

**Lower Perazzo Meadow Restoration
Truckee River Watershed Council
Revegetation Plan – Contractor responsibilities**

Long-term site stability will be achieved through revegetation strategies. The Contractor shall be responsible for a portion of the revegetation work. Supplemental revegetation will be accomplished through California and Sacramento Regional Conservation Corps (Corps) crews and volunteers. Work completed by the Corps and volunteers will be coordinated by TRWC.

Revegetation Areas

This section generally describes the different project areas that will require revegetation. Specific revegetation strategies are described in the next section. Revegetation areas are shown on Figure 1.

- Channel fill area
- Meadow restoration borrow areas (F and G)
- Forested borrow areas (A/B, C, D, and staging area)
- Access routes
- Restored channels

Channel fill area. Most of the existing channel of the Little Truckee River and associated low-lying areas will be filled. Without any revegetation treatments, these areas are most at risk for erosion after project completion. As such, the channel fill area will be the highest priority for revegetation. The channel fill area is currently a mix of stream channel, emergent wetlands, willow/sedge wetlands, and upland. After project construction, the channel fill area will be a mix of emergent wetlands, willow/sedge wetlands, and stream channel.

Meadow restoration borrow areas (F and G). Borrow areas F & G will be excavated to provide fill for the channel. These sites are composed of historic and recent colluvium that appears to have eroded from the hillslope above (NV5, 2018). Below the coarse deposits, meadow soils are present. The historic and recent deposits will be removed, and then the sites will be graded to match the meadow surface. After project construction and revegetation, it is anticipated that these areas will revert to meadow and wetland habitat.

Forested borrow areas (A/B, C, D, and staging area). Borrow areas A/B and C are previously disturbed borrow sites located in coniferous upland areas. The project staging area is located in a previously disturbed location adjacent to borrow area C. Borrow area D is a relatively undisturbed forested area. The dominant species at all the forested borrow areas is lodgepole pine with some Jeffrey pine mixed in. After project completion, these areas are expected to remain coniferous forest with sparse grass/shrub understory.

Access routes. Access routes from borrow locations to the channel will require rehabilitation after the project is completed.

Restored channels. The project proposes to restore flow to historic remnant channels on the meadow surface. These channels are, in general, extremely well vegetated with sedges, rushes, grasses, and willows, so limited active revegetation will be required. However, some willows will need to be strategically removed to encourage reconnection of channel remnants. Some limited excavation may also be necessary to form pilot channels to direct flow into the remnants. These actions will result in disturbance that could be susceptible to erosion if not treated.

Revegetation Strategies

Revegetation of the project area will be accomplished through several strategies:

- Minimize disturbance
- Sod and topsoil salvage and replanting
- Willow salvage, transplant, and staking
- Seeding
- Conifer planting
- Mulching/mastication
- Access route decommissioning

Contractor responsibilities are detailed below.

Minimize disturbance. Access, stockpile, and staging areas shall be limited to sites outlined in the Design Plan and SWPPP (Attachments 1 and 2) to minimize the project footprint, and reduce the size of the revegetation areas.

Sod and topsoil salvage and replanting. The contractor shall be responsible for all sod salvage and replanting.

Sod/topsoil salvage and replanting will be used extensively in the channel fill area and the meadow borrow areas (F and G). Topsoil salvage and replacement will be used at the forested borrow areas (A/B, C, and D).

Sod specifications: Sod shall consist of above ground and below ground plant materials including leaves and roots, and the soil bound by the root mass. Plants shall be healthy, vigorous and well rooted. Sod shall consist of living plants, thatch and plant detritus and shall consist primarily of perennial bunchgrasses, rushes, sedges, or a combination thereof. Soil mass of sod shall contain a uniform distribution of roots with a target of 50 percent (50%) root mass by volume to a depth of six (6) inches from the root crown. Sod sections shall be rejected when, in the opinion of the Engineer's Representative, they are of insufficient root mass or cohesiveness, but may be determined appropriate for use as topsoil. At all times, sod salvage shall be free of noxious weeds.

Sod shall be lifted from the subgrade in contiguous sections using machinery equipped with a front end bucket, 36-inch wide excavator bucket, or otherwise approved apparatus. Work shall progress in such a manner as to minimize the disturbance of the soil bound by the root mass and the contiguous integrity of the sod section.

