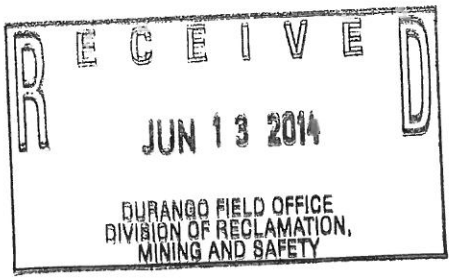
M-1998-080
RESPONSE TO DRMS BOND ESTIMATE



Colorado Division of Reclamation, Mining, and Safety
1313 Sherman Street, Room 215
Denver, CO

SUBJECT: M1998-080 H&H Quarry #2

Dear Ladies and Gentlemen:

At the request of the Operators of M1998-080, I have reviewed the documentation and the reclamation estimate prepared, and have inspected the site, and am submitting the information in this report.[1]

I believe that the reclamation estimate is higher than necessary, for the reasons explained in this report. Part of this is due to the nature of the site, and part is due to the way the information was provided in the 1998 110(c) application and related documents. Also, due to the poor economic conditions in the past five-six years, which have greatly reduced sales from the operation, the Operator has not had sufficient resources to properly maintain and operate the site. The operator has begun actions to correct this situation, as is discussed below.

An extension of sixty days is requested to allow the Operators to continue to perform needed maintenance on the site, and to review this information and change the cost estimate. These actions will also reduce the cost of reclamation, and therefore of the financial warranty needed.

Based on the information in this report, the Operator requests that the reclamation cost estimate be recalculated so that it can again be reviewed and discussed with the Division.

NATURE OF OPERATIONS:

This is not a sandstone pit typical of the area, in which sandstone is ripped or blasted and then crushed and screened to produce base course and fill material. As stated in the application, this pit's primary product is "Sandstone Building Block." Actually a wide variety of sandstone products are produced at the quarry, which fit into the general category of "dimension stone" (SIC code 1410), including sandstone landscaping boulders, cut and natural stone for building and other structural construction and paving, and flat stone for "flagstone" use. These include small sandstone cobbles which have been weathered after fracturing and are called "loaves" locally, and are highly prized for both structural and landscaping use. In addition, weathering and water staining on the sandstone as it hardens with exposure to air after fracturing creates many unique patterns which are often of great value for both structures and landscaping.

Therefore, although some large equipment is used in this mining (such as loaders and forklifts), most of the competent sandstone is drilled (usually by a truck-mounted drill but sometimes by hand) and then fractured using wedges, saws, or flowable/expanding materials that are reclaimed and used over and over. Fractured sandstone is moved to stockpiles by loader and then sorted mostly by hand.

[1] This report was delayed due to several weeks illness on the part of the preparer.

The products are placed by hand or forklift on pallets, secured, and then loaded by forklift onto trucks for hauling from the site. In some cases, selected pieces of stone are blocked and braced with wood material to prevent damage from abrasion during transport. Smaller and broken pieces of stone (generally 9 -inch maximum dimension) are left in stockpiles to be used either for reclamation but could also be crushed into roadbase at a future date, as a byproduct.

Sandstone building stone was last removed from the Quarry in late April 2014. While materials are removed frequently, they do not maintain a log of work days, and the operations are generally seasonal in nature due both to demand and to road conditions. As mentioned above, the poor economy in the region has limited operations significantly since 2008.

Photos 1 and 2. Sandstone "loaf" and sandstone drilled and split prior to further shaping and shipping from site.

