SECTION 8

MAINTENANCE ACTIVITIES

INDEX

MAINTENANCE ACTIVITY 8.1
BANK STABILIZATION

DEFINITION

Bank stabilization activities are undertaken to repair slides, slipouts and washouts adjacent to water bodies such as creeks, streams, lakes, ponds and certain ditches. Bank stabilization activities may include removal of slide debris from the bank; backfilling or stabilizing the bank; reestablishing damaged roadway features; repairing and cleaning drainage system; and applying erosion controls.

PURPOSE

Bank stabilization activities are done to protect the public, to repair the roadway system, and to prevent further damage to the roadway, private property and/or the environment. Bank stabilization may be undertaken as either an emergency response to mitigate ongoing or imminent damage, or as a planned restoration project.

BMP OUTCOMES

- ✓ Stabilize damaged area within the right of way to reduce transportation, structural and environmental impacts
- ✓ Protect water quality by reducing erosion/sedimentation
- ✓ Repair roadways, drainage, storm water and other right of way structures
- ✓ Prevent potential water pollution from equipment operations

CONSERVATION OUTCOMES

- ✓ Prevent catastrophic road failure
- ✓ Protect water quality by reducing erosion/sedimentation
- ✓ Encourage revegetation to stabilize slope and protect sensitive aquatic habitat
- ✓ Maintain or restore the storage, delivery and routing of surface runoff and ground water
- ✓ Contribute to restoration of aquatic habitat by reducing erosion / sedimentation, maintaining or restoring stream flow volumes and velocities, and revegetating disturbed areas

STANDARD

Resource agencies shall be notified not less than 14 days prior to performing planned bank stabilization work. When bank stabilization work is performed as an emergency response, the activity shall be reported immediately (Form RM-E01 protocol) and any “after the fact” notifications shall be made immediately.

Areas adjacent to water bodies that wash or slip out, reducing the width of the traveled way, shall be evaluated for:

1. Temporary one-way traffic controls
2. Temporary closure of the road if adequate alternate route(s) exist
3. Rerouting road into cut slope (if impacts are minimal, within right of way or with written approval from property owner)
4. Emergency stabilization using large wood materials (root wads, log cribbing, etc.)
5. Placement of asphalt concrete or cutback berms to divert runoff away from the damaged area

No slide debris or other spoils shall be sidecast or used to construct, repair, augment or replace berms within 150 feet of any water body. Refer to the section entitled “Slide Control/Slide Debris,” for temporary storage of material.

Rip rap shall only be used on stream banks for emergency stabilization on roads that have no alternate access (i.e. Canyon Road to the Butano Colony and Gazos Creek Road between Cloverdale Road and the Mountain Camp), where one or more of the following apply:

1. Rip rap previously existed, and is to be replaced in the same quantity and location and is immediately reported
2. Rip rap is to be placed only below the ordinary high water line to halt scour at the toe of a slope or bank supporting a public road, and is immediately reported
3. Large wood materials (root wads, logs, etc.) are not available

Rip rap may be used to protect bridge support structures (abutments, embankments, etc.) that are actively being undermined and are at imminent risk of failure.

Wherever possible, key trenches shall be dug prior to placing rip rap.

Rip rap may be used for non-emergency stabilization only after all applicable permits have been obtained. Proposals for non-emergency rip rap use shall include mitigation and avoidance measures such as incorporating large woody debris, revegetation, etc.

BMPs

- ✓ Asphalt Berm
- ✓ Brush Layering
- ✓ Brush Packing
- ✓ Cofferdam
- ✓ Coir Fabric/Netting
- ✓ Diversion Berm
- ✓ Energy Dissipater/Flume
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats

- ✓ Flume
- ✓ Hand Seeding
- ✓ Large Woody Debris
- ✓ Live Pole Drain
- ✓ Live Staking
- ✓ Mulching
- ✓ Stockpiling
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Streambank Stabilization
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetative Buffer
- ✓ Vegetable-based Equipment Oil
- ✓ Wattle/Fascine

MAINTENANCE ACTIVITY 8.2
SLIDE DEBRIS

DEFINITION

Slides and slipouts are caused by the impact of heavy rainfall, concentrated runoff onto unstable slopes, and high groundwater conditions. Slides and slipouts may occur on the slope above or below roadways, private property or sensitive areas. Slide debris management activities may include: removal of slide debris/soils from right of way; hauling, storage and stabilization of debris; repairing and cleaning drainage systems.

Slides and slipouts occurring adjacent to water bodies are addressed under “Streambank Stabilization.”

PURPOSE

This emergency response activity is done to protect the public, and to prevent further damage to the roadway, private property and/or the environment.

BMP OUTCOMES

- ✓ Control sediment and debris
- ✓ Stabilize damaged area within the right of way to reduce transportation, structural and environmental impacts
- ✓ Protect water quality by reducing erosion/sedimentation

CONSERVATION OUTCOMES

- ✓ Provide safe transportation corridors
- ✓ Maintain or restore the storage, delivery and routing of surface runoff
- ✓ Contribute to restoration of sensitive habitats by reducing erosion / sedimentation and revegetating disturbed areas

STANDARD

Slide debris shall be removed to the nearest suitable area for temporary storage, and shall be enclosed or contained after the emergency to prevent erosion. In no event shall slide debris removed by County Road crews be allowed to erode into any water body. Slide debris shall be removed to the nearest permanent, stable storage or recycling location at the earliest opportunity, or may be used as backfill in permanent repair projects.

Slide debris shall not be sidecast and shall not be used to construct, repair, augment or replace berms within 150 feet of any water body.

Large woody debris removed with slide debris on the coast side shall be transported to the designated area at the quarry or other suitable locations for use in bank stabilization activities.

Wherever possible, brush and garbage shall be sorted and stored separately from soils.

BMPs

- ✓ Containment
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Mulching
- ✓ Silt Fence
- ✓ Stockpiling
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Timing of Work
- ✓ Traffic Control

MAINTENANCE ACTIVITY 8.3
BERMS

DEFINITION

Berms are elevated areas constructed of asphalt materials, base rock, soils, sand/gravel bags or other materials along roadway shoulders.

PURPOSE

Berms are created and maintained to control and direct surface runoff away from unstable slopes. Berms may also provide a measure of traffic safety on narrow roads or where sufficient shoulder width is lacking. Berm areas may be used for temporary storage of slide debris where the berm is more than 150' horizontally from any water body and failure of the berm or sidecast over the berm will not contribute to sedimentation into a sensitive area.

BMP OUTCOMES

- ✓ Control runoff
- ✓ Control erosion and sedimentation
- ✓ Stabilize damaged area within the right of way to reduce transportation, structural and environmental impacts
- ✓ Provide a vegetated buffer to trap sediment and debris

CONSERVATION OUTCOMES

- ✓ Protect unstable slopes by controlling and directing surface runoff
- ✓ Protect water quality by reducing erosion/sedimentation
- ✓ Contribute to restoration of sensitive habitats by reducing erosion / sedimentation and revegetating disturbed areas
- ✓ Preserve and/or enhance visual resources
- ✓ Preserve and/or enhance traffic safety by reducing channelized runoff

STANDARD

Existing earthen berms within 150 feet of any water body shall not be constructed, repaired, augmented or replaced in kind. Refer to Section 8.2, "Slide Debris," for temporary storage of material.

Where berm or bank failures have occurred and runoff is contributing to damage, earthen berms shall be replaced with asphalt or cutback berms, temporary sand/gravel bags, flumes or other devices, and measures employed to control or divert runoff. Appropriate traffic warning devices shall be placed to warn motorists of the hazard.

Existing earthen berms that have not been smoothed, vegetated, treated with erosion controls or which lack sufficient runoff controls should be scheduled for upgrading. Where new runoffs are created, overside drains and/or energy dissipaters should be installed. All bare soils shall be revegetated and/or mulched.

BMPs

- ✓ Asphalt Berm
- ✓ Coir Fabric/Netting
- ✓ Diversion Berm
- ✓ Energy Dissipater/Flume
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Hydroseeding
- ✓ Mulching
- ✓ Sand Bags
- ✓ Stockpiling
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetative Buffer
- ✓ Vegetable-based Equipment Oil

MAINTENANCE ACTIVITY 8.4
LARGE WOODY DEBRIS MANAGEMENT/REMOVAL

DEFINITION

Large woody debris is defined as logs with average diameter of 6" or greater and of length 10' or longer, rootwads and stumps. Large woody debris and logjams provide good quality in-stream habitat for fish, frogs and other aquatic species, and may provide beneficial stream grade control.

PURPOSE

Large woody debris management (modification and/or removal) is undertaken only if the integrity of roads, bridges, or other public facilities is threatened or is currently being damaged. Large woody debris modification and/or removal may be undertaken as either an emergency response to mitigate ongoing or imminent damage, or as a planned and permitted restoration project.

BMP OUTCOMES

- ✓ Avoid contributing to downstream jams and/or flooding
- ✓ Minimize negative impacts to aquatic habitat
- ✓ Protect water quality by reducing erosion/sedimentation
- ✓ Revegetate impacted stream bank areas
- ✓ Prevent potential water pollution from equipment operations

CONSERVATION OUTCOMES

- ✓ Reduce damage to public facilities while preserving sensitive aquatic habitat
- ✓ Contribute to restoration of sensitive habitats by reducing erosion / sedimentation and revegetating disturbed areas
- ✓ Preserve large woody materials for use in bank stabilization or habitat restoration activities

STANDARD

Resource agencies shall be notified not less than 14 days prior to performing planned large woody debris management/removal work. When large woody debris management/removal work is performed as an emergency response, the activity shall be reported immediately (Form RM-E01 protocol) and any "after the fact" notifications shall be made. Any necessary bank stabilization, erosion control and/or restoration work undertaken at the first opportunity.

Large woody debris on County-owned property or in the public right of way shall <u>not</u> be removed or physically altered (sawn, repositioned, etc.) in any body of water except under the following emergency conditions:

1. Material backing up flows at a bridge or culvert during a storm may be modified to halt damage or flooding.

2. Large woody debris/log jams on public property that are damaging or immediately threatening the integrity of roads, bridges, other public facilities or private developments during high flows may be modified to reduce or halt damage and direct flow toward a more desirable path.

3. Logs and debris shall only be removed from streams as a “last resort” (i.e. failure to remove them will certainly cause the loss of an essential facility).

4. Non-emergency debris maintenance will only be undertaken after the appropriate permits have been obtained.

Crews shall take precautions to ensure that modifications of log or debris jams will not cause damage downstream. “Cut and plug” practices shall be avoided.

Emergency modifications and/or removal shall be limited to materials higher than approximately 2’ above the streambed (i.e. above knee height) to preserve some instream habitat features unless the log or debris jam is immediately upstream of a culvert or bridge, or if permit conditions require otherwise.

Emergency modification and/or removal of large woody debris shall be reported on form RM-E01.

Large woody debris removed from water bodies shall either be immediately incorporated into streambank repairs or cribbing at a nearby location, or shall be transported to a stable Road Maintenance Division storage area for potential reuse. Trees, logs and/or stumps shall be left in the longest lengths/diameters practicable for removal and hauling. If logs must be cut from fallen trees, at least 12’ of trunk shall be left attached to the root ball and logs shall be left at least 20’ long.

