Stream Maintenance Program
Addendum

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SMP MANUAL ADDENDUM

Introduction and Purpose

This Stream Maintenance Program (SMP) Manual Addendum was developed to provide and describe updates and revisions to the Draft SMP Manual. The Draft SMP Manual was issued in January 2009 along with its program Draft Environmental Impact Report (DEIR). In the course of addressing public comments on the DEIR, modifications to the text of the DEIR were implemented. Because the SMP Manual and the SMP DEIR are interrelated documents and contain shared information, several changes made to the DEIR also required parallel updates to the SMP Manual. This Addendum presents the changes made to the SMP Manual based on comments on the DEIR, as well as revisions based on communications from other interested agencies who commented directly on the SMP Manual.

This Addendum is organized by chapter for ease of reference and comparison to the January 2009 Draft SMP Manual. Each Chapter section provides a brief introduction to the location and nature of the amended Manual text. Changes from the January 2009 Draft Manual are indicated as follows: new text is shown in **boldface** type; deleted text is shown as ~~strikethrough.~~

This SMP Manual Addendum also includes attached documents, which represent new supporting materials that were developed through the SMP Manual revision process, or revised versions of existing appendices from the original Draft Manual. The attached documents included with this Addendum are:

- Appendix B: Sediment Sampling and Analysis Guidelines
- Appendix E: Vegetation Management Plan
- Appendix F: Annual Report Outlines

Taken together, the January 2009 Draft SMP Manual and this SMP Manual Addendum represent a Final SMP Manual, dated June 2009.

Global Changes

The following global change is incorporated throughout the SMP Manual:

- Shining or Yellow willow will now be referred to as Pacific willow (*Salix lucida lasiandra*).

Chapter 1. Introduction and Program Summary

On page 1-3, the following clarification has been made to the third bullet under Section 1.2 "Program Purpose and Objectives":

- Use the stream system understanding to develop informed maintenance approaches that avoid and**/ or** minimize environmental impacts;

On page 1-4, the following deletion has been made to the first paragraph under Section 1.3 "Program Area and Channel Types":

Figure 1-1 presents the SMP Program Area located in Sonoma County, California and shows SCWA's ~~jurisdiction organized into~~ nine flood control zones, Zones 1A – Zone 9A. The great majority of SMP activities (over 95%) are located in the engineered flood control channels of Zones 1A, 2A, and 3A – the Laguna de Santa Rosa, Petaluma River, and Sonoma Creek watershed, respectively.

The following clarifications have been made to Section 1.7 "Project Mitigation", on page 1-12 in paragraph 3:

During the 2006-2008 interim period, while the SMP was in development, four Tier 3 off-site watershed mitigation projects were successfully implemented with local RCDs, landowners, or non-profit agencies. These projects included headwater erosion control through stream fencing to protect streams from cattle grazing, erosion control activities at an active landslide to reduce downstream sediment yields into SMP flood control channels, and restoration and ~~tree~~ **vegetation** planting activities in the Upper Laguna watershed.

On page 1-13, the following addition has been made to the second sentence under Section 1.8.3 "Program Reporting":

As described above, at the conclusion of each year's maintenance season a summary report is developed, posted to the program website, and submitted to the appropriate regulatory agencies. This report includes: a summary of the year's maintenance projects describing what activities occurred and where; a description and confirmation of the restoration and mitigation activities implemented during the current year mitigation; a status and monitoring report of on-going mitigation activities initiated during previous seasons; **sampling results from any sediment removal activities;** and other program updates as necessary. The report may include additional information on project area conditions, activities employed, the effectiveness of certain activities, possible recommendations for future maintenance, or suggestions to improve the program's implementation and management.

The footnote on Figure 1-6 depicting Zone 5A has been updated as follows:

Following guidance provided by NMFS and FWS regarding sensitive species habitat, certain natural channels were removed from maintenance activities and coverage of

the SMP. These creeks and reaches are **shown in Figure 1-12**~~indicated in Table X-X of the SMP manual~~.

Chapter 2. Environmental Regulations and Compliance

The following changes have been made to the last paragraph under "Small MS4 General Permit Coverage in the SMP Area" in Section 2.2.3 on page 2-8:

> The following ~~seven cities~~ **entities** in the County have submitted documentation to the appropriate RWQCB and obtained coverage under the Small MS4 General Permit: **City of** Cotati, Healdsburg, **Community of Eldridge,** Petaluma, Rohnert Park, Sebastopol, ~~City of~~ Sonoma, and Windsor. In accordance with coverage under the General Permit, each ~~city~~ **community** has developed its own SWMP. In most cases, the SWMPs do not contain detailed standards for stormwater quality control that are different from the requirements of state and federal regulations. However, many of the SWMPs stipulate that a post-construction program (similar to the SUSMP described above) is to be developed in the future, and all cities must develop ordinances related to erosion/sediment control and post-construction stormwater quality.

The first paragraph under "SMP Actions and Compliance Approach" in Section 2.2.4, page 2-11, has been revised as follows:

> SMP maintenance activities would involve the use of pesticides for weed control on access roads**,** ~~and~~ on cut tree stumps**, and for blackberry control**. Application of pesticides **on access roads** in the SMP program area is carried out by Sonoma County under an agreement with SCWA. The agreement requires that Sonoma County complies with all application regulations, including the Federal Insecticide and Fungicide Act, and that all County pesticide applicators are certified by the state. Currently, Sonoma County applies AquaMaster®, which contains glyphosate as the active ingredient, to access roads along SCWA-maintained channels. As part of tree removal activities within maintenance channels, AquaMaster® is applied primarily on cut willow stumps by hand, as shown in Figure 6-26. Approximately 5-10 gallons of AquaMaster® are applied per month during the dry season (June-October) throughout the SMP area. **SCWA may apply AquaMaster® to control problematic blackberry patches. The herbicide would be applied with a backpack sprayer after initial mechanical removal.** The SMP does not include application of pesticides directly to water bodies, such as for control of invasive ludwigia.

The third paragraph on page 2-13, under "SMP Compliance Approach" in Section 2.2.5, has been revised as follows:

> The SMP Manual is being developed to protect the beneficial uses identified in the basin plan and especially those which are currently listed as impaired on the 303[d] list. A particularly sensitive area of beneficial use protection in the program area is reducing the amount of sediment currently entering the Laguna de Santa Rosa and larger Russian River system**, as well as the Sonoma Creek watershed which is listed as impaired by sediment.** The SMP helps reduce sediment loading (in support of CWA Section 303 requirements) in two fundamental ways: through repairing bank erosion sites and in-channel sediment removal activities. These

activities are described in Chapter 6 *Maintenance Activities*. The SMP will also reduce sediment loading to the Laguna de Santa Rosa through its off-site watershed mitigation program. This program funds many erosion control and sediment source reduction activities in the upper watersheds of the program area. The work is led by local Resource Conservation Districts or other local agencies or nonprofit entities. Chapter 8 *Program Mitigation* describes the watershed program in more detail.

A footnote has been added to Section 2.3.1: "Section 7 – ESA Authorization for Federal Actions" on page 2-15 to provide clarity on terminology used when referencing regulatory compliance. Subsequent footnotes in this chapter are renumbered accordingly.

The BO issued by USFWS or NMFS may stipulate "reasonable and prudent" conservation~~s~~ measures. If the project would not jeopardize a listed species, USFWS or NMFS issues an incidental take statement to authorize the proposed activity.

Footnote 6 **The SMP Manual has been developed to address resource issues governed by a variety of laws and regulations. In an attempt to standardize language in the SMP, there are situations when specific terms are appropriate for one resource agency working under one set of laws or regulations, but not for others. A case in point is the use of the terms "impact" and "mitigation" in the SMP. These are the terms most commonly used by the RWQCB, DFG, and the Corps, but not within Section 7 of the ESA. As such, please note that within the context of the ESA the term "impact" will refer to "affect" or "effect" and the term "mitigation" will refer to "compensation".**

The first paragraph of Section 2.14 "Local Stream and Watershed Plans" on page 2-32 has been modified as follows:

Applicable local plans, such as general plans, are discussed in detail in the EIR which accompanies the SMP Manual. The Santa Rosa Citywide Creek Master Plan~~,~~ **and** the Laguna de Santa Rosa Restoration and Management Plan~~, and the Rohnert Park-Cotati Creek Master Plan~~ are relevant stream and watershed management plans in the SMP program area. These plans share many common goals with the SMP. These plans are summarized below.

To correct a misidentification of Rohnert Park-Cotati Creek Master Plan, Section 2.14.3 on page 2-35 of the SMP Manual has been removed in its entirety. Consequently, the succeeding section, "Water Clarity Ordinance of the County of Sonoma – Ordinance No. 3836R" has been renumbered to 2.14.3.

Chapter 3. Environmental Setting

The following clarification has been made to the 2nd paragraph in Section 3.2.2 "Lowlands and the Laguna", on page 3-4:

> In the winter, a natural basin at the confluence of the Laguna and Mark West Creek receives surplus (or carryover) storm flows from the Russian River. This inflow from the Russian River causes a hydraulic backwatering and detainment of other Laguna watershed flows providing flood storage and peak attenuation benefits for the lower Russian River valley. The Laguna can detain and store 80,000 acre-feet of water that would otherwise flow directly to the lower Russian River (PWA 2004; ~~Honton and Sears 2006~~**Sonoma County Flood Control and Water Conservation Improvement District 1965**). Although this natural flood storage is advantageous for managing flood waters in the lower Russian River watershed, the backwatering effects upstream areas and impacts flood conveyance in many of its tributaries.

The following clarification has been made to the 2nd paragraph in Section 3.3.2 "Petaluma River Watershed", on page 3-6:

> In the northeastern Petaluma River watershed, tributaries flow southwest out of the Sonoma Mountains to the Petaluma River and then flow southeast to San Pablo Bay. The Petaluma Valley in the central watershed forms a wide basin with characteristic rolling hills and grasslands that stretches from Cotati southeast to San Pablo Bay. Primary tributaries to the Petaluma River include Willow Brook, Lichau, Lynch, **Washington**, Adobe, Ellis, Liberty, Marin, and San Antonio creeks. These creeks that include engineered channels are described in greater detail in Chapter 4.

Chapter 4. Channel Characterization

The description of Piner Creek in Section 4.2.3, page 4-7 has been amended to include a discussion of Piner Reservoir:

> The headwaters of Piner Creek are located in the northern portion of the City of Santa Rosa limits, including Fountain Grove Lake along Fountain Grove Parkway (Figure 4-9). The creek then flows southwest from Highway 101 and merges with Santa Rosa Creek just west of Fulton Road. Major tributaries to Piner Creek include Coffey, Russell, Paulin, and Steele creeks. **Paulin Creek includes an in-line flood control reservoir (known as Piner Reservoir – despite it being located on Paulin Creek), approximately 1 mile upstream of Highway 101 (and downstream of County Farm Rd.).** A large portion of the City of Santa Rosa is located in th**e Piner Creek**~~is~~ subbasin; including industrial, commercial, residential, schools, and park land uses located adjacent to SMP channels.

Descriptive text in relation to the Prince Memorial Greenway has been changed to better acknowledge that post-project objectives were met in relation to pre-project conditions. The third sentence of the second paragraph of the description of Lower Santa Rosa Creek (Section 4.2.3, page 4-8) has been revised as follows:

> Reaches 5 and 6 were modified in recent years, including the *Prince Memorial Parkway Project* in Reach 6 to stabilize the stream banks**, provide a low flow channel, increase riparian vegetation, and increase instream habitat complexity compared to pre-project conditions.** ~~and provide improved flow and sediment conveyance through the channel. As indicated in the reach sheets, enhancement of biological resources is not strongly observed in these recent creek upgrades.~~

The first paragraph in Section 4.2.4 "Roseland and Colgan Creek Subwatershed" on page 4-9, has been revised as follows to clarify the headwater area of Roseland Creek:

> Roseland and Colgan Creeks are located south of Santa Rosa Creek and drain the middle portion of the Laguna de Santa Rosa subbasin (Figure 4-23). The two creeks flow parallel to each other from the southwest area of Santa Rosa to the Laguna, south of Sebastopol. Colgan Creek encompasses approximately 7 square miles is located approximately one mile south of Roseland Creek. Elevations in the drainage areas range from nearly 75 ft. above MSL at the Laguna to 1,400 feet above MSL at Taylor Mountain. The upper portion of these catchment basins are mostly urbanized within the Santa Rosa city limits. The headwaters of ~~both creeks~~ **Colgan Creek** include smaller tributaries that drain the north side of Taylor Mountain. Both **Roseland and Colgan** creeks flow through residential and industrial areas, and **Colgan Creek is** ~~are~~directed under Highway 101 through culverts. The lower portions of both drainages flow through agricultural fields until they meet the Laguna. The primary land use in the lower portion of the subwatershed is cattle grazing.

The following clarifications are made to Section 4.2.5, starting on the 4th sentence beneath the heading "Upper Laguna Channel" on Page 4-15:

> Sediment clearing in reaches *Laguna 6 and 7*, as described in the reach sheets, has improved flow conditions and provided opportunities for community involvement in riparian plantings, such as organized by the Cotati Creek Critters organization for example. The Cotati Creek Critters organization is one of the Watershed Partners who ~~have~~ participated in SCWA's watershed mitigation and grant funding program **in 2008** (see Chapter 8 *Program Mitigation*). The continued nurturing and planting of the riparian corridor in these upper reaches will hopefully reduce the need for additional cattail removal and bank stabilization projects.

Revisions to Stream Channel Characterization Sheets

The reach sheet for Santa Rosa Creek Reach 0 will be updated as follows:

> JURISDICTION: **Owned by SCWA and private party,** SCWA ~~owned and~~ maintained

The "Maintenance Considerations and Opportunities" section of the reach sheet for Austin Creek Reach 3 will be updated as follows:

> Management considerations for Austin Creek Reach 3 include focused sediment and cattail removal downstream of Jack London Dr. and a variety of habitat enhancement opportunities. Although SCWA has no ownership and maintenance responsibility upstream of Boas Dr, the channel (although confined) appears to continue for at least 1.4 miles and supports additional gravel bars and a dense riparian canopy. As such, there might be value in performing maintenance in the lower portion of Reach 3 that extends the length of higher quality habitat from the headwaters down to Middle Rincon Dr. This could include installation of a low flow channel downstream of Jack London Dr. and a planting plan to increase riparian canopy. **Additionally, SCWA may consider working with the City of Santa Rosa to improve sediment mobility and habitat quality within the stream reach immediately upstream, between Calistoga Road and Boas Drive.**

The physical conditions description of Spring Creek Reach 3 will be updated as follows:

> *Reach setting:* Small tributary system emerging from **headwaters at the base of Bennett Mountain within Annadel State Park with flows attenuated by diversions into Spring Lake and the Spring Creek Bypass Conduit**~~. alluvial fan within Bennett Valley~~. Flows likely transmitted through system in pulses and water is not retained within the channel for long.

The reach sheet for Russell Creek Reaches 2 and 1 will be updated as follows:

> UPSTREAM*:* ~~No upstream watershed~~ **Limited 0.5 sq mi watershed in Fountain Grove foothills including Nielsen Lake.**

PHYSICAL CONDITIONS:

Active channel: 1.5-2 ft wide through most of Reach 2 (photo a), expanding to 4-8 ft wide in lower Reach 1; water depths range from 1"-6". **Grade control structure located at the middle of Reach 1 (photo c).**

PHOTO CAPTIONS: (c) Mid Reach 1 grade control structure **located midway between Range Avenue and the confluence with Piner Creek** (August 2008).

The reach sheet for Coffey Creek Reach 1 will be updated as follows:

JURISDICTION: **Privately** Owned ~~by City of Santa Rosa~~; Maintenance easement held by SCWA

PHYSICAL CONDITIONS:

Reach Setting: Coffey Cr. is limited to this reach and a 400 ft non-SCWA maintained reach stretching from Piner Rd to Plum Tree Lane. **The creek drains a 1.5 sq mi area extending north to Old Redwood Highway.** Upstream of Plum Tree Lane, there is no discernible **creek channel** ~~watershed~~ and flows **are connected** ~~appear to emanate from the railroad and from industrial and residential areas likely~~ by **underground** stormdrain systems to the west, north, and east.

The reach sheet for Paulin Creek Reaches 6 & 5 will be updated as follows:

LOCATION: **Paulin 6 – Cleveland Avenue to Hardies Lane. Paulin 5 – Hardies Lane to Coffey Lane**~~North-central Santa Rosa, west (downstream) of Hwy 101 crossing of Paulin Creek~~

PHYSICAL CONDITIONS:

Reach setting: Paulin Creek is a central tributary to Piner Creek (a lower tributary to Santa Rosa Creek); Reach 6 represents the transition from the modified channel upstream of Hwy 101 to the more linear/uniform engineered channels downstream. The surrounding land uses are urbanized, with flashy winter runoff and summer release flows. Gradient in Reaches 6/5 controlled by hardened crossings including railroad at downstream end of Reach 5 **and the Piner Reservoir located on Paulin Creek approximately one mile upstream from the Hwy 101 crossing**.

The reach sheet for Paulin Creek Reaches 4 & 3 will be updated as follows:

LOCATION: **Paulin 4 – Coffey Lane to railroad tracks. Paulin 3 – railroad tracks to West Steele Lane**~~North-central Santa Rosa, west (downstream) of Hwy 101 crossing of Paulin Creek, upstream of Piner Creek confluence~~

The reach sheet for Paulin Creek Reaches 2 & 1 will be updated as follows:

LOCATION: **Paulin 2 – West Steele Lane to Marlow Road. Paulin 1 – Marlow Road to confluence with Piner Creek**~~North-central Santa Rosa from W. Steele Ln. to Marlow Rd, upstream of Piner Creek confluence~~

MANAGEMENT CONSIDERATIONS AND OPPORTUNITIES:

Management considerations for Paulin Creek Reaches 2 and 1 are focused toward the following activities: (1) localized sediment removal should be assessed for areas downstream of W. Steele Ln. (200 ft) and downstream of Marlowe Rd. (150 ft) where cattails and sediment wedges have reduced conveyance capacity; (2) blackberry removal in upper Reach 2; and (3) evaluation of tree planting opportunities along the northern bank of upper Reach 2. **The City of Santa Rosa Citywide Creek Master Plan recommends restoration activities along Reach 2 adjacent to the Northwest Community Park.**

The reach sheet for Steele Creek Reach 5 will be updated as follows:

PHYSICAL CONDITIONS:

Reach setting: Located along lower alluvial plain downstream of Hwy 101, creek drains directly into Santa Rosa Cr at Reach 1; upstream the channel is in an underground culvert and there appears to be little connection with uplands. **A filtering station operated by the City of Santa Rosa discharges water to Steele Creek at the upstream end of the reach year-round. This permanent source of water supports extensive growth of cattails.**

The reach sheet for Steele Creek Reach 1 will be updated as follows:

LOCATION: ~750 ft upstream of Gamay St. (adjacent to eastern boundary of Biella **Elementary School**~~High School~~) to Piner Cr. Confluence

PHYSICAL CONDITIONS:

First instance of "Channel Processes" deleted from page 1.

MAINTENANCE HISTORY: **Localized sediment removal and riparian planting conducted at the Gamay Street crossing in 2008.**

PHOTO CAPTIONS:

(d): Looking **downstream**~~upstream~~ at Pine Cr. confluence. From Gamay St. down to the confluence, a scattered canopy of woody riparian species has developed (Nov. 2007).

(e): Looking **from Steel Creek to culverts leading to Piner Creek**~~upstream from Channel Drive crossing. Banks are heavily vegetated~~ (Nov. 2007).

MANAGEMENT CONSIDERATIONS AND OPPORTUNITIES:

~~Sediment management activities at the Gamay Street crossing are necessary at this time. At the upstream end of the crossing, one cell is nearly inoperable due to sediment accumulation. At the downstream end, a large sediment wedge appears to be blocking not only the southern cell, but part of the northern cell. In addition, vegetation management may need to be conducted in the upper portion of the reach to address any reduction in capacity resulting from extensive instream vegetation growth. Finally,~~ SCWA should routinely assess the integrity of the culverts and the culvert apron at the Piner Cr confluence. Although they currently do not appear to be in need of urgent repair, some piping and underflow appears to be occurring. ~~The section of Reach 1 upstream of Gamay could significantly benefit from additional canopy. As such, this reach would be a good candidate for planting of appropriate riparian canopy species.~~ **Consider partnering with students and volunteers from the Biella Elementary School for future restoration activities.**

The reach sheet for Santa Rosa Creek Reach 6 will be updated as follows:

PHYSICAL CONDITIONS:

Reach setting: Located in the middle of the watershed, this is the reach where the headwater creeks merge to form the mainstream channel that flows to the Laguna. Located at the toe of the alluvial fan in the transition to alluvial plain. **The Prince Memorial Greenway project was completed in 2000 to improve steelhead habitat and create recreational access in this reach.** ~~Also located at the upper end of restoration project to stabilize banks and improve recreational access along the channel.~~

BIOLOGICAL CONDITIONS:

Instream habitat: **Instream habitat is improving with establishment of riparian vegetated planted during a 2004 restoration project.**~~Low quality habitat due to lack of developed riparian corridor.~~ Reach is maintained for flood control, but provides an important migratory corridor for fish passing from the Laguna to spawning grounds in the upper Santa Rosa Creek watershed. Pools and riffles provide instream habitat for a variety of aquatic species.

The reach sheet for Santa Rosa Creek Reach 5 will be updated as follows:

PHYSICAL CONDITIONS:

Reach setting: Located at the toe of the alluvial fan from the Mayacamas Mountains. Sediment transport reach. Additional surface runoff conveyed to channel from surrounding development. **The Prince Memorial Greenway project was completed in 2000 to improve steelhead habitat and create recreational access in this reach.** ~~Channel has been modified to provide flood control for the downtown area and recreational access.~~ Perennial flows.

MANAGEMENT CONSIDERATIONS AND OPPORTUNITIES:

Reduce portions of channel covered by grout and rip-rap. Increase canopy cover. Vegetation thinning where appropriate for flood control. **The City of Santa Rosa proposes continuing the Prince Memorial Greenway from Railroad Street to Pierson Street in Reach 4.**

The reach sheet for Santa Rosa Creek Reach 3 & 2 will be updated as follows:

LOCATION: Santa Rosa 3: **Stony Point Road**~~Marlow Road~~ to Fulton Road

PHOTO CAPTIONS: (a): Reach 3, looking downstream from just below the **Stony Point Road**~~Marlow Road~~ Bridge.

The reach sheet for College Creek Reaches 3 & 2 will be updated as follows:

MAINTENANCE HISTORY: **Sediment removal at the West College Avenue crossing of College Creek in 2008.**

PHOTO CAPTIONS: (d): Bottom of Reach 2 looking downstream at West College crossing. A large (15 ft and 100 ft long) wedge of sediment ~~has~~ accumulated upstream of this crossing. **This sediment wedge was cleared during the summer of 2008**~~2 of the 3 cells are dramatically reduced in capacity~~ (May 6, 2008).

MANAGEMENT CONSIDERATIONS AND OPPORTUNITIES:

~~At the time of channel assessment, the most pressing consideration is the need for sediment removal at the W. College Dr. crossing where accumulated sediment and debris is severely blocking the culverts (photo d). Additionally, several smaller local culvert outfalls that drain to College Cr. are blocked due to sediment accumulation in the College Cr. channel.~~ **Several small culvert outfalls that drain to College Cr. are blocked due to sediment accumulation.** These outfalls should be inspected for their operation. Three to four sites along upper Reach 3 with steep banks show erosion and may require future stabilization. These sites should also be monitored. Reach 3 includes several bars which may be aggrading and should also be monitored. No evidence of overbank flows or imminent flood hazards associated with these instream bars in upper Reach 3 were observed. When and if either the instream bars or the sloughing banks are addressed, additional canopy plantings could benefit the existing riparian habitat along Reach 3.

The reach sheet for College Creek Reach 1 will be updated as follows:

JURISDICTION: Owned ~~by SCWA, eastern margin owned~~ by City of Santa Rosa**, SCWA maintained**

The reach sheet for Forestview Creek Reaches 3, 2 & 1 will be updated as follows:

PHOTO CAPTIONS: (b): Lower Reach 3, looking **downstream**~~upstream.~~

The reach sheet for Santa Rosa Creek Reach 1 will be updated as follows:

ADJACENT LAND USE: Agricultural/Grassland and **reclaimed water storage pond**~~percolation Ponds~~

The reach sheet for Roseland Creek Reaches 6 & 5 will be updated as follows:

JURISDICTION: ~~Owned by City of Santa Rosa,~~ SCWA maintenance easement

PHYSICAL CONDITIONS:

Reach setting: Reach 6 is uppermost reach of Roseland Cr, which **originates southwest of the intersections of Highways 101 and 12.**~~apparently drains commercial and residential development upstream but with no clear link to larger headwaters on Taylor Mtn.; a~~ **A**erial photos suggest that the footprint of Roseland Cr may be a relic drainage of Santa Rosa Cr; Based on winter flow, possible that these reaches go dry in summer.

The following text will be added to the Management Considerations and Opportunities section of the reach sheet for Roseland Creek Reach 4:

MANAGEMENT CONSIDERATIONS AND OPPORTUNITIES:

City of Santa Rosa's Citywide Creek Master Plan suggests restoration activities along this reach including pools, riffles, and plantings of native species.

The following text will be added to the Management Considerations and Opportunities section of the reach sheet for Kawana Creek Reach 1:

MANAGEMENT CONSIDERATIONS AND OPPORTUNITIES:

City of Santa Rosa's Citywide Creek Master Plan suggests restoration activities along this reach including pools, riffles, and plantings of native species.

The reach sheet for Colgan Creek Reach 6 will be updated as follows:

MAINTENANCE HISTORY: **Sediment removal activities were performed at the Hearn Avenue crossing of Colgan Creek in 2008.**

BIOLOGICAL CONDITIONS:

Vegetation Composition: The riparian corridor is narrow along the entire reach **due to the presence of a wide service road on the north/west sides of the creek and development to the top of bank on the opposite side**~~as both sides contain service roads~~.

MANAGEMENT CONSIDERATIONS AND OPPORTUNITIES:

During October 2007, SCWA conducted cattail removal throughout much of this reach (photos a, b and c). Limited canopy and significant deposition of fine sediments has created a situation that is conducive to explosive re-growth of cattails. Although no signs of recent bank overtopping were observed, channel capacity has been reduced by deposition and growth of emergent vegetation.

Vegetation and sediment accumulation at the Hearn Ave. crossing **was cleared in 2008.**~~should be carefully monitored and addressed to provide appropriate conveyance through the culvert.~~ In addition to regular vegetation maintenance, focused sediment removal will likely be necessary at some point in the future. Although the creek cross-section is constrained by service roads, preliminary surveys suggest that there is room for canopy enhancement in areas where the banks are earthen (lower reach has the best opportunities).

The ownership description on the stream reach sheet for Upper Laguna Reach 7 will be updated to more accurately reflect City of Rohnert Park ownership from Ladybug Park upstream to the culvert and City of Cotati ownership of the rest of the reach.

The vegetation mapping of Upper Laguna Reach 7 shown in Figure 4-41 of the SMP Manual will be updated to more accurately reflect existing conditions.

The vegetation mapping of Corona and Capri Creeks shown in Figures 4-42 and 4-44 of the SMP Manual will be updated to include reaches Corona 6 and Corona 7 and existing vegetation for all reaches in Corona and Capri Creeks.