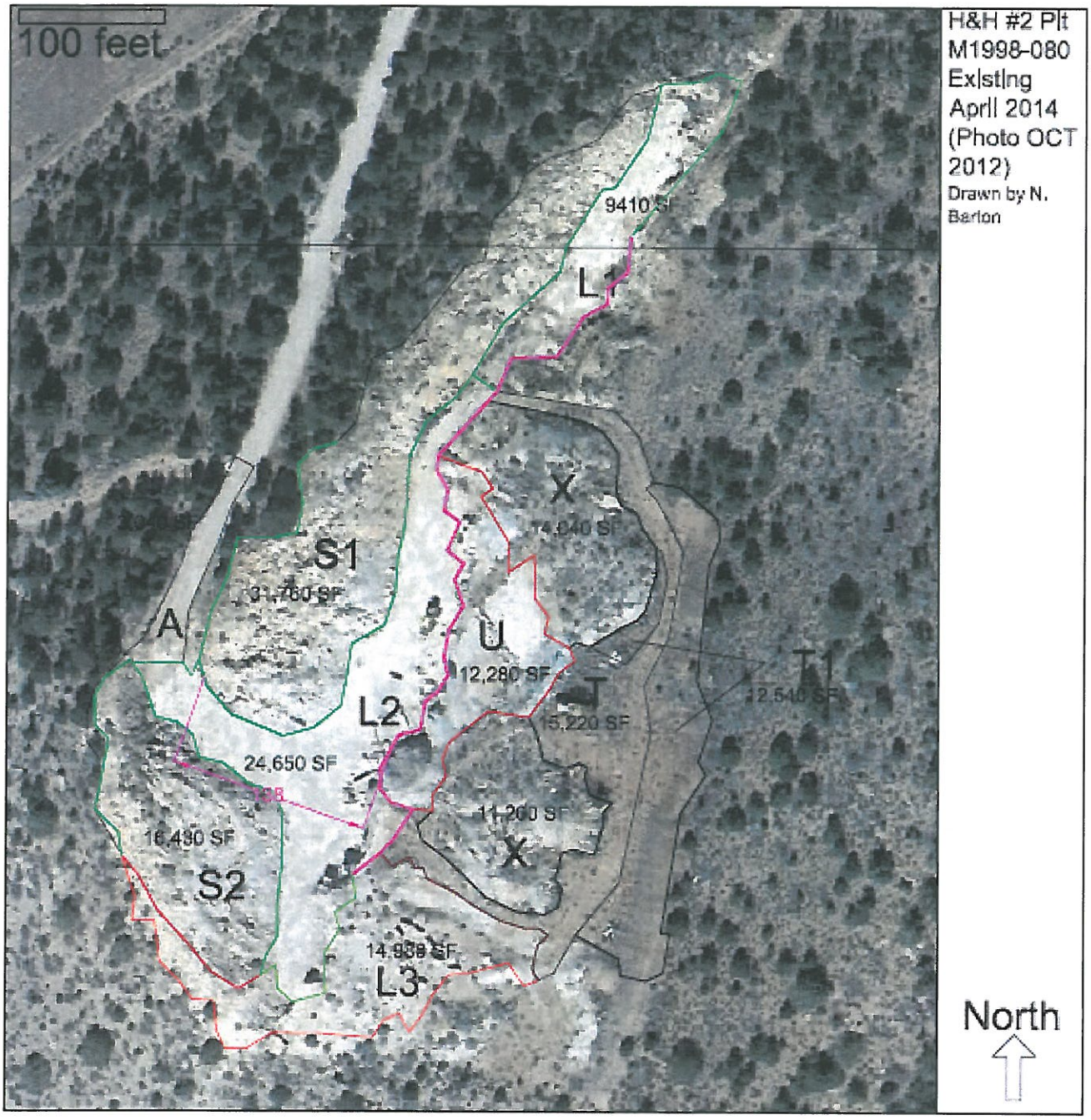
SITE:

As shown on the attached map and table, which is based on both site reconnaissance and satellite photography, the total disturbed area, including the access road (ramp) is 3.30 acres. This was determined by using a scaled satellite photo and AutoCAD (Maps 1 and 2). The total area inside the perimeter is 3.8 acres, but this includes two areas which have not been disturbed by mining.

