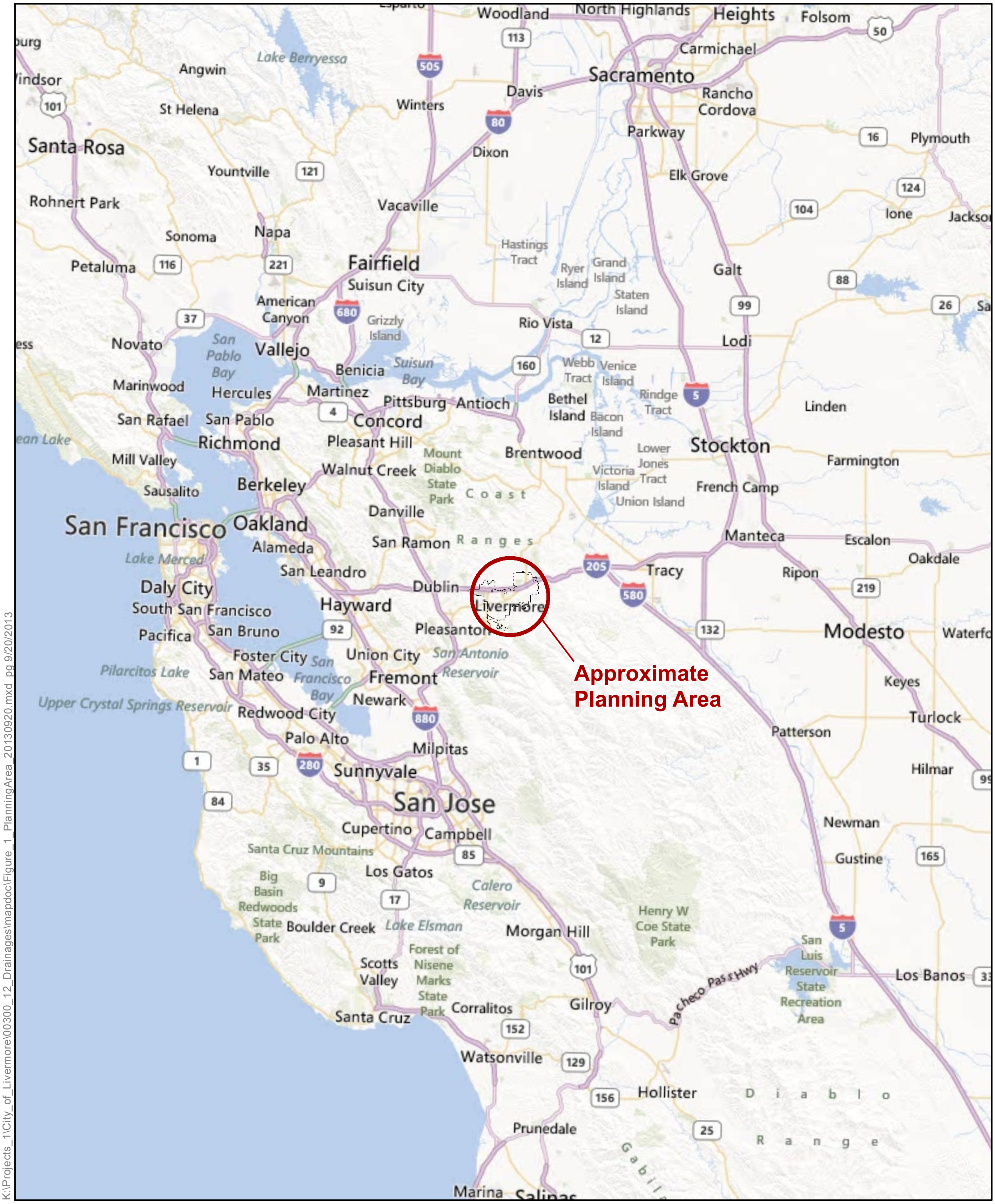


N

0 10 20

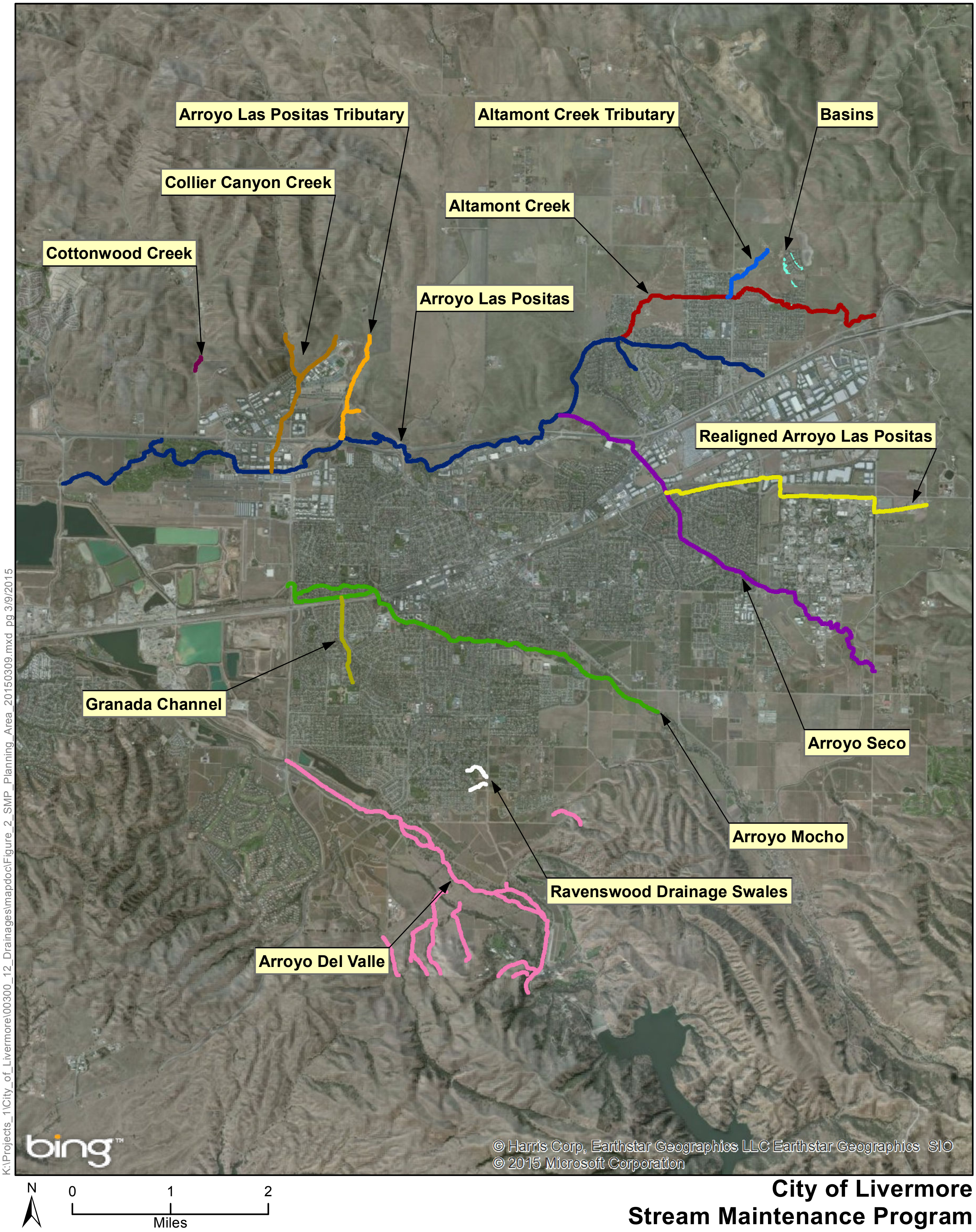
Miles

City of Livermore
Stream Maintenance Program

Figure 1
SMP Vicinity

Source: Bing Maps

K:\Projects_1\City_of_Livermore\00300_12_Drainages\mapdoc\Figure_1_PlanningArea_20130920.mxd pg 9/20/2013



K:\Projects_1\City_of_Livermore\00300_12_Drainages\mapdoc\Figure_2_SMP_Planning_Area_20150309.mxd pg 3/9/2015

City of Livermore
Stream Maintenance Program

Figure 2
SMP Area

BMP ID	Name	BMP
General Impact Avoidance and Minimization		
GEN-1	Maintenance Work Window	1. All ground-disturbing maintenance activities occurring in the creek or channel (i.e., from top-of-bank to top-of-bank) will take place during the low-flow period, between May 1 and October 31. Extensions of this period require the advance approval of the USACE, SFBRWQCB, CDFW, and/or USFWS (as appropriate) on a project-by-project basis. 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 creeks or 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. 4. With the exception of emergencies, construction work will be limited to between 7:00 a.m. and 8:00 p.m. Routine maintenance activities conducted by the City in residential areas will not occur on Saturdays, Sundays, or City observed state holidays except during emergencies, or with advance notification of surrounding residents (weekend or holiday work would be limited to between 9:00 a.m. and 3:00 p.m.).
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. Stockpiling of material will occur on disturbed, barren, or ruderal surfaces that do not support habitat for focal species. 3. 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. 4. As necessary, to prevent sediment-laden water from being released back into waters of the State 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. 5. 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. 6. 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 onsite temporary sediment stockpile or storage areas, to

