

## EXHIBIT E – RECLAMATION PLAN

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This information provided in this Exhibit is intended to satisfy the requirements outlined in Section 6.4.5 of the Colorado Mined Land Reclamation Board Construction Material Rules and Regulations: The proposed mining and reclamation plan focuses on minimizing the ecological impacts of mining, minimizing the length of time of impact, and maximizing long-term benefits.

- (a) ***A description of the type(s) of reclamation the Operator proposes to achieve in the reclamation of the affected land, why each was chosen, the amount of acreage accorded to each, and a general discussion of methods of reclamation as related to the mechanics of earthmoving;***

The majority of the site (Cell 1 through Cell 4) will be reclaimed to lined water storage reservoirs due to a need within the county and state for water storage facilities. The mined area in the Siltation Pond and Fresh Water Pond may be backfilled back to native grade and used as farmland or may be converted to a water storage facility if economically feasible and sufficient void space exists at the completion of mining. Refer to Exhibit F for the acreages of each cell and additional details.

### Earthmoving

Topsoil mined while establishing the plant sites and establishing the Fresh Water Pond and Siltation Pond will be placed in a berm along the edge of the pit. The bermed topsoil will be used in final reclamation of the siltation pond and freshwater pond. Any excess topsoil will be placed to the north of the plant site (See Figure C-5).

Topsoil mined in later phases will be placed in berms around the current mine phase or placed in the topsoil stockpiles to the north of the plant site or north of Cell 2. Topsoil from these stockpiles will be used to reclaim vegetated areas over the rest of the site. Topsoil may be replaced by a scraper or haul truck, excavator, and bulldozer, and will generally be graded with a blade. All grading will be done in a manner that controls erosion and siltation of the affected lands, to protect areas outside the affected land from slides and other damage.

Reclamation in each phase will begin as soon as mining in that phase is completed. Overburden and clay seam materials will be removed from mining phases and stockpiled north of Cell 2 and adjacent to the Freshwater Pond and Siltation Pond (See Figure C-5). Overburden and clay materials may also be sold as general fill to remove excess material not needed in Reclamation. All disturbed areas will be regraded and smoothed to a finished grade that is suitable for revegetation or the final land use.

- (b) ***A comparison of the proposed post-mining land use to other land uses in the vicinity and to adopted state and local land use plans and programs.***

The water storage reservoirs will be compatible with the other land uses in the vicinity, which includes farmland, industrial land, and rural residential. Municipal boundaries have

approached the vicinity of the site and represent a growing need for both construction materials and water storage facilities.

**(c) *A description of how the Reclamation Plan will be implemented to meet each applicable requirement of Section 3.1.***

The Operator will carry reclamation to completion with reasonable diligence. Each phase of reclamation will be generally completed within one to two years from completion of mining, but not more than five years from the date the Operator informs the Board or Office that final reclamation has commenced.

***Section 3.1.5 Reclamation Measures Material Handling:***

Grading will be performed to help control erosion and siltation of the affected lands through phased mining, implementing good operation techniques to handle material as little as possible, and vegetation of stockpiles remaining in place for more than 180 days. Although the use of erosion protection devices is not anticipated, if deemed necessary by the operator at the time of excavation, silt fence, haybale dams or other erosion control devices will be installed. Backfilling and grading will be completed as soon as feasible after the mining process is complete for each phase.

Maximum slopes and slope combinations will be compatible with the configuration of surrounding conditions and selected land use. Mining will occur at a 3:1 slope. Reclaimed slopes in the water storage reservoir will not be steeper than a 3:1 ratio and will be shaped by a bulldozer to remove rills caused by precipitation. Any gaps in the slope will be filled with fill materials and construction methods that will insure stability. The upland area will be reclaimed to grades consistent with pre-mining drainage patterns.

The operator will backfill using fill material generated on-site, or imported inert fill generated outside the permit area. If any inert off-site material is used as backfill, a notarized letter will be submitted to the Division as required by Section 3.1.5(9) of the MLRB Construction Material Rules and Regulations.

It is not anticipated that mining will uncover any refuse or acid-forming or toxic producing materials, however if any such materials are encountered the operator will take precaution to handle the materials in a manner that will control unsightliness and protect the drainage system.

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. Any test pits, soils boring holes, or monitoring wells not located within the mine excavation limits will be plugged as soon as it can be confirmed that they are no longer needed for the operation.

