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

MINERALS PROGRAM INSPECTION REPORT
PHONE: (303) 866-3567

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME: Sprague Red Lyons	**MINE/PROSPECTING ID#:** M-1981-057	**MINERAL:** Sandstone (silica, stone, quartzite)	**COUNTY:** Boulder
INSPECTION TYPE: Monitoring	**INSPECTOR(S):** Amy Eschberger	**INSP. DATE:** July 11, 2017	**INSP. TIME:** 09:45
OPERATOR: Arkins Park Stone Corporation	**OPERATOR REPRESENTATIVE:** David Sprague, Chad Theis	**TYPE OF OPERATION:** 112c - Construction Regular Operation	

REASON FOR INSPECTION: Normal I&E Program	**BOND CALCULATION TYPE:** Complete Bond	**BOND AMOUNT:** $26,500.00
DATE OF COMPLAINT: NA	**POST INSP. CONTACTS:** None	**JOINT INSP. AGENCY:** None
WEATHER: Clear	**INSPECTOR'S SIGNATURE:** Amy Eschberger	**SIGNATURE DATE:** August 29, 2017

The following inspection topics were identified as having Problems or Possible Violations. OPERATORS SHOULD READ THE FOLLOWING PAGES CAREFULLY IN ORDER TO ASSURE COMPLIANCE WITH THE TERMS OF THE PERMIT AND APPLICABLE RULES AND REGULATIONS. If a Possible Violation is indicated, you will be notified under separate cover as to when the Mined Land Reclamation Board will consider possible enforcement action.

INSPECTION TOPIC: Financial Warranty
PROBLEM: The financial warranty is not adequate to reclaim the site in accordance with the approved reclamation plan. This is a failure to maintain the proper financial warranty amount to complete reclamation of the affected lands pursuant to C.R.S. 34-32.5-117(4)(b).
CORRECTIVE ACTIONS: The operator shall submit adequate financial warranty, as determined by the Division. The Division will be sending a separate surety increase notice to the operator regarding the increase of the financial warranty. The operator will have 60 days from the date on the surety increase notice to post the additional required financial warranty.
CORRECTIVE ACTION DUE DATE: October 28, 2017

INSPECTION TOPIC: Reclamation Plan
PROBLEM: Failure to follow approved reclamation plan, or current reclamation plan needs to be updated and clarified pursuant to C.R.S. 34-32.5-116(1). Specifically, the operator has imported material to the site to be used as a growth medium for reclamation. This activity is not part of the approved reclamation plan.
CORRECTIVE ACTIONS: The operator shall submit a Technical Revision, with the required $216 revision fee, to update and clarify the current approved reclamation plan to reflect existing and proposed activities. The revision should include a description of any growth medium to be used for reclamation (including existing material and material to be imported), type(s) of material, source(s) for the material, approximate storage location(s) of the material, estimated volume(s) of the material, and the anticipated minimum depth of application of the material. If the material is to be used for backfill rather than growth medium, the operator will need to include in the revision all information required by Rule 3.1.5(9) [see enclosed]. Additionally, an updated mining plan map should be provided with the revision, which shows the location(s) where existing growth medium is stockpiled (if different than current approved map), and location(s) proposed for stockpiling any future imported growth medium.
CORRECTIVE ACTION DUE DATE: October 28, 2017

OBSERVATIONS

This inspection of the Sprague Red Lyons site (Permit No. M-1981-057) was conducted by Amy Eschberger of the Division of Reclamation, Mining and Safety (Division). Mr. David Sprague represented the operator during the inspection. The potential new landowner, Mr. Chad Theis was also present for the inspection. The site is located approximately one mile north of Lyons, Colorado in Boulder County. The site can be accessed via Steamboat Valley Road, which crosses the western portion of the permit area.

Permit Summary

This is a 112c operation permitted for 59.7 acres to mine sandstone for building material and riprap use. The sandstone deposit is approximately 20-30 feet thick. The stone is quarried by hand using picks, bars, and shovels, and with loaders. The operator is approved to utilize blasting techniques for loosening stone as needed. Quarried stone is processed on site, typically at the center of the quarries. Flagstone is stacked on pallets, and strip stone is run through a hydraulic stone cutter to be cut into veneer or dimension stone. Waste rock not sold as riprap is compacted and incorporated into work decks or staging areas adjacent to the quarries. This rock can be used as backfill material for reclamation. As quarrying proceeds, the work deck becomes larger and higher, forming a relatively flat area which is utilized for stone working and storage of material and equipment. Any salvaged topsoil is stored in the work deck areas. Historic mining disturbances are scattered throughout the site, including rubble piles and small excavations. The current operator/landowner began mining the area in 1970, enlarging pre-existing excavations. Historic rubble piles are present directly west of Quarry 1 and directly north and south of Quarry 3. These areas will not require reclamation as long as the operation does not redisturb them.