BMPs

- ✓ Clean Water Bypass
- ✓ Cofferdam
- ✓ Coir Fabric/Netting
- ✓ Containment
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Hydroseeding
- ✓ Large Woody Debris
- ✓ Mulching
- ✓ Streambank Stabilization
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetable-based Equipment Oil*

MAINTENANCE ACTIVITY 8.5
ROAD CLOSURES

DEFINITION

Closure of County roads to the public, including scheduled closures of paved and unpaved roads, and unscheduled closures due to flooding or roadway damage.

PURPOSE

County roads may be subject to unscheduled closures to protect the public from hazards such as flooding, landslides, washouts, debris flows, fallen trees or utility lines. Scheduled closures may occur during maintenance or construction activities on roads where detour routes are reasonable. Scheduled closures of unpaved roads occur to protect the motoring public from hazardous winter conditions, to reduce damage to the road surface by vehicle traffic, and to protect sensitive aquatic habitats from increased sedimentation that may result from vehicle traffic on wet, unpaved surfaces.

BMP OUTCOMES

- ✓ Reduce potential surface erosion
- ✓ Restore or maintain surface water drainage
- ✓ Restore or maintain road surface/safety
- ✓ Reduce turbidity in nearby watercourses
- ✓ Reduce road-related pollution of watercourses

CONSERVATION OUTCOMES

- ✓ Reduce risk of vehicle accidents, thereby reducing risk of fluid and debris pollution to nearby watercourses
- ✓ Reduce risk of roadway/shoulder failure
- ✓ Reduce sedimentation to watercourses

STANDARD

Paved County roads may be scheduled for closure for construction or maintenance activities. Closures for anticipated contract construction work shall be posted prior to commencement of work. Closures, detours and notifications of anticipated traffic delays shall be posted with signs meeting the requirements of the Traffic Control BMP.

Unpaved County roads shall be closed to the public during the winter months as authorized by the County Board of Supervisors. The closure season generally coincides with the rainy season, approximately November 1 through April 30. The owners of record of any parcels within and adjacent to the closure area shall be notified via letter not less than thirty (30) days prior to the planned closure. Closures shall be accomplished, where possible, by locked gates that will

prevent entry by any motorized vehicles. Keys shall be provided to the County Sheriff's Office and the fire protection agency with jurisdiction.

Unpaved roads shall be inspected prior to closure, and treated with appropriate BMPs to ensure positive drainage and minimal erosion/sedimentation during the closure period. Unpaved roads shall be inspected prior to reopening to ensure that safe conditions exist for the motoring public.

Any County road may be subject to unscheduled closures due to accidents, natural hazards, etc. County maintenance workers shall observe the "Traffic Control" BMP for safety measures to be taken during unscheduled closures.

County Control shall be notified prior to any planned closures, and upon initiating unplanned closures.

BMPs

- ✓ Coir Fabric/Netting
- ✓ Containment
- ✓ Equipment Maintenance and Fueling
- ✓ Hand Seeding
- ✓ Hydroseeding
- ✓ Mulching
- ✓ Rolling Dip
- ✓ Stockpiling
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Surface Roughening
- ✓ Timing of Work

MAINTENANCE ACTIVITY 8.6
SNOW/ICE CONTROL

DEFINITION

Control and/or removal of snow and ice from the road surface.

PURPOSE

Snow and ice must be removed and/or controlled in order to provide a safe road surface and reduce vehicle accidents.

BMP OUTCOMES

- ✓ Provide a reasonably safe roadway surface for the traveling public
- ✓ Restore or maintain road surface/safety
- ✓ Reduce turbidity in nearby watercourses
- ✓ Reduce road-related pollution of watercourses

CONSERVATION OUTCOMES

- ✓ Reduce risk of vehicle accidents, thereby reducing risk of fluid and debris pollution to nearby watercourses
- ✓ Keep vehicles on roadway and out of riparian and other sensitive areas by improving traction
- ✓ Reduce sedimentation to watercourses by cleaning sand from the roadway

STANDARD

Snow and ice on paved road surfaces shall be controlled by mechanical removal (blading, scraping) and/or application of clean sand. Sand for snow and ice control shall be obtained from existing corporation yard stockpiles or from quarries or suppliers: sand shall not be taken from beaches or streambeds or bars for snow and ice control.

If sand removal is necessary after road surface conditions are deemed safe, County street sweeping equipment may be used and the material swept up and disposed of in accordance with the Section 8.10, “Street Sweeping.”

Salt and/or de-icing chemicals shall not be used on any County road adjacent to sensitive aquatic areas.

Maintenance crews shall have the option of temporarily closing County roads deemed unsafe due to snow and/or ice.

BMPs

- ✓ Containment
- ✓ Equipment Maintenance and Fueling
- ✓ Traffic Control

MAINTENANCE ACTIVITY 8.7
PAVED ROAD SURFACES

DEFINITION

Repair, replace, install or maintain roadway surfaces. Activities include: pothole and square cut patching; removing paved surface; repairing roadway base; repaving; adding gravel; dust control; extending pavement edge; paving graveled shoulder; crack sealing; overlay; chip and slurry seal; resurfacing; pavement marking and traffic control features.

PURPOSE

The road surface routes water and sediment off the roadway to the shoulder/ditch or enclosed drainage system. The slope of the roadway surface is part of the water flow and sediment collection systems.

These activities are performed to provide a safe roadway surface for the traveling public and to prevent further roadway deterioration or failure. Most patching and resurfacing activities occur between April and November. Potholes are repaired as they occur within established guidelines to prevent accidents, vehicle damage and adverse environmental impacts.

BMP OUTCOMES

- ✓ Restore structure
- ✓ Minimize work site pollutants from maintenance/repair activities
- ✓ Restore or maintain surface water drainage
- ✓ Restore or maintain road surface/safety
- ✓ Reduce turbidity in nearby watercourses
- ✓ Reduce road-related pollution of watercourses

CONSERVATION OUTCOMES

- ✓ Reduce risk of vehicle accidents, thereby reducing risk of fluid and debris pollution to nearby watercourses
- ✓ Reduce risk of roadway/shoulder failure
- ✓ Reduce sedimentation to watercourses

STANDARD

Pavements and Seals

Road surface hazards, including potholes and sinkholes, shall be promptly repaired upon being discovered by or reported to the Road Maintenance Division.

Materials used for road surface maintenance shall not be allowed to enter into any water course or drainage facility. Excess gravel from sealing operations shall be swept up by mechanical street sweepers and disposed of as described in Section 8.10, “Street Sweeping.”

The elevation of the finished edge of paved roadway shall meet or exceed the elevation of adjoining shoulder areas. Shoulder areas may need to be raised to meet the edge of roadway following surface treatments to avoid drop-offs.

Geometric standards may vary by community. Maintenance of the constructed roadway and appurtenances (valley gutters, ditches, parking areas and shoulders) shall conform to the community's geometric standards.

Roadway Base

Base materials shall be replaced where required to bring the finished road surface to grade with adjoining areas. Base materials shall be compacted to 95% minimum relative compaction where compaction testing is possible.

Asphalt Removal

Asphalt removal may be performed by manual or mechanical means. Where sawcutting is required, the minimum amount of water required to cool sawcutting equipment shall be used, and shall be vacuumed from the road surface during or immediately after sawcutting operations. Water and asphalt debris from sawcutting shall not be allowed to enter into storm drains or any water body.

Asphalt materials removed shall not be used to construct drainage facilities such as headwalls, and shall not be used as backfill except under existing paved surfaces that are to be repaved. Used asphalt materials may be stockpiled for recycling.

Pavement Marking

Pavement markings shall, in general, be replaced where removed or damaged. Pavement striping shall be performed during dry weather. Striping equipment shall not be washed or cleaned where wash water or cleaning materials may enter into any water body.

Removed or unusable pavement markers (reflectors, dots, etc.) shall not be used in backfill, and shall be disposed of as described in Section 8.25, "Recycling and Disposal."

Roadwork and Paving

Operators shall avoid creating excess dust when breaking and/or removing asphalt or concrete. Broken asphalt and/or concrete pieces shall be completely removed from the site as soon as possible, or shall be stored in a separate, secure stockpile protected from rainfall and runoff.

Dry sawcutting shall not be performed. Slurry resulting from sawcutting operations shall be shoveled or vacuumed and completely removed from the site. Sawcutting debris or slurry shall not be swept or flushed into any creek, drainage ditch or roadside area.

BMPs

- ✓ Asphalt Berm
- ✓ Containment
- ✓ Equipment Maintenance and Fueling
- ✓ Timing of Work
- ✓ Traffic Control

MAINTENANCE ACTIVITY 8.8
UNPAVED ROAD SURFACES

DEFINITION

Repair, replace, install or maintain unpaved roadway surfaces.

PURPOSE

Unpaved public roads can be hazardous to drivers and may contribute to stormwater pollution during the winter. Maintenance of unpaved public roads is performed to provide a safe roadway surface for the traveling public, to prevent further roadway deterioration or failure and to reduce adverse impacts to water bodies. Unpaved service roads, including park roads and flood control facility access roads, are maintained to provide year-round access for inspections, emergency response, etc.

BMP OUTCOMES

- ✓ Preserve surface drainage characteristics
- ✓ Minimize road-related sedimentation

CONSERVATION OUTCOMES

- ✓ Reduce risk of vehicle accidents, thereby reducing risk of fluid and debris pollution to nearby watercourses
- ✓ Reduce risk of roadway/shoulder failure
- ✓ Reduce sedimentation to watercourses

STANDARD

Unpaved public roads shall be inspected at the end of the rainy season. Hazards noted during inspections shall be repaired if the road is to be opened to public traffic. Damage to drainage facilities shall be scheduled for repairs prior to the next rainy season.

Unpaved County roads shall be closed to the public during the winter months as authorized by the County Board of Supervisors. The closure season generally coincides with the rainy season, approximately November 1 through April 30. The owners of record of any parcels within and adjacent to the closure area shall be notified via letter prior to the closure. Closures shall be accomplished, where possible, by locked gates that will prevent entry by any motorized vehicles. Keys shall be provided to the County Sheriff's Office and the fire protection agency with jurisdiction.

Unpaved public roads shall be inspected prior to closure, and treated with appropriate BMPs to ensure positive drainage and minimal erosion/sedimentation during the closure period. Unpaved roads shall be inspected prior to reopening to ensure that safe conditions exist for the motoring public.

Unpaved park and flood control facility access roads shall be maintained throughout the year. Drainage pathways (culverts, rolling dips, etc.) shall be monitored and repaired or cleaned as necessary to reduce damage to the road surface and the potential for sedimentation into water courses.

Planned improvements to unpaved roads shall consider erosion-reducing design features such as outsloping, rolling dips, water bars, rock surfaces or other features recommended in the Mendocino County Resource Conservation District "Handbook for Forest and Ranch Roads," the California Department of Fish and Game "Salmonid Stream Restoration Manual," or other methods recommended in the San Mateo County Watershed Protection Program "Standards for Design and Construction of Public and Private Facilities" (publication pending).

BMPs to control runoff and sedimentation shall be employed during maintenance of unpaved roads when either:

1. Work must be performed during wet weather.
2. Work involves grading within 150' of any watercourse.

Shoulder, turnout and/or berm areas disturbed by unpaved road maintenance activities shall be treated in accordance with Sections 8.11, "Shoulders and Turnouts," or 8.3, "Berms," of these Standards.