Chapter 5. Pre-Maintenance Planning Approach and Impact Avoidance

On page 5-12, the following new section has been added immediately following Section 5.3.4 "Design Guidance for Sediment Removal Projects":

5.3.5 Approach to Avoid and Minimize Repeat Sediment Removal Activities

SCWA shall generally only conduct reach-scale sediment removal once within a given reach over a general period of 5 years. However, if and when large stream discharges occur (e.g. equaling or exceeding the 10-year magnitude flow event), SCWA may review reaches to evaluate the need for additional reach-scale sediment removal activities. Large magnitude events may cause significant sediment accumulation that reduces flow conveyance capacity. As such, large events may result in the need to review and consider reach-scale sediment removal even for reaches where sediment removal activities had occurred within the past 5 years. Under these situations following a significant depositional event, SCWA will evaluate the reach in question carefully for reduced conveyance capacity. If sediment removal activities are required to maintain flood conveyance capacity, SCWA will provide demonstrated evidence to the pertinent regulatory agencies overseeing the SMP to demonstrate that channel capacity has been significantly diminished. Evidence of diminished channel capacity may include channel cross-sections, photographs, modeling, and/or other field-based evidence or observance of a heightened flood risk.

On page 5-14, the following bullet has been added under Section 5.4.3 "Vegetation Management Triggers":

- **Vegetation growth is significant and obstructs access to channels and facilities or threatens SCWA facilities or neighboring property;**

In Section 5.6.2 "Annual Disposal Planning," the following revisions have been made. The fifth bullet on page 5-22 has been revised as follows:

- Based on compliance with CCR Title 22 criteria, ~~no~~ sediment identified as hazardous or designated waste will be placed at ~~the site~~ **an appropriate hazardous waste facility**.

In Section 5.6.2, Step 3 "Characterize physical and chemical properties of sediment", beginning with the last sentence of the first full paragraph on page 5-23, the text has been revised as follows:

Therefore, ~~in some cases, the location of sediment to be removed may indicate the need for further sediment characterization (i.e., testing) or special disposal requirements~~ **every attempt will be made to collect representative samples at each project site and samples will be collected from the finest available sediment**.

The sediment sampling methodology, sampling frequency, and targeted sampling locations are described in the Sediment Sampling and Analysis Guidelines in Appendix B, **the number of samples collected and sampling locations will be determined depending on the project type and volume of sediment to be removed.**~~a minimum of four sediment samples will be collected at sites where less than 20,000 cubic yards are removed. SCWA sediment removal activities have not exceeded 20,000 cubic yards per site or reach within the last 10 years of record. However, if~~**If** more than 20,000 cubic yards of sediment will be removed from a single reach, the San Francisco Bay RWQCB Beneficial Reuse Guidelines (SFBRWQCB 2000) will be followed to determine the proper sampling plan. **However, in the past ten years, maintenance activities have never resulted in the removal of more than 20,000 cubic yards of sediment in a single project.**

For all projects, any observed contamination as evidenced by chemical-like odors, oily sheens, or irregularly colored sediment will be immediately reported to the local fire department's hazardous materials team and the appropriate Regional Water Quality Control Board staff person in the Cleanups and Investigations Unit. In addition, if results are found to exceed selected water quality criteria, SCWA will coordinate with the appropriate Regional Water Quality Control Board to develop a contingency sampling plan. In this event, additional samples will be taken to determine the extent of contamination and pinpoint potential contamination sources. All samples will be analyzed for total metals and other contaminants, as required by the Regional Water Quality Control Board. ~~Collected samples will be taken from a range of locations within each maintenance site or reach to adequately represent the characteristics of sediment which will be disposed. For each maintenance site, the four or more samples will be composited and analyzed for total metals and other contaminants depending on the options selected in Step 2; not all the criteria below are required for all the disposal options (see Appendix B). The reported concentrations will be compared to the following criteria, as appropriate, for the acceptance criteria at the disposal locations:~~

~~1. San Francisco Bay Regional Water Quality Control Board's Beneficial Reuse Guidelines (SFBRWQCB 2000);~~

~~2. San Francisco Bay Regional Water Quality Control Board's Basin Plan water quality objectives for toxic pollutants (SFBRWQCB 2007);~~

~~3. USEPA Regional Screening Levels for chemical contaminants in soil (USEPA 2008);~~

~~4. Landfill acceptance requirements, which can vary depending on the landfill; and~~

~~5. Hazardous waste acceptance criteria (California Code of Regulations Title 22, Chapter 11).~~

~~Selection of a preferred disposal option will be dependent on the degree to which the sediment quality meets these criteria for disposal or reuse.~~ The sediment must

meet **the Sediment Management Provisions as required by permits issued by the Regional Water Quality Control Boards. For reuse in wetland enhancement projects in contact with surface waters, such as creeks, wetlands, and lakes, the sediment must meet** SFBRWQCB Beneficial Reuse Guidelines and Basin Plan water quality objectives. ~~for reuse in wetland enhancement projects in contact with surface waters, such as creeks, wetlands, and lakes.~~ Sediment must meet USEPA Regional Screening Levels for chemical contaminants for reuse at upland agricultural or commercial sites. In order to be disposed as landfill cover, the sediment must meet landfill acceptance requirements of the participating landfill. Lastly, if testing results indicate that the sediment is hazardous such that the sediment would not be accepted at the preferred disposal location, it will be disposed at the nearest hazardous waste facility. Sediment sampling, analysis, and reuse criteria are discussed in more detail in Appendix B, Sediment Sampling and Analysis Guidelines, including tabulated criteria values.

On page 5-24, Step 5 of the Annual Disposal Planning description has been updated as follows:

Step 5: Notification.

Consistent with the annual notification process for the SMP (Chapter 9) the Agency will also notify the appropriate regulatory agencies permitting the SMP on the status of annual sediment disposal needs (following the planning process outlined above) and the identified disposal sites. **Sediment testing results will be provided to the agencies along with the notification package.** ~~If sediment conditions warrant testing, that information will also be provided to the regulatory agencies, if they request to review the testing results.~~

Chapter 6. Maintenance Activities

On page 6-5, the following sentence has been added to the last paragraph under Section 6.3.2 "Reach Scale Sediment Removal":

> These activities are further described below. Note that reach scale sediment removal projects integrate several vegetation management actions. Vegetation activities closely associated with sediment removal projects are introduced below in this section, and described in more detail in Section 6.5. **Approaches taken to reduce the need and frequency of reach-scale sediment removal activities are described in Chapter 5, Section 5.3.5.**

The first paragraph on page 6-7, under "Vegetation Thinning or Removal for Sediment Removal Projects" in Section 6.3.2, has been revised as follows:

> For in-channel vegetation removal prior to conducting sediment removal activities, an effort will be taken to maintain and not remove vegetation that provides channel stability, anchors in-channel bars, or provides habitat benefits through the presence of large woody debris (LWD). Vegetation located on in-channel bars is particularly important at the bar's downstream tip (head) and/or along the bar's periphery. Allowing this vegetation to remain also provides shading benefits to the adjacent low-flow channel. Similarly, the presence of LWD will be evaluated for the opportunity to leave such material in place. Key determinants include whether the LWD is deflecting flow toward banks and the proximity to a channel crossing or other facility. While the habitat benefits of LWD are sought in the Program Area, these benefits will be evaluated in balance of the potential flooding or erosion effects, or threats to infrastructure downstream due to the presence of LWD. **Any removal of LWD will be considered for reuse elsewhere within the SMP Area and in a restoration location that would not increase flooding potential, erosion effects or threaten infrastructure downstream.** Invasive vegetation such as blackberry or fast-growing multi-trunked species such as arroyo willow will be targeted for removal. Section 6.5 below describes vegetation management approaches in more detail.

The second paragraph on page 6-14, under Section 6.4.1"Engineered Channels", has been revised as follows:

> The bank stabilization designs and implementation activities described below draw upon a palette of bioengineering techniques addressing slope stability. These approaches include using engineered back filled soils, erosion control fabric, and planting of native riparian trees at the top-of-bank and the toe-of-slope to provide additional bank stability and increased canopy in the channel. Preferred repair treatment designs were presented in Chapter 5 Figures ~~5-4,~~ 5-5, ~~and~~ 5-6**, and 5-7**. As availability allows, sediment used in bank stabilization projects will be taken from stockpiled sediment collected during sediment removal projects (see Section 6.3). Where soil compaction, erosion control fabrics, and revegetation are not adequate in providing a stable slope on their own, other bioengineered solutions would be prioritized over the use of hardscape installations.

Under Section 6.5.1 "Vegetation Management Overview", the following text is added to the end of the fourth paragraph on page 6-17:

> Vegetation management activities vary depending on the type of facility involved. While the methods described here are common practices by SCWA, maintenance techniques may shift over time and by location depending on site constraints and new technologies. The following paragraphs describe vegetation management activities in the different types of SCWA-maintained facilities. **A more detailed and comprehensive description of vegetation management activities, methodologies for implementation, and impact avoidance, minimization, and mitigation measures is included in Appendix E: Vegetation Management Plan.**

Under Section 6.7 "Sediment Disposal" on page 6-31, the last sentence of the first paragraph has been revised as follows:

> Once the sediment has been tested and disposal locations **have been approved by regulatory agencies**~~and the quantity of sediment requiring off-site disposal are identified~~, implementation of the annual sediment disposal plan will proceed.

Chapter 7. Impact Reduction, Minimization Measures, and Best Management Practices (BMPs)

Under Section 7.2.5 "Hazardous Materials Safety" on page 7-5, the fifth paragraph has been revised as follows:

> Soil testing will be conducted ~~(per every 500 cubic yards of material)~~ in all sediment removal and bank stabilization projects. Should soils be encountered that contain concentrations of listed substances that exceed hazardous waste levels, the contaminated area will be treated as if a hazardous spill occurred (i.e., the Spill Prevention and Response Plan will be implemented) and all measures to ensure compliance with federal, state, and local regulations will be taken. **In addition, any observed contamination as evidenced by chemical-like odors, oily sheens, or irregularly colored sediment will be immediately reported to the local fire department's hazardous materials team and the appropriate Regional Water Quality Control Board staff person in the Cleanups and Investigations Unit. Sediment sampling and analysis procedures, including protocols for the management of contaminated sediments, are discussed in more detail in *Appendix B: Sediment Sampling and Analysis Guidelines*.**

Revisions to Table 7-1. Stream Maintenance Program Best Management Practices

On page 2 of Table 7-1, the seventh item under BMP GEN-2 "Staging and Stockpiling of Materials" has been revised as follows:

GEN-2	Staging and Stockpiling of Materials	1. Staging will occur on access roads, surface streets, or other disturbed areas that are already compacted and only support ruderal vegetation to the extent feasible. Similarly, to the extent practical, all maintenance equipment and materials (e.g., road rock and project spoil) will be contained within the existing service roads, paved roads, or other pre-determined staging areas. Staging areas for equipment, personnel, vehicle parking, and material storage shall be sited as far as possible from major roadways. 2. All maintenance-related items including equipment, stockpiled material, temporary erosion control treatments, and trash, will be removed within 72 hours of project completion. All residual soils and/or materials will be cleared from the project site. 3. As necessary, to prevent sediment-laden water from being released back into **waters of the State**~~the channel~~ during transport of spoils to disposal locations, truck beds will be lined with an impervious material (e.g., plastic), or the tailgate blocked with wattles, hay bales, or other appropriate filtration material. If appropriate**, and only within the active project area where the sediment is being loaded into the trucks**, trucks may drain excess water by slightly tilting the loads and allowing the water to drain out through the applied filter. 4. Building materials and other maintenance-related materials, including chemicals and sediment, will not be stockpiled or stored where they could spill into water bodies or storm drains or where they will cover aquatic or riparian vegetation. 5. **No runoff from the staging areas may be allowed to enter waters of the State, including the creek channel or storm drains, without being subjected to adequate filtration (e.g., vegetated buffer, hay wattles or bales, silt screens). The discharge of decant water from any on-site temporary sediment stockpile or storage areas, to waters of the State, including surface waters or surface water drainage courses, outside of the active project site, is prohibited.** ~~No runoff from the project or staging areas may be allowed to enter waters of the State, including from stockpiled spoils, may be allowed to enter the creek channel or storm drains without being subjected to filtration (e.g., vegetated buffer, hay wattles or bales, silt screens).~~

		6. During dry season, no stockpiled soils shall remain exposed and unworked for more than 30 days. During wet season, no stockpiled soils shall remain exposed, unless surrounded by properly installed and maintained silt fencing or other means of erosion control. 7. All spoils will be disposed of in an approved location. **Sediments that are found to contain contaminants in excess of hazardous materials disposal criteria will be stockpiled separately on heavy plastic pending disposal at an appropriate hazardous materials disposal location.** ~~Selection of the disposal location will be determined after the spoils have been tested for hazardous chemicals (see BMP HAZ-8).~~

The following changes have been made to BMP BR-7 "Special Status Plants" in Table 7-1 page 7 of 31:

BR-7	Special Status Plants	1. For projects located in areas where federally-listed plant species have been identified as potentially occurring (see SMP Manual Table 7-3), a qualified botanist will conduct appropriately timed focused botanical surveys of the project site for these species. If these species is observed in or near the project site, SCWA will follow the measures below as well as any additional measures contained in the forthcoming Biological Opinion issued by the USFWS for the SMP. **The USFWS BO does not cover Sonoma white sedge (*Carex albida*) or many-flowered navaarretia (*Navarretia leucocephala* ssp. *plieantha*). SCWA will initiate ESA Section 7 consultation with USFWS if these species are found.**

The following changes have been made to BMP CR-1 and CR-2, in Table 7-1 beginning on page 16 of 31:

CR-1	Cultural Resources Investigation	For maintenance activities which require excavation into native soils (e.g., bank stabilization, culvert replacement, etc.), and for all new sediment disposal sites, a cultural resources investigation shall be conducted **by a qualified professional archeologist** prior to performing the maintenance activity. The cultural resources investigation shall include the following elements: 1. Background Research and Native American Consultation. An updated records search shall be conducted at locations planned for maintenance that have not had a records search completed within the previous five years. Sediment disposal sites shall only require an initial records search. Investigations should begin with a review of the data acquired for this document to determine whether the proposed activity will occur within a previously-known culturally-sensitive area. An addendum records search at the NWIC will also be necessary to determine if any cultural resources have been recorded since the creation of this document. The records search will identify resources within or near the project location and determine whether that location has been previously surveyed up to current standards. In conjunction with the background research, the appropriate Native American ~~organization~~ **Tribes** will be contacted to provide comments or concerns about a maintenance activity location. **The NAHC will also be contacted for a Sacred Lands File Check.** 2. Pedestrian Survey. If an adequate survey has not been completed for a project location within a ten-year period from the date of scheduled maintenance, a pedestrian survey is required. Sediment disposal sites shall only require an initial pedestrian survey. All areas of exposed ground should be closely inspected for the presence of cultural materials. Areas of dense vegetation should be inspected as closely as possible and any exposed channel banks should be carefully examined for the presence of buried cultural resources. Depending on the likelihood for encountering subsurface remains, based on an analysis of site distribution and geomorphology of the project location, a series of small, hand-auger borings may be excavated, with all sediments passed through 1/4-inch screen, to assure that no subsurface archaeological materials are present. The auger borings would also provide an initial assessment of the surface integrity of the landform (e.g., is a substantial amount of imported or redeposit fill material present?) and provide additional information about the potential for buried archaeological material. If the limited subsurface testing does not reveal buried cultural material, there will be less

likelihood that unexpected discoveries will delay activities.

If an archaeological deposit is encountered, a preliminary assessment of site boundaries should be made **in consultation with the appropriate affiliated tribe(s)**. Any archaeological material recovered in auger holes will be recorded, cataloged, and re-deposited. A map should be prepared depicting site boundaries in relation to the project area, and the site should be recorded on a standard archaeological site record (DPR 523 form).

3. Documentation. If findings are negative, these results will be presented in the SMP annual notification package. If findings are positive, a positive Archaeological Survey Report (ASR)/Historic Property Survey Report (HPSR) will be prepared that includes appropriate background research, site records, and recommendations for additional work. **Prior to finalization of such document, a copy will be provided to the appropriate affiliated tribe(s) for review and comment.** The report will include results of background research, descriptions of field work, findings, appropriate maps and photos, and a record of Native American consultation. A cover letter will detail management recommendations, which could include archaeological and Native American monitoring, site avoidance, or test excavations to determine site significance. The report will be submitted to SCWA and the NWIC. **All information regarding the site locations, Native American human remains, and associated funerary objects will be kept confidential and will not be made available for public disclosure. The final written report will be submitted within 3 months after work has been completed to the NWIC.**
4. Management Requirements. If a cultural resource is located within an area of maintenance activity the following steps shall be implemented. The following are examples of management requirements regarding the treatment of known or unknown cultural resources; other measures may be implemented instead, provided they are at least as protective of the cultural resource in question.
   - Archaeological and Native American Monitoring: SCWA shall retain the services of a Native American monitor **or Native American Monitors, depending on the site constraints, through agreements with the appropriate affiliated tribe(s),** and a qualified archaeological consultant that has expertise in California prehistory to monitor ground-disturbing activities within 200 feet of known archaeological sites or in areas designated as having a high potential for encountering archaeological sites. If an intact archaeological deposit is encountered, all soil disturbing activities in the vicinity of the deposit

should stop until the deposit is evaluated. The archaeological monitor shall immediately notify SCWA of the encountered archaeological deposit. The monitors shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, present the findings of this assessment to SCWA. During the course of the monitoring, the archaeologist may adjust the frequency—from continuous to intermittent—of the monitoring based on the conditions and professional judgment regarding the potential to impact resources.

- Cultural Resources Monitoring Plan: If monitoring is the preferred recommendation, a cultural resources monitoring plan shall be prepared by a qualified professional archaeologist. **Prior to finalization of such document, a copy will be provided to the appropriate affiliated tribe(s) for review and comment.** The plan should address (but not be limited to) the following issues:
  - Training program for all construction involved in site disturbance and field workers;
  - Person(s) responsible for conducting monitoring activities, including Native American monitors;
  - How the monitoring shall be conducted and the required format and content of monitoring reports, including any necessary archaeological re-survey;
  - Person(s) responsible for overseeing and directing the monitors;
  - Schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports;
  - Procedures and construction methods to avoid sensitive cultural resource areas;
  - Clear delineation and fencing of sensitive cultural resource areas requiring monitoring;
  - Physical monitoring boundaries (e.g., 200-foot radius of a known site);
  - Protocol for notifications and stop-work guidelines in case of encountering of cultural resources, as well as methods of dealing with the encountered resources (e.g., collection, identification, curation);
  - Methods to ensure security of cultural resources sites;
  - Protocol for notifying local authorities (i.e.

		Sheriff, Police) should site looting and other illegal activities occur during construction. – If SCWA, in consultation with the monitors, determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed Project, SCWA shall: – Re-design the proposed project to avoid any adverse effect on the significant resource; or, – Implement an archaeological data recovery program (ADRP) (unless the archaeologist determines that the archaeological resource is of greater interpretive than research significance, and that interpretive use of the resource is feasible). The project archaeologist~~, and~~ SCWA**, and appropriate affiliated tribe(s)** shall meet and consult to determine the scope of the ADRP. The archaeologist will prepare a draft ADRP and submit it to SCWA for review and approval. **Prior to finalization of such document, a copy will be provided to the appropriate affiliated tribe(s) for review and comment.** The ADRP will identify how the proposed data recovery program will preserve the significant information the archaeological resource is expected to contain. The ADRP will identify the scientific/historic research questions applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes will address the applicable research questions. Data recovery, in general, shall be limited to the portions of the historic property that could be adversely affected by the proposed Project. Destructive data recovery methods shall not be applied to portions of the archaeological resources if nondestructive methods are practical.
CR-2	Previously Undiscovered Cultural Resources	Inadvertent Discoveries: If discovery is made of items of historical or archaeological interest, activity will immediately cease in the project location (within approximately 50-feet) of discovery. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. After cessation of excavation the contractor shall immediately contact SCWA.

		Maintenance will not resume until authorization is received from the SCWA. ▪ In the event of unanticipated discovery of archaeological indicators during construction, SCWA will retain the services of a qualified professional archaeologist to evaluate**, in consultation with the appropriate affiliated tribe(s),** the significance of the items prior to resuming any activities that could impact the site. ▪ In the case of an unanticipated archaeological discovery that is determined to be potentially eligible for listing in the National and/or California Register, and the site cannot be avoided, SCWA will implement an ADRP, prepared by a qualified archaeologist, as outlined under BMP CR-1. Discovery of Human Remains: If potential human remains are encountered, SCWA shall halt work in the vicinity of the find and contact the county coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. If the coroner determines the remains are Native American, the coroner will contact the NAHC. As provided in Public Resources Code Section 5097.98, the NAHC will identify the person or persons believed to be most likely descended from the deceased Native American. The Most Likely Descendent makes recommendations for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.

The following clarification is made to the first item of BMP GN-4, "Traffic Flow, Pedestrians, and Safety Measures", on page 30 of Table 7-1, as follows:

GN-4	Traffic Flow, Pedestrians, and Safety Measures	1. To the extent feasible, work will be staged and conducted in a manner that maintains two-way traffic flow on public roadways in the vicinity of the work site. If temporary lane closures are necessary, they will be **coordinated with the appropriate jurisdictional agency and** scheduled **to occur** outside of peak traffic hours (7:00 – 10:00 a.m. and 3:00 – 6:00 p.m.) to the maximum extent practicable**.** ~~, and a~~**Any lane closures will include a**dvance warning signage, a detour route and flaggers will be provided in both directions.

The following changes have been made to BMP GN-5 "Odors" on page 31 of Table 7-1:

GN-5	Odors	Sediment that is rich in decaying organic matter that could generate assorted malodorous gases such as reduced sulfur compounds shall be handled to minimize impacts on sensitive receptors such as nearby residents **and businesses and their patrons**. In general, such materials will be hauled off of the site at the time of excavation. Where it needs to be temporarily stockpiled, maintenance personnel shall stockpile potentially odorous sediments as far as possible from residential areas**, businesses and their patrons, and** ~~or~~ other odor sensitive land uses.

Table 7-1 "Stream Maintenance Program Best Management Practices" has been included in its entirety, with changes incorporated, for ease of reference.

Table 7-2 "Best Management Practices by Activity" has been revised to include reservoir inlet clearing. As such, the entire table has been revised and completely replaces the version in the Draft SMP Manual.

Table 7-3 "Listed Species by SMP Reach" has been revised to include presence of habitat near reservoirs, Oakmont Creek, and Bloomfield Channel as maintained under the SMP. The entire table has been revised and completely replaces the version in the Draft SMP Manual.

Table 7-1. Stream Maintenance Program Best Management Practices

BMP ID	Name	BMP
General Impact Avoidance and Minimization		
GEN-1	Work Window	1. All ground-disturbing maintenance activities occurring in the channel (i.e., from top-of-bank to top-of-bank) will take place during the low-flow period, between June 15 and October 31. Exceptions may be made for emergencies or on a project-by-project basis with advance approval of RWQCB, CDFG, NMFS, and/or USFWS as appropriate. 2. Once the first significant rainfall occurs, all in-channel equipment and/or diversion structures shall be removed. Exposed soils in upland areas will be stabilized via hydroseeding or with erosion control fabric/blankets. Significant rainfall is defined as 0.5 inch of rain in a 24-hour period. 3. Work on the upper banks of stream channels (e.g., vegetation, road, and v-ditch maintenance) may be conducted year round. Ground disturbing activities will only be conducted during periods of dry weather.
GEN-2	Staging and Stockpiling of Materials	1. Staging will occur on access roads, surface streets, or other disturbed areas that are already compacted and only support ruderal vegetation to the extent feasible. Similarly, to the extent practical, all maintenance equipment and materials (e.g., road rock and project spoil) will be contained within the existing service roads, paved roads, or other pre-determined staging areas. Staging areas for equipment, personnel, vehicle parking, and material storage shall be sited as far as possible from major roadways. 2. All maintenance-related items including equipment, stockpiled material, temporary erosion control treatments, and trash, will be removed within 72 hours of project completion. All residual soils and/or materials will be cleared from the project site. 3. As necessary, to prevent sediment-laden water from being released back into **waters of the State**~~the channel~~ during transport of spoils to disposal locations, truck beds will be lined with an impervious material (e.g., plastic), or the tailgate blocked with wattles, hay bales, or other appropriate filtration material. If appropriate**, and only within the active project area where the sediment is being loaded into the trucks**, trucks may drain excess water by slightly tilting the loads and allowing the water to drain out through the applied filter. 4. Building materials and other maintenance-related materials, including chemicals and sediment, will not be stockpiled or stored where they could spill into water

Table 7-1. Cont.

BMP ID	Name	BMP
		bodies or storm drains or where they will cover aquatic or riparian vegetation. 5. **No runoff from the staging areas may be allowed to enter waters of the State, including the creek channel or storm drains, without being subjected to adequate filtration (e.g., vegetated buffer, hay wattles or bales, silt screens). The discharge of decant water from any on-site temporary sediment stockpile or storage areas, to waters of the State, including surface waters or surface water drainage courses, outside of the active project site, is prohibited.** ~~No runoff from the project or staging areas may be allowed to enter waters of the State, including from stockpiled spoils, may be allowed to enter the creek channel or storm drains without being subjected to filtration (e.g., vegetated buffer, hay wattles or bales, silt screens).~~ 6. During dry season, no stockpiled soils shall remain exposed and unworked for more than 30 days. During wet season, no stockpiled soils shall remain exposed, unless surrounded by properly installed and maintained silt fencing or other means of erosion control. 7. All spoils will be disposed of in an approved location. **Sediments that are found to contain contaminants in excess of hazardous materials disposal criteria will be stockpiled separately on heavy plastic pending disposal at an appropriate hazardous materials disposal location.** ~~Selection of the disposal location will be determined after the spoils have been tested for hazardous chemicals (see BMP HAZ-8).~~
GEN-3	Channel Access	1. Access points to the channel for the purposes of stream maintenance will be minimized according to need. Access points should avoid large mature trees, native vegetation, or other significant habitat features as possible. Temporary access points shall be sited and constructed to minimize tree removal. 2. In considering channel access routes, slopes of greater than 20 percent shall be avoided if possible. Any sloped access points will be examined for evidence of instability and either revegetated or filled with compacted soil, seeded, and stabilized with erosion control fabric as necessary to prevent future erosion. 3. Personnel will use the appropriate equipment for the job that minimizes disturbance to and compaction of the stream bottom. Appropriately-tired vehicles, either tracked or wheeled, will be used depending on the site and maintenance activity.

Table 7-1. Cont.

BMP ID	Name	BMP
Air Quality Protection		
AQ-1	Dust Management (based on Bay Area Air Quality Management District's basic dust control measures for all sites)	1. Water all active maintenance areas as necessary to reduce dust emissions. In dry areas, this may be twice daily or more, while in already wet areas, no watering may be needed. 2. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain freeboard as necessary to prevent transported material from blowing from the trucks. 3. Sweep as necessary (with water sweepers or dry sweepers, as appropriate) all paved access roads, parking areas and staging areas at construction sites. 4. Sweep streets as necessary (with water sweepers or dry sweepers, as appropriate) if visible soil material is carried onto adjacent public streets.
AQ-2	Enhanced Dust Management (based on Bay Area Air Quality Management District's enhanced dust control measures for sites greater than 4 acres)	1. As necessary, enclose, cover, water, or apply (non-toxic) soil binders to exposed stockpiles. 2. Limit traffic speeds on unpaved roads to 15 mph. 3. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
Biological Resources Protection		
General Measures		
BR-1	Area of Disturbance	1. Activities will avoid damage to or loss of native vegetation to the maximum extent feasible. 2. Soil disturbance shall not exceed the minimum area necessary to complete the operations as described.
BR-2	Pre-Maintenance Educational Training	1. At the beginning of each maintenance season and before conducting stream maintenance activities, all personnel will participate in an educational training session conducted by a qualified biologist.[1] This training will include instruction

[1] A qualified biologist (including those specializing in botany, wildlife, and fisheries) is determined by a combination of academic training and professional experience in biological sciences and related resource management activities. SCWA may also utilize appropriately experienced and/or trained environmental staff. Resumes will be submitted to CDFG, USFWS and/or NFMS for approval prior to commencement of biological surveys, as stated in CDFG, USFWS and NMFS permit conditions.