The permitted operation includes three quarry areas, including Quarry 1 to the far north, Quarry 2 just south of (and connected to) Quarry 1, and Quarry 3 to the far south. All quarry areas are located to the east of Steamboat Valley Road, which runs roughly northwest-southeast across the western portion of the permit area. The operator committed to limiting the size of each quarry to five acres. However, the operation is approved to affect up to 35.8 acres throughout the site. The approved post-mining land use is rangeland and residential. Reclamation of the site will occur in stages as mining is completed in each area. For reclamation, quarry areas will be backfilled with 6 inches of overburden/waste rock and graded to 3H:1V or flatter to blend with existing topography, except where existing rock ledges are too steep for backfilling to be practical. Existing rock ledges that will not be reclaimed are present in Quarries 2 and 3. If necessary, large stones can be placed on portions of the steeper areas to form steps which can be retopsoiled and revegetated. Disturbed areas will receive 6-8 inches of topsoil and be revegetated with a native grass seed mixture recommended by the local Soil Conservation District. The operator will also plant six Ponderosa Pine trees and six Rocky Mountain Juniper trees per acre. Existing roads will remain after reclamation.

The permit changed from a 110c to a 112c with the Division's approval of Conversion No. 1 in 1999. Through this revision, the permit area was increased from 9.9 acres to 59.7 acres, encompassing the entire Sprague property. The conversion application was submitted as a Board-Ordered corrective action to a violation that was found for off-site damage. The off-site damage included areas where quarry rubble was pushed off the west side of Steamboat Valley Road, down into Eagle Canyon. In the conversion application, the operator proposed reclaiming the rubble areas by creating an access road to the valley, using a loader to relocate larger stones back to the rubble piles, creating a berm along the bottom edge of the piles to contain any additional rocks that might fall from the piles, attempting to place topsoil across the rubble piles, and revegetating the piles as best as possible using the revegetation plan approved for the quarry areas. However, according to the operator's adequacy response, received June 8, 1999, it appears the Board felt that implementation of this plan might cause more damage than leaving the rubble piles as-is. The operation is not authorized to place any additional rock off the western edge of Steamboat Valley Road.

Inspection

At the time of the inspection, it was partly cloudy and warm, and the ground was dry. An appropriate permit sign was posted at the entrance to the mine site. The affected land boundary was delineated with white PVC pipes. The Division first inspected Quarry 3 located at the south end of the permit area. According to Mr. Sprague, this quarry has not been active for at least five years. The Division estimates disturbance in Quarry 3 to consist of approximately 4.75 acres. The primary working face is along the northeastern edge of the quarry (**Photos 1 and 2**). The Division estimates this mined wall to be approximately 25-30 feet in height, with slope gradients of approximately 3H:1V. Two shorter mining faces approximately 10-12 feet in height are present along the western edge of Quarry 3 (**Photos 3 and 4**). The slope gradient of these mining faces is at near vertical. The Division estimates the lengths of these highwalls to be approximately 100 feet and 120 feet. Loose stones are piled on the quarry floor (**Photo 5**) which Mr. Sprague indicated to be saleable product. A relatively flat work deck/staging area composed of waste rock was constructed in the western portion of Quarry 3 (**Photo 6**).

The Division observed stockpiles of dark colored material stored at the southeastern edge of the quarry area, which appeared to be composed of crushed shale and schist (**Photo 7**). Mr. Sprague said this material was brought to the site fairly recently. The operator hopes to use this material as a growth medium for reclamation. In review of the approved permit file, the Division was unable to find any mention of importing growth medium to the site for reclamation. Therefore, the operator will need to submit a Technical Revision to revise the reclamation plan for the site (**see enclosed form**). The revision should include a description of any growth medium to be used for reclamation (including existing material and material to be imported), type(s) of material, source(s) for the material, approximate storage location(s) of the material, estimated volume(s) of the material, and the anticipated minimum depth of application of the material. Additionally, an updated mining plan map should be provided with the revision, which shows the location(s) where existing growth medium is stockpiled (if different than current approved map), and location(s) proposed for stockpiling any future imported growth medium. If the material is to be used for backfill rather than growth medium, the operator will need to include in the revision all information required by Rule 3.1.5(9) (**see enclosed Rule**). Pursuant to Rule 3.1.5(9), if an operator intends to backfill inert structural fill generated outside of the approved permit area, it is the operator's responsibility to provide the Division notice of any proposed backfill activity not identified in the approved reclamation plan. This notice must be submitted as a Technical Revision. A problem is cited in this report (see page 1), requiring the operator to submit a revision within 60 days.

