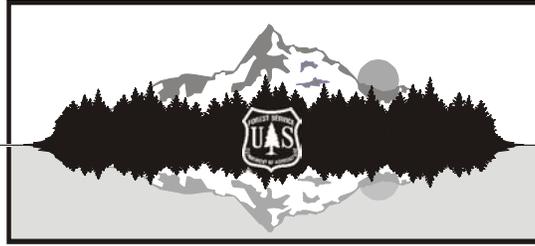


DIAMOND LAKE RESTORATION



Diamond Lake Restoration Project Best Management Practices Checklist

The following Best Management Practices (BMPs) checklist is a monitoring requirement for Resource Element #3 (FW121/NFSW - Water Resources) listed in the 1990 Umpqua National Forest Land and Resource Management Plan. Its purpose is to track BMPs through time and insure they are included in the contract and implemented on the ground. This is necessary to ensure compliance with state requirements in accordance with the Clean Water Act.

Best Management Practices coding (i.e. T-5, R-1) references the BMPs outlined in the Pacific Northwest Regional Guide entitled "General Water Best Management Practices" (USDA, 1988). This checklist will be passed to the responsible department for implementation of the BMPs listed. After the responsible person completes the necessary actions and monitoring, he or she will initial the practice and list comments or attach findings to the BMP checklist.

BMP R-2: EROSION CONTROL PLAN

OBJECTIVE: To limit and mitigate erosion and sedimentation through effective planning prior to initiation of construction activities and through effective contract administration during construction.

PRACTICES: Prior to starting canal reconstruction work, the contractor will submit a general plan that sets forth erosion control measures to be used. The plan documents the mitigation measures required in the contract. Operations cannot begin until the Forest Service has given written approval of the plan.

(Ability to Implement: High Effectiveness: High)

EXPLANATION: Short-term erosion will result from canal reconstruction activities. By effectively planning erosion control measures and through the timely implementation of the control measures, sediment delivery to Diamond Lake and Lake Creek can be minimized. Effective implementation of the Erosion Control plan will enable the Forest Service to exercise control of operations to reduce impacts to water quality.

IMPLEMENTATION AND MONITORING:

Initial/date

- The project engineer, hydrologist, fisheries biologist, soil scientist, and botanist developed mitigative measures during planning.
- An erosion control plan will be a requirement of the Engineering Contract. The project engineer, botanist, hydrologist, fisheries biologist and/or watershed personnel will review the contract package prior to advertisement.
- Erosion control measures will be discussed at the pre-work meeting with the Contractor.
- The Contracting Officer's Representative (COR) and/or Inspectors will ensure that all erosion measures described in the plan are implemented by the contractor/purchaser in a timely manner and are consistent with contract requirements.

COMMENTS:

BMP R-5: ROAD SLOPE & WASTE AREA STABILIZATION

OBJECTIVE: To minimize soil erosion from cut slopes, fill-slopes, and waste areas.

PRACTICES: All material associated with canal reconstruction and the modification of Road 4795 will be end-hauled to waste areas that are on stable, gentle ground where there is no risk of landslides or surface erosion with delivery potential to streams. Depending on various factors such as slope angle, soil type, and proximity to water, vegetative and/or physical restraint measures will be used to provide adequate surface soil stability in construction areas and waste area disposal sites. (*Ability to Implement: High Effectiveness: Moderate*)

The following vegetative erosion control measure will be conducted in the canal reconstruction area to limit delivery potential; areas of ground disturbance will be re-vegetated using local native plant species according to prescriptions prepared by the District Botanist. (*Ability to Implement: High Effectiveness: Moderate*)

EXPLANATION: Vegetative and/or physical restraint measures are used to provide for adequate surface soil stability in modified road cuts and fills and in newly created

mitigation measures were incorporated that would reduce but not eliminate impacts to wetland associated flora and fauna.