Table 7-1. Cont.

BMP ID	Name	BMP
		on how to identify bird nests, recognize special-status species that may occur in the work areas, and the appropriate protocol if any nests or listed species are found during project implementation. 2. Personnel who miss the first training session or are hired later in the season must participate in a make-up session before conducting maintenance activities.
BR-3	Biotechnical Bank Stabilization	If hydraulic conditions allow, the natural bank will be retained or a biotechnical repair technique will be used rather than, or along with, a hardscape repair.
BR-4	Impact Avoidance and Minimization During Dewatering	1. All dewatering activities conducted in streams bearing state- or federally-listed salmonids shall comply with the terms and conditions of the Russian River Biological Opinion (summarized in BMP BR-18), and any other Biological Opinions and associated Consistency Determinations issued by NOAA or DFG for the SMP. 2. Prior to dewatering, the best means to bypass flow through the work area will be determined to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic vertebrates. The area to be dewatered will encompass the minimum area necessary to perform the maintenance activity. The period of dewatering will extend for the minimum amount of time needed to perform the maintenance activity. Where feasible and appropriate, dewatering will occur via gravity driven systems. Where feasible and appropriate, diversion structures shall be installed on concrete sections of the channels, such as concrete box culverts often used at road crossings. 3. A species relocation plan (BMP BR-5) shall be implemented as a reasonable best effort to ensure that native fish and other native aquatic vertebrates and macroinvertebrates are not stranded. 4. Instream cofferdams shall only be built from materials such as sandbags, clean gravel, or rubber bladders which will cause little or no siltation or turbidity. Visqueen shall be placed over sandbags to minimize water seepage into the maintenance areas. The visqueen shall be firmly anchored to the streambed to minimize water seepage. If necessary, the footing of the dam shall be keyed into the channel bed at an appropriate depth to capture the majority of subsurface flow needed to dewater the streambed. 5. When use of gravity fed dewatering is not feasible and pumping is necessary to dewater a work site, a temporary siltation basin and/or use of silt bags may be

Table 7-1. Cont.

BMP ID	Name	BMP
		required to prevent sediment from re-entering the wetted channel. 6. Downstream flows adequate to prevent fish or vertebrate stranding will be maintained at all times during dewatering activities. Bypass pipe diameter will be sized to accommodate, at a minimum, twice the summer baseflow. 7. Diverted and stored water will be protected from maintenance activity-related pollutants, such as soils or equipment lubricants or fuels. 8. If necessary, discharged water will pass over some form of energy dissipater to keep erosion of the downstream channel to a minimum. Silt bags will be equipped to the end of discharge hoses and pipes to remove sediment from discharged water. 9. For full channel dewatering, filtration devices or settling basins will be provided as necessary to ensure that the turbidity of discharged water is not visibly more turbid than in the channel upstream of the maintenance site. If increases in turbidity are observed, additional measures shall be implemented such as a larger settling basin or additional filtration. If increases in turbidity persist, turbidity measurements will be taken on a regular (i.e., at least daily) basis up- and downstream of the cofferdam enclosure. Data recorded will be compared against Regional Water Quality Control Board Basin Plan water quality standards. If Basin Plan standards are being exceeded, additional measures shall be installed and monitored to ensure Basin Plan standards are met. 10. When maintenance is completed, the flow diversion structure shall be removed as soon as possible. Impounded water will be released at a reduced velocity to minimize erosion, turbidity, or harm to fish or amphibians downstream. Cofferdams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than one inch per hour. 11. The area disturbed by flow bypass mechanisms will be restored at the completion of the project. This may include, but is not limited to, recontouring the area and planting of riparian vegetation as appropriate.
BR-5	Fish and Amphibian Species Relocation Plan	1. All fish relocation conducted in streams bearing state- or federally-listed salmonids shall comply with the terms and conditions of the Russian River Biological Opinion (summarized in BMP BR-18), and any other Biological Opinions and associated Consistency Determinations issued by NOAA or DFG for the SMP. This measure will also apply to relocation of other special status species

Table 7-1. Cont.

BMP ID	Name	BMP
		aquatic species (i.e., foothill yellow-legged frog and western pond turtle), and native aquatic species that could be relocated. Relocation for California red-legged frog will be conducted in accordance with BMPs BR-10 and BR-11 and any additional measures contained in the forthcoming SMP Biological Opinion issued by the USFWS. 2. Prior to and during dewatering activities, native fish, tadpoles, and other vertebrates will be excluded from the work area by blocking the stream channel above and below the work area with fine-meshed net or screens. The bottom of the screens will be completely secured to the channel bed. Exclusion screening will be placed in areas of low water velocity to minimize fish impingement. Screens will be checked periodically and cleaned of debris to permit free flow of water. 3. The most efficient means for capturing fish will be determined and implemented. Complex stream habitat generally requires the use of electrofishing equipment, whereas in deep pools, fish may be concentrated by pumping-down the pool and then removing the fish by seining or dipnetting. Ample time will be scheduled to allow for a reasonable fish removal effort to be conducted. 4. Initial fish relocation efforts will be conducted several days prior to the start of maintenance activities. This provides the biologist an opportunity to return to the work area and perform additional electrofishing passes immediately prior to maintenance activities. 5. All native captured fish will be allowed to recover from electrofishing before being returned to the stream. 6. During dewatering, a qualified biologist will direct and monitor activities as necessary to net and rescue any additional fish and/or amphibians that may have become stranded throughout the dewatering process. 7. Prior to capturing fish and/or amphibians, the most appropriate release location(s) will be identified and used. The following issues will be considered when selecting release site(s): ▪ proximity to the project area; ▪ similar water temperature as capture location; ▪ ample habitat availability prior to release of captured fish;

Table 7-1. Cont.

BMP ID	Name	BMP
		▪ presence of other same species so that relocation of new individuals will not upset the existing prey/predation function; ▪ low potential for relocated individual to transport disease; and ▪ low likelihood of fish reentering work site or becoming impinged on exclusion net or screen. 8. In areas where aquatic vertebrates are abundant, to increase survival rates and ensure captured vertebrates are not held overly long, capture will be periodically ceased, and release will occur at predetermined locations.
BR-6	On-Call Wildlife Biologist	A qualified biologist will be on-call in southern Sonoma County and available to visit a project site at any point during maintenance activities in the event a special status species is encountered.
Species-Related Measures		
BR-7	Special Status Plants	1. For projects located in areas where federally-listed plant species have been identified as potentially occurring (see SMP Manual Table 7-3), a qualified botanist will conduct appropriately timed focused botanical surveys of the project site for these species. If these species is observed in or near the project site, SCWA will follow the measures below as well as any additional measures contained in the forthcoming Biological Opinion issued by the USFWS for the SMP. **The USFWS BO does not cover Sonoma white sedge (*Carex albida*) or many-flowered navaarretia (*Navarretia leucocephala* ssp. *plieantha*). SCWA will initiate ESA Section 7 consultation with USFWS if these species are found.** 2. For projects located in areas where special status plant populations have been identified as potentially occurring (see SMP Manual Table 7-3), a qualified botanist will conduct appropriately timed focused botanical surveys of the project site for special status plant occurrences. A qualified botanist will also assess habitat suitability for the potential occurrence of special status plant species at any newly identified sediment disposal sites or previously unidentified staging areas. 3. If discovered, special-status plant populations identified during the field surveys and with potential to be impacted will be enumerated, photographed and conspicuously flagged to maximize avoidance, as well as to determine the total number of individuals affected. If feasible, the project shall be redesigned or modified to avoid direct and indirect impacts on special-status plant species.

Table 7-1. Cont.

BMP ID	Name	BMP
		4. Special-status plant species near the project site will be protected from temporary disturbance by installing environmentally sensitive area fencing (orange construction barrier fencing) around special-status plant species populations. Protective fencing will be installed under the direction of the botanist as necessary to protect the plant and its habitat; where feasible, the environmentally sensitive area fencing will be installed at least 50 ft. from the edge of the population. Where special-status plant populations are located in wetlands, silt fencing will also be installed. The location of the fencing will be shown on the maintenance design drawings and marked in the field with stakes and flagging. The design specifications will contain clear language that prohibits maintenance-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive area.
		5. Vegetation management activities in sensitive plant areas will be conducted under the guidance of the botanist. These activities should be timed following the blooming periods of potentially occurring listed species, after the month of June.
		6. If impacts to state or federally listed plants are unavoidable, then the Agency shall coordinate with the appropriate resource agencies and local experts to determine whether transplantation of special-status plant species is feasible. If the agencies concur that it is a feasible mitigation measure, the botanist shall develop and implement a transplantation plan in coordination with the appropriate agencies. As part of the plan, the Agency, in conjunction with a qualified restoration ecologist and DFG and/or USFWS, shall identify a suitable on- or off-site location for mitigation and appropriate methods for seed collection, propagation, relocation, maintenance and monitoring. If the impacted species are annuals, it is expected that the current seed crop from the individuals to be lost will be collected (as well as immediate soils making up the dormant seed bed) and then sown on appropriate habitat located on the mitigation site. If the species is a perennial, it is expected that both the seed and the plants themselves will be salvaged and relocated to the mitigation site. Seed from the populations that will be impacted may be collected and propagated at a native plant nursery, prior to planting to increase the potential for establishment and survival. Annual monitoring of the mitigation site shall be conducted for 5 years to assess vegetative density, population size, natural recruitment, and plant health and vigor. Monitoring results may trigger management actions such as collection and sowing of additional seed, tillage/disturbance within existing populations to induce establishment, installation of container plants, and control of exotic invasive

Table 7-1. Cont.

BMP ID	Name	BMP
		vegetation such as yellow star thistle to ensure successful plant establishment and survival. The site shall be evaluated at the end of the 5-year monitoring period to determine whether the mitigation has met the success criteria identified in the rare plant relocation, management, and protection plan. 7. If appropriately timed focused botanical surveys cannot be conducted in areas identified as suitable for listed plants prior to vegetation management activities, then the Agency shall assume presence of the plant species in question and coordinate with the appropriate resource agencies and local experts to develop appropriate mitigation for the impact.
BR-8	Nesting Migratory Bird and Raptor Pre-maintenance Surveys	1. To the extent feasible, maintenance activities, including tree trimming, will take place outside the migratory bird and raptor nesting period (February 15 through August 15 for most birds). During the nesting bird season, work sites that are less densely vegetated will be prioritized, to facilitate pre-maintenance surveys and decrease the likelihood of disturbing undiscovered nests. 2. If maintenance activities must be scheduled to occur during the nesting season, a qualified wildlife biologist, familiar with the species and habitats in the Program Area, will be retained to conduct pre-maintenance surveys for raptors and nesting birds within suitable nesting habitat within 300 feet of SMP activities. The surveys should be conducted within one week before initiation of maintenance activities within those habitats. If no active nests are detected during surveys, activities may proceed. Vegetation removal activities will be conducted under the guidance of a biologist. If active nests are detected then measure 3 would be implemented. 3. If active nests are identified within the SMP area, non-disturbance buffers shall be established at a distance sufficient to minimize disturbance based on the nest location, topography, cover and species' tolerance to disturbance. Buffer size shall be determined in cooperation with the CDFG. If active nests are found within 300 feet of the project area, a qualified biologist shall be on site as necessary to monitor the nests for signs of nest disturbance. If it is determined that maintenance activity is resulting in nest disturbance, work shall cease immediately and CDFG shall be contacted. Buffers will be developed through consultation with CDFG. Buffers will remain in place until biologists determine that the young have successfully fledged or nests have been otherwise abandoned.
BR-9	California Freshwater Shrimp Avoidance and Impact	Maintenance activities occurring along streams supporting California freshwater shrimp will be restricted to only conducting vegetation management and/or debris

Table 7-1. Cont.

BMP ID	Name	BMP
	Minimization for Vegetation Management	removal above the water level. In addition, vegetation or debris overhanging into pools or glides (slow or slack water) within the natural reaches of Sonoma Creek will not be removed or altered. ***Note:*** *The only stream maintained under the SMP that supports California freshwater shrimp is Sonoma Creek. This creek has natural and modified channels along its length, and does not have any engineered channels. Therefore, the only type of activity that will be conducted along Sonoma Creek is vegetation management for hydraulic easement purposes. Applying this BMP will ensure that stream channels which support California freshwater shrimp will retain habitat elements (e.g., undercut banks with exposed, fine roots of willows or alders, trailing vines and overhanging woody vegetation) and continue to provide habitat for this species.*
BR-10	California Red-legged Frog Avoidance and Impact Minimization Measures for Ground-Disturbing Activities	1. For ground-disturbing maintenance activities occurring in areas where California red-legged frog (CRLF) has been identified as potentially occurring (see SMP Manual Table 7-3), a qualified biologist will conduct pre-maintenance surveys to assess habitat within the proposed maintenance area. 2. If suitable breeding or foraging habitat is present then focused surveys using the USFWS CRLF survey protocol will be completed or CRLF presence will be assumed. The USFWS will be contacted and any site-specific recommendations will be implemented. 3. If CRLF are present or assumed present, a qualified biological monitor, or a biologist with an Incidental Take Permit, will inspect the area daily before the start of work and will be present during maintenance activities in sensitive habitats. If appropriate, SCWA will install exclusionary fencing. 4. In the event that a CRLF is encountered within the maintenance area, the USFWS Sacramento Field Office will be contacted within 48 hours of any CRLF observations, and a qualified biologist will move the frog to a safe location outside of the project area. Actions taken to move CRLF will be consistent with applicable USFWS and CDFG regulations and permits. The biological monitor will have the authority to stop work if a CRLF is encountered until such a time as the frog may be moved to an area outside of the project area fencing. 5. If dewatering of a creek is required, dipnet and seine surveys for CRLF tadpoles will be completed prior to initiation of dewatering. Captured tadpoles will be moved to a safe location elsewhere in the creek.

Table 7-1. Cont.

BMP ID	Name	BMP
BR-11	California Red-legged Frog Avoidance and Impact Minimization Measures for Vegetation Management	1. For vegetation maintenance activities occurring in areas where CRLF frog has been identified as potentially occurring (see SMP Manual Table 7-3), a qualified biologist will conduct pre-maintenance surveys of aquatic habitats and identify potential CRLF breeding and foraging areas. These areas will be flagged and avoided by maintenance crews. 2. In areas where CRLF could potentially occur, field crews conducting hand trimming of vegetation will access channel banks by foot only and will avoid entering open water. Vehicles will be restricted to existing access roads. 3. In work sites where potential CRLF breeding and foraging areas were identified during the pre-maintenance survey, a qualified biological monitor or a biologist with an Incidental Take Permit, will be on-site during project activity in sensitive habitats. The biological monitor will have the authority to stop work if a CRLF (or any of its life stages) is encountered until such a time as the frog may be moved to an area away from the project site. 4. The USFWS Sacramento Field Office will be contacted within 48 hours of any CRLF observations.
BR-12	California Tiger Salamander Avoidance and Impact Minimization Measures for Sediment and Debris Removal	1. For sediment and debris removal maintenance activities occurring in areas where California tiger salamander (CTS) has been identified as potentially occurring (see SMP Manual Table 7-3), a qualified biologist will conduct pre-maintenance surveys of upland habitats and identify areas with small mammal burrows. Areas with an abundance of small mammal burrows will be flagged and avoided by maintenance crews. 2. Maintenance activities will be restricted to the streambed and avoid disturbance to adjacent upland habitat. 3. Sediment and debris removal activities shall minimize removal of upland vegetation and soil compaction. 4. If upland banks must be traversed by heavy equipment to access a streambed, the route will be located where no small mammal burrows are present and will be delineated by temporary fencing to minimize upland habitat disturbance. 5. If burrows or other suitable aestivation habitat are present where sediment or debris removal activities are proposed, a qualified biological monitor or a biologist with an Incidental Take Permit will be on call during project activity in proximity to upland CTS habitat. The biological monitor will have the authority to stop work

Table 7-1. Cont.

BMP ID	Name	BMP
		if a CTS is encountered until such a time as the animal is moved to an area away from the project site. 6. Maintenance activities located in proximity to upland CTS habitat will be scheduled to avoid the CTS migration season (October 15 – June 30). If work must be completed during the migration season, barrier fencing will be installed to exclude CTS from maintenance areas. 7. In the event that a California tiger salamander is encountered within the maintenance area, a biologist with an Incidental Take Permit, or biologist approved by the USFWS, will move the salamander to a safe location with suitable underground refugia (e.g., open burrow of appropriate depth) outside of the maintenance area. Actions taken to move CTS will be consistent with applicable USFWS and CDFG regulations and permits. 8. The USFWS Sacramento Field Office will be contacted within 48 hours of any California tiger salamander observations.
BR-13	California Tiger Salamander Avoidance and Impact Minimization Measures for Bank Stabilization	1. For bank stabilization activities occurring in areas where California tiger salamander has been identified as potentially occurring (see SMP Manual Table 7-3), a qualified biologist will conduct pre-maintenance surveys of upland habitats and identify areas with burrows and/or other suitable aestivation habitat. 2. If burrows or other suitable aestivation habitat are present where bank stabilization activities are proposed, a qualified biological monitor or a biologist with an Incidental Take Permit, will be on call during project activity in proximity to upland CTS habitat. The biological monitor will have the authority to stop work if a CTS is encountered until such a time as the animal is moved to an area away from the project site. 3. Maintenance activities located in proximity to upland CTS habitat will be scheduled to avoid the CTS migration season (October 15 – June 30). If work must be completed during the migration season, barrier fencing will be installed to exclude CTS from maintenance areas. 4. In the event that a California tiger salamander is encountered within the maintenance area, a biologist with an Incidental Take permit, or biologist approved by the USFWS, will move the salamander to a safe location with suitable underground refugia (e.g., open burrow of appropriate depth) outside of the fenced maintenance area. Actions taken to move CTS will be consistent with

Table 7-1. Cont.

BMP ID	Name	BMP
		applicable USFWS and CDFG regulations and permits. 5. The USFWS Sacramento Field Office will be contacted within 48 hours of any California tiger salamander observations.
BR-14	California Tiger Salamander Avoidance and Impact Minimization Measures for Vegetation Management	1. For vegetation management activities occurring in areas where California tiger salamander has been identified as potentially occurring (see SMP Manual Table 7-3), a qualified biologist will conduct pre-maintenance surveys of upland habitats and identify areas with small mammal burrows. Areas with an abundance of small mammal burrows will be flagged and avoided by maintenance crews. 2. Based on surveys, if California tiger salamander is identified as potentially present, then access across upland channel banks and adjacent upland habitats will be by foot only. Vehicles will be restricted to existing access roads. 3. A qualified biological monitor, or biologist with an Incidental Take Permit, will be on call during project activity in proximity to upland CTS habitat. The biological monitor will have the authority to stop work if a CTS is encountered until such a time as the animal is moved to an area away from the project site. 4. In the event that a California tiger salamander is encountered within the maintenance area, a biologist with an Incidental Take Permit, or biologist approved by the USFWS, will move the salamander to a safe location with suitable underground refugia (e.g., open burrow of appropriate depth) outside of the fenced maintenance area. Actions taken to move CTS will be consistent with applicable USFWS and CDFG regulations and permits. 5. The USFWS Sacramento Field Office will be contacted within 48 hours of any California tiger salamander observations.
BR-15	Foothill Yellow-legged Frog Avoidance and Impact Minimization Measures for Ground-Disturbing Activities	1. For ground-disturbing activities occurring in areas where foothill yellow-legged frog has been identified as potentially occurring (see SMP Manual Table 7-3), a qualified biologist will conduct pre-maintenance surveys to assess habitat within the proposed maintenance area. 2. A qualified biologist will inspect the maintenance area daily before the start of work. If appropriate, SCWA will install exclusionary fencing. In the event that foothill yellow-legged frogs are encountered within the maintenance area, a qualified biologist will move the frog to a safe location outside of the maintenance area. Actions taken to move foothill yellow-legged frog will be consistent with

Table 7-1. Cont.

BMP ID	Name	BMP
		applicable CDFG regulations and permits. 3. If dewatering a creek segment is required, a qualified biologist will conduct visual and dipnet surveys and move captured frogs and tadpoles to a safe location in the creek. Actions taken to move foothill yellow-legged frog will be consistent with applicable CDFG regulations and permits. 4. CDFG will be notified within 48 hours of any foothill yellow-legged frog observations.
BR-16	Foothill Yellow-legged Frog Avoidance and Impact Minimization Measures for Vegetation Management	1. For vegetation maintenance activities occurring in areas where foothill yellow-legged frog has been identified as potentially occurring (see SMP Manual Table 7-3), a qualified biologist will conduct pre-maintenance surveys of aquatic habitats and identify potential foothill yellow-legged frog breeding and foraging areas. These areas will be flagged and avoided by maintenance crews. 2. Based on surveys, if foothill yellow-legged frog is identified as potentially present, then field crews will access channel banks by foot only and will avoid entering open water. Vehicles will be restricted to existing access roads.
BR-17	Western Pond Turtle Pre-maintenance Surveys for Ground-Disturbing Activities	1. For projects located in areas where western pond turtle has been identified as potentially occurring (see SMP Manual Table 7-3), a qualified biologist will conduct pre-maintenance surveys to assess habitat within the proposed maintenance area. 2. If suitable instream habitat for the western pond turtle is present in the maintenance area, a qualified biologist will inspect the maintenance area daily before the start of work. In the event that a western pond turtle is encountered before or during the maintenance activity, a qualified biologist will move the turtle to a safe location outside of the work area. Actions taken to move western pond turtle will be consistent with applicable CDFG regulations and permits. 3. If dewatering of a creek segment is required, a qualified biologist will be present and will move turtles – if found – to a safe location in the creek. Actions taken to move western pond turtle will be consistent with applicable CDFG regulations and permits. 4. CDFG will be notified within 48 hours of any western pond turtle observations.
BR-18	Zone 1A Salmonid Avoidance and Impact Minimization Measures	These conditions apply to steelhead-bearing streams identified in the BO as: Laguna de Santa Rosa, Copeland Creek, Santa Rosa Creek, and Windsor Creek.

Table 7-1. Cont.

BMP ID	Name	BMP
	(based on NMFS Russian River BO issued on September 24, 2008)	SCWA will not perform any flood control maintenance activities in the Mark West Creek mainstem or tributaries of Mark West Creek upstream of the confluence with its largest tributary, the Laguna de Santa Rosa. As such, maintenance activities conducted on Wikiup or Fulton Creeks are not covered under the Zone 1A BO and will require a separate consultation with NMFS. Sediment maintenance activities conducted in steelhead-bearing streams will comply with the terms and conditions of Reasonable and Prudent Measure 5 of the Russian River BO for Zone 1A, which states: 1. **Term and Condition A:** SCWA shall isolate work areas located in aquatic habitat from the flowing stream and relocate listed salmonids prior to proceeding with in-channel work for food control maintenance or habitat enhancement: ▪ retain a qualified biologist with expertise in anadramous salmonid biology; ▪ the biologist shall be onsite during all dewatering events; ▪ all captured salmonids will be properly cared for; ▪ if any salmonids are found dead or injured, the Santa Rosa Area NMFS office will be contacted immediately; and ▪ NMFS staff or persons designated by NMFS will be allowed on-site during dewatering activities. 2. **Term and Condition B:** at all channel maintenance sites in Zone 1A, SCWA will: ▪ check construction equipment for leaks each day prior to conducting work in the channel; ▪ ensure that all fill material for cofferdams is fully contained; ▪ ensure that all diversion pumps are screened in compliance with NMFS' and CDFG's fish screening criteria; ▪ ensure that coffer dams are properly sized and maintained throughout the duration of maintenance activities; and ▪ ensure that all material is removed after completion of the project. 3. **Term and Condition C:** SCWA will provide NMFS and DFG with reports on

Table 7-1. Cont.

BMP ID	Name	BMP
		construction-related and fish relocation activities by February 15 of the year following maintenance. 4. **Term and Condition D:** SCWA will reduce impacts on habitat complexity: ▪ all work in natural channels, except for revegetation activities, will be conducted between June 15 and October 15; ▪ no work will be started that cannot be completed before the onset of a storm event; ▪ vehicles may be driven in the dry streambed only as necessary to accomplish work; ▪ all exposed/disturbed areas on upper stream banks within the project site will be stabilized; ▪ install erosion control measures to divert runoff to stable areas; ▪ all new riprap will be planted with willows or other native trees; ▪ no grouted riprap shall be installed; ▪ bioengineering techniques shall be incorporated into all bank stabilization projects; ▪ when grading gravel bars, a buffer of 25 feet or 10 percent of the maximum bar width, whichever is greater, shall be maintained; ▪ SCWA will construct a low flow channel at sediment removal sites in Zone 1A to provide enhanced migration habitat through sediment removal areas. 5. Sediment removal project designs will be submitted to NMFS and DFG 60 days prior to implementation for approval. 6. The low flow channel shall be monitored at least two times in-between large storm events during the winter period to assess its function as a migration corridor and impact on stream stability.
BR-19	Zone 2A and 3A Salmonid Avoidance and Minimization Measures	*[placeholder for forthcoming NMFS BO for Zone 2/3A. Until then, BR-18 will be utilized for salmonid-bearing streams.]*

Table 7-1. Cont.

BMP ID	Name	BMP
Cultural Resources Protection		
CR-1	Cultural Resources Investigation	For maintenance activities which require excavation into native soils (e.g., bank stabilization, culvert replacement, etc.), and for all new sediment disposal sites, a cultural resources investigation shall be conducted **by a qualified professional archeologist** prior to performing the maintenance activity. The cultural resources investigation shall include the following elements: **1.** *Background Research and Native American Consultation***.** An updated records search shall be conducted at locations planned for maintenance that have not had a records search completed within the previous five years. Sediment disposal sites shall only require an initial records search. Investigations should begin with a review of the data acquired for this document to determine whether the proposed activity will occur within a previously-known culturally-sensitive area. An addendum records search at the NWIC will also be necessary to determine if any cultural resources have been recorded since the creation of this document. The records search will identify resources within or near the project location and determine whether that location has been previously surveyed up to current standards. In conjunction with the background research, the appropriate Native American ~~organization~~ **Tribes** will be contacted to provide comments or concerns about a maintenance activity location. **The NAHC will also be contacted for a Sacred Lands File Check.** **2.** *Pedestrian Survey.* If an adequate survey has not been completed for a project location within a ten-year period from the date of scheduled maintenance, a pedestrian survey is required. Sediment disposal sites shall only require an initial pedestrian survey. All areas of exposed ground should be closely inspected for the presence of cultural materials. Areas of dense vegetation should be inspected as closely as possible and any exposed channel banks should be carefully examined for the presence of buried cultural resources. Depending on the likelihood for encountering subsurface remains, based on an analysis of site distribution and geomorphology of the project location, a series of small, hand-auger borings may be excavated, with all sediments passed through 1/4-inch screen, to assure that no subsurface archaeological materials are present. The auger borings would also provide an initial assessment of the surface integrity of the landform (e.g., is a substantial amount of imported or redeposit fill material

Table 7-1. Cont.

