COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, Colorado 80203

September 09, 2016

Andre LaRoche
Transit Mix Concrete Co.
444 E. Costilla St.
Colorado Springs, CO 80903

RE: Hitch Rack Ranch Quarry, File No. M-2016-010, 112 Construction Materials Reclamation Permit Application, Adequacy Review No. 4

Mr. LaRoche:

The Division of Reclamation, Mining and Safety (Division) has completed its fourth adequacy review of the above referenced permit application. Pursuant to Rule 1.4.1(9), the Division's recommendation deadline for the application has been extended to October 04, 2016. However, pursuant to Rule 1.4.9(2)(c), the Division's recommendation and rationale for its recommendation shall be sent to the applicant and to all objectors of record at least three working days prior to the Pre-hearing Conference, currently scheduled to occur on October 05, 2016. Therefore, the Division's recommendation deadline has been moved up from October 04, 2016 to September 29, 2016. Please be advised, on September 29, 2016, the application may be deemed inadequate and consequentially denied unless the following adequacy items are addressed to the Division's satisfaction.

Exhibit D – Mining Plan (Rule 6.4.4):

1. In the Pre-Blast Survey Plan, Table 1: Water Quality Monitoring Parameters, please add the following parameters to be analyzed in water quality samples collected from local groundwater wells: Color, Corrosivity, Foaming Agents, and Odor.

   Although these standards are considered Secondary Drinking Water Standards, the Division requires them to be analyzed in the Pre-Blast Survey to aid in better identification of potential impacts to water quality in groundwater wells after mining activities have commenced.

Exhibit G - Water Information (Rule 6.4.7):

2. In the groundwater monitoring plan, Table 2.2: Groundwater Sample Suite, please add the following parameters to be analyzed in water quality samples collected on site: Color, Corrosivity, Foaming Agents, and Odor.

   Although these standards are considered Secondary Drinking Water Standards, the Division requires them to be analyzed at least for the five calendar quarters of groundwater quality data to be collected for baseline characterization.

Exhibit L - Reclamation Costs (Rule 6.4.12):

3. The text was not revised correctly per item no. 20 of the Division's adequacy review no. 3. The text was revised to state "All slopes will be regraded to achieve slope angle of 1H:1V or less steep". However, the proposed reclamation plan describes all disturbed slopes (other than pit highwalls) to be graded to slope gradients of 3H:1V or flatter. Please revise this statement accordingly. Please clarify the 1H:1V slope gradient is limited to the highwalls, and all other disturbed slopes will be graded to 3H:1V or flatter.

Exhibit N - Source of Legal Right to Enter (Rule 6.4.14):

4. Please provide a description of the basis for legal right of entry to the site and to conduct mining and reclamation from the surface owner of record of the affected land, RMBC Group, LLC. This may be a copy of access lease, deed, abstract of title, or a current tax receipt. A signed statement by the landowner and acknowledged by a Notary Public stating the Operator/Applicant has legal right to enter and mine is also acceptable.

Exhibit S - Permanent Man-Made Structures (Rule 6.4.19):

5. Please submit damage compensation agreements with RMBC Group, LLC, for the existing Little Turkey Creek Road, Hitch Rack Ranch Road, and any other permanent man-made structures located within the boundary of affected land and within 200 feet of the affected land (e.g., property fencing, gates) which are owned by RMBC Group, LLC. Pursuant to Rule 6.4.19(b), the Division is not authorized to accept an engineering evaluation for any structures until the application demonstrates such agreements have been attempted, but not obtained. Proof of service of the compensation agreements may be in the form of Certified Mail receipts or proof of personal service. Alternatively, if these structures are covered in the lease agreement with RMBC Group, LLC, please provide a copy of the executed lease agreement.

Additional Items:

6. Please address the adequacy items provided by Division staff member, Tim Cazier, regarding issues related to Exhibit G – Water Information, dated August 30, 2016, which was given to the Applicant in person on August 31, 2016, and is also enclosed with this letter.

7. Please address the adequacy items provided by Division staff member, Peter Hays, regarding issues related to Exhibit 6.5 – Geotechnical, dated September 8, 2016, and the Blasting Plan, dated September 8, 2016, both reviews enclosed with this letter.

8. Pursuant to Rules 1.6.2(1)(c) and (2), your response to this adequacy review must be placed with the County Clerk and Recorder and thereby made available for public review. Please provide proof this was done.

9. The Division has calculated the cost of reclamation through full development of mining phase three, totaling $3,766,172. Please find the enclosed cost summary work utilized by the Division to calculate the cost of reclamation. Please review the enclosed financial warranty estimate and submit any questions or comments prior to the recommendation deadline.

Please ensure the Division sufficient time to complete its review process by responding to these adequacy items two weeks prior to the recommendation date, by September 15, 2016. If additional time is needed, please request an extension to the recommendation deadline, currently set at September 29, 2016. The Division reserves the right to further supplement this document with additional adequacy items and details as necessary.

If you have any questions, please contact me by telephone at 303-866-3567, ext. 8129, or by email at amy.eschberger@state.co.us.

Sincerely,

Amy Eschberger

Amy Eschberger
Environmental Protection Specialist

Enclosures:
1) DRMS 2nd Adequacy Review of Exhibit G – Water Information, from Tim Cazier, dated August 30, 2016
2) DRMS 3rd Adequacy Review of Exhibit 6.5 - Geotechnical, from Peter Hays, dated September 8, 2016
3) DRMS 3rd Adequacy Review of Blasting Plan, from Peter Hays, dated September 8, 2016
4) Division's cost summary work for required financial warranty, totaling $3,766,172

ec w/enclosures: Paul Kos, Norwest Corporation
Wally Erickson, DRMS
Tony Waldron, DRMS
Peter Hays, DRMS
Tim Cazier, DRMS

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

Date: August 30, 2016

To: Amy Eschberger

From: Tim Cazier, P.E.

RE: Hitch Rack Ranch Quarry, DRMS File No. M-2016-010;
Second Adequacy Review – Exhibit G, Water Information

The Division of Reclamation, Mining and Safety (Division) engineering staff has reviewed the July 21, 2016 and August 19, 2016 revised Exhibit G Water Information and Exhibit F portions of the 112c mine reclamation permit application prepared by Norwest Corporation for Transit Mix Concrete Company. The following comments are posed to ensure adequate engineering analyses and design practices are implemented to eliminate or reduce to the extent practical the disturbance to the hydrologic balance expected by the mining operation with respect to water quality and quantity in accordance with Rules 3.1.6(1), 6.4.7. The comment numbers below are consistent with the May 3, 2016 preliminary adequacy review for the purpose of tracking responses.