BMPs

- ✓ Coir Fabric/Netting
- ✓ Containment
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Hydroseeding
- ✓ Mulching
- ✓ Rolling Dip
- ✓ Stockpiling
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Surface Roughening
- ✓ Timing of Work
- ✓ Traffic Control

MAINTENANCE ACTIVITY 8.9
TRAILS

DEFINITION

Repair, replace, install or maintain paved or unpaved trails.

PURPOSE

Designated trails may contribute to stormwater pollution during the winter. Trail maintenance is performed to provide a safe surface for hikers, cyclists and/or equestrians, to prevent deterioration or failure and to reduce adverse impacts to water bodies. Trails and unpaved service roads are maintained to provide seasonal or year-round access as designated, and for inspection and emergency response, etc.

BMP OUTCOMES

- ✓ Preserve surface drainage characteristics
- ✓ Minimize trail-related sedimentation

CONSERVATION OUTCOMES

- ✓ Reduce risk of trail failure
- ✓ Reduce sedimentation to watercourses
- ✓ Increase safety for trail users

STANDARD[1]

Trail maintenance crews shall conduct regular inventories of all trail maintenance, including drainage, vegetation clearing, signage, surfacing, graffiti removal and structure repairs prior to the heavy use season. Necessary repairs shall be prioritized and completed as soon as practicable.

Short segments of trails may require permanent rerouting due to landslides or other problems. The original route should be closed to use and restored to its pre-existing condition, if possible. Where rerouting will require new trail segments on private land or where new segments will exceed 50' in length, trail planning and construction shall be performed in accordance with Design Guideline Section 1.0, "Trails and Land Use Compatibility," of the 2001 San Mateo County Trails Plan.

Vegetation on and adjacent to trails may be cleared to the width of the trail plus 2' beyond the trail on each side. Refer to Section 8.21, "Vegetation Management," for additional standards.

Maintenance Activity: TRAILS (continued)

[1] Trail maintenance and repair standards are adapted from the 2001 San Mateo County Trails Plan, Appendix B, Guideline M.G. 3.0, "Trail Monitoring and Maintenance."

Paved trails shall be swept periodically. Damaged pavement shall be repaired as described in Section 8.7, “Paved Road Surfaces.”

Unauthorized trails shall be closed off as soon as practicable. Brush, logs, or other appropriate materials shall be used to cover access points to unauthorized trails to discourage their use.

BMPs

- ✓ Brush Layering
- ✓ Brush Packing
- ✓ Coir Fabric/Netting
- ✓ Diversion Berm
- ✓ Energy Dissipater/Flume
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Hydroseeding
- ✓ Live Pole Drain
- ✓ Live Staking
- ✓ Mulching
- ✓ Rock Slope Protection
- ✓ Rolling Dip
- ✓ Sand Bags
- ✓ Stockpiling
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetative Buffer
- ✓ Wattle/Fascine

MAINTENANCE ACTIVITY 8.10
STREET SWEEPING

DEFINITION

Removing soil, organic material, dust, trash and other debris to keep road surfaces clean and removed sediment from the roadway before it enters the storm drain system, surface water system, watercourses, etc. The removal of dust also reduces air borne pollution and sediment loading.

PURPOSE

Street surface cleaning/sweeping traps and removes large quantities of sediment. The roadways and surface structures are part of the sediment and water collection system.

Street surface cleaning activities are performed to provide a safe roadway surface for the motoring public. Sweeping reduces sediment loading of the drainage system and surface waters. Soil, organic material and other debris and pollutants are removed before they may enter a watercourse.

BMP OUTCOMES

- ✓ Clean the roadway surface
- ✓ Prevent soil, organics, solid waste and debris from entering watercourses
- ✓ Reduce turbidity
- ✓ Restore surface water drainage by cleaning curbs and drain inlets
- ✓ Minimize flooding caused by plugged drains

CONSERVATION OUTCOMES

- ✓ Reduce pollution to watercourses
- ✓ Reduce risk of vehicle accidents, thereby reducing risk of pollutant loading to watercourses
- ✓ Reduce flooding and drainage system failures

STANDARD

Paved surfaces shall be mechanically swept to remove litter and organic debris and to prevent water pollution on a regularly scheduled basis in limited areas. Scheduled street sweeping is performed where existing roadway appurtenances include curbs and gutters, and where litter or debris may enter into enclosed storm drain systems if not swept. The volume of material removed shall be reported daily.

Where pavement flushing is required, water used to flush shall not be allowed to enter into any storm drain or water body. Water used for pavement flushing shall either be collected by vacuum truck or diverted into temporary settling basins to ensure that sediment and other pollutants are not transported into receiving waters.

REQUIRED PRACTICES

- ✓ Control speed of sweeper to minimize airborne particulates and remove maximum amount of debris
- ✓ Use water spray system on sweeper to reduce dust
- ✓ Use pickup sweepers in sensitive areas

BMPs

- ✓ Containment
- ✓ Equipment Maintenance and Fueling

MAINTENANCE ACTIVITY 8.11
SHOULDERS & TURNOUTS

DEFINITION

Maintenance and repair of roadway shoulder, and management of turnout areas within the County right of way with soil/rock surfaces. Shoulder areas provide smooth transitions for traffic safety, while turnout areas may be used for temporary staging and storage areas for equipment or materials.

PURPOSE

Preserve the capacity of shoulder and turnout areas to withstand vehicle use; preserve selected areas for temporary staging and storage areas.

BMP OUTCOMES

- ✓ Preserve surface and sub-surface drainage characteristics
- ✓ Minimize road-related sedimentation

CONSERVATION OUTCOMES

- ✓ Reduce sedimentation to watercourses
- ✓ Reduce stormwater pollution
- ✓ Reduce potential for flooding of roadways, thereby reducing potential for vehicle accidents and water pollution

STANDARD

Shoulders within the County right of way shall be maintained to provide a smooth transition from the edge of pavement to the shoulder surface where sufficient widths exist. Shoulders are typically maintained within a distance of 3' beyond the edge of pavement. New shoulders and shoulders adjacent to newly surfaced roads shall be graded to conform to the road surface elevation.

Shoulder backing material will vary according to the existing subgrade material. District Road Supervisors will select the appropriate type and gradation of shoulder backing for maintenance or repair of shoulders. Shoulder backing may only be cement-treated or lime-treated in areas that are more than 150' away from sensitive aquatic habitats.

Where shoulders or turnouts are used for temporary slide debris storage, the storage areas shall be prepared to prevent polluted runoff as described in Section 8.2, "Slide Debris," of these standards.

BMPs

- ✓ Asphalt Berm
- ✓ Diversion Berm
- ✓ Equipment Maintenance and Fueling
- ✓ Stockpiling
- ✓ Timing of Work
- ✓ Traffic Control

MAINTENANCE ACTIVITY 8.12
BRIDGES

DEFINITION

Maintenance intended to repair or preserve existing bridges, railings, abutments, etc. Does not include removal of large woody debris or other drift material.

PURPOSE

Bridge maintenance preserves the integrity of structural components and surface finishes. Bridge maintenance is intended to extend the service life of the bridge and, potentially, to reveal future maintenance or repair needs.

BMP OUTCOMES

- ✓ Preserve surface and sub-surface drainage characteristics
- ✓ Reduce risk of vehicle accidents, thereby reducing risk of pollution to water bodies

CONSERVATION OUTCOMES

- ✓ Reduce sedimentation to watercourses
- ✓ Reduce stormwater pollution
- ✓ Reduce potential for flooding of roadways, thereby reducing potential for vehicle accidents and water pollution

STANDARD

Routine bridge maintenance work within the flowing channel of any water body shall be performed between June 15 and October 15 only.

Materials used in the maintenance or repair of bridges, such as paint, solvents and mortar, shall be prevented from spilling into any storm drain facility or water body. Overspray of paint onto vegetation or into flowing water shall be avoided. Any material which accidentally falls into a storm drain or water body shall be promptly removed in the least destructive manner possible. Where removal is not possible because the material is borne away by flowing water, the spill shall be immediately reported to the Road Maintenance Manager for further action.

Deck drains and scuppers over streams shall be blocked off prior to pressure washing, sandblasting or scraping of bridge structures.

Where dewatering is needed to gain access to the portion of the bridge to be maintained, approved dewatering methods must be employed. Dewatering methods approved for use include

cofferdams, temporary gravel dams, or straw bale dams[2] with clean water bypass capability and silt retention measures. Straw bale dams are not recommended unless heavy equipment will be present and can reach the straw bales for removal without disturbing the bed or banks.

Concrete repair work shall also conform to the provisions of Section 8.22, “Concrete,” of these standards.

Emergency maintenance or repairs will be performed in accordance with the applicable standards (e.g. Large Woody Debris Management/Removal, General Stormwater Pollution Prevention for Maintenance, Vegetation Management, etc.).

Abutment repairs shall be performed as described in the appropriate Sections of these Standards (i.e. Concrete, Vegetation Management, Berms, etc.).

BMPs

- ✓ Clean Water Bypass
- ✓ Cofferdam
- ✓ Concrete Washout
- ✓ Containment
- ✓ Equipment Maintenance and Fueling
- ✓ Rock Slope Protection
- ✓ Sand Bags
- ✓ Silt Fence
- ✓ Stockpiling
- ✓ Timing of Work
- ✓ Traffic Control

[2] Straw bales make effective in-stream check dams where allowed by permits. Straw bale check dams in flowing ditches or as barriers around construction sites pond water and eventually cause worse erosion. Straw bale check dams are not included as a BMP in these standards.

MAINTENANCE ACTIVITY 8.13
CLEANING STORM DRAIN FACILITIES

DEFINITION

Routine and emergency clean out of culverts, storm drain pipes, manholes, catch basins, pump stations and other storm drainage facilities.

NOTE: This Section does not apply to cleaning of facilities constructed and/or maintained by the Flood Control District (i.e. San Francisquito Creek, San Bruno Channel, Cupid's Row Canal, Colma Creek). Flood Control facility maintenance standards are described in Section 8.18, "Flood Control."

PURPOSE

To preserve the carrying capacity of stormwater conveyances, thereby reducing the potential for roadway flooding, and to reduce water pollution by removing trash, leaves, sediment and other materials before they may be transported by runoff.

BMP OUTCOMES

- ✓ Preserve surface and sub-surface drainage characteristics
- ✓ Minimize road-related sedimentation

CONSERVATION OUTCOMES

- ✓ Reduce stormwater pollution
- ✓ Reduce potential for flooding of roadways, thereby reducing potential for vehicle accidents and water pollution

STANDARD

Storm drain facilities shall be inspected, in general, once prior to the rainy season and once following the rainy season.

Routine cleaning shall be scheduled to occur during dry weather and at the optimum time of year for the location. For example, in areas where deciduous trees will be dropping a heavy leaf load, routine cleaning occurs after the leaves are shed and before the rains begin.

Emergency cleaning shall be conducted as needed to prevent localized flooding and/or potential damage to other facilities.

Materials removed during cleaning shall be hauled to a stable storage or disposal location where they will not enter into any water course. District Road Supervisors shall complete a storm drainage monthly report report following cleaning of storm drainage facilities. Refer to Section 7.0, "Permits and Reporting," of these standards.

Where flushing of storm drains or culverts is required to clear a plug, Maintenance Supervisors shall ensure that the amount of flush water used is the minimum necessary to clear the plug and restore the function of the facility. Crews shall employ BMPs to protect downstream banks and water quality while performing flushing.