BMP ID	Name	BMP
		present?) and provide additional information about the potential for buried archaeological material. If the limited subsurface testing does not reveal buried cultural material, there will be less likelihood that unexpected discoveries will delay activities. If an archaeological deposit is encountered, a preliminary assessment of site boundaries should be made **in consultation with the appropriate affiliated tribe(s)**. Any archaeological material recovered in auger holes will be recorded, cataloged, and re-deposited. A map should be prepared depicting site boundaries in relation to the project area, and the site should be recorded on a standard archaeological site record (DPR 523 form). **3.** *Documentation.* If findings are negative, these results will be presented in the SMP annual notification package. If findings are positive, a positive Archaeological Survey Report (ASR)/Historic Property Survey Report (HPSR) will be prepared that includes appropriate background research, site records, and recommendations for additional work. **Prior to finalization of such document, a copy will be provided to the appropriate affiliated tribe(s) for review and comment.** The report will include results of background research, descriptions of field work, findings, appropriate maps and photos, and a record of Native American consultation. A cover letter will detail management recommendations, which could include archaeological and Native American monitoring, site avoidance, or test excavations to determine site significance. The report will be submitted to SCWA and the NWIC. **All information regarding the site locations, Native American human remains, and associated funerary objects will be kept confidential and will not be made available for public disclosure. The final written report will be submitted within 3 months after work has been completed to the NWIC.** **4.** *Management Requirements.* If a cultural resource is located within an area of maintenance activity the following steps shall be implemented. The following are examples of management requirements regarding the treatment of known or unknown cultural resources; other measures may be implemented instead, provided they are at least as protective of the cultural resource in question. ▪ *Archaeological and Native American Monitoring:* SCWA shall retain the services of a Native American monitor **or Native American Monitors, depending on the site constraints, through agreements with the appropriate affiliated tribe(s),** and a qualified archaeological consultant

Table 7-1. Cont.

BMP ID	Name	BMP
		that has expertise in California prehistory to monitor ground-disturbing activities within 200 feet of known archaeological sites or in areas designated as having a high potential for encountering archaeological sites. If an intact archaeological deposit is encountered, all soil disturbing activities in the vicinity of the deposit should stop until the deposit is evaluated. The archaeological monitor shall immediately notify SCWA of the encountered archaeological deposit. The monitors shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, present the findings of this assessment to SCWA. During the course of the monitoring, the archaeologist may adjust the frequency—from continuous to intermittent—of the monitoring based on the conditions and professional judgment regarding the potential to impact resources. ▪ *Cultural Resources Monitoring Plan:* If monitoring is the preferred recommendation, a cultural resources monitoring plan shall be prepared by a qualified professional archaeologist. **Prior to finalization of such document, a copy will be provided to the appropriate affiliated tribe(s) for review and comment.** The plan should address (but not be limited to) the following issues: – Training program for all construction involved in site disturbance and field workers; – Person(s) responsible for conducting monitoring activities, including Native American monitors; – How the monitoring shall be conducted and the required format and content of monitoring reports, including any necessary archaeological re-survey; – Person(s) responsible for overseeing and directing the monitors; – Schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports; – Procedures and construction methods to avoid sensitive cultural resource areas; – Clear delineation and fencing of sensitive cultural resource areas

Table 7-1. Cont.

BMP ID	Name	BMP
		requiring monitoring; – Physical monitoring boundaries (e.g., 200-foot radius of a known site); – Protocol for notifications and stop-work guidelines in case of encountering of cultural resources, as well as methods of dealing with the encountered resources (e.g., collection, identification, curation); – Methods to ensure security of cultural resources sites; – Protocol for notifying local authorities (i.e. Sheriff, Police) should site looting and other illegal activities occur during construction. – If SCWA, in consultation with the monitors, determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed Project, SCWA shall: – Re-design the proposed project to avoid any adverse effect on the significant resource; or, – Implement an archaeological data recovery program (ADRP) (unless the archaeologist determines that the archaeological resource is of greater interpretive than research significance, and that interpretive use of the resource is feasible). The project archaeologist~~, and~~ SCWA**, and appropriate affiliated tribe(s)** shall meet and consult to determine the scope of the ADRP. The archaeologist will prepare a draft ADRP and submit it to SCWA for review and approval. **Prior to finalization of such document, a copy will be provided to the appropriate affiliated tribe(s) for review and comment.** The ADRP will identify how the proposed data recovery program will preserve the significant information the archaeological resource is expected to contain. The ADRP will identify the scientific/historic research questions applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes will address the applicable research questions. Data recovery, in general, shall be limited to the portions of the historic property that could be adversely affected by the proposed Project. Destructive data recovery methods shall not be applied to portions of the archaeological resources if nondestructive methods are practical.
CR-2	Previously Undiscovered Cultural Resources	*Inadvertent Discoveries:* If discovery is made of items of historical or archaeological interest, activity will immediately cease in the project location (within approximately 50-feet) of discovery. Prehistoric archaeological materials might include obsidian and

Table 7-1. Cont.

BMP ID	Name	BMP
		chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. After cessation of excavation the contractor shall immediately contact SCWA. Maintenance will not resume until authorization is received from the SCWA. ▪ In the event of unanticipated discovery of archaeological indicators during construction, SCWA will retain the services of a qualified professional archaeologist to evaluate**, in consultation with the appropriate affiliated tribe(s),** the significance of the items prior to resuming any activities that could impact the site. ▪ In the case of an unanticipated archaeological discovery that is determined to be potentially eligible for listing in the National and/or California Register, and the site cannot be avoided, SCWA will implement an ADRP, prepared by a qualified archaeologist, as outlined under BMP CR-1. *Discovery of Human Remains:* If potential human remains are encountered, SCWA shall halt work in the vicinity of the find and contact the county coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. If the coroner determines the remains are Native American, the coroner will contact the NAHC. As provided in Public Resources Code Section 5097.98, the NAHC will identify the person or persons believed to be most likely descended from the deceased Native American. The Most Likely Descendent makes recommendations for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.
CR-3	Previously Undiscovered Paleontological Resources	If fossil remains are encountered during maintenance, the maintenance activity will be stopped until a qualified professional paleontologist can assess the nature and importance of the find and recommend appropriate treatment. SCWA shall retain a consultant who meets the Society for Vertebrate Paleontology's criteria for a "qualified professional paleontologist" (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995). Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may also include preparation of a report for publication describing the finds. SCWA shall be responsible for ensuring that the recommendations of the paleontologist regarding treatment and reporting are

Table 7-1. Cont.

BMP ID	Name	BMP
		implemented.
Hazardous Materials Safety		
HAZ-1	Spill Prevention and Response Plan	The Agency will develop a Spill Prevention and Response Plan prior to commencement of maintenance activities. The plan will summarize the measures required under BMPs HAZ-2 through HAZ-6. It will also require that: 1. Equipment and materials for cleanup of spills be available on site and that spills and leaks will be cleaned up immediately and disposed of properly; 2. Prior to entering the work site, all field personnel shall be appropriately trained in spill prevention, hazardous material control, and clean-up of accidental spills. 3. Field personnel shall implement measures to ensure that hazardous materials are properly handled and the quality of water resources is protected by all reasonable means. 4. Spill prevention kits shall always be in close proximity when using hazardous materials (e.g., crew trucks and other logical locations). All field personnel shall be advised of these locations and trained in their appropriate use. The Agency will routinely inspect the work site to verify that the Spill Prevention and Response Plan is properly implemented and maintained. The Agency will notify contractors immediately if there is a noncompliance issue and will require compliance. Absorbent materials will be used on small spills located on impervious surface rather than hosing down the spill; wash waters shall not discharge to the storm drainage system or surface waters. For small spills on pervious surfaces such as soils, wet materials will be excavated and properly disposed rather than burying it. The absorbent materials will be collected and disposed of properly and promptly. As defined in 40 CFR 110, a federal reportable spill of petroleum products is the spilled quantity that: ▪ violates applicable water quality standards; ▪ causes a film or sheen on, or discoloration of, the water surface or adjoining shoreline; or ▪ causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

Table 7-1. Cont.

BMP ID	Name	BMP
		If a spill is reportable, the contractor's superintendent will notify the Agency, and the Agency will take action to contact the appropriate safety and cleanup crews to ensure that the Spill Prevention and Response Plan is followed. A written description of reportable releases must be submitted to the appropriate RWQCB and the California Department of Toxic Substances Control (DTSC). This submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form. If an appreciable spill has occurred, and results determine that project activities have adversely affected surface water or groundwater quality, a detailed analysis will be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the Agency or contractors will select and implement measures to control contamination, with a performance standard that surface and groundwater quality must be returned to baseline conditions. These measures will be subject to approval by the Agency, DTSC, and the RWQCB.
HAZ-2	Equipment and Vehicle Maintenance	1. All vehicles and equipment will be kept clean. Excessive build-up of oil or grease will be avoided. 2. All equipment used in the creek channel will be inspected for leaks each day prior to initiation of work. Action will be taken to prevent or repair leaks, if necessary. 3. Vehicle and equipment maintenance activities will be conducted off-site or in a designated, protected area away from the channel where vehicle fluids and spills can be handled with reduced risk to water quality. 4. If maintenance must occur on-site, designated areas will not directly connect to the ground, surface waters, or the storm drainage system to prevent the run-on of stormwater and runoff of spills. The service area will be clearly designated with berms, sandbags, or other barriers. 5. Secondary containment, such as a drain pan or drop cloth, to catch spills or leaks will be used when removing or changing fluids. Fluids will be stored in appropriate containers with covers, and properly recycled or disposed of off-site. 6. Cracked batteries will be stored in a non-leaking secondary container and

Table 7-1. Cont.

BMP ID	Name	BMP
		removed from the site. 7. Spill clean-up materials will be stockpiled where they are readily accessible. 8. Incoming vehicles and equipment will be checked for leaking oil and fluids (including delivery trucks, and employee and subcontractor vehicles). Leaking vehicles or equipment will not be allowed on-site.
HAZ-3	Equipment and Vehicle Cleaning	1. Equipment will be cleaned of any sediment or vegetation before transferring and using in a different watershed to avoid spreading pathogens or exotic/invasive species between watersheds. 2. Vehicles and equipment will not be washed on-site. Vehicle and equipment washing will occur on an appropriate wash rack at SCWA's maintenance center.
HAZ-4	Refueling	1. No fueling shall be done in the channel (top-of-bank to top-of-bank) unless equipment stationed in these locations cannot be readily relocated (e.g., pumps and generators). 2. All off-site fueling sites (e.g., on access roads above the top-of-bank) shall be equipped with secondary containment and avoid a direct connection to underlying soil, surface water, or the storm drainage system. 3. For stationary equipment that must be fueled on-site, secondary containment, such as a drain pan or drop cloth, shall be provided in such a manner to prevent accidental spill of fuels to underlying soil, surface water, or the storm drainage system.
HAZ-5	On-Site Hazardous Materials Management	1. The products used and/or expected to be used and the end products that are produced and/or expected to be produced after their use will be inventoried. 2. As appropriate, containers will be properly labeled with a "Hazardous Waste" label and hazardous waste will be properly recycled or disposed of off-site. 3. Contact of chemicals with precipitation will be minimized by storing chemicals in watertight containers or in a storage shed (completely enclosed), with appropriate secondary containment to prevent any spillage or leakage. 4. Quantities of equipment fuels and lubricants greater than 55 gallons shall be provided with secondary containment that is capable of containing 110% of the primary container(s). 5. Petroleum products, chemicals, cement, fuels, lubricants, and non-storm drainage

Table 7-1. Cont.

BMP ID	Name	BMP
		water or water contaminated with the aforementioned materials shall not be allowed to enter receiving waters or the storm drainage system. 6. Sanitation facilities (e.g., portable toilets) will be surrounded by a berm, and a direct connection to the storm drainage system or receiving water will be avoided. 7. Sanitation facilities will be regularly cleaned and/or replaced, and inspected regularly for leaks and spills. 8. Waste disposal containers will be covered when they are not in use, and a direct connection to the storm drainage system or receiving water will be avoided. 9. All trash that is brought to a project site during maintenance activities (e.g., plastic water bottles, plastic lunch bags) will be removed from the site daily.
HAZ-6	Existing Hazardous Sites or Waste	Upon selection of maintenance project locations, the Agency will conduct a search for existing known contaminated sites on the State Water Resource Control Board's GeoTracker website (http://www.geotracker.waterboards.ca.gov). For any proposed maintenance sites located within 1,500 feet of any "open" sites where contamination has not been remediated, the Agency will contact the RWQCB case manager listed in the database. The Agency will work with the case manager to ensure maintenance activities would not affect cleanup or monitoring activities or threaten the public or environment. If hazardous materials, such as oil or paint cans, are encountered at the maintenance sites, the Agency will carefully remove and dispose of them according to the Spill Prevention and Response plan. Agency staff will wear proper protective gear and store the waste in an appropriate hazardous waste container until it can be disposed at a hazardous waste facility.
HAZ-7	Fire Prevention	1. All earthmoving and portable equipment with internal combustion engines will be equipped with spark arrestors. 2. During the high fire danger period (April 1–December 1), work crews will have appropriate fire suppression equipment available at the work site. 3. On days when the fire danger is high and a burn permit is required (as issued by the relevant Air Pollution Control District), flammable materials, including flammable vegetation slash, will be kept at least 10 feet away from any equipment that could produce a spark, fire, or flame. 4. On days when the fire danger is high and a burn permit is required, portable tools

Table 7-1. Cont.

BMP ID	Name	BMP
		powered by gasoline-fueled internal combustion engines will not be used within 25 feet of any flammable materials unless at least one round-point shovel or fire extinguisher is within immediate reach of the work crew (no more 25 feet away from the work area).
HAZ-8	Testing and Disposal of Spoils	As specified in the Sediment Sampling and Analysis Guidelines (SMP Manual Appendix B), after selecting potential sediment disposal locations and prior to disposing of excavated sediment, the Agency will test the sediment to determine the suitability for disposal based on presence of contaminants. Criteria for sediment disposal at the selected locations will dictate the concentrations of contaminants such as metals, pesticides, organic compounds, total organic carbon, asbestos, total sulfides, ammonia, and toxicity which are acceptable at the disposal locations. As specified in the Sediment Sampling and Analysis Guidelines, samples will be compared against federal and state environmental screening levels (ESLs) for protection of human health, groundwater quality, and terrestrial receptors. If hazardous levels of contaminants are present such that disposal at the preferred locations is not feasible, the material will be taken to a permitted hazardous waste facility.
Vegetation Management		
VEG-1	Removal of Existing Vegetation	1. Vegetation pruning and removal activities will be conducted under the guidance of a staff biologist or certified arborist. For tree relocation activities, a botanist, certified arborist, or other vegetation specialist will be on site to help direct maintenance activities and to consult if questions and/or issues arise. 2. Only vegetation that is noxious, invasive, hazardous, or could obstruct channel flows will be removed. Herbaceous layers that provide erosion protection and habitat value will be left in place. Invasive plant species that inhibit the health and/or growth of native riparian trees will be targeted for removal. 3. Where a choice between species that may be removed to maintain flood conveyance is feasible, slower-growing species such as oaks (*Quercus* spp.) that develop large canopies will be preferentially preserved, because these species take longer to establish, and provide essential nesting habitat for cavity nesters and food sources for a variety of resident and migratory animals and birds. Faster-growing species such as alders (*Alnus* spp.) and cottonwoods (*Populus* spp.) are the second priority for preservation; these single-trunked species offer the benefit

Table 7-1. Cont.

BMP ID	Name	BMP
		of improved flood conveyance and reduced roughness by comparison with multi-trunked species. 4. Vegetation will be removed and/or pruned in such a manner that channel roughness is reduced while allowing the maximum amount of vegetation to remain in place. Trees will be trimmed or pruned to reduce impedance of floodflows while allowing the canopy to develop. Specifics for each site will differ, but typical options include limbing up to remove lower branches that have potential to interfere with floodflows, and pruning into a "fan" roughly parallel to flow direction. In areas where extensive vegetation removal is desirable to maintain flood flow capacity, *phasing of remov*al shall be considered so that some vegetation may remain in place to provide habitat to birds. 5. Vegetation management will emphasize the preservation of large mature trees that provide well developed overstory for bird habitat, canopy closure for stream shading, and add vertical complexity to the riparian corridor. Vegetation management will be conducted in such a manner that maximizes shading over the active channel. Larger trees will be retained on both sides of north-south flowing streams and on the south side of east-west flowing streams. Where vegetation is removed from the active channel, removal will target nonnative species and removal of native species that are stiff and/or multi-trunked such as arroyo willow (*Salix lasiolepis*). Trees will never be topped as this encourages shrubby growth and weak branch attachments 6. Large woody debris, stumps, or root wads that are fully or partially buried and do not present a flood hazard shall be allowed to remain in place to provide habitat and to maintain bank stability. 7. If vegetation requires removal for access to project site, non-native species and/or quick growing species shall be targeted first for removal. Removal of native, mature trees will be avoided whenever possible. 8. To the extent feasible, removed native vegetation shall be saved to replant after maintenance or plant in other nearby sites. This includes the reuse of mulch and willow sprigs where possible.
VEG-2	Use of Herbicides	1. All herbicide use shall be consistent with all Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) label instructions and any use conditions issued by the Sonoma County Agricultural Commissioner.

Table 7-1. Cont.

BMP ID	Name	BMP
		2. Herbicide use will be restricted to the minimum amount needed to ensure adequate control of vegetation. 3. Application of herbicides to upland areas shall not be made within 72 hours of predicted rainfall. 4. Herbicides will not be directly applied to waters of the U.S., such as for ludwigia eradication. 5. Herbicides, including AquaMaster© and Renovate©, will not be used within 60 feet of areas identified in the Court-Ordered Stipulated Injunction for the protection of California red-legged frogs. This includes areas in Zones 1A and 3A, as well as Zones 8A and 9A (see SMP Manual Figure 3-29 for detail on where these areas are located.) The Agency will review the details and exceptions in the court order and comply with the herbicide use buffers as appropriate. 6. As required by the Court-Ordered Stipulated Injunction for pesticide use near Pacific salmon-supporting waters in Sonoma County, pesticides specified in the injunction including triclopyr (Renovate©) will not be used within 20 yards of salmon-supporting waters. The Agency will review the details and exceptions in the court order and comply with the herbicide use buffers as appropriate.
VEG-3	Planting and Revegetation After Soil Disturbance	1. Sites where maintenance activities result in exposed soil will be stabilized to prevent erosion and revegetated with native vegetation as soon as feasible after maintenance activities are complete. 2. Revegetation will occur at a ratio of at least 1½: 1 to account for initial mortality of plantings. 3. If soil moisture is deficient, new vegetation will be supplied with supplemental water until vegetation is firmly established. 4. To the extent possible, native grass seed will be used when seeding a project site. 5. Erosion control fabric, hydromulch, or other mechanism will be applied as appropriate to provide protection to seeds, hold them in place, and help retain moisture. 6. Revegetation shall be regularly monitored for survival for at five years or until minimum survival/cover is achieved. If invasive species colonize the area, action shall be taken to control their spread; options include hand and mechanical

Table 7-1. Cont.

BMP ID	Name	BMP
		removal and replanting with native species.
Water Quality and Channel Protection		
WQ-1	Apply Erosion Control Fabric to or Hydroseeding of Exposed Soils	1. Upland soils exposed due to maintenance activities will be seeded and stabilized using erosion control fabric or hydroseeding. The channel bed and other areas below ordinary high water mark are exempt from this BMP. 2. Erosion control fabric will consist of natural fibers that will biodegrade over time. No plastic or other non-porous material will be used as part of a permanent erosion control approach. Plastic sheeting may be used to temporarily protect a slope from runoff, but only if there are no indications that special-status species would not be impacted by the application. 3. The site will be properly prepared to make sure the fabric/mat has complete contact with the soil. Sites can be prepared by grading and shaping the installation area; removing all rocks, dirt clods, vegetation, etc.; preparing the seedbed by loosening the top 2- to 3-inches of soil; and applying soil amendments as directed by soil tests, the seeding plan, and manufacturer's recommendations. 4. The area will be seeded before installing the fabric. All areas disturbed during installation will be re-seeded. 5. Erosion control fabric will be anchored in place. Anchors can include U-shaped wire staples, metal geotextiles stake pins or triangular wooden stakes. 6. The manufacturer's installation recommendations will be followed. 7. Other erosion control measures shall be implemented as necessary to ensure that sediment or other contaminants do not reach surface water bodies for stockpiled or reused/disposed sediments.
WQ-2	Prevent Scour Downstream of Sediment Removal	After sediment removal, the channel shall be graded so that the transition between the existing channel both upstream and downstream is smooth and continuous between the maintained and non-maintained areas and does not present a "wall" of sediment or other blockage that could erode once flows are restored to the channel.
WQ-3	In-Channel Grading	1. Where pre-maintenance channel form exhibited desirable features, the channel bed will be regraded to mimic the channel form before work was conducted. 2. Where possible, grading may include channel enhancements such as excavation of a low-flow channel, development of a meander, or riffle/pool configurations. No

Table 7-1. Cont.

BMP ID	Name	BMP
		channel grading will occur below the as-built design for the flood control channels. 3. If gravels that have the potential to be utilized for spawning are removed to conduct maintenance activities, the gravels will be carefully removed and stored where maintenance activities will not impact the quality of the gravel. The gravel shall be replaced as close to original conditions as possible upon completion of the maintenance activities. 4. Where in-stream gravel and gravel (or cobble) bars are encountered, sediment removal activities will aim to preserve the overall shape and form of the existing bar or gravel feature. Sediment removal activities will aim to retain the form of the gravel or cobble bar feature, while reducing bar elevations as necessary to accommodate flood conveyance capacity.
Good Neighbor Policies		
GN-1	Work Site Housekeeping	1. SCWA will maintain the work site in a neat and orderly condition, and will leave the site in a neat, clean, and orderly condition when work is complete. To the extent feasible, slash, sawdust, cuttings, etc. will be removed to clear the site of vegetation debris. Paved access roads will be swept and cleared of any residual vegetation or dirt resulting from the maintenance activity. 2. For activities that last more than one day, materials or equipment left on the site overnight will be stored as inconspicuously as possible, and will be neatly arranged.
GN-2	Public Outreach	1. In efforts to keep the public informed about stream maintenance work, why it is necessary, when it occurs, and what a neighborhood can expect when crews arrive to conduct maintenance work, SCWA will post and update information about the SMP and maintenance activities on their website (http://www.scwa.ca.gov/about_your_water/). 2. Each spring, once maintenance sites have been selected for the annual work season, a newspaper notice will be published with information on the maintenance sites, approximate work dates, and contact information. This information will also be posted on SCWA's website. 3. For high profile projects, at SCWA's discretion, signs will be posted in the neighborhood to notify the public at least one week in advance of maintenance schedules, trail closures, and road/land closures as necessary and as possible.

Table 7-1. Cont.

BMP ID	Name	BMP
		Signage used at work sites will provide contact information for lodging comments and/or complaints regarding the activities.
GN-3	Noise Control	1. With the exception of emergencies, normal work will be limited to normal business hours (8:00 a.m.–5:00 p.m.). Routine activities in residential areas will not occur on Saturdays, Sundays, or SCWA observed state holidays except during emergencies, or with approval by the local jurisdiction and advance notification of surrounding residents. 2. SCWA will ensure that power equipment (vehicles, heavy equipment, and hand equipment such as chainsaws) is equipped with original manufacturer's sound-control devices, or alternate sound control that is no less effective than those provided as original equipment. Equipment will be operated and maintained to meet applicable standards for construction noise generation. No equipment will be operated with an unmuffled exhaust.
GN-4	Traffic Flow, Pedestrians, and Safety Measures	1. To the extent feasible, work will be staged and conducted in a manner that maintains two-way traffic flow on public roadways in the vicinity of the work site. If temporary lane closures are necessary, they will be **coordinated with the appropriate jurisdictional agency and** scheduled **to occur** outside of peak traffic hours (7:00 – 10:00 a.m. and 3:00 – 6:00 p.m.) to the maximum extent practicable**.** ~~, and a~~**Any lane closures will include a**dvance warning signage, a detour route and flaggers will be provided in both directions. When work is conducted on public roads and may have the potential to affect traffic flow, work will be coordinated with local emergency service providers as necessary to ensure that emergency vehicle access and response is not impeded. 2. Public transit access and routes shall be maintained to the extent feasible. If public transit would be affected by temporary road closures and require detours, affected transit authorities will be consulted and kept informed of project activities. 3. Heavy equipment and haul traffic will be prohibited in residential areas, except when no other route to and from the site is available. 4. Roadway segments or intersections in the vicinity of project sites will be assessed to determine if they are at, or approaching an LOS that exceeds local standards. Maintenance traffic will avoid these locations to the extent feasible, either by traveling different routes or by traveling at non-peak times of day. 5. Adequate off-street parking will be provided or designated public parking areas

Table 7-1. Cont.

BMP ID	Name	BMP
		will be used for maintenance workers' personal vehicles and maintenance-related vehicles not in use through the maintenance period. 6. Access for driveways and private roads will be maintained to the extent feasible. If brief periods of maintenance would temporarily block access, property owners will be notified prior to maintenance activities.
GN-5	Odors	Sediment that is rich in decaying organic matter that could generate assorted malodorous gases such as reduced sulfur compounds shall be handled to minimize impacts on sensitive receptors such as nearby residents **and businesses and their patrons**. In general, such materials will be hauled off of the site at the time of excavation. Where it needs to be temporarily stockpiled, maintenance personnel shall stockpile potentially odorous sediments as far as possible from residential areas**, businesses and their patrons, and** ~~or~~ other odor sensitive land uses.

Table 7-2. Best Management Practices by Activity

				Vegetation Management									Other Activities								
BMP	**Name**	**Sediment Removal**	**Bank Stabilization**	Willow Removal	Blackberry Removal	Cattail Removal	Ludwigia Removal	Tree Pruning and Exotics Removal	Tree Removal and Relocation	Mowing	Nursery Stock Tree Planting	Herbicide Application	Modified and Natural Channel Maintenance	Access Road Maintenance	V-Ditch Maintenance	Culvert Repair and Installation	**Reservoir Inlet Clearing**	Debris Removal	Fence Maintenance	Graffiti Removal	Sediment Disposal
General Impact Avoidance and Minimization																					
GEN-1	Work Window	X	X	X		X	X	X	X	X		X	X			X	**X**	X			X
GEN-2	Staging and Stockpiling of Materials	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
GEN-3	Channel Access	X	X	X	X	X	X	X	X	X	X	X	X			X	**X**	X			
Air Quality Protection																					
AQ-1	Dust Management	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X		X
AQ-2	Enhanced Dust Management	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X		X
Biological Resources Protection																					
BR-1	Area of Disturbance	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	
BR-2	Pre-maintenance Educational Training	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	
BR-3	Biotechnical Bank Stabilization		X										X		X	X					
BR-4	Impact Avoidance and Minimization During Dewatering	X	X				X						X		X	X	**X**				
BR-5	Fish and Amphibian Species Relocation Plan	X	X				X						X		X	X	**X**				
BR-6	On-Call Wildlife Biologist	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
BR-7	Special Status Plant Survey	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
BR-8	Nesting Migratory Bird and Raptor Pre-maintenance Surveys	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
BR-9	California Freshwater Shrimp Avoidance and Impact Minimization for Vegetation Management	X	X	X	X	X	X	X	X			X	X			X		X			X

Table 7-2. Cont.