1. Page G-3, paragraph a, Little Turkey Creek. Figure G-5 provides the requested cross-section demonstrating the horizontal and vertical mining offsets, but does not indicate positive drainage will be promoted for either the North Pit Area or the Plant Area/South Pit. The North Pit contours show positive drainage from the northwest towards the southeast, but the southeast portion of the North Pit appears to be contained by an unmined "block" ranging in height from 20 to possible 80 feet. This is also apparent in Figure F-2 for the reclamation plan. A similar, but less prominent blockage may be present in the Plant Area/South Pit, as shown in cross-section A-A' on Figure G-5 where it shows an approximately five-foot rise near Little Turkey Creek that might prevent positive drainage at closure if the rise persists along the creek and until after reclamation is complete. Please provide additional discussion and figures demonstrating how positive drainage will be maintained during operations and after reclamation.
2. Page G-9 *[now p. G-10]*, paragraph b, Deadman Creek. The response is adequate.
3. Page G-9 *[now p. G-10]*, paragraph c, Drainage Discussion. The response is adequate.

4. Page G-11 *[now p. G-12]*, 100-year, 24-hour storm. The response commits to designing stormwater structures using the 100-year, 24-hour storm event as required by the Division, but continues to defer to El Paso County rules and regulations regarding precipitation data, which may be outdated. As explained below, the Division requires the application acknowledge and utilize current references for precipitation data.

   Paragraph a. Site Climate (p. G-12) acknowledges NOAA Atlas 14 has superseded NOAA Atlas 2 (on which the county regulations are based, using data available only prior to 1973), but cites using this older 1973 data. Depending on the "point" selected in the NOAA Atlas 14 (based on data available in 2013), the 100-year, 24-hour precipitation depth can reasonably be expected to be between 5.34 and 5.4 inches. This is 16 to 17 percent higher than the outdated NOAA Atlas 2 selected estimate of 4.6 inches used in the revised analyses. As such, the SEDCAD results in Appendix G-1 are not adequate for Division approval. Please revise the runoff estimates using NOAA Atlas 14 data. Additionally, as the Division requires designs based on the 100-year event, please refrain from providing results to the Division for the 10-year event.

5. Page G-11 *[now p. G-13]*, Table G-3. The response is adequate.

6. Page G-12 *[now p. G-14]*, paragraph a, Ditches. The response is adequate.

7. Page G-12 *[now p. G-14]*, paragraph i, Terrace Ditches. The response is adequate.

8. Page G-13 *[now p. G-15]*, paragraph ii. This paragraph states the PADER method is used for riprap sizing. The response is adequate with the exception of reclamation phase channel DD-F1-1 which Table G-4 indicates has a slope of 25 percent. The USACE EM-1110-2-1601 steep slope method (eq. 3-5) is valid for channels sloped between 2 and 20 percent. An alternative method for sizing riprap for the channel must be selected.

9. Page G-13 *[now p. G-16]*, Table G-4. The response is adequate. Please see Comment No.32.

10. Page G-13 *[now p. G-17]*, paragraph b, Sediment Ponds. The response confirming none of the detention basins will be jurisdictional is adequate.

11. Page G-14 *[now p. G-18]*, paragraph c, Culverts. The response is adequate. Table G-6 was not checked as peak flows will increase based on the response to Comment No. 4.

12. Page G-15 *[now p. G-18]*, Culverts LTC-CC-1 through LTC-CC-6. The response is adequate. However, Table G-6 was not checked as peak flows will increase based on the response to Comment No. 4.

13. Page G-15 *[now p. G-19]*, Table G-6. The response is adequate.

14. Page G-16 *[now p. G-20]*, Paragraph d. The response is adequate.
15. Figure G-5. The purpose of the LTC culverts… The response is adequate.
16. Figure G-6. The response is adequate.
17. Figure G-7. The requested ditch and grade-to-drain directions were not provided. Please provide the requested information.
18. Figure G-8. The requested ditch and grade-to-drain directions were not provided. Please provide the requested information.
19. Figure G-9. The requested ditch and grade-to-drain directions were not provided. Please provide the requested information.
20. Figure G-10. The requested ditch and grade-to-drain directions were not provided. Please provide the requested information.
21. Figure G-11. The requested ditch and grade-to-drain directions were not provided. Please provide the requested information.
22. Figure G-12. The requested ditch and grade-to-drain directions were not provided. Please provide the requested information.
23. Figure G-14. Cross Section A-A' shows an outlet pipe to the creek. The expressed intent "to excavate a trench/notch for the pipe" is an adequate response.
24. Figure G-15. The culvert profile. The expressed response and minimum "1% slope" note added to the drawing provides an adequate response.
25. Attachment G-1, SEDCAD Model Reports – Times of Concentration. The revised SEDCAD times of concentration limiting overland flow lengths is an adequate response. However, the stated initial assumption suggesting vegetative and litter cover would cause overland flow to occur for longer distances demonstrates an incomplete understanding of how excess rainfall flows through a watershed. Greater litter and rough cover actually cause the length of overland (or sheet flow) to decrease. Sheet flow is defined as that which is about 0.1 feet in depth. Litter, rocks and ground debris cause these shallow flows to be deflected around these small obstacles causing rivulets to form; forcing the second category of runoff flow (shallow concentrated flow) to be initiated. Steep slopes have a similar effect by accelerating the sheet flow such that it is more likely to initiate small erosion rills (as is frequently observed on steep unvegetated soil stockpiles), leading to shallow concentrated flow. Shallow concentrated flow is the formation of small rivulets observed between the shallow uniform flow (sheet flow) and the channel flow that occurs in small streams. No additional response to this adequacy issue is necessary.
26. 100-foot horizontal and 1-foot vertical offsets for mining activities… The response is adequate.

New Comments:

27. Page G-18, Table G-5. There appears to be a discrepancy between a sediment pond label in Table G-5 when compared to the Mining Phase figures (Figures G-6x through G-12) and the SEDCAD sediment pond sizing model. Table G-5 lists "F1-DET-1" that cannot be found on the figures, nor in the SEDCAD model, but it has the same contributing area (149.13 acres) as the sediment pond labeled "P-DET-1" on Figure G-6A and in the SEDCAD model. Please correct Table G-5 to be consistent with the figures and SEDCAD model labels.