BMP ID	Name	BMP
		waters of the State, including surface waters or surface water drainage courses, outside of the active project site, is prohibited. 7. During dry season, no stockpiled soils shall remain exposed and unworked for more than 30 days. During wet season, no stockpiled soils shall be surrounded by properly installed and maintained silt fencing or other means of erosion control. When there is the reasonable possibility of precipitation, stockpiled soils shall additionally be covered. 8. 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. 9. Pipes, culverts and similar materials greater than four inches in diameter, will be stored so as to prevent focal wildlife species from using these as temporary refuges, and these materials will be inspected each morning for the presence of animals prior to being moved.
GEN-3	Creek and Channel Access	1. Access points to creeks and channels 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 much as possible. Temporary access points shall be sited and constructed to minimize tree removal. Vernal pools will be avoided. 2. In considering creek and 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 creek or channel bottom. Appropriately-tired vehicles, either tracked or wheeled, will be used depending on the site and maintenance activity. 4. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.
Air Quality Protection		
AQ-1	Basic Construction Air Quality Measures (based on BAAQMD Air Quality Guidelines)	1. Water all exposed surfaces in active maintenance areas (e.g., parking and staging areas, soil piles, graded areas, and unpaved access roads) 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. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweepers is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 mph. 5. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

BMP ID	Name	BMP
		6. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
AQ-2	Additional Construction Air Quality Measures (based on BAAQMD Air Quality Guidelines)	1. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph. 2. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established. 3. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time. 4. Gravel bags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent. 5. Minimize the idling time of diesel powered construction equipment to two minutes. 6. All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NOx and PM.
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. To the extent feasible, vernal pool habitats will not be impacted. If vernal pools, clay flats, alkaline pools, ephemeral stock tanks, or sandstone pools, or roadside ditches are present and will be avoided, a qualified biologist will stake or flag an exclusion zone prior to construction activities. The exclusion zone will be fenced with orange construction zone and erosion control fencing (to be installed by construction crew). The exclusion zone will encompass the maximum practicable distance from the worksite and at least 250 feet from the aquatic feature wet or dry. The hydrology feeding into exclusion zones shall not be modified or changed. 3. If potential dens are present, their disturbance and destruction will be avoided. 4. Prior to ground disturbing activities in sensitive habitats, project construction boundaries and access areas will be flagged or temporarily fenced during construction to reduce the potential for vehicles and equipment to stray into adjacent habitats. 5. Soil disturbance shall not exceed the minimum area necessary to complete the operations as described. 6. Trenches will be backfilled as soon as possible. Open trenches will be searched each day prior to construction to ensure no focal species are trapped. Earthen escape ramps will be installed at intervals prescribed by a qualified biologist. 7. In locations where the removal of sediment and associated vegetative cover is required to reestablish a low flow channel, the area of disturbance shall be limited to no more than one half the width of the creek or channel in any given year to the extent feasible in order to maintain adequate foraging and cover habitat for special-status species.

BMP ID	Name	BMP
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] or an appropriately experienced and/or trained staff. Training will include review of environmental laws and avoidance and minimization BMPs that must be followed by all personnel to reduce or avoid effects on focal species during SMP activities. This training will include instruction 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. 3. Contracts with contractors, construction management firms, and subcontractors will obligate all contractors to comply with these requirements and BMPs.
BR-3	Biotechnical Bank Stabilization	1. 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. 2. When erosion control matting is required, plastic mono-filament netting or similar material containing netting shall not be used at the project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.
BR-4	Impact Avoidance and Minimization During Dewatering	1. All dewatering activities conducted in creeks and channels bearing state- or federally-listed species shall comply with the terms and conditions of the Biological Opinion issued by the USFWS and the 2081 Incidental Take Permit issued by CDFW 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 creek or 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 creek or channel, 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. In-stream cofferdams shall only be built from materials such as gravel bags, clean gravel, or rubber bladders which will cause little or no siltation or turbidity. Visqueen shall be placed over gravel bags to minimize water seepage into the maintenance areas. The visqueen shall be firmly anchored to the creek or channel bed to

[1] A biologist (including those specializing in botany, wildlife, and fisheries) is determined to be qualified through a combination of academic training and professional experience in biological sciences and related resource management activities. Resumes will be submitted to CDFW and USFWS for approval prior to commencement of biological surveys, as stated in CDFW and USFWS permit conditions.