Map	Description	Ac	SF
A	Access road (ramp)	0.07	3040
L1	Lower level north	0.22	9410
L2	Lower level middle	0.57	24650
L3	Lower + talus (South)	0.34	14980
S1	Stockpile North	0.73	31760
S2	Stockpile South	0.38	16430
T	Upper level (soil)	0.35	15220
t1	Upper area (min. dist)	0.29	12540
U	Working area/face	0.28	12280
X(N)	Undisturbed outcrop	0.32	14040
X(S)	Undisturbed outcrop	0.26	11200
	Exterior Boundary	3.80	
	Total affected	3.22	

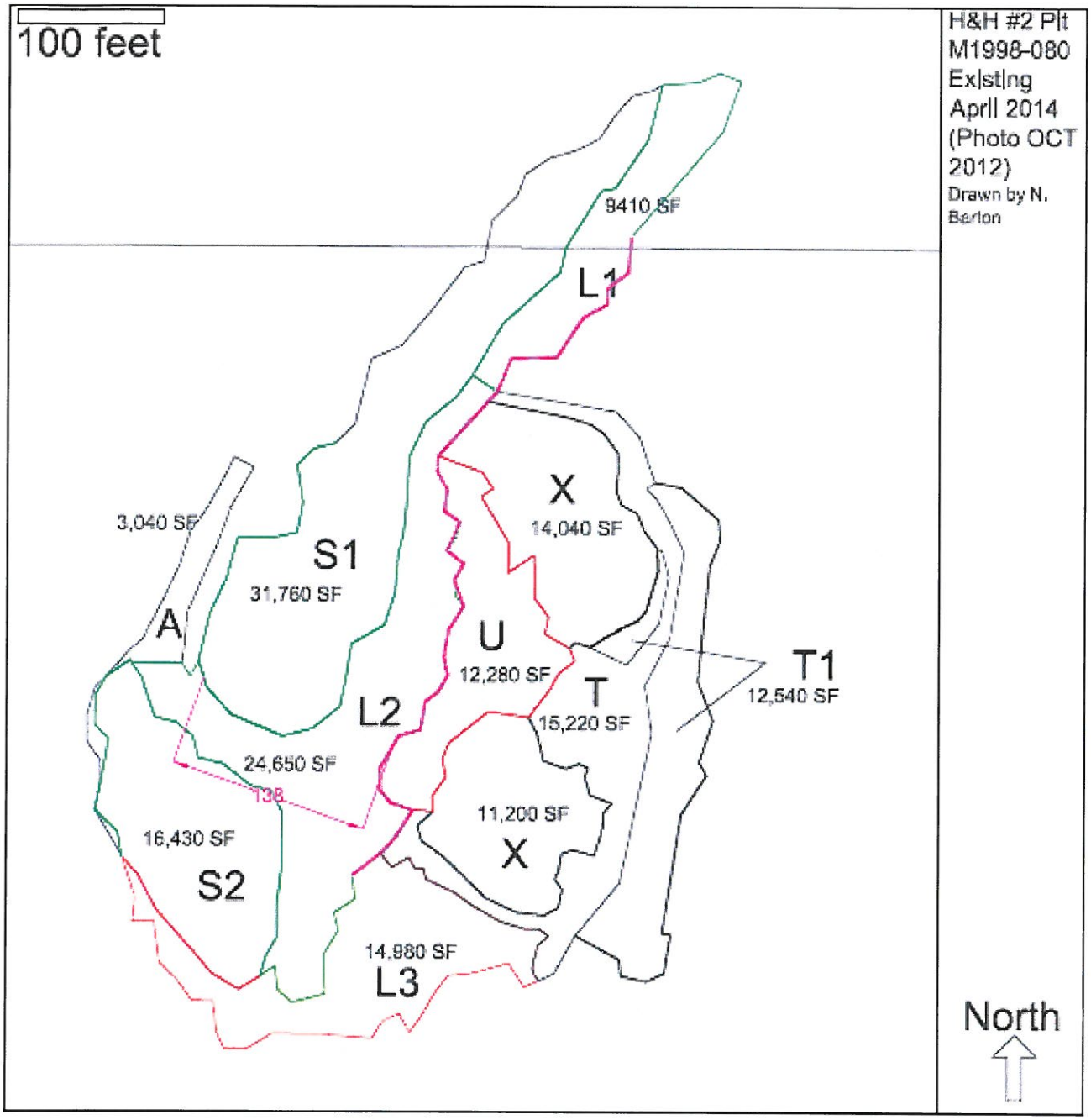
Table 1. Affected areas as of April 2014.