				Vegetation Management									Other Activities								
BMP	**Name**	**Sediment Removal**	**Bank Stabilization**	Willow Removal	Blackberry Removal	Cattail Removal	Ludwigia Removal	Tree Pruning and Exotics Removal	Tree Removal and Relocation	Mowing	Nursery Stock Tree Planting	Herbicide Application	Modified and Natural Channel Maintenance	Access Road Maintenance	V-Ditch Maintenance	Culvert Repair and Installation	**Reservoir Inlet Clearing**	Debris Removal	Fence Maintenance	Graffiti Removal	Sediment Disposal
BR-10	California Red-legged Frog Avoidance and Impact Minimization Measures for Ground-Disturbing Activities	X	X	X	X	X	X	X	X		X		X	X	X	X	**X**	X			
BR-11	California Red-legged Frog Avoidance and Impact Minimization Measures for Vegetation Management			X	X	X	X	X	X	X	X	X	X				**X**				
BR-12	California Tiger Salamander Avoidance and Impact Minimization Measures for Sediment and Debris Removal	X		X		X	X						X	X	X	X	**X**	X			X
BR-13	California Tiger Salamander Avoidance and Impact Minimization Measures for Bank Stabilization		X													X					
BR-14	California Tiger Salamander Avoidance and Impact Minimization Measures for Vegetation Management			X	X			X	X	X	X	X	X	X	X		**X**	X	X	X	
BR-15	Foothill Yellow-legged Frog Avoidance and Impact Minimization Measures for Ground-Disturbing Activities	X	X	X	X	X	X						X			X	**X**	X			
BR-16	Foothill Yellow-legged Frog Avoidance and Impact Minimization Measures for Vegetation Management			X	X	X	X						X				**X**				
BR-17	Western Pond Turtle Pre-maintenance Surveys for Ground-Disturbing Activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	
BR-18	Zone 1A Salmonid Avoidance and Impact Minimization Measures	X	X	X	X	X	X	X	X			X	X			X		X			

Table 7-2. Cont.

BMP	Name	Sediment Removal	Bank Stabilization	Vegetation Management: Willow Removal	Blackberry Removal	Cattail Removal	Ludwigia Removal	Tree Pruning and Exotics Removal	Tree Removal and Relocation	Mowing	Nursery Stock Tree Planting	Herbicide Application	Other Activities: Modified and Natural Channel Maintenance	Access Road Maintenance	V-Ditch Maintenance	Culvert Repair and Installation	**Reservoir Inlet Clearing**	Debris Removal	Fence Maintenance	Graffiti Removal	Sediment Disposal
BR-19	Zones 2A and 3A Salmonid Avoidance and Impact Minimization Measures	X	X	X	X	X	X	X	X			X	X			X		X			
Cultural Resources Protection																					
CR-1	Phase I Cultural Investigation and Report		X						X				X	X	X	X	**X**				X
CR-2	Previously Undiscovered Cultural Resources	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
CR-3	Previously Undiscovered Palentological Resources	X	X	X	X	X	X	X	X	X	X		X	X	X	X	**X**	X	X	X	X
	Hazardous Materials Safety																				
HAZ-1	Spill Prevention and Response	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
HAZ-2	Equipment and Vehicle Maintenance	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
HAZ-3	Equipment and Vehicle Cleaning	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
HAZ-4	Refueling	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
HAZ-5	On-Site Hazardous Materials Management	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
HAZ-6	Existing Hazardous Sites or Waste	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
HAZ-7	Fire Prevention	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
HAZ-8	Testing and Disposal of Spoils	X	X										X	X	X	X	**X**	X			X
Vegetation Management																					
VEG-1	Removal of Existing Vegetation	X	X	X				X	X		X	X	X	X	X	X	**X**				
VEG-2	Use of Herbicides			X	X	X	X	X	X			X	X	X	X		**X**		X		
VEG-3	Planting and Revegetation After Soil Disturbance	X	X					X	X		X		X		X	X	**X**				

Table 7-2. Cont.

				Vegetation Management									Other Activities								
BMP	**Name**	**Sediment Removal**	**Bank Stabilization**	Willow Removal	Blackberry Removal	Cattail Removal	Ludwigia Removal	Tree Pruning and Exotics Removal	Tree Removal and Relocation	Mowing	Nursery Stock Tree Planting	Herbicide Application	Modified and Natural Channel Maintenance	Access Road Maintenance	V-Ditch Maintenance	Culvert Repair and Installation	**Reservoir Inlet Clearing**	Debris Removal	Fence Maintenance	Graffiti Removal	Sediment Disposal
Water Quality and Channel Protection																					
WQ-1	Apply Erosion Control Fabric to or Hydroseeding of Exposed Soils	X	X	X	X	X		X	X				X	X	X	X	**X**	X	X		X
WQ-2	Prevent Scour Downstream of Sediment Removal	X											X				**X**				
WQ-3	In-Channel Grading	X	X										X			X					
Good Neighbor Policies																					
GN-1	Work Site Housekeeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
GN-2	Public Outreach	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
GN-3	Noise Control	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
GN-4	Traffic Flow, Pedestrians, and Safety Measures	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	**X**	X	X	X	X
GN-5	Odors	X	X										X		X	X	**X**	X	X		X

Table 7-3. Listed Species by SMP Reach

Legend

O	Known occurrence in reach
O*	Presence documented within adjacent reach or tributary; not applicable for fish if known barrier or reach goes dry
P	Potential habitat (includes areas rated potential or marginal)
M	Migration corridor (fish only)
S	Known or potential spawning habitat (fish only)
R	Known or potential rearing habitat (fish only)
H	Historic occurrence; recent occurrence not confirmed
U	Unsuitable habitat, unlikely to occur and/or no known occurrence

CTS Habitat Rankings

P/A-1	Moderate-High likelihood for occurrence in potential upland habitat
P/A-2	Moderate likelihood for occurrence in potential upland habitat
P/A-3	Low likelihood for occurrence in potential upland habitat
P/A-4	Unlikely to occur in potential upland habitat

Creek Name	Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants
Zone 1A - Laguna de Santa Rosa Watershed										
Abramson Creek	Abramson1	U	U	P/A-4	U	P	U	U	U	U
	Abramson2	U	U	P/A-4	U	P	U	U	U	U
Airport Creek	Airport1	U	U	P/A-4	U	P	U	U	U	U
	Airport2	U	U	P/A-4	U	P	U	U	U	P
Austin Creek	Austin1	U	U	U	U	P	O (M)	U	U	U
	Austin2	U	U	U	U	P	O (M)	U	U	U
	Austin3	U	U	U	U	O	O (M/R)	U	U	U
Bellevue Wilfred Channel	BellWil1	U	U	P/A-1	U	P	U	U	U	P
	BellWil2	U	U	P/A-1	U	P	U	U	U	U
	BellWil3	U	U	P/A-1	U	P	U	U	U	U
	BellWil4	U	U	P/A-1	U	P	U	U	U	U

Table 7-3. Cont.

Creek Name	Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants
Brush Creek	Brush1	U	U	U	U	O	O (M)	U	U	U
	Brush2	U	U	U	U	P	O (M/R)	U	U	U
	BrushRes	**U**	**P**	**U**	**U**	**P**	**U**	**U**	**U**	**U**
Coffey Creek	Coffey1	U	U	U	U	P	U	U	U	U
Coleman/Cook Creek	Cook1	U	U	U	U	U	U	U	U	U
	Coleman1	U	U	U	U	U	U	U	U	U
	Coleman 2	U	U	U	U	U	U	U	U	U
Colgan Creek	Colgan1	U	U	P/A-1	U	P	U	U	U	U
	Colgan2	U	U	P/A-1	U	P	U	U	U	P
	Colgan3	U	U	P/A-1	U	P	U	U	U	U
	Colgan4	U	U	P/A-1	U	P	U	U	U	U
	Colgan5	U	U	P/A-1	U	P	U	U	U	U
	Colgan6	U	U	P/A-1	U	P	U	U	U	U
	Colgan7	U	U	U	U	P	U	U	U	U
College Creek	College1	U	U	U	U	P	U	U	U	U
	College2	U	U	U	U	P	U	U	U	U
	College3	U	U	U	U	P	U	U	U	U
Cook Creek	Cook1	U	U	U	U	U	U	U	U	U
	Cook2 (basin)	U	U	P/A-4	P	P	U	U	U	U
Copeland Creek	Copeland1	U	U	U	U	P	O (M)	U	U	U
	Copeland2	U	U	U	U	P	O (M)	U	U	U
	Copeland3	U	U	U	U	P	O (M/R)	U	U	U
	Copeland4	U	U	U	U	P	O (M)	U	U	U
	Copeland5	U	U	U	P	P	O (M/R)	U	U	U

Table 7-3. Cont.

Creek Name	Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants
South Fork Copeland Creek	SFCope1	U	U	U	U	P	U	U	U	U
	SFCope2	U	U	U	U	P	U	U	U	U
Cotati Creek	Cotati1	U	U	P/A-4	U	P	U	U	U	U
	Cotati2	U	U	P/A-4	U	P	U	U	U	U
Crane Creek	Crane1	U	U	P/A-4	U	P	P(M)	U	U	U
	Crane2	U	P	P/A-4	O	P	P(M)	U	U	U
Ducker Creek	Ducker1	U	U	U	U	P	U	U	U	U
	Ducker2	U	U	U	U	P	U	U	U	U
Faught Creek	Faught1	U	U	U	U	P	U	U	U	U
Five Creek	Five1	U	U	P/A-4	U	P	U	U	U	U
Forestview Creek	Forestview1	U	U	P/A-2	U	P	U	U	U	U
	Forestview2	U	U	P/A-2	U	P	U	U	U	U
	Forestview3	U	U	P/A-2	U	P	U	U	U	U
Fulton Creek	Fulton1	U	U	P/A-4	U	P	U	U	U	U
Gossage Creek	Gossage1	U	U	P/A-1	U	P	O*	U	U	U
	Gossage2	U	U	P/A-1	U	P	U	U	U	U
	Gossage3	U	U	P/A-1	U	P	U	U	U	U
Hinebaugh Creek	Hinebaugh1	U	U	P/A-1	U	P/O	P(M)	U	U	U
	Hinebaugh2	U	U	P/A-1	U	P	P(M)	U	U	U
	Hinebaugh3	U	U	P/A-1	U	P	P(M)	U	U	U
	Hinebaugh4	U	U	U	U	P	P(M)	U	U	U
	Hinebaugh5	U	U	U	U	P	P(M)	U	U	U
	Hinebaugh6	U	U	U	U	P	P(M)	U	U	U
	Hinebaugh7	U	U	U	U	P	P(M)	U	U	U

Table 7-3. Cont.

Creek Name	Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants
Hunter Creek	Hunter1	U	U	P/A-4	U	P	U	U	U	U
	Hunter2	U	U	P/A-4	U	P	U	U	U	U
	Hunter3	U	U	P/A-4	P	P	U	U	U	U
Kawana Springs Creek	Kawana1	U	U	P/A-4	U	P	U	U	U	U
Laguna de Santa Rosa	Laguna1	U	U	P/A-4	U	P	O (M)	U	U	P
	Laguna2	U	U	P/A-4	U	P	O (M)	U	U	P
	Laguna3	U	U	P/A-4	U	P	O (M)	U	U	P
	Laguna4	U	U	P/A-4	U	P	O (M)	U	U	P
	Laguna5	U	U	P/A-4	U	P	O (M)	U	U	P
	Laguna6	U	U	P/A-4	U	P	O (M)	U	U	P
	Laguna7	U	U	P/A-4	U	P	O (M)	U	U	P
Lornadel Creek	Lorna Dell1	U	U	U	U	P	U	U	U	U
Matanzas Reservoir	**MatanzasRes**	**U**	**U**	**U**	**U**	**P**	**U**	**U**	**U**	**U**
Middle Fork Brush Creek	MiddleBrush1	U	U	U	U	P	O*	U	U	U
	MiddleBrush2	U	U	U	U	P	U	U	U	U
Oakmont Creek	**Oakmont1**	**U**	**U**	**U**	**U**	**U**	**U**	**U**	**U**	**U**
Paulin Creek	Paulin1	U	U	U	U	P	O (M/R)	U	U	U
	Paulin2	U	U	U	U	P	O*	U	U	U
	Paulin3	U	U	U	U	P	U	U	U	U
	Paulin4	U	U	U	U	P	U	U	U	U
	Paulin5	U	U	U	U	P	U	U	U	U
	Paulin6	U	U	U	U	P	U	U	U	U
Peterson Creek	Peterson1	U	U	P/A-1	U	P	U	U	O*	U
	Peterson2	U	U	P/A-1	U	P	U	U	U	P

Table 7-3. Cont.

Creek Name	Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants
Piner Creek	Piner1	U	U	P/A-3	U	P/O	O (M)	U	O*	U
	Piner2	U	U	U	U	P/O	O (M)	U	U	U
	Piner3	U	U	U	U	P	O (M/R)	U	U	U
	Piner4	U	U	U	U	P	O*	U	U	U
	Piner5	U	U	U	U	P	U	U	U	U
	Piner6	U	U	U	U	U	U	U	U	U
	Piner7	U	U	U	U	U	U	U	U	U
	Piner8	U	U	P	U	U	U	U	U	U
	PinerRes	**U**	**P**	**U**	**U**	**P**	**U**	**U**	**U**	**U**
Roseland Creek	Roseland1	U	U	P/A-1	U	P	U	U	U	P
	Roseland2	U	U	P/A-1	U	P	U	U	U	U
	Roseland3	U	U	P/A-1	U	P	U	U	U	P
	Roseland4	U	U	P/A-1	U	P	U	U	U	U
	Roseland5	U	U	P/A-4	U	U	U	U	U	U
	Roseland6	U	U	P/A-4	U	U	U	U	U	U
Russell Creek	Russell1	U	U	U	U	P	U	U	U	U
	Russell2	U	U	U	U	P	U	U	U	U
Santa Rosa Creek	Santa Rosa0	U	U	U	U	P	O (M/R)	U	O (M/S/R)	P
	Santa Rosa1	U	PU	P/A-3	U	P	O (M)	U	O (M/S/R)	P
	Santa Rosa2	U	PU	P/A-1	U	P	O (M/R)	U	O (M/S/R)	P
	Santa Rosa3	U	U	P/A-4	U	P	O (M/R)	U	O (M/S/R)	P
	Santa Rosa4	U	U	U	U	P	O (M/R)	U	O (M/S/R)	P
	Santa Rosa5	U	U	U	U	P	O (M/R)	U	O (M/S/R)	P
	Santa Rosa6	H	U	U	U	O	O (M/R)	U	O (M/S/R)	P
Santa Rosa Creek Diversion	Santa Rosa Div.1	U	U	U	P	P	O*	U	U	U

Table 7-3. Cont.

Creek Name	Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants
Sierra Park Creek	Sierra Park1	U	U	U	U	P	U	U	U	U
	Sierra Park2	U	U	U	U	P	U	U	U	U
	Sierra Park3	U	U	U	U	P	U	U	U	U
Spring Creek	Spring1	U	U	U	U	P	U	U	U	U
	Spring3	U	U	U	U	P	U	U	U	U
	SpringRes	**U**	**U**	**U**	**U**	**P**	**P**	**U**	**U**	**U**
Starr Creek	Starr1	U	U	U	U	P	U	U	U	U
	Starr2	U	U	U	U	P	U	U	U	U
	StarrTrib1	U	U	U	U	U	U	U	U	U
Steele Creek	Steele1	U	U	U	U	P	U	U	U	U
	Steele2	U	U	U	U	P	U	U	U	U
	Steele3	U	U	U	U	P	U	U	U	U
	Steele4	U	U	U	U	P	U	U	U	U
	Steele5	U	U	U	U	P	U	U	U	U
Todd Creek	Todd1	U	U	P/A-1	U	P	U	U	U	U
	Todd2	U	U	P/A-1	U	P	U	U	U	U
	Todd3	U	U	P/A-4	U	P	U	U	U	U
	Todd4	U	U	P/A-4	U	P	U	U	U	U
	Todd5	U	U	P/A-4	U	P	U	U	U	U
Washoe Creek	Washoe1	U	U	U	U	P	U	U	U	U
Wikiup Creek	Wikiup1	U	U	U	P	P	U	U	U	U
Wilfred Creek	Wilfred1	U	U	P/A-4	U	P	U	U	U	U
Wilfred Extension	Wilfred Ext.1	U	U	P/A-4	U	P	U	U	U	U
Windsor Creek	Windsor1	U	U	U	U	P	O (M/R)	U	U	P

Table 7-3. Cont.

Creek Name	Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants
	Windsor2	U	U	U	U	P	U	U	U	U
	Windsor3	U	U	U	U	P	U	U	U	U
	Windsor4	U	U	U	U	P	U	U	U	U
Zone 2A – Petaluma River Watershed										
Adobe Creek	Adobe1	U	P	U	U	P	O (M)	U	U	U
	Adobe2	U	P	U	U	P	O (M)	U	U	U
	Adobe3	U	P	U	P	P	O (M)	U	U	U
	Adobe4	U	P	U	O	P	O (M/R)	U	U	U
Capri Creek	Capri1	U	U	U	U	P	O*	U	U	U
	Capri2	U	U	U	U	P	U	U	U	U
	Capri3	U	U	U	U	P	U	U	U	U
	Capri4	U	U	U	U	P	U	U	U	U
Corona Creek	Corona1	U	U	U	U	P	U	U	U	U
	Corona2	U	U	U	U	P	U	U	U	U
	Corona3	U	U	U	U	P	U	U	U	U
	Corona4	U	U	U	U	P	U	U	U	U
	Corona5	U	U	U	U	U	U	U	U	U
	Corona6	U	U	U	U	U	U	U	U	U
	Corona7	U	U	U	U	U	U	U	U	U
East Fork McDowell Creek	East Fork McDowell1	U	U	U	U	P	U	U	U	U
East Washington Creek	East Washington1	U	U	U	U	P	U	U	U	U
	East Washington2	U	U	U	U	P	U	U	U	U
	East Washington3	U	U	U	U	P	U	U	U	U
	East Washington4	U	U	U	U	P	U	U	U	U

Table 7-3. Cont.

Creek Name	Reach	California Freshwater Shrimp	California Red-legged Frog	California Tiger Salamander	Foothill Yellow-legged Frog	Western Pond Turtle	Central California Coast Steelhead	Central California Coast Coho	California Coastal Chinook	Plants
	East Washington5	U	U	U	U	P	U	U	U	U
Jessie Lane Creek	Jessie Lane1	U	U	U	U	P	O*	U	U	U
Lichau Creek	Lichau1	U	U	P/A-4	U	P	O (M)	U	U	U
	Lichau2	U	U	P/A-4	U	P	O (M)	U	U	U
	Lichau3	U	U	P/A-4	U	P	O (M)	U	U	U
Lynch Creek	Lynch1	U	U	U	U	P	O(M)	U	U	U
McDowell Creek	McDowell1	U	U	U	U	P	O*	U	U	U
	McDowell2	U	U	U	U	P	U	U	U	U
Thompson Creek	Thompson1	U	P	U	U	P	U	U	U	U
Washington Creek	Washington1	U	U	U	U	P	O*	U	U	U
	Washington2	U	U	U	U	P	U	U	U	U
	Washington3	U	U	U	U	P	U	U	U	U
	Washington4	U	U	U	U	P	U	U	U	U
	Washington5	U	U	U	U	P	U	U	U	U
	Washington6	U	U	U	U	U	U	U	U	U
	Washington7	U	U	U	U	U	U	U	U	U
Zone 3A - Sonoma Creek Watershed										
Fryer Creek	Fryer1	U	U	U	U	P	U	U	U	P
	Fryer2	U	U	U	U	P	U	U	U	U
	Fryer3	U	U	U	U	P	U	U	U	U
	Fryer4	U	U	U	U	U	U	U	U	U
Lower East Fork Fryer Creek	Lower East Fork Fryer1	U	U	U	U	P	U	U	U	U
Zone 8A – Bodega Bay and Adjacent Coastal Creeks										
Bloomfield Channel	**Bloomfield1**	**U**	**P**	**U**	**U**	**U**	**U**	**U**	**U**	**U**

Table 7-3. Cont.

Legend

O	Known occurrence in reach
O*	Presence documented within adjacent reach or tributary; not applicable for fish if known barrier or reach goes dry
P	Potential habitat (includes areas rated potential or marginal)
M	Migration corridor (fish only)
S	Known or potential spawning habitat (fish only)
R	Known or potential rearing habitat (fish only)
H	Historic occurrence; recent occurrence not confirmed
U	Unsuitable habitat, unlikely to occur and/or no known occurrence

CTS Habitat Rankings

P/A-1	Moderate-High likelihood for occurrence in potential upland habitat
P/A-2	Moderate likelihood for occurrence in potential upland habitat
P/A-3	Low likelihood for occurrence in potential upland habitat
P/A-4	Unlikely to occur in potential upland habitat

Chapter 8. Program Mitigation

Table 8-1 "Regulatory Agencies and Relevant Jurisdictions"1, second row attributes for RWQCBs have been updated as follows:

Regulatory Authority: ~~Clean Water Act Section 402 and the~~ Porter-Cologne Water Quality Control Act

Vegetation Management: ~~No~~**Yes (only activities that affect beneficial uses of channel shading)**

Debris Removal, Fence Maintenance and Graffiti Removal: No **(non-ground disturbing activities)**

The first paragraph on page 8-2 has been revised as follows:

Section 8.8 *Mitigation ~~Accounting~~* ***Performed During the Interim Period*** draws on impact and mitigation data from the interim permitting period 2006-2008. **The program's mitigation approach was developed and refined during the interim permitting period to reflect improvements in the program and regulatory agency requests.** ~~to portray expected mitigation outcomes for the program~~. **Section 8.9 describes the environmental commitments established between SCWA and the various regulatory agencies overseeing the SMP. Section 8.10 provides an overview of mitigation ratios and specific mitigation requirements for program activities.** Section 8.~~9~~**11** describes how mitigation activities will be communicated and coordinated with the relevant regulatory agencies.

Section 8.3.4 Vegetation Management Activities, the "Conclusions" section starting on page 8-13 has been revised as follows:

Maintenance Principles (Section 5.2), Vegetation Management Approach Framing Considerations (Section 5.4.1), and Programwide Best Management Practices (Chapter 7) including BMPs will assist in avoidance and minimization of potential impacts for vegetation management activities. While Maintenance Principles and other maintenance or BMP measures minimize impacts to vegetation, there may be occasions when vegetation **planted as mitigation for**~~removed during~~ SMP activities does not **perform to the success criteria after 5 years**~~reestablish within a year~~. This would be considered a permanent loss and measures to mitigate this impact are discussed below **in Section 8.10.2, bullet 4**. However, in general vegetation management activities do not result in residual impacts that require compensatory mitigation, unless they are conducted in coordination with other activities that require such mitigation (e.g., sediment removal, bank stabilization).

The fifth paragraph of Section 8.4 "Mitigation for Residual and Temporary Impacts," on page 8-17 has been revised as follows:

Mitigation opportunities are also considered at other SWCA reaches (Tier 2), and off-site locations within the watershed (Tier 3). These two tiers of mitigation address the temporary loss of Beneficial Uses and ecological functions and values during the time gap between SMP maintenance activities and when Tier 1 mitigation occurs, and the time when Tier 1 mitigation has become fully functional and the temporary impacts have been eliminated. Tiers 2 and 3 are funded though a contribution by SCWA of 10% of the total cost of maintenance activities, and will provide a 0.1:1 ratio of acres restored to acres disturbed, at a minimum. Additional details regarding funding of the mitigation program and mitigation ratios is provided below in Sections 8.7**,**~~and~~ 8.8**, and 8.10**.

Section 8.5 "On-Site Mitigation at SCWA Reaches (Tier 1)," the end of the first complete paragraph on page 8-19 has been revised as follows:

> Based on engineering evaluations, in larger channels where there is sufficient capacity, both overstory and understory trees and shrubs can be planted. In smaller **tributary channel** systems, planting may be focused on tall trees on the upper bank with little or nothing but sedges and grasses on the side slopes and in channel. **Note that for all project and stream types, the same mitigation ratio will be applied but the types and specific locations of plantings may vary.**

Section 8.5.1 "Planting Program and Canopy Development" on page 8-19 the following sentence is added to the end of the first paragraph:

> **A more detailed and comprehensive description of vegetation management activities, methodologies for implementation, and impact avoidance, minimization, and mitigation measures is included in *Appendix E: Vegetation Management Plan*.**

In Section 8.5.1 "Planting Program and Canopy Development," the discussion of "Implementation and Monitoring" on page 8-24 (in the fifth and sixth complete paragraphs) has been revised as follows:

> Success criteria for shrubs and trees planted in overbank and side bank areas will be **85**~~75~~ percent survival. For the in-channel plantings, setting the appropriate criteria for survival is difficult due to lack of reference criteria and the dynamic environment of the channel bottom. Depending upon winter flow conditions, in-channel plantings could be covered in sediment or scoured and eroded by the following next year. Instead of establishing strict survival criteria for the in-channel zone, SCWA will monitor and document the presence of the planted species in the channel. Initial goals for the in-channel plantings will be some level of survival, retention, and successful colonization into the subsequent years. Based on plant monitoring, SCWA will adaptively develop appropriate future criteria for the SMP.
>
> In the event of poor plant survival, corrective measures will include replanting to reach the **85**~~75~~ percent goal in the overbank and side bank areas. For the in-channel zone, selective replanting will be conducted along the low-flow channel to help stabilize it.

In Section 8.7.5 "2006-2008 Watershed Mitigation Projects" the following changes have been made, starting on page 8-32:

Upper Laguna Stream Restoration and Planting Project (2008), with the Watershed Partner Cotati Creek Critters (CCC)

The purpose of this project **is** ~~was~~ to restore habitat and ecological functions to the Upper Laguna channel corridor. The project is located along a 5,000-foot reach of the Upper Laguna flood control channel between Liman Way in ~~Cotati~~**Rohnert Park** and East Cotati Avenue in ~~Rohnert Park~~**Cotati**. This location is shown as Laguna reaches 6 and 7 in the Upper Laguna channel map, Figure 4-41. A summary project fact sheet is provided in Appendix D-3.

The project goal **is** ~~was~~ to establish an understory layer of native plants including grasses, sedges, rushes, vines and other appropriate herbaceous perennials. CCC **will install** ~~installed~~ 1,000 plants ~~under 250~~ **in proximity of the 1,500** previously planted trees **and shrubs**. It is expected that the understory plants will be viably reproducing and spreading by seed, roots and rhizomes within one to two years. The project also **includes** ~~included~~ treating eroded banks and bare soil with a combination of ~~willow sprigging,~~ erosion control fabrics~~,~~ and straw mulch. To reduce non-native grass encroachment, the project **includes** ~~included~~ selective mowing of non-native grasses and distributing native seeds in their place throughout the entire project length.

The Upper Laguna channel restoration project**, once completed, will provide** ~~provided~~ several direct and indirect benefits. Direct benefits **will occur** ~~occurred~~ locally on-site where the numerous plantings **will** reduce bank erosion, enhance riparian habitat, reduce stream temperatures through increased shading, and promote water quality enhancement. The proposed planting plan was designed to create a mature riparian canopy that supports continuous riparian vegetation throughout the reach. Beneath the canopy understory native plants and shrubs will provide improved habitat at the immediate channel banks areas. Downstream indirect benefits include reduced sediment loading to the Laguna and enhanced water quality. The reduction in sediment loading both locally and downstream reduces the need for in-channel maintenance activities, which in turn, reduces future potential impacts to the channel. Beneficial uses of the Laguna de Santa Rosa are currently impaired by sediment. Because the restoration project is located on the Upper Laguna channel (Figure 4-41) it **will reduce** ~~reduces~~ local sediment loading and also provide**s** benefits to the downstream Laguna system.

The Upper Laguna restoration project **is** ~~was~~ directly responsive to residual impacts associated with the 2008 stream maintenance activities and **demonstrates** ~~demonstrated~~ suitable and appropriate Tier 3 off-site watershed mitigation. Cost for the 2008 CCC Upper Laguna restoration project **is** ~~was~~ $43,700~~,~~**.** ~~t~~**T**his mitigation project **is** ~~was~~ funded through the WPP grant program. Funding **is** ~~was~~ provided from the 10% matching contribution based on 2008 SCWA maintenance costs.