BMP ID	Name	BMP
		minimize water seepage. If necessary, the footing of the dam shall be keyed into the creek or channel bed at an appropriate depth to capture the majority of subsurface flow needed to dewater the creek or channel bed. 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 required to prevent sediment from re-entering the wetted creek or 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 creek or 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 creek or 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 creek or 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. In general, turbidity in discharged water should be no more than 110 percent of receiving water turbidity, if receiving water turbidity is greater than 50 NTU, and no greater than 5 NTU above receiving water turbidity, if receiving water turbidity is less than 50 NTU. 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	Amphibian Species Relocation	1. Prior to and during dewatering activities, tadpoles, and other vertebrates will be excluded from the work area by blocking the creek or channel above and below the work area with fine-meshed net or screens. The bottom of the screens will be completely secured to the creek or channel bed. Screens will be checked periodically and cleaned of debris to permit free flow of water. 2. During dewatering, a qualified biologist will direct and monitor activities as necessary to net and rescue any amphibians that may have become stranded throughout the dewatering process.

BMP ID	Name	BMP
		3. Prior to capturing 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; • presence of other same species so that relocation of new individuals will not upset the existing prey/predation function; and • low potential for relocated individual to transport disease. 4. 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 Biologist	1. A qualified biologist will be on-call 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	Focal Species Plants	1. For projects located in areas where focal plant species (i.e., San Joaquin spearscale, Congdon's tarplant, palmate-bracted bird's-beak, and Livermore tarplant) 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 prior to the initiation of project activities. If these species are observed in or near the project site, the City will follow the measures below as well as any additional measures contained in the forthcoming Biological Opinion issued by the USFWS for the SMP. 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 prior to project activities in these areas. 2. If discovered, focal 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. 3. Subject to the review and approval of CDFW and USFWS for listed species, focal plant species near the project site will be protected from temporary disturbance by installing environmentally sensitive area protective fencing (orange construction barrier fencing) around focal 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 an appropriate distance approved by CDFW and USFWS depending on the species. At a minimum, fencing will be installed at least 50 ft. from the edge of the population. Where focal 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.

BMP ID	Name	BMP
		4. 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. 5. If impacts to focal plant species are unavoidable, then the City 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 City, in conjunction with a qualified restoration ecologist and CDFW 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. For Congdon's tarplant and Livermore tarplant, 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. For San Joaquin spearscale and palmate-bracted bird's-beak, then enhancement of occupied habitat and/or expansion adjacent to occupied habitat will occur to compensate for project-related impacts. Compensation will occur at the appropriate ratio under EACCS. 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 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. If success criteria have not been achieved, remedial actions shall be implemented following review and approval by CDFW and the USFWS. 6. If appropriately timed focused botanical surveys cannot be conducted in areas identified as suitable for listed plants prior to vegetation management activities, then the City 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 Planning 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.

BMP ID	Name	BMP
		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 CDFW. 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 CDFW and the USFWS Migratory Bird Program shall be contacted. Buffers will be developed through consultation with CDFW. Buffers will remain in place until biologists determine that the young have successfully fledged or nests have been otherwise abandoned.
BR-9	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 biologist or an appropriately experienced and/or trained staff will inspect the area daily before the start of work and will be present during maintenance activities in suitable habitat. A qualified biologist will be on-call during implementation of maintenance activities. If appropriate, the City will install exclusionary fencing. 4. In the event that a CRLF is encountered within the maintenance area, a qualified biologist approved by USFWS under the specific project level biological opinion appending to the SMP Programmatic Biological Opinion 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 CDFW regulations and permits. The biologist 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. 6. In locations where the removal of sediment and associated vegetative cover is required to reestablish a low flow channel, the area of disturbance shall be limited to no more than one half the width of the creek or channel in any given year to the extent feasible in order to maintain adequate foraging and cover habitat for CRLF. 7. Work will be avoided within suitable habitat from October 15 (or the first measurable fall rain of 1" or greater) to May 1. 8. The USFWS Sacramento Field Office will be contacted within 24 hours of any CRLF observations.
BR-10	California Red-legged Frog Avoidance and Impact Minimization	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