Pump stations shall be checked prior to forecasted periods of rain to confirm correct operation and make any necessary repairs or modifications. Pump stations shall be cleaned at a minimum twice per year (at the beginning and end of the rainy season). Pump stations shall also be cleaned as needed during the rainy season to ensure proper operation.

BMPs

- ✓ Containment
- ✓ Equipment Maintenance and Fueling
- ✓ Stockpiling
- ✓ Stormwater Separation Systems
- ✓ Timing of Work
- ✓ Traffic Control

MAINTENANCE ACTIVITY 8.14
DRAINAGE FACILITY INSTALLATION, REPAIR & REPLACEMENT

DEFINITION

NOTE: This section does not apply to culverts on seasonal or year-round streams. Refer to the "Stream Crossings" section for on-stream facility maintenance standards and BMPs.

Repair or replacement of catch basins, inlets, junctions, cross culverts (ditch relief culverts), headwalls, ditches, runoffs, overside drains, flumes and various energy dissipation devices.

PURPOSE

Drainage facilities are installed, repaired or replaced to convey stormwater safely away from roads, sidewalks and other public facilities. Aging drainage facilities may require replacement to prevent damage to road surfaces or embankment areas resulting from plugging, collapse or breakage of pipes or structures. Headwalls, flumes and energy dissipation devices are installed, repaired or replaced to reduce erosion and to prolong the life of pipes and road surfaces. Overside drains and runoffs reduce roadway flooding and limit the downslope areas impacted by stormwater.

BMP OUTCOMES

- ✓ Preserve surface and sub-surface drainage characteristics
- ✓ Minimize road-related sedimentation

CONSERVATION OUTCOMES

- ✓ Reduce sedimentation to watercourses
- ✓ Reduce stormwater pollution
- ✓ Reduce potential for flooding of roadways, thereby reducing potential for vehicle accidents and water pollution

STANDARD

Cross Culverts

New and replacement cross culverts shall be 15" minimum diameter. Where ditch flow is in one direction, new and replacement cross culverts shall be installed with the ditch flowline to inlet angle not greater than 45 degrees unless trees, structures or other conditions prevent the angled alignment. Where ditch flow enters the culvert from opposing directions, a reinforced concrete headwall or drop structure shall be constructed to direct flow into the pipe and prevent erosion at the inlet.

Rolling dips may be constructed over replaced culverts where clogging due to upslope sedimentation and/or debris is a concern. Rolling dips shall not be constructed where posted speed limits exceed 35 MPH. Where rolling dips are constructed, signs and/or pavement markings shall be posted in each direction at an appropriate distance from the dip to alert motorists.

All new and replacement culverts shall be fitted with appropriate energy dissipation devices and/or flumes to reduce bank erosion. New and replacement culverts shall not be installed in "shotgun" configurations (i.e. outlet end shall not extend out over slopes or streams). Where new or replacement culverts are installed, the installers shall either install a flume or immediately request flume installation be performed by the maintenance crew for that Road District.

Overside Drains, Downspouts, Runoffs

Overside drains and downspouts are constructed features that channel stormwater off the shoulder of a roadway. Overside drains and downspouts may be constructed of asphalt material and metal or plastic flumes.

"Runoffs" are excavated sections of earthen berms or natural features that allow stormwater to exit the roadway. Runoffs have a high potential for worsening erosion of unstable soils, and should only be employed as a temporary means of reducing potential flooding. Where runoffs are necessary due to the height or location of earthen berms, the berms shall be evaluated for removal to allow sheet flow, or for replacement with dikes or overside drains.

New runoffs and existing runoffs with outlet erosion shall be fitted with appropriate energy dissipation devices and/or flumes to reduce bank erosion. Vegetation growing in runoffs shall be preserved to allow filtering of stormwater runoff and natural stabilization of the soil surface.

Detention Facilities

Detention facilities may be necessary to capture sediment-laden water used in pavement flushing, culvert flushing or other maintenance or construction activities. Detention facilities shall be designed to accommodate the maximum amount of water anticipated for the activity being supported. Detention facilities intended for use with large grading operations shall be designed by a civil engineer to ensure adequate detention time and appropriate soil conditions and slopes.

Headwalls, Wingwalls, and Cutoff Walls

Headwall, wingwall and cutoff wall construction shall be performed as described in Section 8.22, "Concrete." Broken concrete shall not be used in headwall, wingwall or cutoff wall construction[3].

[3] The Regional Water Quality Control Board has determined that broken concrete introduces lime and other chemical constituents into surface waters, potentially altering the pH balance and may adversely affecting water quality.

BMPs

- ✓ Clean Water Bypass
- ✓ Coir Fabric/Netting
- ✓ Concrete Washout
- ✓ Containment
- ✓ Curb Inlet Sediment Barrier
- ✓ Diversion Berm
- ✓ Energy Dissipater/Flume
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Mulching
- ✓ Reno Mattress
- ✓ Rock Slope Protection
- ✓ Rock Sock
- ✓ Rolling Dip
- ✓ Stockpiling
- ✓ Stormwater Separation Systems
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Trash Rack
- ✓ Vegetative Buffer

MAINTENANCE ACTIVITY 8.15
STREAM CROSSINGS

DEFINITION

NOTE: This section does not apply to cross culverts (ditch relief culverts). Refer to the "Repair/Replace Storm Drainage Facilities" section for off-stream drainage facility maintenance standards and BMPs.

Repair or replacement of culverts, headwalls, arches, weirs, flumes, fish ladders, and various energy dissipation devices on seasonal or year-round streams. Bridge and abutment maintenance standards are described in Section 8.12, "Bridges."

PURPOSE

Stream crossing facilities are installed, repaired or replaced to convey stream flow safely under or away from roads, sidewalks and other public facilities. Aging or under-sized stream crossing facilities may require replacement to prevent damage to road surfaces or embankment areas resulting from plugging, collapse or breakage of pipes or structures. Headwalls, flumes and energy dissipation devices are installed, repaired or replaced to reduce erosion and to prolong the life of pipes and road surfaces.

BMP OUTCOMES

- ✓ Preserve surface and sub-surface drainage characteristics
- ✓ Minimize culvert- and road-related sedimentation

CONSERVATION OUTCOMES

- ✓ Preserve or enable fish passage
- ✓ Reduce sedimentation to watercourses
- ✓ Reduce stormwater pollution
- ✓ Reduce potential for flooding of roadways, thereby reducing potential for vehicle accidents and water pollution

STANDARD

Culverts and Arches

New and/or replacement culverts and arches on all fish-bearing streams shall be designed and constructed to allow fish passage in accordance with current CDFG and NOAA Fisheries criteria.

New and/or replacement culverts and arches on non-fish bearing streams shall be designed and constructed to accommodate 100-year (1%) flows where sufficient depth of cover and right of way width exist. Where the existing depth of cover or right of way width is insufficient to allow a large enough pipe to convey the 100-year flow, the site shall be evaluated for installation of a concrete pipe saddle, parallel culvert, rolling dip, bridge or other economical means of conveying high flows across the road.

New and/or replacement culverts and arches shall be aligned with the existing stream flowline unless sensitive resources or structures prevent such alignment. Where the new/replacement culvert cannot be constructed to match the stream alignment, the site shall be evaluated for potential grade controls and meander development (i.e. stream training).

Rolling dips may be constructed over replaced culverts where clogging due to upslope sedimentation and/or debris is a concern. Rolling dips shall not be constructed where posted speed limits exceed 35 MPH. Where rolling dips are constructed, signs and/or pavement markings shall be posted in each direction at an appropriate distance from the dip to alert motorists.

All new and replacement culverts shall be fitted with appropriate energy dissipation devices to prevent bank erosion.

On-stream culvert replacements shall be scheduled to occur during the low-flow or no-flow season, depending on the stream. This season will generally occur between June 15 and October 15.

Emergency Culvert Placement

Emergency culvert placements and/or replacements may be required due to catastrophic road, slope or culvert failures. Such catastrophic failures often coincide with fish migration periods. Emergency culvert placements/replacements shall be sized so that the pipe diameter is equal to or wider than the width of the active stream channel, with the pipe buried to a depth of at least ¼ (25%) of the pipe diameter to allow stream gravels to accumulate inside. Maintenance supervisors shall complete and forward Maintenance Form RM-E01 for any emergency culvert placement/replacement.

Low Water Crossings (Fords)

Low water crossings or fords shall not be installed on any County-maintained road.

Headwalls, Wingwalls and Cutoff Walls

Headwall, wingwall and cutoff wall construction shall be performed as described in Section ___, "Concrete." Broken concrete shall not be used in headwall, wingwall or cutoff wall construction[4].

BMPs

- ✓ Clean Water Bypass
- ✓ Cofferdam
- ✓ Coir Fabric/Netting
- ✓ Containment
- ✓ Diversion Berm
- ✓ Energy Dissipater/Flume

[4] The Regional Water Quality Control Board has determined that broken concrete introduces lime and other chemical constituents into surface waters, potentially altering the pH balance and may adversely affecting water quality.

- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Large Woody Debris
- ✓ Mulching
- ✓ Rolling Dip
- ✓ Stockpiling
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Streambank Stabilization
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetative Buffer
- ✓ Vegetable-based Equipment Oil

MAINTENANCE ACTIVITY 8.16
DITCHES & SWALES

DEFINITION

Construction, maintenance and repair of roadside ditches (paved or unpaved).

NOTE: This section does not apply to ditches/swales that carry year-round flow, or to flood control channels or canals. Refer to the sections entitled “Watercourses and Streams” or “Flood Control Facilities” for standards pertaining to those facilities.

PURPOSE

Roadside ditches are intended to carry stormwater runoff away from the road surface to a relief point or facility, such as a ditch relief culvert (or “cross culvert”). Ditches are maintained to reduce roadway flooding by preserving their runoff carrying capacity; to prevent erosion and scouring of the ditch, the adjacent roadway/shoulder and slopes; and to reduce the delivery of pollutants to stormwater.

BMP OUTCOMES

- ✓ Preserve surface and sub-surface drainage characteristics
- ✓ Minimize culvert- and road-related sedimentation

CONSERVATION OUTCOMES

- ✓ Reduce sedimentation to watercourses
- ✓ Reduce stormwater pollution
- ✓ Reduce potential for flooding of roadways, thereby reducing potential for vehicle accidents and water pollution

STANDARD

Unpaved Ditches

Unpaved ditches shall be cleaned and/or mechanically “pulled’ annually, except as noted below. Annual cleaning shall generally be accomplished during the late summer or early autumn months (August through October). Unpaved ditches shall be cleaned with hand tools during the rainy season as needed to preserve their capacity. Unpaved ditches shall not be mechanically pulled during the rainy season (*Exception: Large quantities of slide debris in ditches may require mechanical removal to alleviate roadway flooding. See Section 8.2, “Slide Debris,” for standards to employ in those cases*.)

Slide debris may be removed from ditches along Gazos Creek Road using heavy equipment if needed to reduce roadway flooding and restore ditch flow. Slide debris removal from ditches shall be performed as defined in the “Slide Debris” section of these standards.

Unpaved ditches shall be cleaned to the depth to match the existing adjacent grade and to ensure sufficient slope for runoff to flow to the nearest outlet. Where ditches have eroded to depths below the existing adjacent grade, they shall be filled with rock and/or soil suitable for the area as determined by the District Road Supervisor. Broken concrete may be used for below-grade fill in ditches only where the finished surface will be lined with asphalt to ensure that surface erosion will not expose broken concrete to runoff.