28. Figures G-6A, B & C:

    a. The former Figure 6 has been converted from one drawing to three which provide a great deal more hydrologic and stormwater management information. However, portions of the drawings are difficult to differentiate the different kinds of information and the lack of major contour labels and arrows indicating direction of flow make it difficult to interpret the intent in some areas. For example, it is difficult to determine which subbasins contribute to which sediment ponds. Please provide major contour labels and channel/ditch flow direction arrows. The Division suggests using different colors to differentiate undisturbed subbasins (and their culverts and/or ditches) from affected area subbasins that have runoff intercepted and directed to sediment ponds. In this case, it would be helpful if affected area subbasins and their labels were the same color.

    b. On both Figures G-6B and C, there are two rational method subbasins labeled "F1". Both have 5.30 acres, and 0.46 and 0.60 runoff coefficients for the 10- and 100-year events. Please correct the drawings.

    c. The reservoir (Glen Cairn Reservoir?) near the proposed access road does not appear on this drawing. Where is the reservoir with respect to the access road and how is sediment prevented from impacting the reservoir?

29. Figures G-7, G-8, G-9 and G-10.

    a. The area "P1" contributing to pond P-DET-1 appears to be identical to the P-1 area on Figure G-6A, but is shown as being 37.88 acres smaller (Note Figures G-9 and G-10 increase this area by 0.05 acres over that shown in Figure G-8). Please provide an explanation for the difference in area.

    b. Also, please provide major contour labels, channel/ditch flow direction arrows, and use color to differentiate which channels contribute to which ponds as suggested in Comment No. 28a.

    c. Please define the "honeycomb" hatch pattern shown in the west end of the North Pit area on the legend.

30. Figures G-8 and G-9. There appears to be a culvert in the expanded portion of the fines stockpile. Please explain whether or not this culvert is accessible for maintenance and if not, remove it as previously directed.

31. Figures G-9, G-10 and G-11. Unimpacted Drainage. The line representing the upland diversion ditch along the west side of the topsoil stockpile (as shown on Figure G-8) does not appear on either of these drawings. How is undisturbed runoff from subbasins P1 and P2 handled?

32. Figure G-12 and Table G-4. The Division could not find closure channel designs or analyses for either the terrace channels on the reclaimed fines stockpile (T-1, T-2, or T-3) or the contact channel along the west side of the south end of the reclaimed fines stockpile (F1b). Please provide the appropriate analyses and designs for these channels.

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

Date: September 8, 2016

To: Amy Eschberger; Division of Reclamation, Mining & Safety

From: Peter Hays; Division of Reclamation, Mining & Safety

Re: Third Review of Exhibit 6.5 - Geotechnical; Transit Mix Concrete Co.; Hitch Rack Ranch Quarry; File No. M-2016-010

The Division of Reclamation, Mining and Safety (Division/DRMS) has reviewed the Galena software compatible geotechnical model inputs included within Exhibit 6.5 of the Hitch Rack Ranch Quarry adequacy letter response dated August 19, 2016 and submits the following comments. The Division is required to make an approval or denial decision no later than October 4, 2016. Therefore, a response to the following Geotechnical Exhibit adequacy review concerns should be submitted to the Division as soon as possible.

1. Please provide the model type and parameter inputs used by Norwest for the Geotechnical Model Analysis (Bench L-E). The models provided for the stockpile analysis indicate Mohr-Coulomb and provide the models parameter inputs. Please provide this information for the Bench L-E models. If Hoek-Brown was used for the Bench L-E models please provide the following input information; unit weight, UCS, “m” and “s” for each rock type.

2. Please provide the SLOPE/W slope stability analysis model inputs for the stockpile models (Sections A-D) from the Norwest analysis included in Appendix C dated June 30, 2016 to allow the Division to duplicate the analysis with Clover Technology’s Galena software for verification purposes.

If you have any questions, please contact me at peter.hays@state.co.us or (303) 866-3567 Ext. 8124.

Ec: Wally Erickson; Division of Reclamation, Mining & Safety
Tim Cazier; Division of Reclamation, Mining & Safety

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

Date: September 8, 2016

To: Amy Eschberger; Division of Reclamation, Mining & Safety

From: Peter Hays; Division of Reclamation, Mining & Safety

Re: Third Review of Blasting Plan; Transit Mix Concrete Co.; Hitch Rack Ranch Quarry; File No. M-2016-010

The Division of Reclamation, Mining and Safety (Division/DRMS) has reviewed the Blasting Plan included within Exhibit D - Mining Plan for the Hitch Rack Ranch Quarry adequacy letter response dated August 19, 2016 and submits the following comments. The Division is required to make an approval or denial decision no later than October 4, 2016. Therefore, a response to the following Blasting Plan adequacy review concerns should be submitted to the Division as soon as possible.

1. In the Mitigation Plan section of the Pre-Blasting Survey Plan included in Exhibit D, the Applicant states in the event a well is determined to be damaged or "dry" and it is determined Transit Mix Concrete Co. is at fault, a new well producing a similar or greater quantity and quality of water as the original well will be drilled at Transit Mix Concrete Co.'s cost. Please commit to installing a new well producing at the historic level or greater if Transit Mix Concrete Co. is determined to be at fault for damage to the well.

2. In the Mitigation Plan section of the Pre-Blasting Survey Plan included in Exhibit D, the Applicant states if DRMS determines blasting at the Hitch Rack Ranch Quarry was the cause for degraded water quality and the quality never returns to the same level of the pre-blast survey, Transit Mix Concrete Co. will, at their cost, drill a new well producing a similar or greater quantity and quality of water as the original well. Please commit to installing a new well producing at the historic level or greater if Transit Mix Concrete Co. is determined to be at fault for the degraded water quality.

If you have any questions, please contact me at peter.hays@state.co.us or (303) 866-3567 Ext. 8124.

