Volume	0.25 A.F. @7181.9 ft.
Remaining Sediment Storage Capacity	0.03 A.F. The pond will be cleaned in 2 <sup>nd</sup> Qtr.2012. Or sooner if weather permits.
Water Impounded	0.00
Changes, comments, etc.	Mining has seized at Trail Mtn. operations, only storm run off will run into the pond. The pond was cleaned in 4th Quarter 2005.

Qualification Statement



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: John Christensen Date: 1/20/12

Signature: Rickard Cullum Date: 1/31/12



**MT NEBO SCIENTIFIC, INC.**

*research & consulting*

---

March 5, 2012

Dennis Oakley  
*Interwest Mining Company,*  
North Temple Office  
1407 W. North Temple  
Suite 310  
Salt Lake City, UT 84116

Dear Mr. Oakley:

Enclosed please find three (3) hard copies (1 bound, 2 unbound) of the following vegetation monitoring report. A CD with electronic files has also been included with this package.

**VEGETATION MONITORING:  
REFERENCE AREAS**

2011

ENERGY WEST MINE AREAS

Please call or write if you have questions or comments.

Sincerely,

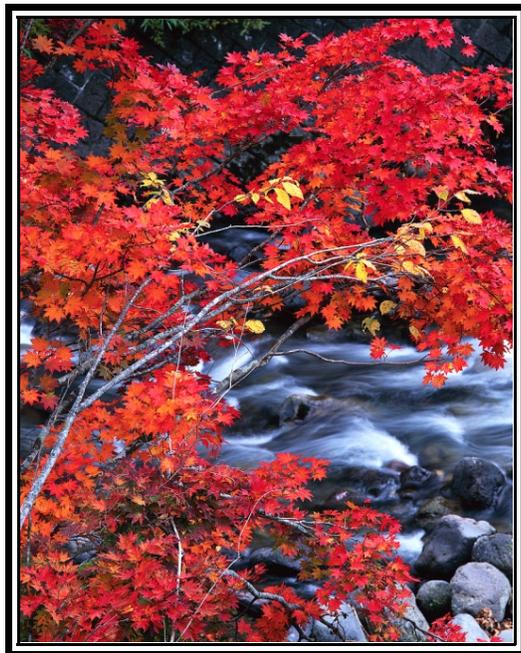
Patrick Collins, Ph.D.  
Biologist/Environmental Consultant

Enclosures

**VEGETATION MONITORING:  
REFERENCE AREAS**

2011

ENERGY WEST MINE AREAS



*Prepared by*

**MT. NEBO SCIENTIFIC, INC.**

330 East 400 South, Suite 6

P.O. Box 337

Springville, Utah 84663

(801) 489-6937

Patrick D. Collins, Ph.D.

*for*

**ENERGY WEST MINING COMPANY**

P.O. Box 310

Huntington, Utah 84528



March 2012

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## INTRODUCTION

Reference areas are those plant communities that have been chosen to represent standards for future revegetation success. Often the reference areas were chosen prior to any land disturbance proposed by a mine operator. In choosing a reference area for a proposed new disturbance site, attempts are made to select a plant community that has similar environmental variables as the site that will be disturbed and ultimately be reclaimed. The environmental considerations include variables such as soil type, exposure, elevation, plant species, slope, etc. Both the proposed disturbed and reference areas are then quantitatively sampled. The datasets are summarized and compared statistically to determine if they are similar enough for the reference area to be used for future revegetation success standards. If the reference area meets the criteria, it is set aside to remain undisturbed until final reclamation and revegetation has occurred. At that time the reference area is used to make comparisons with the reclaimed plant community during the “responsibility period”. At the end of this period (usually ten years are required), if the revegetated land meets those standards set by the reference area, final bond release can be obtained by the mine operator through the State of Utah, Division of Oil, Gas & Mining (DOGM).

The purpose of the vegetation monitoring study in 2011 is to provide recent quantitative data for total cover, cover by plant species, species frequency and lifeform composition information for all reference areas previously chosen to represent future revegetation success standards for disturbed lands on the properties of the Energy West Mining Company. For comparative purposes, a similar study was conducted by *Mt. Nebo Scientific* for *Energy West Mining Company* in 2007.

Upon review of the summarized monitoring data, determinations can be made as to whether or not the reference areas continue to be viable for future success standards. The following table lists reference areas studied for this report; it also includes sample sizes for each area.

**STUDY AREAS AND SAMPLE SIZES FOR THE  
REFERENCE AREA MONITORING STUDY (2011)**

		Sample Sizes (n)
<b>1.</b>	<b>COTTONWOOD MINE NEW WASTE ROCK SITE</b>	
	a. Black Sagebrush Reference Area	20
	b. Pinyon-Juniper Reference Area	20
	c. Gardner Saltbush Reference Area	20
<b>2.</b>	<b>COTTONWOOD MINE SITE</b>	
	a. Pinyon-Juniper Reference Area	20
<b>3.</b>	<b>DEER CREEK MINE SITE</b>	
	a. Riparian Reference Area	20
	b. Saltbush Reference Area	20
	c. Pinyon-Juniper Reference Area	20
	d. Mixed Conifer Reference Area	20
<b>4.</b>	<b>RILDA CANYON</b>	
	a. Pinyon-Juniper/Mountain Brush Reference Area (Lower Area)	20 20
	b. Sagebrush/Grass Reference Area (Undisturbed; Lower Area)	20 0
	c. Riparian Reference Area (Lower Area)	20
	d. Pinyon-Juniper/Mountain Brush Reference Area (AMR)	20
	e. White Fir/Aspen Reference Area	20
	f. Mountain Brush/Salina Wildrye Reference Area	
	g. Aspen/Fir/Dogwood Reference Area	
<b>5.</b>	<b>DES-BEE-DOVE MINE SITE</b>	
	a. Pinyon-Juniper Reference Area	20
	b. Salt Desert Reference Area	20
<b>6.</b>	<b>TRAIL MOUNTAIN MINE SITE</b>	
	a. Trail Mountain Reference Area	20
<b>7.</b>	<b>COTTONWOOD FAN PORTAL AREA</b>	
	a. Pinyon-Juniper Reference Area	20

# METHODS

## Transect & Quadrat Placement

Transect lines for quantitative sampling the vegetation were randomly placed throughout the reference areas to adequately represent each site as a whole. Sample quadrats were then randomly placed along the transect lines for sampling.

## Cover, Frequency & Composition

Cover estimates were made using ocular methods with meter square quadrats. Species composition and relative frequencies were also assessed from the quadrats. Additional information recorded on the raw data sheets may have included notes just as: estimated precipitation, slope, exposure, grazing use, animal disturbance and other appropriate notes. Plant nomenclature follows "A Utah Flora" (Welsh, Atwood, Goodrich, Higgins, 2008).

## Sample Size & Adequacy

Sampling adequacy was calculated using formula given below.

$$nMIN = \frac{t^2 s^2}{(dx)^2}$$

where,

- $nMIN$  = minimum adequate sample
- $t$  = appropriate confidence t-value
- $s$  = standard deviation
- $x$  = sample mean
- $d$  = desired change from mean

## Photographs

Representative color photographs were taken of the sample areas and have been included in this report.