Channel fill sod/topsoil salvage and placement: For the channel fill areas, all plant material and topsoil from the areas to be filled shall be removed prior to placement of fill. The sod shall be stockpiled and watered to ensure viability. Sod should ideally be placed on the same day as it is harvested, and no more than 48-hours after harvest. Any sod stored for over 8 hours shall be protected from exposure to wind, heat, and desiccation. Contractor shall be responsible for irrigating sod to maintain moisture levels of no less than 15 percent (15%) moisture. Any stored sod shall be stored root side down, edges tightly abutting adjacent sod blocks, and shall not be stacked. Sod on the perimeter of the storage area shall have the outermost edges draped with wetted burlap within thirty (30) minutes of placement for storage to protect roots and conserve soil moisture.

This salvaged sod and topsoil shall be placed on channel fill types B, C, and D. Material salvaged from elevations closer to the stream channel shall be used on channel fill types C and D, as this salvaged material will be composed primarily of FACW and OBL species. Material salvaged from elevations further above the stream channel shall be placed on channel fill type B, as this salvaged material will have a more mixed species composition. Guidance will be provided by the Engineer's Representative.

Sod placement shall focus most on the edges of channel fill and at swale crossings (channel fill type C) – areas at greatest risk of erosion. The target is 100% coverage for channel fill type C, with channel fill type D the second priority, and channel type B lowest priority. It is anticipated that sufficient sod will not be

present to entirely cover the fill areas, so additional revegetation treatments (willow, seeding, and mulching) will be used to supplement sod transplant.

Sod shall also be placed at any "pilot channel" excavation areas in the remnant channel system to prevent erosion when flow is returned to these areas.

Prior to sod placement, the graded soil surface shall be loosened to a minimum depth of four (4) inches. The top elevation of sod shall correspond to finish grade.

Soil shall be irrigated within four (4) hours of sod placement and water shall have infiltrated to a minimum depth of four (4) inches prior to placement. Sod shall be rejected when, in the opinion of the Engineer's Representative, it has been allowed to become too dry or is otherwise damaged. Any sod that is determined to be un-usable due to inappropriate storage shall be replaced at the Contractor's expense. Replacement materials must be approved by the Engineer's Representative and will likely consist of wetland plugs or other purchased material. Additional on-site sod salvage outside of the project footprint will not be possible.

Sod shall be placed with sides snugly adjoining adjacent sections. Voids between sod sections shall be filled with native topsoil. Sod shall be firmly tamped or rolled after placement to eliminate air pockets between the prepared surface and roots. Sod shall be placed so that the top surface forms a continuous shape. Sod which is damaged due to the Contractor's activities during the course of work shall be replaced at the Contractor's expense.

Borrow areas sod/topsoil salvage and placement: At all borrow areas, topsoil shall be removed and stockpiled for use in revegetation. At Borrow areas F & G, sod salvage will also be possible. Sod will be treated as described above. After use, all borrow areas will be finished graded to match the adjacent hillslopes and left at a sustainable slope (<3% or at Engineer's Direction). Topsoil will be replaced on the disturbed area after final grading and before any additional revegetation treatments.

Willow salvage and replanting. Some willows are present in the channel fill areas. These shall be excavated and replanted, concurrent with construction as much as practicable. Prior to removal, prune willows so that branches include two to three nodes, but are generally less than six (6) inches in length. Cuts shall be clean, leave no frayed bark, and be made ½ inch above the node. Generated willow branch material that is of sufficient size to be used as pole cuttings shall be trimmed of leaves and shoots, and shall be stockpiled in ponded water for later use by the Corps crews. Sufficient size is 4.5' length and 0.5" inch to 1.5" inch diameter.

Gently remove entire willow plants by excavating around the root zone with a backhoe bucket, or other approved equipment. As much of the root ball as feasible shall be removed intact. Plants shall be replanted at locations on the channel fill under the Engineer's direction. To replant the willows, excavate holes twelve (12) inches below the root zone and twelve (12) inches wider on both sides of the root mass. Loosen soils in the bottom and along the sides of the hole and place the plant in the hole, backfill with the excavated moist soil so that the root ball is two to four (2 – 4) inches below existing grade. Tamp soil and thoroughly water immediately following planting.

Any willows removed from the remnant channels to promote flow connectivity will also be transplanted to the channel fill areas and treated as described above.

Seeding. Native seeds shall be spread where needed to supplement revegetation of all disturbed areas. Seeds shall be provided by TRWC, composed of three mixes:

- Type 1 - Wet meadow. Used on channel fill C & D, access routes as appropriate, and the lower portions of Borrow areas F & G.
- Type 2 - Mesic meadow. Used on Channel Fill B, borrow areas F & G, and access routes as appropriate.

- Type 3 - Upland. Used on access routes as appropriate.

After acceptance of seed mixes from TRWC, Contractor shall store seeds immediately in a dry, weather and damp proof structure. Any seed which has become wet, moldy, or damaged in transit or storage will not be acceptable. Any seeding materials that are damaged due to mishandling shall be removed and replaced at the Contractor's expense.

The areas to be seeded shall have a firm seed bed which has previously been roughened by scarifying, disking, harrowing, chiseling, or otherwise worked to a depth of at least four (4) inches. The seed bed may be prepared at the time of completion of excavation or earthwork. Construction debris and extraneous piles of soil shall be removed before seeding.

Seeding shall occur after September 1 and prior to any snow accumulation and ground freeze, unless otherwise approved by the Engineer's Representative.

Seeding shall not occur when wind speeds exceed 5 miles per hour.

Seed only those areas that can be watered on that same day as installation.

Seed shall be uniformly broadcast with hand-held seeders and lightly raked to incorporate to a depth of 0.25- to 0.5-inches. Seed shall not be left uncovered for more than 24 hours, unless otherwise approved by the Engineer's Representative.

Mulching/mastication. All disturbed areas shall be mulched to promote seed and moisture retention. Mulch shall be gathered on site or nearby and is anticipated to include pine needles, branches, and shredded/chipped wood. Conifers removed from Borrow areas A/B, C, and D will be limbed and shredded or chipped as a mulch source. Limbs shall be stockpiled and later used as slash on channel fill areas, decommissioned access roads, and other disturbed areas as appropriate.

Pine needles brought to the site for application as a top-dressing shall originate from as close to the site as possible and shall not be derived from areas with invasive weeds such as cheatgrass.

Salvaged duff/mulch shall be evenly applied to the surface of the seeding areas to a one (1) inch depth; pine needles/wood mulch shall then be applied to increase depth to two (2) inches.

Access route decommissioning. Construction access routes will be decommissioned by loosening compacted soils to a minimum depth of twelve (12) inches and achieving a density no greater than 300 PSI (approximately 2,000 KPA) as measured by a penetrometer. 30 days prior to demobilization the contractor shall submit a plan specifying methods for decompaction for approval by the Engineer's Representative.

Access routes shall be seeded and mulched as necessary to achieve 70% cover. Slash and logs can be used.

Encapsulated route decommissioning. Encapsulated access routes shall be removed with extreme care to prevent soil from spilling on the meadow. If any rutting or damage to vegetation is observed once the access route is removed, contractor shall be responsible for revegetating and decompacting damaged areas.

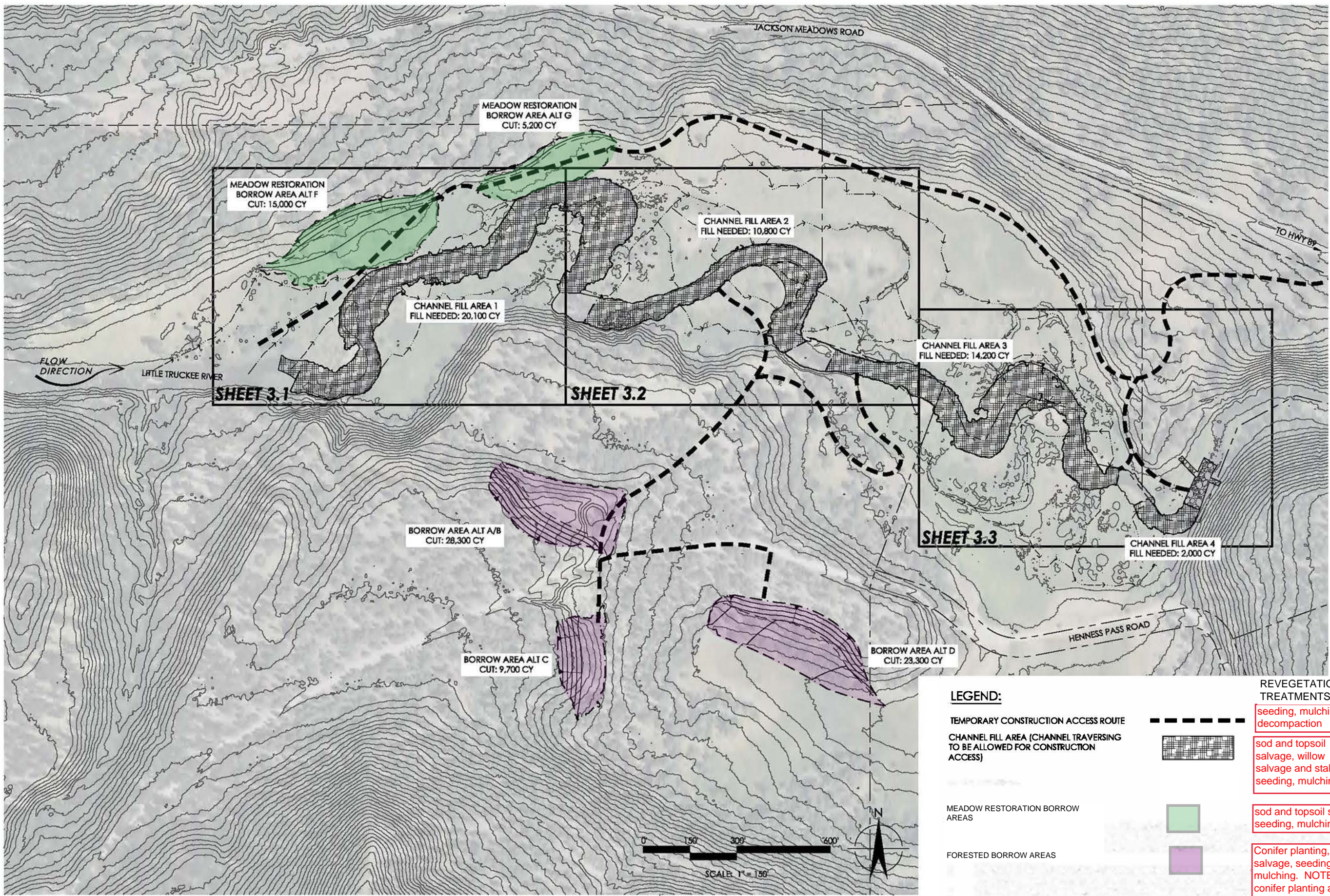
Warranty

For two years following completion of the work, the work shall show no evidence of erosion such as rilling, gullyng, or headcutting.

DESIGNED BY	DATE	BY	SUBMITTALS / REVISIONS
D SHAW	4/16/18	DS	95% DESIGN
B TRUSTMAN	7/27/18	DS	REVISED 95% DESIGN
CHECKED BY			
D SHAW			
IN CHARGE			
P KULCHAWIK			
DATE	7/27/18		

OVERVIEW MAP AND ACCESS AND STAGING PLAN
LOWER PERAZO MEADOW RESTORATION
 SIERRA COUNTY, CALIFORNIA
 TRUCKEE RIVER WATERSHED COUNCIL

PROJECT NUMBER	218116
SCALE	1" = 150'
SHEET	3.0

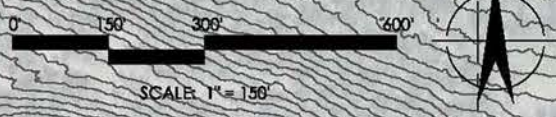


LEGEND:

- TEMPORARY CONSTRUCTION ACCESS ROUTE: Dashed line
- CHANNEL FILL AREA (CHANNEL TRAVERSING TO BE ALLOWED FOR CONSTRUCTION ACCESS): Hatched pattern
- MEADOW RESTORATION BORROW AREAS: Green fill
- FORESTED BORROW AREAS: Purple fill

REVEGETATION TREATMENTS

- seeding, mulching, decompaction
- sod and topsoil salvage, willow salvage and staking, seeding, mulching
- sod and topsoil salvage, seeding, mulching
- Conifer planting, topsoil salvage, seeding, mulching. NOTE: conifer planting and mulching to be completed by Corps.



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