Mined material to be disposed of within the affected area will be handled in such a manner to prevent any unauthorized release of pollutants to the surface drainage system. No unauthorized release of pollutants to groundwater shall occur from any materials mined, handled or disposed of within the permit area.

### ***Section 3.1.6 Water-General Requirements:***

The Operator will comply with applicable Colorado water laws governing injury to existing water rights and with applicable state and federal water quality and dredge and fill laws and regulations.

The operator will develop and comply with a stormwater management plan and will use best management practices (BMPs) to ensure groundwater and surface water are protected to the greatest possible extent. BMPs include schedules of activities, prohibitions of practices, maintenance procedures and other management practices to prevent or reduce the pollution in runoff from the site.

### ***Section 3.1.7 Groundwater - Specific Requirements:***

The Operator will comply with the applicable standards and conditions for classified and unclassified groundwater.

### ***Section 3.1.8 Wildlife:***

The mining and reclamation plans have been designed to account for the safety and protection of wildlife on the mine site. The Operator will mine the site in phases and use concurrent reclamation methods to minimize the impact on wildlife. The proposed reclamation plan may improve wildlife habitat. The proposed seed mix and plantings will create improved cover, foraging, roosting, and nesting areas for wildlife. The water area within the reservoir will serve as habitat for waterfowl and other bird species and the fringes of the reservoir will be used by mammal, bird, reptile and amphibian species. Control and/or removal of noxious and weedy species during the project and the introduction of desirable graminoid, forb and potential woody species during reclamation will result in enhancement of wildlife habitat on the project site.

### ***Section 3.1.9 Topsoiling:***

Topsoil shall be removed and segregated from other spoil. Topsoil stockpiles shall be stored in places and configurations to minimize erosion and located in areas where disturbance by ongoing mining operations will be minimized. Once stockpiled, topsoil shall be re-handled as little as possible. Stockpiles that will remain in place for more than 180 days will receive vegetative cover with the Weld County Sandy Site Mix noted below:

#### **Weld County - Sandy Site Mix Sand**

Bluestem (Champ, Chet) 1.00 lbs pls/acre  
Sand Lovegrass (Bend, Native, Ne27) 2.50 lbs pls/acre  
Indian Ricegrass (Nezpar, Rimrock) 3.00 lbs pls/acre  
Prairie Sandreed (Goshen) 0.75 lbs pls/acre  
Green Needlegrass (Lodorm) 1.50 lbs pls/acre  
Little bluestem (Blaze, Cimarron, Camper) 0.75 lbs pls/acre

Yellow Indiangrass (Cheyenne, Holt, Scout) 0.50 lbs pls/acre  
Switchgrass (Blackwell, Nebraska 28) 1.50 lbs pls/acre  
Sand Dropseed 0.50 lbs pls/acre Total: 12.00 pounds pls/acre

***Section 3.1.10 Revegetation:***

In those areas where revegetation is part of the reclamation plan, the land shall be revegetated in a manner that establishes a diverse, effective, and long-lasting vegetative cover that is capable of self-regeneration without continued dependence on irrigation or fertilizer and is at least equal in extent of cover to the natural vegetation of the surrounding area. These areas are relatively minimal given the water development reclamation plan for the site. The proposed seed-mix and plantings for reclamation are outlined below:

**Weld County - Areas South of County Road 68 Mix**

Western Wheatgrass (Arriba, Barton, Rosana) 2.50 lbs pls/acre  
Blue Grama (Hachital, Lovington) 1.50 lbs pls/acre  
Sideoats Grama (Vaughn, Butte, Niner, El Reno, Haskell) 2.25 lbs pls/acre  
Smooth Brome (Lincoln, Manchar) 2.00 lbs pls/acre  
Sand dropseed 0.25 lbs pls/acre  
Perennial Ryegrass (Calibra or Garibaldi tetraploid) 0.75 lbs pls/acre  
Slender Wheatgrass (Pryor, Revenue or San Luis) 2.50 lbs pls/acre  
Alkaligrass (Fults II, Salt on Sea) 1.25 lbs pls/acre  
Switchgrass (Nebraska 28, Blackwell) 1.00 lbs pls/acre  
Total: 14.00 pound pls/acre

***Section 3.1.11 Buildings and Structures:***

The existing house and outbuilding in the western portion of Cell 4 will be utilized as office buildings until mining progresses to that portion of the Cell and the buildings are removed. A portable building will be utilized as an office during Phase 5 and will be placed in the plant area.