The Division next inspected Quarries 1 and 2, which were connected in the early 2000's as Quarry 2 was expanded northeastward. These quarries were active during the inspection. A few men were on site splitting and stacking stone (**Photo 8**). The Division estimates disturbance in Quarries 1 and 2 to consist of approximately 9.95 acres combined. Rubble piles located between the western edge of Quarry 1 and Steamboat Valley Road (**Photo 9**) were not included in the disturbance, as the permit file shows them to have existed prior to permitting. If the operation redisturbs these historic rubble piles, they will need to be included in the disturbed area to be reclaimed. The primary working faces are along the northeastern edges of the quarries (**Photos 10-12**). The mining walls range in height from 15-30 feet, and have slope gradients of roughly 3H:1V. A shorter mining wall is present above the eastern primary working face in Quarry 1 (shown in **Photo 12**), with a height of approximately 10-12 feet. This mining wall is approximately 100 feet in length with slope gradients of near vertical. Loose stones are piled on the quarry floors (**Photos 13 and 14**). According to Mr. Sprague, much of this material is saleable product. Relatively flat work deck/staging areas composed of waste rock material were constructed in the western portions of the quarry areas (**Photos 15-17**).

The Division observed a small area of disturbance approximately 0.25 acre in size located between Quarries 2 and 3 (**Photo 18**). The disturbance consisted of piles of quarried stone. One of the piles forms a half circle along

the southern edge. This pile appears to have been present for many years, and is possibly historic disturbance due to the amount of vegetation covering the file. However, the other piles appear to have been dumped in more recent times due to lack of vegetation or moss growing on the rocks, minimal weathering, and the presence of a few wooden pallets in the area. For reclamation, the rocks in this area would need to be spread out and graded to blend with surrounding topography, and the area retopsoiled and revegetated.

In driving north on Steamboat Valley Road, the Division observed a small working face at the southwestern edge of Quarry 2, adjacent to the road (**Photo 19**). The working face in this area was no more than 5 feet in height, with a near vertical slope gradient. Slabs of quarried stone were piled in front of the working face. Due to its location, this disturbance was included in the disturbed area for Quarry 2. While on Steamboat Valley Road, the Division also observed the rubble that was pushed off the western edge of the road prior to 1999 (**Photos 20-22**). The drop-off from Steamboat Valley Road down to Eagle Canyon is steep. The Division estimates the footprint of the rubble piles closer to Quarries 1 and 2 to be approximately 1.93 acres in size, and the footprint of the rubble piles closest to Quarry 3 to be approximately 0.19 acre in size. Much of the rubble piles closer to Quarries 1 and 2 have some vegetative cover consisting of grasses, shrubs, and some pine trees. The rubble pile closer to Quarry 3 has only a few shrubs growing across it. As mentioned above, the operator has committed to not pushing any additional rock over the edge of the road. The rubble piles appear to have assumed an angle of repose at approximately 1.5H:1V.

Annual Report

It should be noted the recent annual report submitted by the operator (received 6/12/2017) indicates the site is in Temporary Cessation. However, the Division has not received a request from the operator to change the status of the permit to Temporary Cessation. Therefore, until such request is submitted and approved by the Division, the operation is considered to be active. The operation is approved to be active intermittently, meaning for less than 180 days per year. However, if the operation is not active every year (e.g., extracting, processing, and/or hauling off from stockpiled material), the operator should either request Temporary Cessation or begin final reclamation of the site. Additionally, the 6/12/2017 annual report states the total number of acres currently affected to be 9.9 acres. However, the Division estimates the operation has affected approximately 15 acres. Finally, in the 6/12/2017 annual report, the operator circled "N/A" regarding questions about weed control implementation and topsoil for reclamation. The operator should be advised that weed control and topsoil reservation are part of the approved permit, and therefore, should be implemented at the site as necessary. The Division recommends that, starting with the next annual report, the operator work to provide more accurate information about site conditions and activities.

Financial Warranty

The Division currently holds a financial warranty for the site in the amount of $26,500.00. On April 24, 2017, the Division had received notice from the operator's financial warrantor that the bond in the form of a Letter of Credit would not be renewed past August 9, 2017. This inspection was conducted to assess site conditions and to determine whether $26,500.00 is sufficient to reclaim the site in accordance with the approved reclamation plan. It should be noted the Division received and accepted a replacement financial warranty check for deposit in the amount of $26,500.00 on July 10, 2017. Therefore, the operator is in compliance with regard to maintaining the financial warranty in good standing as required by C.R.S. 34-32.5-117(6)(a).

After conducting the inspection, the Division recalculated the required financial warranty for completing reclamation of the site in accordance with the approved reclamation plan. The Division estimates a total of approximately 15 acres have been disturbed by the operation that require reclamation (**see enclosed Google Earth image of site**). The revised bond estimate includes costs for backfilling quarry areas with 6 inches of

overburden/waste rock material, backfilling near vertical portions of highwalls present in Quarries 1 and 3 to 3H:1V, replacing growth medium across quarry areas at a depth of 6 inches, and revegetating the land with the approved grass seed mixture and tree plantings. Costs for reclaiming the 0.25 acre disturbed area located between Quarries 2 and 3 are included with reclamation costs estimated for the quarry areas. The Division did not include costs for reclaiming the large rubble piles present on the west side of the road, because, as mentioned above, it appears to have been determined that any attempts to reclaim the piles would cause more damage than leaving the piles as-is.