## **RESULTS & DISCUSSION**

Because this report was intended to provide current cover, frequency and composition information only, the results section is made up primarily of the summarized tables and photographs showing each reference area.

A review of the reference area data with respect to parameters sampled revealed that most of the reference areas had respectable values for native plant communities in the area. Consequently, most of them should be adequate for revegetation success standards at the time of final reclamation, provided they are compared with reclaimed areas that once supported a similar plant community prior to its disturbance by mining and reclamation activities. One exception that was explained in the Rilda Canyon section below (and also in the 2007 study) was the *Pinyon-Juniper/Mountain Brush Reference Area (AMR)*. This reference area was covered by material from construction activities creating soil storage piles. Consequently, the area should not be considered as a reference area for revegetation success standards.

## COTTONWOOD MINE NEW WASTE ROCK SITE



Gardner Saltbush Reference Area

**Table 1: Percent cover, standard deviation and frequency by plant species in the Cottonwood Mine New Waste Rock area.**

Black Sagebrush Reference Area

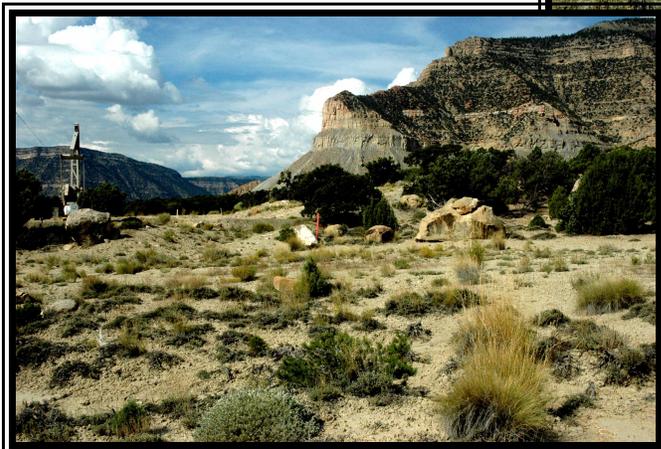
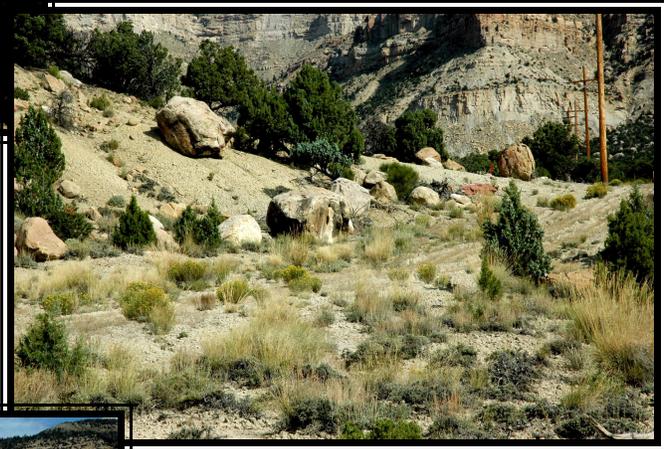
	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Juniperus osteosperma</i>	1.00	4.36	5.00
<i>Pinus edulis</i>	1.25	5.45	5.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Artemisia nova</i>	13.00	9.14	80.00
<i>Atriplex confertifolia</i>	1.35	3.82	15.00
<i>Juniperus osteosperma</i>	3.40	5.97	30.00
<i>Pinus edulis</i>	4.70	8.73	30.00
<b>FORBS</b>			
<i>Eriogonum bicolor</i>	0.25	0.62	15.00
<b>GRASSES</b>			
<i>Elymus salinus</i>	2.05	4.24	25.00
<i>Stipa hymenoides</i>	0.25	1.09	5.00

**Table 2: Total cover and composition in the Cottonwood Mine New Waste Rock Area.**

Black Sagebrush Reference Area

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	2.25	6.80
Understory (U)	25.00	8.37
Litter	11.00	6.04
Bareground	41.50	13.97
Rock	22.50	16.32
O + U	27.25	9.15
<b>B. COMPOSITION (%)</b>		
Shrubs	89.87	17.10
Forbs	1.27	3.36
Grasses	8.87	17.00

Black Sagebrush Reference Area



**Table 3: Percent cover, standard deviation and frequency by plant species in the Cottonwood Mine New Waste Rock area.**

*Pinyon-Juniper Reference Area*

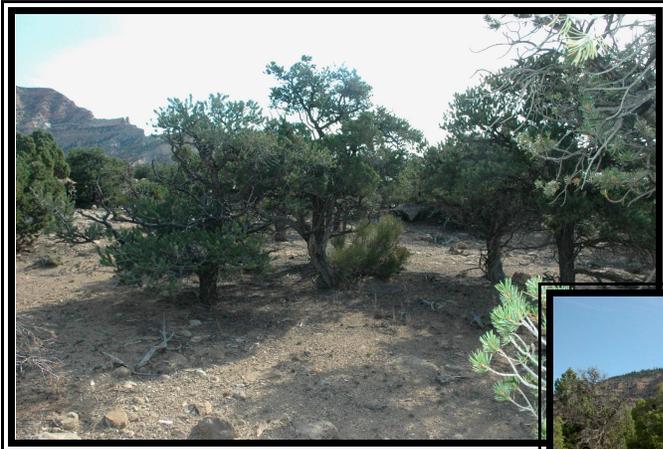
	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Pinus edulis</i>	10.75	16.90	40.00
<i>Juniperus osteosperma</i>	2.50	10.90	5.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Artemisia nova</i>	1.25	5.45	5.00
<i>Cercocarpus montanus</i>	3.75	9.86	15.00
<i>Ephedra viridis</i>	3.60	6.18	30.00
<i>Juniperus osteosperma</i>	3.50	11.52	10.00
<i>Pinus edulis</i>	10.50	12.24	50.00
<i>Yucca harrimaniae</i>	0.50	1.50	10.00
<b>FORBS</b>			
<i>Asclepias sp.</i>	0.25	1.09	5.00
<i>Descurainia pinnata</i>	0.25	1.09	5.00
<i>Eriogonum bicolor</i>	0.15	0.65	5.00
<b>GRASSES</b>			

**Table 4: Total cover and composition in the Cottonwood Mine New Waste Rock area.**

*Pinyon-Juniper Reference Area*

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	13.25	18.73
Understory (U)	23.75	11.82
Litter	25.75	18.59
Bareground	16.75	12.87
Rock	33.75	18.50
O + U	37.00	17.64
<b>B. COMPOSITION (%)</b>		
Shrubs	92.17	23.79
Forbs	7.83	23.79
Grasses	0.00	0.00

Pinyon-Juniper Reference Area



**Table 5: Percent cover, standard deviation and frequency by plant species in the Cottonwood Mine New Waste Rock area.**

