

Specification Aggregates Quarry Amendment
EXHIBIT E (Rule 6.4.5) Reclamation Plan

General Approach

The method of land reclamation currently being used at the Specification Aggregates Quarry is concurrent reclamation. Concurrent reclamation is a process wherein reclamation of areas where mining and associated activities have been completed starts within months of the completion of those activities. The features incorporated into the reclamation design have been planned and designed to provide amenities for future land use. The planned reclamation program includes water storage, as approved by Technical Revision Number 3 to this permit, and open space. The reclamation plan will revegetate the site to be similar to the adjacent open space lands above the anticipated water line of the reservoir.

During the extraction process features of the highwalls (land use backdrop) will continue to be established that will be similar to the surrounding topography. These backslopes or highwalls have a variety of slopes and configurations. The back slopes have an average overall slope of approximately 45 degrees (measured from the rim to the toe of the highwall). The benches above the anticipated water line (approximately 6,405 feet elevation) for the proposed reservoir (exposed slopes) will have excess overburden soils placed on them to allow the establishment of a vegetated slope. The amount of fill or placement of soils on each bench will vary, but typically will be 35-50 feet in height from the toe of the bench to the top of the face exposed from the removal of that bench. The bottom width of the soils placed will be the full width of each bench. Soil exposures will be sloped downward and generally will be at the same 45-degree angle of repose as the overall highwall configuration. Benches will be developed on the face of the highwall during the course of the mining operation. These benches may be spaced at random intervals and so shaped as to preclude the formation of extended and continuous horizontal lines across the face of the highwalls. Randomly spaced rock faces may be left or develop from some settling of the fill in the backfilling of the benches. It is intended that the majority of the highwall, slopes and benches have the appearance of the surrounding topography. Plans and specifications for establishing the final slope of these benches and their highwalls are in general terms to accommodate certain uncontrollable irregularities occurring during extraction of the rock and the placement of the soil overburden. As the final slope and location of each bench is established, revegetation will be implemented. **Appendix A** to this Exhibit E includes a depiction of the conceptual final slope design along with a photo demonstrating the concurrent reclamation process.

Careful attention will be given to finishing the floor of the quarry outside of the proposed reservoir area (exposed floor), which will be a terrace for future land use. Shaping of the exposed floor will provide the necessary grading required for overall drainage of the area. Several natural drainages currently traverse the exposed floor area of the quarry outside of the reservoir basin, and drainages from these will be reconstructed as needed to flow across the exposed floor area.

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Martin Marietta and Jefferson County Open Space have reached an agreement that the final contours of the eastern side of the Quarry will be as depicted in Exhibit F and include gradual slopes of approximately twenty-seven (27) degrees consistent with a beach shoreline, while the remaining limits of the Quarry may be graded to provide for steeper slopes. The eastern shoreline will include approximately fourteen hundred (1400) linear feet of shoreline with an average width (including above and below the anticipated water line) of approximately three hundred and fifty (350) feet.

To achieve the post mining land use envisioned by Jefferson County Open Space, Martin Marietta anticipates that the first three benches below the 6,405 feet elevation level along the anticipated shoreline will be mined to approximate slopes of 2h:1v, the next two levels below that will be mined to approximate 1h:1v. Below that, all slopes will be mined to 0.5h:1v to the pit floor.

Along the southeast side, the first bench below the 6,405 feet elevation level will be mined to an approximate 2h:1v slope. The next four benches below that level will be mined to an approximate slope of 1h:1v, and below that all slopes will be mined to 0.5h:1v.

Along the south and west sides of the ultimate pit, all slopes will be mined to an approximate slope of 1h:1v from the top of the mine to the first bench below the 6,405 feet elevation level. Below that, all slopes will be mined to 0.5h:1v.

All slopes along the north side of the mine will be mined to an approximate slope of 1h:1v.

All of these slope configurations are depicted in the Reclamation Map in Exhibit F.

The Geotechnical Stability Report prepared by Schnabel Engineering and attached to this amendment application in Section 6.5, demonstrates that all of these slope configurations meet the Division's minimum factor of safety requirements.

The accomplishment of this land reclamation method in conjunction with applicable reclamation standards of the City of Golden, Colorado Mined Land Reclamation Board, and the Agreement with Jefferson County Open Space will establish a beneficial multiple sequential land use.