The Division has determined the required financial warranty for the site to be in the amount of $47,050.00 (**see enclosed bond estimate**), which is $20,550.00 more than the currently held financial warranty. Therefore, the Division is citing a problem in this report for failure to maintain the proper financial warranty amount to complete reclamation of the affected lands pursuant to C.R.S. 34-32.5-117(4)(b). A notice of surety increase will be mailed to the operator under separate cover. The operator will have 60 days from the date of the notice to post the additional required financial warranty. To reduce the required financial warranty for the site, the operator may complete reclamation of disturbed areas and provide photographic evidence this has been done. If sufficient evidence is submitted within 60 days of the notice of surety increase, the Division could adjust the required financial warranty accordingly.

This concludes the report.

PHOTOGRAPHS

Photo 1. View of primary working face present along northeastern edge of Quarry 3.

Photo 2. View of primary working face present along northeastern edge of Quarry 3, showing slope gradients of approximately 3H:1V.

Photo 3. View of working face present along southwestern edge of Quarry 3, with slope gradients of near vertical.

Photo 4. View of working face present along northwestern edge of Quarry 3, with slope gradients of near vertical.

Photo 5. View showing piles of loose stone stored on floor of Quarry 3.

Photo 6. View looking east across work deck/staging area present in western portion of Quarry 3.

Photo 7. View of dark material (possibly crushed shale and schist) imported to site and stored in southern portion of Quarry 3.

Photo 8. View showing mine personnel working stone in Quarry 1 during inspection.

Photo 9. View of historic quarry rubble piles located immediately west of Quarry 1. These areas will not require reclamation as long as the operator does not redisturb them.

Photo 10. View of primary working face present along northeastern edge of Quarry 2.

Photo 11. View of primary working face present along northeastern edge of Quarry 2, showing slope gradients of approximately 3H:1V

Photo 12. View of primary working face present along northeastern edge of Quarry 1. Also note more recently mined wall at top (indicated) with near vertical slope gradient.

Photo 13. View of loose stones piled on floor of Quarry 2.

Photo 14. View of loose stones piled adjacent to primary working face in Quarry 2.

Photo 15. View of work deck/staging area present in western portion of Quarry 2.

Photo 16. View of work deck/staging area present in southern portion of Quarry 2.

Photo 17. View of work deck/staging area present in western portion of Quarry 1.

Photo 18. View of 0.25 acre disturbance area located between Quarries 2 and 3, consisting of piles of quarried stone.

Photo 19. View of small working face and piles of quarried stone present adjacent to Steamboat Valley Road, southwest of Quarry 2. This area was included with Quarry 2 disturbance.

Photo 20. View of rubble pile that was dumped off western edge of Steamboat Valley Road, across from Quarry 3. This pile will not require reclamation as long as the operator does not redisturb the area.

Photo 21. View of rubble piles that were dumped off western edge of Steamboat Valley Road, across from Quarries 1 and 2. These piles will not require reclamation as long as the operator does not redisturb the areas.

Photo 22. View looking off western edge of Steamboat Valley Road across from Quarry 2, showing portion of rubble piles dumped in Eagle Canyon.

GENERAL INSPECTION TOPICS

The following list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each

(AR) RECORDS---------- Y	**(FN) FINANCIAL WARRANTY-------- PB**	**(RD) ROADS---------- Y**
(HB) HYDROLOGIC BALANCE---------- Y	**(BG) BACKFILL & GRADING---------- Y**	**(EX) EXPLOSIVES--------- N**
(PW) PROCESSING WASTE/TAILING---- Y	**(SF) PROCESSING FACILITIES------- Y**	**(TS) TOPSOIL---------- N**
(MP) GENL MINE PLAN COMPLIANCE- Y	**(FW) FISH & WILDLIFE---------- N**	**(RV) REVEGETATION---- Y**
(SM) SIGNS AND MARKERS---------- Y	**(SP) STORM WATER MGT PLAN---- Y**	**(CI) COMPLETE INSP---- Y**
(ES) OVERBURDEN/DEV. WASTE--------- Y	**(SC) EROSION/SEDIMENTATION--- Y**	**(RS) RECL PLAN/COMP-- PB**
(AT) ACID OR TOXIC MATERIALS------- NA	**(OD) OFF-SITE DAMAGE---------- Y**	**(ST) STIPULATIONS------- NA**

Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

Inspection Contact Address
Judy Sprague
Arkins Park Stone Corporation
5975 NCR 27
Loveland, CO 80538

Enclosures: Technical Revision form
Rule 3.1.5(9) regarding use of backfill material generated outside approved permit area
Google Earth image of site
Bond Estimate

CC: Chad Theis via email at: 5280chad@gmail.com
Michael Lang, Coffey Engineering & Surveying via email at: mlang@coffey-engineering.com
Wally Erickson, DRMS

COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY
1313 Sherman Street, Room 215, Denver, Colorado 80203 ph(303) 866-3567

REQUEST FOR TECHNICAL REVISION (TR) COVER SHEET

File No.: M- _____ Site Name: _____

County _____ TR# _____ *(DRMS Use only)*

Permittee: _____

Operator (If Other than Permittee): _____

Permittee Representative: _____

Please provide a brief description of the proposed revision: _____

_____

_____

As defined by the Minerals Rules, a Technical Revision (TR) is: "a change in the permit or application which does not have more than a minor effect upon the approved or proposed Reclamation or Environmental Protection Plan." The Division is charged with determining if the revision as submitted meets this definition. If the Division determines that the proposed revision is beyond the scope of a TR, the Division may require the submittal of a permit amendment to make the required or desired changes to the permit.

The request for a TR is not considered "filed for review" until the appropriate fee is received by the Division (as listed below by permit type). Please submit the appropriate fee with your request to expedite the review process. After the TR is submitted with the appropriate fee, the Division will determine if it is approvable within 30 days. If the Division requires additional information to approve a TR, you will be notified of specific deficiencies that will need to be addressed. If at the end of the 30 day review period there are still outstanding deficiencies, the Division must deny the TR unless the permittee requests additional time, in writing, to provide the required information.

There is no pre-defined format for the submittal of a TR; however, it is up to the permittee to provide sufficient information to the Division to approve the TR request, including updated mining and reclamation plan maps that accurately depict the changes proposed in the requested TR.

Required Fees for Technical Revision by Permit Type - Please mark the correct fee and submit it with your request for a Technical Revision.

Permit Type	**Required TR Fee**	**Submitted** (mark only one)
110c, 111, 112 construction materials, and 112 quarries	$216	☐
112 hard rock (not DMO)	$175	☐
110d, 112d(1, 2 or 3)	$1006	☐

116(4)(e) On lands owned by the Operator, the Operator may permit the public to use the same for recreational purposes, in accordance with the Limited Landowner Liability Law contained in Article 41 of Title 33, C.R.S. 1984, as amended, except in areas where such use is found by the Operator to be hazardous or objectionable.

3.1.5 Reclamation Measures - Materials Handling

The Operator shall set forth the measures that will be taken to meet all the following requirements:

116(4)(a) (1) Grading shall be carried on so as to create a final topography appropriate to the final land use selected in the Reclamation Plan.

116(4)(g) (2) When backfilling is a part of the plan, the Operator shall replace overburden and waste materials in the mined area and shall ensure adequate compaction for stability and to prevent leaching of toxic or acid-forming materials.

116(4)(i) (3) All grading shall be done in a manner to control erosion and siltation of the affected lands, to protect areas outside the affected land from slides and other damage. If not eliminated, all highwalls shall be stabilized.

116(4)(q)(I) (4) All backfilling and grading shall be completed as soon as feasible after the mining process. The Operator shall establish reasonable timetables consistent with good mining and reclamation procedures.

116(4)(c),(d)and(e) (5) All refuse and acid-forming or toxic producing materials that have been mined shall be handled and disposed of in a manner that will control unsightliness and protect the drainage system from pollution.

(6) Any drill or auger holes that are part of the mining operation shall be plugged with non-combustible material, which shall prevent harmful or polluting drainage. Adits and shafts should be closed, and where practicable, backfilled and graded in a manner consistent with the

post mine land use and shall comply with the provisions of the Act, Construction Material Rules and Regulations.

(7) Maximum slopes and slope combinations shall be compatible with the configuration of surrounding conditions and selected land use. In all cases where a lake or pond is produced as a portion of the Reclamation Plan, all slopes, unless otherwise approved by the Board or Office, shall be no steeper than a ratio of 2:1 (horizontal to vertical ratio), except from 5 feet above to 10 feet below the expected water line where slopes shall be not steeper than 3:1. If a swimming area is proposed as a portion of the Reclamation Plan, the slope, unless otherwise approved by the Board or Office, shall be no steeper than 5:1 throughout the area proposed for swimming, and a slope no steeper than 2:1 elsewhere in the pond.

116(4)(o)

(8) If the Operator's choice of reclamation is for agricultural or horticultural crops which normally require the use of farm equipment, the Operator shall grade so that the area can be traversed with farm machinery.