*Gardner Saltbush Reference Area*

	MEAN	STANDARD DEVIATION	FREQUENCY
<b>TREES &amp; SHRUBS</b>			
<i>Atriplex gardneri</i>	15.65	12.49	70.00
<b>FORBS</b>			
<i>Atriplex powellii</i>	0.30	0.90	10.00
<i>Halogeton glomeratus</i>	1.65	3.58	30.00
<i>Malcolmia africana</i>	3.15	4.79	40.00
<i>Phacelia demissa</i>	0.05	0.22	5.00
<i>Stanleya pinnata</i>	0.75	3.27	5.00
<b>GRASSES</b>			
<i>Elymus salinus</i>	6.80	10.70	30.00

**Table 6: Total cover and composition in the Cottonwood Mine New Waste Rock Area.**

*Gardner Saltbush Reference Area*

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Understory	28.35	9.88
Litter	7.85	7.70
Bareground	54.35	20.64
Rock	9.45	15.28
<b>B. COMPOSITION (%)</b>		
Shrubs	52.96	39.07
Forbs	21.49	24.63
Grasses	25.55	40.28

Gardner Saltbush Reference Area



## COTTONWOOD MINE SITE



Pinyon-Juniper Reference Area

**Table 7: Percent cover, standard deviation and frequency by plant species in the Cottonwood Mine area.**

*Pinyon-Juniper Reference Area*

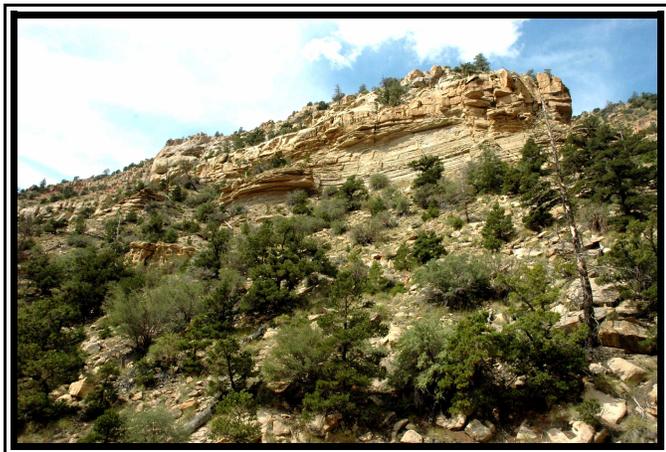
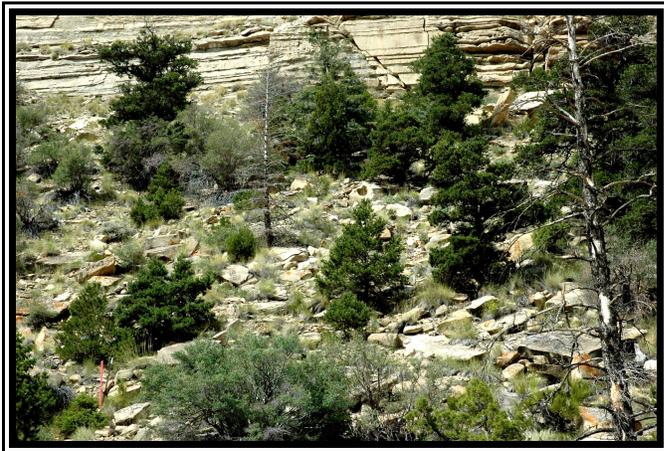
	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Amelanchier utahensis</i>	2.00	6.78	10.00
<i>Cercocarpus montanus</i>	3.00	9.14	10.00
<i>Juniperus osteosperma</i>	1.00	4.36	5.00
<i>Pinus edulis</i>	1.50	4.50	10.00
<i>Pseudotsuga menziesii</i>	0.50	2.18	5.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Abies concolor</i>	2.75	9.15	10.00
<i>Amelanchier utahensis</i>	4.00	12.10	10.00
<i>Cercocarpus montanus</i>	4.25	7.29	35.00
<i>Gutierrezia sarothrae</i>	0.25	1.09	5.00
<i>Juniperus osteosperma</i>	3.00	6.20	20.00
<i>Pinus edulis</i>	2.25	4.02	25.00
<i>Pseudotsuga menziesii</i>	1.25	5.45	5.00
<b>FORBS</b>			
<i>Galium bifolium</i>	0.75	2.38	10.00
<i>Hedysarum occidentale canone</i>	4.10	6.66	35.00
<b>GRASSES</b>			
<i>Elymus salinus</i>	12.90	8.32	90.00
<i>Stipa hymenoides</i>	0.75	2.38	10.00

**Table 8: Total cover and composition in the Cottonwood Mine area.**

*Pinyon-Juniper Reference Area*

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	8.00	11.22
Understory (U)	36.25	10.59
Litter	17.00	6.96
Bareground	10.75	4.55
Rock	36.00	13.84
O + U	44.25	11.43
<b>B. COMPOSITION (%)</b>		
Shrubs	45.42	30.16
Forbs	14.50	19.91
Grasses	40.08	23.44

Pinyon-Juniper Reference Area



## DEER CREEK MINE SITE



Mixed Conifer Reference Area

**Table 9: Percent cover, standard deviation and frequency by plant species in the Deer Creek Mine area.**

Riparian Reference Area

	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Abies concolor</i>	3.25	8.55	15.00
<i>Acer glabrum</i>	4.25	11.76	15.00
<i>Populus angustifolia</i>	9.00	18.14	20.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Abies concolor</i>	2.25	5.58	15.00
<i>Acer glabrum</i>	0.75	3.27	5.00
<i>Cornus sericea</i>	2.00	6.00	10.00
<i>Holodiscus dumosa</i>	0.75	3.27	5.00
<i>Juniperus scopulorum</i>	2.75	6.80	15.00
<i>Populus angustifolia</i>	3.50	6.73	25.00
<i>Pseudotsuga menziesii</i>	2.75	6.42	20.00
<i>Ribes viscosissimum</i>	1.00	3.39	10.00
<i>Rosa woodsii</i>	13.25	19.25	35.00
<i>Symphoricarpos oreophilus</i>	1.00	3.00	10.00
<b>FORBS</b>			
<i>Aster chilensis</i>	8.50	10.74	45.00
<i>Cirsium sp.</i>	0.50	2.18	5.00
<i>Equisetum arvense</i>	1.50	6.54	5.00
<i>Erigeron engelmannii</i>	4.25	8.98	20.00
<i>Habenaria sparsiflora</i>	1.00	3.39	10.00
<b>GRASSES</b>			
<i>Agrostis stolonifera</i>	9.50	18.63	25.00

**Table 10: Total cover and composition in the Deer Creek Waste Rock Area.**

Riparian Reference Area

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	16.50	19.44
Understory (U)	55.25	14.18
Litter	23.50	13.88
Bareground	8.50	8.23
Rock	12.75	10.89
O + U	71.75	17.27
<b>B. COMPOSITION (%)</b>		
Shrubs	59.05	33.28
Forbs	26.35	25.66
Grasses	14.60	28.38