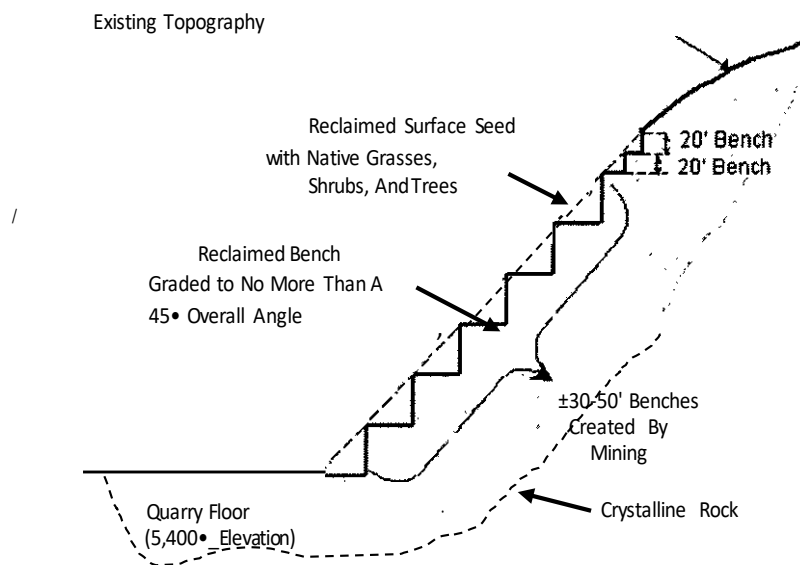
Backslopes and Grading:

Reclamation of the mine area is governed by the rules and regulations of the Colorado Division of Mining, Reclamation and Safety, and by the Agreement with Jefferson County Open Space. The maximum overall highwall angle shall not exceed 45 degrees for the exposed slopes. That is, the inter-ramp angle of the overall highwall will not exceed 1:1 (horizontal:vertical) though individual benches may be narrower than their respective height to account for the bench face angle. In addition, the exposed slopes will be shaped so that they will homogenously blend (as much as is possible) with the existing undisturbed topography. Loose or unstable material that poses a potential hazard will be removed from the face of the backslopes. Benches will be developed across the face of the highwall, and benches on exposed slopes will have a minimum

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safe width of 30 feet. Vertical faces will be limited to maximum slopes of 88 degrees for final benches. Except, as necessary to minimize dangers associated with slope hazards, the rim of the quarry highwall will be rounded and the two uppermost benches shall not exceed 20 feet in height.

Martin Marietta has committed to continue the complete backfilling of the finished exposed benches created by mining in the fashion that has been the standard practice at the quarry for most of its operational life. This method of reclamation is visible on the north, west, and current south walls of the quarry. The following illustration details the important points of this reclamation requirement.



Example of Whole Bench Reclamation

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Below the anticipated water line at elevation 6,405 feet, slopes will not be backfilled except for some benches along the proposed shoreline.

Final grading of the exposed floor areas shall provide for a graded surface and the prescribed gradations of 2 percent for surface drainage. Roads servicing the area shall be located, shaped, and graded so as to minimize the potential for erosion.

Drainage:

Reclamation shall give due regard to proper drainage of the affected areas. Upon completion of the mining and reclamation, the land shall be left in a safe condition that provides drainage structures sufficient to prevent water pockets or undue erosion, and to control surface runoff in excess of historical flow. Natural drainage channels outside the mining area will be preserved and used whenever possible. In those areas where natural drainage is interrupted, French drains and/or culverts will be installed as required, to assure flow of runoff water through the area. Reconstruction of the Jackson Gulch drainage will be completed after cessation of mining activities, and will result in flows from Jackson Gulch being directed to the proposed reservoir.

Top Soil:

There is a limited quantity of topsoil overlying bedrock on the site that is suitable for revegetation and this will be stockpiled and preserved for use in reclamation on the property. Topsoil will be used with other available soils and decomposed rock to provide a minimum of 12 inches to 18 inches of cover on the floors and stockpile areas.

