GCC Energy

"Safety as a Value"

Telephone: 970.385.4528
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GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326

August 14, 2017

State of Colorado
Division of Reclamation, Mining & Safety
1313 Sherman St., Room 215
Denver, CO 80203

Attn: Rob Zuber, Environmental Protection Specialist II

Re: GCC Energy, LLC
King II Mine
CDRMS Permit # C-81-035
Permit Renewal 07 (RN-07)
Adequacy Review #2 Response

Dear Mr. Zuber:

This submittal is in response to your letter of August 14, 2017, "King Coal Mine, Second Adequacy Letter for RN-07".

The Division's adequacy items are reprinted as received, but printed in *italics*. GCC Energy responses to each adequacy item are shown in bold type. A replacement page schedule is attached for your convenience.

CDRMS 8/14/17: Additional items that need to be addressed that have arisen since the previous adequacy letter:

- *Please update legal descriptions of the permit area to include areas added with TR-24.*

  Please find attached King I 2.03.6 pages 1 thru 5. These pages have been updated to clarify which coal leases have been relinquished. Also, metes-and-bounds descriptions are included of the areas added to the permit boundary due to angle-of-draw calculations.

- *Please resubmit PAP pages to include edits from recently approved revisions, such as MR-46.*

  Please find attached pages 2.05.4 pages 6 & 8 which were approved with MR-46. Page footers have been updated to read RN-07 AR#2.

- *Please update the Reclamation Cost Estimate appendix to include the most recent estimate performed by the Division (to be sent in separate email).*

  Please find attached replacement King II "Appendix 12(1), Reclamation Bond Estimate prepared by Colorado Division of Reclamation, Mining & Safety". Please delete Appendix 12(2) in its entirety. Also included is updated King II Table of Contents page iii which changes the obsolete "Appendix 12(2)" designation under Appendix 12 to "Appendix 12(1)".

Adequacy Item #41
KII Section 2.05.3, Page 5
CDRMS 8/14/17: The approved PAP text states that discharges from the SAE by the King II entrance will be sampled. Please explain GCC's rationale for altering this commitment.

GCCE August 14, 2017:
Original text concerning SAE sampling has been restored to 2.05.3 page 5.

Adequacy Item #42
KII Section 2.05.3, Page 6
CDRMS 8/14/17: Please add a statement that prior to water being pumped from the pond to the native channel, the water will be sampled, and it will not be discharged to the native channel unless it meets effluent limitations.

GCCE August 14, 2017:
2.05.6 page 6 text has been revised as requested.

Adequacy Item #44
KII Section 2.05.3, Page 7 (formerly page 6a)
CDRMS 8/14/17: I believe that you misinterpreted my previous intent for editing this page. Please re-write the fourth paragraph as follows:
"A further discussion of topsoil salvage, protection, and stabilization at exploration drill pads (as well as monitoring well pads) is contained in Sections 2.04.6 and 2.04.9."

GCCE August 14, 2017:
King II 2.05.3 page 7, paragraph 4, has been revised as requested.

Adequacy Item #61
CDRMS 8/14/17: The King II Ditch Capacity table in Appendix 11 still has some values that do not match the as-built details (Map King II-007B, last updated in December 2015). For example, the bottom width of the lower portion of CWD-1A is 1.6 feet in the table but 1.0 feet in the details on the map. Also, there appears to be a discrepancy for the depths for CWD-1C and 1D. Please check all values and explain or revise.

GCCE August 14, 2017:
The Ditch Capacities table from Appendix 11 has been revised to match the surveyed measurements of Map King II-007B and is included herein.

Adequacy Item #65

CDRMS 8/14/17: Map King II-005

It appears that the area where pillars were pulled in Section 36 (and section to north) has lost the hatching on the map indicating this.

GCCE August 14, 2017:

The hatch layer of Map King II-005 has been restored.

Adequacy Item #66

CDRMS 8/14/17: The Map King II-010 series

Please explain the purpose of this series of maps. Are they meant to accurately reflect the reclamation plan, including the post-mining topography and channel configuration, or are they supposed to be a guide only? Please provide an explanation, and we can discuss if it is worth updating these maps.

GCCE August 14, 2017:

The Map King II-010 A-C series show the pre-disturbance topography and cross-sections of the King II site, with conceptual notations of various features such as roads, highwall bench, buildings, topsoil storage, etc. While many of the features have been somewhat superseded by the as-built features on Maps King II-007, and King II-007 A thru C, it would seem that retaining the original pre-disturbance maps in the PAP would be useful. We only have access to paper and .pdf copies of these maps, so removing the conceptual notations would require white-out and re-scanning.

Map King II-010D shows as-built cut and fill quantities of the highwall bench where the conveyor belt portal and return ventilation portals are located.

Please find attached a page replacement schedule which details the various replacement and newly added text pages, appendices, and maps as modified thus far with RN-07.

Please contact Tom Bird at 970.385.4528 x 6503 with questions or comments.

Sincerely,
Tom Bird

Manager of Coal Services
GCC Energy, LLC

GCC Energy, LLC, Permit Renwal RN-07, Replacement Page Schedule

08/14/2017	Replace:	With:	New:	Remove:
King I Text Pages	King I Cover Page MR-43, 11/14/2016	King I 0 Cover Page, RN-07, 08/14/2017		
	King I 2.03.4 page 1, 11/14/2016	King I 2.03.4 page 1, 07/20/2017		
	King I 2.03.4 page 2, 11/29/2016	King I 2.03.4 page 2, 07/20/2017		
	King I 2.03.4 page 3, 11/10/2016	King I 2.03.4 page 3, 07/11/2017		
	King I 2.03.4 page 4, 11/30/2015	King I 2.03.4 page 4, 07/11/2017		
	King I 2.03.6 page 1, 12/07	King I 2.03.6 page 1, 08/14/2017		
	King I 2.03.6 page 2, 12/07	King I 2.03.6 page 2, 08/14/2017		
	King I 2.03.6 page 3, 08/25/2016	King I 2.03.6 page 3, 08/14/2017		
			King I 2.03.6 page 4, 08/14/2017	
			King I 2.03.6 page 5, 08/14/2017	
	King I 2.03.8 page 1, 08/25/2016	King I 2.03.8 page 1, 07/11/2017		
	King I 2.03.10 page 1, 07/14/2015	King I 2.03.10 page 1, 07/11/2017		
	King I 2.04.7 page 7, 08/2009	King I 2.04.7 page 7, 07/11/2017		
			King I 2.04.7 page 8, 07/11/2017	
	King I 2.05.3 page 2, 08/01/2012	King I 2.05.3 page 2, 07/11/2017		
	King I 2.05.3 page 3, 08/01/2012	King I 2.05.3 page 3, 07/11/2017		
	King I 2.05.3 page 4, 08/01/2012	King I 2.05.3 page 4, 07/11/2017		
	King I 2.05.4 page 1, 08/01/2012	King I 2.05.4 page 1, 07/11/2017		
	King I 2.05.4 page 2, 08/01/2012	King I 2.05.4 page 2, 07/11/2017		
	King I 2.05.4 page 3, 08/01/2012	King I 2.05.4 page 3, 07/11/2017		
	King I 2.05.4 page 4, 08/01/2012	King I 2.05.4 page 4, 07/11/2017		
	King I 2.05.4 page 8, 02/2007	King I 2.05.4 page 8, 07/11/2017		
	King I 2.05.6 page 1, 02/2007	King I 2.05.6 page 1, 07/11/2017		
	King I 2.05.6 page 2, 02/2007	King I 2.05.6 page 2, 07/11/2017		
	King I 2.05.6 page 3, 02/2007	King I 2.05.6 page 3, 07/11/2017		
	King I 2.05.6 page 4, 02/2007	King I 2.05.6 page 4, 07/11/2017		
	King I 2.05.6 page 5, 02/2007	King I 2.05.6 page 5, 07/11/2017		
	King I 2.05.6 page 9,10/13/2016	King I 2.05.6 page 9, 07/11/2017		
	King I 2.05.6 page 10, 10/13/2016	King I 2.05.6 page 10, 07/11/2017		
King I Appendicies				
King I Maps	King I-002 Surface Ownership 08/23/16	King I-002 Surface Ownership 07/11/17		
	King I-007 Op. Plan and Surface Feat. 08/23/16	King I-007 Op. Plan and Surface Feat. 07/11/17		
King II Text Pages	King II Cover Page MR-43, 11/14/2016	King II 0 Cover Page, RN-07, 08/14/17		
	King II 0 page ii ToC, 10/18/16	King II 0 page ii ToC, 07/11/17		
	King II 0 page iii ToC, 10/13/16	King II 0 page iii ToC, 08/14/17		
	King II 2.03.4 page 1, 11/14/2016	King II 2.03.4 page 1, 07/20/2017		
	King II 2.03.4 page 2, 11/29/2016	King II 2.03.4 page 2, 07/20/2017		
	King II 2.03.4 page 3, 11/10/2016	King II 2.03.4 page 3, 07/11/2017		
	King II 2.03.4 page 4, 11/30/2015	King II 2.03.4 page 4, 07/11/2017		
	King II 2.03.6 page 1, 10/13/2016	King II 2.03.6 page 1, 08/08/2017		
	King II 2.03.8 page 1, 08/22/2016	King II 2.03.8 page 1, 07/11/2017		
	King II 2.03.9 page 1, 04/30/2015	King II 2.03.9 page 1, 07/19/2017		
	King II 2.03.10 page 1, 10/19/2016	King II 2.03.10 page 1, 07/11/2017		
	King II 2.04.4 page 1, 10/13/2016	King II 2.04.4 page 1, 07/11/2017		
Page # mislabeled	King II 2.04.6 page 4, 06/26/2014	King II 2.04.6 page 4, 07/11/2017		
	King II 2.04.7 page 6, 04/30/2015	King II 2.04.7 page 6, 07/19/2017		
	King II 2.04.10 page 2, 10/13/2016	King II 2.04.10 page 2, 07/11/2017		
	King II 2.04.11 page 3, 10/13/2016	King II 2.04.11 page 3, 07/11/2017		
	King II 2.05.2 page 1, 04/30/2015	King II 2.05.2 page 1, 07/11/2017		
	King II 2.05.3 page 1, 11/2009	King II 2.05.3 page 1, 07/11/2017		
	King II 2.05.3 page 2, 03/2010	King II 2.05.3 page 2, 07/11/2017		
	King II 2.05.3 page 3, 08/15/2014	King II 2.05.3 page 3, 07/11/2017		

King II 2.05.3 page 4, 03/2010		King II 2.05.3 page 4, 07/11/2017				
King II 2.05.3 page 5, 03/2010		King II 2.05.3 page 5, 08/14/2017				
King II 2.05.3 page 6, 07/14/2015		King II 2.05.3 page 6, 08/14/2017				
King II 2.05.3 page 7, 10/13/2016		King II 2.05.3 page 7, 08/14/2017				
						King II 2.05.3 page 7a, 07/14/2015
King II 2.05.3 page 8, 07/14/2015		King II 2.05.3 page 8, 07/11/2017				
King II 2.05.3 page 9, 11/2009		King II 2.05.3 page 9, 07/11/2017				
King II 2.05.3 page 10, 11/2009		King II 2.05.3 page 10, 07/11/2017				
King II 2.05.3 page 11, 11/2009		King II 2.05.3 page 11, 07/11/2017				
King II 2.05.3 page 12, 11/2009		King II 2.05.3 page 12, 07/11/2017				
				King II 2.05.3 page 13, 07/11/2017		
				King II 2.05.3 page 14, 07/11/2017		
King II 2.05.4 page 1, 03/2010		King II 2.05.4 page 1, 07/11/2017				
King II 2.05.4 page 2, 11/2009		King II 2.05.4 page 2, 07/11/2017				
King II 2.05.4 page 3, 11/2009		King II 2.05.4 page 3, 07/11/2017				
King II 2.05.4 page 4, 11/2009		King II 2.05.4 page 4, 07/11/2017				
King II 2.05.4 page 5, 11/2009		King II 2.05.4 page 5, 07/11/2017				
King II 2.05.4 page 6, 07/18/2017		King II 2.05.4 page 6, 08/14/2017				
King II 2.05.4 page 7, 03/2011		King II 2.05.4 page 7, 07/11/2017				
King II 2.05.4 page 8, 07/18/2017		King II 2.05.4 page 8, 08/14/2017				
King II 2.05.4 page 9, 04/30/2015		King II 2.05.4 page 9, 07/11/2017				
King II 2.05.4 page 10, 11/2009		King II 2.05.4 page 10, 07/11/2017				
King II 2.05.4 page 11, 11/2009		King II 2.05.4 page 11, 07/11/2017				
King II 2.05.4 page 12, 11/2009		King II 2.05.4 page 12, 07/11/2017				
King II 2.05.4 page 13, 11/2009		King II 2.05.4 page 13, 07/11/2017				
King II 2.05.4 page 14, 11/2009		King II 2.05.4 page 14, 07/11/2017				
King II 2.05.4 page 15, 04/30/2015		King II 2.05.4 page 15, 07/11/2017				
King II 2.05.4 page 16, 04/30/2015		King II 2.05.4 page 16, 07/11/2017				
King II 2.05.4 page 17, 04/30/2015		King II 2.05.4 page 17, 07/11/2017				
King II 2.05.4 page 18, 04/30/2015		King II 2.05.4 page 18, 07/11/2017				
King II 2.05.4 page 19, 07/02/2014		King II 2.05.4 page 19, 07/11/2017				
King II 2.05.4 page 20, 10/13/2016		King II 2.05.4 page 20, 07/11/2017				
King II 2.05.4 page 21, 06/26/2014		King II 2.05.4 page 21, 07/11/2017				
King II 2.05.6 page 5, 10/13/2016		King II 2.05.6 page 5, 07/11/2017				
King II 2.05.6 page 6, 10/13/2016		King II 2.05.6 page 6, 07/11/2017				
King II 2.05.6 page 9, 10/13/2016		King II 2.05.6 page 9, 07/11/2017				
King II 2.05.6 page 10, 10/13/2016		King II 2.05.6 page 10, 07/11/2017				
King II 2.05.6 page 11, 10/13/2016		King II 2.05.6 page 11, 07/11/2017				
King II 2.05.6 page 12, 10/13/2016		King II 2.05.6 page 12, 07/11/2017				
				King II 2.05.6 page 13, 07/11/2017		
King II 2.06.8 page 1, 10/2008		King II 2.06.8 page 1, 07/11/2017				
King II Appendicies				Appendix 2(5) Add Monitoring Well Permits		
Appendix 8(3) 05/26/15		Appendix 8(3) 07/11/17				
Appendix 11 Culvert-Ditch Capacity Table 04/25/16		Appendix 11 Culvert-Ditch Capacity Table 08/24/17				
Appendix 12(2) CDRMS Recl. Bond Est. 02/11/2015		Appendix 12(1) CDRMS Recl. Bond Est. 07/21/2017				Appendix 12(2)
King II Maps	King II-001 Permit and Adjacent Areas 08/23/2016		King II-001 Permit and Adjacent Areas 07/11/2017			
King II-002 Surface Ownership 08/23/2016		King II-002 Surface Ownership 07/11/2017				
King II-005 Mine Plan 07/27/2016		King II-005 Mine Plan 08/14/2017				
King II-006 Soils, Veg, Land Use 08/23/16		King II-006 Soils, Veg, Land Use 07/11/2017				

GCC ENERGY, LLC
KING I MINE
PERMIT DOCUMENT
CDRMS MINING PERMIT C-1981-035

Permit Renewal RN-07

August 14, 2017 (AR#2)

GCC Energy, LLC
King I Mine
4424 County Road 120
Hesperus, Co. 81326

2.03.6 - RIGHT OF ENTRY AND OPERATION INFORMATION

The King I Mine is located in portions of Sections 31 and 32; Township 35 N, Range 11 W, N.M.P.M., Section 36; Township 35 N, Range 12 W, N.M.P.M., and Sections 5 and 6; Township 34 N, Range 11 W, N.M.P.M., all in La Plata County, Colorado. The surface of the area to be mined within the Permit Area is owned by Huntington Ranches, LLC, Crawford Ranches, and the Thomas Lee Compton Revocable Trust. All mining activities of the King I Mine lie to the south side of Hay Gulch, approximately 4.5 miles southwest of Hesperus, Colorado, as identified on U.S.G.S. 7.5 Minute Quadrangles for Hesperus and Kline.

None of the leases or legal right to enter is the subject of pending litigation.

LEGAL DESCRIPTION OF ACCESS ROAD

Tract in Sections 29 and 30, T 35 N., R 11 W., N.M.P.M. Beginning at a point on the South line in said Section 29, whence SW corner of said Section 29 bears West, 9.16 feet; Thence N 22 37' W, 551.30 feet, more or less to south right-of-way in Hay Gulch County Road; Thence N 84 23' E, 82.09 feet, to West right-of-way in Wright Coal Mine Road; Thence S 22 37' E, along said line, 560.0 feet to South line of said Section 29; Thence West along said South line 85.04 feet to point of beginning, approximately .92 acres. (Deed of Trust; Microfilm #403958)

This access road connects County Road 120 with permit area. Also included on Microfilm #403958 are two tracts of land which include much of the surface facility area of the King I Mine.

Map King I-001 shows the location of the King I Mine site. The disturbed area is shown on Map King I-007. Maps King I-002 and King I-003 show the surface ownership and mineral ownership respectively of GCC Energy, LLC and surrounding lands.

SOURCE OF LEGAL RIGHT TO ENTER

GCC Energy, LLC holds the following deeds, perpetual easements and coal leases.

