Dollar Creek Shared Use Trail – Preliminary Revegetation Plan

Areas to receive revegetation treatments shall include all areas disturbed by construction activities associated with the Dollar Creek Shared-Use Trail (hereinafter referred to as the Project). The revegetation materials and methods specified for use in the Project Technical Specifications and Construction Drawings (Pending) shall conform to the requirements set forth in this document. Any alterations in materials and/or methods from those specified in the Project Technical Specifications and Construction Drawings will be subject to review and approval by Placer County's Designated Project Representative (DPR) All required certificates and samples shall be submitted prior to prior to their use. performing revegetation treatments. The revegetation work shall consist of all labor, materials, equipment, and incidentals for revegetation of all areas disturbed by construction activities as described in the project Technical Specifications and Construction Drawings, and shall include site preparation, seeding, and application of amendments, mulch, erosion control blankets, and temporary irrigation. The stream environment zone (SEZ) revegetation plan is pending.

Submittals.

- 1. Within 10 business days following the award of contract, Contractor shall submit a revegetation schedule to Placer County's DPR for review and approval.
- 2. Within 20 business days following the award of Contract, Contractor shall submit to Placer County's DPR the results of soils testing.
- 3. Within 30 business days following the award of Contract, Contractor shall submit to Placer County's DPR the written documentation that they have ordered the specified revegetation materials. Such documentation shall include letters from the suppliers of revegetation materials for the Project including the following information:
 - Name and contact information for the supplier
 - A list of the materials ordered
 - Quantities of materials ordered
 - Expected delivery date of materials to the Project site

It shall be the Contractor's responsibility to inform Placer County's DPR of any proposed substitutes for revegetation materials. Proposed substitutions shall be subject to review and approval by Placer County's DPR prior to their use.

- 4. At least 10 business days prior to the delivery of revegetation materials to the Project site, Contractor shall submit the following information to Placer County's DPR:
 - Name and contact information for the supplier
 - A list of the materials to be delivered
 - Material labels for seed, mulch, and erosion control blanket to be delivered (labels for seed shall show seed vendor's certification for required seed mixtures and all requirements listed in **Revegetation Seed Mix** Section).

- Quantities of materials to be delivered.
- Date of delivery
- Manufacturer's shipping, storing, and placement recommendations
- 5. Within 24-hours after compaction testing has occurred, Contractor shall submit compaction test results to Placer County's DPR for review.
- 6. During temporary irrigation period, Contractor shall submit an irrigation log on a monthly basis to Placer County's DPR.

Inspections. Prior to implementing revegetation treatments, Contractor shall stake the limits of revegetation activities (types and boundaries) and shall request inspection of the staked areas by Placer County's DPR. Contractor shall schedule field inspections of completed revegetation work by Placer County's DPR as part of the process to obtain notices of substantial completion and final completion.

Site Preparation and Grading. Contractor shall limit soil disturbance to those areas that require treatment. Contractor shall protect all existing vegetation within the project limits that is not designated for removal, especially mature shrubs and trees. Under no circumstances shall any disturbance be allowed to occur outside the work areas identified on the construction drawings or in the field by Placer County's DPR. Any vegetation damaged during construction shall be repaired or replaced and any areas disturbed or compacted during construction shall receive full soil conditioning and revegetation treatment at the Contractor's expense as directed by Placer County's DPR.

Revegetation Treatment Summary. Contractor shall conduct revegetation activities in the order outlined below. The Contractor shall notify Placer County's DPR not less than 72 hours in advance of revegetation work and shall not begin the work until the prepared treatment areas have been approved.