Revegetation:

The site revegetation program shall be continued with the assistance of the designee of Jefferson County or the Colorado Division of Mining, Reclamation and Safety. The ongoing revegetation program will involve utilization of available topsoil, and the selection of appropriate plant species, locations for planting, and maintenance procedures. In those areas where revegetation is part of the reclamation plan, land shall be revegetated in such a way as to establish a diverse, effective, and long-lasting vegetative cover that is capable of self-regeneration and similar in extent of cover to the natural vegetation of the surrounding area. The existing vegetation program that will continue to be implemented satisfies the following minimum standards:

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1. For the back filled benches and at other locations outside of the proposed reservoir impoundment area, bare-root stock bushes and trees will be planted. The plant species used will be selected from the annual list of the Jefferson County 4 - H as provided by the Colorado Division of Forestry. The spacing of the trees and shrubs will be random and staggered at a minimum distance of 20 feet apart.
2. For exposed slopes, benches and quarry floor areas outside of the proposed reservoir impoundment area one of the following seed mixture shall be planted:
 - a.) Seed mix to be provided by Jefferson County designee
 - OR**
 - b.) The seed mix presented in Appendix B

The seed mix provided by the Jefferson County designee shall be the preferred mix, but after two failed seeding attempts, the alternate (b) mix may be used.

Cleanup and Maintenance:

Cleanup and maintenance of the area affected by the open mining operation shall be instigated as a part of the final phase of reclamation in each portion of the Planned Unit Development, and after termination of the mining and processing activities. Notice of cessation of mining and processing activities to the City of Golden, as to the existing quarry, and to the Colorado Division of Mining, Reclamation and Safety is mandatory. Within two years after the date of that notice, the reclamation shall be completed, including the removal of all mining and processing equipment and scales from the premises.

Spec Agg Expansion Reclamation Study
Appendix A



Figure 1: Final conceptual reclamation slopes for the Spec Agg Quarry. For illustrative purposes only. Actual mining will dictate final reclamation.



Figure 2: Concurrent Reclamation at Spec Agg Quarry

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Appendix B: Permanent Revegetation Seed Mixture					Total seeds per acre= 2,613,600			
					Total acres= 1.60			
					Pure Live Seeds per square foot= 60.00			
Species	Common Name	Desired Species %	No. Seeds/ Pound	Number PLS per acre	Pounds PLS per Acre	Pounds of PLS For Reclamation Area	PLS per Square Foot	
Grasses								
Agropyron smithii	Western Wheatgrass: arriba	14.5	145,000	378,972	2.614	4.18	8.70	
Agropyron trichophorum	Pubescent Wheatgrass	14	90,000	365,904	4.066	6.50	8.40	
Bouteloua gracilis	Blue grama: Native CO	8	711,000	209,088	0.294	0.47	4.80	
Buchloe dactyloides	Buffalo Grass	8	42,000	209,088	4.978	7.97	4.80	
Koeleria macrantha	prairie junegrass: native	7	1,465,000	182,952	0.125	0.20	4.20	
Nassella viridula	green needlegrass	8	181,000	209,088	1.155	1.85	4.80	
Poa secunda	sandberg bluegrass: native	10	925,000	261,360	0.283	0.45	6.00	
Stipa comata	needle and thread: native	8	115,000	209,088	1.818	2.91	4.80	
Grass Total (% PLS/Acre, PLS Pounds/Acre, PLS/Square Foot)		77.5		2,025,540	15.332	24.53	46.50	
Forbs								
Cleome serrulata	Rocky mountain beeplant	3	75,000	78,408	1.045	1.67	1.80	
Linum lewisii	Prairie Flax	2	293,000	52,272	0.178	0.29	1.20	
Lupinus argenteus	Silver lupine	2	126,000	52,272	0.415	0.66	1.20	
Penstemon strictus	Rocky mountain penstemon	3	280,000	78,408	0.280	0.45	1.80	
Rudbeckia hirta	Black-eyed Susan	5	1,500,000	130,680	0.087	0.14	3.00	
Thermopsis montana	Mountain Golden banner	0	15,000	0	0.000	0.00	0.00	
Forb Total (% PLS/Acre, PLS Pounds/Acre, PLS/Square Foot)		15		392,040	2.006	3.21	9.00	
Trees & Shrubs								
Chrysothamnus nauseosus	Rubber rabbitbrush	5	335,000	130,680	0.390	0.62	3.00	
Prunus virginiana	Chokecherry	0.5	4,790	13,068	2.728	4.37	0.30	
Rhus trilobata	Three-leaved sumac	1	20,000	26,136	1.307	2.09	0.60	
Yucca glauca	Soap Yucca	1	15,000	26,136	1.742	2.79	0.60	
Trees & Shrubs Total (% PLS/Acre, PLS Pounds/Acre, PLS/Square Foot)		7.5		196,020	6.167	9.87	4.50	
Seed Mixture Total (% PLS/Acre, PLS Pounds/Acre, PLS/Square Foot)		100.0		2,613,600	23.506	37.61	60.00	