Section 8.7.6 "Monitoring for Watershed Mitigation", second paragraph on page 8-34 has been revised as follows:

In the example agreement provided in Appendix C between SCWA and the Sotoyome RCD for the 2008 erosion control project at Cook Creek headwaters, the agreement provides that the RCD will be responsible for monitoring for the first three years following implementation. **In this example,** SCWA will be responsible for monitoring the remaining two years, providing a total of five years of project monitoring. **For all Tier 3 projects,** SCWA will be responsible for coordinating monitoring reports to the relevant agencies. As part of establishing work agreements with watershed Partners for individual projects, SCWA will ensure that at least 5 years of monitoring occurs; ~~either~~ provided by the Partner **and overseen by SCWA**~~, or SCWA, or both parties~~.

Monitoring reports for watershed mitigation projects will **be prepared by the project partner and submitted to SCWA. The monitoring reports will** include a description of how the project achieved objectives identified in the proposal, how the project is developing over time, and if the project requires adaptive management or maintenance.

Section 8.7.7 "Success Criteria and Remedial Actions", starting on page 8-35 has been revised as follows:

Success criteria will be included for **mitigation** projects as outlined above under Section 8.7.6 **and as required for all stream maintenance activities**. For vegetation, the goal will be **85**~~75~~ percent survival. For in-channel plantings, setting the appropriate criteria for survival is difficult due to lack of reference criteria and the dynamic environment of the channel bottom. Depending upon winter flow conditions, in-channel plantings could be covered in sediment or scoured and eroded by the following next year. Instead of establishing strict survival criteria for the in-channel zone, projects will be monitored and the presence of the planted species in the channel will be documented. Initial goals for in-channel plantings will be some level of survival, retention, and successful colonization into the subsequent years.

In the event of poor plant survival or failure to meet stated performance criteria, corrective measures will be implemented, including replanting to reach the **85**~~75~~ percent goal. Such remedial measures will be monitored for a **5**~~3~~-year period following implementation to ensure that the project is successful. For instance, if remedial activities were taken during the **fifth**~~fourth~~ year after project implementation, monitoring of these remedial measures would continue until year **10**~~7~~. If they did not meet performance criteria at that point, additional measures would be required, triggering another **5**~~3~~-year monitoring period. As a last resort, new mitigation would be provided elsewhere, should a project not be capable of meeting performance criteria.

SCWA will determine if and when a Tier 3 mitigation project is complete based on monitoring and remedial actions, if necessary. A completed and signed termination of contract will be submitted to regulatory agencies with annual reporting. Remedial actions, if outside the scope of funding of the original WPP project, will be funded by SCWA.

Section 8.8 "Mitigation Accounting," beginning on page 8-35 has been replaced and reorganized. New sections have been added to provide additional detail on the SMP's mitigation program. The remainder of Chapter 8 is now structured as follows:

Section 8.8 Mitigation Performed During the Interim Period (2006-2008)

Section 8.9 Environmental Commitments for the Mitigation Program

Section 8.9.1 Environmental Commitments for Sediment Removal Activities

Section 8.9.2 Environmental Commitments for Vegetation Management Activities

Section 8.10 Mitigation Accounting and Requirements

Section 8.10.1 Overview of Mitigation Ratios

Section 8.10.2 Specific Mitigation Requirements for Sediment Removal Activities

Section 8.10.3 Specific Mitigation Requirements for Vegetation Management Activities

Section 8.11 Mitigation Notification and Reporting

All references to sections in this revised part of the chapter (after section 8.7) have been altered to reflect the changes shown above. The following sections include the reorganized and newly developed text for these sections of Chapter 8. The text for Section 8.11 "Mitigation Notification and Reporting" remains identical to the existing Section 8.9 (with the same name) but its location in Chapter 8 has been moved.

8.8. Mitigation Performed During the Interim Period 2006-2008

The interim permitting period (2006-2008) provided several projects that were used as a basis to develop the mitigation approach. The interim permitting period was used to apply and demonstrate the mitigation approach with regulators who were overseeing the SMP permitting. During the interim period, consensus was reached on how the mitigation approach would achieve the mitigation requirements for the program. Over the course of the three year interim period the mitigation approach was revised to reflect additional regulatory agency requests, as well as other improvements developed for the program.

Tables 6-1, 8-7, and 8-8 are referenced to describe mitigation performed during the interim period~~The review of mitigation accounting is presented through three tables: Table 6-1, Table 8-7, and Table 8-8.~~ Table 6-1 provides a summary of the project types, lengths and areas impacted, and sediment removed for the 46 maintenance projects conducted in the SMP interim period 2006-2008. These projects consisted of reach scale sediment removal, bank stabilization, and localized sediment removal projects. The 46 projects developed, permitted, and conducted during the 2006-2008 period demonstrate well the range of project and mitigation activities of the program.

Table 8-7 provides maintenance costs for the 2006-2008 projects. As described in Section 8.7.2 the WPP is an in-lieu-fee arrangement whereby 10 percent of the cost of SMP activities for sediment removal and bank stabilization are collected to fund off-site watershed mitigation projects. These contributions to the WPP will account for the compensatory mitigation of residual program impacts as summarized in Table 8-7. For example, in 2008, $18,900 was provided to the WPP grant fund to implement off-site suitable watershed from the $189,000 maintenance cost conducted at Copeland Creek Reach 4. In Table 8-7, for each of the three years, mitigation project costs are shown below the listings of the maintenance project costs. For example, in 2008 the Cook Creek Headwaters Erosion Project ($67,633 and the Cotati Creek Critters Project ($43,700) are shown. These watershed mitigation projects are described above in Section 8.7.5.

Note that the 2008 WPP project fund also includes $7,271 of contributed money not used by this year's two watershed mitigation projects. This money will be reserved in the WPP Project Fund for application in the coming year. Rolling over of funds from the current year to be applied in a future year in no way reduces any future funding obligation of the Agency. Under the SMP program, annual notifications to regulatory agencies will include a summary accounting of the WPP project fund, how much money was put into the fund, how much has been spent, and if any funds (such as the $7,271 from 2008) are in holding until future use.

Table 8-8 provides a summary of project impacts, Tier 1 mitigation provided on-site, and Tier 3 mitigation provided off-site. Ratios are provided comparing impacted areas (or lengths) to mitigated and restored areas (or lengths). Table 8-8 includes sub-tables (a), (b), and (c) comparing impacts and mitigation for the Coleman Creek, Copeland Creek, and Todd Creek reach scale sediment removal projects respectively. Table 8-8(d) provides a summary combining information for the three reach scale projects. Table 8-8(e) shows a summary of impacts and mitigation conditions for all the sediment removal projects in 2008, including the smaller localized sediment removal projects.

8.9 Environmental Commitments for Mitigation

In the process of working with the regulatory agencies overseeing the development of programmatic permits, the following environmental commitments were established.

8.9.1 Environmental Commitments for Sediment Removal Activities

- **Through implementing the SMP, SCWA shall seek to minimize the need for reach-scale sediment removal projects wherever possible. SCWA shall prioritize the development and use of targeted sediment removal areas to reduce the need for reach-scale sediment removal projects. The use of limited sediment removal areas is most effective at known and recurring depositional zones, whereby removal of sediment at the targeted location reduces the dispersal of sediment throughout the downstream reach.**

Mitigation requirements for the targeted sediment removal areas are discussed below.

- **To avoid and minimize potential impacts related to stream maintenance, SCWA will follow the Maintenance Principles, framing considerations, goals and maintenance triggers described in Chapter 5 of the SMP Manual. For sediment removal projects this includes understanding the relative causes of excess sedimentation and the relative reduction in channel capacity prior to conducting any repeated reach-scale sediment removal activities within a 5-year period.**
- **SCWA shall generally only conduct reach-scale sediment removal once within a given reach over the duration of the 5-year permit term of the ARM. However, if and when large stream discharges occur (e.g. equaling or exceeding the 10-year magnitude flow event), SCWA may review reaches to evaluate the need for additional reach-scale sediment removal activities. Large magnitude events may cause significant sediment accumulation that reduces flow conveyance capacity. As such, large events may result in the need to review and consider reach-scale sediment removal even for reaches where sediment removal activities had occurred within the past 5 years. Under these situations following a significant depositional event, SCWA will evaluate the reach in question carefully for reduced conveyance capacity. If sediment removal activities are required to maintain flood conveyance capacity, SCWA will provide demonstrated evidence to the pertinent regulatory agencies overseeing the SMP to demonstrate that channel capacity has been significantly diminished. Evidence of diminished channel capacity may include channel cross-sections, photographs, modeling, and/or other field-based evidence or observance of a heightened flood risk.**
- **If repeated reach-scale sediment removal activities are necessary, SCWA shall restore any associated on-site restoration activities that occurred as original mitigation for the initial sediment removal project. If restoration activities are damaged due to the occurrence of a large flow event as described above, the restoration activities shall be replaced on-site at a 1:1 ratio. If on-site restoration activities are not successful due to other reasons (beyond the occurrence of a large flood event) than they will be replaced at a 2:1 ratio as described below in the mitigation requirements.**
- **SCWA will consult with the pertinent regulatory agencies overseeing the SMP on any potential repeated reach-scale project and use the SMP guidance to reduce all potential impacts resulting from implementation to the greatest extent feasible.**
- **SCWA will conduct sediment removal activities in engineered channels in accordance with the Biological Opinion for the Russian River Watershed (National Marine Fisheries Service 2008) which states under Incidental Take Statement 7c that for the following creeks and stream distances, sediment removal activities are restricted to:**

- **Laguna de Santa Rosa – 2,400 feet of sediment removal three times during the next fifteen years, and 12,000 feet of vegetation removed annually;**

- **Copeland Creek – 3,270 feet of sediment removal six times during the next fifteen years, and 9,625 feet of vegetation removed annually;**

- **Windsor Creek – 500 feet of sediment removal two times during the next fifteen years, and the annual removal of 3,000 feet of vegetation during the next fifteen years;**

- **Santa Rosa Creek – 4,000 feet three times during the next fifteen years, and 12,100 feet of vegetation removal annually.**

These restrictions apply to reach scale sediment removal projects. For localized sediment removal at culverts and road crossings at the following creeks or areas: Laguna de Santa Rosa, Santa Rosa Creek, Copeland Creek, and Windsor Creek; no more than three sediment removal actions will occur annually in these engineered channels.

Additionally, annual reach scale sediment removal activities at Adobe Creek will be limited to 1,000 linear feet per year. Within SCWA Zones 2A/3A, (under the jurisdiction of RWQCB Region 2) the SCWA maintenance reaches along Adobe Creek are noted as the engineered reaches with the highest value for steelhead habitat.

The Adobe Creek in-stream basin is not restricted within this limitation and may be maintained annually.

8.9.2 Environmental Commitments for Vegetation Management Activities

- **SCWA will describe their vegetation management strategies in a Vegetation Management Plan that will be included as an appendix to the SMP Manual. The Vegetation Management Plan will include a discussion of relevant impact avoidance and minimization measures undertaken when planning and implementing vegetation management activities. Additionally, the vegetation management strategy will describe the criteria used to identify and determine vegetation management actions and also describe the protocols used to remove, trim, thin, or limb bank and in-stream vegetation. The Vegetation Management Plan is included in Appendix E.**

- **SCWA shall limit the removal of vegetation to plants and trees that directly affect the hydraulic capacity of the channels as described in the SMP Manual. SCWA will avoid and minimize impacts to the beneficial uses that vegetation provides including cover, shade, and aquatic habitat support.**

- **The SMP vegetation management approach includes developing and enhancing the riparian canopy throughout the SMP program area. This is achieved through the planting of native and suitable riparian vegetation, and the thinning and selective removal of non-suitable species. If and when vegetation thinning and removal are to occur, such actions should be implemented in a phased approach such that channel areas are not left wholly void of vegetation that provides shade. Mitigation requirements for vegetation removal are described below.**

8.10 Mitigation Accounting and Requirements

8.10.1 Overview of Mitigation Ratios

Compensatory mitigation under the SMP will be provided at a minimum of 1.1:1 (acres restored to acres disturbed). The first increment of 1:1 will be provided by on-site Tier 1 mitigation, which will directly restore the area disturbed and address on-site impacts. Due to the degraded nature of many of the SMP channels, in most cases Tier 1 mitigation will result in improved conditions on these sites over the long term (ecological lift concept). As such, they functionally will provide a greater than 1:1 mitigation ratio when considering functions and values, not just acreage.

The next increment of 0.1:1 will be provided by Tier 2 and Tier 3 off-site mitigation. In other words, at a minimum, the 10% contribution described above will provide a 0.1:1 acreage ratio. Should a 10% contribution not be sufficient to provide this ratio, additional funds would be applied until the ratio is met. However, as shown in the example below, the 10% contribution will typically provide a ratio which greatly exceeds 0.1:1 (in the example below, it results in a ratio of 0.4:1, or a total ratio of 1.4:1 considering Tier 1 mitigation). This increment mitigates for the temporary impacts that persist while Tier 1 mitigation is becoming fully established. This approach was developed and demonstrated through the mitigation projects implemented during the 2006-2008 interim permitting period while the SMP was under development.

The examples from the interim period 2006-08 described above demonstrate how this would work in practice. As shown in the sub-tables of Table 8-8, project impacts are shown by total acreage, and also by habitat and vegetation types. The two Tier 3 off-site mitigation projects for 2008 include the Cotati Creek Critters and Cook Creek Headwaters Erosion Control projects as described above. Through the $43,700 and $67,633 of funding provided to the Cotati Creek Critters and Cook Creek Headwaters projects (see Table 8-7), 4.60 and 0.21 acres will be restored respectively.

Mitigation ratios are developed by combining the on-site and off-site mitigation areas provided and comparing that to the acreage of maintenance project impacts. For the three reach scale sediment removal projects shown in Table 8-8(d), the net mitigation provided is 7.94 acres and the net wetlands area impacted is 6.23 acres. This resulted in a ratio of 1.3 acres mitigated for every 1 acre impacted, or 1.3:1.

Table 8-8(e) summarizes the impacts and mitigation areas for all the 2008 projects, including the smaller localized sediment removal projects. The net mitigation ratio for all 2008 projects is 1.4:1, meaning impacted areas are mitigated at 140%.

Taken together, the on-site reach-based mitigation activities, and the watershed mitigation activities through the WPP was determined to provide adequate and substantive compensatory mitigation for temporary and permanent residual impacts of the 2008 stream maintenance projects. This mitigation approach was reviewed by the relevant regulatory staff and agencies participating in the development of the SMP and approved as part of the permit conditions. As such, it serves as a demonstration of the mitigation approach in the SMP.

8.10.2 Specific Mitigation Requirements for Sediment Removal Activities

This section includes more specific mitigation requirements for sediment removal activities that were developed for the program in coordination with the North Coast and San Francisco Bay Regional Water Quality Control Boards (RWQCBs).

- **Localized, intermediate-scale sediment removal, reach-scale sediment removal, and bank stabilization projects shall include on-site habitat enhancement and restoration activities (as described in Section 8.4) at no less than a 1:1 ratio for areas impacted to areas restored.**

- **On-site restoration activities need not occur within concrete flood control channels or other concrete/hardened flood control facilities. However, the cost of removal of sediment from such concrete facilities will be included in the calculation of SCWA's contribution to the off-site watershed restoration projects fund (described below).**

- **On-site and off-site mitigation activities shall be observed and monitored for 5 years as described in Sections 8.5.1, 8.7.6 and 8.7.7.**

- **Should on-site mitigation activities not perform to the success criteria as described in the SMP Manual, then corrective measures shall be taken. The portion of the mitigated area that was unsuccessfully restored after 5-years shall be mitigated at a 2:1 ratio. Due to the higher mitigation requirement for past unsuccessful areas, SCWA may use other channel reaches (as suitable) in addition to (or in place of) the on-site reach area to fulfill the mitigation requirement. All mitigation monitoring and reporting requirements as described in Chapter 9 shall be followed.**

- **Annual costs for the implementation of localized sediment removal, intermediate-scale sediment removal, reach-scale sediment removal, reservoir inlet clearing sediment removal, and bank stabilization projects shall be used as the basis to fund off-site mitigation projects. Off-site mitigation projects will be selected and funded that provide beneficial watershed functions of restored habitat, erosion control, or other suitable**

watershed benefits as described in the SMP Manual. 10% of the annual costs for the sediment removal and bank stabilization projects shall be contributed to a mitigation fund to be used by watershed partners as described in the SMP Manual. The area to be restored or enhanced off-site as mitigation shall not be less than 10% of the impacted on-site sediment removal area (resulting in a total mitigation ratio of 1.1:1, considering both on-site and off-site mitigation). For example, if the impact to the SMP channel is 1 acre, then the off-site mitigation area should not be less than 0.1 acre.

- **The rationale for the additional 10% compensatory off-site mitigation rate is to provide for the temporary loss of beneficial uses during the time gap between when on-site impacts occur and when on-site restoration activities occur. Due to this "temporal gap" the North Coast RWQCB assigned an additional 10% mitigation requirement to interim stream maintenance projects, and because this could not be achieved on-site where complete restoration was occurring (at 1:1 ratio), the additional mitigation requirement needed to happen off-site.**

- **Targeted sediment removal areas that are used as a preferential approach to reduce the need for reach-scale sediment removal projects shall be included in the cost basis for calculating the annual off-site mitigation fund. While maintenance costs at targeted sediment removal areas shall contribute to off-site mitigation, the area of impact within the targeted sediment removal zones does not require compensatory mitigation.**

8.10.3 Specific Mitigation Requirements for Vegetation Management Activities

This section includes more specific mitigation requirements for vegetation management activities that were developed for the program in coordination with the North Coast and San Francisco Bay Regional Water Quality Control Boards (RWQCBs) and the California Department of Fish and Game (CDFG).

- **SCWA shall mitigate for the loss of beneficial uses due to SMP vegetation management activities.**

- **To help clarify the mitigation requirements for the vegetation removal activities of the SMP, the following three vegetation classes have been identified:**

  <u>Class 1: Native Riparian Vegetation</u>*: Class 1 native vegetation (except for those species listed under Class 2, below) shall be retained wherever possible, and pruned or thinned where necessary so as to foster the development of a riparian canopy. Examples of native riparian vegetation include: white alder (*Alnus rhombifolia*), box elder (*Acer negundo*), big leaf maple (*Acer macrophyllum*), Oregon ash (*Fraxinus latifolia*), red willow (*Salix laevigata*), Pacific willow (*Salix

***lucida lasiandra*), Fremont's poplar (*Populus fremontii*), and oaks (*Quercus* spp.) as appropriate. Additionally there are a number of native understory riparian shrubs suitable for flood control channels (depending on location) including: American dogwood (*Cornus sericea*), Western spicebush (*Calycanthus occidentalis*), elderberry (*Sambucus* spp.), snowberry (*Symphoricarpos* spp.), hazelnut (*Corylus cornuta californica*), and a number of others. Most of these shrub and tree species are included in the SMP plant palette included in Figures 8-2 and 8-3 of the SMP Manual. The removal of such native vegetation will be avoided to the greatest extent possible. Where such native vegetation has to be removed due to flood management considerations, the following limitations and mitigation shall apply. The removal of native vegetation with any single stem greater than 4" dbh (diameter at breast height) will be monitored, recorded, and mitigated at a 2:1 ratio, whereby 2 trees are replaced for every tree removed. Replacement trees shall include, but not be limited to, suitable riparian species such as alder, willow, Oregon ash, etc.**

***<u>Class 2: Problematic In-Channel Vegetation</u>*: This class of vegetation is particularly problematic for flood management purposes and ecologically, inhibits and prevents the establishment of a native riparian canopy. This class of vegetation includes the following species:**

1. **Cattails (*Typha* sp.)**
2. **Himalaya blackberry (Rubus discolor)**
3. **Arroyo willow (Salix lasiolepis)**
4. **Giant reed (Arundo donax)**
5. **Pampas grass (Cotaderia selloana, and C. jubata)**
6. **Indian bean (Catalpa bignoniodes)**
7. **Privet (Ligustrum sp.)**
8. **English and Algerian ivy (Hedera helix, H. canariensis)**
9. **Periwinkle (Vinca major.)**
10. **Red clusterberry(Contoneaster sp.)**
11. **Brooms (Spartium and Genista spp.)**
12. **Sweet fennel (Foeniculum vulgare)**
13. **Harding grass (*Phalaris aquatica*)**
14. **Water primrose (*Ludwigia peploides montevidensis*)**
15. **Eucalyptus (*Eucalyptus* ssp.)**
16. **Tree of heaven (*Ailanthus altissima*)**
17. **Acacia (*Acacia* ssp.)**
18. **White poplar (*Populus alba*)**
19. **Lombardy poplar (*Populous nigra 'Italicia'*)**
20. **Tamarisk (*Tamarix* spp.)**
21. **Rattlebox (*Sesbania punicea*)**

These Class 2 species are identified as particularly problematic for flood management purposes and because they limit the beneficial uses that can be achieved in the riparian zone. Impact avoidance and minimization approaches applied for the removal and thinning of these species is described in the SMP Manual. Regulatory provisions for the removal and management of these species are included in the Agreement for Routine Maintenance (ARM) with the California Department of Fish and Game (CDFG). The thinning and removal of these species do not require any additional specific mitigation requirements.

***Class 3: Other Non Native Vegetation*:** **Class 3 vegetation consists of non-native species that are not listed under Class 2, above. Examples of Class 3 vegetation include: various landscaping Ash species (green ash, raywood ash), London plane (Sycamore), and Carolina poplar. While these species are not as ecologically preferred as Class 1 vegetation, it is acknowledged that they may provide beneficial uses. As such, the removal of Class 3 vegetation with any single stem greater than 4" dbh (diameter at breast height) will be monitored, recorded, and mitigated at a 1.5:1 ratio.**

- **When replacing Class 1 and Class 3 trees, replacement trees shall consist of native riparian species such as alder, willow, Oregon ash, or other suitable species. The mitigation replacement of trees may either occur at the reach under maintenance or at another suitable SCWA channel reach in need of riparian canopy. The number of removed trees will be reported in the annual summary report of maintenance activities and the replacement of trees as mitigation will be reported through the annual maintenance reports as well. Similar to the requirements for on-site and off-site mitigation and restoration activities, the performance criteria for replacement planting for vegetation mitigation shall be 85% success, and mitigation plantings shall be monitored for 5 years. In addition to overall success, planted trees shall be evaluated for their overall health and vigor.**

- **The pruning of trees, including native trees, in order to promote a more upright, mature riparian canopy does not require mitigation.**

- **Grass mowing and shrub thinning activities are not anticipated to adversely affect shade or habitat benefits, and as such, do not require mitigation.**

Chapter 9. Program Management

In Section 9.2 "Stream Reconnaissance and Assessment," in Table 9-1, Step 3: "Project Design and Description" the following updates have been made:

Sediment Disposal	1) Identify the total amount of sediment for off-site disposal 2) Identify the sediment disposal options: A. On-site reuse B. Other SCWA Channel Reuse C. Wetland or Floodplain Restoration or Enhancement D. Upland Agricultural or Commercial Reuse (dry) E. Upland Agricultural or Commercial Reuse (wet) F. Landfill Disposal G. Hazardous Waste Disposal 3) Conduct sediment testing ~~based on acceptance criteria for options selected in Step 2~~. ~~4) Select appropriate disposal site based on test results~~

In Table 9-1, Step 5: "Agency Notification" has been updated as follows:

Sediment Disposal	▪ Include location and characteristics of disposal sites, as well as BMPs implemented, in the notification package, as appropriate. ▪ **Include results from sediment sampling in the notification package for agency review.**

In Table 9-1, page 4 of the table, the following text has been added to the first bullet under "Step 7: Annual Reporting":

Permitting/Compliance	▪ Prepare Annual Report summarizing work completed, on-site and off-site mitigation performed, the initiation of monitoring activities, **sediment sampling results,** and any other relevant information. Include summary photographs of work completed, results of resource surveys, cross sections as needed, and any final mapping of activities as necessary.

Under Section 9.4.3 "Develop Project Description", the second bullet at the top of page 9-7 has been revised as follows:

- Identify sediment sampling locations on a map. ~~Four samples per site will be collected and analyzed for every 20,000 cubic yards of material removed~~

Test the sediment samples according to the **Sediment Sampling and Analysis Guidelines (Appendix B)** ~~acceptance criteria for the disposal sites~~. Based on results from the sediment samples, select the final sediment disposal sites and identify the available capacity at each site. Also, identify the routes for transport from the maintenance sites to the disposal sites.

The following addition has been made after the last sentence of the first paragraph of section 9.6 "Agency Notification," on page 9-8:

An outline for the annual notification is provided in Appendix F-1.

The last paragraph in Section 9.7 "Project Implementation" has been revised as follows:

When projects are implemented, data will be collected at the project site prior to**, during,** and immediately after, project implementation**, as required by regulatory permits**. Data collected will include**: water quality monitoring data;** before**, during,** and after photos; cross section surveys after sediment removal is conducted; quantification of material removed (for sediment removal projects) or placed (for bank stabilization projects); length of stream channel maintained, sensitive species or other resources encountered at the site during preconstruction surveys or during project implementation; quantity, characteristics, and location of any debris disposed off-site; and any additional information as required to update the SMP database. Recording and monitoring data collected following project implementation will be collected within seven working days of final maintenance activities.

The following addition has been made after the last sentence of the second paragraph of section 9.8 "Annual Reporting," on page 9-9:

An outline for the annual report is provided in Appendix F-2.

Under Section 9.8 "Annual Reporting," the following text has been added to the third bullet at the top of page 9-10:

- How much material was disposed off-site, disposal locations, **sediment sampling results,** and acres affected, if applicable. **A sediment sampling report will be submitted. An outline for the annual sediment sampling report is provided in Appendix F-3.**

Chapter 10. References

The following references have been added to Chapter 10:

Sonoma County Flood Control and Water Conservation Improvement District. 1965. "Flood" December 1964 – January 1965. Santa Rosa, CA. pp. 20.

Appendices

Appendix B

The Sediment Sampling and Analysis Guidelines included in Appendix B have been significantly updated. Thus, this Addendum includes an entirely new version of the appendix.

Appendix D

Appendix D "Watershed Mitigation Project Descriptions" includes the following revisions to the "Upper Laguna Restoration and Planting Project (2008), with the Cotati Creek Critters (CCC)" project description in Appendix D-3:

> CCC plans to install 1000 plants ~~under 250~~ **in proximity of the 1,500** previously planted trees **and shrubs**. They predict the understory plants will be viably reproducing and spreading by seed, roots, and rhizomes within one to two years. The project also includes treating eroded banks and bare soil with a combination of ~~willow sprigging,~~ erosion control fabrics~~,~~ and straw mulch.

The *Planting Diagram for Laguna Channel Revegetation Project* has been removed.

Appendix E

A vegetation management plan is now included in Appendix E. The vegetation management plan provides detailed information on the approach, rationale, implementation, mitigation, monitoring, and reporting actions for vegetation management activities conducted under the SMP.

Appendix F

Annual Notification outlines are now included in Appendix F. Appendix F includes three notification outlines: F-1, Outline for Annual Notification; F-2, Outline for Annual Post-Maintenance Summary; and F-3, Outline for Sediment Sampling Summary. These outlines are representative of the information that will be provided annually to all regulatory agencies, as appropriate.

Appendix B

SEDIMENT SAMPLING AND ANALYSIS GUIDELINES

Appendix E

VEGETATION MANAGEMENT PLAN

Appendix E: Vegetation Management Plan

1. Introduction

This vegetation management plan describes the Stream Maintenance Program's (SMP's) approach and procedures for conducting vegetation management activities. This plan summarizes the planning steps taken prior to conducting vegetation maintenance work to ensure that the work is effective and also avoids, minimizes, and compensates for potential environmental impacts. This plan also describes how vegetation management activities are implemented and is consistent with the descriptions provided in the main body of the SMP Manual. The purpose of this plan is to provide a comprehensive and single summary of the SMP's vegetation management activities. This plan reflects the information presented in Chapters 5, 6, 7, 8, and 9 of the SMP Manual, as well as additional details describing the rationale and basis for vegetation management decisions and actions.