A) Federal Coal Lease #COC-60941 (194.79 acres; includes Upper Menefee seam only). RELINQUISHED IN 2010

Township 34 North, Range 11 West, N.M.P.M.;
Section 6, Lots 1 - 5 (inclusive): NE/4 SW/4, NW/4 SE/4

Surface owner: Huntington Ranches, LLC
Date of execution: 10/1/98

Federal Coal Lease #COC-60941 (Modified 12/1/99 to add 160 acres; includes Upper Menefee seam only). RELINQUISHED IN 2010
Township 34 North, Range 11 West, N.M.P.M.;
Section 6; E/2 SW/4 SE/4, SW/4 SW/4 SE/4
Section 7; NE/4 NE/4, NE/4 NW/4 NE/4
Section 8; N/2 NW/4

Surface owner: Ron, Norris and Marc Crawford, et al, Thomas L. & Patricia Compton.
Date of execution: 12/1/99

B) Federal Coal Lease #P-058300 (160 acres; includes all seams).
ALL BUT NW/4 NW/4 SECTION 32 RELINQUISHED IN 2010
Township 35 North, Range 11 West, N.M.P.M.;
Section 31: SE/4 NE/4
Section 32: SE/4 NW/4, W/2 NW/4

Surface owner: Huntington Ranches, LLC
Date of execution: 9/11/41

C) Federal Coal Lease #COC-29125 (180 acres; includes all seams)
RELINQUISHED IN 2010
Township 35 North, Range 11 West, N.M.P.M.;
Section 31: N/2 NE/4 SE/4
Section 32: SW/4

Surface owner: Huntington Ranches, LLC
Date of execution: 11/1/81

Federal Coal Lease #COC-29125 (Modified 7/1/89 to add 60 acres; includes all seams)
RELINQUISHED IN 2010
Township 35 North, Range 11 West, N.M.P.M.;
Section 31: S/2 NE/4 SE/4
Section 31: SE/4 SE/4

Surface owner: Huntington Ranches, LLC

Federal Coal Lease #COC-29125 (Modified 10/1/97 to add 100 acres; includes all seams)
RELINQUISHED IN 2010
Township 34 North, Range 11 West, N.M.P.M.;
Section 6: W/2 NE/4 NE/4, W/2 SE/4 NE/4, NE/4 SE/4, SE/4 SE/4
Section 5: W/2 SW/4 SW/4, W/2 NW/4 SW/4

Surface Owners: Huntington Ranches, LLC and Ron, Norris and Marc Crawford.

D) Federal Coal Lease #COC-49465 (193 acres; includes all seams)
RELINQUISHED IN 2010
Township 35 North, Range 11 West, N.M.P.M.;
Section 31: Lot 4, SW/4 NE/4, SE/4 SW/4, W/2 SE/4

Surface owner: Huntington Ranches, LLC
Date of execution: 9/1/90

Federal Coal Lease #COC-49465 (Modified 5/1/98 to add 160 acres; includes all seams)
RELINQUISHED IN 2010
Township 34 North, Range 11 West, N.M.P.M.;
Section 6: E/2 NE/4 NE/4, E/2 SE/4 NE/4
Section 5: S/2 SW/4 NW/4, E/2 NW/4 SW/4, E/2 SW/4 SW/4 Surface Owners: Huntington Ranches, LLC and Ron, Norris and Marc Crawford.

E) State of Colorado Lease #CO-3388 (640 acres; includes all seams)
Township 35 North, Range 11 West, N.M.P.M.;
Section 36: SE/4

Surface Owner: State of Colorado
Date of execution: 08/27/04

F) Private Coal Lease: Huntington (160 acres; includes all seams)
RELINQUISHED IN 2010
Township 34 North, Range 11 West, N.M.P.M.;
Section 6: E/2 NW/4, W/2 NE/4

Surface owner: Huntington Ranches, LLC
Date of execution: 4/25/90

G) Private Coal Lease: Four Daughter's Coal Company (320 acres; includes all seams)
RELINQUISHED
Township 35 North, Range 11 West, N.M.P.M.;
Section 29: SW/4 SE/4, SE/4 SE/4
Section 32: W/2 NE/4, NE/4 NW/4, a tract of land in the NW/4 NW/4 as described in lease, E/2 NE/4
Section 28: SW/4 SW/4

Surface Owner: Huntington Ranches, LLC
Date of execution: 1/20/90

H) Private Coal Lease: Richard Tipotsch, et al (160 acres; includes all seams)
RELINQUISHED IN 2010
Township 34 North, Range 11 West, N.M.P.M.;
Section 5: E/2 SW/4, W/2 SE/4

Surface Owner: Ron, Norris and Marc Crawford.
Date of execution: 10/25/99

I) Federal Coal Lease #COC-62920 (1304.51 acres; includes Upper Menefee seam only)

Township 35 North, Range 11 West, N.M.P.M.;
Section 19 - lots 4, 5, E/2 SW/4, and SE/4,

Township 35 North, Range 12 West, N.M.P.M.;
Section 24 - lots 1, 2, and SW/4 SE/4
Section 25 - lots 1, 2, W/2 NE/4, and W/2
Section 26 - SE/4 NE/4, E/2 SE/4, SW/4 SE/4
Section 35 - NE/4, N/2 SE/4

Surface Owner: Bureau of Land Management, Ute Mountain Ute Tribe
Date of execution: 11/01/02

Technical Revision TR-24 Angle-of-Draw Areas

As part of Technical Revision TR-24, various areas "affected" by angle-of-draw were added to the permit area. These areas are described as follows:

A parcel of land located within Section 32; T35N, R11W, N.M.P.M. being more particularly described as follows: Beginning at the center point of Section 32, thence to the NE Corner of the NW/4 SE/4 Sec. 32, T35N, R11W, N.M.P.M.; thence 42.88' westward along the north edge of NE/4 SE/4; thence S86°38'09"E 226.78 feet; thence W0°58'32"S 937.39 feet; thence S16°21'05"W 682.83 feet; thence S02°18'35"W 231.22 feet; thence West 182.45 feet; thence S0°19'09"W 1019.242 feet; thence West 58.41 feet to the west edge of SW/4 SE/4 Section 32; thence North to the Point of Beginning.

A parcel of land located within Section 5; T34N, R11W, N.M.P.M. being more particularly described as follows: Beginning at the NW Corner of the NE/4 NW/4 of Section 5; T34N, R11W, N.M.P.M.; thence South 158.14 feet; thence West 713.68 feet; thence North 158.84 feet; thence East to the Point of Beginning.
A parcel of land located within Section 5; T34N, R11W, N.M.P.M. being more particularly described as follows: Beginning at the NW Corner of Section 5; T34N, R11W, N.M.P.M.; thence West 234.90 feet along the North line of Section 5; thence South 1739.31 feet; thence East 939.48 feet; thence South 248.48 feet; thence West to the NW/4 Corner of SW/4 SW/4 NW/4 of Section 5; thence North to the Point of Beginning.

A parcel of land located within Section 5; T34N, R11W, N.M.P.M. being more particularly described as follows: Beginning at the SW Corner of SE/4 NW/4 Section 5; T34N, R11W, N.M.P.M.; thence North 583.72 feet along the East line of the SE/4 NW/4 Section 5; thence East 235.332 feet; thence South 374.45 feet; thence East 2669.86 feet; thence South to the southern edge of Section 5; thence West to the SW Corner of the SE/4 SE/4 of Section 5; thence North to the NW Corner of the NE/4 SE/4 Section 5; thence West to the Point of Beginning.

A parcel of land located within Section 8; T34N, R11W, N.M.P.M. being more particularly described as follows: Beginning at the NW Corner of NE/4 of Section 8; T34N, R11W, N.M.P.M.; thence eastward 1579.40 feet along the north edge of Section 8; thence South 249.86 feet; thence West to the west edge of NW/4 Section 8; thence North the Point of Beginning.

A parcel of land located within Section 8; T34N, R11W, N.M.P.M. being more particularly described as follows: Beginning at a point on the west edge of Section 8 2146.11 feet north of the SW Corner Section 8; thence E40°25'59"S 65.75 feet; thence E1°42'01"S 1438.79 feet; thence N40°30'46"E 419.91 feet; thence West to the western edge of Section 8; thence South to the Point of Beginning.

A parcel of land located within Section 7; T34N, R11W, N.M.P.M. being more particularly described as follows: Beginning at a point on the east edge of Section 7 2146.11 feet north of the SE Corner Section 7; thence N49°34'01"W 360.43 feet; thence West 83.15 feet; thence S42°13'58"W 274.82 feet; thence West 73.03 feet; thence N49°34'01"W 311.47 feet; Thence East along the south line of relinquished federal Lease COC-60941 856.59 feet; thence South to the Point of Beginning.

A parcel of land located within Section 7; T34N, R11W, N.M.P.M. being more particularly described as follows: Beginning at the SE Corner of the NE/4 NW/4 NE/4 of Section 7; thence South 162.19 feet; thence N49°39'52"W 251.93 feet to the south edge of the NE/4 NW/4 NE/4 of Section 7; thence East to the Point of beginning.

A parcel of land located within Section 7; T34N, R11W, N.M.P.M. being more particularly described as follows: Beginning at the NW Corner of the NE/4 NW/4 NE/4 of Section 7; thence South 266.32 feet; thence N49°39'52"W to the North edge of Section 7; thence East to the Point of Beginning.

A parcel of land located within Section 6; T34N, R11W, N.M.P.M. being more particularly described as follows: Beginning at the NE Corner of the SW/4 SW/4 SE/4 of Section 6; thence West 152.83 feet; thence N40°26'07"E to the west edge of the E/2 SW/4 SE/4 of Section 7; thence South to the Point of Beginning.

GCC ENERGY, LLC
KING II MINE
PERMIT DOCUMENT
CDRMS PERMIT # C-1981-035

Permit Renewal RN-07

August 14, 2017 (AR#2)

GCC Energy, LLC
King II Mine
6473 County Road 120
Hesperus, CO 81326

Water contained in the sediment pond will not be discharged into the Hay Gulch Ditch, but allowed to evaporate. The only water to be discharged from the ponds will be from precipitation events approaching or exceeding the ten year, twenty-four hour storm event. The ponds are described in Section 2.05.6 and are designed to manage the precipitation events as required by regulation and in accordance with the requirements of GCC Energy's N.P.D.E.S permit No. CO-G-850001.

PONDS, IMPOUNDMENTS, AND DIVERSIONS

DRAINAGE PLAN

The drainage plan for the King II Mine consists of diversion of uncontaminated water originating upstream of the mine yard, through the yard to the discharge point at the south end of site. Runoff generated on the yard itself will be collected and routed through the sedimentation pond.

Refer to 2.05.6 (Hydrologic Balance) Appendix 10 & 11 and Maps King II-007 A thru G for a detailed description of Mine Surface Drainage and Sediment Pond design and descriptions.

The sediment control system for the King II Mine is comprised of undisturbed area drainage ditches and one sediment pond. Designs for sediment control system structures are included in Appendix 11.

Small Area Exemption #1 is approximately 1.3 acres of the disturbed area which lies below the sediment pond, consisting of the haul road between County Road 120 and the north end of the Sediment Pond. Runoff from this area will tend to collect and drain along the haul road bypassing the sediment pond. Alternate sediment control measures are used in this area. These measures consist of the use of rock check dams, rock filters and gravel surface. This area is too small and too flat to run a SEDCAD demonstration. Therefore, GCC Energy, LLC commits to sampling any discharge from this area for Total Settable Solids. This runoff flows into the area on either side of the haul road.

UNDISTURBED AREA DRAINAGE DITCHES

Two undisturbed area drainage ditches convey undisturbed surface flow around the disturbed area of the mine surface facilities and return the flow to the native surface drainage channel below the mine bench. The ditches encircle the mine disturbance. One ditch conveys surface flow along the west side of the mine facilities to the native channel, while the corresponding ditch drains east and south above the mine portal and down the east side of the mine bench and surface facilities to the native channel. These open earthen channels are sized to contain the precipitation events as required by regulation. The channels are stabilized with a combination of vegetation and riprap (where necessary).

SEDIMENT POND

One sediment pond is utilized for the King II Mine. The sediment pond is located at the southeast corner of the mine bench and sized to contain the precipitation events as required by regulation. Surface runoff reaches the sediment pond through a combination of sheet flow, berms, culverts and "V" ditches. Detailed plans, certifications and maps can be found in Appendix 11 and Maps King II-007, King II-007 A-D & King II-007F-G. The pond contains a primary spillway at elevation 7233' and an emergency spillway at elevation 7234'. The spillways are both vertical 24" CMP risers with oil skimmers constructed as shown on Map King II-007F, Detail 1. The spillways are always open. The minimum magnitudes of storm events that will cause the spillways to discharge, subtracting a 60% sediment clean-out level of 1.5 acre feet, are as follows:

Primary Spillway: 4.36 acre feet – 1.5 acre feet = 2.86 acre feet

Emergency Spillway: 5.22 acre feet – 1.5 acre feet = 3.72 acre feet

Faces of pond embankments are stabilized with vegetation. Due to evaporation and infiltration, water is not normally impounded except immediately following storm events or snowmelt. While there is no mechanism in place to suddenly draw down the water level, standing water can be pumped as necessary to the native channel at the south end of the site. Prior to water being pumped from the pond to the native channel, the water will be sampled, and it will not be discharged to the native channel unless it meets effluent limitations.

TOPSOIL

Sufficient suitable topsoil resources exist in the Umbarg soil map unit to provide topsoil replacement depths of six inches. This replacement depth will require stockpiling and ultimate replacement of 20,570 cubic yards of topsoil from the A and B horizons of the Umbarg series. Topsoil was salvaged and stockpiled using truck/shovel or scraper methods. Topsoil was salvaged and stockpiled during construction in piles constructed adjacent to the sediment pond and north of Coal Stack Tube #2. The topsoil pile is stabilized using the seed mix proposed for final reclamation. To further minimize the potential for accidental contamination, a berm was constructed around the perimeter of the toe of the topsoil piles. The berms are of sufficient size (18" to 24" high, 4' to 6' wide) to prevent machinery from intruding on the topsoil stockpile.

Stockpile locations can be found on Map King II-007. Epp & Associates surveyors performed topsoil stockpile volume calculations in March, 2015 using pre-disturbance and as-built aerial surveys. Topsoil Stockpile #1 (south) contains 3,267 cubic yards and Topsoil Stockpile #2 (north) contains 27,435 cubic yards for a total of 30,670 cubic yards on site. The current disturbed area is 22.89 acres. To cover 22.89 acres with 6" of topsoil would require 18,465 cubic yards.

TOPSOIL, EXPLORATION CORE DRILLING

Topsoil will be salvaged and will be replaced at all areas of new disturbance caused by exploration core drilling that may damage existing topsoil, such as "cuttings pits", used to collect drill cuttings. Existing topsoil will be removed from these areas and stockpiled in a nearby area where it can be accessed without causing damage to the stockpile location. The topsoil stockpile will be "bermed", tarped, or otherwise protected to help prevent loss of topsoil due to rain and wind events. Once the cuttings pits have been re-filled with sub-soil material, the topsoil will be returned to its original location, spread evenly, and re-seeded as detailed in Section 2.05.4 of this document.

Topsoil for exploration core drilling and/or monitoring well drilling and reclamation will be salvaged from the following soil map units; Big Blue Clay Loam, Pulpit Loam, Umbarg Loam, and Witt Loam. Topsoil for mine reclamation will be salvaged from the following soil map units where suitable material for reclamation (greater than 6" is recoverable through normal means) is present; Zau Stony Loam. Due to limitations for use in reclamation, and an overall lack of suitable material, topsoil for reclamation will not be salvaged for reclamation from the following soil map units: Archuleta-Sanchez Stony Complex, Lazear Stony Loam, and Lazear Rock Outcrop Complex,.

A further discussion of topsoil salvage, protection, and stabilization at exploration drill pads (as well as monitoring well pads) is contained in Sections 2.04.6 and 2.04.9.

OVERBURDEN

Approximately 20,500 cubic yards of material was removed from the portal area and used to construct the mine bench and base for all mine surface facilities. Additional overburden was excavated in the construction of the sediment pond. No overburden will be stockpiled as would occur in surface coal mining operations. There will be no overburden disposal sites at the King II mine.

Surface blasting is addressed in Section 2.05.3(6) of this application.

YY) Sediment Pond and Diversion Ditches: The sediment pond is not intended as permanent feature of the mine site, but will remain intact until the site has been successfully reclaimed.

ZZ) Cattle Guard: The cattle guard will either be removed or cut up for scrap or offered to the surface grazing lease holder of the area.

AAA) Portable Offices and Storage Containers: Until the Executive Offices/Parts Warehouse/Bath House Building is completed, several portable offices and storage containers will be utilized. These units are leased from a 3rd party supplier.

BBB) Waterline to Connect to Huntington Ranch Waterline: The waterline will be buried a minimum of 4 feet deep to avoid freezing. The waterline will be left in place during the reclamation phases to supply water to the site for plant germination and dust control. Upon final reclamation, the valve feeding the pipe will be closed. There are no plans to remove the buried portions of the pipe for reclamation purposes. The surface of the field, once the original trench has been back-filled, will be re-seeded using the approved seed mix.

CCC) Equipment Storage Area: A small area just north of the shop used to store machinery or supplies.