Riparian Reference Area



**Table 11: Percent cover, standard deviation and frequency by plant species in the Deer Creek Mine area.**

*Pinyon-Juniper Reference Area*

	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Abies concolor</i>	1.00	4.36	5.00
<i>Juniperus osteosperma</i>	0.50	2.18	5.00
<i>Pinus edulis</i>	3.00	7.31	15.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Abies concolor</i>	0.50	2.18	5.00
<i>Amelanchier utahensis</i>	2.25	7.15	10.00
<i>Artemisia frigida</i>	1.50	4.77	10.00
<i>Artemisia tridentata</i>	3.75	7.40	25.00
<i>Ephedra viridis</i>	4.00	8.46	20.00
<i>Juniperus osteosperma</i>	1.50	6.54	5.00
<i>Opuntia sp.</i>	0.75	1.79	15.00
<i>Pinus edulis</i>	2.25	6.80	15.00
<i>Symphoricarpos oreophilus</i>	1.25	3.83	10.00
<b>FORBS</b>			
<i>Agoseris glauca</i>	0.25	1.09	5.00
<i>Antennaria sp.</i>	0.25	1.09	5.00
<i>Astragalus sp.</i>	1.00	4.36	5.00
<i>Erigeron engelmannii</i>	0.50	2.18	5.00
<i>Machaeranthera grindelioides</i>	5.25	6.42	45.00
<b>GRASSES</b>			
<i>Elymus salinus</i>	18.00	11.22	90.00
<i>Stipa hymenoides</i>	0.50	2.18	5.00
<i>Stipa comata</i>	0.50	2.18	5.00

**Table 12: Total cover and composition in the Deer Creek area.**

*Pinyon-Juniper Reference Area*

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	4.50	8.20
Understory (U)	44.00	12.81
Litter	11.75	4.55
Bareground	10.50	4.44
Rock	33.75	14.74
O + U	48.50	14.15
<b>B. COMPOSITION (%)</b>		
Shrubs	37.72	22.84
Forbs	19.49	24.65
Grasses	42.79	21.27

Pinyon-Juniper Reference Area



**Table 13: Percent cover, standard deviation and frequency by plant species in the Deer Creek Mine area.**

Mixed Conifer Reference Area

	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Abies concolor</i>	1.25	3.83	10.00
<i>Pinus edulis</i>	0.75	3.27	5.00
<i>Pseudotsuga menziesii</i>	4.00	11.47	15.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Abies concolor</i>	6.25	13.40	25.00
<i>Amelanchier utahensis</i>	1.50	4.77	10.00
<i>Chrysothamnus nauseosus</i>	0.75	3.27	5.00
<i>Eriogonum corymbosum</i>	5.85	8.98	40.00
<i>Gutierrezia sarothrae</i>	0.50	1.50	10.00
<i>Juniperus scopulorum</i>	1.00	4.36	5.00
<i>Pachistima myrsinites</i>	0.25	1.09	5.00
<i>Pinus edulis</i>	0.75	3.27	5.00
<i>Pseudotsuga menziesii</i>	5.00	6.71	40.00
<i>Symphoricarpos oreophilus</i>	5.15	6.36	50.00
<b>FORBS</b>			
<i>Castilleja sp.</i>	0.25	1.09	5.00
<i>Erigeron engelmannii</i>	1.50	4.50	15.00
<i>Hymenoxys acaulis</i>	0.75	2.38	10.00
<i>Linum perenne</i>	1.25	3.49	15.00
<i>Machaeranthera grindelioides</i>	1.25	3.11	15.00
<i>Petradoria pumila</i>	0.25	1.09	5.00
<b>GRASSES</b>			
<i>Elymus salinus</i>	17.00	14.42	90.00

**Table 14: Total cover and composition in the Deer Creek Mine area.**

Mixed Conifer Reference Area

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	6.00	11.79
Understory (U)	49.25	12.07
Litter	14.50	6.10
Bareground	7.50	2.96
Rock	28.75	11.82
O + U	55.25	13.65
<b>B. COMPOSITION (%)</b>		
Shrubs	55.38	27.11
Forbs	11.10	13.43
Grasses	33.52	24.11

Mixed Conifer Reference Area



**Table 15: Percent cover, standard deviation and frequency by plant species in the Deer Creek Waste Rock area.**

*Saltbush Reference Area*

	MEAN	STANDARD DEVIATION	FREQUENCY
<b>TREES &amp; SHRUBS</b>			
<i>Artemisia nova</i>	1.75	4.82	15.00
<i>Artemisia tridentata wyomingensis</i>	1.00	4.36	5.00
<i>Atriplex confertifolia</i>	4.00	6.63	30.00
<i>Atriplex corrugata</i>	1.75	5.76	10.00
<i>Atriplex gardneri</i>	9.25	13.16	40.00
<i>Chrysothamnus depressus</i>	0.75	1.79	15.00
<i>Chrysothamnus nauseosus</i>	0.25	1.09	5.00
<i>Eriogonum corymbosum</i>	1.25	5.45	5.00
<i>Gutierrezia sarothrae</i>	0.50	2.18	5.00
<i>Sarcobatus vermiculatus</i>	1.50	6.54	5.00
<b>FORBS</b>			
<i>Eriogonum sp.</i>	0.60	1.53	15.00
<i>Halogeton glomeratus</i>	0.40	1.74	5.00
<i>Machaeranthera grindelioides</i>	0.25	1.09	5.00
<b>GRASSES</b>			
<i>Bromus tectorum</i>	0.10	0.44	5.00
<i>Elymus salinus</i>	5.40	8.22	45.00
<i>Stipa hymenoides</i>	0.25	1.09	5.00

**Table 16: Total cover and composition in the Deer Creek Waste Rock Area.**

*Saltbush Reference Area*

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Understory	29.00	10.20
Litter	13.95	20.82
Bareground	49.65	24.09
Rock	7.40	8.84
<b>B. COMPOSITION (%)</b>		
Shrubs	75.85	23.00
Forbs	4.50	9.44
Grasses	19.65	24.26

Saltbush Reference Area



## RILDA CANYON



Aspen/Fir/Dogwood Reference Area

**Table 17: Percent cover, standard deviation and frequency by plant species in the Rilda Canyon area.**

Pinyon-Juniper/Mtn. Brush Reference Area (Lower Area)

	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Juniperus osteosperma</i>	1.75	5.31	10.00
<i>Pinus edulis</i>	5.00	13.60	15.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Artemisia frigida</i>	1.00	3.00	10.00
<i>Artemisia nova</i>	0.25	1.09	5.00
<i>Cercocarpus ledifolius</i>	4.00	12.10	10.00
<i>Chrysothamnus nauseosus</i>	1.50	5.50	10.00
<i>Eriogonum corymbosum</i>	1.10	4.36	10.00
<i>Gutierrezia sarothrae</i>	0.25	1.09	5.00
<i>Juniperus osteosperma</i>	2.00	5.34	15.00
<i>Pinus edulis</i>	4.25	10.28	20.00
<i>Rhus aromatica</i>	4.75	11.78	15.00
<b>FORBS</b>			
<i>Artemisia dracuncululus</i>	0.25	1.09	5.00
<i>Chaenactis douglasii</i>	0.25	1.09	5.00
<i>Erigeron sp.</i>	0.50	1.50	10.00
<i>Machaeranthera canescens</i>	0.25	1.09	5.00
<b>GRASSES</b>			
<i>Elymus salinus</i>	19.40	12.92	95.00
<i>Stipa hymenoides</i>	1.50	3.57	20.00