Spoils removed during ditch cleaning shall be hauled and disposed of in an area where they will not be discharged into any water body or drainage facility. Spoils that must be stored prior to transport or disposal shall be protected from rainfall, runoff or wind erosion.

Maintenance Managers shall schedule lining of unpaved ditches where down-cutting and/or damage to adjacent roads or slopes are occurring, or where sediments from the ditch have the potential to enter any sensitive aquatic habitat. Asphalt ditch lining work shall consist of regrading and aligning the ditch, then surfacing with a layer of not less than 2” of asphalt concrete. Ditches may also be lined with turf-reinforcing mats (TRM) to reduce erosion while allowing for percolation into the soil. TRMs are indicated for use where ditches carry very low velocity flows and are not immediately adjacent to the paved travel way of a road.

Paved Ditches

Paved ditches shall be cleaned annually where necessary to preserve drainage capacity.

Spoils removed during vacuum cleaning shall be hauled and disposed of in an area where they will not be discharged into any water body or drainage facility. Spoils that must be stored prior to transport or disposal landfill shall be protected from rainfall, runoff or wind erosion.

District Road Supervisors shall complete a storm drainage monthly report following cleaning of paved ditches and other storm drainage facilities. Refer to Section 7.0, “Permits and Reporting,” of these standards.

Vegetation

Mechanical ditch pulling will result in vegetation removal from unpaved ditches. Where mechanical ditch pulling is not required, low grasses should be preserved within the ditches to filter sediment and other pollutants in stormwater, and to reduce scour by lowering the velocity of the ditch flow.

Overhanging branches may be trimmed during ditch cleaning operations. Trimmed matter (limbs, vines, brush, etc.) shall be hauled and disposed of in an area where they will not be discharged into any water body or drainage facility. Alternatively, trimmed matter that is free of exotic or invasive plant species may be chipped and used as mulch.

Refer to Section 8.21 for Vegetation Management Standards.

BMPs

- ✓ Clean Water Bypass
- ✓ Coir Fabric/Netting
- ✓ Containment
- ✓ Diversion Berm
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Mulching
- ✓ Rock Slope Protection
- ✓ Stockpiling
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetable-based Equipment Oil

MAINTENANCE ACTIVITY 8.17
WATERCOURSES & STREAMS

DEFINITION

Routine and emergency sediment, vegetation and/or debris removal in natural streams, certain ditches and watercourses which have been altered for development or other purposes, but which are not managed by the Flood Control District.

NOTE: This Section does not apply to management of large woody debris in fish bearing streams. Refer to Section 8.4, “Large Woody Debris.”

PURPOSE

Watercourses and streams are managed to preserve their conveyance capacities and aquatic habitat, and to reduce the potential for damage to public facilities and, in limited cases, private facilities.

BMP OUTCOMES

- ✓ Protect habitat and vegetation
- ✓ Minimize damage to streambanks and adjacent facilities
- ✓ Reduce potential sedimentation to watercourses

CONSERVATION OUTCOMES

- ✓ Reduce sedimentation to watercourses
- ✓ Preserve or improve habitat for aquatic species
- ✓ Reduce potential for flooding of roadways, thereby reducing potential for vehicle accidents and water pollution

STANDARD

Sediment, vegetation and/or debris shall only be removed from watercourses in the following cases:

1. Sediment or debris deposits are actively causing scour erosion of streambanks supporting public facilities.
2. Sediment, debris or vegetation has reduced channel capacity to the extent that flooding will occur during a 10-year storm event, and flooding will potentially damage private properties or substantially threaten public safety.
3. Removal of vegetation will not substantially adversely affect habitat of aquatic species.

Scheduled sediment, vegetation and/or debris removal activities shall be undertaken during periods of low or no flow in the watercourse, and during late autumn (i.e. just prior to the rainy season) to minimize impacts and to maximize channel capacity. The materials removed shall be placed in a stable location away from watercourses, and protected against erosion.

Soil or bank surfaces damaged by removal operations shall be treated with appropriate erosion controls.

The amounts and types of materials removed shall be reported using the storm drainage monthly report.

BMPs

- ✓ Clean Water Bypass
- ✓ Cofferdam
- ✓ Coir Fabric/Netting
- ✓ Containment
- ✓ Diversion Berm
- ✓ Energy Dissipater/Flume
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Large Woody Debris
- ✓ Mulching
- ✓ Silt Fence
- ✓ Stockpiling
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Streambank Stabilization
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetative Buffer
- ✓ Vegetable-based Equipment Oil

MAINTENANCE ACTIVITY 8.18
FLOOD CONTROL FACILITIES

DEFINITION

Routine and emergency cleaning and/or repair of facilities constructed and/or maintained by the Flood Control District, limited to San Francisquito Creek, San Bruno Channel (Cupid's Row Canal and North Channel) and Colma Creek. May include vegetation trimming or removal, sediment removal and/or maintenance of flood control facility access roads.

NOTE: This Section does not apply to cleaning out of culverts, storm drain pipes, manholes, catch basins, pump stations and other storm drainage facilities, or to maintenance activities occurring in other watercourses such as ditches or streams. Standards for those activities are described in the preceding sections.

PURPOSE

Flood control facilities are maintained to preserve their conveyance capacities and, where applicable, preserve aquatic habitat.

BMP OUTCOMES

- ✓ Preserve surface and sub-surface flood control capabilities
- ✓ Minimize the potential for introduction of pollutants to receiving waters

CONSERVATION OUTCOMES

- ✓ Reduce sedimentation to watercourses
- ✓ Reduce stormwater pollution
- ✓ Reduce potential for flooding of roadways, thereby reducing potential for vehicle accidents and water pollution

STANDARD

The following minor maintenance activities may be performed in flood control facilities provided that appropriate BMPs are employed and any notifications required by the County's NPDES permit or other general permits are made:

1. Minor vegetation trimming
2. Minor repairs to concrete structures (such as painting, patching or crack sealing)
3. Maintenance/repairs of access roads
4. Removal of garbage or debris
5. Emergency flood fighting

BMPs that will prevent spills or fallback of debris, paint, etc. shall be installed prior to commencing work involving any equipment, fluids or concrete mixtures.

BMPs

- ✓ Clean Water Bypass
- ✓ Cofferdam
- ✓ Concrete Washout
- ✓ Containment
- ✓ Diversion Berm
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Mulching
- ✓ Silt Fence
- ✓ Stockpiling
- ✓ Streambank Stabilization
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetable-based Equipment Oil

MAINTENANCE ACTIVITY 8.19
EROSION CONTROL

DEFINITION

The treatment or protection of soil and stockpile surfaces.

PURPOSE

To reduce or eliminate soil losses and sedimentation by controlling the impacts of rainfall, runoff or wind on soils, slopes, streambanks, stockpiles and other surfaces.

BMP OUTCOMES

- ✓ Reduce overland flow velocities
- ✓ Avoid concentrating runoff onto slopes
- ✓ Reduce runoff energy that can dislodge soils
- ✓ Establish vegetative cover over disturbed surfaces

CONSERVATION OUTCOMES

- ✓ Reduce sedimentation to watercourses
- ✓ Reduce stormwater pollution
- ✓ Preserve soil and vegetative resources

STANDARD

Erosion Control

All soil surfaces disturbed by maintenance and/or construction activities will be treated with appropriate erosion controls within 3 working days of the disturbance during the rainy season and within 14 days of the disturbance during the dry season.

During the dry season, disturbed soil surfaces shall be treated sooner than 14 working days if wind or traffic create airborne dust.

Crews shall limit the disturbance of existing vegetation during maintenance and construction activities to the maximum extent practicable while still allowing access to the work.

Temporary erosion controls may consist of straw logs, straw mulch, netting, or any combination of these or other means that will prevent soil and/or wind erosion. Temporary erosion controls shall be applied at any worksite where disturbed soil conditions will persist beyond 14 days.

Permanent erosion controls may consist of straw mulch, forest litter mulch, straw or coir logs, erosion control netting, mats or blankets, revegetation, etc. Permanent erosion controls shall be applied at the conclusion of soil disturbing work within 3 days during the rainy season and within 14 days during the dry season. Erosion control blankets or mats with plastic netting will not be

used between the banks of any watercourse, or in any area known to provide habitat for the salt marsh harvest mouse.

Plastic sheeting shall only be used as erosion control in emergency situations. Plastic sheeting placed on slopes or streambanks may temporarily alleviate erosion or sliding by preventing additional rainfall or runoff from affecting the slope. Vegetation that is helpful in halting erosion and stabilizing the slope is prevented from growing under plastic. Plastic sheeting shall be promptly removed when emergency conditions have lessened and shall be replaced with other suitable temporary or permanent erosion controls.

Plastic sheeting may be used to protect stockpiles against wind or rain erosion.

BMPs

- ✓ Asphalt Berm
- ✓ Brush Layering
- ✓ Brush Packing
- ✓ Coir Fabric/Netting
- ✓ Diversion Berm
- ✓ Energy Dissipater/Flume
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Hydroseeding
- ✓ Live Pole Drain
- ✓ Live Staking
- ✓ Mulching
- ✓ Reno Mattress
- ✓ Rip Rap
- ✓ Rock Slope Protection
- ✓ Stockpiling
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Surface Roughening
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetative Buffer
- ✓ Wattles/Fascines

MAINTENANCE ACTIVITY 8.20
SLOPE STABILIZATION

DEFINITION

Repair, reconstruction or stabilization of cut slope, fill slope and through-cut slope failures not adjacent to a watercourse. Slope failures on the cut slope side of a roadway are typically referred to as “slides.” Slope failures on the fill side are typically referred to as “slipouts.”

NOTE: This Section does not apply to streambanks or the banks of any watercourse. Streambank stabilization standards are described in Section 8.1, “Bank Stabilization.”

PURPOSE

Slope stabilization work is performed to repair damage to roads and shoulders, to prevent additional failure of the supporting soils or structures, and to reduce the potential hazard of falling debris.

BMP OUTCOMES

- ✓ Preserve surface and sub-surface drainage characteristics
- ✓ Minimize culvert- and road-related sedimentation
- ✓ Restore vegetation to slopes

CONSERVATION OUTCOMES

- ✓ Protect unstable slopes by controlling and directing surface runoff
- ✓ Protect water quality by reducing erosion/sedimentation
- ✓ Contribute to restoration of sensitive habitats by reducing erosion / sedimentation and revegetating disturbed areas
- ✓ Preserve and/or enhance visual resources
- ✓ Preserve and/or enhance traffic safety

STANDARD

Large, steep and/or dangerous slopes, or slopes supporting or adjacent to public or private structures should be assessed by a qualified civil engineer prior to initiating repairs.

Maintenance crews shall assess the stability of failing or recently failed slopes and take precautions to ensure their own safety and that of the public prior to performing any work.

Slope stabilization work in riparian areas, sensitive habitats or scenic areas shall be planned and designed to incorporate biotechnical methods such as brushlayering, brushpacking or vegetated rip rap to restore habitat and scenic values.

Rock slope protection (i.e. rip rap) shall not be used between the banks of any watercourse. The limits of rock slope protection use near streams is defined as being above the uppermost level of

flow during a 100-year flood event, and any areas where rock slope protection material may be introduced into a watercourse by subsequent bank failure or sliding.