An aggregate processing plant, a 250 by 50-foot sand drying and screening plant and two 80-foot tall silos will be located at the site for the duration of mining operations. These structures will be removed and the footprint will be graded back to native grade prior to final reclamation. The plant structures are shown on Figure C-5.

Conveyors will be constructed at the site to move material from the cells to the processing plant. The approximate conveyor alignment is shown on Figure C-5.

***Section 3.1.12 Signs and Markers:***

The Operator will post appropriate signage at the entrance to the mine site. The permit area will be marked by existing fencing, or proximity to existing County roads.

**(d) *Plans for topsoil segregation, preservation and replacement; for stabilization, compaction and grading of spoil; and for revegetation.***

Topsoil will be removed and segregated from other spoil. Topsoil not needed for reclamation may be sold or removed from the site. For reclamation, topsoil will be replaced by a scraper and generally graded with a blade. Grading shall be done in a manner that controls erosion and siltation of the affected land and protects areas outside the affected land from slides and other damage. In addition, backfilling and grading shall be completed as soon as feasible after the mining process.

Final grading will create a final topography that is appropriate for the final land use. For example, final grading of the reservoir above the high water line will replace material no steeper than 3:1 slope to meet the grade at the top of the banks. Topsoil will be uniformly placed and spread on areas disturbed by the mining, above the anticipated high water line. The minimum thickness shall be 6 inches above the surrounding finished grade. The topsoil shall be keyed to the underlying and surrounding material by the use of harrows, rollers or other equipment suitable for the purpose.

In those areas where revegetation is part of the reclamation plan, the Operator will revegetate the land in such a manner to establish a diverse, effective, and long-lasting vegetative cover that is capable of self-regeneration without continued dependence on irrigation or fertilizer and is at least equal in extent of cover to the natural vegetation of the surrounding area. Seed will be drilled and mulched.

The revegetation seeding list on the Reclamation Plan Map contains the preferred species of grasses to be planted.

Seeding will take place once final grading and replacement of topsoil have been completed for each phase. Timing of seeding will be consistent with standard horticultural practice for dryland applications - generally between late September and the middle of April to ensure there is adequate moisture for germination.

**(e) *A plan or schedule indicating how and when reclamation will be implemented.***  
***Include:***

***i. An estimate of the periods of time which will be required for the various stages or phases of reclamation.***

Reclamation for any given stage of mining may take up to five years to allow for successful revegetation. Please refer to the Timetable for Mining in Section (e) of Exhibit D.

***ii. A description of the size and location of each area to be reclaimed during each phase.***

Please refer to the Reclamation Plan Map (Exhibit F).

***iii. Outlining the sequence in which each stage or phase of reclamation will be carried out.***

Please refer to the Timetable for Mining in Section (e) of Exhibit D.

**(f) A description of:**

**i. Final grading – maximum anticipated slope gradient or expected ranges thereof;**

The finished slopes of the reservoir will be no steeper than 3:1 for slopes mined at a 3:1.

**ii. Seeding – types, mixtures, quantities and time of application;**

Please refer to the Reclamation Plan Map for the list of plant materials and seeds to be utilized. Timing of seeding will be consistent with standard horticultural practice for dryland applications - generally between late September and the middle of April to ensure there is adequate moisture for germination. Additional plantings may be installed once the reservoirs are full of water and the grasses are established.

**iii. Fertilization – types, mixtures, quantities, and time of application;**

The type and application rate of fertilizer shall be determined based on a soil test at the time of final reclamation.

**iv. Revegetation – types of trees, shrubs, etc.;**

The site is historically irrigated farmland. The site will be revegetated with an upland grass seed mix in areas that are above the highwater line or are graded back to native grade.

**v. Topsoiling – specify anticipated minimum depth or range of depths for those areas where topsoil will be replaced.**

Topsoil will be uniformly placed and spread on all areas disturbed by the mining above the anticipated high water line and areas graded back to native grade. The minimum thickness shall be 6 inches above the surrounding finished grade.

## **WEED MANAGEMENT PLAN**

The Operator will monitor and control noxious weeds as they appear. The Operator may control weeds mechanically, by mowing and/or disking, or with a contact herbicide.