**Table 18: Total cover and composition in the Rilda Canyon Area.**

Pinyon-Juniper/Mtn. Brush Reference Area (Lower Area)

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	6.75	13.99
Understory (U)	41.25	10.83
Litter	15.00	8.22
Bareground	18.00	6.96
Rock	25.75	11.54
O + U	48.00	18.19
<b>B. COMPOSITION (%)</b>		
Shrubs	44.31	33.41
Forbs	3.17	7.05
Grasses	52.53	34.19

Pinyon-Juniper/Mtn. Brush Reference Area



**Table 19: Percent cover, standard deviation and frequency by plant species in the Rilda Canyon area.**

Sagebrush/Grass Reference Area (Lower Area)

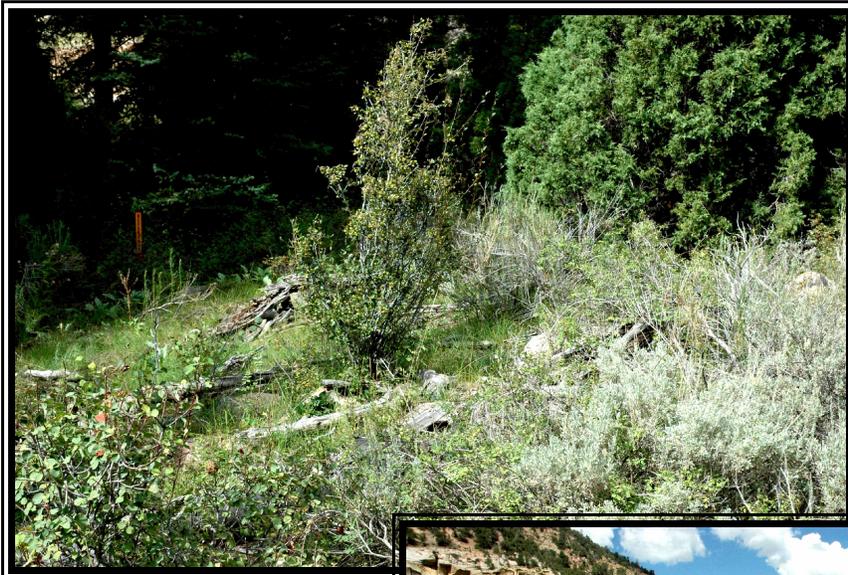
	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Populus tremuloides</i>	1.00	4.36	5.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Artemisia tridentata</i>	25.50	11.17	95.00
<i>Chrysothamnus nauseosus</i>	1.50	3.57	15.00
<i>Populus tremuloides</i>	1.25	5.45	5.00
<i>Rosa woodsii</i>	0.25	1.09	5.00
<i>Symphoricarpos oreophilus</i>	5.25	12.89	15.00
<b>FORBS</b>			
<i>Achillea millefolium</i>	0.75	3.27	5.00
<i>Antennaria sp.</i>	3.00	7.65	15.00
<i>Artemisia ludoviciana</i>	0.75	2.38	10.00
<i>Cynoglossum officinale</i>	3.00	4.00	40.00
<i>Descurainia pinnata</i>	0.25	1.09	5.00
<i>Lathyrus lanszwertii</i>	0.25	1.09	5.00
<i>Machaeranthera canescens</i>	0.25	1.09	5.00
<i>Taraxacum officinale</i>	0.25	1.09	5.00
<b>GRASSES</b>			
<i>Bromus carinatus</i>	1.00	3.00	10.00
<i>Elymus spicatus</i>	7.50	9.81	45.00
<i>Poa pratensis</i>	10.75	13.72	55.00
<i>Stipa comata</i>	3.00	9.14	10.00
<i>Stipa hymenoides</i>	0.50	2.18	5.00

**Table 20: Total cover and composition in the Rilda Canyon Area.**

Sagebrush/Grass Reference Area (Lower Area)

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	1.00	4.36
Understory (U)	65.00	6.52
Litter	22.65	6.20
Bareground	6.20	2.20
Rock	6.15	8.45
O + U	66.00	8.46
<b>B. COMPOSITION (%)</b>		
Shrubs	52.53	19.29
Forbs	13.18	12.97
Grasses	34.29	20.35

Sagebrush/Grass Reference Area



**Table 21: Percent cover, standard deviation and frequency by plant species in the **Rilda Canyon** area.**

Riparian Reference Area (Lower Area)

	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Acer glabrum</i>	1.50	6.54	5.00
<i>Alnus incana</i>	3.50	15.26	5.00
<i>Cornus sericea</i>	2.50	10.90	5.00
<i>Picea pungens</i>	6.25	19.16	10.00
<i>Populus angustifolia</i>	13.50	18.85	40.00
<i>Populus tremuloides</i>	4.25	12.97	20.00
<i>Prunus virginiana</i>	2.00	8.72	5.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Acer glabrum</i>	0.50	2.18	5.00
<i>Alnus incana</i>	1.25	5.45	5.00
<i>Cornus sericea</i>	9.25	20.39	25.00
<i>Mahonia repens</i>	0.75	1.79	15.00
<i>Populus angustifolia</i>	3.00	5.34	25.00
<i>Populus tremuloides</i>	0.25	1.09	5.00
<i>Ribes aureum</i>	1.25	5.45	5.00
<i>Rosa woodsii</i>	8.25	14.52	35.00
<i>Salix sp.</i>	1.00	4.36	5.00
<b>FORBS</b>			
<i>Equisetum arvense</i>	5.50	6.50	45.00
<i>Geranium richardsonii</i>	1.25	4.44	10.00
<i>Smilacina racemosa</i>	0.25	1.09	5.00
<i>Taraxacum officinale</i>	0.25	1.09	5.00
<i>Thalictrum fendleri</i>	0.25	1.09	5.00
<b>GRASSES</b>			
<i>Agrostis stolonifera</i>	2.50	6.22	15.00
<i>Carex microptera</i>	1.00	4.36	5.00
<i>Elymus canadensis</i>	5.00	12.14	20.00
<i>Juncus arcticus</i>	1.00	4.36	5.00
<i>Poa pratensis</i>	1.00	3.00	10.00

**Table 22: Total cover and composition in the **Rilda Canyon** Area.**

Riparian Reference Area (Lower Area)

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	33.50	27.35
Understory (U)	43.50	21.28
Litter	23.40	20.58
Bareground	28.65	20.92
Rock	4.45	7.41
O + U	77.00	28.30
<b>B. COMPOSITION (%)</b>		
Shrubs	62.48	36.23
Forbs	17.96	20.50
Grasses	19.55	33.35