The site is divided into three areas: the lower level on which material is stockpiled and processed, a bench face/work area, and the upper level on which some equipment is parked and soil stockpiles and traffic areas are maintained.



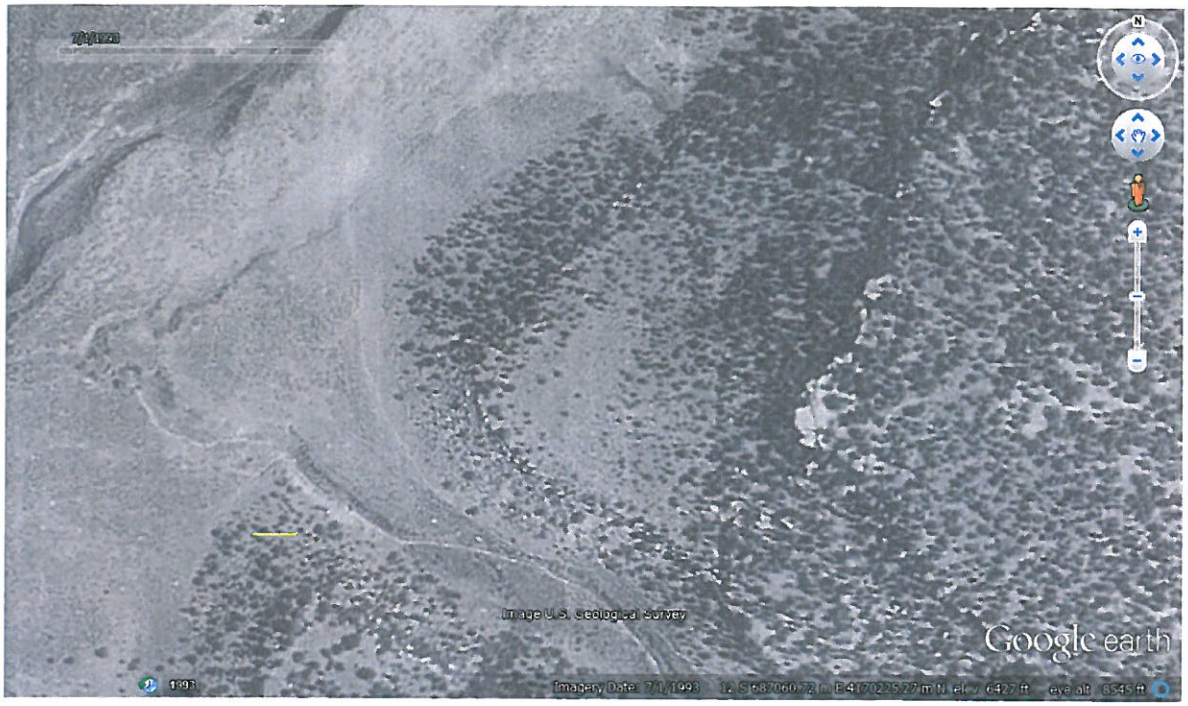
Map 1. From aerial photo OCT 2012, showing affected areas (labeled, see Table 1) as of April 2014.

As can be seen in 1993 satellite/aerial photography, much of the site was already in rock outcrop, and soil existing on the site was very limited. Although the soil descriptions for the typical Romberg-CrossCan-Rock Outcrop indicate that 20% of the surface is rock outcrop and 35% is the deep Romberg, pre-mining photos indicate that this particular area has at least 35% rock outcrop, and significantly less Romberg (perhaps as little as 15%). In addition, the entire 60-inch profile of the Romberg is "very stony," and the CrossCan soil (only 18 inches to bedrock) is "very bouldery" to "very gravelly." (That is the soil that was salvaged and is located in stockpiles on the upper level.)