DDD) Return Portal Mine Ventilation Fan: The main mine fan will be a 8' diameter fan as part of a steel structure consisting of air doors for escape purposes, explosion doors which protect the fan in the event of a mine explosion, and a culvert system which connects the fan to the underground workings. The fan and steel structures will be removed for final reclamation, however the concrete footers and pads will remain, as they will be covered by approximately 20-30 feet of backfill

Map Symbol	Structure Description	Structure					Slab				Foundation/Footers				Comments
		Volume	Length	Width	Height	Diam.	Length	Width	Thick	Qty	Length	Width	Thick	Qty	
DD	Coal Stack Tube #1, 20,000 Ton Coal Storage Pile	7461			66	12									Steel Structure
DD1	Coal Stack Tube #1 Head House	4350	14.5	12	25										Steel Structure
EE	Magnet Dumpster Pad #2	0					8	8	0.5						Concrete Pad, Thickened Edge
FF	Raw Coal Conveyor	2832	177	4	4										Belt Conveyor, 36"
FF1	Raw Coal Conveyor: Bent 1	9	5	0.75	2.5		7	3	1	1	1.5	1.5	4	2	Steel Structure
FF2	Raw Coal Conveyor: Bent 2	69	8	0.75	11.5		4	4	1	2	1.5	1.5	4	2	Steel Structure
FF3	Raw Coal Conveyor: Bent 3	250	10	1	25		5.5	5.5	1	2	1.5	1.5	4	2	Steel Structure
FF4	Raw Coal Conveyor: Bent 4	360	12	1	30		4	4	1	2	1.5	1.5	4	2	Steel Structure
GG	Crushing/Screening Structure	37100	28	25	53		40	30	0.5						Thickened Edge
GG1	Crushing/Screening Structure Pile Caps	0					6.5	3.5	4	6	1.5	1.5	4	6	Concrete Pads
HH	Lump Conveyor	900	100	3	3										Portable 24" Radial Stacker Belt
II	Lump Coal Storage Area	0			30	60									
JJ	Stoker Conveyor	900	100	3	3										Portable 24" Radial Stacker Belt
KK	Stoker Coal Storage Area	0			30	60									
LL	Crushed Coal Storage Conveyor	10240	320	4	8		7.75	6	1	1	5.75	4	4	1	Belt Conveyor, 36"
LL1	Crushed Coal Storage Conveyor: Bent 1	8	5	0.75	2		7	3	1	1	1.5	1.5	4	2	Steel Structure
LL2	Crushed Coal Storage Conveyor: Bent 2	21	5	0.75	5.5		7	3	1	1	1.5	1.5	4	2	Steel Structure
LL3	Crushed Coal Storage Conveyor: Bent 3	38	5	0.75	10		14	7	1.2	1	1.5	1.5	4	2	Steel Structure
LL4	Crushed Coal Storage Conveyor: Bent 4	3060	17	5	36		8	8	1.5	2	1.5	2.5	4	2	Steel Structure
MM	Coal Stack Tube #2, 20,000 Ton Coal Storage Pile	7461			66	12									Steel Structure
MM1	Coal Stack Tube #2 Head House	4350	14.5	12	25										Steel Structure
NN	Cross-Belt Coal Sampler	0					20	20	6						Concrete Pad, Thickened Edge
OO	Truck Loadout Conveyor	8320	260	4	8										Belt Conveyor, 36"
OO1	Truck Loadout Conveyor: Bent 1	4	5	0.75	1		7	3	1	1	1.5	1.5	4	2	Steel Structure
OO2	Truck Loadout Conveyor: Bent 2	17	5	0.75	4.5		4	4	1	2	1.5	1.5	4	2	Steel Structure
OO3	Truck Loadout Conveyor: Bent 3	43	5	0.75	11.5		4	4	1	2	1.5	1.5	4	2	Steel Structure
OO4	Truck Loadout Conveyor: Bent 4	3864	12	14	23		8	8	1.2	2	1.5	2.5	4	2	Steel Structure
OO5	Truck Loadout Conveyor: Bent 5	3864	12	14	23		5	5	1.2	2	1.5	2.5	4	2	Steel Structure
PP	Truck Loadout Structure & Bins	13500	30	15	30		6.5	3.5	4	6	2	2	4	12	Pile Caps
QQ	Truck Scale	4800	120	20	2		150	16	1						Thickened Edge
RR	Coal Sales Building	2400	20	12	10		20	12	0.5						Thickened Edge
SS	Coal Sales Building Septic System Drain Field	0	50	30											Leach Field
TT	Coal Sales Building Septic System Tank	300	6	10	5										Concrete Tank
UU	Coal Sales Building Parking Area	0													Graveled Area
VV	Main Motor Control Center (Main MCC)	3501	21	16.67	10		21	20	0.5		84	1.5	2		Block Bldg, Slab Thickened Edge
WW	Bermed Topsoil Storage #1	5000yd3													High quality soil only from lower site
XX	Concrete Truck Wash-Out	0	12	12											Bermed area to wash out trucks
YY	Sediment Pond	0													See Maps King II-007 D,E,F,G
ZZ	Cattle Guard	96	8	24	0.5										Steel Structure
AAA	Portable Office or Storage Container														Leased from port. building vendor
BBB	Waterline to Connect to Huntington Ranch Waterline														6 Inch Pipe Buried >4 Feet Deep
CCC	Non-Coal Equipment Storage Area														Equipment Storage Area
DDD	Mine Ventilation Fan, Return Portal	17302					8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Steel Structure
*	All dimensions shown in feet, volumes in cubic feet. All concrete is reinforced with rebar.														

Ditch ID	Station	Soil Type	Bottom Width-Ft.	Lin.Ft.	Slope	Hydraulic Radius	Manning's "n"	Required Flow CFS	Velocity	Required Depth	Actual Depth	Type	Ditch Material
CWD-1A	0+00 to 0+32 (A')	Unbarg Loam	3.6	32	2.92%	0.584	N/A	15.2	1.91	1.22	4.4	Trapezoidal	Grass Mixture
	0+32 to 1+18 (B')	Unbarg Loam	8.7	86	6.84%	0.7	N/A	15.2	2.66	1.47	3.5	Trapezoidal	Grass Mixture
	1+18 to 1+80 (C')	Unbarg Loam	3.3	62	0.10%	0.46	N/A	15.2	4.94	0.93	2.0	Trapezoidal	Grass Mixture
	1+80 to 2+37 (D')	Unbarg Loam	3.3	57	4.24%	1.3	N/A	15.2	1.11	2.57	2.6	Trapezoidal	Grass Mixture
	4+90 to 8+38 (E')	Unbarg Loam	4.3	348	3.72%	0.594	0.038	24.17	5.42	1.08	1.9	Trapezoidal	Rip Rap
	8+38 to 10+81 (F')	Unbarg Loam	2.2	243	6.08%	0.64	0.038	24.17	5.61	1.02	2.1	Trapezoidal	Rip Rap
	10+81 to 12+40 (G')	Unbarg Loam	1.6	159	3.63%	0.548	0.038	24.17	6.48	1.23	2.1	Trapezoidal	Rip Rap
	12+40 to 18+95 (H')	Unbarg Loam	1.0	655	4.05%	0.675	0.036	24.17	6.07	1.59	3.0	Trapezoidal	Rip Rap
CWD-1B	18+95 to 24+01 (I')	Unbarg Loam	2.3	506	4.25%	0.275	0.3	4.38	4.23	0.65	3.0	Trapezoidal	Graded Loam to Cobbles when noncollodial
CWD-1C	24+01 to 27+58 (J')	Unbarg Loam	2.7	357	4.25%	0.221	0.3	3.23	3.74	0.57	1.0	Trapezoidal	Graded Loam to Cobbles when noncollodial
CWD-1D	27+58 to 24+01 (J')	Unbarg Loam	2.7	12	4.25%	0.049	0.3	0.33	2.43	0.35	1.0	Trapezoidal	Graded Loam to Cobbles when noncollodial
Cattle Guard		Steele	6.5	35	0.50%	0.183	0.013	3.37	2.61	0.49	3.0	Trapezoidal	Steel
CWD-2	0+00 to 0+05 (A')	Unbarg Loam	3.8	5	17.68%	0.11	0.3	2.38	4.98	0.42	3.0	Trapezoidal	Graded Loam to Cobbles when noncollodial
	0+05 to 0+70 (B')	Unbarg Loam	5.79	65	6.20%	0.09	0.3	2.38	4.19	0.39	1.3	Trapezoidal	Graded Loam to Cobbles when noncollodial
	0+70 to 1+60 (C')	Unbarg Loam	3.91	90	1.68%	0.142	0.3	2.38	3.37	0.46	1.07	Trapezoidal	Graded Loam to Cobbles when noncollodial
	1+60 to 4+70 (D')	Unbarg Loam	4.79	310	0.62%	0.193	0.3	2.38	2.15	0.51	2.05	Trapezoidal	Graded Loam to Cobbles when noncollodial
	4+70 to 6+12 (E')	Unbarg Loam	3.11	142	0.85%	0.988	0.3	35.76	3.88	1.59	3.64	Trapezoidal	Graded Loam to Cobbles when noncollodial
	6+12 to 7+90 (F')	Unbarg Loam	7.23	178	2.84%	0.784	0.3	35.76	3.89	1.29	2.98	Trapezoidal	Graded Loam to Cobbles when noncollodial
	7+90 to 11+95 (G')	Unbarg Loam	7.62	405	1.78%	0.893	0.3	35.76	2.32	1.56	2.68	Trapezoidal	Graded Loam to Cobbles when noncollodial
	11+95 to 14+56 (H')	Unbarg Loam	5.34	261	2.57%	1.113	N/A	35.76	2.33	1.96	1.99	Trapezoidal	Grass Mixture
	14+56 to 18+00 (I')	Unbarg Loam	5.84	344	2.88%	0.699	N/A	35.76	2.58	1.74	1.79	Trapezoidal	Grass Mixture
	18+00 to 20+84 (J')	Unbarg Loam	6.18	284	3.08%	0.979	N/A	35.76	2.8	1.67	3.82	Trapezoidal	Grass Mixture
	20+84 to 22+20 (K')	Unbarg Loam	3.94	136	1.49%	0.719	N/A	35.76	1.38	1.6	1.6	Trapezoidal	Grass Mixture
	22+20 to 25+95 (L')	Unbarg Loam	3.74	375	15.89%	1.206	N/A	76.82	2.37	2.58	2.54	Trapezoidal	Grass Mixture
	25+95 to 26+61 (M')	Unbarg Loam	3.04	66	2.34%	0.814	0.3	76.82	9.25	1.53	7.29	Trapezoidal	Rip Rap
	26+61 to 31+87 (N')	Unbarg Loam	8.34	526	2.34%	0.495	0.03	85.86	4.75	1.11	6.21	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID 00	Minimum	Unbarg Loam	2	9	2.10%	0.26	0.3	2.76	2.95	0.65	0.8	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID 0	Minimum	Unbarg Loam	2	210	10.00%	0.13	0.3	1.4	4.03	0.45	0.8	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID 1A	Minimum	Unbarg Loam	2	260	7.64%	0.17	0.3	2.14	4.25	0.51	0.8	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID 1B	Minimum	Unbarg Loam	2	9	2.22%	0.35	0.3	5.27	3.65	0.79	0.8	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID 1C	Minimum	Unbarg Loam	2	20	3.50%	0.31	0.3	5.27	4.29	0.73	0.8	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID 1D	Minimum	Unbarg Loam	2	136	2.70%	0.346	0.3	6.18	4.82	0.77	0.8	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID 1E	Minimum	Unbarg Loam	8.3	274	6.60%	0.222	0.3	9.39	4.68	0.53	0.8	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID-2A	Minimum	Unbarg Loam	1.25	187	2.00%	0.21	0.025	1.09	3.27	0.58	0.8	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID-2B	Minimum	Unbarg Loam	0.66	265	4.20%	0.22	0.3	1.83	3.77	0.67	0.8	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID-3	Minimum	Unbarg Loam	1		10.00%	0.2	0.03	2.51	5.4	0.59	0.8	Trapezoidal	Graded Loam to Cobbles when noncollodial
ID 4	Minimum	Unbarg Loam	4	128	5.30%	0.372	0.3	10.94	5.05	0.75	0.8	Trapezoidal	Cobbles and Shales
ID-5A Sta. 1	Minimum	Unbarg Loam	3	75	2.00%	0.138	0.3	1.19	2.25	0.46	0.71	Trapezoidal	Shales and Hardpans
ID-5A Sta. 2	Minimum	Unbarg Loam	4	305	1.90%	0.51	N/A	2.07	1	1.07	1.1	Trapezoidal	Grass Mixture
ID 5B	Minimum	Unbarg Loam	3	329	2.00%	0.22	0.025	3.01	3.08	0.57	1.1	Trapezoidal	Shales and Hardpans
ID-6	Minimum	Unbarg Loam	2	160	12.00%	0.062	0.025	0.45	3.25	0.37	0.8	Trapezoidal	Course Gravel noncollidal

COST SUMMARY WORK

Task description: **Reclamation Tasks for Permit Renewal No. 7**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 7/21/2017 County: La Plata Filename: C035-000
User: JHB

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Demolish King I Structures	DEMOLISH	1	40.00	$40,750.20
002	King I - Rip 12" in upper facility area	RIPPER	1	2.95	$610.00
003	King I - push ripped waste to tipple highwall	DOZER	1	16.28	$3,362.00
004	King I - haul topsoil/growth medium to Upper Facilities Area	TRUCK1	1	4.51	$972.00
005	King I - Finish grade upper facilities area	GRADER	1	1.92	$168.00
006	King I - Revegetate upper facilities area (area #3)	REVEGE	1	4.00	$1,803.00
008	King I - backfill portals, grade fill slope and topsoil	DOZER	1	1.54	$307.00
009	King I - revegetate highwall area (Area #4)	REVEGE	1	4.00	$1,205.00
010	King I - rip and final grade lower facilities area	GRADER	1	1.09	$97.00
011	King I - revegetate highwall area (Area #4)	REVEGE	1	4.00	$1,095.00
012	King I - regrade cover of pre-law portion of refuse area	DOZER	1	8.11	$1,616.00
013	King I - regrade 6" growth medium on pre-law refuse area	DOZER	1	1.16	$231.00
014	King I - revegetate refuse area (Area #5)	REVEGE	1	2.00	$534.00
015	King I - Push 3.5' cover to refuse pile	DOZER	1	39.02	$7,780.00
016	King I - grade 3.5' cover on post-law refuse area	DOZER	1	10.03	$1,999.00
017	King I - Haul topsoil to post-law refuse area	TRUCK1	1	3.03	$655.00
018	King I - finish grade post-law refuse area (area #6)	GRADER	1	0.97	$85.00
019	King I - revegetate refuse area (Area #6)	REVEGE	1	2.00	$994.00
020	King I - finish grade topsoil area	GRADER	1	1.84	$161.00
021	King I - revegetate borrow area	REVEGE	1	4.00	$1,840.00
022	King I - seal vent hole	BOREHOLE	1	8.00	$1,550.62
023	King I - backfill and regrade east and west sediment ponds	DOZER	1	10.40	$2,073.00
025	King I - revegetate east and west ponds (Area #6)	REVEGE	1	4.00	$1,711.00
032	King I -Rill and gully maint. 8 hours every other yr, 10 yrs	SITEMAINTENANCE	1	24.00	$4,258.80
050	King I&II - mobilize for initial reclamation	MOBILIZE	1	8.00	$10,051.00
051	King I&II - mobilize for rill and gully maintenance, X 3	MOBILIZE	1	8.00	$5,148.00
052	King I&II - mobilize for second pond cleaning	MOBILIZE	1	8.00	$2,780.00
060	King II-Rill and gully maint. 8 hours every other yr, 10 yrs	SITEMAINTENANCE	1	24.00	$4,258.80
062	Weed Control over liability period	REVEGE	1	35.00	$3,150.00
064	Clean sediment ponds (two cleanings)	EXCAVATE	1	65.13	$5,126.00
065	King II - haul sediment from ponds to King I site	TRUCK1	1	30.85	$23,690.00
100	Seal Mine Openings	MINESEAL	1	32.00	$110,737.60
200	King II structural demolition	DEMOLISH	1	140.00	$207,465.41

300	King II - Haul coal waste rock to King I waste pile	TRUCK1	1	1.06	$311.00
301	King II - Rip coal sales area	RIPPER	1	1.61	$334.00
302	King II - Haul gravel from coal sales, portals, rd/wtr tank	TRUCK1	1	14.81	$4,662.00
303	King II - Haul office fill to portal cuts/acc rd/wtr tank	TRUCK1	1	50.64	$19,660.00
304	King II - grade portal cuts, access roads, water tank pad	DOZER	1	38.65	$7,705.00
305	King II-Compact fill on portal cuts/access rd/water tank pad	COMPACT	1	17.23	$3,514.00
306	King II - Rip portal, access rd., coal sales areas	RIPPER	1	34.32	$7,092.00
308	King II - remove east and west cleanwater ditches	DOZER	1	8.62	$1,718.00
309	King II - construct drainage channel in Cochrane Canyon	DOZER	1	3.51	$699.00
310	King II - construct channel in office drainage	DOZER	1	4.53	$904.00
311	King II - backfill pond	DOZER	1	18.49	$3,686.00
312	King II - Rip coal sales area	RIPPER	1	3.43	$710.00
313	King II - Grade haul road	DOZER	1	13.20	$2,631.00
314	Water truck for dust control	MISCTRUK	1	240.00	$10,562.00
401	King II - distribute tosoil from Cochrane stockpile	TRUCK1	1	101.93	$39,571.00
402	King II - finish grade topsoil area	GRADER	1	20.66	$1,802.00
403	King II revegetate Rangeland Areas (19.36 acres)	REVEGE	1	20.00	$35,913.00
404	King II revegetate Pinyon-Juniper areas (3 acres)	REVEGE	1	3.00	$7,722.00
406	King II-seed water line corridor (0.47 ac)	REVEGE	1	1.25	$819.00
409	Seal Boreholes CO-14-01 through CO-14-09	BOREHOLE	1	36.00	$4,632.91
410	Regrade drill pads and pits CO-14-01 through CO-14-09	DOZER	1	7.06	$615.00
411	Replace topsoil on CO-14-01 through CO-14-09 disturbance	DOZER	1	3.00	$261.00
412	King II-Broadcast seed CO-14-01 thru CO-09 disturbance	REVEGE	1	9.00	$2,198.00
500	King II - seal downgradient monitoring well	BOREHOLE	1	4.00	$386.16
501	Plug and Seal MW-1, 2, 3 and 4 Clusters (12 Wells) TR26	BOREHOLE	1	53.00	$9,283.92
502	Remove MW-1,2,3,4 Well Clusters Cement Pads/Poles TR26	DEMOLISH	1	0.00	$356.19
503	Regrade drill pads and pits (MW-1, 2, 3, 4)	DOZER	1	2.73	$367.00
504	Replace Topsoil on Well Clusters (TR26)	DOZER	1	1.54	$200.00
505	Revegetation; MW-1,2,3,4 Well Cluster Pads	REVEGE	1	1.00	$3,111.00
		SUBTOTALS:		**1264.1**	**$619,691**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$12,517.76
Performance bond:	1.05	Total =	$6,506.76
Job superintendent:	632.05	Total =	$46,171.25
Profit:	10.00	Total =	$61,969.10
		TOTAL O & P =	$127,164.87
		CONTRACT AMOUNT (direct + O & P) =	$746,855.87

