Best Management Practices - Inglenook Fen-Ten Mile Dune Rehabilitation Project Appendix E

The following specifications and best management practices were adapted from two California Department of Parks and Recreation (CSP) publications (Merrill and Casaday, 2001, and 2002) and a CSP and California Geological Survey (CGS) publication. This compilation of specifications and practices may be altered to meet the specific needs of the Inglenook Fen – Ten Mile Dunes Preserve within MacKerricher State Park as remediation and restoration efforts proceed.

To ensure that State Park restoration goals are met, CSP will provide a full-time Project Inspector (PI), and qualified cultural and biological monitors as necessary, to oversee project activities. Within specific constraints defined within the Mitigated Negative Declaration (MND), the PI may adjust specifications and excavation designs as excavations proceed. Contractors and equipment operators must be able to accurately interpret written and verbal excavation details as stated in the contract or given by the PI. They must be able to visualize and plan all aspects of work required at each site. Skill in operation and coordination of heavy equipment is necessary for cost-effective restoration of these state park lands. Adverse impacts to park resources (e.g. natural ground surface, water quality, vegetation, wildlife habitat, etc.) must be minimized in accomplishing the required work.

The Contractor shall not initiate any earth moving work or vegetation manipulation unless the PI is present at the worksite. By monitoring excavations as they progress, the PI shall assist the contractor in adjusting the excavation grade and alignment to achieve a topographic match, and also shall determine the suitability of the grade achieved. Indicators of original (natural) grade may include: original topsoil or channel features (small woody debris and rock), bedrock outcrops, or naturally introduced large woody debris. These boundary conditions exist naturally in a stream channel or its valley prior to road building and functioned as natural control for the channel forming processes. It is extremely important not to remove or disturb these natural grade indicators.

Area of disturbance

Areas of Disturbance are established for the road and culvert removal components of the project and define the maximum area anticipated to be impacted by the proposed work. Sensitive areas to be avoided are depicted on the project maps and are delineated for compliance with various environmental regulations and requirements. The Areas of Disturbance do not represent areas of unrestrained access for earthmoving equipment and support vehicles. More specifically, any necessary staging areas, parking areas, or equipment access ramps required for the remediation work are to be contained within the Areas of Disturbance and each such area shall be approved by the PI and CSP and marked with fluorescent flagging, pin flags or fencing.

Parking Areas, Heavy Equipment Staging Areas, and Access Ramps

Parking areas for two-wheel drive vehicles as well as staging areas for heavy equipment shall be located within the Areas of Disturbance for the project area. Each

such area shall be identified and approved by the PI and CSP, and will be flagged on the jobsite by the PI.

Photo Point Locations
Photo points are locations that have been used to photo-document the restoration areas. They will be identified by stakes with yellow flagging, and will be located out of the way of any anticipated equipment work. They must not be disturbed.

Responsibilities of the Project Inspector
An engineering geologist with the California Geological Survey (CGS), or his/her designee, shall be designated by CSP as the Project Inspector (PI) and authorized to provide full-time inspection during heavy equipment operation for the length of the project. The PI works closely with the contractor and equipment operators to maintain a professional work environment and to maximize the quality and quantity of work accomplished. The inspector shall have five primary responsibilities.

a. The PI is responsible for making sure all reference marks, photo point locations, watercourses, culverts, and project boundaries are accurately flagged prior to the commencement of restoration activities. Additionally, the PI explains the proposed design to the heavy equipment operators and makes on-site design modifications as the project proceeds. The PI oversees the day-to-day heavy equipment operations and assists the operators in understanding the design specifications. This requires maintaining frequent and professional dialogue with the operator. However, the PI shall refrain from telling equipment operators how to conduct the excavation and grading. Instead, the PI shall remain focused on the design of the finished product.
b. The PI is responsible for protecting the natural, cultural, and capital resources of CSP. The PI shall exercise the authority given to him/her by CSP and permitting agencies to halt operations if equipment work poses a threat to any resources outside the work area.
c. The PI keeps detailed records of the project's progress. This includes equipment operating time, operator's time on the job, time spent on individual tasks such as brushing or recontouring, and other topics of interest. On some jobs, the PI shall keep track of equipment production for many different phases of the project to better analyze the overall job effectiveness. The PI shall document work efforts such as bucket loads of soil moved per hour, time spent positioning equipment, and equipment efficiency.
d. CGS is responsible for preparing an "as-built" report that describes each phase of the heavy equipment work and includes appropriate tables, maps, and figures.
e. The PI is responsible for maintaining clear and professional communication with the equipment operator(s) throughout the length of the project.