(9) An Operator may backfill structural fill material generated within the MLRB permitted area into an excavated pit within the permit area as provided for in the MLRB Permit. If an Operator intends to backfill inert structural fill generated outside of the approved permit area, it is the Operator's responsibility to provide the Office notice of any proposed backfill activity not identified in the approved Reclamation Plan. If the Office does not respond to the Operator's notice within thirty (30) days after receipt of such Notice by the Office, the Operator may proceed in accordance with the provisions of this Rule. The Operator shall maintain a Financial Warranty at all times adequate to cover the cost to stabilize and cover any exposed backfilled material. The Notice to the Office shall include but is not limited to:

(a) a narrative that describes the approximate location of the proposed activity;

(b) the approximate volume of inert material to be backfilled;

(c) a signed affidavit certifying that the material is clean and inert, as defined in Rule 1.1(20);

(d) the approximate dates the proposed activity will commence and end, however, such dates shall not be an enforceable condition;

(e) an explanation of how the backfilled site will result in a post-mining configuration that is compatible with the approved post-mining land use; and

(f) a general engineering plan stating how the material will be placed and stabilized in a manner to avoid unacceptable settling and voids.

116(4)(c)

(10) All mined material to be disposed of within the affected area must be handled in such a manner so as to prevent any unauthorized release of pollutants to the surface drainage system.

116(4)(d)

(11) No unauthorized release of pollutants to groundwater shall occur from any materials mined, handled or disposed of within the permit area.

3.1.6 Water - General Requirements

116(4)(h)

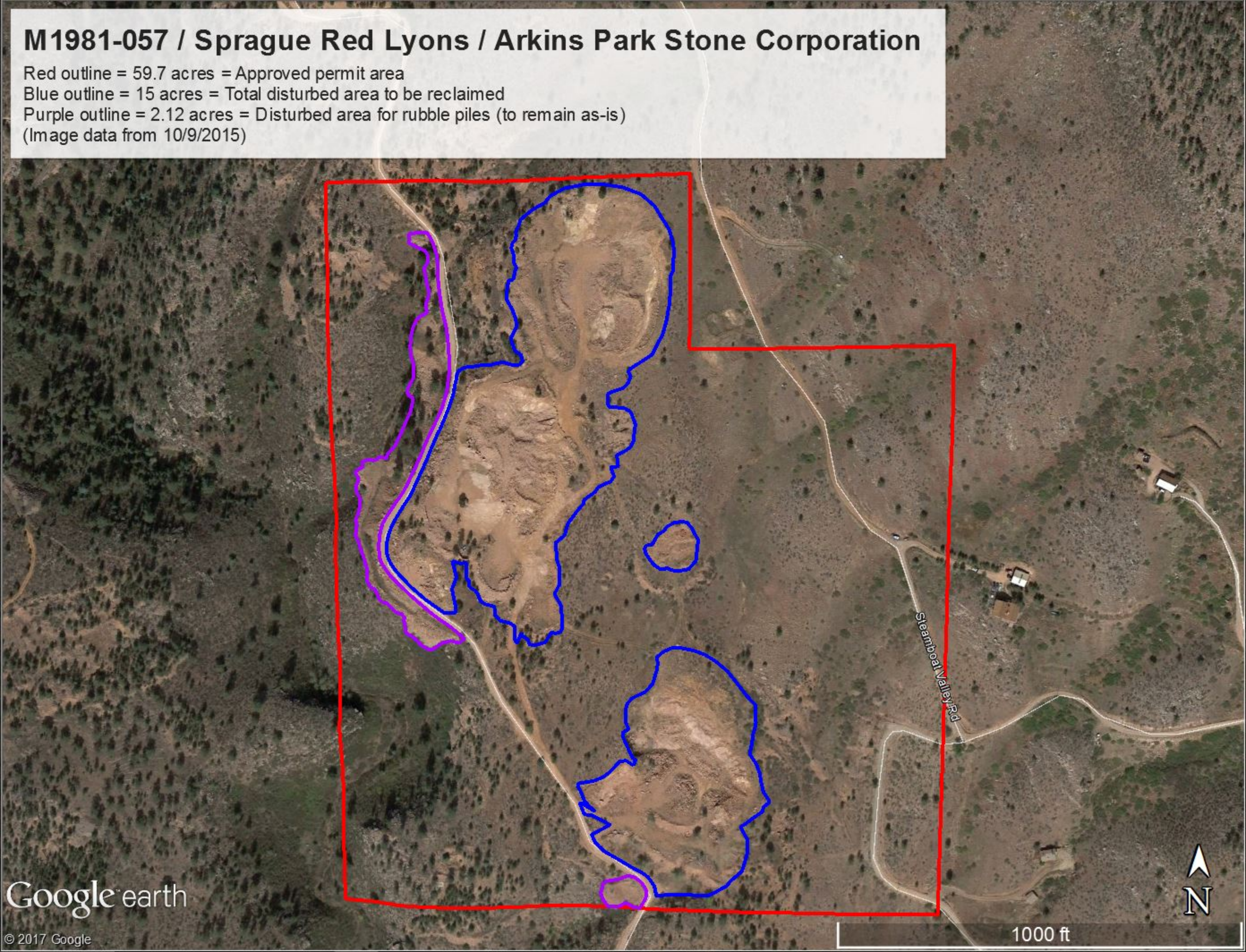
(1) Hydrology and Water Quality: Disturbances to the prevailing hydrologic balance of the affected land and of the surrounding area and to the quantity or quality of water in surface and groundwater systems both during and after the mining operation and during reclamation shall be minimized by measures, including, but not limited to:

(a) compliance with applicable Colorado water laws and regulations governing injury to existing water rights;

(b) compliance with applicable federal and Colorado water quality laws and regulations, including statewide water

M1981-057 / Sprague Red Lyons / Arkins Park Stone Corporation

Red outline = 59.7 acres = Approved permit area
Blue outline = 15 acres = Total disturbed area to be reclaimed
Purple outline = 2.12 acres = Disturbed area for rubble piles (to remain as-is)
(Image data from 10/9/2015)



COST SUMMARY WORK

Task description: **Cost Summary**

Site: **Sprague Red Lyons** Permit Action: 7-11-2017 Inspection Permit/Job#: M1981057

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 8/23/2017 County: Boulder Filename: M057-000
User: AME

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Backfill Quarry Areas - 15 ac	DOZER	2	16.14	$6,509.00
002	Replace Topsoil on Quarry Areas - 15 ac	SCRAPER1	1	10.73	$5,377.00
003	Revegetate Quarry Areas - 15 ac	REVEGE	1	30.00	$20,691.00
004	Backfill Steep Highwalls in Quarries 1 and 3	DOZER	1	4.75	$958.00
005	Mobilization/Demobilization	MOBILIZE	1	3.94	$6,095.00
	SUBTOTALS:			**65.56**	**$39,630**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$800.53
Performance bond:	1.05	Total =	$416.12
Job superintendent:	0.00	Total =	$0.00
Profit:	10.00	Total =	$3,963.00
		TOTAL O & P =	$5,179.65
		CONTRACT AMOUNT (direct + O & P) =	$44,809.65

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	0.00	Total =	0.00
Engineering work and/or contract/bid preparation:	0.00	Total =	$0.00
Reclamation management and/or administration:	5.00		$2,240.48
CONTINGENCY:	0.00	Total =	$0.00
		TOTAL INDIRECT COST =	$7,420.13
		TOTAL BOND AMOUNT (direct + indirect) =	**$47,050.13**

BULLDOZER WORK

Task description: **Backfill Quarry Areas - 15 ac**

Site: **Sprague Red Lyons** Permit Action: 7-11-2017 Inspection Permit/Job#: M1981057

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 8/23/2017 County: Boulder Filename: M057-001
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:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$3.61	50
Operator Cost/Hour:	$40.52	NA

Total unit Cost/Hour: $201.66
Total Fleet Cost/Hour: **$403.31**

MATERIAL QUANTITIES

Initial Volume: 12,100
Swell factor: 1.165
Loose volume: **14,097** LCY

Source of estimated volume: CN-1 application (6 inch depth x 15 ac)
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 10 %
Average site altitude: 5,900 feet

Material weight: 2,900 lbs/LCY

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

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:	0.786	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5122

Adjusted unit production: 436.70 LCY/hr
Adjusted fleet production: **873.4** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: $0.462/LCY

Total job time: **16.14** Hours
Total job cost: **$6,509**

SCRAPER TEAM WORK

Task description: **Replace Topsoil on Quarry Areas - 15 ac**

Site: **Sprague Red Lyons** Permit Action: 7-11-2017 Inspection Permit/Job#: M1981057

PROJECT IDENTIFICATION

Task #: 002 State: Colorado Abbreviation: None
Date: 8/23/2017 County: Boulder Filename: M057-002
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 627G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	$93.72	NA	NA	NA	NA	NA
Operating cost/hour:	$115.38	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	$41.46	NA	NA	NA	NA	NA
Unit Subtotals:	$250.56	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work:	$501.12	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$501.12**

MATERIAL QUANTITIES

Initial volume: 12,100 CCY Swell factor: 1.125
Loose volume: **13,613** LCY

Source of estimated volume: CN-1 application (6 inches depth)
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight: 2,650 lbs/LCY
Material description: Decomposed rock - 25% Rock, 75% Earth
Rated Payload: 52,800 pounds
Payload Capacity: 19.92 LCY

Struck Volume: 15.70 LCY
Heaped Volume: 22.00 LCY
Average Volume: 18.85 LCY
Adjusted Capacity: **18.85** LCY