Cc: Wally Erickson; Division of Reclamation, Mining & Safety
Tim Cazier; Division of Reclamation, Mining & Safety

COST SUMMARY WORK

Task description: **Cost Summary**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 8/18/2016 County: El Paso Filename: M010-000
User: AME

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Demolition of structures (applicant estimate)	NA	0	80.00	$1,116,431.00
002B	Load/Haul/Grade Subsoil F1 to N Pit Highwall Benches	TRUCK1	1	85.32	$88,537.00
003B	Load/Haul/Grade Topsoil TS1 to N Pit Highwall Benches	TRUCK1	1	41.06	$42,609.00
004B	Load/Haul/Grade Subsoil F1 to N Pit Floor + Haul Rds + Plant	TRUCK1	1	291.87	$302,881.00
005B	Load/Haul/Grade Topsoil TS1 to N Pit Floor + Haul Rds +Plant	TRUCK1	1	171.74	$178,218.00
006B	Load/Haul/Grade Subsoil F1 to Access Rd + E Crossing	TRUCK1	1	400.46	$415,566.00
007	Spread Topsoil Berms on Access Rd + E Crossing	DOZER	2	29.82	$12,662.00
008	Grade F1 Stockpile Area to 3H:1V	DOZER	2	252.69	$107,302.00
009B	Load/Haul/Grade Topsoil TS1 to F1 Stockpile Area	TRUCK1	1	29.54	$30,650.00
010	Revegetation of 156.18 ac - Grasses	REVEGE	1	468.00	$444,818.00
011	Revegetation of 37 ac - Mixed Conifer Slopes	REVEGE	1	111.00	$4,773.00
012	Revegetation of 60.61 ac - Mixed Conifer Pit Floor,Plant,Rds	REVEGE	1	180.00	$7,037.00
013	Revegetation of 16.45 ac - Mountain Shrubland Slopes	REVEGE	1	49.00	$14,923.00
014	Revegetation of 21.69 ac - Mountain Shrubland Access Rd	REVEGE	1	65.00	$29,367.00
015	Revegetation of 1.02 ac - Riparian E Crossing LTC	REVEGE	1	3.00	$1,928.00
016	Revegetation of 0.76 ac - Riparian W Crossing LTC	REVEGE	1	1.00	$1,005.00
017	Revegetation - Planting Materials	DEMOLISH	1	0.00	$30,979.91
018B	Mobilization/Demobilization	MOBILIZE	1	35.20	$111,270.00
		SUBTOTALS:		**2294.7**	**$2,940,957**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$59,407.33
Performance bond:	1.05	Total =	$30,880.05
Job superintendent:	1,219.86	Total =	$90,855.17
Profit:	10.00	Total =	$294,095.70

TOTAL O & P =	$475,238.25
CONTRACT AMOUNT (direct + O & P) =	$3,416,195.25

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	500.00	Total =	500.00
Engineering work and/or contract/bid preparation:	5.23	Total =	$178,667.01
Reclamation management and/or administration:	5.00		$170,809.76
CONTINGENCY:	0.00	Total =	$0.00

TOTAL INDIRECT COST =	$825,215.02
TOTAL BOND AMOUNT (direct + indirect) =	**$3,766,172.02**

TRUCK/LOADER TEAM WORK

Task description: **Load/Haul/Grade Subsoil F1 to N Pit Highwall Benches**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 002B State: Colorado Abbreviation: None
Date: 8/22/2016 County: El Paso Filename: M010-002B
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 740
-Loader:	CAT 980H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

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	100	50
Ownership cost/hour:	$65.15	$53.90	NA	$82.01	$79.03	$11.19
Operating cost/hour:	$63.46	$63.95	NA	$79.23	$69.17	$15.64
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Operator cost/hour:	$25.46	$40.86	NA	$39.87	$40.67	$0.00
Unit Subtotals:	$154.07	$158.71	NA	$201.11	$188.87	$26.83
Number of Units:	3	1	0	1	1	1
Group Subtotals:	Work:	$620.92	Support:	$201.11	Maint:	$215.70

Total work team cost/hour: **$1,037.73**

MATERIAL QUANTITIES

Initial volume: 26,539 CCY Swell factor: 1.060
Loose volume: **28,131** LCY

Source of estimated volume: 16.45 ac x 1 ft depth subsoil
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: Sand and gravel - Dry
Rated Payload: 87,000 Pounds
Payload Capacity: 30.00 LCY

Truck Bed (volume) Basis:

Struck Volume:	24.20	LCY
Heaped Volume:	31.40	LCY
Average Volume:	27.80	LCY
Adjusted Volume:	30.00	LCY

Final Truck Volume Based on Number of Loader Passes: **27.75** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	7.500	LCY (heaped)
Bucket Fill Factor:	0.925	Loose material - 1/8" to 3/8" (90 - 95%) 0.925
Adjusted Capacity:	**6.938**	LCY

Job Condition Corrections: Site Altitude (ft.): 7200 feet

	Truck	Loader	Source
Altitude Adj:	0.960	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.797**	**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): 0.550 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 and up 0.00	0.000	(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:	-0.100	minutes
	Adjusted Loader Cycle Time:	**0.450**	minutes
	Net Load Time per Truck:	**1.450**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.625	Minutes
Truck Load Time:	1.450	Minutes	Adjusted for site altitude:	1.450	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.042	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4500.00	13.00	3.00	16.00	585	7.752

Haul Time: **7.752** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4500.00	-13.00	3.00	-10.00	2721	1.705

Return Time: **1.705** minutes
Total Truck Cycle Time: **12.574** minutes

Loading Tool unit Production 802.41 LCY/Hour Adjusted for job efficiency: 666.00 LCY/Hour
Truck Unit Production 132.42 LCY/Hour Adjusted for job efficiency: 109.91 LCY/Hour

Optimal No. of Trucks: 6 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 329.72 LCY/Hour
Adjusted single truck/loader team production: 329.72 LCY/Hour
Adjusted multiple truck/loader team production: **329.72** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **85.32** Hours

Unit cost: $3.147 /LCY Total job cost: **$88,537**

TRUCK/LOADER TEAM WORK

Task description: **Load/Haul/Grade Topsoil TS1 to N Pit Highwall Benches**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 003B State: Colorado Abbreviation: None
Date: 8/22/2016 County: El Paso Filename: M010-003B
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 740
-Loader:	CAT 980H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

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	100	50
Ownership cost/hour:	$65.15	$53.90	NA	$82.01	$79.03	$11.19
Operating cost/hour:	$63.46	$63.95	NA	$79.23	$69.17	$15.64
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Operator cost/hour:	$25.46	$40.86	NA	$39.87	$40.67	$0.00
Unit Subtotals:	$154.07	$158.71	NA	$201.11	$188.87	$26.83
Number of Units:	3	1	0	1	1	1
Group Subtotals:	Work:	$620.92	Support:	$201.11	Maint:	$215.70

Total work team cost/hour: **$1,037.73**

MATERIAL QUANTITIES

Initial volume: 13,270 CCY Swell factor: 1.215
Loose volume: **16,123** LCY

Source of estimated volume: 16.45 ac x 6 in depth topsoil
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: 87,000 Pounds
Payload Capacity: 54.38 LCY