Map 2. Map showing affected areas (labeled, see Table 1) as of April 2014.

Total affected acreage is estimated at 3.22 acres, including the access road. There are two areas (X, each about 0.3 acres) of undisturbed areas on the upper level surrounded by affected land.



Map 3. July 1993 (pre-mining) Scale shown by yellow line in lower left (100-feet).

Map 4. October 2012 (no significant change since) Scale shown by yellow line in lower left (100-feet).

The highwall is estimated to be 580 feet in length (cyan line on Map 2), and consists of the exposed sandstone, mostly in large (8 ft to 20 ft high, up to 20 feet wide, 10 feet or more deep), which are very stable. Some areas are significantly fractured but still stable. Although the original application indicated there was some overburden (and may refer to the darker band of shaly sandstone between the caprock

and thicker formation), only residual soil in fractures appears to be present, except in a single area which appears to be the remnants of a ravine, near the center of the highwall.

Photo 3. Highwall in main quarry area showing coherent sandstone blocks, shale layer, and upper sandstone capstone. Material stockpile to right. Bedrock floor.

Photo 4. Highwall and natural undisturbed upper slope in northern part of quarry. Material stockpile on right. Bedrock floor. Figures in distance are about 5-8.

Photo 5. Material stockpile near entry. Height about 20 feet at this point. Note size of sandstone fragments.

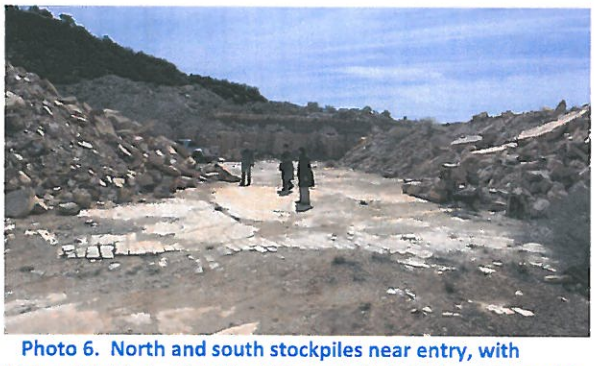


Photo 6. North and south stockpiles near entry, with highwall behind. Right (south) stockpile 8-10 feet high at this point. Note bedrock floor of pit.

The lower level is close to equally divided between two areas: 1.1 acres of "pit floor" (L1, L2) which is bedrock at the base of the sandstone being mined, and another 1.1 acres of materials stockpiles (S1, S2), consisting of sandstone boulders, rubble, and smaller fragments. There does not appear to be more than approximately 6000 CY (already loose) of sandstone in the two stockpiles on the lower level[2], in pieces ranging in size from sand/gravel to boulders of 6 feet and more. However, to create a level bench that is capable of sustaining any vegetation, approximately 50% of that would need to be left in place, since the total area of the two stockpiles is about 48,000 SF and the lower floor to be covered is only about 34,000 SF (a total of 82,000 SF (9000 SY). Therefore, there is only enough material to cover the lower level with 2-4 feet depth of material fractured enough to serve as bedding zone material, on which the 4 inches of available topsoil can be placed on approximately 65% of the surface. However, this should be adequate, so that no ripping of the pit floor bedrock is needed. This would also allow the bench height to be nearer the 10 foot height as per the reclamation plan. Although the dark shaly sandstone layer may be more erodable than the more pure sandstone above and below, the caprock protects it from erosion.

The upper level is divided into soil stockpiles and areas (T) where vegetation has been beaten down by equipment parking and traffic but original soil is present, and areas which have been disturbed (T1) but in which vegetation has reestablished itself or remains despite some activities.

[2] Rather than the 13,500 CY (loose) of material on the lower level, as stated in the most recent reclamation estimate.