Riparian Reference Area



**Table 23: Percent cover, standard deviation and frequency by plant species in the Rilda Canyon area.**

White Fir/Aspen Reference Area

	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Abies concolor</i>	4.75	11.56	15.00
<i>Acer glabrum</i>	0.75	3.27	5.00
<i>Picea pungens</i>	4.00	9.70	15.00
<i>Populus tremuloides</i>	18.75	18.83	55.00
<i>Pseudotsuga menziesii</i>	2.00	8.72	5.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Abies concolor</i>	12.00	15.20	50.00
<i>Acer glabrum</i>	0.50	2.18	5.00
<i>Juniperus scopulorum</i>	0.50	2.18	5.00
<i>Mahonia repens</i>	21.75	16.60	95.00
<i>Pachistima myrsinites</i>	2.75	4.60	30.00
<i>Picea pungens</i>	1.25	3.83	10.00
<i>Populus tremuloides</i>	4.75	8.44	35.00
<i>Pseudotsuga menziesii</i>	1.25	5.45	5.00
<i>Rosa woodsii</i>	2.00	5.79	15.00
<i>Symphoricarpos oreophilus</i>	3.00	8.28	15.00
<b>FORBS</b>			
<i>Achillea millefolium</i>	0.25	1.09	5.00
<i>Fragaria vesca</i>	0.25	1.09	5.00
<i>Thalictrum fendleri</i>	0.75	2.38	10.00
<b>GRASSES</b>			
<i>Elymus spicatus</i>	1.00	3.00	10.00
<i>Elymus trachycaulus</i>	0.75	2.38	10.00
<i>Poa pratensis</i>	1.75	4.82	15.00
<i>Poa secunda</i>	1.25	3.11	15.00

**Table 24: Total cover and composition in the Rilda Canyon Area.**

White Fir/Aspen Reference Area

A. COVER (%)	MEAN	STANDARD DEVIATION
Overstory (O)	30.25	12.19
Understory (U)	55.75	12.77
Litter	32.95	14.45
Bareground	8.60	8.81
Rock	2.70	5.00
O + U	86.00	18.28
<b>B. COMPOSITION (%)</b>		
Shrubs	89.29	10.56
Forbs	2.02	4.33
Grasses	8.70	9.93

White Fir/Aspen Reference Area



**Table 25: Percent cover, standard deviation and frequency by plant species in the **Rilda Canyon** area.**

Mtn. Brush/Salina Wildrye Reference Area

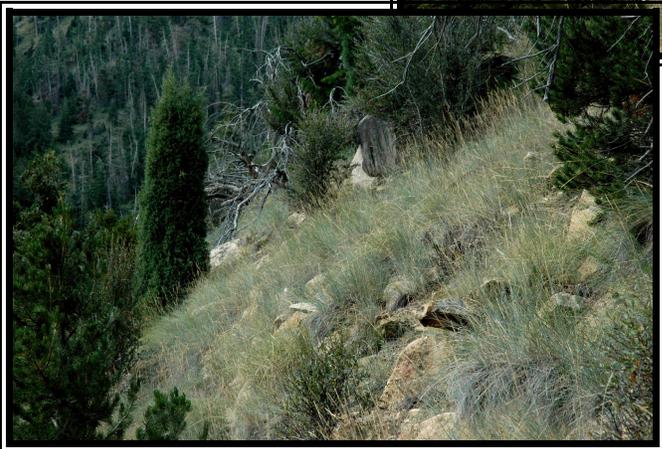
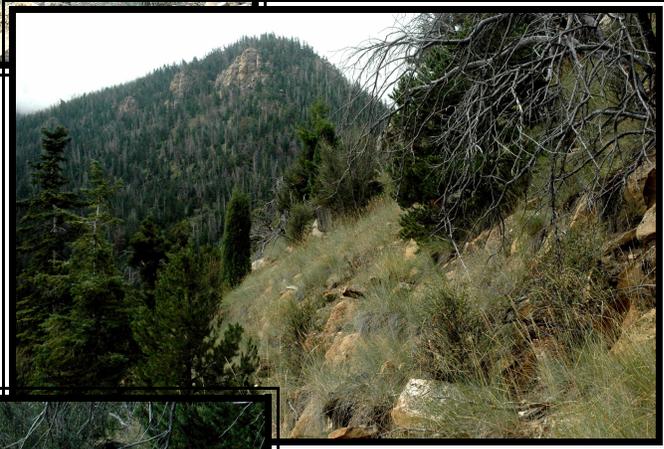
	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Cercocarpus ledifolius</i>	7.00	13.73	25.00
<i>Juniperus osteosperma</i>	0.50	2.18	5.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Cercocarpus ledifolius</i>	4.50	9.60	20.00
<i>Gutierrezia sarothrae</i>	0.25	1.09	5.00
<i>Juniperus communis</i>	0.75	3.27	5.00
<i>Juniperus osteosperma</i>	1.50	6.54	5.00
<i>Juniperus scopulorum</i>	1.00	4.36	5.00
<i>Mahonia repens</i>	2.75	4.87	30.00
<i>Pinus edulis</i>	3.00	10.17	10.00
<b>FORBS</b>			
<b>GRASSES</b>			
<i>Elymus salinus</i>	26.25	13.59	100.00
<i>Stipa hymenoides</i>	0.25	1.09	5.00

**Table 26: Total cover and composition in the **Rilda Canyon** Area.**

Mtn. Brush/Salina Wildrye Reference Area

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	7.50	13.65
Understory (U)	40.25	10.54
Litter	19.75	12.89
Bareground	18.50	10.14
Rock	21.50	11.74
O + U	47.75	15.20
<b>B. COMPOSITION (%)</b>		
Shrubs	32.89	29.23
Forbs	0.00	0.00
Grasses	67.11	29.23