Truck Bed (volume) Basis:

Struck Volume:	24.20	LCY
Heaped Volume:	31.40	LCY
Average Volume:	27.80	LCY
Adjusted Volume:	31.40	LCY

Final Truck Volume Based on Number of Loader Passes: **24.75** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	7.500	LCY (heaped)
Bucket Fill Factor:	1.100	Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity:	**8.250**	LCY

Job Condition Corrections: Site Altitude (ft.): 7200 feet

	Truck	Loader	Source
Altitude Adj:	0.960	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.797**	**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): 0.550 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 and up 0.00	0.000	(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:	-0.100	minutes
	Adjusted Loader Cycle Time:	**0.450**	minutes
	Net Load Time per Truck:	**1.000**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.625	Minutes
Truck Load Time:	1.000	Minutes	Adjusted for site altitude:	1.000	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.042	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3200.00	13.00	3.00	16.00	585	5.530

Haul Time: **5.530** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3200.00	-13.00	3.00	-10.00	2721	1.220

Return Time: **1.220** minutes
Total Truck Cycle Time: **9.417** minutes

Loading Tool unit Production 913.85 LCY/Hour Adjusted for job efficiency: 758.49 LCY/Hour

Truck Unit Production 157.70 LCY/Hour Adjusted for job efficiency: 130.89 LCY/Hour

Optimal No. of Trucks: 6 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 392.67 LCY/Hour
Adjusted single truck/loader team production: 392.67 LCY/Hour
Adjusted multiple truck/loader team production: **392.67** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **41.06** Hours

Unit cost: $2.643 /LCY Total job cost: **$42,609**

TRUCK/LOADER TEAM WORK

Task description: **Load/Haul/Grade Subsoil F1 to N Pit Floor + Haul Rds + Plant**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 004B State: Colorado Abbreviation: None
Date: 8/22/2016 County: El Paso Filename: M010-004B
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 740
-Loader:	CAT 980H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

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	100	50
Ownership cost/hour:	$65.15	$53.90	NA	$82.01	$79.03	$11.19
Operating cost/hour:	$63.46	$63.95	NA	$79.23	$69.17	$15.64
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Operator cost/hour:	$25.46	$40.86	NA	$39.87	$40.67	$0.00
Unit Subtotals:	$154.07	$158.71	NA	$201.11	$188.87	$26.83
Number of Units:	3	1	0	1	1	1
Group Subtotals:	Work:	$620.92	Support:	$201.11	Maint:	$215.70

Total work team cost/hour: **$1,037.73**

MATERIAL QUANTITIES

Initial volume: 99,010 CCY Swell factor: 1.060
Loose volume: **104,951** LCY

Source of estimated volume: Total 61.37 ac x 1 ft depth subsoil
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: Sand and gravel - Dry
Rated Payload: 87,000 Pounds
Payload Capacity: 30.00 LCY

Truck Bed (volume) Basis:

Struck Volume:	24.20	LCY
Heaped Volume:	31.40	LCY
Average Volume:	27.80	LCY
Adjusted Volume:	30.00	LCY

Final Truck Volume Based on Number of Loader Passes: **27.75** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	7.500	LCY (heaped)
Bucket Fill Factor:	0.925	Loose material - 1/8" to 3/8" (90 - 95%) 0.925
Adjusted Capacity:	**6.938**	LCY

Job Condition Corrections: Site Altitude (ft.): 7200 feet

	Truck	Loader	Source
Altitude Adj:	0.960	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.797**	**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): 0.550 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 and up 0.00	0.000	(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:	-0.100	minutes
	Adjusted Loader Cycle Time:	**0.450**	minutes
	Net Load Time per Truck:	**1.450**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.625	Minutes
Truck Load Time:	1.450	Minutes	Adjusted for site altitude:	1.450	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.042	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4000.00	13.00	3.00	16.00	585	6.897

Haul Time: **6.897** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4000.00	-13.00	3.00	-10.00	2721	1.516

Return Time: **1.516** minutes
Total Truck Cycle Time: **11.530** minutes

Loading Tool unit Production 802.41 LCY/Hour Adjusted for job efficiency: 666.00 LCY/Hour

Truck Unit Production 144.41 LCY/Hour Adjusted for job efficiency: 119.86 LCY/Hour

Optimal No. of Trucks: 6 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 359.58 LCY/Hour
Adjusted single truck/loader team production: 359.58 LCY/Hour
Adjusted multiple truck/loader team production: **359.58** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **291.87** Hours

Unit cost: $2.886 /LCY Total job cost: **$302,881**

TRUCK/LOADER TEAM WORK

Task description: **Load/Haul/Grade Topsoil TS1 to N Pit Floor + Haul Rds +Plant**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 005B State: Colorado Abbreviation: None
Date: 8/22/2016 County: El Paso Filename: M010-005B
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 740
-Loader:	CAT 980H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

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	100	50
Ownership cost/hour:	$65.15	$53.90	NA	$82.01	$79.03	$11.19
Operating cost/hour:	$63.46	$63.95	NA	$79.23	$69.17	$15.64
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Operator cost/hour:	$25.46	$40.86	NA	$39.87	$40.67	$0.00
Unit Subtotals:	$154.07	$158.71	NA	$201.11	$188.87	$26.83
Number of Units:	3	1	0	1	1	1
Group Subtotals:	Work:	$620.92	Support:	$201.11	Maint:	$215.70

Total work team cost/hour: **$1,037.73**

MATERIAL QUANTITIES

Initial volume: 49,505 CCY Swell factor: 1.215
Loose volume: **60,149** LCY

Source of estimated volume: 61.37 ac x 6 in depth topsoil
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: 87,000 Pounds
Payload Capacity: 54.38 LCY

Truck Bed (volume) Basis:

Struck Volume:	24.20	LCY
Heaped Volume:	31.40	LCY
Average Volume:	27.80	LCY
Adjusted Volume:	31.40	LCY

Final Truck Volume Based on Number of Loader Passes: **24.75** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	7.500	LCY (heaped)
Bucket Fill Factor:	1.100	Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity:	**8.250**	LCY

Job Condition Corrections: Site Altitude (ft.): 7200 feet

	Truck	Loader	Source
Altitude Adj:	0.960	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.797**	**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): 0.550 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 and up 0.00	0.000	(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:	-0.100	minutes
	Adjusted Loader Cycle Time:	**0.450**	minutes
	Net Load Time per Truck:	**1.000**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.625	Minutes
Truck Load Time:	1.000	Minutes	Adjusted for site altitude:	1.000	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.042	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3750.00	13.00	3.00	16.00	585	6.470