Responsibilities of the Contractor
It is the contractor's responsibility to coordinate with the PI and equipment operators to insure that the project objectives and goals are achieved. In addition, the contractor shall have the following responsibilities:

a. The contractor shall maintain all equipment engines in good condition, in proper tune (according to manufacturer's specifications), and in compliance with all State and federal requirements.
b. The contractor shall inspect all equipment and vehicles for leaks immediately prior to the start of construction, and regularly thereafter until the equipment and/or vehicles are removed from park premises.
c. The contractor shall clean and repair (other than emergency repairs) all equipment outside park boundaries, whenever possible. Contaminated water, sludge, spill residue, or other hazardous compounds will be disposed of outside park boundaries at a lawfully authorized destination

Responsibilities of the Heavy Equipment Operator

An operator's main job is to work to reconstruct the desired landscape according to the design specifications. Based on the specifications, the operator shall develop the most efficient procedure for accomplishing the prescribed work. The operator shall have four primary responsibilities:

d. The operator is responsible for all safety related to the operation of the equipment and must take all precautions to avoid accidents. Road removal jobs are often complex, difficult, and can be extremely hazardous. The operator shall communicate with other onsite personnel about blind spots and/or the limitations of the equipment in particular situations or locations.
e. The equipment operator is responsible for determining the safest and most efficient use of equipment. It is the operator's responsibility to decide the best way to maneuver and position equipment on uneven terrain. This includes the order in which work is done and any intermediate steps that may be required to complete the project work. Operators shall consult with the PI on strategies that increase the efficiency of the work.
f. The equipment operator shall document the number of hours worked on each project. The hour meter in the machine can be used and it shall be double-checked using a watch. Each day the operator shall confer and concur with the PI as to the number of hours worked. The operator and the PI shall each keep a notebook to record time worked. Depending on the contract specifications, some projects pay by the operator time, some pay by equipment time, some pay by the volume of soil moved, and some pay by a total cost estimate. Equipment time contracts require the most careful record-keeping because time for breakdowns, fueling, and maintenance is not paid. In some cases, the number of hours of equipment time can be different from the number of hours the operator works each day.
g. The equipment operator is responsible for maintaining clear and professional communication with the PI throughout the length of the project.

Heavy Equipment Selection

Equipment selection is an essential component of remediation work because the choice of equipment affects the cost of the earthmoving. In general, the largest machine that will safely fit on a road or project site while not limiting maneuverability shall be used. Limitations on the size of the machine depend primarily on the road width and the proximity to valuable resources.

Hours of Work

The PI must be present during all equipment operations involving excavation or placement of fill. Hours of work shall be determined by the project activities schedule. Heavy equipment work is only permitted between sunrise and sunset. Heavy equipment work outside of the days and hours specified in the project activities schedule may be performed only with prior consent of the PI, with notification at least 48 hours in advance. Sound judgment shall be exercised in the case of bona fide emergencies, or where resource damage may result if work does not continue.

Rough Grading for Watercourse Crossing Removal

a. The excavator shall prepare the site by first removing all vegetation growing on the cutslope, roadbed, and embankment fillslope of the adjacent road sections. Vegetation growing on the crossing fill shall also be removed. Mulch shall be stockpiled on the top of the adjacent road cutslopes or elsewhere in the crossing excavation area. Mulch may be stockpiled in piles but shall be left accessible to the excavator when earthmoving tasks are complete.
b. If the stream is flowing, water shall be diverted away from the excavation area(s) to minimize turbidity. Diversion techniques shall be developed through consultation with project engineers and regulatory agencies.

Finish Grading

a. The final earthmoving task is finish grading to eliminate berms or depressions. Small windrows usually remain after this step but they are eliminated when the excavator spreads mulch on the finished surfaces. Finish grade must be approved by the PI and CSP before the mulch is placed. Removing mulch to change the shape of the recontoured fill is very time consuming and does not produce good results.

Mulching

a. Once the final shape has been achieved, the excavator shall place previously removed trees and brush on top of the recontoured fill (“slash packing”). Woody material is spread evenly over the newly recontoured slope. Tamping woody material down onto the ground provides contact with the soil reducing sheet erosion. Large clumps of brush shall be pulled apart and spread whenever possible. In general, any larger tree trunks shall be laid perpendicular to the slope to break up surface runoff and catch fine sediment. In coastal climates, the use of straw mulch is not necessary and may actually slow down natural revegetation.

REFERENCES

Merrill, B.R., and Casaday, E., 2001, Field techniques for forest and range road removal: unpublished agency report by California State Parks, 70 p.

Merrill, B.R., and Casaday, E., 2002, Best management practices for road rehabilitation, partial road recontouring: unpublished agency report by California State Parks, 19 p.

Merrill, B.R., and Casaday, E., 2002, Best management practices for road rehabilitation, road-stream crossing removal: unpublished agency report by California State Parks, 25 p.

Standard Specifications & Best Management Practices for Disturbed Lands Remediation, Big River Unit, Mendocino Headlands State Park Mendocino County, California, 2006, unpublished agency report by California Department of Conservation- California Geological Survey and California State Parks, 23 p.