Rock slope protection for slope stabilization shall be planned to include appropriate drainage facilities, erosion controls and revegetation to restore function to the slope and to blend it into adjacent slopes.

BMPs

- ✓ Asphalt Berm
- ✓ Brush Layering
- ✓ Brush Packing
- ✓ Coir Fabric/Netting
- ✓ Concrete Washout
- ✓ Containment
- ✓ Diversion Berm
- ✓ Energy Dissipater/Flume
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Hydroseeding
- ✓ Live Pole Drain
- ✓ Live Staking
- ✓ Mulching
- ✓ Reno Mattress
- ✓ Rip Rap
- ✓ Rock Slope Protection
- ✓ Stockpiling
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Surface Roughening
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetative Buffer
- ✓ Wattle/Fascine

MAINTENANCE ACTIVITY 8.21
VEGETATION MANAGEMENT

DEFINITION

Activities and methods used to control plant growth and locations. Management strategies may include manual trimming, mowing, mechanical removal or herbicide application.

PURPOSE

Vegetation is managed to preserve sight distances and clearances for motorists and pedestrians; to reduce hazards; to eliminate invasive or exotic weeds; and to preserve and maintain road surfaces and other structures.

BMP OUTCOMES

- ✓ Minimize the introduction of organic material to water bodies
- ✓ Recycle/reuse vegetative matter where practicable

CONSERVATION OUTCOMES

- ✓ Reduce fire hazard
- ✓ Protect endangered and sensitive plant species
- ✓ Protect water quality by preserving native vegetation, thereby reducing erosion/sedimentation
- ✓ Contribute to restoration of sensitive habitats by reducing erosion/sedimentation and revegetating disturbed areas
- ✓ Preserve and/or enhance visual resources
- ✓ Preserve and/or enhance traffic safety by improving sight distances

STANDARDS

Endangered and Sensitive Plant Species and Habitats

San Bruno Mountain – Lupine

Perennial lupines *(Lupinus albifrons, L. variicolor, and L. formosus)* provide habitat for several endangered butterfly species in the San Bruno Mountain State and County Park. The lupines and other plants that may provide habitat are protected under the Habitat Conservation Plan (HCP) for San Bruno Mountain, and may not be mowed, sprayed, or otherwise disturbed. Damaging or destroying habitat for endangered butterflies is considered “take of an endangered species” and is subject to enforcement action by the U.S. Fish and Wildlife Service and/or California Department of Fish and Game.

Lupines and other sensitive plants grow in the shoulder areas adjacent to Guadalupe Canyon Road. Vegetation monitors mark these sensitive plants with landscape flagging to assist maintenance workers in avoiding them. However, flagging may not be completed prior to mowing,

or flags may be missing. Maintenance workers shall avoid mowing any flowering plants in these areas.

Other Locations and Species

The San Mateo Woolly Sunflower *(Eriophyllum latilobum),* San Mateo thornmint *(Acanthomintha duttonii)* and other state and federal protected plant species occur throughout San Mateo County. Areas where these species are discovered or are known to occur will be flagged and/or protected by exclusion fencing prior to mowing, spraying or construction activities in their vicinity.

Vegetation Management Areas

The Pescadero Weed Management Area (WMA) was established "to focus on the exclusion, detection, eradication and suppression of designated noxious weeds and invasive exotic plants using an integrated approach." *(Memorandum of Understanding, San Mateo County Weed Management Area, December 2001)* Pampas grass has been identified as a high-priority invasive plant in the WMA.

The Department of Public Works is responsible under the MOU for educating its employees about noxious weeds, their identification and methods of control and prevention; providing data on noxious weed infestations within the right-of-way; identifying high-risk pathways of noxious weed introduction onto County roads; implementing elements of integrated weed management to prevent the spread of noxious weeds; and cooperating with agencies and landowners in the prevention, control and eradication of noxious weeds.

Within the Pescadero WMA, maintenance crews shall be alert to the potential spread of pampas grass and shall collect, contain and dispose of pampas grass fronds either trimmed from roadside plants or found within the right of way. Maintenance crews responsible for mowing and/or trimming shall completely remove by either pulling or digging any pampas grass plants beginning to grow or become established within the right-of-way. (Established plants will, in general, require heavy equipment for removal and are usually part of an established stand of pampas grass plants. This standard is not intended to address large-scale removal projects, but rather addresses the newer, smaller plants to prevent them from becoming well-established and developing into additional seed sources.)

Pampas grass trimmings or plants shall be disposed of by burial at a designated location in the Pescadero quarry. Pampas grass trimmings and plants shall not be left exposed to wind, rain or runoff.

Herbicides

Herbicides are used to prevent weed damage to paved and concreted surfaces. Weeds can cause cracks and eventual potholes, resulting in potential damage to vehicles and costly repairs to the road surface.

(The following paragraph does not apply until approved by the Director of Public Works and the Pescadero Municipal Advisory Council.)

Herbicides shall not be used in the Pescadero area. Clove oil may be applied to unwanted vegetation within paved surfaces and to a distance of 4' beyond the paved surface or to the edge of the drainage ditch, but shall not be used in or allowed to enter into any watercourse. Herbicides may be applied to dry ditches when no rainfall or runoff is expected to occur within 14 days of application.

Outside of the Pescadero area, herbicides may be used to control weeds on any paved or concrete surface and up to 3' beyond the edge of the paved or concrete surface. Herbicides shall not be applied during wet or rainy weather due to the potential for discharge into a water body.

Herbicides shall not be used in any fish-bearing stream, lake or pond, or any watercourse known to support California red-legged frog populations. For other water bodies, herbicide use is limited to the control of invasive plant species where excess vegetation is determined to be the cause of sediment deposition and/or debris accumulations that result in flooding or damage to public facilities. Herbicides approved for use in water bodies are listed in Table 1 below.

Herbicides shall not be used on any slope where bare erosive soil may result.

Herbicides shall be selected for the uses approved by the United States Environmental Protection Agency (USEPA) and California Department of Pesticide Regulation (CDPR), and shall be used according to the label directions. Current Material Safety Data Sheets (MSDS) for all herbicides stored or in use by Maintenance Division Staff shall be kept on file at the Grant Corporation Yard, and copies provided to the Department Safety Officer.

Herbicides shall not be broadcast sprayed, but shall be selectively sprayed at the plants targeted for removal.

Table 1 lists herbicides currently approved for use by USEPA and CDPR.

TABLE 1
Herbicides Approved for Use by USEPA and CDPR

Product Name	Chemical Name	Indication	Restrictions[5]
Garlon-4	Triclopyr acetic acid, butoxy ethyl ester	Preemergent, selective to broadleaf weeds.	May not be used within 60' of any watercourse in San Mateo County.
Pendulum AquaCap	Pendimethalin with ethylene dicholoride	Postemergent, nonselective. Approved for aquatic use.	May not be used within 60' of any watercourse in San Mateo County.
Roundup Pro	Glyphosate	Postemergent, nonselective.	May not be applied to surface waters.

[5] Restrictions noted are based on July 2004 Washington Toxics Coalition (WTC) ruling as published by US Environmental Protection Agency.

Fallen Trees

Redwood and fir trees fallen from County property shall be protected and retrieved for use in bank stabilization and/or habitat enhancement projects. Redwood, fir and other large woody debris (anything over 6" in diameter, 10' in length, and any large stumps) within the County's right-of-way or on any County parcel, shall be handled in the following manner at the first opportunity:

1. All-weather (plastic or metal) "Property of San Mateo County" signs shall be nailed in visible location(s) on the wood. Bright colored traffic paint may be used if signs are not available.

2. Maintenance Supervisors shall arrange to have the material hauled to a Road Maintenance Division stable storage area for potential reuse.

3. The site may require stabilization and/or erosion control treatment after the material is removed. District Maintenance Supervisors shall notify their Manager of any special materials that will be required to stabilize the site (e.g. erosion control blankets, hydroseeding, etc.). Stabilization work shall be accomplished within 2 working days during the rainy season (November through April), 7 working days during the dry season (May through October).

Where the Parks Department assists with emergency road clearing, they may be allowed to take logs from right-of-way trees for their own use. Parks Department forces shall leave at least 12' of stem on any tree/stump that falls from the right-of-way, and position the stump so that it does not block traffic and so that Public Works equipment can retrieve it later.

Trees, General

Road Maintenance crews shall trim or remove trees in the County right-of-way to maintain the safety of vehicle traffic and pedestrians under the following circumstances:

1. To maintain line of sight clearance (usually 4 feet at intersections)
2. To maintain a 14-foot height clearance for vehicles and a 7-foot height clearance for pedestrians
3. To remedy a dangerous situation such as cracked or broken overhanging limbs
4. If the tree is dead or dying. Where the property owner believes and the Roads Services Division confirm by inspection that tree appears to be diseased, the RoadsServices Division shall recommend that the property owner obtain an arborist's report.

Where trees on private property encroach into the right-of-way, the Road Services Division shall notify the property owner. Encroaching trees shall be trimmed by the maintenance crew if, 10 days after receipt of notice, the property owner has not addressed the problem. **Exception: Trees deemed to be an immediate hazard shall be trimmed/removed by the Roads Services Division with follow up notification to the property owner.** Maintenance crews shall photo-document hazard trees prior to trimming wherever possible.

Roadsides and Ditches

Outside of the Pescadero area, vegetation in paved asphalt or concrete areas (e.g. ditches, gutters, sidewalks) and extending to 3 feet beyond the pavement or concrete may be treated with herbicides as described above to alleviate damage to the asphalt or concrete surface.

Vegetation on shoulders, berms and unpaved (earthen) ditches shall be mowed as described in "Mowing" below. Low grasses are highly desirable in earthen roadside ditches as they filter pollutants from stormwater runoff, and reduce the velocity of flows thereby reducing the erosive forces. Other types of vegetation in ditches such as woody plants and trees may require complete removal and/or treatment with approved herbicides.

Overhanging branches may be trimmed during ditch cleaning operations. Trimmed matter (limbs, vines, brush, etc.) shall be hauled and disposed of in an area where they will not be discharged into any water body or drainage facility. Alternatively, trimmed matter that is free of exotic or invasive plant species may be chipped and used as mulch.

Riparian and Aquatic Vegetation

Limitations on herbicide use in aquatic areas are described in "Herbicides" above.

Most riparian and aquatic vegetation management activities shall occur during the early fall season (September-October), prior to the high-flow season but after the warmest part of the summer when aquatic species are most sensitive to changes in canopy, shading and water temperatures.

Aquatic vegetation may require removal or trimming when its presence is causing sediment deposition that is likely to contribute to flooding or damage to streambanks.

Riparian vegetation within the County right-of-way may be trimmed or mowed as described below.

Mowing

Roadside vegetation (i.e. grasses, vines, brush) is mowed throughout the year to maintain sight distance and reduce fire hazards adjacent to County roads.

Mowing shall, in general, be performed as close to the ground surface as possible. Mowers shall not be allowed to dislodge rock or soils, or to uproot plants. Where uneven ground surfaces exist, mowers shall be set to a height of not less than 4 inches above the highest surface. Subsequent passes of the mowing equipment may be necessary to trim vegetation along existing berms, slopes, ditches, etc. (Mowing is typically completed in 1 to 3 passes, with each pass mowing a strip of 3' to 4' in width.)