Haul Time: **6.470** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3750.00	-13.00	3.00	-10.00	2721	1.421

Return Time: **1.421** minutes
Total Truck Cycle Time: **10.558** minutes

Loading Tool unit Production 913.85 LCY/Hour Adjusted for job efficiency: 758.49 LCY/Hour

Truck Unit Production 140.66 LCY/Hour Adjusted for job efficiency: 116.74 LCY/Hour

Optimal No. of Trucks: 6 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 350.23 LCY/Hour
Adjusted single truck/loader team production: 350.23 LCY/Hour
Adjusted multiple truck/loader team production: **350.23** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **171.74** Hours

Unit cost: $2.963 /LCY Total job cost: **$178,218**

TRUCK/LOADER TEAM WORK

Task description: **Load/Haul/Grade Subsoil F1 to Access Rd + E Crossing**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 006B State: Colorado Abbreviation: None
Date: 8/22/2016 County: El Paso Filename: M010-006B
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 740
-Loader:	CAT 980H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

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	100	50
Ownership cost/hour:	$65.15	$53.90	NA	$82.01	$79.03	$11.19
Operating cost/hour:	$63.46	$63.95	NA	$79.23	$69.17	$15.64
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Operator cost/hour:	$25.46	$40.86	NA	$39.87	$40.67	$0.00
Unit Subtotals:	$154.07	$158.71	NA	$201.11	$188.87	$26.83
Number of Units:	3	1	0	1	1	1
Group Subtotals:	Work:	$620.92	Support:	$201.11	Maint:	$215.70

Total work team cost/hour: **$1,037.73**

MATERIAL QUANTITIES

Initial volume: 66,744 CCY Swell factor: 1.060
Loose volume: **70,749** LCY

Source of estimated volume: Total 41.37 ac x 1 ft depth subsoil
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: Sand and gravel - Dry
Rated Payload: 87,000 Pounds
Payload Capacity: 30.00 LCY

Truck Bed (volume) Basis:

Struck Volume:	24.20	LCY
Heaped Volume:	31.40	LCY
Average Volume:	27.80	LCY
Adjusted Volume:	30.00	LCY

Final Truck Volume Based on Number of Loader Passes: **27.75** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	7.500	LCY (heaped)
Bucket Fill Factor:	0.925	Loose material - 1/8" to 3/8" (90 - 95%) 0.925
Adjusted Capacity:	**6.938**	LCY

Job Condition Corrections: Site Altitude (ft.): 7200 feet

	Truck	Loader	Source
Altitude Adj:	0.960	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.797**	**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): 0.550 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 and up 0.00	0.000	(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:	-0.100	minutes
	Adjusted Loader Cycle Time:	**0.450**	minutes
	Net Load Time per Truck:	**1.450**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.625	Minutes
Truck Load Time:	1.450	Minutes	Adjusted for site altitude:	1.450	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.042	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	12000.00	10.00	3.00	13.00	708	17.012

Haul Time: **17.012** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	12000.00	-10.00	3.00	-7.00	3706	3.338

Return Time: **3.338** minutes
Total Truck Cycle Time: **23.467** minutes

Loading Tool unit Production 802.41 LCY/Hour Adjusted for job efficiency: 666.00 LCY/Hour

Truck Unit Production 70.95 LCY/Hour Adjusted for job efficiency: 58.89 LCY/Hour

Optimal No. of Trucks: 11 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 176.67 LCY/Hour
Adjusted single truck/loader team production: 176.67 LCY/Hour
Adjusted multiple truck/loader team production: **176.67** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **400.46** Hours

Unit cost: $5.874 /LCY Total job cost: **$415,566**

BULLDOZER WORK

Task description: **Spread Topsoil Berms on Access Rd + E Crossing**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 007 State: Colorado Abbreviation: None
Date: 8/18/2016 County: El Paso Filename: M010-007
User: AME

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:	$82.01	NA
Operating Cost/Hour:	$79.23	100
Ripper own. Cost/Hour:	$8.40	NA
Ripper op. Cost/Hour:	$2.81	50
Operator Cost/Hour:	$39.87	NA

Total unit Cost/Hour: $212.32
Total Fleet Cost/Hour: **$424.65**

MATERIAL QUANTITIES

Initial Volume: 16,900
Swell factor: 1.215
Loose volume: **20,534** LCY

Source of estimated volume: 41.37 ac x 6 in depth topsoil
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 300 feet
Unadjusted hourly production: 291.4 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %
Average site altitude: 7,200 feet

Material weight: 1,600 lbs/LCY

Weight description: Top Soil

Job Condition Correction Factor		Source
Operator Skill:	1.000	(EXCL.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.100	(50% SL)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.900	(SSD-FC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 1.1816

Adjusted unit production: 344.32 LCY/hr
Adjusted fleet production: **688.64** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: $0.617/LCY

Total job time: **29.82** Hours
Total job cost: **$12,662**

BULLDOZER WORK

Task description: **Grade F1 Stockpile Area to 3H:1V**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 008 State: Colorado Abbreviation: None
Date: 8/18/2016 County: El Paso Filename: M010-008
User: AME

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:	$82.01	NA
Operating Cost/Hour:	$79.23	100
Ripper own. Cost/Hour:	$8.40	NA
Ripper op. Cost/Hour:	$2.81	50
Operator Cost/Hour:	$39.87	NA

Total unit Cost/Hour: $212.32
Total Fleet Cost/Hour: **$424.65**

MATERIAL QUANTITIES

Initial Volume: 145,833
Swell factor: 1.060
Loose volume: **154,583** LCY

Source of estimated volume: (100' H x 700' L) x 3 benches @ 1.38H:1V
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 300 feet
Unadjusted hourly production: 291.4 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: -15 %
Average site altitude: 7,200 feet

Material weight: 2,900 lbs/LCY

Weight description: Sand and gravel - Dry

Job Condition Correction Factor		Source
Operator Skill:	1.000	(EXCL.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.200	(SLOT)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	1.000	(DOZ-OC)
Push gradient:	1.329	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 1.0497

Adjusted unit production: 305.88 LCY/hr
Adjusted fleet production: **611.76** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: $0.694/LCY