The vegetation management plan is divided into the following sections:

Section 1: Introduction

Section 2: Vegetation management planning approach and goals;

Section 3: Vegetation classes for management planning;

Section 4: Vegetation assessment and maintenance decision making

Section 5: Description of vegetation maintenance activities

Section 6: Impact reduction and best management practices (BMPs)

Section 7: Mitigation for vegetation management activities

Section 8: Annual work cycle and reporting

Section 9: References

2. Vegetation Management Planning Approach and Goals

The planning approach for SMP activities, including vegetation management actions, is a five-step process that begins with large scale considerations and then focuses down to details informing maintenance at a specific project site. This planning approach was developed to avoid and minimize environmental impacts and to prioritize activities in a consistent manner. The five planning steps occur as follows:

1. **Maintenance Principles:** provide overarching guidance to avoid and minimize potential impacts while also prioritizing and potentially limiting maintenance activities;
2. **Framing Considerations:** provide more specific management and resource questions related to vegetation management activities;
3. **Goals:** describe desired outcomes for vegetation management activities;

4. **Vegetation Assessments:** are conducted to evaluate existing vegetation conditions, their functions, and to also assess the maintenance need; and
5. **Triggers**: are used to clearly define the need and timing for vegetation management activities.

These planning steps are described below in the remainder of Section 2 and in Sections 3 and 4.

2.1 Maintenance Principles

The following Maintenance Principles were develop to guide the SMP and ensure that maintenance activities are conducted in such a way to avoid and minimize potential impacts from routine activities:

1. No Unnecessary Intervention
2. Understand the System and its Processes
3. Consider Adjacent Land Uses
4. Apply System Understanding to Maintenance Activities
5. Manage for Incremental Ecologic Improvement (Lift)
6. Integrate Maintenance Activities Towards Sustainability (reduced frequency of maintenance)

These principles are described in detail in the SMP Manual Chapter 5 and help guide the decision making process and avoid unnecessary removal.

2.2 Framing Considerations for Vegetation Management Activities

Five key considerations frame the context and approach for vegetation management activities. Recognizing these framing concepts helps provide consistency and guide each maintenance project.

- **Vegetation along flood control channels managed to accommodate natural recruitment and focused planting forms two discrete zones that should be managed separately but in parallel.** These are the toe and instream versus the side and upper bank zones. Toe and instream areas are managed to allow inundation tolerant species (alders (*Alnus* spp.), willows (*Salix* spp.), maples (*Acer macrophyllum*) and ash (*Fraxinus* spp.)) to naturally recruit and are augmented with additional plantings. This lower zone establishes and matures much more rapidly than the slower growing species that establish or are planted along the side and upper bank. Along many of the Agency's engineered channels this zone is in a early to middle seral stage (less than 10 -20 years old). Often flooding, scouring, and bank failures in the channel work to keep this zone in an early to middle seral stage. These species are also shorter lived, more exposed to stream changing flood events, and more likely to vary in overall cover, density, and species makeup than upper bank species. Species growing higher on the channels represent the longer term more permanent makeup of the riparian corridor and include the oaks (Q*uercus* spp.), poplars (*Populus* spp.), boxelders (*Acer negundo*), and buckeye (*Aesculus californica*). Late seral

stage for this zone is anticipated to change little in terms of cover, density and species makeup, but takes decades to establish and mature, but will provide the densest stable riparian canopy over time.

- **Riparian vegetation benefits instream habitat by shading the channel, drawing subsurface water up, lowering water temperatures, limiting in-channel emergent vegetation, and providing LWD.** Cooler water temperatures are preferable for cold water species, such as salmonids (NMFS 2008) and don't exclude native warm water fish assemblages which are also an important component of regional low gradient streams. Deeply rooted riparian vegetation pulls subsurface moisture up via the transpirational stream, in some cases depending on depth to groundwater and geologic constraints, keeping water in the channel. It also provides cover, forage, and breeding habitat for a variety of birds and other wildlife that use the streambank area. Shading provided by a mature riparian canopy can also hinder the growth of instream emergent vegetation, which in turn reduces the need for future instream vegetation management.
- **Invasive species may limit the success of native, slower-growing vegetation and can degrade habitat quality over time.** Because many invasive species (both native and non-native) grow quickly, they often out-compete non-invasive more desirable native species. This may occur to the point that entire channels are filled with fast-growing, invasive vegetation that further degrades habitat and water quality.
- **Excessive vegetation growth can decrease a channel's flood conveyance capacity.** This occurs in three ways. First, excess growth of instream and bank vegetation can obstruct the channel by reducing its cross sectional area and conveyance capacity of the floodway as a whole. Second, vegetation increases bed and bank friction or hydraulic roughness, resulting in bank erosion, energy losses, turbulence, decreased capacity, and leads to an increased threat of flooding. Third, increases in hydraulic roughness can encourage further sediment deposition as flow velocities slow. This effect is illustrated in photos in Figure 6-12 and 6-14 through 6-16 in the SMP Manual.
- **Riparian vegetation provides physical stabilization for bank and terrace surfaces through the growth of root structure.** Densly rooted vegetation in suitable locations provides appropriate boundary conditions (provide hard and soft structure that affects stream form) that further geomorphic equilibrium and channel stability. In addition to the structural benefits provided by roots, vegetation also contributes to bank stability by helping remove excess soil moisture, which can contribute to slumping and other types of bank failure. This represents an important nexus between vegetation management, stream function, and bank stabilization efforts.
- **Establishing adequate flood protection may require aggressive vegetation management.** In areas where creeks are closely bordered by developed land uses or agriculture, or have severely reduced floodplains, the increased risk of flooding created by excess vegetation growth may be unacceptable, and it will be important to identify the threshold at which vegetation must be managed in each reach to provide adequate flood protection and ensure the safety of the community.

2.3 Vegetation Management Goals

Consistent with the framing considerations presented above, the primary goals of vegetation management are to:

- ensure that adequate flood conveyance capacity is maintained; and to
- develop a mature and complex riparian canopy and corridor comprised of native species that armors the side banks, stabilizes boundary conditions, offers habitat functions and beneficial uses including creek shading, provides aesthetic value, and reduces the need for future understory maintenance.

In most channels, meeting these goals will require balancing flood protection needs and habitat protection or enhancement opportunities. Although it is possible to identify an "ideal" or "target" vegetation configuration, it may not be possible to achieve this condition in all reaches of all channels. As described in SMP Manual Chapter 3 *Environmental Setting*, a range of channel vegetation conditions is observed in the SMP Program Area. SMP Manual Figure 5-1 synthesizes this range of conditions into a spectrum of channel characteristics, each with varying ecologic and habitat quality. Generally vegetation is managed toward the ideal spacing and arrangement of trees, shrubs, grasses and sedges as presented in Figures 8-2 and 8-3 of the SMP Manual.

Within this context and the goals stated above, vegetation will be managed for the following outcomes as appropriate for reach specific conditions:

- to develop riparian woodland/forest canopy closure;
- to encourage native vegetation and discourage non-native vegetation, particularly invasive species;
- to control emergent vegetation in the channel;
- to establish optimal boundary conditions that promote stream form and pattern stability
- to minimize flow obstructions; and
- to improve bank stability.

3. Vegetation Classes to Guide Management Actions

Three primary vegetation classes are identified in the SMP to help attain program goals, guide management activities, and provide appropriate mitigation (Section 7 below). These three vegetation classes include:

Class 1: *Native Riparian Vegetation:* Class 1 native vegetation (except for those species listed under Class 2, below) shall be retained wherever possible, and pruned or thinned where necessary so as to foster the development of a riparian canopy. Examples of native riparian vegetation include: white alder (*Alnus rhombifolia*), box elder (*Acer negundo*), big leaf maple (*Acer macrophyllum*), Oregon ash (*Fraxinus latifolia*), red willow (*Salix laevigata*), Pacific willow (*Salix lucida lasiandra*), Fremont's poplar (*Populus fremontii*), and oaks (*Quercus* spp.) as appropriate. Additionally there are a number of native understory riparian shrubs suitable for flood control channels (depending on location) including: American dogwood (*Cornus sericea*),

Western spicebush (*Calycanthus occidentalis*), elderberry (*Sambucus* spp.), snowberry (*Symphoricarpos* spp.), hazelnut (*Corylus cornuta californica*), and a number of others. Most of these shrub and tree species are included in the SMP plant palette included in Figures 8-2 and 8-3 of the SMP Manual. The removal of such native vegetation will be avoided to the greatest extent possible.

Class 2: *Problematic In-Channel Vegetation:* Class 2 vegetation is identified as particularly problematic for flood management purposes. These species inhibit and prevent the establishment of a native riparian canopy and limit the beneficial uses that can be achieved in the riparian zone. Impact avoidance and minimization approaches applied for the removal and thinning of these species is described in the SMP Manual. This class of vegetation includes the following species:

1. Cattails (*Typha* sp.)
2. Himalaya blackberry (*Rubus discolor*)
3. Arroyo willow (*Salix lasiolepis*)
4. Giant reed (*Arundo donax*)
5. Pampas grass (*Cotaderia selloana*, and *C. jubata*)
6. Indian bean (*Catalpa bignoniodes*)
7. Privet (*Ligustrum* sp.)
8. English and Algerian ivy (*Hedera helix, H. canariensis*)
9. Periwinkle (*Vinca major*.)
10. Red clusterberry (*Contoneaster* sp.)
11. Brooms (*Spartium* and *Genista* spp.)
12. Sweet fennel (*Foeniculum vulgare*)
13. Harding grass (*Phalaris aquatica*)
14. Water primrose (*Ludwigia peploides montevidensis*)
15. Eucalyptus (*Eucalyptus* ssp.)
16. Tree of heaven (*Ailanthus altissima*)
17. Acacia (*Acacia* ssp.)
18. White poplar (*Populus alba*)
19. Lombardy poplar (*Populous nigra 'Italicia'*)
20. Tamarisk (Tamarix spp.)
21. Rattlebox (*Sesbania punicea)*

Class 3: *Other Non Native Vegetation:* Class 3 vegetation consists of non-native species that are not listed under Class 2, above. Examples of Class 3 vegetation include various landscaping species that are establishing in the flood control channels but are recognized as providing beneficial uses similar to their native counterparts. These species include: a variety of ash species (Modesto ash (*Fraxinus velutina*), green ash (*F. pennsylvanica*), raywood ash (*F. oxycarpa*), and evergreen ash (*F. uhdei*), London plane tree (*Platanus acerifolia*), and Carolina poplar (*Populus canadensis*).

4. Vegetation Assessment and Maintenance Prioritization and Decision Process

4.1 Vegetation Assessment

Understanding existing vegetation conditions in the flood control channels for which SCWA has maintenance responsibilities provides the basis for maintenance prioritization and decision making. SCWA undertakes a complete assessment of vegetation conditions in the program flood control channels annually, typically in the spring season. In order to evaluate the need to conduct vegetation maintenance, an assessment of the stream channels must be conducted. The following questions guide the assessment process. This information is recorded in the data forms for the annual vegetation assessment.

A. *Understand channel hydrologic and geomorphic context and setting:*

1) What geomorphic processes are dominant in the channel? Is the channel generally erosional or depositional? In general, more roughness (vegetation) is allowed in erosional reaches than depositional reaches.

2) What is the available conveyance capacity? Consider field evidence as well as hydraulic/modeling studies (if available). Evaluate elevation of debris drift lines, deposited sediment, and consider elevation and risk of bankfull flows.

3) Estimate existing channel roughness and vegetation condition based on annual inspections.

B. *Assess specific in-channel vegetation conditions:*

1) Identify the in-channel and bank vegetation types.

2) Evaluate the relative composition and how much of the channel vegetation is native (and riparian suitable) versus non-native and problematic invasive species.

3) Assess channel reach for evidence of vegetation obstructing flows, accumulating other debris, deflecting flows and causing bank scouring, or directing flows toward other infrastructure, toward banks, or causing other flow related issues. Excessive bank scour is considered when more than 1 ft. of bank is actively eroded in the lateral dimension.

4) Consider the ecology and functions of the existing channel vegetation. Is the existing vegetation providing nesting, cover, or other supportive functions for specific species or their habitats? Is the existing vegetation providing root wads/mass for overhanging banks? Is the existing vegetation providing significant shading? Is the existing vegetation weedy and capable of suppressing native species establishment.

   i. Significant shading is considered when a tree provides important shade functions (i.e., shading over pools) and is likely the only tree in the area providing shade.

ii. Consider the overall shade provided by existing vegetation – and if that shade is provided by the vegetation along the entire bank slope, just the upper bank, or just the lower bank?

iii. Consider what would be the anticipated cover and growth habitat when the existing vegetation continues to mature. How would this trajectory affect the overall riparian ecology (beneficial or detrimental)?

4.2 Vegetation Management Triggers

During the vegetation assessment process, the SCWA maintenance manager also evaluates the channel vegetation conditions for specific conditions which would trigger or require vegetation management activities. In general, vegetation management is appropriate when any of the following conditions occur:

- Vegetation growth is significantly causing bank scour or decreasing flood conveyance capacity, particularly where infrastructure or adjacent properties are at risk;
- Invasive non-native plants are reducing the success of native vegetation recruitment; or
- Vegetation management offers good opportunities to improve habitat value for fish and wildlife.

These triggers are evaluated in the field by the SCWA maintenance manager or trained personnel whom have experience with regional vegetation and wetland ecology. Vegetation management actions which are triggered through the assessment process include removal, thinning, and preservation of vegetation. The decision to remove, thin, or preserve individual trees will be made in the field by SMP field staff familiar with regional vegetation and wetland ecology. The decision making process and rationale to preserve, remove, or thin vegetation is described below.

4.3 Rationale and Decision Making for Tree Removal and Thinning

Mature healthy trees

Mature, healthy, native trees are generally only removed if channel capacity is significantly limited or if the tree is creating unacceptably high hydraulic roughness in the channel and the situation cannot be rectified though limbing or pruning.

Sick, dying, or dead mature trees

Sick, dying, or dead mature trees may be removed if they are determined to be reducing channel capacity, increasing roughness, have the likely potential of falling into the channel and increasing the flood hazard, or presenting a potential safety hazard to recreational users (in areas where the access road is accessible to the public) or adjacent structures. The determination of tree health and likelihood of being a hazard to people or channel capacity is made on site by appropriate environmental staff (arborist or biologist). Snags will be left in place to provide habitat for birds and small mammals if it is determined by staff that they do not otherwise pose a flood or safety hazard. Sick, dying, or dead trees and snags may also be pruned so that the flood and/or safety hazard is reduced and so that at least a portion of the tree may remain in place to provide habitat.

This approach has been successfully used by cities including Seattle, WA and Victoria, B.C. (Williams 2001).

Factors for tree removal and thinning

Removal involves considering the tree in the context of it's setting including a functional evaluation of the current and future ecological role being provided, the role that should be provided in this situation, what could or should be used to replace it or not, and how does it fit with the long term vision for the channel vegetation and morphology. Consideration for individual tree removal or thinning will be based on several factors including:

- What is the type and age of the tree? Are there a lot of these trees already in the channel reach? Are there better trees to preserve? Are there any natives nearby that could replace the function of the tree in question in the next year?
- What is the degree of blockage across the channel and where is the tree located in the channel?
- Can the individual tree be pruned or thinned (before consideration of removal) to provide the necessary conveyance capacity?
- Does the tree under consideration provide significant shade or other habitat benefits?
- Does the tree under question provide longer-term canopy development or riparian corridor benefits?

The rationale to either thin, prune, or remove trees are based on addressing these questions above. Answering these questions requires the oversight and guidance of a biologist or arborist that is familiar with the vegetation in the area and knowledgeable of channel botanical conditions.

Managing trees for their role/function in the channel

In general, trees are managed according to their location and spacing in the channel. The following bullets provide a summary of the decision process in evaluating tree removal, thinning, and preservation for specific locations across the channel cross-section.

1) **Upper bank:** generally native trees that are located on the upper side banks are retained unless they are a fall or safety hazard, have already fallen, or present an access issue.

2) **Mid bank (side bank):** generally native trees and shrubs that are located on the side banks are retained unless they are causing significant debris accumulation, causing bank scour, presenting a fall hazard, or are limiting access. Often native shrubs naturally recruited are retained in this area but are not actively planted.

3) **Lower bank (toe of bank):** generally native trees located at the toe and on the side bank are retained unless the following conditions occur:

    a) presence of Arroyo willow with a very horizontal growth habit (cannot be pruned to grow upright);

    b) there is other vegetation with horizontal or flow blocking growth and cannot be pruned to facilitate flows;

c) vegetation is causing significant debris accumulation (whereby a debris pile deeper than 2 ft or covering more than 100 sq. ft. of lower bank or instream channel area is covered);

d) vegetation is causing bank scour; or

e) vegetation is presenting a considerable fall hazard.

4) **Instream:** vegetation is targeted for thinning and removal when:

- an aggressive stand of Arroyo willow is developing and significantly constricting channel capacity;
- instream vegetation is demonstrated to catch significant debris; or
- Instream vegetation is it causing excessive bank scour.

Exceptions to this thinning and removal approach include:

- when in channel trees show no evidence of bank scour and minimal debris accumulation.
- when single trunk or prunable red and Pacific willows, alder, Fremont poplar, bigleaf maple, and Oregon ash are observed. These species are generally retained in the channel, especially if they provide significant shade or are developing instream habitat that is not destabilizing the tree itself or the side bank.
- when the channel has enough capacity to allow trees well spaced (on approximately 30 foot centers) and upright to establish and mature in the channel.

Tree relocation opportunities

When a native tree requires removal, it will be evaluated for potential use in another location within the channel or at a different site. Trees that may be desirable include those with a single trunk that provide canopy such as alders, red willow, or Pacific willow. If it is determined that the tree may be used in another location where it would not present issues for channel flow or roughness, the tree will be removed with root structure intact, pruned to compensate for root damage, and immediately planted and watered. The vacated root structure site will be managed as a bank stabilization project and treated with bioengineered methods as described in SMP Manual Chapter 6, Section 6.4. Large red or yellow willows that require removal may also be cut into large sprigs and planted on the toe or mid-bank with the use of an auger.

Large woody debris removal and preservation

The flood control channels of the program area will also be assessed for the presence of large woody debris (LWD). Prior to conducting sediment removal activities, an effort will be taken to maintain and not remove large woody debris (LWD) that provides channel stability, anchors in-channel bars, or provides other habitat benefits. LWD, including tree stumps, will be evaluated for the opportunity to leave such material in place. Key determinants include whether the LWD is deflecting flow toward banks and the proximity to a channel crossing or other facility. While the habitat benefits of LWD are sought in the program area, these benefits will be evaluated in balance of the potential flooding or erosion effects, or threats to infrastructure downstream due to the presence of LWD. If LWD would have the potential to adversely affect channel banks or conveyance capacity, the LWD would be removed from the channel. The preference is to relocate

the LWD to another location that would not affect banks or conveyance capacity and provide in-channel habitat for aquatic species. The LWD would be anchored it in place and monitored annually. If no suitable locations are appropriate for LWD relocation, the piece will be chipped with other vegetation requiring removal and used as mulch.

5. Description of Vegetation Management Activities

Vegetation management refers to the trimming and removal of potentially problematic vegetation in engineered channels and other constructed facilities. The vegetation assessment process and the decision making process used to evaluate the need for removal or thinning are described above. In this section the techniques and procedures for vegetation maintenance are described, though some discussion of the assessment and selection process may also be covered.

Vegetation management activities also include the planting of new trees in engineered channels at the top-of-bank and just above the toe-of-slope. Vegetation management does not include any ground-disturbing activities except as described below.

Vegetation management activities described in this section includes:

5.1 General Information Related to Vegetation Work

5.2 Tree Pruning

5.3 Willow Pruning and Removal

5.4 Removal of Exotic Trees

5.5 Removal of Exotic Bushes

5.6 Removal of Exotic Aquatic Plants

5.7 Nursery Stock Tree Planting

5.8 Mowing Activities

Vegetation management at other non-channel facilities, including in-channel engineered structures, reservoirs, and sediment basins, is described in the SMP Manual Chapter 6, Section 6.5.3.

5.1 General Information Related to Vegetation Work

Non ground breaking vegetation work on the upper banks of stream channels may be conducted year round. If the channel is dry, and with notification and approval by the CDFG, non ground-disturbing vegetation thinning and pruning work may be conducted in the channel zone beyond the primary maintenance work window of June 15 to October 31. More specifically, vegetation management occurs on different schedules depending on the type of thinning or removal being conducted. Vegetation management activities and the general period of implementation are shown below.

- Routine vegetation pruning and removal (trees, Ludwigia, cattails, blackberries) on the lower bank and in channel bed – June 15th to October 31st (with the potential for an extension dependent upon dry conditions and agency notification and approval).

- Tree planting, relocating, and/or transplanting – all year
- Upper bank planting, pruning, and removal, access road and v-ditch clearing – all year
- Nursery stock tree planting – December 1st to May 31st
- Mowing (access roads and dam faces) – March 1st to August 31st
- Access road herbicide spraying – April 1st to May 31st

Vegetation management and removal activities are relatively consistent from year to year, though locations change. Years that experience flooding or strong winds may require additional work to clear downed trees or vegetation debris. Conversely, vegetation management needs following dry or drought years are generally reduced. Some channels may require annual vegetation management while others do not. This largely depends on the type of vegetation in the channel. For example, channels characterized by early seral cattails or young willows may need annual pruning while channels with a later seral mature riparian canopy (especially on the upper bank) generally require less vegetation thinning and removal to maintain flow capacity.

Vegetation management techniques include hand removal using small tools and hand-held equipment, mechanical removal using heavy equipment, and spot chemical control. Heavy equipment used for vegetation removal may include a flail mower attachment on an excavator or Bobcat® that is used to cut cattails or blackberries, or a backhoe or rubber-tracked excavator that is used for removing material from the channel.

Herbicides are used sparingly, mostly for persistent blackberry patches or applied to cut arroyo willow stumps or other exotic woody species targeted for removal following functional evaluation. . In these cases, herbicides are applied carefully with a hand applicator. For context, only 30-40 gallons of herbicides are used annually under the SMP for in-channel vegetation treatment. These are used sparingly for the hand sprayer application to blackberries (Section 5.5 below) and hand painted application to cut arroyo willows (Section 5.3 below).

Vegetation management activities vary depending on the type of facility involved. While the methods described here are the common practices of SCWA, maintenance techniques may shift over time and by location depending on site constraints and new technologies. The following sections describe more specific aspects of vegetation management activities.

5.2 Tree Pruning

Maintenance activities related to tree pruning focus on selectively thinning brush and multi-trunked trees. The preferred maintenance approach is to prune lower limbs up to the top of the channel banks, if possible. Multi-stemmed trees are pruned down to a single trunk and lower limbs are removed up to the top of the channel banks, if possible. The goal of this maintenance approach is to develop a native canopy over the channel but not to increase channel roughness such that the flood hazard is increased.

In the top-of-bank area outside the stream channel (including the access road and adjacent above channel area), healthy mature native trees are only trimmed if a limb is blocking the access road, hanging over a fence into a private yard, appears unbalanced or broken, or to maintain appropriate

spacing for access (targeted ideal spacing). Enough space will be maintained along the access road to allow maintenance and emergency vehicles.

Tree pruning considers the extent of local riparian canopy and vegetation in general. For example, if the active channel is fully shaded by early seral arroyo willow, the complete removal of which would expose the channel to direct sunlight, pruning and thinning techniques, such as allowing a narrow strip of vegetation to persist on the sides of the banks to shade the channel, will be used. This process is repeated for each tree assessed for removal. For example, if a privet is providing the only shade and vertical element along the channel it will be retained until such time as a replacement has developed to replace and improve the ecologic function. In other words, vegetation removal may be phased to reduce potential impacts of reducing channel shade. The reach will also be identified for planting of more desirable trees the following planting season.

Pruning on the bank side slopes usually requires careful hand clearing using chainsaws, pole saws, pruners, and loppers. Hand clearing may also be used at the top-of-bank to remove hazard trees (e.g., snags, dying or dead trees, broken branches) from areas with high public use or that are adjacent to residences or other structures.

Pruning and removal of arroyo willows is the major activity related to vegetation management. This topic is addressed in the section below.

5.3 Willow Pruning and Removal

Arroyo willows are the most prominent vegetation maintenance issue in the SMP due to their rapid growth (over 1.5 inches in diameter per year) and the bushy structure of the plant which is effective at slowing flows and trapping debris. White alder, big leaf maple, Oregon ash, red and Pacific willow species are better suited to flood control channels because they generally form a single main trunk that can be limbed up and pruned so as not to extensively block the channel cross section. The rapid growth, multi-stemmed base, and bushy nature of arroyo willow generally prevent this type of management approach, though in some cases (especially where arroyo willow is the dominant tree along a stretch of channel), these trees are being managed toward a more upright stature. In general, arroyo willow pruning to form an upright tree requires considerably more management effort since the form of the tree is not naturally upright and the attempt is working against the central tendency of the tree. Species like red, yellow, and Pacific willow are retained where they do not present issues for flows or roughness, or where possible, are transplanted when feasible.

Willows are perhaps the most common channel vegetation type throughout the program area. Willows generally grow from the lower bank slope (near or at the toe-of-slope) and can grow into and across the channel bed quickly, often within a single season. SCWA generally conducts willow removal from June 15th to October 31st.

Arroyo willows will be removed wherever they are significantly impeding flows and reducing the channel conveyance capacity. If arroyo willows are not removed (in cases where the canopy is needed and channel integrity is not at risk), they will be pruned to minimize their ability to catch debris and impede the flow of water. Red and yellow willows will generally be retained, but be pruned to reduce the number of branches and trunks below the top of the channel banks.

Willow removal generally requires hand clearing using chainsaws, pole saws, pruners, and loppers. Willow stumps may be hand treated with an herbicide such as Aqua Master® (formerly known as Rodeo®) to prevent future growth (see SMP Manual Chapter 6, Section 6.5.5 for additional detail). Cut vegetation must then be removed from the channel. This is achieved using a variety of methods including hand removal (passing branches up the slope), attaching a line to the cut limbs and pulling them up the slope with the aid of an excavator arm, using an excavator reaching into the channel from top-of-bank, using a skid-steer with a grapple bucket, by angled pulls using a line and two vehicles, or using a winch on a truck or tractor.

In cases where arroyo willow root wads protrude from the channel bottom after limbs have been pruned, these are generally left in place but depending on the channel size and geometry, the root wad may require removal to reduce roughness on the channel bed. If necessary, removal of a root wad generally requires the use of heavy equipment such as an excavator. Arroyo willow removal may also be combined with sediment removal. In such cases, the channel is cleared of both sediment and arroyo willow roots in order to increase channel capacity and to decrease the rate of return of arroyo willows (see SMP Manual Chapter 6, Section 6.3.2).

5.4 Removal of Exotic Trees

Non-native, invasive trees (e.g., tree of heaven, acacia, white poplar Lombardy poplar, eucalyptus, Indian bean and London plane tree may be cleared from the top-of-bank area or within the channel.

Non-native, mature trees that provide canopy or may provide habitat to nesting birds or raptors, such as eucalyptus, may be selectively removed if other native mature trees are present nearby and the loss in canopy and/or habitat is not considerable. If these trees are the only mature trees along the channel and provide the only canopy and habit in the area, they will be left in place until such a time as a native canopy is developed.

5.5 Removal of Exotic Bushes

Non-native, invasive bushes (e.g., blackberry, privet, brooms, red clusterberry, and ivy), may be cleared from the top-of-bank area or within the channel.