Contractor shall provide revegetation treatments on all areas disturbed by construction activities associated with the Project, including fill/cut slopes and temporary construction access and staging areas. Contractor shall implement the following Revegetation Treatment Types:

Revegetation Type A:

Revegetation Type A shall be applied on disturbed land areas (excluding areas with Land Capability District 1b - Stream Environment Zones) having surface slopes equal to or flatter than 2:1 (Horizontal: Vertical). Contractor shall carry out the following activities in all areas to receive Revegetation Type A:

- Collect and analyze soil samples
- Remove and store topsoil (depending on quality of topsoil)
- Grade and excavate
- Till soil to depth of:
 - o 18-inches in areas having surface slopes less than 5:1 (20%)
 - o 12-inches in areas having slopes between 5:1 and 3:1 (20%-33%)
 - o 6-inches in areas having slopes between 3:1 and 2:1 (33%-50%)

- Test for compaction
- Apply salvaged topsoil OR soil amendment to 4 inches
- Prepare surface
- Apply seed to depth of ¼ inch
- Mulch
- Irrigate

Revegetation Type B:

Revegetation Type B shall be applied on disturbed land areas (excluding areas within Land Capability 1b - Stream Environment Zones) having surface slopes steeper than 2:1 (Horizontal: Vertical). Contractor shall carry out the following activities in all areas to receive Revegetation Type B:

- Collect and analyze soil samples
- Remove and store topsoil (depending on quality of topsoil)
- Grade and excavate
- Till soil to depth of 12 inches
- Test for compaction
- Apply salvaged topsoil OR soil amendment to 4 inches
- Prepare surface
- Apply seed to depth of ¼ inch
- Install erosion control blankets
- Irrigate

Revegetation Type C:

Revegetation Type C shall be applied on land areas within Land Capability District 1b – Stream Environment Zones. Contractor shall carry out the following activities in all areas to receive Revegetation Type C: (PENDING)

Soil Sample. Contractor shall collect soil samples at regular intervals of no less than every 1,000 feet along the proposed Trail to provide representatives soils samples from areas to receive Revegetation Treatments A and B. Contractor shall send those samples to a laboratory for analysis as specified below. Tools used to collect the soil sample shall be stainless steel or chrome plated to avoid contamination of the sample. Sample shall be send to the laboratory in a clean, dry plastic container. The samples shall be tested for organic matter, Phosphorus, Potassium, Magnesium, Calcium, Sodium, pH, Hydrogen, Cation Exchange Capacity, Nitrogen, Sulfur, Zinc, Manganese, Iron, Copper, Boron, Excess Lime, Soluble Salts, TKN, NO₂, Total P, and Ortho P. Contractor shall submit the results of soils analysis to Placer County's DPR in order to determine the appropriate fertilizer type and application rate to optimize soil conditioning and revegetation efforts. The fertilizer shall be subject to approval in writing by Placer County's DPR prior to application.

Topsoil removal and storage. In areas where grading and excavation is required, Contractor shall remove topsoil to an approximate depth of 6-inches below the existing ground surface and store the topsoil. Topsoil is defined as the mulch, duff, and top organic

matter layer of the soil. Placer County's DPR will identify both the extent and depth of topsoil that will be removed. The requirements surrounding removal and storage of topsoil include:

- Topsoil shall be removed and stored with a minimum of handling.
- Topsoil shall be stored for as short a time period as possible and shall be replaced immediately after grading and excavation is finished.
- Any areas negatively affected by the storage of topsoil shall be treated following the specifications outlined in this document at the Contractor's expense.

Grading and Excavation. Some areas shall require reshaping of terrain prior to revegetation as noted on the Construction Drawings or in the field by Placer County's DPR. Grading and excavation shall take place prior to the revegetation activities described below. Contractor shall conduct Grading and Excavation activities in accordance with the applicable section(s) of the Project Technical Specifications and the Construction Drawings.

Soil Tilling. Prior to surface treatments, Contractor shall loosen disturbed soil or decompact areas unless otherwise noted. In areas receiving Revegetation Types A and B, Contractor shall till the soil to a minimum depth of 12-inches. Contractor shall replace any topsoil removed after grading, excavation, and tilling are completed, unless otherwise directed by Placer County's DPR.

Contractor shall notify Placer County's DPR at least 5 business days before tilling the soil. Contractor's proposed method of loosening the soil shall be subject to review and approval by Placer County's DPR. After soil tilling has occurred, construction equipment shall not travel on tilled areas. If tilled areas are recompacted by construction equipment, Contractor shall reloosen the soil in those areas at his/her expense.