Total job time: **252.69** Hours
Total job cost: **$107,302**

TRUCK/LOADER TEAM WORK

Task description: **Load/Haul/Grade Topsoil TS1 to F1 Stockpile Area**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 009B State: Colorado Abbreviation: None
Date: 8/22/2016 County: El Paso Filename: M010-009B
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 740
-Loader:	CAT 980H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

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	100	50
Ownership cost/hour:	$65.15	$53.90	NA	$82.01	$79.03	$11.19
Operating cost/hour:	$63.46	$63.95	NA	$79.23	$69.17	$15.64
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	$0.00	$0.00
Operator cost/hour:	$25.46	$40.86	NA	$39.87	$40.67	$0.00
Unit Subtotals:	$154.07	$158.71	NA	$201.11	$188.87	$26.83
Number of Units:	3	1	0	1	1	1
Group Subtotals:	Work:	$620.92	Support:	$201.11	Maint:	$215.70

Total work team cost/hour: **$1,037.73**

MATERIAL QUANTITIES

Initial volume: 16,900 CCY Swell factor: 1.215
Loose volume: **20,534** LCY

Source of estimated volume: 20.95 ac x 6 in depth topsoil
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: 87,000 Pounds
Payload Capacity: 54.38 LCY

Truck Bed (volume) Basis:

Struck Volume:	24.20	LCY
Heaped Volume:	31.40	LCY
Average Volume:	27.80	LCY
Adjusted Volume:	31.40	LCY

Final Truck Volume Based on Number of Loader Passes: **24.75** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	7.500	LCY (heaped)
Bucket Fill Factor:	1.100	Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity:	**8.250**	LCY

Job Condition Corrections: Site Altitude (ft.): 7200 feet

	Truck	Loader	Source
Altitude Adj:	0.960	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.797**	**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): 0.550 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:	**0.460**	minutes
	Net Load Time per Truck:	**1.020**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.625	Minutes
Truck Load Time:	1.020	Minutes	Adjusted for site altitude:	1.020	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.042	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	10.00	3.00	13.00	708	2.182

Haul Time: **2.182** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	-10.00	3.00	-7.00	3706	0.450

Return Time: **0.450** minutes
Total Truck Cycle Time: **5.319** minutes

Loading Tool unit Production 902.74 LCY/Hour Adjusted for job efficiency: 749.27 LCY/Hour

Truck Unit Production 279.21 LCY/Hour Adjusted for job efficiency: 231.74 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 695.22 LCY/Hour
Adjusted single truck/loader team production: 695.22 LCY/Hour
Adjusted multiple truck/loader team production: **695.22** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **29.54** Hours

Unit cost: $1.493 /LCY Total job cost: **$30,650**

REVEGETATION WORK

Task description: **Revegetation of 156.18 ac - Grasses**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 010 State: Colorado Abbreviation: None
Date: 8/19/2016 County: El Paso Filename: M010-010
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	121.00	pound	$0.37	$44.77
Triple superphosphate, 0-46-0	87.00	pound	$0.51	$44.37
			Total Fertilizer Materials Cost/Acre	**$89.14**

Application

Description	Cost /Acre
Hydro spreader (MEANS 32 01 90.13 0180)	$44.43
Total Fertilizer Application Cost/Acre	**$44.43**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$107.59
Weed control spraying (MEANS 31 31 16.13 3100)	$242.00
Total Tilling Cost/Acre	**$349.59**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	5.00	81.61	$53.35
Big Bluestem - Native	5.00	14.92	$49.15
Indian Ricegrass - Native	5.00	16.18	$33.75
Little Bluestem - Native	5.00	29.84	$71.55
Sideoats Grama - Butte	5.00	16.41	$55.80
Sheep Fescue - Bighorn	5.00	78.05	$15.35
Slender Wheatgrass - Native	5.00	18.25	$11.25
Thickspike Wheatgrass - Critana	5.00	17.68	$25.90
Western Wheatgrass - Arriba	5.00	12.63	$18.45

Penstemon, Rocky Mountain	1.00	15.67	$33.78
Bluebunch Wheatgrass - Goldar	5.00	16.07	$27.55
Totals Seed Mix	51.00	317.33	**$395.88**

Application

Description	**Cost /Acre**
Hydro seeding (MEANS 32 92 19.14 0200)	$936.54
Total Seed Application Cost/Acre	**$936.54**

MULCHING and MISCELLANEOUS

Materials

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

Application

Description	**Cost /Acre**
Weed spray, hand, aquatic area, nox. [DMG]	$183.16
Weed spray, hand, non-aquatic area, nox. [DMG]	$183.16
Total Mulch Application Cost/Acre	**$366.32**

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: 156.18
Estimated Failure Rate: 50%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $2,181.90
Cost /Acre*: $1,332.42

Initial Job Cost: **$340,769.14**
Reseeding Job Cost: **$104,048.68**
Total Job Cost: **$444,818**
Job Hours: **468.00**

REVEGETATION WORK

Task description: **Revegetation of 37 ac - Mixed Conifer Slopes**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 011 State: Colorado Abbreviation: None
Date: 8/19/2016 County: El Paso Filename: M010-011
User: AME

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
			$	$
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
Fir, Douglas	36.55	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$74.56
Pine, Ponderosa	6.45	Bare root seedling, 11-16 inch ht. (MEANS)	$4.44	$2.40	$28.64
Totals Nursery Stock Cost / Acre					**$103.20**

JOB TIME AND COST

No. of Acres: 37
Estimated Failure Rate: 25%
*Selected Replanting Work Items: NURSERY

Cost /Acre: $103.20
Cost /Acre*: $103.20

Initial Job Cost: **$3,818.40**
Reseeding Job Cost: **$954.60**
Total Job Cost: **$4,773**
Job Hours: **111.00**

REVEGETATION WORK

Task description: **Revegetation of 60.61 ac - Mixed Conifer Pit Floor,Plant,Rds**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 012 State: Colorado Abbreviation: None
Date: 8/19/2016 County: El Paso Filename: M010-012
User: AME

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
			$	$
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
Fir, Douglas	8.6	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$17.54
Pine, Ponderosa	30.1	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$61.40
Oak, Gambel's	2.15	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$4.39
Sumac, Skunkbrush	2.15	Bare root seedling, 11-16 inch ht. (MEANS)	$4.44	$2.40	$9.55
Totals Nursery Stock Cost / Acre					**$92.88**

JOB TIME AND COST

No. of Acres: 60.61
Estimated Failure Rate: 25%
*Selected Replanting Work Items: NURSERY