IMPLEMENTATION AND MONITORING:

Initial/date

- The project engineer, hydrologist, fisheries biologist, limnologist, geohydrologist, botanist, private lake consultants and resource specialists from the Oregon Department of Environmental Quality and US Environmental Protection Agency developed project design features and mitigative measures during planning.
- Wetland protection and appropriate erosion control measures will be a requirement of the Engineering Contract. The project engineer, botanist, wildlife biologist, hydrologist, limnologist, fisheries biologist and/or other watershed personnel will review the contract package prior to advertisement.
- Wetland protection will be discussed at the pre-work meeting with the Contractor.
- The Contracting Officer's Representative (COR) and/or Inspectors will ensure that mitigative measures described in the plan are implemented by the contractor/purchaser in a timely manner and are consistent with contract requirements.

COMMENTS:

BMP W-4: OIL AND HAZARDOUS SUBSTANCE SPILL PREVENTION AND COUNTERMEASURES

BMP T-21: SERVICING AND REFUELING EQUIPMENT

OBJECTIVES: To prevent accidental spills, increase awareness of the potential for spills and to lessen the impacts of spills if they occur.

PRACTICES:

To prevent contamination of waters (Diamond Lake, Lake Creek, and downstream waters) from accidental spills, an Oil and Hazardous Substance Spill Contingency Plan and Spill Prevention Control & Countermeasure (SPCC) Plan will be required if the volume of fuel used for barging, commercial fishing and/or other activities exceeds

660 gallons in a single container or if total storage at a site exceeds 1,320 gallons. *(Ability to Implement: High Effectiveness: Moderate)*

Pollutants such as fuels and lubricants will be kept from accidentally entering waterways in the project area by requiring that fueling and servicing occur in designated areas. *(Ability to Implement: High Effectiveness: High)*

Storage of rotenone on-site will be at designated areas and security will be provided 24 hours/day to prevent human health risk and vandalism. Enough potassium permanganate (rotenone neutralizer) to neutralize the largest container of rotenone will be stored on site. Completion of a Spill Contingency Plan for the handling and use of rotenone is a requirement that will be incorporated into the project design. *(Ability to Implement: High Effectiveness: Moderate)*

Rotenone mixing will occur in designated areas, well away from waters in the project to control the risk of contamination to non-target areas and waters. A water source for mixing will be designated. *(Ability to Implement: High Effectiveness: Moderate)*

Control structures at the Lake Creek outflows will be reconstructed to an elevation that would contain water in Diamond Lake in the event that unexpectedly high amounts of precipitation occur following the rotenone application. *(Ability to Implement: High Effectiveness: High)*

EXPLANATION: There are risks of unintentional water contamination associated with several project management activities. The above measures will reduce the risks of accidental spills or contamination.

IMPLEMENTATION RESPONSIBILITY AND MONITORING:

Initial/date:

- The project engineer will identify the location, size and allowable uses of service and refueling areas. They will also be aware of emergency notification procedures and actions to be taken in case of a hazardous substance spill.
- The Forest Service will review and approve the Spill Contingency Plan and will designate appropriate mixing areas for the handling and use of rotenone.
- The COR and/or contract inspectors will regularly inspect and require the contractor to have spill materials on site and readily available.

COMMENTS:

BMP W-7: WATER QUALITY MONITORING

OBJECTIVE: To determine the effects of management activities on the beneficial uses of water and to ensure the health and safety of water users.

PRACTICES: Lake water testing will be done prior to the release of water from Diamond Lake to ensure that rotenone, rotenolone, and all semi-volatile and volatile organic compounds associated with the chemical treatment have dissipated to non-detectable or trace levels in both the water column and lake bottom sediments.
(Ability to Implement: High Effectiveness: High)

EXPLANATION: Monitoring will enable the Forest Service to ensure that Diamond Lake waters are safe for release to downstream systems and for resumption of traditional uses by the public.

IMPLEMENTATION AND MONITORING:

Initial/date

- The Forest Service project implementation leader will ensure that all appropriate tests are completed and that the results indicate water is safe for release.

COMMENTS:

BMP REC-3: MANAGEMENT OF SANITATION FACILITIES

OBJECTIVE: To protect surface and subsurface water from bacteria, nutrients, and chemical pollutants resulting from the collection, transmission, treatment, and disposal of sewage at Forest Service facilities.