Mechanical Tilling. Placer County's DPR will determine in the field where mechanical tilling is appropriate. Mechanical soil tilling will not be allowed where Placer County's DPR determines that mechanical tilling is inappropriate. Soil shall be loosened mechanically using a backhoe or excavator equipped with a bucket capable of loosening the soil to the appropriate depth. A bucket equipped with cutting teeth may be used if soil can be tilled appropriately without pulverizing it. Soil shall be loosened in such a way that clods remain and soil is not reduced to powder.

Existing Roots. Exceptions to the tilling depth requirements described above will be made in areas where shrub or tree roots may be negatively impacted by tilling. Tree roots and existing plants shall be avoided wherever possible during tilling activities. No mechanical loosening shall take place within the drip line of mature trees or shrubs. If tree roots are encountered, tilling shall occur by hand using tools such as pick mattocks or Pulaskis or an equivalent tool to a depth of approximately 8-inches.

Compaction Testing. Following soil tilling activities, Contractor shall test for compaction using a cone penetrometer or equivalent tool. Contractor shall provide the results of compaction testing to Placer County's DPR within 24 hours following the test. If an area requires a force greater than 200 pounds per square inch in order to drive the tool a depth of 12-inches, that area will be retreated following the methods described in **Soil Tilling** section.

Soil Amendment Application. Contractor shall apply soil amendments to a depth of 4-inches and shall replace topsoil where possible. Amendments are dependent on soil test laboratory results. If compost is necessary as determined by laboratory results, it shall have the following characteristics:

- 1. 30-65% organic matter on dry weight basis
- 2. Less than 0.5% undesirable materials such as plastic, glass, metal, or rocks on dry weight basis
- 3. 30-60% moisture content
- 4. pH 6.0-8.5

Compost shall be accompanied by a lab analysis of content, and shall be approved by Placer County's DPR prior to use.

If fertilizer is necessary in addition to compost, as determined by the laboratory tests, Contractor shall apply it according to the manufacturer directions. If any soil nutrient deficiencies were determined by laboratory tests, Contractor shall apply organic fertilizer to compensate. Proposed fertilizer shall be subject to review and approval by Placer County's DPR prior to application, but shall likely be a slow release fertilizer similar to Biosol 6-1-3, or approved equal.

Surface Preparation. Prior to seed application, Contractor shall lightly smooth tilled areas by rake in such a way that some surface roughness is attained. The result shall be a soil surface that mimics natural conditions, with relief between 3- and 6-inches over a 24-inch distance. Tilled areas will be subject to inspection and approval by Placer County's DPR prior to any further revegetation activities.

Revegetation Seed Mix. (See table, below)

Botanical Name	Common Name/Variety	Pure Live Seed Ibs/acre
Elymus elymoides ssp. Elymoides	Squirreltail (high elevation collection)	35
Bromus carinatus	Mokelumne or El Dorado Brome	20
Achnatherum occidentale	Western Needlegrass	10
Purshia tridentate	Antelope Bitterbrush	10
Arctostaphylos patula	Greenleaf manzanita (high elevation collection)	5
Eriogonum umbellatum	Sulfur-flower buckwheat	3
Linum lewisii	Blue Flax	3
TOTAL PLS pounds per acre		86

All seed shall be in conformance with the California Department of Food and Agriculture requirements regarding noxious weeds, and shall be delivered to Placer County's DPR for on-site approval.

Seed shall be ordered pre-mixed and shall be certified weed-free. Seed shall come from sources within 50-miles of the Project area and within 1,000 vertical feet of the project elevation. Exceptions may be made for non-local, commercially available native grass seeds that originate from locations more than 50-miles from the project. Seed shall be of a quality which has a minimum Pure Live Seed as specified. Weed seed shall not exceed 0.5 percent of the pure live seed and inert material. Any changes to the seed mixes described in the **Table** above must be approved in writing by Placer County's DPR. The seed mix shall be delivered to Placer County's DPR in sealed and clearly marked bags that indicate:

- 1. Species
- 2. Purity
- 3. Percent germination
- 4. Vendor's guarantee
- Dates of tests
- Content of Pure Live Seed (PLS).

Prior to application, the Contractor shall provide a letter of certification, original Association of Official Seed Analysts (AOSA) seed test results, and calculations of PLS content to Placer County's DPR.

Seeding. Contractor shall conduct seeding in the fall prior to the first snow unless otherwise approved by Placer County's DPR. Soils shall be moist to two inches unless otherwise approved by Placer County's DPR. Seed shall not be planted unless the seed mix and soil preparation activities have been approved by Placer County's DPR.

The seeding process shall occur in the following order:

- 1. Contractor shall apply seed mix by hand or hand applicator at the rates listed in the Revegetation Seed Mix Table and shall spread the seed in a uniform manner.
- Following seed application, Contractor shall lightly rake the soil surface so the seeds are tilled in to a depth of one-quarter to one-half inch $(\frac{1}{4} \frac{1}{2})$.
- 3. Revegetation Type A areas: Contractor shall spread mulch over the seeded area to a depth of two inches (1" to 2" depending on application method). Mulch used shall consist of the material and following the procedure described in the **Mulch** section.
- 4. Revegetation Type B areas: Contractor shall install erosion control blankets using the blanket described in and following the instructions in the **Erosion Control Blanket** section.
- 5. Revegetation Types A and B, Contractor shall provide irrigation in accordance with the **Temporary Irrigation System** Section.

Mulch. Mulch shall be clean and free of rocks, garbage, or other unsuitable material. Mulch can be collected on site and shall consist of pine needles and related duff material. Mulch shall contain less than ten percent (10%) large pieces such as twigs and pinecones and less than ten percent (10%) decomposed organic matter. Mulch shall contain less than one percent (1%) mineral soil. If garbage occurs, it shall represent less than one-half percent (0.5%) of the total volume and shall be removed to the satisfaction of Placer

County's DPR. Mulch materials must be approved in writing by Placer County's DPR prior to application.

In areas receiving Revegetation Type A, Contractor shall be spread mulch after seeding. Mulch may be applied by hand or blower and must be applied in such a way as to achieve an even layer. If applied by hand, mulch depth shall equal approximately two inches (2"), and if applied by blower, mulch depth shall equal approximately one inch (1"). Mulch shall cover ninety-eight percent (98%) of all bare areas. Placer County's DPR shall be notified 5 business days prior to mulch application. Mulched areas shall be approved on-site by Placer County's DPR after application and before further revegetation activities.

Erosion Control Blanket. In areas receiving Revegetation Type B, Contractor shall install erosion control blankets after seeding.

The coconut fiber erosion control blankets shall be North American Green C125BN or equivalent. The erosion control blanket shall meet requirements established by the Erosion Control Technology Council (ECTC) Specification and the US Department of Transportation, Federal Highway Administration's (FHWA) Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 Section 713.17 as a Type 4 Long-term Erosion Control Blanket. A product of equal properties may be used if pre-approved by Placer County's DPR. The product must be a long-term double net 100% biodegradable erosion control blanket that is a machine-produced mat of 100% coconut fiber with a functional longevity of up to 24 months. The blanket shall be of consistent thickness with the coconut evenly distributed over the entire area of the mat. The blanket shall be covered on the top and bottom sides with 100% biodegradable woven, natural, organic fiber netting. The top netting shall consist of machine directional strands formed from two intertwined yarns with cross directional strands interwoven through the twisted machine strands (commonly referred to as a Leno weave) to form an approximate 0.50 x 1.00 (1.27 x 2.54 cm) mesh. The blanket shall be sewn together on 1.50 inch (3.81 cm) centers with degradable thread. The Erosion Control Blanket shall include an installation staple pattern clearly marked with environmentally safe paint. The blanket shall be manufactured with a colored thread stitched along both outer edges (approximately 2-5 inches [5-12.5 cm] from the edge) as an overlap guide for adjacent mats.

Material Content:

- 1. Matrix: 100% Coconut Fiber 0.5 lbs/yd² (0.27 kg/m²)
- 2. Nettings: Top Leno woven 100% biodegradable jute fiber 9.3 lb/1000 $\rm ft^2$ (4.5 kg/100 m²) Bottom 100% biodegradable jute fiber 7.7 lb/1000 $\rm ft^2$ (3.76 kg/100 m²)
- 3. Thread: Biodegradable

All coir fabric shall be stored elevated off the ground and adequately covered to protect the material from damage. Protect fabric from sharp objects that may damage the material. Materials damaged during transport, storage or placement shall be replaced at the Contractor's expense. Placer County's DPR shall inspect and approve all materials prior to installation.