Area U is part of the upper level more significantly affected by mining, primarily by removing the caprock and exposing the shaly sandstone lay. Although the 2014 reclamation estimate identifies about 711 CY of material to be pushed from the top (to reduce the highwall), this does not appear to be a wise use of the material, as it would damage areas with existing topsoil and vegetation. Only about 200 CY of loose material (ranging from boulders down to gravel) could be used without significant further damage to remaining soils in this area.

Photo 7. Edge of upper area showing both original and post-disturbance vegetation.

Photo 8. Soil stockpiles and disturbed area, on upper level (and edge of area where caprock is put on pallets.

RECLAMATION:

The permit application specifically states that benches of ten feet height are to be left, apparently as this was the situation prior to mining: natural benches of sandstone 10-15 feet tall, with talus slopes of varying height, existed on the site, and were assumed to be stable although fractured.

It would appear that the original intent was to mine the upper caprock layer back further to the east, and remove part of the dark shaly sandstone layer, leaving the top of the lower, thicker sandstone as the floor for one or more middle benches, using the dark layer as rooting zone material with soil placed on top of it, so that there was at least two feet of rooting zone and soil. This can still be done in area U, to provide a stable bench and an area where soil can be placed and vegetation can be established.

With mining to date, the sandstone now exposed (the lower, thicker formation) is more coherent and therefore more stable. Using the loose stockpiles of materials, both to provide rooting zone material where they are located, as well as filling in the rest of the bench and backfilling at the base of the bench "highwalls" to a crushed and compacted depth of 3-4 feet will leave benches of 10-15 feet in height, with the lower bench ranging in width from 80 to 200 feet, and the upper bench about 160 feet wide (including those portions where the caprock has been removed, which would a middle bench up to 60 feet wide and about 200 feet long). The exposed sandstone blocks are mostly vertical but in good condition, stable, and similar to rock outcrops in the area.

Although the reclamation plan calls for drilling seed, given the very shallow nature and limited quantity of the soil on-site both before and after mining, it may be necessary to broadcast seed rather than drill, in most of the area. However, most of the upper bench has reasonably good vegetative cover, and disturbing the existing soil and vegetative cover would be counterproductive. Raking the soil where it has been compacted by traffic followed by seeding would be more beneficial.

These actions would meet both the general concept of the reclamation plan even if operations cease immediately. At the same time, the actions and quantities of material to be moved are greatly reduced, thus reducing the cost of reclamation and the amount of the financial warranty. This includes:

Task 01A: Reduce from 711 CY initial volume to 200 CY initial volume and zero swell factor (already loose)

Task 02A: Reduce from 6304 CY initial volume to 3000 CY and zero swell factor (already loose).

Task 03A: Eliminate: seems to duplicate Task 02A.

Task 04A: Eliminate: adequate material to provide rooting zone with no need to rip.

Task 05A: Unable to analyze, as 3090 CY initial volume is shown, and no information on estimated area to have soil placed on. Appears approximately 2.2 acres needs to be covered with soil after grading.

Task 06A: Reduce estimated area from 3.22 acres to 2.2 acres, reflecting areas already with vegetation.

Task 08A: Eliminate based on Operator action #7 below.

ACTIONS BY OPERATOR JUN-JUL 2014:

1. Consolidate pallet storage area (upper level, including already loaded pallets). Area T.

2. Consolidate equipment storage on upper level. Area T.

3. Remove and dispose of trash (off-site). All Areas.

4. Block access to areas where traffic has needlessly reduced vegetation, rake and seed as necessary. (Relocate traffic to areas nearby.) Areas T, T1.

5. Segregate larger sandstone boulders in stockpiles (Area S).

6. Grade areas with unstable slopes (leaving exposed boulders) and place soil and seed (Areas L1, L3)

7. Pull back stockpiled sandstone from edge of bench, grade, place soil, and seed (Areas S(n) and S(s).

Prepared by Nathan A. Barton, CE, PE, DEE