Mower operators shall monitor their equipment height for soil disturbance, and shall immediately adjust the blade height if soils and/or rock are being dislodged from the ground.

Special precautions shall be taken to avoid mowing endangered or sensitive plant species as described at the beginning of this section.

Revegetation

Areas that have been cleared for maintenance or construction activities and which are not intended for continuing use by vehicles shall be revegetated within 3 working days after the work during the rainy season, and within 14 working days after the work during the dry season. Examples of such areas include earthen berms, culvert backfills, slopes and vegetated drainage swales.

Areas that have been cleared for maintenance or construction activities and which are intended for continuing use by vehicles shall be treated and maintained as described in Section 8.11, “Shoulders and Turnouts,” of these standards.

Revegetation work may consist of planting container stock, transplanting seedlings, hand-broadcasting seed, hydroseeding and/or mulching with native forest litter to allow natural revegetation. Seed mixes, if used, shall be as specified for use in the particular watershed (see Table 2 at the end of this section for general information on seed mixes).

Hydroseeding

Hydroseeding shall not be used on the bank(s) of any water body, including earthen berms at the tops of banks.

Hydroseeding, where selected as erosion control for a finished slope or ground surface, shall be performed within 2 working days after the work during the rainy season, and within 7 working days after the work during the dry season. If hydroseeding is delayed until the anticipated beginning of the rainy season, alternate methods of erosion control shall be placed within the numbers of working days specified above.

Controlled Burns

Controlled burning shall not be performed by maintenance crews, and is outside the scope of this document. Controlled burning performed on County-owned property shall conform to the requirements of the California Department of Forestry and Fire Protection.

TABLE 2
APPROVED SEED MIXES FOR EROSION CONTROL GRASSES

District	Watershed	Plant Types	Common Names	Application Rate
Portola Valley, Woodside, West Menlo	San Francisquito, Los Trancos		Blue wild rye, fescue,	
Redwood City, Emerald Hills, Palomar Park	Redwood, Cordilleras, Belmont, Laurel, Pulgas		(Santa Cruz Erosion Mix)	
San Mateo Highlands, Crystal Springs	San Mateo, Crystal Springs			
South San Francisco, Broadmoor, Burlingame Hills	Colma, San Bruno, Guadalupe, Lake Merritt, Mills, Sanchez		(Santa Cruz Erosion Mix)	
Princeton	Lobitos, Tunitas, Purisima, Pilarcitos, Arroyo de en Medio, San Vicente, Denniston, Montara,		(Santa Cruz Erosion Mix)	
La Honda	La Honda, Alpine, San Gregorio	Native only		
Pescadero	Pescadero, Butano, Pomponio, Gazos	Native only		

BMPs

- ✓ Containment
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Hydroseeding
- ✓ Live Pole Drain
- ✓ Live Staking
- ✓ Mulching
- ✓ Surface Roughening
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Vegetative Buffer
- ✓ Wattle/Fascine

MAINTENANCE ACTIVITY 8.22
CONCRETE

DEFINITION

Concrete construction and maintenance, including formwork, mixing, pouring, patching, mortar, washout and cleanup.

PURPOSE

Concrete is used to construct sturdy weather- and erosion-resistant structures that can withstand compression loads such as vehicle and equipment traffic. Concrete mortar is used to seal cracks or gaps between concrete blocks, pipes or other structures, and to join bricks or blocks to create walls. Typical concrete structures include culvert headwalls, sidewalks, curbs and gutters, pipe saddles, drainage inlets and bridges.

BMP OUTCOMES

- ✓ Prevent the introduction of materials into watercourses and drainage facilities
- ✓ Reduce material usage and/or waste

CONSERVATION OUTCOMES

- ✓ Reduce sedimentation to watercourses
- ✓ Reduce stormwater pollution
- ✓ Reduce potential for damage to earthen areas adjacent to structures

STANDARD

Concrete and Mortar

Concrete construction shall not occur during periods of rain. Surface waters (streams, ditch flow, etc.) shall not contact fresh concrete for a period of 30 days after its construction unless barrier chemicals have been applied.

Concrete and mortar shall be contained and not allowed to leave the construction site. Any excess concrete or mortar placed or spilled beyond the limits of concrete construction shall be immediately collected, removed and disposed of properly.

Washout of concrete mixers or trucks shall occur in the Maintenance Yard. Should the travel distance to the Maintenance Yard prohibit the delay, crews shall use a washout trailer or detention pond to capture wash water. Wash water shall be completely clear with all solids settled out prior to being released from the trailer or detention pond. Solids shall be properly disposed.

Excess concrete or mortar shall not be deposited into culverts, ditches or other locations tributary to any watercourse.

Dry sacks of cement shall be protected against rainfall, runoff and wind. Opened sacks of cement shall be secured and protected from spilling.

Headwalls, Wing Walls and Cutoff Walls

Headwalls shall be constructed at the inlet of any new or replacement ditch relief culvert ("cross culvert"). Headwalls shall, in general, be constructed of new reinforced concrete. Alternatives to new reinforced concrete may include lumber, logs, brick, and rip rap. Pressure- or creosote-treated wood and/or broken concrete shall not be used in any area where there is potential contact with any surface water (stream, pond, runoff, etc.) due to the potential of chemical leaching[6].

Scheduling for headwall construction shall account for the necessary excavation, formwork, concrete curing and backfilling so that the items of work with the potential to introduce pollutants into stormwater shall be completed prior to any rainfall event.

Headwalls and/or wing walls shall be constructed at the ends of new or replacement stream crossings where headwalls and/or wing walls will not impede fish passage through the crossing.

Sidewalks, Driveways, Curbs and Gutters

Sidewalks, driveways, curbs and gutters shall, in general, be constructed as shown in the San Mateo County *Standard Drawings for Public Improvements*. Where the design shown in the Standard Drawings is unsuitable to conform to adjacent existing construction, the design may be modified. Maintenance Managers shall ensure that Americans with Disabilities Act (ADA) accessibility issues are addressed in the modification, or shall immediately notify the Maintenance Division Manager if accessibility cannot be accomplished and other accommodations for disabled persons may be required.

Sidewalks shall be scheduled for repair when they are either reported as a tripping hazard, or are displaced by ¾".

Root barriers shall be installed at the back of any new sidewalks constructed where tree roots are causing damage.

Broken Concrete

Broken concrete may be used as backfill where it will not contact stormwater runoff or any natural water body. For example, broken concrete may be used as backfill below grade in earthen ditches if it is completely covered with soil and/or asphalt and will not be exposed by erosion in the ditch. Broken concrete may not be used to construct headwalls around culvert inlets or in any streambank repair project.

[6] The Regional Water Quality Control Board has determined that broken concrete introduces lime and other chemical constituents into surface waters, potentially altering the pH balance and may adversely affecting water quality. The Department of Fish and Game expressly prohibits the use of pressure- or creosote-treated lumber in areas where the material may contact surface waters.

Sawcutting

Slurry and/or dust resulting from sawcutting operations shall be shoveled or vacuumed and completely removed from the site. Sawcutting debris or slurry shall not be swept or flushed into any creek, drainage ditch or roadside area.

BMPs

- ✓ Concrete Washout
- ✓ Containment
- ✓ Curb Inlet Sediment Barrier
- ✓ Equipment Maintenance and Fueling
- ✓ Rock Sock
- ✓ Timing of Work
- ✓ Traffic Control

MAINTENANCE ACTIVITY 8.23
SEWERS

DEFINITION

Maintenance and repair of sewer collection systems in 9 sewer districts and of sewer collection and treatment systems in County Parks.

PURPOSE

To preserve the capacity of sewer collection systems to ensure efficient delivery of sewage to treatment plants, to prevent accidental overflows and blockages, and to provide adequate wastewater treatment and disposal of wastes.

BMP OUTCOMES

- ✓ Protect ground water against contamination
- ✓ Reduce the potential for introducing pollution into stormwater

CONSERVATION OUTCOMES

- ✓ Conserve water resources by reusing treated wastewater
- ✓ Reduce the potential for sewer backups, thereby reducing the potential for damage to properties and facilities

STANDARD

Sewer Spills

Sewer spills shall be handled in accordance with the *San Mateo County Sewer Spill Response Plan*, August 2002, included as Appendix G in these standards. Any sewer spill or wastewater release that exceeds 1,000 gallons or that potentially has a negative impact on public health shall be reported as described in the *Sewer Spill Response Plan*.

Collection System Maintenance

Sewer mains shall be cleaned, in general, a minimum of one time per year. Sewer collection system cleaning typically consists of eliminating grease accumulations and cutting roots to restore pipe capacities. Additional sewer main cleaning is performed on an “as-needed” basis in identified problem areas (e.g. areas with mature trees and frequent root intrusion into the sewer mains) and where customers request additional service.

Emergency sewer service consisting of clearing blockages shall be provided between the main and a standard cleanout. Crews shall notify the property owner and sewer district management if the sewer lateral appears to be in poor condition requiring repair or replacement. Sewer district management shall notify the property owner in writing if a damaged lateral appears to be the

cause of the blockage, and that no further emergency maintenance work will be performed until the damaged lateral has been repaired or replaced.

Grinder Pumps

Grinder pumps accepted as the Sewer District's responsibility shall be cleaned once per year. Additional cleaning, maintenance and/or replacement shall be performed on an "as-needed" basis once reported by the property owner.

The Facilities Maintenance Division shall keep two functional grinder pumps in reserve to use as replacements in cases where the property owner's pump cannot be readily cleaned or repaired.

Treatment Plants

Treatment plants, pump stations, treatment ponds, pipelines and sprayfields shall be maintained according to the Operating and Maintenance procedures approved for the facility under its Waste Discharge Requirements (NPDES Permit).

BMPs

- ✓ Concrete Washout
- ✓ Containment
- ✓ Curb Inlet Sediment Barrier
- ✓ Diversion Berm
- ✓ Equipment Maintenance and Fueling
- ✓ Rock Sock
- ✓ Sand Bags
- ✓ Timing of Work
- ✓ Traffic Control

MAINTENANCE ACTIVITY 8.24

WATER SYSTEMS

DEFINITION

The maintenance and repair of intakes, wells, pumps, distribution systems, treatment facilities and storage tanks for County Service Areas 7 and 11 and County Parks.

PURPOSE

To maintain clean, safe drinking water for customers and to ensure conservation of water resources to the maximum extent practicable.

BMP OUTCOMES

- ✓ Reduce the potential for introduction of pollutants into watercourse
- ✓ To minimize or prevent erosion during construction or maintenance activities

CONSERVATION OUTCOMES

- ✓ Reduce sedimentation to watercourses
- ✓ Reduce stormwater pollution
- ✓ Conserve water resources to the maximum extent practicable

STANDARD

Standard operating procedures for County Service Areas (CSA) 7 and 11 are contained in the CSA 7/11 Treatment Plant Operations Manual.

Damage and/or leaks in County-operated water supply systems shall be immediately repaired, and shall be reported as follows:

> Damage to the CSA 7 intake gallery in Alpine Creek shall be immediately reported to Public Works Watershed Protection Services.
>
> Damage to in-stream facilities (intakes) in County Parks shall be reported to the Parks Superintendent.

Planned repairs to any in-stream facilities shall only be conducted after appropriate water quality protection BMPs have been installed. BMPs shall be maintained throughout the work, and shall be removed in a manner that will not introduce sediment into the stream.