Fabric stakes shall be wooden stakes 18 inches long and have a top (head) dimension of at least 1.5 inches on one axis (thickness) and 3 inches on the second axis (width). Fabric stakes shall be manufactured by ripping an 18-inch long standard 2-inch by 4-inch,

undamaged wooden stud that is free of knots along the diagonal from corner to corner. Fabric stakes shall not be treated with preservative. Other types of stakes shall be subject to the approval of Placer County's DPR. Pre-approved stakes are Wooden Wedges from Rolanka International (www.rolanka.com) as long as they meet the dimension and length requirements in the Project Technical Specifications and Construction Drawings.

Existing woody vegetation and rocks larger than two feet (2') in diameter shall remain uncovered. Blankets shall be installed from the top to the bottom of the slope. Wooden stakes described above shall be used to secure the blankets to the slopes. No more that three inches (3") of the stake shall protrude above the surface of the blanket. Stake installation patterns shall be clearly marked on the erosion control blanket with environmentally safe paint. The blanket shall be manufactured with a colored line or thread stitched along both outer edges to ensure proper material overlapping.

Temporary Irrigation System. Contractor shall use water trucks or equivalent equipment for irrigation. Water shall be applied with low-flow or misting nozzles that shall not cause runoff, erosion, or mulch displacement in areas to receive Revegetation Types A and B.

Contractor shall apply a quantity of water to penetrate to a depth of 8-inches, but not to fully saturate the soil. Frequency of irrigation shall depend on air and soil temperatures, but is expected to occur every 3-days for the first 4-weeks and every 8-days thereafter for the remainder of the growing season. The irrigation cycle shall continue until written direction is given by Placer County's DPR to stop but not longer than one full growing season. If rain occurs during the irrigation program, the schedule may be modified under the direction and written approval of Placer County's DPR. Irrigation is meant to assist with the establishment of vegetation, and shall not continue beyond the initial germination period.

The Contractor shall keep a log of all irrigation activities performed, with one log entry per irrigation event. Each entry shall include:

- 1. Date and time of irrigation
- 2. Quantity of water applied expressed as a ratio of gallons per square foot of surface area
- 3. Depth of water penetration
- 4. Estimated air temperature and general weather observations
- 5. Operator's name and affiliation

Contractor shall submit the irrigation log entries to Placer County's DPR on a monthly basis for one (1) calendar year after irrigation begins or until Placer County's DPR has given a written notice to stop irrigating.

Maintenance. The Contractor shall ensure continued mulch cover over seeded areas until the sites are adequately protected from erosion, as determined by Placer County's DPR. Contractor shall replace displaced mulch at his or her expense.

Performance Standard and Acceptance. The Contractor is responsible for providing landscape plant care before landscape work is accepted by Placer County's DPR in writing as complete. Placer County's DPR will use his discretion in determining if the revegetation is established and successful. Placer County's DPR's discretion will be guided by the goal of having 50% plant cover and 95% total cover 6-months after construction, and 90% plant

and total cover one 1-year after construction. Total cover is defined as cover provided by both vegetation and mulch.

The Contractor shall furnish to Placer County's DPR a Letter of Credit in the amount equal to 20% of the Contractor's total bid price for Revegetation. e Letter of Credit shall be furnished in a form acceptable to Placer County's DPR and shall be valid for a period of 1-calendar year from the date of final completion of the project. If during the correction period revegetation material becomes defective or fails to thrive, and if the Contractor fails to take corrective action in a timely manner after being notified of the defects, Placer County's DPR will have the right to utilize the Letter of Credit to pay for the cost of corrective work, whether performed by themselves or others.

Measurement and Payment

"Revegetation" shall be measured by the (PENDING). The contract unit price paid per (PENDING) for Revegetation shall include full compensation for providing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in seeding, planting, irrigation, complete in place, as specified in the Project Technical Specifications and the Construction Drawings, and as directed by Placer County's DPR.