Cost /Acre: $92.88
Cost /Acre*: $92.88

Initial Job Cost: **$5,629.46**
Reseeding Job Cost: **$1,407.36**
Total Job Cost: **$7,037**
Job Hours: **180.00**

REVEGETATION WORK

Task description: **Revegetation of 16.45 ac - Mountain Shrubland Slopes**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 013 State: Colorado Abbreviation: None
Date: 8/19/2016 County: El Paso Filename: M010-013
User: AME

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
			$	$
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
Pine, Pinyon	16.8	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$34.27
Juniper, Common	16.8	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$34.27
Mahogany, Mountain	33.6	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$68.54
Oak, Gambel's	252	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$514.08
Sumac, Skunkbrush	16.8	Bare root seedling, 11-16 inch ht. (MEANS)	$4.44	$2.40	$74.59
				Totals Nursery Stock Cost / Acre	**$725.76**

JOB TIME AND COST

No. of Acres: 16.45
Estimated Failure Rate: 25%
*Selected Replanting Work Items: NURSERY

Cost /Acre: $725.76
Cost /Acre*: $725.76

Initial Job Cost: **$11,938.75**
Reseeding Job Cost: **$2,984.69**
Total Job Cost: **$14,923**
Job Hours: **49.00**

REVEGETATION WORK

Task description: **Revegetation of 21.69 ac - Mountain Shrubland Access Rd**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 014 State: Colorado Abbreviation: None
Date: 8/19/2016 County: El Paso Filename: M010-014
User: AME

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
			$	$
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
Mahogany, Mountain	50.4	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$102.82
Oak, Gambel's	268.8	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$548.35
Rose, Wood's	10	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$20.40
Sagebrush, Fringed	90	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$183.60
Sagebrush, Louisiana	90	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$183.60
Sumac, Skunkbrush	10	Bare root seedling, 11-16 inch ht. (MEANS)	$4.44	$2.40	$44.40
				Totals Nursery Stock Cost / Acre	**$1,083.17**

JOB TIME AND COST

No. of Acres: 21.69
Estimated Failure Rate: 25%
*Selected Replanting Work Items: NURSERY

Cost /Acre: $1,083.17
Cost /Acre*: $1,083.17

Initial Job Cost: **$23,493.96**
Reseeding Job Cost: **$5,873.49**
Total Job Cost: **$29,367**
Job Hours: **65.00**

REVEGETATION WORK

Task description: **Revegetation of 1.02 ac - Riparian E Crossing LTC**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 015 State: Colorado Abbreviation: None
Date: 8/19/2016 County: El Paso Filename: M010-015
User: AME

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
			$	$
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
Cottonwood, Narrowleaf	35	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$71.40
Willow, Sandbar	87.5	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$178.50
Rose, Wood's	227.5	Bare root seedling, 11-16 inch ht. (MEANS)	$4.44	$2.40	$1,010.10
Totals Nursery Stock Cost / Acre					**$1,260.00**

JOB TIME AND COST

No. of Acres: 1.02
Estimated Failure Rate: 50%
*Selected Replanting Work Items: NURSERY

Cost /Acre: $1,260.00
Cost /Acre*: $1,260.00

Initial Job Cost: **$1,285.20**
Reseeding Job Cost: **$642.60**
Total Job Cost: **$1,928**
Job Hours: **3.00**

REVEGETATION WORK

Task description: **Revegetation of 0.76 ac - Riparian W Crossing LTC**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 016 State: Colorado Abbreviation: None
Date: 8/19/2016 County: El Paso Filename: M010-016
User: AME

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
			$	$
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
Fir, Douglas	70	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$142.80
Cottonwood, Narrowleaf	140	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$285.60
Pine, Ponderosa	70	Bare root seedling, 11-16 inch ht. (MEANS)	$2.04	$2.40	$142.80
Willow, Sandbar	70	Bare root seedling, 11-16 inch ht. (MEANS)	$4.44	$2.40	$310.80
Totals Nursery Stock Cost / Acre					**$882.00**

JOB TIME AND COST

No. of Acres: 0.76
Estimated Failure Rate: 50%
*Selected Replanting Work Items: NURSERY

Cost /Acre: $882.00
Cost /Acre*: $882.00

Initial Job Cost: **$670.32**
Reseeding Job Cost: **$335.16**
Total Job Cost: **$1,005**
Job Hours: **1.00**

DEMOLITION WORK

Task description: **Revegetation - Planting Materials**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 017 State: Colorado Abbreviation: None
Date: 8/19/2016 County: El Paso Filename: M010-017
User: AME

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
18" protection basket w 3' x 3' weed barrier	NA	USER PROVIDED ITEM	17,635.00	NA	$1.25	$22,043.75
Transportation, 2 Laborers	NA	Light Duty Pickup, 4x4, 1 T. Crew	140.00	EA	$80.23	$11,232.20

Job Hours: 0.00 **Subtotal (unadjusted): $33,275.95** **Total Cost (adjusted for location): $30,979.91**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilization/Demobilization**

Site: **Hitch Rack Ranch Quarry** Permit Action: 112c Permit App 2016 Permit/Job#: M2016010

PROJECT IDENTIFICATION

Task #: 018B State: Colorado Abbreviation: None
Date: 8/22/2016 County: El Paso Filename: M010-018B
User: AME

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	53.08	$90.41	$125.45	4	$863.44	$501.80	$750.00
CAT 16M	28.73	$79.03	$117.55	2	$393.16	$235.10	$250.00
CAT 980H	33.12	$53.90	$117.55	2	$342.90	$235.10	$250.00
Cat 740	36.49	$65.15	$117.55	6	$1,096.20	$705.30	$1,500.00
Hydroseeder with Tractor	28.00	$51.65	$117.55	2	$338.40	$235.10	$250.00
Subtotals:					**$3,034.10**	**$1,912.40**	**$3,000.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 3,500 Gal.	$42.46	2	$84.92	$84.92
Light Duty Pickup, 4x4, 1 T. Crew	$80.23	1	$80.23	$80.23
Subtotals:			**$165.15**	**$165.15**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	COLORADO SPRINGS	
Total one-way travel distance:	20.00	miles
Average Travel Speed:	25.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$111,005.60
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$264.24

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.80	0.80
Return Time (Hours):	0.80	0.80
Loading Time (Hours):	8.00	NA
Unloading Time (Hours):	8.00	NA
Subtotals:	17.60	1.60

JOB TIME AND COST

Total job time:	**35.20**	Hours
Total job cost:	**$111,270**	