Cycle Time:

Scraper Loading Time: 0.70 Minutes
Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction: Site Altitude: 5900 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:

Road Condition: Hard, smooth, stabilized, surfaced, watered, maintained 2.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	100.00	10.00	2.00	12.00	918	0.13

Haul Time: **0.13** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	100.00	-10.00	2.00	-8.00	2938	0.05

Return Time: **0.05** minutes

Total Scraper team cycle time: **1.48** minutes
Adjusted for job conditions: 634.28 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,268.55 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,268.55** LCY/Hour

Unadjusted unit production/hour: 764.19 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **10.73** Hours

Unit cost: $0.395 /LCY Total job cost: **$5,377**

REVEGETATION WORK

Task description: **Revegetate Quarry Areas - 15 ac**

Site: **Sprague Red Lyons** Permit Action: 7-11-2017 Inspection Permit/Job#: M1981057

PROJECT IDENTIFICATION

Task #: 003 State: Colorado Abbreviation: None
Date: 8/23/2017 County: Boulder Filename: M057-003
User: AME

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Potassium nitrate, 13-46-0	2.00	pound	$1.23	$2.46
			Total Fertilizer Materials Cost/Acre	**$2.46**

Application

Description	Cost /Acre
Push rotary spreader (MEANS 32 01 90.13 0110)	$181.65
Total Fertilizer Application Cost/Acre	**$181.65**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$106.29
Total Tilling Cost/Acre	**$106.29**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indiangrass - Cheyenne	1.00	3.05	$17.20
Big Bluestem - Native	3.00	8.95	$30.75
Blue Grama - Native	0.50	8.16	$7.25
Little Bluestem - Native	2.40	14.33	$37.80
Sideoats Grama - Vaughn	2.40	7.88	$24.00
Totals Seed Mix	9.30	42.37	**$117.00**

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
Crimping, with tractor {DMG survey data}	$66.02
Total Mulch Application Cost/Acre	**$66.02**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
Pine, Ponderosa	6	Tubling, 10 cu. in. container {(MEANS)	$1.93	$2.40	$11.58
Juniper, Common	6	Tubling, 10 cu. in. container {(MEANS)	$4.98	$2.40	$29.88
Totals Nursery Stock Cost / Acre					**$41.46**

JOB TIME AND COST

No. of Acres: 15
Estimated Failure Rate: 25%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $1,304.10
Cost /Acre*: $384.22

Initial Job Cost: **$19,561.50**
Reseeding Job Cost: **$1,440.83**
Total Job Cost: **$21,002**
Job Hours: **30.00**

BULLDOZER WORK

Task description: **Backfill Steep Highwalls in Quarries 1 and 3**

Site: **Sprague Red Lyons** Permit Action: 7-11-2017 Inspection Permit/Job#: M1981057

PROJECT IDENTIFICATION

Task #: 004 State: Colorado Abbreviation: None
Date: 8/29/2017 County: Boulder Filename: M057-004
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:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$3.61	50
Operator Cost/Hour:	$40.52	NA

Total unit Cost/Hour: $201.66
Total Fleet Cost/Hour: **$201.66**

MATERIAL QUANTITIES

Initial Volume: 1,780
Swell factor: 1.165
Loose volume: **2,074** LCY

Source of estimated volume: Q1: 10'Hx100'L, Q3: 10'Hx220'L, near vertical to 3H:1V
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 10 %
Average site altitude: 5,900 feet

Material weight: 2,900 lbs/LCY

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

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:	0.786	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5122

Adjusted unit production: 436.70 LCY/hr
Adjusted fleet production: **436.7** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.462/LCY

Total job time: **4.75** Hours
Total job cost: **$958**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilization/Demobilization**

Site: **Sprague Red Lyons** Permit Action: 7-11-2017 Inspection Permit/Job#: M1981057

PROJECT IDENTIFICATION

Task #: 005 State: Colorado Abbreviation: None
Date: 8/29/2017 County: Boulder Filename: M057-005
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	$91.36	$125.45	2	$433.62	$250.90	$500.00
Cat 627G	41.80	$93.72	$117.55	2	$422.54	$235.10	$500.00
Drill/Broadcast Seeder with Tractor	25.00	$12.22	$88.67	1	$100.89	$88.67	$250.00

Subtotals:	**$957.05**	**$574.67**	**$1,250.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet

Subtotals:	**$0.00**	**$0.00**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	LONGMONT	
Total one-way travel distance:	13.00	miles
Average Travel Speed:	55.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$6,095.24
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$0.00

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.24	0.24
Return Time (Hours):	0.24	0.24
Loading Time (Hours):	0.75	NA
Unloading Time (Hours):	0.75	NA
Subtotals:	1.97	0.47

JOB TIME AND COST

Total job time:	**3.95**	Hours
Total job cost:	**$6,095**	