Mtn. Brush/Salina Wildrye Reference Area



**Table 27: Percent cover, standard deviation and frequency by plant species in the Rilda Canyon area.**

Aspen/Fir/Dogwood Reference Area

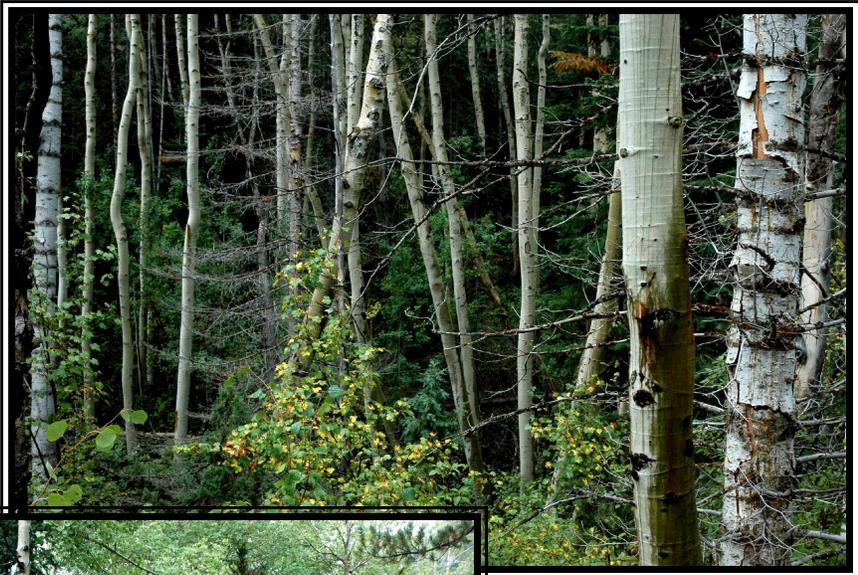
	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Abies concolor</i>	7.00	15.44	20.00
<i>Acer glabrum</i>	5.25	13.18	15.00
<i>Alnus incana</i>	2.50	10.90	5.00
<i>Cornus sericea</i>	1.25	5.45	5.00
<i>Populus tremuloides</i>	27.50	30.68	50.00
<i>Pseudotsuga menziesii</i>	2.50	10.90	5.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Abies concolor</i>	3.25	8.55	15.00
<i>Acer glabrum</i>	2.25	4.60	20.00
<i>Acer grandidentatum</i>	1.25	5.45	5.00
<i>Alnus incana</i>	0.50	2.18	5.00
<i>Cornus sericea</i>	17.25	19.27	60.00
<i>Cornus sericea</i>	0.25	1.09	5.00
<i>Juniperus scopulorum</i>	0.50	2.18	5.00
<i>Mahonia repens</i>	6.25	11.50	30.00
<i>Pachistima myrsinites</i>	8.00	9.27	60.00
<i>Populus tremuloides</i>	2.50	6.02	20.00
<i>Pseudotsuga menziesii</i>	0.75	3.27	5.00
<i>Ribes viscosissimum</i>	1.50	5.50	10.00
<i>Rosa woodsii</i>	7.25	8.44	50.00
<i>Shepherdia canadensis</i>	0.50	2.18	5.00
<i>Symphoricarpos oreophilus</i>	0.50	2.18	5.00
<b>FORBS</b>			
<i>Apocynum cannabinum</i>	0.25	1.09	5.00
<i>Cirsium sp.</i>	0.25	1.09	5.00
<i>Viola nuttallii</i>	0.25	1.09	5.00
<b>GRASSES</b>			

**Table 28: Total cover and composition in the Rilda Canyon Area.**

Aspen/Fir/Dogwood Reference Area

A. COVER (%)	MEAN	STANDARD DEVIATION
Overstory (O)	46.00	18.75
Understory (U)	53.25	12.87
Litter	33.10	17.80
Bareground	12.15	13.76
Rock	1.50	1.20
O + U	99.25	15.91
<b>B. COMPOSITION (%)</b>		
Shrubs	98.68	4.03
Forbs	1.32	4.03
Grasses	0.00	0.00

Aspen/Fir/Dogwood Reference Area



## Pinyon-Juniper/Mountain Brush Reference Area (AMR)

The Pinyon-Juniper/Mountain Brush Reference Area (AMR) was an old mine site that was later reclaimed by the State of Utah, Division of Oil, Gas & Mining Abandoned Mine Reclamation Program (AMR). After that the site was chosen as a reference area to represent other reclaimed sites in Rilda Canyon that were once again proposed for re-disturbance by the Energy West Mining Company for some new surface facilities in the canyon. Construction plans changed as did the location of the surface facilities (the site was moved up-canyon a short distance). New reference areas were chosen to represent plant communities for the new site. Since data were recorded for all reference areas, the reference areas for the first surface facilities location remain as options for future standards of revegetation success. Therefore, all reference areas were sampled for this document.

The Pinyon-Juniper/Mountain Brush Reference Area here, however, was covered

by material from construction to create soil piles (see photographs).

*Consequently, the area cannot be considered a reference area for future use and no quantitative data were recorded for this document.*



## DES-BEE-DOVE MINE SITE



Salt Desert Reference Area

**Table 29: Percent cover, standard deviation and frequency by plant species in the [Des-Bee-Dove Mine area](#).**

*Pinyon-Juniper Reference Area*

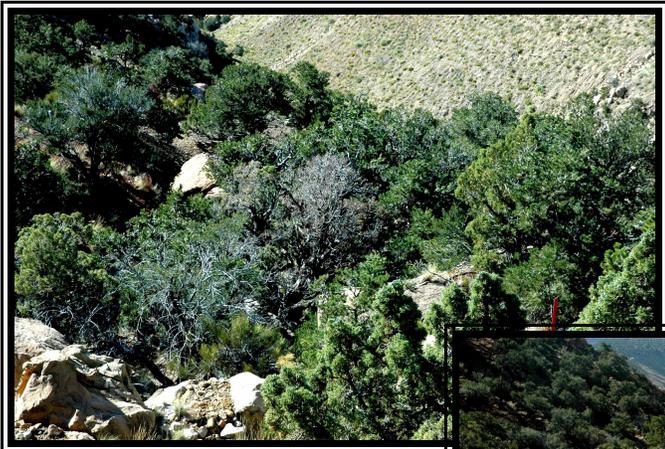
	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Cercocarpus ledifolius</i>	2.25	7.15	10.00
<i>Juniperus osteosperma</i>	0.25	1.09	5.00
<i>Pinus edulis</i>	7.00	14.53	25.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Cercocarpus ledifolius</i>	1.25	4.44	10.00
<i>Ephedra viridis</i>	4.50	9.60	20.00
<i>Juniperus osteosperma</i>	2.75	8.29	10.00
<i>Pinus edulis</i>	4.75	9.81	25.00
<b>FORBS</b>			
<b>GRASSES</b>			
<i>Elymus salinus</i>	15.75	12.77	75.00

**Table 30: Total cover and composition in the [Des-Bee-Dove Mine Area](#).**

*Pinyon-Juniper Reference Area*

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	9.50	15.07
Understory (U)	29.00	14.46
Litter	19.00	14.28
Bareground	13.25	5.97
Rock	38.75	16.50
O + U	38.50	13.05
<b>B. COMPOSITION (%)</b>		
Shrubs	42.46	40.42
Forbs	0.00	0.00
Grasses	57.54	40.42

Pinyon-Juniper Reference Area



**Table 31: Percent cover, standard deviation and frequency by plant species in the [Des-Bee-Dove Mine](#) area.**

*Salt Desert Reference Area*

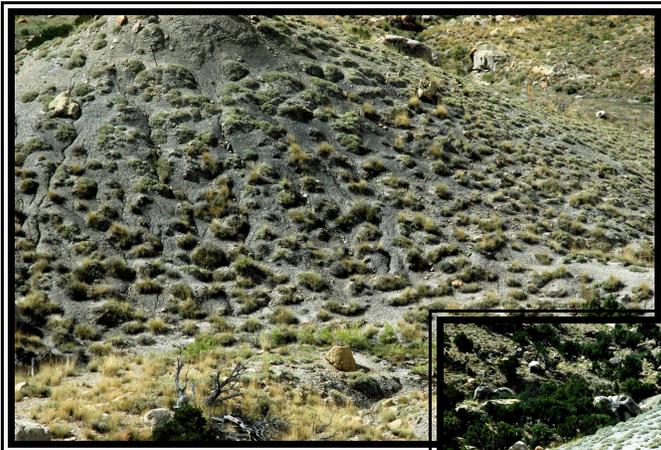
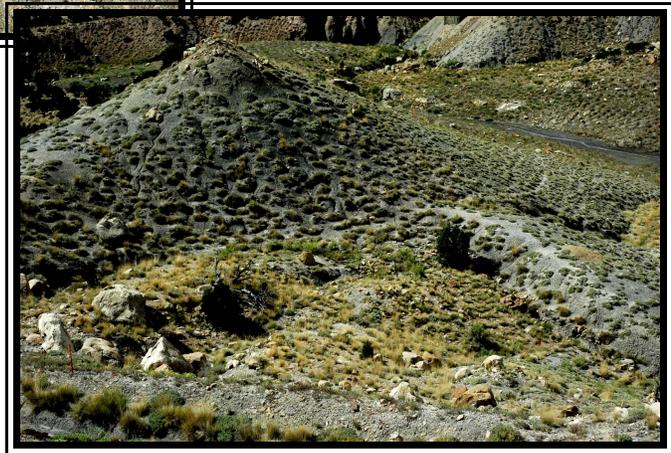
	MEAN	STANDARD DEVIATION	FREQUENCY
<b>TREES &amp; SHRUBS</b>			
<i>Atriplex confertifolia</i>	5.50	9.86	25.00
<i>Atriplex gardneri</i>	14.00	15.22	55.00
<i>Eriogonum corymbosum</i>	2.00	6.20	10.00
<i>Sarcobatus vermiculatus</i>	0.40	1.74	5.00
<i>Suaeda torreyana</i>	0.35	1.53	5.00
<b>FORBS</b>			
<i>Machaeranthera canescens</i>	0.50	2.18	5.00
<b>GRASSES</b>			
<i>Elymus salinus</i>	13.00	12.29	65.00
<i>Stipa hymenoides</i>	0.50	2.18	5.00

**Table 32: Total cover and composition in the [Des-Bee-Dove Mine](#) Area.**

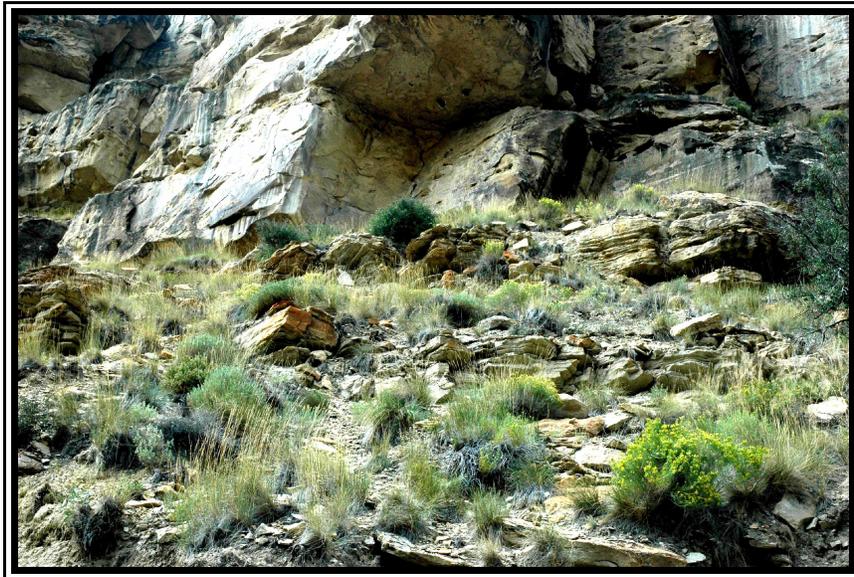
*Salt Desert Reference Area*

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Understory	36.25	9.98
Litter	11.50	10.14
Bareground	35.00	15.17
Rock	17.25	10.18
<b>B. COMPOSITION (%)</b>		
Shrubs	62.60	35.71
Forbs	1.25	5.45
Grasses	36.15	33.89

*Salt Desert Reference Area*



## TRAIL MOUNTAIN MINE SITE



Trail Mountain Reference Area

**Table 33: Percent cover, standard deviation and frequency by plant species for Trail Mountain Mine area.**

Trail Mountain Reference Area

	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Amelanchier utahensis</i>	0.50	2.18	5.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Amelanchier utahensis</i>	1.25	3.11	15.00
<i>Artemisia tridentata</i>	2.00	6.00	10.00
<i>Atriplex confertifolia</i>	2.75	4.32	35.00
<i>Chrysothamnus nauseosus</i>	2.00	4.58	20.00
<i>Ephedra viridis</i>	0.50	2.18	5.00
<i>Eriogonum corymbosum</i>	2.50	5.59	20.00
<b>FORBS</b>			
<i>Machaeranthera grindelioides</i>	1.00	2.00	20.00
<i>Stanleya pinnata</i>	0.75	2.38	10.00
<b>GRASSES</b>			
<i>Elymus salinus</i>	17.25	9.81	90.00
<i>Stipa hymenoides</i>	1.25	4.44	10.00

**Table 34: Total cover and composition in the Trail Mountain Mine Area.**

Trail Mountain Reference Area

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	0.50	2.18
Understory (U)	31.25	6.68
Litter	10.50	5.45
Bareground	9.50	4.72
Rock	48.75	10.59
O + U	31.75	6.94
<b>B. COMPOSITION (%)</b>		
Shrubs	35.11	29.72
Forbs	5.71	10.97
Grasses	59.18	28.58

Trail Mountain Reference Area



## COTTONWOOD FAN PORTAL AREA



Pinyon-Juniper Reference Area

**Table 35: Percent cover, standard deviation and frequency by plant species in the Cottonwood Fan Portal area.**

Pinyon-Juniper Reference Area

	MEAN	STANDARD DEVIATION	FREQUENCY
<b>OVERSTORY</b>			
<i>Pinus edulis</i>	5.25	9.15	30.00
<b>UNDERSTORY</b>			
<b>TREES &amp; SHRUBS</b>			
<i>Amelanchier utahensis</i>	0.50	2.18	5.00
<i>Atriplex confertifolia</i>	2.25	7.15	10.00
<i>Cercocarpus montanus</i>	0.75	3.27	5.00
<i>Ephedra viridis</i>	4.00	9.70	15.00
<i>Juniperus osteosperma</i>	2.25	5.58	15.00
<i>Pinus edulis</i>	3.50	7.26	20.00
<b>FORBS</b>			
<i>Cryptantha sp.</i>	0.50	1.50	10.00
<i>Descurainia pinnata</i>	0.25	1.09	5.00
<i>Stanleya pinnata</i>	0.25	1.09	5.00
<b>GRASSES</b>			
<i>Elymus salinus</i>	19.00	10.68	100.00
<i>Stipa hymenoides</i>	0.50	1.50	10.00

**Table 36: Total cover and composition in the Cottonwood Fan Portal Area.**

Pinyon-Juniper Reference Area

<b>A. COVER (%)</b>	MEAN	STANDARD DEVIATION
Overstory (O)	5.25	9.15
Understory (U)	33.75	7.40
Litter	18.25	7.46
Bareground	14.50	6.30
Rock	33.50	10.74
O + U	39.00	9.17
<b>B. COMPOSITION (%)</b>		
Shrubs	36.36	31.91
Forbs	2.68	5.37
Grasses	60.96	32.06

Pinyon-Juniper Reference Area