Blackberries are commonly found in reaches with little to no riparian canopy. This species generally grows from the bank slope, particularly near (or at) the toe-of-slope and can grow into and across the channel bed quickly, often within a single season. Blackberries are generally removed using a bladed weed-eater, or an excavator or Bobcat® with a flail mower attachment. Stalks are then raked together, picked up, and removed from the site using a dump truck. If a technique is used such as a flail mower or other violent chopping machine, efforts to remove all slash, sawdust, cuttings, etc. will be taken to leave the site free of significant quantities of vegetative debris. Remaining cut stalks are then sprayed with an herbicide (generally AquaMaster®) using a small backpack sprayer to control re-growth. The development of a canopy encouraged by tree planting also helps to reduce the re-growth of blackberries.

Other invasive bush species are removed using similar methods as for blackberries. However, herbicides are not applied on other species.

5.6 Removal of Exotic Aquatic Plants

The majority of vegetation removed from the channel bed portions of maintenance sites are cattails and water primrose (*Ludwigia*).

Cattails are generally removed using bladed weed-eaters. In areas where mature trees do not prohibit access, heavy equipment, such as an excavator with a flail mover extension positioned at top-of-bank, may be used. This approach to cattail management is a shorter-term solution as cattails readily grow back.

Cattail removal may also be combined with sediment removal. In such cases, the channel is cleared of both sediment and cattails using methods described in SMP Manual Chapter 6, Section 6.3.2 in order to increase channel capacity. This approach includes removal of cattail roots along with the sediment and has proven successful in reducing in-channel cattail re-growth for several years. Over the long-term, cattail growth is further discouraged by the development of a canopy over the channel, strategic planting of cattail competitors, and the establishment of a low-flow channel.

Water primrose (*Ludwigia peploides montevidensis*) is an invasive, exotic, aquatic weed found in apparently increasing occurrence on the west coast as well as nationally. The species occurs in the Russian River as well as in the Laguna de Santa Rosa (Laguna) and in tributaries to the Laguna system. This plant can completely fill channels and accelerate sediment deposition (SMP Manual Figure 6-16). However, Ludwigia also provides some beneficial function similar to the native species (*Ludwigia peploides peploides*) including, toe stabilization, nutrient exchange and uptake, and cover for young fish and amphibians. While these functions may not be enough to support the presence in Agency flood control channels, it does provide sound reasoning for leaving it in a channel with no other emergent cover.

Ludwigia growth and channel blockages have been observed in some of the low-lying flood control channels of the Program Area draining to the Laguna de Santa Rosa west of Highway 101. Generally, in most SCWA flood control channels streamflow rises above the Ludwigia patches and is not necessarily problematic in conveying flood flows. SCWA anticipates that the need to manage Ludwigia and the appropriate methodology will be developed during the ongoing implementation of the SMP. Ludwigia removal activities will be conducted between June 15th and October 31st.

Mechanical removal will be the primary method of control for Ludwigia and will generally be conducted using a long-reach excavator from maintenance roads adjacent to the project site channel. Where the channel is too wide, the excavator may occasionally travel partially down the bank in areas that will not impact existing native and riparian vegetation. The excavator will work from the mid-bank position, thus reducing the need for multiple trips along the bank slope by smaller equipment. Aquatic harvesters may be used to remove vegetation from the main Laguna channel.

5.7 Nursery Stock Tree Planting

Planting of nursery stock trees typically occurs from December 1st to May 31st. This is timed during the typically wetter months of the year so that newly planted trees have the opportunity to establish before the hotter and drier summer months. Planted nursery stock trees are generally

planted as 1 to 15 gallon container trees. Once planted, trees are monitored and watered by hand during the dry season as necessary for approximately 2 to 3 years or until established. Trees planted on the upper bank require irrigation longer than those located closer to the toe-of-slope. Some trees planted near the toe-of-slope may not require irrigation (although all planted trees will be monitored for watering needs).

Trees are planted just up from the toe-of-slope and along the top of the bank slope. Trees planted along the top-of-bank may include big leaf maple, oaks, box elder, buckeye, and Fremont poplar. Trees planted at the ordinary high water mark, slightly above the toe-of-slope may include alders, ash, maples, and red or yellow willows. Trees will be spaced appropriately to allow room for a mature tree canopy to develop (typically 30 ft. on center) and thinned later as necessary to maximize canopy yet retain channel capacity.

The SMP Manual includes recommended plant palettes according to channel geomorphic form. These are shown in SMP Manual Table 8-3 and Figures 8-2 and 8-3. All listed plants are native riparian species found in Sonoma County waterways. Not all species will be equally appropriate for all sites. The planting list for any given site should be developed in consideration of the current and known historic native flora of the site and the local subwatershed area. Planting is expected to improve boundary conditions that set basic stream dimension and function, thereby improving stream stability.

5.8 Mowing

Grasses in the top-of-bank area are mowed up to three times annually using a flail mower where space allows or with hand-held tools such as a weed-whacker where a flail mower is not practical. If a flail mower or other violent chopping machine is used, then all slash, sawdust, cuttings, will be left in place as mulch (except in the active channel).

6. Impact Reduction, Minimization Measures, and Best Management Practices (BMPs)

SMP Manual Table 7-1 includes three specific BMPs to avoid or minimize potential impacts from vegetation management activities. BMP measure VEG-1 *Removal of Existing Vegetation* requires preservation of as much existing vegetation as possible, particularly for native species, and fostering a balance between habitat and flood conveyance. To prevent unintended damage to existing vegetation, setback areas will be flagged and hand pruning and clearing will be implemented as possible to reduce impacts from machinery. BMP measure VEG-2 *Use of Herbicides* will ensure the use and handling of herbicides for maintenance activities is consistent with federal, state, and local regulations. BMP measure VEG-3 *Planting and Revegetation after Soil Disturbance* ensures that work sites are properly replanted and monitored for successful revegetation. The complete description of these measures is provided below.

BMP ID	Name	BMP
VEG-1	Removal of Existing Vegetation	1. Vegetation pruning and removal activities will be conducted under the guidance of a staff biologist or certified arborist. For tree relocation activities, a botanist, certified arborist, or other vegetation specialist will be on site to help direct maintenance activities and to consult if questions and/or issues arise. 2. Only vegetation that is noxious, invasive, hazardous, or could obstruct channel flows will be removed. Herbaceous layers that provide erosion protection and habitat value will be left in place. Invasive plant species that inhibit the health and/or growth of native riparian trees will be targeted for removal. 3. Where a choice between species that may be removed to maintain flood conveyance is feasible, slower-growing species such as oaks (*Quercus* spp.) that develop large canopies will be preferentially preserved, because these species take longer to establish, and provide essential nesting habitat for cavity nesters and food sources for a variety of resident and migratory animals and birds. Faster-growing species such as alders (*Alnus* spp.) and cottonwoods (*Populus* spp.) are the second priority for preservation; these single-trunked species offer the benefit of improved flood conveyance and reduced roughness by comparison with multi-trunked species. 4. Vegetation will be removed and/or pruned in such a manner that channel roughness is reduced while allowing the maximum amount of vegetation to remain in place. Trees will be trimmed or pruned to reduce impedance of flood flows while allowing the canopy to develop. Specifics for each site will differ, but typical options include limbing up to remove lower branches that have potential to interfere with flood flows, and pruning into a "fan" roughly parallel to flow direction. In areas where extensive vegetation removal is desirable to maintain flood flow capacity, *phasing of remov*al shall be considered so that some vegetation may remain in place to provide habitat to birds. 5. Vegetation management will emphasize the preservation of large

		mature trees that provide well developed overstory for bird habitat, canopy closure for stream shading, and add vertical complexity to the riparian corridor. Vegetation management will be conducted in such a manner that maximizes shading over the active channel. Larger trees will be retained on both sides of north-south flowing streams and on the south side of east-west flowing streams. Where vegetation is removed from the active channel, removal will target nonnative species and removal of native species that are stiff and/or multi-trunked such as arroyo willow (*Salix lasiolepis*). Trees will never be topped as this encourages shrubby growth and weak branch attachments 6. Large woody debris, stumps, or root wads that are fully or partially buried and do not present a flood hazard shall be allowed to remain in place to provide habitat and to maintain bank stability. 7. If vegetation requires removal for access to project site, non-native species and/or quick growing species shall be targeted first for removal. Removal of native, mature trees will be avoided whenever possible. 8. To the extent feasible, removed native vegetation shall be saved to replant after maintenance or plant in other nearby sites. This includes the reuse of mulch and willow sprigs where possible.
VEG-2	Use of Herbicides	1. All herbicide use shall be consistent with all Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) label instructions and any use conditions issued by the Sonoma County Agricultural Commissioner. 2. Herbicide use will be restricted to the minimum amount needed to ensure adequate control of vegetation. 3. Application of herbicides to upland areas shall not be made within 72 hours of predicted rainfall. 4. Herbicides will not be directly applied to waters of the U.S., such as for Ludwigia eradication. 5. Herbicides, including AquaMaster© and Renovate©, will not be used within 60 feet of areas identified in the Court-Ordered Stipulated Injunction for the protection of California red-legged frogs. This includes areas in Zones 1A and 3A, as well as Zones 8A and 9A (see SMP Manual Figure 3-29 for detail on where these areas are located.) The Agency will review the details and exceptions in the court order and comply with the herbicide use buffers as appropriate. 6. As required by the Court-Ordered Stipulated Injunction for pesticide use near Pacific salmon-supporting waters in Sonoma County, pesticides specified in the injunction including triclopyr (Renovate©) will not be used within 20 yards of salmon-supporting waters. The Agency will review the details and exceptions in the court order and comply with the herbicide use buffers as appropriate.
VEG-3	Planting and Revegetation After Soil Disturbance	1. Sites where maintenance activities result in exposed soil will be stabilized to prevent erosion and revegetated with native vegetation as soon as feasible after maintenance activities are complete. 2. Revegetation will occur at a ratio of at least 1½: 1 to account for initial mortality of plantings. 3. If soil moisture is deficient, new vegetation will be supplied with

	supplemental water until vegetation is firmly established. 4. To the extent possible, native grass seed will be used when seeding a project site. 5. Erosion control fabric, hydromulch, or other mechanism will be applied as appropriate to provide protection to seeds, hold them in place, and help retain moisture. 6. Revegetation shall be regularly monitored for survival for at five years or until minimum survival/cover is achieved. If invasive species colonize the area, action shall be taken to control their spread; options include hand and mechanical removal and replanting with native species.

7. Mitigation for Vegetation Management Activities

This section includes two aspects of the SMP's mitigation program for vegetation management activities. First, three additional environmental commitments are described which provide additional clarification or assurances to the information described above. Secondly, mitigation requirements for vegetation management activities are described. These requirements were developed in consultation with staff from the California Department of Fish and Game (CDFG) and the North Coast and San Francisco Bay Regional Water Quality Control Boards (RWQCBs).

7.1 Environmental Commitments for Vegetation Management

- SCWA will describe their vegetation management strategies in a *Vegetation Management Plan* that will be included as an appendix to the SMP Manual (this plan). The *Vegetation Management Plan* will include a discussion of relevant impact avoidance and minimization measures undertaken when planning and implementing vegetation management activities. Additionally, the vegetation management plan will describe the criteria and rationale used to identify and determine vegetation management actions and also describe the protocols used to remove or thin bank and in-stream vegetation.

- SCWA shall limit the removal of vegetation to plants and trees that directly affect the hydraulic capacity of the channels as described in the SMP Manual. SCWA will avoid and minimize impacts to the beneficial uses that vegetation provides including cover, shade, and aquatic habitat support.

- The SMP vegetation management approach includes developing and enhancing the riparian canopy throughout the SMP program area. This is achieved through the planting of native and suitable riparian vegetation, and the thinning and selective removal of non-suitable species. If and when vegetation thinning and removal are to occur, such actions should be implemented in a phased approach such that channel areas are not left wholly void of vegetation that provides shade. Mitigation requirements for vegetation removal are described below.

7.2 Mitigation for Vegetation Management

- SCWA shall mitigate for the loss of beneficial uses due to SMP vegetation management activities.
- To help clarify the mitigation requirements for the vegetation removal activities of the SMP, the following three vegetation classes have been identified:

  Class 1: *Native Riparian Vegetation* - native vegetation (except for those species listed under Class 2, below) shall be retained wherever possible, and pruned or thinned where necessary so as to foster the development of a riparian canopy. Examples of native riparian vegetation include: white alder, big leaf maple, Oregon ash, red willow, Pacific willow, Fremont's poplar, and oaks as appropriate. The removal of such native

vegetation will be avoided to the greatest extent possible. Where such native vegetation has to be removed due to flood management considerations (leaning, down, diseased, or compromising channel integrity), the following limitations and mitigation shall apply:

- The removal of native vegetation with any single stem greater than 4" dbh (diameter at breast height) will be monitored, recorded, and mitigated at a 2:1 ratio, whereby 2 trees are replaced for every tree removed. Replacement trees shall include, but not be limited to, suitable riparian species such as alder, willow, Oregon ash, etc.

Class 2: *Problematic In-Channel Vegetation:* These species inhibits and prevent the establishment of a native riparian canopy and limit the beneficial uses that can be achieved in the riparian zone. This class of vegetation includes the following species:

1. Cattails (*Typha* sp.)
2. Himalaya blackberry (*Rubus discolor*)
3. Arroyo willow (*Salix lasiolepis*)
4. Giant reed (*Arundo donax*)
5. Pampas grass (*Cotaderia selloana*, and *C. jubata*)
6. Indian bean (*Catalpa bignoniodes*)
7. Privet (*Ligustrum* sp.)
8. English and Algerian ivy (*Hedera helix, H. canariensis*)
9. Periwinkle (*Vinca major*.)
10. Red clusterberry (*Contoneaster* sp.)
11. Brooms (*Spartium* and *Genista* spp.)
12. Sweet fennel (*Foeniculum vulgare*)
13. Harding grass (*Phalaris aquatica*)
14. Water primrose (*Ludwigia peploides montevidensis*)
15. Eucalyptus (*Eucalyptus* ssp.)
16. Tree of heaven (*Ailanthus altissima*)
17. Acacia (*Acacia* ssp.)
18. White poplar (*Populus alba*)
19. Lombardy poplar (*Populous nigra 'Italicia'*)
20. Tamarisk (Tamarix spp.)
21. Rattlebox (*Sesbania punicea)*

These species are identified as particularly problematic for flood management purposes and because they limit the beneficial uses that can be achieved in the riparian zone. Impact avoidance and minimization approaches applied for the removal and thinning of these species is described in the SMP Manual. Regulatory provisions for the removal and management of these species are included in the Agreement for Routine Maintenance (ARM) with the California Department of Fish and Game (CDFG). The thinning and removal of these species do not require any additional specific mitigation requirements.

Class 3: *Other Non Native Vegetation* Class 3 vegetation consists of non-native species that are not listed under Class 2, above. Examples of Class 3 vegetation include various landscaping species that are establishing in the flood control channels but are recognized as providing beneficial uses similar to their native counterparts. These species include a variety of ash species (Modesto ash (*Fraxinus velutina*), green ash (*F. pennsylvanica*), raywood ash (*F. oxycarpa*), and evergreen ash (*F. uhdei*), London plane tree (*Platanus acerifolia*), and Carolina poplar (*Populus canadensis*). While these species are not as ecologically preferred as Class 1 vegetation, it is acknowledged that they may provide beneficial uses. As such, the removal of Class 3 vegetation with any single stem greater than 4" dbh (diameter at breast height) will be monitored, recorded, and mitigated at a 1.5:1 ratio.

- When replacing Class 1 and Class 3 trees, replacement trees shall consist of native riparian species such as alder, willow, Oregon ash, or other suitable species. The mitigation replacement of trees may either occur at the reach under maintenance or at another suitable SCWA channel reach in need of riparian canopy. The number of removed trees will be reported in the annual summary report of maintenance activities and the replacement of trees as mitigation will be reported through the annual maintenance reports as well. Similar to the requirements for on-site and off-site mitigation and restoration activities, the performance criteria for replacement planting for vegetation mitigation shall be 85% success, and mitigation plantings shall be monitored for 5 years. In addition to overall success, planted trees shall be evaluated for their overall health and vigor.

- The pruning of trees, including native trees, in order to promote a more upright, mature riparian canopy does not require mitigation.

- Grass mowing and shrub thinning activities are not anticipated to adversely affect shade or habitat benefits, and as such, do not require mitigation.

8. Annual Work Cycle and Reporting

The annual work cycle for vegetation management is discussed in Chapter 9 of the SMP Manual. Vegetation management activities shall be notified to the pertinent regulatory agencies overseeing the SMP through an annual notification report. This annual notification will occur in the spring or early summer following the vegetation assessment. The annual notification for vegetation management activities may be included with the annual notification for sediment and bank stabilization activities. Or, it may be submitted as a separate volume depending upon the timing of the annual channel assessments. The vegetation management notification package will include identification of the reaches where vegetation management activities will be conducted, the general type of vegetation to be worked on, and a reference to the standard SMP maintenance activities from Chapter 6 of the SMP Manual.

In the fall, following the season's maintenance activities an annual maintenance report shall be submitted to the pertinent regulatory agencies overseeing the SMP. In the annual summary report, details of the conducted vegetation management activities shall be confirmed. This summary report shall include a brief description of the number, size (dbh), and species of trees removed. This information will also provide the basis for SMP mitigation required for the previously

conducted vegetation management activities. A summary table will be provided which describes the information related to tree removal and the number of replacement trees needed for mitigation. The annual program summary report shall also describe the monitoring status of on-going mitigation activities and include information regarding the monitoring period (following the mitigation), description of current status of the mitigated trees, and a report of their success.

9. References

California Department of Fish and Game (CDFG). 2006. Agreement for Routine Maintenance for the Sonoma County Water Agency (SCWA) Stream Maintenance Program (SMP).

Williams, David B. 2001. Seattle's New-Look Park— keeping dying trees creates habitats for animals. Available: <http://findarticles.com/p/articles/mi_m1016/is_1_107/ai_78399946/print;%20http://www.islandnet.com/beaconhillpark/articles/111_wildlife_trees.htm>. Accessed: December 13, 2007.

Appendix F

OUTLINES FOR ANNUAL REPORTS

Appendix F-1
OUTLINE FOR ANNUAL NOTIFICATION REPORT

1. Cover Letter

- Purpose and need for this year's projects.
- Permitting coordination – reference program permit numbers, agency compliance, etc.
- Reference programmatic guidance provided by SMP Manual (BMPs and impact avoidance measures).
- Schedule field visit.

2. Project List and Locations

A. Project List and Type

- Sediment Management Projects (reach, intermediate, localized)
- Bank Stabilization Projects

B. Project Site Locations General Information

Insert a table listing the following standard information:

- Project Site Name
- Creek
- Tributary to
- SMP Reach name and number
- United States Geological Survey (USGS) Quad, Township, Range, Section
- Latitude and Longitude

C. Project Setting and Resources

- Channel characterization sheets – insert from SMP Manual (Chapter 4) and/or updated sheets
- Results of site surveys for cultural resources
- Results of site surveys for presence of special-status plants

3. Project Activities

The following information summary tables will be provided for the various maintenance projects.

A. Sediment Management Projects

Project Site	Length (linear feet)	Volume Removed (cu. yds.)	Acres Disturbed: Waters of the U.S. (below OHWM)	Acres Disturbed: Temporary fill below OHWM	Acres Disturbed: Waters of the State
Reach Scale					
Project 1					
Project 2					
Intermediate Scale					
Project 3					
Project 4					
Localized Scale					
Project 5					
Project 6					
Project Totals					

B. Bank Stabilization Projects

Project Site	Length (linear feet)	Acres Disturbed: Waters of the U.S. (below OHWM)	Acres Disturbed: Waters of the State (entire project site)	Volume of Fill (cu.yds)	Treatment Approach (SMP Manual Figures 5-5, 5-6, or 5-7)
Example:					
Reach 5	60	0.01	0.02	160	Compacted Soil (Figure 5-5)
Totals					

C. Other Minor Activities

Textual description of other minor maintenance activities, such as trash and debris removal, that do not require fee payment.

4. Project Designs for Sediment Removal

Submit design drawings for each project. The drawings will display the following information:

- Project Profiles (existing conditions and the project design)
- Plan Views (existing conditions, OHWM, and the project design)
- Cross Sections (existing conditions and the project design)

5. Annual Mitigation Plan

a. On-Site Mitigation Activities (Tier 1)

Description of planned on-site restoration and enhancement activities.

b. Off-Site Mitigation Activities (Tiers 2 and/or 3)

Description of planned restoration or enhancement activities at other SCWA channels or properties.

Tables containing details of candidate off-site mitigation projects, including the project name, partners, cost, length, and area of mitigating activities. Tables 5A and 5B are examples of how this information will be presented (these are based on similar tables submitted in the interim 2007-2008 permit applications).

Table 5A. Summary of Maintenance Costs and Off-Site Mitigation Contributions

Project	Cost	10% Off-Site Mitigation Contribution
[Year] Maintenance Projects		
Reach Scale Sediment Removal Projects		
Example:		
Coleman Reach X	$81,806	$8,181
Hinebaugh Reach Y and Z	$358,000	$35,800
Localized Sediment Removal Projects		
Copeland Reach V	$9,007	$901
College Reach S	$11,275	$1,128
Airport Reach X	$11,275	$1,128
Ducker Reach Y	$13,828	$1,383
Bank Repair Projects		
Gossage Reach Z	$12,939	$1,294
Total	**$498,130**	**$49,813**
[Year] WPP Mitigation Projects		
Erosion control project at X-Ranch, supported by Ranch Partners, RCD, and Friends of Y-Creek		$31,000
Friends of Y-Creek, restoration activities on the Upper Laguna de Santa Rosa Channel		$17,800
WPP Project Fund		$1,013
Total		**$49,813**

Table 5B. Accounting of Impacts and Mitigation (example)

Project and Type	Impact	Mitigation	Ratio of Mitigation to Impact
Maintenance Projects			
Project 1 – reach-scale sediment removal	0.75 ac		
Project 2 – reach scale sediment removal	0.50 ac		
Project 3 – bank stabilization	0.20 ac		
Total	**1.45 acres**		
Mitigation Projects			
Project 1 (on-site)		0.75 ac	
Project 2 (on-site)		0.50 ac	
Project 3 (on-site)		0.20 ac	
WPP Project 1 (off-site)		0.5 acres	
WPP Project 2 (off-site)		0.5 acres	
Total		**2.45 acres**	
Ratio of Mitigation to Impact			**1.7:1**

6. Annual Sediment Disposal Plan

a. Identify this year's sediment disposal options and available capacity at each. Identify the preferred site. Include a map showing all site locations.

b. Planned sediment sampling and testing based on criteria for selected options and Sediment Sampling and Analysis Guidelines (Appendix B of SMP Manual). The appropriate disposal site will be selected based on sampling results. Agencies will be notified if testing indicates that the preferred site cannot be selected based on sediment sample results.

c. Disposal site reference documentation (as needed - CEQA, permitting, landowner agreements, etc.)

7. Permit Fees

a. 401 Certification (dredge and fill fee)

b. DFG 1602 fees (based on total project cost)

8. Submittal Confirmation

Record date notification package sent to agencies.

Appendix F-2
OUTLINE FOR ANNUAL POST-MAINTENANCE SUMMARY REPORT

1. Cover Letter

General introduction, including year of permitting program.

Reference existing program permit numbers and authorizations received during the notification period.

2. Summary of Work Completed

- Table summarizes maintenance work completed during previous year. Confirms that projects were not completed (explain ones that were not), and confirms that activities were conducted according to project description. Notes/comments used to explain any differences.

Maintenance Project	Length (linear feet)	Volume Removed (cu. yds.)	Project Complete?	Project Conducted According to Notification Report?	Comments
Project 1	750	2,500	Yes	Yes	
Project 2	500	1,200	No	No	Project half completed. Will be finished in 2011.
Project 3	250	800	Yes	Yes	

- Cumulative SMP maintenance activities on sensitive creeks with restrictions will be documented/tracked and a summary table provided. Tracking of cumulative SMP activities is important to demonstrate compliance with programmatic permits that have restrictions/conditions, such as Russian River BO conditions. Example table below uses hypothetical creek conditions.

Creek Name	Permitting Condition from Russian River BO (NMFS, 2008)	Current Year SMP Activities	Total SMP Maintenance Activities on Creek to Date	Remaining Available Maintenance Activities on Creek
Santa Teresa Creek	4 times in 15-yr RRBO term 2,000 ft. max maintenance in any one year	1,500 reach-scale sediment removal project	1	3

- Site photo sheets (1-2 before and after photos per site) documenting conditions pre- and post-maintenance

3. Sediment Disposal Summary

Summary quantities of sediment disposed off-site and disposal locations (and acres affected, if applicable). Reference *Annual Sediment Sampling Report* for results of sediment testing.

Sediment Disposal Site	Volume Disposed (cu.yds.)	Comments
Site A	XX	Sediment from project sites near Rohnert Park taken here.
Site B	XX	Sediment from project sites near Santa Rosa taken here.
Total Disposed	XX	

4. Confirmation of Avoidance, Minimization, and Best Management Measures

Discussion of implementation of avoidance/minimization and BMP measures. Review list of BMPs and identify additional minimization actions that were implemented as a result of site conditions or other unexpected issues.

Examples:

- Were any sensitive species or other sensitive resources encountered during maintenance? If so, how was this handled, and what impact avoidance steps were taken?
- Did any hazardous spills or other threats to water quality occur? If so, what actions were taken to remedy the situation?

5. Mitigation Activities Implemented in Year 20XX

Summarize on-site and off-site mitigation activities that were implemented. Was mitigation implemented as stated in the notification package? If not, why.

6. On-going Program Mitigation Monitoring

Program mitigation monitoring includes 5-year observation, recording, and tracking of all mitigation sites. Photos will be provided in annual report to document progress as well as provide regulatory compliance documentation.

- A master table (example below) will be included to track all SMP mitigation sites, including off-site mitigation projects.

- Mitigation site photo sheets will be updated and submitted with report. An example layout for these photo sheets is provided below.

Year of Implementation	Mitigation Project	Year Created	Current Monitoring Year	Remaining Years of Monitoring	Evaluation of Mitigation Sufficiency	Mitigation Photo Reference
2008	On-site Project 1	2007	2	3		Photo A on sheet 1
	On-site Project 2					
	WPP Project 1					
2009	Project 1	2008	1	4		
	Project 2					
	Project 3					
2010		2009				

Photo Sheet for Mitigation Project 1			
[photo]	[photo]	[photo]	[photo]
Photo A. Mitigation Project X Initiation (month, year)	Photo B. Project X Year 1 (month, year)	Photo C. Project X Year 2 (month, year)	Photo D. Project X Year 3 (month, year)
[photo]	[photo]		
Photo E. Project X Year 4 (month, year)	Photo F. Project X Year 5 (month, year)		

7. Recommended SMP Revisions or Updates (if needed)

Potential revisions or updates to maintenance methods

Potential revisions or updates to BMPs

8. Anticipated Future Maintenance Activities (if known)

Projects that didn't finish this year

Anticipated projects for next year

Appendix F-3

OUTLINE FOR SEDIMENT SAMPLING REPORT

1. Introduction

2. Project Sites and Sampling Locations

a. List of annual projects, types, and quantity and characteristics of sediment removed
b. Project site and Sampling Locations
    i. Map showing sites sampled for each project site

3. Disposal Options Evaluated

- ☐ On-site
- ☐ Other SCWA channel or property
- ☐ Wetland or Floodplain Restoration or Enhancement
- ☐ Upland Agricultural or Commercial Reuse (dry)
- ☐ Upland Agricultural or Commercial Reuse (wet)
- ☐ Landfill Disposal
- ☐ Hazardous Waste Disposal

4. Testing Criteria Applied and Results

Attach sampling results

5. Disposal Sites Selected

Explain reasons for selecting preferred and back-up sites.