PRACTICES: Portable sanitation systems will be located in appropriate locations for all work sites. *(Ability to Implement: High Effectiveness: High)*

EXPLANATION: Toilet facilities are provided at work sites. The type and number depends on the capacity of a given site. Portable sanitation facilities will be planned, located, operated, inspected and maintained to minimize the possibility of water contamination.

IMPLEMENTATION RESPONSIBILITY AND MONITORING:

Initial/date:

- The project engineer in consultation with the hydrologist will identify location and specifications for all portable sanitation facilities.
- The COR and/or contract inspectors will regularly inspect and monitor the condition and functioning of the portable sanitation facilities.

COMMENTS:

BMP REC-5: ASSURING PROPER SANITATION AND SAFE WATER SUPPLIES FOR SPECIAL USE PERMIT FACILITIES.

OBJECTIVE: To protect the quality of water both consumed by and discharged from facilities under Special Use Permit.

PRACTICES: Lake water testing will be done prior to the release of water from Diamond Lake to ensure that rotenone, rotenolone, and all semi-volatile and volatile organic compounds associated with the chemical treatment have dissipated to non-detectable or trace levels in both the water column and lake bottom sediments. *(Ability to Implement: High Effectiveness: High)*

Bottled water will be supplied to all potentially impacted wells along the western shore of the Lake from Thielsen View Campground to Silent Creek should rotenone or other added ingredients be detected in any of the Forest Service monitoring wells along the west shore. *(Ability to Implement: High Effectiveness: High)*

The summer home residents who use wells that tap the shallow aquifer (those less than 100 feet deep) for domestic water would be notified in advance and required to use the supplied bottled water if rotenone or its other ingredients are detected in the monitoring wells. Monitoring of well water would occur to determine when well use could resume. *(Ability to Implement: High Effectiveness: High)*

Monitor ground water and evaluate flow patterns prior to and following the application of rotenone. If monitoring indicates rotenone is migrating toward the west shore summer cabin wells, the Forest Service will notify the cabin owners with an advisory not to consume the water, and will provide the cabins owners with bottled drinking

water until it has been determined that the rotenone and rotenone by products are not present in the wells. *(Ability to Implement: High Effectiveness: High)*

Provide water to cabin owners whose wells go dry as a result of implementing these alternatives. *(Ability to Implement: High Effectiveness: High)*

EXPLANATION: There is a risk that the draw down and rotenone treatment of Diamond Lake would compromise the supply of safe drinking water for some of the summer cabins under special use permits. The above measures ensure that safe drinking water is available. Testing lake water prior to reopening to the public will provide assurance that drinking water from shallow wells is safe for public use.

IMPLEMENTATION AND MONITORING:

Initial/date

- The Forest Service project implementation leader will ensure that all appropriate tests and monitoring are completed and appropriate mitigation measures are implemented.

COMMENTS:

BMP REC-10: SAMPLING AND SURVEILLANCE OF DESIGNATED SWIMMING SITES

OBJECTIVE: To ensure the health and safety of water contact recreationists at designated National Forest Swimming Sites.

PRACTICES:

Diamond Lake would be closed to the public during the rotenone application period and only reopened when safety concerns are eliminated. Reopening will be determined by continual monitoring of the assessment wells, the lake water, and the water in lower Lake Creek. *(Ability to Implement: High Effectiveness: High)*

Recreational water contact activities in Diamond Lake will not be permitted until monitoring results indicate that the lake water represents no risk to the public. *(Ability to Implement: High Effectiveness: High)*

EXPLANATION: Although rotenone manufacturers indicate swimming in rotenone treated water immediately after treatment represents no human health risks, implementation of the above measures provides additional assurance of public safety during project implementation.

IMPLEMENTATION AND MONITORING:

Initial/date

- The Forest Service project implementation leader will ensure that all appropriate tests and monitoring are completed and appropriate closures and mitigation measures are implemented.

COMMENTS:
