

# TECHNICAL NOTES

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TN - PLANT MATERIALS - 43

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## SALVAGE OF NATIVE SOD FOR WETLAND RESTORATION IN THE CENTRAL SIERRA NEVADA MOUNTAINS

The success of meadow and stream restoration projects can be greatly improved by the utilization of suitable plant materials that may be available onsite. Projects which require the excavation and reuse of well vegetated sod, or provide opportunity for nearby offsite sod harvesting, should incorporate this practice as a project component. This practice serves not only to maintain the genetic integrity and species composition of the site, it also provides an immediate ground cover for erosion control and armoring of regraded streambanks.

Sod should consist of perennial grasses, rushes, sedges and forbs. The sod considered for harvesting should have an average plant density of 4 living plants per square foot and exhibit 100 percent ground cover. Ground cover may consist of a combination of living plants, thatch and plant detritus.

Plant species with a rhizomatous root structure are preferred. The soil should be bound by a contiguous root mass, 50 percent by volume, to a depth of 6 inches below the root crown. If the water table within the project area is within the subgrade, or if frequent irrigation is possible, harvesting may occur during the mid-summer months, otherwise harvesting should occur in late summer or fall when plants are entering dormancy.

In preparation for harvesting, plants should be mowed to a height of 4 inches. A study conducted in 1990 concluded that this practice forces root and shoot development(1). Mowing also creates a well defined visual landmark for harvesting. Cutting sod into sections requires both a vertical and horizontal cut. Sod should first be cut vertically. The size of sod sections should be determined by the means of transport. If lifting is to be accomplished by hand, sod sections should be limited to 1 foot by 1 foot. If heavy equipment is available, they can be cut vertically into 2 foot by 3 foot sections which are small enough to manipulate by hand for final placement.

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The sod should be moist throughout the top 6 inches prior to harvest. The sod may be lifted or scalped from the subgrade with a horizontal cutting motion to a depth of 6 inches below the root crown. Sod may be lifted in contiguous sections using machinery equipped with a front end bucket; or, if small enough, using hand implements with a square, sharp leading edge. It is important during this process to insure that operations progress with care to minimize disturbance of the soil bound by the root mass and maintain the contiguous integrity of the sod section.

Final placement of sod should take no longer than 30 minutes from time of harvest. If logistical constraints require the storage of materials, they should not be stored for longer than 72 hours. Stored sod should be immediately transported to the storage site and placed roots down with edges snugly adjoining adjacent sections. Sod should not be stacked. Sections placed on the perimeter should be draped with wetted burlap to maintain soil moisture.

Prior to final placement of sod, the subgrade should be saturated to a depth of 4 inches. Place the sod with sides snugly adjoining adjacent sections. When sod is placed on or adjacent to streambanks, placement should begin at the upstream edge. Voids between sod sections should be filled with native soil and firmly tamped or rolled to eliminate air pockets. The sodded areas should be irrigated to field capacity immediately following placement.

Depending on the scale of the restoration project, it may be necessary to utilize heavy equipment for harvesting and transport of materials. The environmental impacts that such equipment can exert on sensitive meadow and stream environments can be minimized by utilization of either constructed haul roads or military style, heavy steel landing mats for use as temporary access roads. Both methods have been used successfully in the Lake Tahoe Basin.

Haul road construction requirements are specific to the type of soil material used and require the assistance of the NRCS State Conservation Engineer. Haul roads are constructed by laying lifts of soil material over an appropriate filter fabric. After construction, these materials are then removed and disposed of properly. Depending on the length of time or season during which this activity takes place, existing vegetation may recover sufficiently so that additional vegetative restoration may not be necessary. Should reseeding become necessary, a well established cover of grass may be expected by the end of the second growing season, depending on climate and local growing conditions.

Landing mats come in a variety of configurations and are available through the Department of Defense or GSA surplus property programs. Landing mats are heavy steel interlocking panels which, once constructed, can support the weight of equipment. The use of two types in the Lake Tahoe Basin suggests that the non-perforated style performs best. Since individual panel dimensions vary, it will be necessary to locate the source and type available as a part of the planning process.

#### REFERENCE CITED

(1) Owens, Jerry, and Dave Dyer. Propagation of Wetland Plants in the Lake Tahoe Basin. (Special report prepared for California Department of Water Resources). USDA Natural Resources Conservation Service, South Lake Tahoe, CA., 1993