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	500.00	Total =	500.00
Engineering work and/or contract/bid preparation:	4.25	Total =	$31,741.37

Reclamation management and/or administration:	5.00		$37,342.79
CONTINGENCY:	0.00	Total =	$0.00
		TOTAL INDIRECT COST =	$196,749.04
		TOTAL BOND AMOUNT (direct + indirect) =	**$816,440.04**

DEMOLITION WORK

Task description: **Demolish King I Structures**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 7/21/2017 3:52:09 PM County: La Plata Filename: C035-001
User: JHB

Agency or organization name: DRMS

UNIT COSTS **Location adjustment:**
94.00 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
(TR26) 4" x 6' l steel poles MW-1,2,3 &4	24(4" dia. x 6'l)	Pipe, steel, welded connections - 4 in. diameter pipe	144.00	LF	$1.16	$167.04
(TR26) disposal of poles	24 poles	Dump fees - Rubbish only	1.05	CY	$9.45	$9.92
2 500 gallon fuel tanks	NA	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	2.00	EA	$760.00	$1,520.00
Bury debris	10x10x40.5	Push demolished materials/rubble/debris into pit - Max. 200 ft. push	150.00	CY	$0.83	$123.90
Cement Pads (TR26) MW-1,2,3 & 4	3(3' x4' x0.3'th)	Demo. and on-site disposal in existing pit, 4 in. thick - Max. 50 ft. push	36.00	SF	$0.40	$14.33
East bins	15x25x50	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	18,750.00	CF	$0.18	$3,356.25
Main Conveyor	40	OBSOLETE-Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	40.00	LF	$44.51	$1,780.36
Mine fan	8x6x30	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	1,440.00	CF	$0.35	$509.76
Mine fan	8x6x10	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	480.00	CF	$0.35	$169.92
MR46 Fan & housing	sec. 2.05.4 p. 8	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 50 ft. push	17,302.00	CF	$0.17	$3,010.55
Portal	12x20x8	Bldg. (SN) demo./off-	1,920.00	CF	$0.35	$679.68

Building		site disposal in approved landfill - Max. 15 mile haul				
Scale house	40x42x10	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	16,800.00	CF	$0.18	$3,007.20
Stacker conveyor	300	OBSOLETE-Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	300.00	LF	$44.51	$13,352.70
Stacker tower #1	16x16x50/10x10x50	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	8,900.00	CF	$0.35	$3,150.60
Stacker tower #2	8.5x16x25/8.5x5.5x25	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	2,284.00	CF	$0.35	$808.54
Tipple Building	60x65x8	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	31,200.00	CF	$0.18	$5,584.80
Tipple Lean-to Shed	16x44x8	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	5,632.00	CF	$0.18	$1,008.13
Two office trailers	12x120x10	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	14,400.00	CF	$0.35	$5,097.60

Job Hours:	**40.00**	**Subtotal (unadjusted)**:	**$43,351.28**	**Total Cost (adjusted for location)**:	**$40,750.20**

BULLDOZER RIPPING WORK

Task description: **King I - Rip 12" in upper facility area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 002 State: Colorado Abbreviation: None
Date: 5/3/2017 County: La Plata Filename: C035-002
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper Ownership Cost/Hour:	$7.55	NA
Ripper Operating Cost/Hour:	$7.21	100
Operator Cost/Hour:	$41.85	NA
Total Unit Cost/Hour:	$206.59	

Total Fleet Cost/Hour: **$206.59**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 1.96 acres Rip Depth (ft): 1.00 Volume: 3,162 BCY or CCY

Source of estimated quantity: Map King I-007

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	1.00	mph
Average Ripping Width:	7.08	degrees
Average Ripping Length:	300.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.800	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	0.800	Acres/hr
Site Altitude:	7,400	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Adjusted Hourly Unit Production: 0.66 Acres/hr
Adjusted Hourly Fleet Production: **0.66** Acres/hr

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**2.95**	Hours
Unit cost:	$311.305	Per acre	Total job cost:	**$610**	

BULLDOZER WORK

Task description: **King I - push ripped waste to tipple highwall**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 003 State: Colorado Abbreviation: None
Date: 5/3/2017 County: La Plata Filename: C035-003
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$7.21	100
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $206.59
Total Fleet Cost/Hour: **$206.59**

MATERIAL QUANTITIES

Initial Volume: 3,794
Swell factor: 1.000
Loose volume: **3,794** LCY

Source of estimated volume: Volume from Task 002, 20% swell
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 200 feet
Unadjusted hourly production: 491.9 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)

Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit production: 233.11 LCY/hr

Adjusted fleet production: **233.11** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.886/LCY

Total job time: **16.28** Hours

Total job cost: **$3,362**

TRUCK/LOADER TEAM WORK

Task description: **King I - haul topsoil/growth medium to Upper Facilities Area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 004 State: Colorado Abbreviation: None
Date: 5/3/2017 County: La Plata Filename: C035-004
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	$18.29	$25.66	NA	NA	NA	NA
Operating cost/hour:	$39.97	$32.31	NA	NA	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	NA	NA	NA
Operator cost/hour:	$0.00	$41.20	NA	NA	NA	NA
Unit Subtotals:	$58.26	$99.17	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	$215.69	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$215.69**

MATERIAL QUANTITIES

Initial volume: 1,581 CCY Swell factor: 1.165
Loose volume: **1,842** LCY

Source of estimated volume: 1.96 acres x 6” depth
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,850 Pounds/LCY
Description: User Provided
Rated Payload: 35,400 Pounds
Payload Capacity: 12.42 LCY

Truck Bed (volume) Basis:

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7400 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 3 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.090	minutes
	Adjusted Loader Cycle Time:	**0.393**	minutes
	Net Load Time per Truck:	**0.885**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	5.00	5.00	2218	0.293

Haul Time: **0.293** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	5.00	5.00	2814	0.203

Return Time: **0.203** minutes
Total Truck Cycle Time: **2.781** minutes

Loading Tool unit Production: 494.19 LCY/Hour — Adjusted for job efficiency: 410.18 LCY/Hour

Truck Unit Production: 246.12 LCY/Hour — Adjusted for job efficiency: 204.28 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) — Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 408.55 LCY/Hour
Adjusted single truck/loader team production: 408.55 LCY/Hour
Adjusted multiple truck/loader team production: **408.55** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **4.51** Hours

Unit cost: $0.528 /LCY — Total job cost: **$972**

MOTOR GRADER WORK

Task description: **King I - Finish grade upper facilities area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 005 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-005
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158
Ripper Attachment: Multi-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$28.02	NA
Operating Cost/Hour:	$28.28	100
Ripper Ownership Cost/Hour:	$1.99	NA
Ripper Operating Cost/Hour:	$0.00	0
Operator Cost/Hour:	$28.90	NA
Total Unit Cost/Hour:	$87.19	
Total Fleet Cost/Hour:	**$87.19**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.96 acres

Source of estimated acreage: Section 2.05.3 of permit application

HOURLY PRODUCTION

Average Grader Speed: 1.25 mph
Selected Application: Production Deration - 1.25
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.2727 acres/hour

Job Condition Correction Factors Site Altitude: 7400 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.80	(3sh/d, fav.)
Net Correction:	0.8000	multiplier

Adjusted Hourly Unit Production: 1.0182 acres/Hour
Adjusted Hourly Fleet Production: **1.0182** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **1.93** Hours

Unit cost: $85.63 per acre Total job cost: **$168**

REVEGETATION WORK

Task description: **King I - Revegetate upper facilities area (area #3)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 006 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-006
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.34	$51.00
			Total Fertilizer Materials Cost/Acre	**$51.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$13.35
Switchgrass - Pathfinder	0.75	6.70	$7.48
Mountain Brome - Bromar	1.82	2.92	$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	$6.53
Sheep Fescue - Bighorn	0.31	4.84	$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	$6.66
Western Wheatgrass - Native	2.54	6.41	$17.78
Flax, Lewis Blue	0.46	3.05	$7.59
Totals Seed Mix	11.39	36.92	**$68.76**

Application

Description	Cost /Acre
	$0.00
Total Seed Application Cost/Acre	**$0.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$99.32**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	1.96	Cost /Acre:	$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,735.97**
Reseeding Job Cost:	**$67.38**
Total Job Cost:	**$1,803**
Job Hours:	**4.00**

TRUCK/LOADER TEAM WORK

Task description: **King I - Haul topsoil/growth medium to highwall**

Site: **King Coal Mine** Permit Action: 007 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 007 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-007
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	$18.29	$25.66	NA	NA	NA	NA
Operating cost/hour:	$39.97	$32.31	NA	NA	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	NA	NA	NA
Operator cost/hour:	$0.00	$41.20	NA	NA	NA	NA
Unit Subtotals:	$58.26	$99.17	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	$215.69	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$215.69**

MATERIAL QUANTITIES

Initial volume: 1,057 CCY Swell factor: 1.000
Loose volume: **1,057** LCY

Source of estimated volume: 1.96 acres, 6” depth
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,850 Pounds/LCY
Description: User Provided
Rated Payload: 35,400 Pounds
Payload Capacity: 12.42 LCY

Truck Bed (volume) Basis:

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 3 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.090	minutes
	Adjusted Loader Cycle Time:	**0.393**	minutes
	Net Load Time per Truck:	**0.885**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1100.00	-6.00	5.00	-1.00	2938	0.444

Haul Time: **0.444** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1100.00	6.00	5.00	11.00	1584	0.702

Return Time: **0.702** minutes

Total Truck Cycle Time: **3.431** minutes

Loading Tool unit Production: 494.19 LCY/Hour — Adjusted for job efficiency: 410.18 LCY/Hour

Truck Unit Production: 199.49 LCY/Hour — Adjusted for job efficiency: 165.58 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) — Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 331.15 LCY/Hour

Adjusted single truck/loader team production: 331.15 LCY/Hour

Adjusted multiple truck/loader team production: **331.15** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **3.19** Hours

Unit cost: $0.651 /LCY — Total job cost: **$688**

BULLDOZER WORK

Task description: **King I - backfill portals, grade fill slope and topsoil**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 008 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-008
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 400
Swell factor: 1.000
Loose volume: **400** LCY

Source of estimated volume: Reclamation plan
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 200 feet
Unadjusted hourly production: 491.9 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: -5 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)

Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(SSD-AC)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5284

Adjusted unit production: 259.92 LCY/hr

Adjusted fleet production: **259.92** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.767/LCY

Total job time: **1.54** Hours

Total job cost: **$307**

REVEGETATION WORK

Task description: **King I - revegetate highwall area (Area #4)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 009 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-009
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.34	$51.00
			Total Fertilizer Materials Cost/Acre	**$51.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$13.35
Switchgrass - Pathfinder	0.75	6.70	$7.48
Mountain Brome - Bromar	1.82	2.92	$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	$6.53
Sheep Fescue - Bighorn	0.31	4.84	$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	$6.66
Western Wheatgrass - Native	2.54	6.41	$17.78
Flax, Lewis Blue	0.46	3.05	$7.59
Totals Seed Mix	11.39	36.92	**$68.76**

Application

Description	Cost /Acre
	$0.00
Total Seed Application Cost/Acre	**$0.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$99.32**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	1.31	Cost /Acre:	$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,160.27**
Reseeding Job Cost:	**$45.04**
Total Job Cost:	**$1,205**
Job Hours:	**4.00**

MOTOR GRADER WORK

Task description: **King I - rip and final grade lower facilities area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 010 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-010
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158
Ripper Attachment: Multi-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$28.02	NA
Operating Cost/Hour:	$28.28	100
Ripper Ownership Cost/Hour:	$1.99	NA
Ripper Operating Cost/Hour:	$2.16	100
Operator Cost/Hour:	$28.90	NA
Total Unit Cost/Hour:	$89.35	

Total Fleet Cost/Hour: **$89.35**

MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.18 acres

Source of estimated acreage: TR-9 submittal

HOURLY PRODUCTION

Average Grader Speed: 1.25 mph
Selected Application: Production Deration - 1.25
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.2727 acres/hour

Job Condition Correction Factors Site Altitude: 7400 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.85	(1sh/d, mod.)
Net Correction:	0.8500	multiplier

Adjusted Hourly Unit Production: 1.0818 acres/Hour
Adjusted Hourly Fleet Production: **1.0818** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **1.09** Hours

Unit cost: $82.59 per acre Total job cost: **$97**

REVEGETATION WORK

Task description: **King I - revegetate highwall area (Area #4)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 011 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-011
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.34	$51.00
			Total Fertilizer Materials Cost/Acre	**$51.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$13.35
Switchgrass - Pathfinder	0.75	6.70	$7.48
Mountain Brome - Bromar	1.82	2.92	$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	$6.53
Sheep Fescue - Bighorn	0.31	4.84	$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	$6.66
Western Wheatgrass - Native	2.54	6.41	$17.78
Flax, Lewis Blue	0.46	3.05	$7.59
Totals Seed Mix	11.39	36.92	**$68.76**

Application

Description	Cost /Acre
	$0.00
Total Seed Application Cost/Acre	**$0.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$99.32**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	1.19	Cost /Acre:	$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,053.98**
Reseeding Job Cost:	**$40.91**
Total Job Cost:	**$1,095**
Job Hours:	**4.00**

BULLDOZER WORK

Task description: **King I - regrade cover of pre-law portion of refuse area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 012 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-012
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 3,275
Swell factor: 1.000
Loose volume: **3,275** LCY

Source of estimated volume: 0.58 acres, 3.5' depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 100 feet
Unadjusted hourly production: 852.6 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)

Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit production: 404.05 LCY/hr

Adjusted fleet production: **404.05** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.493/LCY

Total job time: **8.11** Hours

Total job cost: **$1,616**

BULLDOZER WORK

Task description: **King I - regrade 6" growth medium on pre-law refuse area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 013 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-013
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 468
Swell factor: 1.000
Loose volume: **468** LCY

Source of estimated volume: 0.58 acres, 6" depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 100 feet
Unadjusted hourly production: 852.6 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)

Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit production: 404.05 LCY/hr

Adjusted fleet production: **404.05** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.493/LCY

Total job time: **1.16** Hours

Total job cost: **$231**

REVEGETATION WORK

Task description: **King I - revegetate refuse area (Area #5)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 014 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-014
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.34	$51.00
			Total Fertilizer Materials Cost/Acre	**$51.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$13.35
Switchgrass - Pathfinder	0.75	6.70	$7.48
Mountain Brome - Bromar	1.82	2.92	$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	$6.53
Sheep Fescue - Bighorn	0.31	4.84	$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	$6.66
Western Wheatgrass - Native	2.54	6.41	$17.78
Flax, Lewis Blue	0.46	3.05	$7.59
Totals Seed Mix	11.39	36.92	**$68.76**

Application

Description	Cost /Acre
	$0.00
Total Seed Application Cost/Acre	**$0.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$99.32**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	0.58	Cost /Acre:	$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$513.71**
Reseeding Job Cost:	**$19.94**
Total Job Cost:	**$534**
Job Hours:	**2.00**

BULLDOZER WORK

Task description: **King I - Push 3.5' cover to refuse pile**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 015 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-015
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 6,098
Swell factor: 1.000
Loose volume: **6,098** LCY

Source of estimated volume: 3.5' depth on 1.08 acres
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 100 feet
Unadjusted hourly production: 852.6 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 25 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)

Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.422	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.1833

Adjusted unit production: 156.28 LCY/hr

Adjusted fleet production: **156.28** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $1.276/LCY

Total job time: **39.02** Hours

Total job cost: **$7,780**

BULLDOZER WORK

Task description: **King I - grade 3.5' cover on post-law refuse area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 016 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-016
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 6,098
Swell factor: 1.000
Loose volume: **6,098** LCY

Source of estimated volume: 3.5' depth on 1.08 acres
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)

Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr

Adjusted fleet production: **608.16** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.328/LCY

Total job time: **10.03** Hours

Total job cost: **$1,999**

TRUCK/LOADER TEAM WORK

Task description: **King I - Haul topsoil to post-law refuse area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 017 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-017
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	$18.29	$25.66	NA	NA	NA	NA
Operating cost/hour:	$39.97	$32.31	NA	NA	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	NA	NA	NA
Operator cost/hour:	$0.00	$41.20	NA	NA	NA	NA
Unit Subtotals:	$58.26	$99.17	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	$215.69	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$215.69**