Emergency repairs to in-stream facilities shall be reported using the Maintenance Report Form (Form RM-E01). Follow-up bank stabilization, erosion control and/or restoration activities shall be performed in accordance with the standards in this manual.

Water usage amounts are reported annually to the State Water Resources Control Board in compliance with the County's appropriations. Water conservation is ensured through the continued maintenance and use of meters along the CSA 7 distribution system.

BMPs

- ✓ Clean Water Bypass
- ✓ Cofferdam
- ✓ Concrete Washout
- ✓ Containment
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Large Woody Debris
- ✓ Mulching
- ✓ Streambank Stabilization
- ✓ Timing of Work
- ✓ Traffic Control

MAINTENANCE ACTIVITY 8.25
RECYCLING & DISPOSAL

DEFINITION

The diversion of materials away from the waste stream for potential reuse wherever possible, and the proper disposal of materials not suitable for reuse.

PURPOSE

Recycling and reuse are necessary to meet the County's waste diversion requirements. Proper disposal of non-reusable items and materials reduces the potential for pollution.

BMP OUTCOMES

- ✓ Reduce the potential of introducing pollutants to stormwater

CONSERVATION OUTCOMES

- ✓ Reduce waste and slow the filling of landfills
- ✓ Reduce the need to produce additional construction materials where old materials can be reused
- ✓ Potentially improve air quality by reducing production and transportation needs

STANDARD

Construction and demolition debris constitutes between 11 and 28% of the unincorporated County waste stream. The Board of Supervisors has adopted ordinances and policies to reduce this contribution to the waste stream to reach the 50% diversion goal mandated by the California Integrated Waste Management Act. These ordinances and policies apply to both public and private builders and developers, structures, landscaping, trees, vegetative matter, roads, concrete facilities, etc.

Construction & Demolition Debris

In accordance with the San Mateo County Construction and Demolition Debris Ordinance (Ordinance No. 4.105, February 2002), County crews shall divert 100% of inert solids and at least 50% of the remaining construction and demolition debris.

Designated Recyclable and Reusable Materials

The following types of materials shall be diverted from the waste stream:

1. Inert solids, including asphalt, concrete, rock, stone, brick, sand, soil and fines.

2. Wood materials: any and all dimensional lumber, fencing or construction wood that is not chemically treated, creosoted, CCA pressure treated, contaminated or painted.

3. Vegetative materials: trees, tree parts, shrubs, stumps, logs, brush or any other type of plants cleared from a site for construction or maintenance. (Refer also to Section 8.4, "Large Woody Debris Management/Removal," and Section 8.21, "Vegetation Management.")

4. Metals: all scrap such as pipes, culverts, rebar, siding, ductwork, signs and posts.

5. Roofing materials, including wood shingles, shakes, asphalt, stone and slate-based roofing material.

6. Salvageable materials and structures, including doors, windows, fixtures, sinks, appliances, etc.

7. Any other recyclable or reusable material as determined by the Environmental Services Section of the Department of Public Works.

Diversion Methods

Maintenance crews may meet the diversion requirements by:

a. Road Maintenance crews: Taking all trees (over 12" in diameter), stumps and other large woody debris to the Pescadero Quarry or Princeton Yard for future incorporation in streambank repair or habitat enhancement projects;

b. Taking all mixed construction and demolition debris to an approved Mixed Construction and Demolition Debris Recycling facility, and taking all sorted or crushed construction and demolition debris to approved facilities, or

c. Separating non-inert materials, such as cardboard, paper, wood, metals, green waste, tile, and other easily recycled materials, and directing them to recycling facilities approved by the Environmental Services Section and taking the remainder (but no more than 50% by weight or volume) to a facility for disposal.

Note: Broken concrete may not be reused in any area where it will contact surface water due to the potential introduction of chemical constituents into watercourses.

New Materials

In accordance with the County's Environmental Purchasing Policy, the Maintenance Division shall incorporate used materials, recycled or recyclable paint products, re-refined oil (American Petroleum Institutes certified), recycled propylene glycol antifreeze, and other products or materials where the use of those products or materials will not negatively impact upon the integrity or safety of any public road or facility, and where the material itself will not cause environmental degradation (example: broken concrete may be reused as backfill material except where it potentially contacts stormwater runoff or any natural water body).

Hauling & Disposal

Maintenance crews shall securely cover all loads prior to hauling, except that as allowed under the California Vehicle Code, loads of soil that do not exceed the proper loading limit of the hauling vehicle need not be covered.

BMPs

- ✓ Containment
- ✓ Stockpiling
- ✓ Timing of Work
- ✓ Traffic Control

MAINTENANCE ACTIVITY 8.26

GENERAL STORMWATER POLLUTION PREVENTION FOR MAINTENANCE ACTIVITIES

DEFINITION

General stormwater pollution prevention consists of measures and activities that reduce or prevent the introduction of pollutants into watercourses.

PURPOSE

General stormwater pollution prevention practices protect water quality and air quality, improve the appearance of work sites, and satisfy the requirements of the National Pollution Discharge Elimination System (NPDES) permit.

BMP OUTCOMES

- ✓ Preserve surface and sub-surface drainage characteristics
- ✓ Minimize culvert- and road-related sedimentation

CONSERVATION OUTCOMES

- ✓ Reduce sedimentation to watercourses
- ✓ Reduce stormwater pollution
- ✓ Reduce potential for flooding of roadways, thereby reducing potential for vehicle accidents and water pollution

STANDARDS

Maintenance crews shall adhere to these Watershed Protection standards, which have been adapted from the San Mateo County-wide Stormwater Pollution Prevention Program (STOPPP) Performance Standards for Municipal Maintenance. The adaptations have been made to ensure compliance with endangered species act requirements, and to ensure that water resources in unincorporated San Mateo County are protected to the maximum extent practicable. Where the Watershed Protection standards and the STOPPP Performance Standards conflict, the Watershed Protection standard shall apply.

Water pollution control materials may consist of temporary erosion controls such as silt fencing, straw mulch and straw logs; spill cleanup materials such as absorbent pads or cat litter; runoff controls such as sand bags or continuous berms, etc.

For construction activities occurring between June 15 and September 15, applicable water pollution control materials, such as silt fencing and spill cleanup materials, shall be available at the work site prior to commencing any work. For construction activities occurring between September 15 and June 15, all applicable water pollution control measures, such as runoff controls, shall be installed and all applicable water pollution control materials, such as straw mulch and spill cleanup

materials, shall be available at the work site prior to commencing any work.

Excavation and Grading

Excavation and grading activities shall be scheduled for dry weather periods. Excavation and grading activities shall not be allowed to commence or continue during periods of rainfall or runoff.

Between June 15 and September 15, no excavation, backfilling, grading or stockpiling operations shall commence until water pollution control materials have been delivered to the work site. Between September 15 and June 15, excavation, backfilling, grading or stockpiling operations shall not commence until water pollution control and temporary erosion control materials have been both delivered to the work site and installed.

Sediment-laden runoff from the construction sites and/or staging areas shall not be allowed to enter into any watercourse.

The amount of runoff entering upon construction and staging areas shall be controlled, particularly during excavation, to reduce the amount of temporary controls required. Temporary diversion berms and/or sandbags may be employed to divert runoff from entering upon construction and staging areas.

Dust Control

Crews shall avoid generating excess dust during maintenance and construction activities. Sources of dust may include soil stockpiles, staging areas, turnouts and unpaved roads. Causes of dust include wind, mowing and traffic.

Methods of controlling dust include:

- Operate equipment/vehicles at reduced speeds
- Cover stockpiles
- Raise mower blades to avoid disturbing the soil surface
- Periodically sweep paved surface where tracked soils create dust
- Water unpaved surfaces to reduce dust generation (avoid applying excess water that will become polluted runoff)

Chemical dust palliatives shall not be used.

General Housekeeping

Materials shall be protected from rainfall to prevent runoff contamination. Exposed construction materials that have the potential to introduce pollutants via runoff or leaching shall be covered with plastic sheeting secured with sandbags or temporary roofs.

Paved surfaces at construction sites shall be dry-swept as necessary to prevent water pollution. If pavement flushing is necessary, detention ponds or other techniques to trap sediment and other pollutants shall be employed.

Materials/Waste Handling

No waste materials or debris shall be stored or buried in the street or near a creek or stream bed. Refer to Section 8.25, “Recycling and Disposal,” for requirements relating to waste diversion.

Vehicle Maintenance

Vehicle maintenance, oiling, and refueling shall occur in a completely contained area of the construction site, well away from streams or storm drain inlets. The area shall be bermed if necessary to contain any spills or leaks.

All vehicles and heavy equipment shall be maintained in good repair. Equipment operators shall inspect frequently for and immediately repair or request vehicle maintenance for any leaks. Garbage shall be removed from vehicles daily.

Drip pans or drop cloths shall be used to catch drips and spills if any vehicle or equipment fluids (e.g. motor oil, radiator coolant, etc.) must be drained on site. All spent fluids shall be stored in separate containers, and recycled whenever possible, or dispose of as hazardous waste.

Diesel oil shall not be used to lubricate or clean equipment or parts.

Vehicle batteries shall be recycled whenever possible.

Spill Prevention and Response

Fluid spills shall not be hosed down. Maintenance crews shall use dry cleanup methods (absorbent materials, cat litter, and/or rags) whenever possible. If water must be used, the water and any spilled fluids shall be collected and disposed of as hazardous waste. Spilled fluids shall not be allowed to soak into the ground or enter into any drainage facility or creek.

Spilled dry materials shall be swept up immediately. Maintenance crews shall not wash down or bury any dry spills.

Spills on dirt areas shall be removed by digging up and properly disposing of contaminated soil.

Maintenance supervisors shall immediately report significant spills using Maintenance Notification Form RM-E01.

Stockpiles

All soil and/or rock stockpiles shall be protected against wind and rainfall erosion at all times. Plastic sheeting may be used to cover soils (including aggregate base), and shall be securely anchored by sandbags or other suitable means. At no time will any stockpiled materials be allowed to erode into any water body or drainage facility or onto any roadway.

BMPs

- ✓ Asphalt Berm
- ✓ Brush Layering
- ✓ Brush Packing
- ✓ Clean Water Bypass
- ✓ Cofferdam
- ✓ Coir Fabric/Netting
- ✓ Concrete Washout
- ✓ Containment
- ✓ Curb Inlet Sediment Barrier
- ✓ Diversion Berm
- ✓ Energy Dissipater/Flume
- ✓ Equipment Maintenance and Fueling
- ✓ Erosion Control Blankets & Mats
- ✓ Hand Seeding
- ✓ Hydroseeding
- ✓ Large Woody Debris
- ✓ Live Pole Drain
- ✓ Live Staking
- ✓ Mulching
- ✓ Reno Mattress
- ✓ Rip Rap
- ✓ Rock Slope Protection
- ✓ Rock Sock
- ✓ Rolling Dip
- ✓ Sand Bags
- ✓ Silt Fence
- ✓ Stockpiling
- ✓ Stormwater Separation Systems
- ✓ Straw Log, Straw Roll, Coir Log
- ✓ Streambank Stabilization
- ✓ Surface Roughening
- ✓ Timing of Work
- ✓ Traffic Control
- ✓ Trash Rack
- ✓ Vegetative Buffer
- ✓ Vegetable-based Equipment Oil
- ✓ Wattle/Fascine