MATERIAL QUANTITIES

Initial volume: 871 CCY Swell factor: 1.429
Loose volume: **1,245** LCY

Source of estimated volume: 1.08 acres, 6” depth
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,850 Pounds/LCY
Description: User Provided
Rated Payload: 35,400 Pounds
Payload Capacity: 12.42 LCY

Truck Bed (volume) Basis:

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 3 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.090	minutes
	Adjusted Loader Cycle Time:	**0.393**	minutes
	Net Load Time per Truck:	**0.885**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	200.00	0.00	5.00	5.00	2218	0.158

Haul Time: **0.158** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	200.00	0.00	5.00	5.00	2814	0.097

Return Time: **0.097** minutes

Total Truck Cycle Time: **2.540** minutes

Loading Tool unit Production: 494.19 LCY/Hour — Adjusted for job efficiency: 410.18 LCY/Hour

Truck Unit Production: 269.47 LCY/Hour — Adjusted for job efficiency: 223.66 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) — Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 447.32 LCY/Hour

Adjusted single truck/loader team production: 410.18 LCY/Hour

Adjusted multiple truck/loader team production: **410.18** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **3.03** Hours

Unit cost: $0.526 /LCY — Total job cost: **$655**

MOTOR GRADER WORK

Task description: **King I - finish grade post-law refuse area (area #6)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 018 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-018
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158
Ripper Attachment: Multi-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$28.02	NA
Operating Cost/Hour:	$28.28	100
Ripper Ownership Cost/Hour:	$1.99	NA
Ripper Operating Cost/Hour:	$0.00	0
Operator Cost/Hour:	$28.90	NA
Total Unit Cost/Hour:	$87.19	

Total Fleet Cost/Hour: **$87.19**

MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.06 acres

Source of estimated acreage: Section 2.05.3 of permit application

HOURLY PRODUCTION

Average Grader Speed:	1.25	mph
Selected Application:	Production Deration - 1.25	
Selected Blade Angle:	30	degrees
Effective Blade Length:	10.40	feet
Width of blade overlap per pass:	2.00	feet
Net grading or ripping width per pass:	8.40	feet
Unadjusted Hourly Unit Production:	1.2727	acres/hour

Job Condition Correction Factors Site Altitude: 7400 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.85	(1sh/d, mod.)
Net Correction:	0.8500	multiplier

Adjusted Hourly Unit Production: 1.0818 acres/Hour
Adjusted Hourly Fleet Production: **1.0818** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **0.98** Hours

Unit cost: $80.60 per acre Total job cost: **$85**

REVEGETATION WORK

Task description: **King I - revegetate refuse area (Area #6)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 019 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-019
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.34	$51.00
			Total Fertilizer Materials Cost/Acre	**$51.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$13.35
Switchgrass - Pathfinder	0.75	6.70	$7.48
Mountain Brome - Bromar	1.82	2.92	$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	$6.53
Sheep Fescue - Bighorn	0.31	4.84	$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	$6.66
Western Wheatgrass - Native	2.54	6.41	$17.78
Flax, Lewis Blue	0.46	3.05	$7.59
Totals Seed Mix	11.39	36.92	**$68.76**

Application

Description	Cost /Acre
	$0.00
Total Seed Application Cost/Acre	**$0.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$99.32**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	1.08	Cost /Acre:	$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$956.56**
Reseeding Job Cost:	**$37.13**
Total Job Cost:	**$994**
Job Hours:	**2.00**

MOTOR GRADER WORK

Task description: **King I - finish grade topsoil area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 020 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-020
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158
Ripper Attachment: Multi-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$28.02	NA
Operating Cost/Hour:	$28.28	100
Ripper Ownership Cost/Hour:	$1.99	NA
Ripper Operating Cost/Hour:	$0.00	0
Operator Cost/Hour:	$28.90	NA
Total Unit Cost/Hour:	$87.19	

Total Fleet Cost/Hour: **$87.19**

MATERIAL QUANTITIES

Total Area to be graded or ripped: 2.00 acres

Source of estimated acreage: Section 2.05.3 of permit application

HOURLY PRODUCTION

Average Grader Speed: 1.25 mph
Selected Application: Production Deration - 1.25
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.2727 acres/hour

Job Condition Correction Factors Site Altitude: 7400 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.85	(1sh/d, mod.)
Net Correction:	0.8500	multiplier

Adjusted Hourly Unit Production: 1.0818 acres/Hour
Adjusted Hourly Fleet Production: **1.0818** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **1.85** Hours

Unit cost: $80.60 per acre Total job cost: **$161**

REVEGETATION WORK

Task description: **King I - revegetate borrow area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 021 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-021
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.34	$51.00
			Total Fertilizer Materials Cost/Acre	**$51.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$13.35
Switchgrass - Pathfinder	0.75	6.70	$7.48
Mountain Brome - Bromar	1.82	2.92	$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	$6.53
Sheep Fescue - Bighorn	0.31	4.84	$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	$6.66
Western Wheatgrass - Native	2.54	6.41	$17.78
Flax, Lewis Blue	0.46	3.05	$7.59
Totals Seed Mix	11.39	36.92	**$68.76**

Application

Description	Cost /Acre
	$0.00
Total Seed Application Cost/Acre	**$0.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$99.32**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	2	Cost /Acre:	$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,771.40**
Reseeding Job Cost:	**$68.76**
Total Job Cost:	**$1,840**
Job Hours:	**4.00**

BOREHOLE SEALING WORK

Task description: **King I - seal vent hole**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 022 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035=022
User: JHB

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Seal hole	Portland cement grout - 8 in. (labor, equip, materials)	7	100	100.00	LF	$11.21	$1,121.00
Bottom Plug	Stainless steel plug - 8 in. diameter borehole	7	100	1.00	EA	$192.81	$192.81
Cut Casing	Exposed casing removal - Calculate Circumference in Linear Feet	7	2	2.00	LF	$1.77	$3.54
Mark Hole	Borehole location/identification marker (EA, material cost only)	7	1	1.00	EA	$3.67	$3.67
drill rig	SCHRAMM T450WS	7	NA	1.00	hr	$229.60	$229.60

Job Hours: **8.00** **Total Cost**: **$1,551.00**

BULLDOZER WORK

Task description: **King I - backfill and regrade east and west sediment ponds**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	023	State:	Colorado	Abbreviation:	None
Date:	5/4/2017	County:	La Plata	Filename:	C035-023
User:	JHB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	310
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume:	3,226
Swell factor:	1.165
Loose volume:	**3,758** LCY

Source of estimated volume: Operator estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 75 feet
Unadjusted hourly production: 1,017.1 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 0 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)

Material consistency:	0.900	(CAT HB))
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3554

Adjusted unit production: 361.48 LCY/hr

Adjusted fleet production: **361.48** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.552/LCY

Total job time: **10.40** Hours

Total job cost: **$2,073**

REVEGETATION WORK

Task description: **King I - revegetate east and west ponds (Area #6)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 025 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-025
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.34	$51.00
			Total Fertilizer Materials Cost/Acre	**$51.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$13.35
Switchgrass - Pathfinder	0.75	6.70	$7.48
Mountain Brome - Bromar	1.82	2.92	$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	$6.53
Sheep Fescue - Bighorn	0.31	4.84	$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	$6.66
Western Wheatgrass - Native	2.54	6.41	$17.78
Flax, Lewis Blue	0.46	3.05	$7.59
Totals Seed Mix	11.39	36.92	**$68.76**

Application

Description	Cost /Acre
	$0.00
Total Seed Application Cost/Acre	**$0.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$99.32**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	1.86	Cost /Acre:	$885.70
Estimated Failure Rate:	50%	Cost /Acre*:	$68.76
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,647.40**
Reseeding Job Cost:	**$63.95**
Total Job Cost:	**$1,711**
Job Hours:	**4.00**

SITE MAINTENANCE

Task description: **King I -Rill and gully maint. 8 hours every other yr, 10 yrs**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 032 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-032
User: JHB

Agency or organization name: DRMS

UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
D3 Dozer	8.00	Cat D3K LGP - 3P	24.00	EA	$81.57	$1,957.68
12M Grader	8.00	CAT 12M	24.00	EA	$95.88	$2,301.12

Job Hours: 24.00 **Total Cost: $4,258.80**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **King I&II - mobilize for initial reclamation**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 050 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-050
User: JHB

Agency or organization name: DRMS

EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day
Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED, 400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER (25T, 50T, AND 100T)

Cost Breakdown:

Available Rig Capacities	**0-25 Tons**	**26-50 Tons**	**51+ Tons**
Ownership Cost/Hour:	$16.63	$18.37	$22.33
Operating Cost/Hour:	$44.38	$46.13	$50.07
Operator Cost/Hour:	$27.66	$27.66	$27.66
Helper Cost/Hour:	$0.00	$25.39	$25.39
Total Unit Cost/Hour:	$88.67	$117.55	$125.45

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D8T - 8SU	47.71	$62.67	$117.55	2	$360.44	$235.10	$0.00
CAT 938H	16.34	$21.63	$88.67	2	$220.60	$177.34	$0.00
CAT 12M	16.01	$24.98	$88.67	1	$113.65	$88.67	$0.00
CAT 825H	36.08	$62.10	$117.55	1	$179.65	$117.55	$0.00
Drill/Broadcast Seeder with Tractor	25.00	$39.59	$88.67	1	$128.26	$88.67	$0.00
Power Mulcher (Reinco M90)	6.00	$7.03	$88.67	1	$95.70	$88.67	$0.00
GENERIC 3.0 in. - 1, 700 ft. capy.	0.00	$17.72	$88.67	1	$106.39	$88.67	$250.00
Subtotals:					**$1,204.69**	**$884.67**	**$250.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Generic 10-12 cy, 6x4	$101.68	2	$203.36	$203.36
Water Tanker, 2,500 Gal.	$29.67	1	$29.67	$29.67
Subtotals:			**$233.03**	**$233.03**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	DURANGO	
Total one-way travel distance:	20.00	miles
Average Travel Speed:	40.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$9,817.50
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$233.03

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.50	0.50
Return Time (Hours):	0.50	0.50
Loading Time (Hours):	2.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	4.00	1.00

JOB TIME AND COST

Total job time:	**8.00**	Hours
Total job cost:	**$10,051**	

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **King I&II - mobilize for rill and gully maintenance, X 3**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 051 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-051
User: JHB

Agency or organization name: DRMS

EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day
Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED, 400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER (25T, 50T, AND 100T)

Cost Breakdown:

Available Rig Capacities	**0-25 Tons**	**26-50 Tons**	**51+ Tons**
Ownership Cost/Hour:	$16.63	$18.37	$22.33
Operating Cost/Hour:	$44.38	$46.13	$50.07
Operator Cost/Hour:	$27.66	$27.66	$27.66
Helper Cost/Hour:	$0.00	$25.39	$25.39
Total Unit Cost/Hour:	$88.67	$117.55	$125.45

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D3K LGP - 3P	9.20	$13.24	$88.67	3	$305.74	$266.01	$0.00
CAT 12M	16.01	$24.98	$88.67	3	$340.94	$266.01	$0.00
Subtotals:					**$646.68**	**$532.02**	**$0.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 2,500 Gal.	$29.67	3	$89.01	$89.01
Subtotals:			**$89.01**	**$89.01**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	DURANGO	
Total one-way travel distance:	20.00	miles
Average Travel Speed:	40.00	mph
Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$5,058.78	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$89.01	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.50	0.50
Return Time (Hours):	0.50	0.50
Loading Time (Hours):	2.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	4.00	1.00

JOB TIME AND COST

Total job time:	**8.00**	Hours
Total job cost:	**$5,148**	

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **King I&II - mobilize for second pond cleaning**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 052 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-052
User: JHB

Agency or organization name: DRMS

EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day
Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED, 400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER (25T, 50T, AND 100T)

Cost Breakdown:

Available Rig Capacities	**0-25 Tons**	**26-50 Tons**	**51+ Tons**
Ownership Cost/Hour:	$16.63	$18.37	$22.33
Operating Cost/Hour:	$44.38	$46.13	$50.07
Operator Cost/Hour:	$27.66	$27.66	$27.66
Helper Cost/Hour:	$0.00	$25.39	$25.39
Total Unit Cost/Hour:	$88.67	$117.55	$125.45

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
CAT 938H	16.34	$21.63	$88.67	2	$220.60	$177.34	$0.00
Cat 312D L 9'-2" Stick	14.83	$20.89	$88.67	1	$109.56	$88.67	$0.00
Subtotals:					**$330.16**	**$266.01**	**$0.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Generic 10-12 cy, 6x4	$101.68	2	$203.36	$203.36
Subtotals:			**$203.36**	**$203.36**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: DURANGO
Total one-way travel distance: 20.00 miles
Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost *
'* two round trips with haul rig: $2,577.13

Total Roadable Mob/Demob Cost **
** one round trip, no haul rig: $203.36

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.50	0.50
Return Time (Hours):	0.50	0.50
Loading Time (Hours):	2.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	4.00	1.00

JOB TIME AND COST

Total job time: **8.00** Hours

Total job cost: **$2,780**

SITE MAINTENANCE

Task description: **King II-Rill and gully maint. 8 hours every other yr, 10 yrs**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 060 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-060
User: JHB

Agency or organization name: DRMS

UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
D3 Dozer	8.00	Cat D3K LGP - 3P	24.00	EA	$81.57	$1,957.68
12M Grader	8.00	CAT 12M	24.00	EA	$95.88	$2,301.12

Job Hours: 24.00 **Total Cost: $4,258.80**

REVEGETATION WORK

Task description: **Weed Control over liability period**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 062 State: Colorado Abbreviation: None
Date: 5/4/2017 County: La Plata Filename: C035-062
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
			Total Fertilizer Materials Cost/Acre	**$0.00**

Application

Description	Cost /Acre
	$
Total Fertilizer Application Cost/Acre	**$0.00**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
			$
Totals Seed Mix	0.00	0.00	**$0.00**

Application

Description	Cost /Acre
	$
Total Seed Application Cost/Acre	**$0.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
	5.00		$0.00	$0.00
Total Mulch Materials Cost/Acre				**$0.00**

Application

Description	Cost /Acre
Weed spray, hand, non-aquatic area, nox. [DMG]	$180.00
Total Mulch Application Cost/Acre	**$180.00**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	17.5	Cost /Acre:	$180.00
Estimated Failure Rate:	0%	Cost /Acre*:	$0.00
*Selected Replanting Work Items:	NONE		

Initial Job Cost:	**$3,150.00**
Reseeding Job Cost:	**$0.00**
Total Job Cost:	**$3,150**
Job Hours:	**35.00**

HYDRAULIC EXCAVATOR WORK

Task description: **Clean sediment ponds (two cleanings)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 064 State: Colorado Abbreviation: None
Date: 5/5/2017 County: La Plata Filename: C035-064
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 312D L 9'-2" Stick
Attachment 1: ROPS Cab

Horsepower: 90
Weight (MT): 13.48
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$21.10	NA
Operating Cost/Hour:	$19.81	100
Operator Cost/Hour:	$37.79	NA
Total Unit Cost/Hour:	$78.70	

Total Fleet Cost/Hour: $78.70

MATERIAL QUANTITIES

Initial volume: 6,453 CCY Swell factor: 1.135
Loose volume: **7,324** LCY

Source of estimated volume: 2 pond cleanings, 2 ac ft per cleanout
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: AVERAGE
Secondary Job Condition within Basic Description: AVERAGE
Cycle Time Value: 0.256 minutes

Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 0.68 LCY (heaped)
Bucket Fill Factor: 0.850 Hard, tough clay (80% - 90%) 0.850
Adjusted Capacity: **0.58** LCY

Job Condition Correction Factors

Site Altitude: 7500 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Unadjusted Hourly Unit Production: 135.47 LCY/Hour
Adjusted Hourly Unit Production: 112.44 LCY/Hour
Adjusted Hourly Fleet Production: **112.44** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: **65.14** Hours

Unit cost: $0.700 /LCY Total job cost: **$5,126**

TRUCK/LOADER TEAM WORK

Task description: **King II - haul sediment from ponds to King I site**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 065 State: Colorado Abbreviation: None
Date: 5/5/2017 County: La Plata Filename: C035-065
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	OBSOLETE - CAT 938H
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	$22.16	$25.66	NA	$25.66	NA	NA
Operating cost/hour:	$42.40	$32.31	NA	$32.31	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$30.37	$41.20	NA	$41.20	NA	NA
Unit Subtotals:	$94.93	$99.17	NA	$99.17	NA	NA
Number of Units:	6	1	0	1	0	0
Group Subtotals:	Work:	$668.75	Support:	$99.17	Maint:	$0.00

Total work team cost/hour: **$767.92**

MATERIAL QUANTITIES

Initial volume: 6,453 CCY Swell factor: 1.000
Loose volume: **6,453** LCY

Source of estimated volume: 2 pond cleanings, 2 ac ft each cleanout
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,700 Pounds/LCY
Description: Earth - Wet excavated
Rated Payload: 50,300 Pounds
Payload Capacity: 18.63 LCY

Truck Bed (volume) Basis:

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.080	minutes
	Adjusted Loader Cycle Time:	**0.403**	minutes
	Net Load Time per Truck:	**1.308**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)

1	10560.00	11.50	5.00	16.50	690	15.314

Haul Time: **15.314** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	10560.00	-11.50	5.00	-6.50	2938	3.705

Return Time: **3.705** minutes
Total Truck Cycle Time: **21.727** minutes

Loading Tool unit Production 504.90 LCY/Hour Adjusted for job efficiency: 419.06 LCY/Hour

Truck Unit Production 42.00 LCY/Hour Adjusted for job efficiency: 34.86 LCY/Hour

Optimal No. of Trucks: 12 Truck(s) Selected Number of Trucks: 6 Truck(s)

Adjusted hourly truck team production: 209.18 LCY/Hour
Adjusted single truck/loader team production: 209.18 LCY/Hour
Adjusted multiple truck/loader team production: **209.18** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **30.85** Hours

Unit cost: $3.671 /LCY Total job cost: **$23,690**

SAFEGUARDING UNDERGROUND OPENINGS

Task description: **Seal Mine Openings**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 100 State: Colorado Abbreviation: None
Date: 5/5/2017 County: La Plata Filename: C035-100
User: JHB

Agency or organization name: DRMS

UNIT COSTS

Opening Description	Dimensions	Closure Method	Quantity	Unit	Unit Cost	Total Cost
Portal 1 seal	200	Adit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	$105.56	$21,112.00
Portal 1 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	$9.56	$1,577.40
Portal 1 backfill	185	Adit closure - backfilling (per cu. yd.)	185.00	CY	$27.00	$4,995.00
Portal 2 seal	200	Adit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	$105.56	$21,112.00
Portal 2 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	$9.56	$1,577.40
Portal 2 backfill	185	Adit closure - backfilling (per cu. yd.)	185.00	CY	$27.00	$4,995.00
Portal 3 seal	200	Adit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	$105.56	$21,112.00
Portal 3 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	$9.56	$1,577.40
Portal 3 backfill	185	Adit closure - backfilling (per cu. yd.)	185.00	CY	$27.00	$4,995.00
Portal 4 seal	200	Adit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	$105.56	$21,112.00
Portal 4 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	$9.56	$1,577.40
Portal 4 backfill	185	Adit closure - backfilling (per cu. yd.)	185.00	CY	$27.00	$4,995.00

Job Hours: **32.00** **Total Cost**: **$110,737.60**

DEMOLITION WORK

Task description: **King II structural demolition**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 200 State: Colorado Abbreviation: None
Date: 5/5/2017 County: La Plata Filename: C035-200
User: JHB

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 94.00**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Water storage tank	100k gal	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	13,333.00	CF	$0.20	$2,666.60
water storage tank slab	24' diam, .75 thick	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	613.00	SF	$0.87	$532.70
water storage tank	37k gal	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	7,933.00	CF	$0.20	$1,586.60
water storage tank slab	32x14x.5	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	448.00	SF	$0.65	$292.10
Main pump house	14x10x12.67	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	1,774.00	CF	$0.20	$354.80
Shop equipment wash pad slab	20x25x.75	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	1,250.00	SF	$0.87	$1,086.25
shop equipment wash pad footers	2x1	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	150.00	LF	$2.61	$391.50
Shop building	60x50x16	Bldg. (SN) demo./on-site disposal in	48,000.00	CF	$0.20	$9,600.00

		excavated pit - Max. 10,000 ft. haul				
shop building slab	60x50x.75	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	3,000.00	SF	$0.87	$2,607.00
shop building footers	2x1	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	220.00	LF	$2.61	$574.20
Mine fan	28.6x25x10.5	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	7,508.00	CF	$0.20	$1,501.60
mine fan slab	4x8x6	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	192.00	SF	$1.30	$250.18
Retaining wall adjacent to fan	1x60x8	Wall, concrete, demolition only, average reinforcing - 12 in. thick	480.00	SF	$1.28	$614.40
retaining wall footers	7x1	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	60.00	LF	$2.82	$169.20
Fan portal	30x20x8	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,800.00	CF	$0.20	$960.00
fan portal slab	30x20	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	600.00	SF	$1.30	$781.80
fan portal footers	.75x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	100.00	LF	$5.86	$586.00
Travelway portal	30x20x8	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,800.00	CF	$0.20	$960.00
travelway portal	14x1	Demo. and on-	60.00	LF	$2.82	$169.20

footers		site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push				
Portal Motor Control Center (MCC)	14x10x12.67	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	1,774.00	CF	$0.20	$354.80
MCC slab	14x10	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	140.00	SF	$0.65	$91.28
MCC footers	1x2	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	48.00	LF	$2.61	$125.28
Rock dust storage silo	11' diam x 40'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	3,799.00	CF	$0.22	$835.78
rock dust storage silo slab	12x12	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	144.00	SF	$1.30	$187.63
rock dust storage silo footers	2x2	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	2.00	LF	$5.86	$11.72
Concrete retaining wall #2	70x2x4	Wall, block, demolition only, 12 in. thick - Horizontal reinforcing	560.00	SF	$1.06	$593.60
Exec. offices/Parts warehouse/Bath house bldgs	150x60x34	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	306,000.00	CF	$0.23	$69,156.00
offices/warehouse/bath house slab	150x60	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	9,000.00	SF	$0.65	$5,868.00
offices/warehouse/bath house footers	1x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft.	420.00	LF	$5.86	$2,461.20

		push				
Covered storage building	80x20x18.5	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	29,600.00	CF	$0.20	$5,920.00
storage building slab	80x26	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	2,080.00	SF	$0.65	$1,356.16
storage building footers	1x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	260.00	LF	$5.86	$1,523.60
Main septic system tank	4000 gal	Excavate and load tank onto trailer, non-leaking - 3,000 gal. to 5,000 gal.	1.00	EA	$571.50	$571.50
Fuel storage building and apron	45x25x20	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	22,500.00	CF	$0.20	$4,500.00
fuel storage building slab	45x27	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	1,215.00	SF	$0.87	$1,055.84
fuel storage building footers	1x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	140.00	LF	$5.86	$820.40
Belt portal	15x20x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	3,000.00	CF	$0.20	$600.00
belt portal footers	1x2	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	30.00	LF	$2.61	$78.30
Return portal	15x20x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	3,000.00	CF	$0.20	$600.00
return portal footers	1x2	Demo. and on-site disposal in	30.00	LF	$3.91	$117.30

		excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push				
Belt portal pump house	20x14x10	Bldg. (SC) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	2,800.00	CF	$0.25	$708.40
belt portal pump house slab	20x14	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	280.00	SF	$1.09	$304.08
belt portal pump house footer	2x1	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	68.00	LF	$2.61	$177.48
Electrical substation	19x14x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	2,660.00	CF	$0.20	$532.00
electircal substation slab	19x14	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	266.00	SF	$0.65	$173.43
Electrical substation slabs	35x35	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	1,225.00	SF	$0.65	$798.70
Main dumpster pad	20x8	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	160.00	SF	$0.65	$104.32
Slope conveyor (box truss section)	8x8	OBSOLETE-Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	240.00	LF	$44.51	$10,682.16
Slope conveyor (non-box truss section)	4x4	OBSOLETE-Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	110.00	LF	$44.51	$4,895.99
Magnet Dumpster Pad #1	8x8	Demo. and on-site disposal in excavated pit, 6 in. thick - Max.	64.00	SF	$0.65	$41.73

		200 ft. push				
Coal Stack Tube #1 Head House	14.5x12x25	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,350.00	CF	$0.23	$983.10
Magnet Dumpster Pad #2	8x8	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	64.00	SF	$0.65	$41.73
Raw Coal Conveyor	4x4	OBSOLETE-Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	177.00	LF	$44.51	$7,878.09
Crushing/Screening structure	28x25x53	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	37,100.00	CF	$0.23	$8,384.60
crushing/screening slab	40x30	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	7,200.00	SF	$0.65	$4,694.40
Crushing/Screening Pile Caps	6 - 4x6.5x3.5	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	546.00	SF	$1.30	$711.44
Crushing/screening pile footers	1.5x1.5	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	24.00	LF	$3.91	$93.84
Lump conveyor (radial stacker belt)	3x3	OBSOLETE-Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	100.00	LF	$17.60	$1,760.00
Stoker conveyor (radial stacker belt)	3x3	OBSOLETE-Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	100.00	LF	$17.60	$1,760.00
Crushed coal storage conveyor	4x8x320	OBSOLETE-Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	320.00	LF	$44.51	$14,242.88

crushed coal storage conveyor slab	7.75x6	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	47.00	SF	$1.30	$61.24
crushed coal storage conveyor footers	4x4	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	6.00	LF	$2.82	$16.92
Coal Stack Tube #2 Head House	14.5x12x25	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,350.00	CF	$0.23	$983.10
Cross-Belt Coal Sampler	20x20	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	400.00	SF	$0.65	$260.80
Truck Loadout Conveyor	4x8x260	OBSOLETE-Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	260.00	LF	$44.51	$11,572.34
Truck Loadout & Bins	30x15x30	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	13,500.00	CF	$0.23	$3,051.00
truck loadout & bins slab	6.5x3.5x4	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	273.00	SF	$1.30	$355.72
truck loadout & bins footers	2x4	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	24.00	LF	$2.82	$67.68
Truck scale	120x20x2	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,800.00	CF	$0.20	$960.00
truck scale slab	150x16	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	2,400.00	SF	$1.30	$3,127.20
Coal sales building	20x12x10	Bldg. (SN) demo./on-site disposal in	2,400.00	CF	$0.20	$480.00

		excavated pit - Max. 10,000 ft. haul				
coal sales slab	20x12	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 50 ft. push	240.00	SF	$0.64	$152.88
Coal Sales Building Septic System Tank	6x10x5	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 200 ft. push	300.00	CF	$0.19	$58.20
Main Motor Control Center (Main MCC)	21x16.67x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 200 ft. push	3,501.00	CF	$0.19	$679.19
Main MCC slab	21x20	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	420.00	SF	$0.65	$273.84
Main MCC footers	1.5x2	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	84.00	LF	$3.91	$328.44
Cattle guard	8x24x.5	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	96.00	SF	$1.30	$125.09
Culvert C-1	48"	Pipe, corrugated metal (CMP) - 48 in. diameter pipe	81.00	LF	$14.56	$1,179.28
Culvert C-2	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	48.00	LF	$6.47	$310.66
Culvert C-2A	18"	Pipe, corrugated metal (CMP) - 18 in. diameter pipe	48.00	LF	$4.98	$238.94
Culvert C-3 (double)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	120.00	LF	$6.47	$776.64
Culvert C-5A	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	63.00	LF	$6.47	$407.74
Culvert C-5B	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	40.00	LF	$6.47	$258.88

Culvert C-6	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	90.00	LF	$6.47	$582.48
Culvert C-7	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	203.00	LF	$6.47	$1,313.82
Culvert C-8	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	58.00	LF	$6.47	$375.38
Culvert C-9	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	201.00	LF	$6.47	$1,300.87
Culvert C-10	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	158.00	LF	$6.47	$1,022.58
Culvert C-11	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	82.00	LF	$6.47	$530.70
West Clearwater Culvert	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	220.00	LF	$6.47	$1,423.84
Culvert C-14	18"	Pipe, corrugated metal (CMP) - 18 in. diameter pipe	40.00	LF	$4.98	$199.12
Culvert C-14A	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	40.00	LF	$6.47	$258.88
Culvert C-14B	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	12.00	LF	$6.47	$77.66
Culvert C-15	15"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	60.00	LF	$6.47	$388.32
Pond primary spillway	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	120.00	LF	$6.47	$776.64
Pond emergency spillway	36"	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	120.00	LF	$10.09	$1,210.92
Material and debris removal	NA	Loading and 2 mile haul, no salvage - Machine loading	200.00	CY	$17.70	$3,540.00
Remove/dispose of signs and markers	NA	USER PROVIDED ITEM	1.00	EA	$500.00	$500.00

Job Hours:	**140.00**	**Subtotal (unadjusted)**:	**$220,707.88**	**Total Cost (adjusted for location)**:	**$207,465.41**

TRUCK/LOADER TEAM WORK

Task description: **King II - Haul coal waste rock to King I waste pile**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 300 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-300
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	OBSOLETE - CAT 938H
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	$22.16	$25.66	NA	$25.66	NA	NA
Operating cost/hour:	$42.40	$32.31	NA	$32.31	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$30.37	$41.20	NA	$41.20	NA	NA
Unit Subtotals:	$94.93	$99.17	NA	$99.17	NA	NA
Number of Units:	1	1	0	1	0	0
Group Subtotals:	Work:	$194.10	Support:	$99.17	Maint:	$0.00

Total work team cost/hour: **$293.27**

MATERIAL QUANTITIES

Initial volume: 37 CCY Swell factor: 1.000
Loose volume: **37** LCY

Source of estimated volume:	Assume 100 sf x 10 ft high
Source of estimated swell factor:	Cat Handbook
Material Purchase Cost:	$0.00
Total Cost:	$0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight:	2,900	Pounds/LCY
Description:	User Provided	
Rated Payload:	50,300	Pounds
Payload Capacity:	17.34	LCY

Truck Bed (volume) Basis:

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	17.34	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.080	minutes
	Adjusted Loader Cycle Time:	**0.403**	minutes
	Net Load Time per Truck:	**1.308**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	10560.00	11.50	5.00	16.50	690	15.314

Haul Time: **15.314** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	10560.00	-11.50	5.00	-6.50	2938	3.705

Return Time: **3.705** minutes
Total Truck Cycle Time: **21.727** minutes

Loading Tool unit Production: 504.90 LCY/Hour — Adjusted for job efficiency: 419.06 LCY/Hour
Truck Unit Production: 42.00 LCY/Hour — Adjusted for job efficiency: 34.86 LCY/Hour

Optimal No. of Trucks: 12 Truck(s) — Selected Number of Trucks: 1 Truck(s)

Adjusted hourly truck team production: 34.86 LCY/Hour
Adjusted single truck/loader team production: 34.86 LCY/Hour
Adjusted multiple truck/loader team production: **34.86** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **1.06** Hours

Unit cost: $8.412 /LCY — Total job cost: **$311**

BULLDOZER RIPPING WORK

Task description: **King II - Rip coal sales area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	301	State:	Colorado	Abbreviation:	None
Date:	5/8/2017	County:	La Plata	Filename:	C035-301
User:	JHB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU	Horsepower:	310
Ripper Attachment:	3-Shank Ripper	Shift Basis:	1 per day
		Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper Ownership Cost/Hour:	$7.55	NA
Ripper Operating Cost/Hour:	$7.21	100
Operator Cost/Hour:	$41.85	NA
Total Unit Cost/Hour:	$206.59	

Total Fleet Cost/Hour: **$206.59**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic:	NA		Bank Volume:	NA	BCY	NA	
Area:	0.80	acres	Rip Depth (ft):	2.00	Volume:	2,581	BCY or CCY

Source of estimated quantity: Map King II-007

HOURLY PRODUCTION

Seismic:

Seismic Velocity:	NA	feet/second

Area:

Average Ripping Depth:	1.00	mph
Average Ripping Width:	7.08	degrees
Average Ripping Length:	50.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.596	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	0.596	Acres/hr
Site Altitude:	7,400	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier
Adjusted Hourly Unit Production:	0.49	Acres/hr
Adjusted Hourly Fleet Production:	**0.49**	Acres/hr

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**1.62**	Hours
Unit cost:	$417.652	Per acre	Total job cost:	**$334**	

TRUCK/LOADER TEAM WORK

Task description: **King II - Haul gravel from coal sales, portals, rd/wtr tank**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 302 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-302
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	OBSOLETE - CAT 938H
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	$18.29	$25.66	NA	$25.66	NA	NA
Operating cost/hour:	$39.97	$32.31	NA	$32.31	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$0.00	$41.20	NA	$41.20	NA	NA
Unit Subtotals:	$58.26	$99.17	NA	$99.17	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	$215.69	Support:	$99.17	Maint:	$0.00

Total work team cost/hour: **$314.86**

MATERIAL QUANTITIES

Initial volume: 4,604 CCY Swell factor: 1.060
Loose volume: **4,880** LCY

Source of estimated volume: Operator's estimate PR-8
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight:	2,850	Pounds/LCY
Description:	User Provided	
Rated Payload:	35,400	Pounds
Payload Capacity:	12.42	LCY

Truck Bed (volume) Basis:

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 3 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.090	minutes
	Adjusted Loader Cycle Time:	**0.393**	minutes
	Net Load Time per Truck:	**0.885**	minutes

Truck Cycle Time:

Truck Exchange Time: 0.50 Minutes Adjusted for site altitude: 0.500 Minutes

Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1120.00	2.00	5.00	7.00	1568	0.747

Haul Time: **0.747** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1120.00	-2.00	5.00	3.00	2874	0.415

Return Time: **0.415** minutes
Total Truck Cycle Time: **3.447** minutes

Loading Tool unit Production: 494.19 LCY/Hour — Adjusted for job efficiency: 410.18 LCY/Hour
Truck Unit Production: 198.56 LCY/Hour — Adjusted for job efficiency: 164.81 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) — Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 329.62 LCY/Hour
Adjusted single truck/loader team production: 329.62 LCY/Hour
Adjusted multiple truck/loader team production: **329.62** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **14.81** Hours

Unit cost: $0.955 /LCY — Total job cost: **$4,662**

TRUCK/LOADER TEAM WORK

Task description: **King II - Haul office fill to portal cuts/acc rd/wtr tank**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 303 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-303
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	OBSOLETE - CAT 938H
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	$22.16	$25.66	NA	$25.66	NA	NA
Operating cost/hour:	$42.40	$32.31	NA	$32.31	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$30.37	$41.20	NA	$41.20	NA	NA
Unit Subtotals:	$94.93	$99.17	NA	$99.17	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	$289.03	Support:	$99.17	Maint:	$0.00

Total work team cost/hour: **$388.20**

MATERIAL QUANTITIES

Initial volume: 18,217 CCY Swell factor: 1.165
Loose volume: **21,223** LCY

Source of estimated volume: Map King II-007: portal 18148 yds, fan port/wtr tank 4673 yd
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight:	2,700	Pounds/LCY
Description:	User Provided	
Rated Payload:	50,300	Pounds
Payload Capacity:	18.63	LCY

Truck Bed (volume) Basis:

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.080	minutes
	Adjusted Loader Cycle Time:	**0.403**	minutes
	Net Load Time per Truck:	**1.308**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	490.00	3.00	5.00	8.00	1381	0.397

Haul Time: **0.397** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	490.00	-3.00	5.00	2.00	2905	0.204

Return Time: **0.204** minutes

Total Truck Cycle Time: **3.309** minutes

Loading Tool unit Production: 504.90 LCY/Hour — Adjusted for job efficiency: 419.06 LCY/Hour

Truck Unit Production: 275.83 LCY/Hour — Adjusted for job efficiency: 228.94 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) — Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 457.89 LCY/Hour

Adjusted single truck/loader team production: 419.06 LCY/Hour

Adjusted multiple truck/loader team production: **419.06** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **50.64** Hours

Unit cost: $0.926 /LCY — Total job cost: **$19,660**

BULLDOZER WORK

Task description: **King II - grade portal cuts, access roads, water tank pad**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 304 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-304
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 16,562
Swell factor: 1.165
Loose volume: **19,295** LCY

Source of estimated volume: Map King II-007C
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3566

Adjusted unit production: 499.24 LCY/hr

Adjusted fleet production: **499.24** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.399/LCY

Total job time: **38.65** Hours

Total job cost: **$7,705**

COMPACTION WORK

Task description: **King II-Compact fill on portal cuts/access rd/water tank pad**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	305	State:	Colorado	Abbreviation:	None
Date:	5/8/2017	County:	La Plata	Filename:	C035-305
User:	JHB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	CAT 825H	Horsepower:	354
Compactor Type:	Soil - tamping foot	Shift Basis:	1 per day
		Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$103.01	NA
Operating Cost/Hour:	$74.57	100
Operator Cost/Hour:	$26.32	NA
Total Unit Cost/Hour:	$203.90	
Total Fleet Cost/Hour:	**$203.90**	

MATERIAL QUANTITIES

Loose volume:	22,821	LCY	Shrinkage factor:	0.750
Compacted volume:	**17,116**	CCY		

Source of estimated volume: Tasks 302 and 303

Source of estimated shrinkage factor: Cat Handbook

HOURLY PRODUCTION

Unadjusted hourly production = (W x S x L x C) / P

Compacted width per pass (W):	7.34	feet
Average Compactor Speed (S):	5.00	mph
Compacted thickness of each lift (L):	10.00	inches
Conversion Constant (C):	16.3	(5,280ft./12in./27cu.ft.)
Required number of machine passes (P):	5	passes
Unadjusted Hourly Unit Production:	1,196.42	CCY/hour

Job Condition Correction Factors

Site Altitude: 7,300 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.8300	multiplier

Adjusted Hourly Unit Production:	993.03	CCY/Hour
Adjusted Hourly Fleet Production:	**993.03**	CCY/Hour

JOB TIME AND COST

Fleet size:	1	Compactor(s)	Total job time:	**17.24**	Hours
Unit cost:	$0.205	per CCY	Total job cost:	**$3,514**	

BULLDOZER RIPPING WORK

Task description: **King II - Rip portal, access rd., coal sales areas**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 306 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-306
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper Ownership Cost/Hour:	$7.55	NA
Ripper Operating Cost/Hour:	$7.21	100
Operator Cost/Hour:	$41.85	NA
Total Unit Cost/Hour:	$206.59	

Total Fleet Cost/Hour: **$206.59**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic:	NA		Bank Volume:	NA	BCY	NA	
Area:	16.98	acres	Rip Depth (ft):	2.00	Volume:	54,789	BCY or CCY

Source of estimated quantity: Page 2.05.3-3

HOURLY PRODUCTION

Seismic:

Seismic Velocity:	NA	feet/second

Area:

Average Ripping Depth:	1.00	mph
Average Ripping Width:	7.08	degrees
Average Ripping Length:	50.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.596	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	0.596	Acres/hr
Site Altitude:	7,400	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Adjusted Hourly Unit Production:	0.49	Acres/hr
Adjusted Hourly Fleet Production:	**0.49**	Acres/hr

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**34.33**	Hours
Unit cost:	$417.652	Per acre	Total job cost:	**$7,092**	

BULLDOZER WORK

Task description: **King II - grade portal cuts, access roads, water tank pad**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 307 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-307
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 54,789
Swell factor: 1.000
Loose volume: **54,789** LCY

Source of estimated volume: Page 2.05.3-3, 16.98 ac x 2' depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3566

Adjusted unit production: 499.24 LCY/hr
Adjusted fleet production: **499.24** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.399/LCY

Total job time: **109.74** Hours
Total job cost: **$21,880**

BULLDOZER WORK

Task description: **King II - remove east and west cleanwater ditches**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 308 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-308
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 3,235
Swell factor: 1.330
Loose volume: **4,303** LCY

Source of estimated volume: West:4x3x2480 - East: 10x3x1920

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3566

Adjusted unit production: 499.24 LCY/hr
Adjusted fleet production: **499.24** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.399/LCY

Total job time: **8.62** Hours
Total job cost: **$1,718**

BULLDOZER WORK

Task description: **King II - construct drainage channel in Cochrane Canyon**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 309 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-309
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 2,133
Swell factor: 1.000
Loose volume: **2,133** LCY

Source of estimated volume: Mp King II-011A, Post-Mining X-Section Plan
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr
Adjusted fleet production: **608.16** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.328/LCY

Total job time: **3.51** Hours
Total job cost: **$699**

BULLDOZER WORK

Task description: **King II - construct channel in office drainage**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 310 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-310
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 2,756
Swell factor: 1.000
Loose volume: **2,756** LCY

Source of estimated volume: Mp King II-011A, Post-Mining X-Section Plan,

	10x3x2480
Source of estimated swell factor:	Cat Handbook

HOURLY PRODUCTION

Average push distance:	50 feet
Unadjusted hourly production:	1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient:	0 %
Average site altitude:	7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4344

Adjusted unit production:	608.16 LCY/hr
Adjusted fleet production:	**608.16** LCY/hr

JOB TIME AND COST

Fleet size:	1 Dozer(s)
Unit cost:	$0.328/LCY
Total job time:	**4.53** Hours
Total job cost:	**$904**

BULLDOZER WORK

Task description: **King II - backfill pond**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 311 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-311
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 9,993
Swell factor: 1.125
Loose volume: **11,242** LCY

Source of estimated volume: Pond design
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: User Provided

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr

Adjusted fleet production: **608.16** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.328/LCY

Total job time: **18.49** Hours

Total job cost: **$3,686**

BULLDOZER RIPPING WORK

Task description: **King II - Rip coal sales area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	312	State:	Colorado	Abbreviation:	None
Date:	5/8/2017	County:	La Plata	Filename:	C035-312
User:	JHB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU	Horsepower:	310
Ripper Attachment:	3-Shank Ripper	Shift Basis:	1 per day
		Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper Ownership Cost/Hour:	$7.55	NA
Ripper Operating Cost/Hour:	$7.21	100
Operator Cost/Hour:	$41.85	NA
Total Unit Cost/Hour:	$206.59	

Total Fleet Cost/Hour: **$206.59**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic:	NA		Bank Volume:	NA	BCY	NA	
Area:	1.70	acres	Rip Depth (ft):	2.00	Volume:	5,485	BCY or CCY

Source of estimated quantity: Map King II-007

HOURLY PRODUCTION

Seismic:

Seismic Velocity:	NA	feet/second

Area:

Average Ripping Depth:	1.00	mph
Average Ripping Width:	7.08	degrees
Average Ripping Length:	50.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.596	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	0.596	Acres/hr
Site Altitude:	7,400	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier
Adjusted Hourly Unit Production:	0.49	Acres/hr
Adjusted Hourly Fleet Production:	**0.49**	Acres/hr

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**3.44**	Hours
Unit cost:	$417.652	Per acre	Total job cost:	**$710**	

BULLDOZER WORK

Task description: **King II - Grade haul road**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 313 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-313
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $199.38
Total Fleet Cost/Hour: **$199.38**

MATERIAL QUANTITIES

Initial Volume: 5,485
Swell factor: 1.330
Loose volume: **7,295** LCY

Source of estimated volume: 1.7 acres x 2' depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)

Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3949

Adjusted unit production: 552.86 LCY/hr

Adjusted fleet production: **552.86** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.361/LCY

Total job time: **13.20** Hours

Total job cost: **$2,631**

MISCELLANEOUS TRUCK WORK

Task description: **Water truck for dust control**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	314	State:	Colorado	Abbreviation:	None
Date:	5/8/2017	County:	La Plata	Filename:	C035-314
User:	JHB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Make and Model:	Water Tanker, 2,500 Gal.	Horsepower:	150
Attachment 1:		Shift Basis:	1 per day
Attachment 2:		Weight:	5.25
Labor Unit 1:	Tanker Driver - 1 rear axle		(US Tons)
Labor Unit 2:			

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$7.88	NA
Operating Cost/Hour:	$14.74	100
Operator Cost/Hour:	$21.39	NA
Total Unit Cost/Hour:	$44.01	

Total Fleet Cost/Hour: $44.01

JOB TIME AND COST

Fleet size: 1 Truck(s) Total job time: **240.00** Hours

Unit cost: $44.01 /Hour Total job cost: **$10,562**

TRUCK/LOADER TEAM WORK

Task description: **King II - distribute topsoil from Cochrane stockpile**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 401 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-401
User: JHB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	OBSOLETE - CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	OBSOLETE - CAT 938H
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	$22.16	$25.66	NA	$25.66	NA	NA
Operating cost/hour:	$42.40	$32.31	NA	$32.31	NA	NA
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$30.37	$41.20	NA	$41.20	NA	NA
Unit Subtotals:	$94.93	$99.17	NA	$99.17	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	$289.03	Support:	$99.17	Maint:	$0.00

Total work team cost/hour: **$388.20**

MATERIAL QUANTITIES

Initial volume: 27,699 CCY Swell factor: 1.215
Loose volume: **33,654** LCY

Source of estimated volume: 22.36 ac - 1.5 ponds
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight:	1,600	Pounds/LCY
Description:	Top Soil	
Rated Payload:	50,300	Pounds
Payload Capacity:	31.44	LCY

Truck Bed (volume) Basis:

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.080	minutes
	Adjusted Loader Cycle Time:	**0.403**	minutes
	Net Load Time per Truck:	**1.308**	minutes

Truck Cycle Time:

Truck Exchange Time: 0.50 Minutes Adjusted for site altitude: 0.500 Minutes

Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 1" tire penetration 4.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	2.00	4.00	6.00	1855	1.158

Haul Time: **1.158** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	-2.00	4.00	2.00	2905	0.723

Return Time: **0.723** minutes

Total Truck Cycle Time: **4.589** minutes

Loading Tool unit Production: 504.90 LCY/Hour — Adjusted for job efficiency: 419.06 LCY/Hour

Truck Unit Production: 198.89 LCY/Hour — Adjusted for job efficiency: 165.08 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) — Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 330.15 LCY/Hour

Adjusted single truck/loader team production: 330.15 LCY/Hour

Adjusted multiple truck/loader team production: **330.15** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **101.93** Hours

Unit cost: $1.176 /LCY — Total job cost: **$39,571**

MOTOR GRADER WORK

Task description: **King II - finish grade topsoil area**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	402	State:	Colorado	Abbreviation:	None
Date:	5/8/2017	County:	La Plata	Filename:	C035-402
User:	JHB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	CAT 12M	Horsepower:	158
Ripper Attachment:	Multi-Shank Ripper	Shift Basis:	1 per day
		Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$28.02	NA
Operating Cost/Hour:	$28.28	100
Ripper Ownership Cost/Hour:	$1.99	NA
Ripper Operating Cost/Hour:	$0.00	0
Operator Cost/Hour:	$28.90	NA
Total Unit Cost/Hour:	$87.19	

Total Fleet Cost/Hour: **$87.19**

MATERIAL QUANTITIES

Total Area to be graded or ripped: 22.36 acres

Source of estimated acreage: Section 2.05.3 of permit application

HOURLY PRODUCTION

Average Grader Speed:	1.25	mph
Selected Application:	Production Deration - 1.25	
Selected Blade Angle:	30	degrees
Effective Blade Length:	10.40	feet
Width of blade overlap per pass:	2.00	feet
Net grading or ripping width per pass:	8.40	feet
Unadjusted Hourly Unit Production:	1.2727	acres/hour

Job Condition Correction Factors Site Altitude: 7400 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.85	(1sh/d, mod.)
Net Correction:	0.8500	multiplier

Adjusted Hourly Unit Production: 1.0818 acres/Hour

Adjusted Hourly Fleet Production: **1.0818** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **20.67** Hours

Unit cost: $80.60 per acre Total job cost: **$1,802**

REVEGETATION WORK

Task description: **King II revegetate Rangeland Areas (19.36 acres)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 403 State: Colorado Abbreviation: None
Date: 5/8/2017 County: La Plata Filename: C035-403
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.34	$51.00
			Total Fertilizer Materials Cost/Acre	**$51.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Native	0.60	9.79	$8.70
Indian Ricegrass - Native	1.45	4.69	$10.15
Mountain Brome - Bromar	1.74	2.80	$7.57
Sideoats Grama - Butte	1.00	3.28	$9.67
Burnett, Small (or Little) - Delar	2.90	3.66	$7.25
Slender Wheatgrass - Native	1.24	4.53	$3.50
Western Wheatgrass - Native	2.18	5.51	$15.26
Globemallow, Scarlet (or copper)	0.44	4.98	$59.62
Totals Seed Mix	11.55	39.24	**$121.72**

Application

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	$232.00
Total Seed Application Cost/Acre	**$232.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$66.02
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$165.34**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	19.36	Cost /Acre:	$1,236.68
Estimated Failure Rate:	50%	Cost /Acre*:	$1,236.68
*Selected Replanting Work Items:	FERTILIZING,SEEDING,MULCHING		

Initial Job Cost:	**$23,942.12**
Reseeding Job Cost:	**$11,971.06**
Total Job Cost:	**$35,913**
Job Hours:	**20.00**

REVEGETATION WORK

Task description: **King II revegetate Pinyon-Juniper areas (3 acres)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 404 State: Colorado Abbreviation: None
Date: 5/9/2017 County: La Plata Filename: C035-404
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.34	$51.00
			Total Fertilizer Materials Cost/Acre	**$51.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bitterbrush, Antelope	8.71	2.68	$169.85
Blue Grama - Native	0.60	9.79	$8.70
Indian Ricegrass - Native	1.45	4.69	$10.15
Mountain Brome - Bromar	1.74	2.80	$7.57
Sideoats Grama - Butte	1.00	3.28	$9.67
Burnett, Small (or Little) - Delar	2.90	3.66	$7.25
Slender Wheatgrass - Native	1.24	4.53	$3.50
Mahogany, Mountain	4.84	6.56	$178.16
Western Wheatgrass - Native	2.18	5.51	$15.26
Globemallow, Scarlet (or copper)	0.44	4.98	$59.62
Sumac, Skunkbrush	4.36	2.04	$91.56
Winter Fat	1.94	4.94	$39.77

Totals Seed Mix	31.40	55.46	**$601.05**

Application

Description	**Cost /Acre**
Drill Seeding (DRMS Survey Cost)	$232.00
Total Seed Application Cost/Acre	**$232.00**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	**Cost /Acre**
Crimping, with tractor {DMG survey data}	$66.02
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$165.34**

NURSERY STOCK PLANTING

Common Name	**No / Acre**	**Type and Size**	**Planting Cost**	**Fertilizer Pellet Cost**	**Cost /Acre**
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	3	Cost /Acre:	$1,716.01
Estimated Failure Rate:	50%	Cost /Acre*:	$1,716.01
*Selected Replanting Work Items:	FERTILIZING,SEEDING,MULCHING		

Initial Job Cost:	**$5,148.03**
Reseeding Job Cost:	**$2,574.02**
Total Job Cost:	**$7,722**
Job Hours:	**3.00**

REVEGETATION WORK

Task description: **King II-seed water line corridor (0.47 ac)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 406 State: Colorado Abbreviation: None
Date: 5/9/2017 County: La Plata Filename: C035-406
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.34	$51.00
			Total Fertilizer Materials Cost/Acre	**$51.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$13.35
Switchgrass - Pathfinder	0.75	6.70	$7.48
Mountain Brome - Bromar	1.82	2.92	$7.92
Burnett, Small (or Little) - Delar	2.61	3.30	$6.53
Sheep Fescue - Bighorn	0.31	4.84	$1.47
Thickspike Wheatgrass - Critana	1.16	4.10	$6.66
Western Wheatgrass - Native	2.54	6.41	$17.78
Flax, Lewis Blue	0.46	3.05	$7.59
Totals Seed Mix	11.39	36.92	**$68.76**

Application

Description	Cost /Acre
Tractor spreader (MEANS 32 92 19.14 0100)	$548.86
Total Seed Application Cost/Acre	**$548.86**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Total Mulch Application Cost/Acre	**$99.32**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	0.47	Cost /Acre:	$1,434.56
Estimated Failure Rate:	50%	Cost /Acre*:	$617.62
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$674.24**
Reseeding Job Cost:	**$145.14**
Total Job Cost:	**$819**
Job Hours:	**1.25**

BOREHOLE SEALING WORK

Task description: **Seal Boreholes CO-14-01 through CO-14-09**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 409 State: Colorado Abbreviation: None
Date: 5/9/2017 County: La Plata Filename: C035-409
User: JHB

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plugs	Stainless steel plug - 6 in. diameter borehole	6	NA	18.00	EA	$140.75	$2,533.50
Seal Holes	Portland cement grout (Bag, material cost only...94 lb. bag)	6	27	27.45	bag	$10.55	$289.60
Cut Casing	Exposed casing removal - Calculate Circumference in Linear Feet	6	14.14	14.14	LF	$1.77	$25.03
Hole Marker	Borehole location/identification marker (EA, material cost only)	NA	NA	9.00	EA	$3.67	$33.03
Drill Rig Time	GENERIC 3.0 in. - 1, 700 ft. capy.	NA	NA	36.00	EA	$26.04	$937.44
Water Truck Time	Water Tanker, 2,500 Gal.	NA	NA	36.00	EA	$22.62	$814.32

Job Hours: **36.00** **Total Cost**: **$4,633.00**

BULLDOZER WORK

Task description: **Regrade drill pads and pits CO-14-01 through CO-14-09**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	410	State:	Colorado	Abbreviation:	None
Date:	5/9/2017	County:	La Plata	Filename:	C035-410
User:	JHB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D5K XL - 5P
Horsepower:	96
Blade Type:	Power Angle Tilt
Attachment:	NA
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$22.82	NA
Operating Cost/Hour:	$22.47	100
Ripper own. Cost/Hour:	$0.00	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $87.14
Total Fleet Cost/Hour: **$87.14**

MATERIAL QUANTITIES

Initial Volume:	833
Swell factor:	1.165
Loose volume:	**971** LCY

Source of estimated volume: 9 pads, 50’ x 50’, 1’ depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 464.3 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.600	(FND-SF)

Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2962

Adjusted unit production: 137.53 LCY/hr

Adjusted fleet production: **137.53** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.634/LCY

Total job time: **7.06** Hours

Total job cost: **$615**

BULLDOZER WORK

Task description: **Replace topsoil on CO-14-01 through CO-14-09 disturbance**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	411	State:	Colorado	Abbreviation:	None
Date:	5/9/2017	County:	La Plata	Filename:	C035-411
User:	JHB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D5K XL - 5P
Horsepower:	96
Blade Type:	Power Angle Tilt
Attachment:	NA
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$22.82	NA
Operating Cost/Hour:	$22.47	100
Ripper own. Cost/Hour:	$0.00	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $87.14
Total Fleet Cost/Hour: **$87.14**

MATERIAL QUANTITIES

Initial Volume:	417
Swell factor:	1.125
Loose volume:	**469** LCY

Source of estimated volume: 9 pads, 50’ x 50’, 0.5’ depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 464.3 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,550 lbs/LCY

Weight description: Earth - Dry packed

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.600	(FND-SF)

Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3369

Adjusted unit production: 156.42 LCY/hr

Adjusted fleet production: **156.42** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.557/LCY

Total job time: **3.00** Hours

Total job cost: **$261**

REVEGETATION WORK

Task description: **King II-Broadcast seed CO-14-01 thru CO-09 disturbance**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 412 State: Colorado Abbreviation: None
Date: 5/9/2017 County: La Plata Filename: C035-412
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
			Total Fertilizer Materials Cost/Acre	**$0.00**

Application

Description	Cost /Acre
	$
Total Fertilizer Application Cost/Acre	**$0.00**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	3.48	11.18	$26.69
Switchgrass - Pathfinder	1.50	13.40	$14.96
Mountain Brome - Bromar	3.64	5.85	$15.83
Burnett, Small (or Little) - Delar	5.22	6.59	$13.05
Sheep Fescue - Bighorn	0.62	9.68	$2.93
Thickspike Wheatgrass - Critana	2.32	8.20	$13.32
Western Wheatgrass - Native	5.08	12.83	$35.56
Flax, Lewis Blue	0.92	6.10	$15.18
Totals Seed Mix	22.78	73.83	**$137.52**

Application

Description	Cost /Acre
Broadcast seeding [DMG]	$267.22
Total Seed Application Cost/Acre	**$267.22**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$522.00**

Application

Description	Cost /Acre
Hand spread, 1" deep (MEANS 32 91 13.16 0200)	$3,097.60
Total Mulch Application Cost/Acre	**$3,097.60**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	0.52	Cost /Acre:	$4,024.34
Estimated Failure Rate:	50%	Cost /Acre*:	$404.74
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$2,092.66**
Reseeding Job Cost:	**$105.23**
Total Job Cost:	**$2,198**
Job Hours:	**9.00**

BOREHOLE SEALING WORK

Task description: **King II - seal downgradient monitoring well**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 500 State: Colorado Abbreviation: None
Date: 5/9/2017 County: La Plata Filename: C035-500
User: JHB

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Seal Hole	Granular bentonite (Bag, material cost only...50 lb. bag)	4	15	10.00	bag	$18.60	$186.00
Cut Casing	Exposed casing removal - Calculate Circumference in Linear Feet	4	1.05	1.05	LF	$1.77	$1.86
Mark Hole	Borehole location/identification marker (EA, material cost only)	4	1	1.00	EA	$3.67	$3.67
Drill Rig Time	GENERIC 3.0 in. - 1, 700 ft. capy.	4	15	4.00	EA	$26.04	$104.16
Water Truck Time	Water Tanker, 2,500 Gal.	4	15	4.00	EA	$22.62	$90.48

Job Hours: **4.00** **Total Cost**: **$386.00**

BOREHOLE SEALING WORK

Task description: **Plug and Seal MW-1, 2, 3 and 4 Clusters (12 Wells) TR26**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 501 State: Colorado Abbreviation: None
Date: 5/9/2017 County: La Plata Filename: C035-501
User: JHB

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Install Plugs, Cliffhouse SS, 4 x 6" wells	PVC plug - 6 in. diameter borehole	6	NA	4.00	EA	$54.14	$216.56
Install Plugs, "A: Coal Seam and Menefee Interburden, 8 x 2" Wells	PVC plug - 2 in. diameter borehole	2	NA	8.00	EA	$21.67	$173.36
Seal Wells	Portland cement grout (Bag, material cost only...94 lb. bag)	4x6" & 8x2"	1031	68.00	bag	$10.55	$717.40
Cut Casings	Exposed casing removal - Calculate Circumference in Linear Feet	7"	4 x 7"	7.30	LF	$1.77	$12.92
Cut Casings	Exposed casing removal - Calculate Circumference in Linear Feet	6"	8x6"	12.60	LF	$1.77	$22.30
Install Markers	Borehole location/identification marker (EA, material cost only)	NA	NA	12.00	EA	$3.67	$44.04
Drill Rig	ATLAS COPCO ROC D7-11,4.0 in.	NA	NA	53.00	EA	$130.16	$6,898.48
Water Truck	Water Tanker, 2,500 Gal.	NA	NA	53.00	EA	$22.62	$1,198.86

Job Hours: **53.00** **Total Cost**: **$9,284.00**

DEMOLITION WORK

Task description: **Remove MW-1,2,3,4 Well Clusters Cement Pads/Poles TR26**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	502	State:	Colorado	Abbreviation:	None
Date:	5/10/2017	County:	La Plata	Filename:	C035-502
User:	JHB				

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 93.10 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Cement Pads 3'x3'x4" Pads x 6 Pads	3'x3'x4" Pad/well	Demo. and on-site disposal in existing pit, 4 in. thick - Max. 50 ft. push	72.00	SF	$0.40	$28.66
4" x 6' Steel poles	48(4" dia. X 6' poles)	Pipe, steel, welded connections - 4 in. diameter pipe	288.00	LF	$1.16	$334.08
disposal of poles	48 poles	Dump fees - Rubbish only	2.10	CY	$9.45	$19.85

Job Hours: **0.00** **Subtotal (unadjusted)**: **$382.59** **Total Cost (adjusted for location)**: **$356.19**

BULLDOZER WORK

Task description: **Regrade drill pads and pits (MW-1, 2, 3, 4)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	503	State:	Colorado	Abbreviation:	None
Date:	5/10/2017	County:	La Plata	Filename:	C035-503
User:	JHB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D6T XL
Horsepower:	185
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$46.87	NA
Operating Cost/Hour:	$41.52	100
Ripper own. Cost/Hour:	$3.40	NA
Ripper op. Cost/Hour:	$1.00	50
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $134.64
Total Fleet Cost/Hour: **$134.64**

MATERIAL QUANTITIES

Initial Volume:	370
Swell factor:	1.165
Loose volume:	**431** LCY

Source of estimated volume: 4 Clusters, 50' x50', 1' depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 444.6 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))

Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3554

Adjusted unit production: 158.01 LCY/hr

Adjusted fleet production: **158.01** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.852/LCY

Total job time: **2.73** Hours

Total job cost: **$367**

BULLDOZER WORK

Task description: **Replace Topsoil on Well Clusters (TR26)**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	504	State:	Colorado	Abbreviation:	None
Date:	5/10/2017	County:	La Plata	Filename:	C035-504
User:	JHB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D6T XL
Horsepower:	185
Blade Type:	Semi-Universal
Attachment:	NA
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$46.87	NA
Operating Cost/Hour:	$41.52	100
Ripper own. Cost/Hour:	$0.00	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.85	NA

Total unit Cost/Hour: $130.24
Total Fleet Cost/Hour: **$130.24**

MATERIAL QUANTITIES

Initial Volume:	539
Swell factor:	1.000
Loose volume:	**539** LCY

Source of estimated volume: Depths from Section 2.04.9
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 444.6 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %
Average site altitude: 0,050 feet

Material weight: 1,600 lbs/LCY

Weight description: Top Soil

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)

Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.7877

Adjusted unit production: 350.21 LCY/hr

Adjusted fleet production: **350.21** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.372/LCY

Total job time: **1.54** Hours

Total job cost: **$200**

REVEGETATION WORK

Task description: **Revegetation; MW-1,2,3,4 Well Cluster Pads**

Site: **King Coal Mine** Permit Action: RN7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 505 State: Colorado Abbreviation: None
Date: 5/10/2017 County: La Plata Filename: C035-505
User: JHB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
			Total Fertilizer Materials Cost/Acre	**$0.00**

Application

Description	Cost /Acre
	$
Total Fertilizer Application Cost/Acre	**$0.00**

TILLING

Description	Cost /Acre
Hand raking (MEANS 32 91 13.23 0250)	$1,328.58
Total Tilling Cost/Acre	**$1,328.58**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Lovington	1.20	19.59	$19.50
Indian Ricegrass - Paloma	2.90	9.39	$28.28
Bitterbrush, Antelope	17.42	5.36	$339.69
Mountain Brome - Bromar	3.48	5.59	$15.14
Sideoats Grama - Butte	2.00	6.57	$19.34
Burnett, Small (or Little) - Delar	5.80	7.32	$14.50
Slender Wheatgrass - San Luis	2.48	9.05	$8.04
Mahogany, Mountain	9.68	13.11	$356.32
Western Wheatgrass - Arriba	4.36	11.01	$35.23
Globemallow, Scarlet (or copper)	0.88	9.96	$119.24
Sumac, Skunkbrush	8.72	4.08	$183.12
Winter Fat	3.88	9.89	$79.54
		110.92	**$1,217.93**

Totals Seed Mix	62.80		

Application

Description	**Cost /Acre**
Broadcast seeding [DMG]	$267.22
Total Seed Application Cost/Acre	**$267.22**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
			$	$
Total Mulch Materials Cost/Acre				**$0.00**

Application

Description	**Cost /Acre**
	$
Total Mulch Application Cost/Acre	**$0.00**

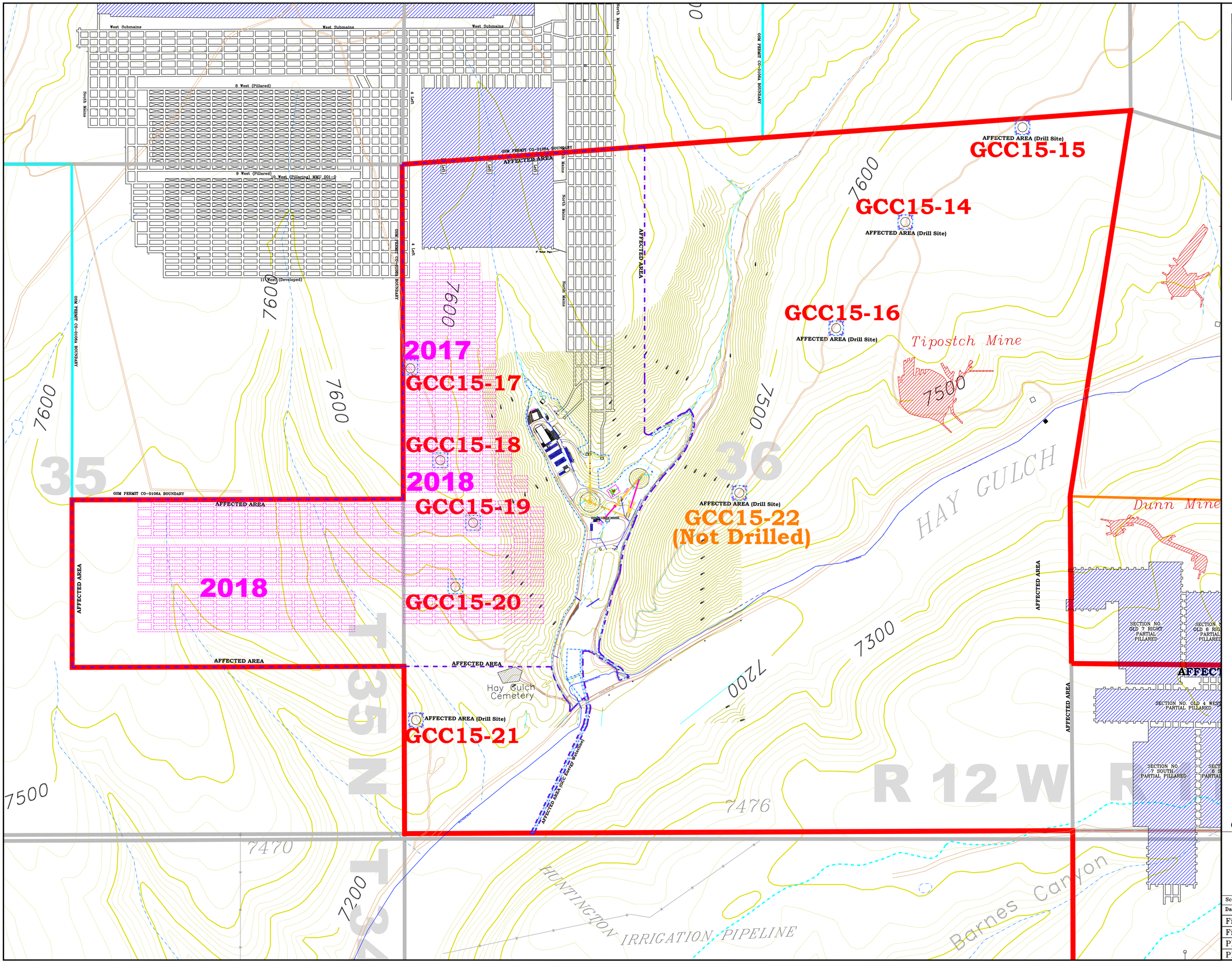
NURSERY STOCK PLANTING

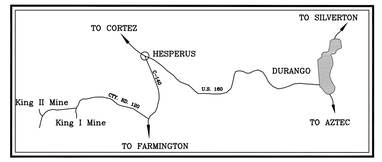
Common Name	**No / Acre**	**Type and Size**	**Planting Cost**	**Fertilizer Pellet Cost**	**Cost /Acre**
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	1	Cost /Acre:	$2,813.73
Estimated Failure Rate:	20%	Cost /Acre*:	$1,485.15
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$2,813.73**
Reseeding Job Cost:	**$297.03**
Total Job Cost:	**$3,111**
Job Hours:	**1.00**





LEGEND

- PERMIT BOUNDARY: CDRMS PERMIT C-1985-035
- PERMIT BOUNDARY: OSMRE PERMIT CO-0106A
- PERMIT BOUNDARY: OSMRE PERMIT CO-0101A
- AFFECTED AREA BOUNDARY
- AREAL EXTENT OF SURFACE DISTURBANCE
- TOWNSHIP & SECTION BOUNDARIES
- UNDERGROUND MINE WORKINGS
- 2018 PROJECTED UNDERGROUND MINE DEVELOPMENT, YEAR
- GCC15-15 TR-22 DRILL HOLE LOCATIONS
- OLD MINES
- AREA WHERE PILLERS HAVE BEEN REMOVED (PULLED)
- ROADS

REVISIONS

DATE	DESCRIPTION
04/30/18	TR-24/MT-07 Mid-Term Review Updates
07/14/15	TR-24/MT-07 Adequacy Review #1 Updates
03/22/16	TR-24/MT-07, Surface Disturbance Boundary Correction
07/28/16	TR-24/MT-07, Clarify Disturbed Area & Affected Area Polygons
07/11/17	RN-07 Preliminary Adequacy Review #1 Updates
08/14/17	RN-07 Adequacy Review #2 Updates

I, _____, a professional engineer, certify that the information on this map is correct to the best of my knowledge and belief.

0' 300' 600' 900'

Scale: 1" = 300'

GCC Energy

GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326
Colorado Mining Permit C-1981-035

King II-005
Mine Plan Map

Scale:	1" = 300'	Designed By:	Tom Bird
Date:	08/14/17	Drawn By:	Tom Bird
File Path:	Environmental\King II\Permit Maps		
File Name:	King II-005 Mine Plan		
Plot Date:	08/14/17		
Plot Time:	9:55 am		