BMP ID	Name	BMP
	Measures for Vegetation Management	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 creek or 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 biologist approved by USFWS under the specific project level biological opinion appending to the SMP Programmatic Biological Opinion will be on-call during project activity in suitable habitat. In the event that CRLF is encountered, staff will contact the qualified biologist. The biologist 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. Work will be avoided within suitable habitat from October 15 (or the first measurable fall rain of 1” or greater) to May 1. 5. The USFWS Sacramento Field Office will be contacted within 48 hours of any CRLF observations.
BR-11	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. When possible, maintenance activities will be restricted to the creek or channel bed and avoid disturbance to adjacent upland habitat. 3. Sediment and debris removal activities shall minimize removal of upland vegetation and soil compaction. 4. In locations where the removal of sediment and associated vegetative cover is required to reestablish a low flow channel, the area of disturbance shall be limited to no more than one half the width of the creek or channel in any given year to the extent feasible in order to maintain adequate foraging and cover habitat for CTS. 5. If upland banks must be traversed by heavy equipment to access a creek or channel bed, the route will be located where no small mammal burrows are present and will be delineated by temporary fencing to minimize upland habitat disturbance. 6. If burrows or other suitable aestivation habitat are present where sediment or debris removal activities are proposed, a qualified biologist approved by USFWS under the specific project level biological opinion appending to the SMP Programmatic Biological Opinion and approved by CDFW under the SMP CESA incidental take permit will be on-call during project activity in proximity to upland CTS habitat. In the event that CTS is encountered, staff will contact the qualified biologist. The biologist will have the authority to stop work if CTS is encountered until such a time as the animal is moved to an area away from the project site. 7. 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.

BMP ID	Name	BMP
		8. In the event that a CTS is encountered within the maintenance area, a qualified biologist approved by USFWS under the specific project level biological opinion appending to the SMP Programmatic Biological Opinion and approved by CDFW under the SMP CESA incidental take permit 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 CDFW regulations. 9. The USFWS Sacramento Field Office and CDFW will be contacted within 24 hours of any CTS observations.
BR-12	California Tiger Salamander Avoidance and Impact Minimization Measures for Vegetation Management	1. For vegetation management activities occurring in areas where 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. Based on surveys, if CTS is identified as potentially present, then access across upland creek or channel banks and adjacent upland habitats will be by foot only. Vehicles will be restricted to existing access roads. 3. A qualified biologist approved by USFWS under the specific project level biological opinion appending to the SMP Biological Opinion and approved by CDFW under the SMP CESA incidental take permit will be on-call during project activity in proximity to upland CTS habitat. In the event that CTS is encountered, staff will contact the qualified biologist. The biologist will have the authority to stop work if 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 CTS is encountered within the maintenance area, a qualified biologist approved by USFWS under the specific project level biological opinion appending the SMP Programmatic Biological Opinion and approved by CDFW under the SMP CESA incidental take permit 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 CDFW regulations and permits. 5. The USFWS Sacramento Field Office and CDFW will be contacted within 24 hours of any CTS observations.
BR-13	California Tiger Salamander Avoidance and Impact Minimization Measures for Bank Stabilization	1. For bank stabilization activities occurring in areas where 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 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 biologist approved by USFWS under the specific project level biological opinion appending the SMP Programmatic Biological Opinion and approved by CDFW under the SMP CESA incidental take permit will be on-call during project activity in proximity to upland CTS habitat. In the event that CTS is encountered, staff will contact the qualified biologist. The biologist will have the authority to stop work if 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.

BMP ID	Name	BMP
		4. In the event that a CTS is encountered within the maintenance area, a qualified biologist approved by USFWS under the specific project level biological opinion appending the SMP Programmatic Biological Opinion and approved by CDFW under the SMP CESA incidental take permit 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 CDFW regulations and permits. 5. The USFWS Sacramento Field Office and CDFW will be contacted within 24 hours of any CTS observations.
BR-14	Western Pond Turtle Pre-maintenance Surveys for Ground-Disturbing Activities	1. For projects located in areas where western pond turtle has the potential to occur, a qualified biologist will conduct pre-maintenance surveys to assess habitat within the proposed maintenance area. 2. If suitable in-stream habitat for the western pond turtle is present in the maintenance area, a qualified biologist or an appropriately experienced and/or trained staff 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 CDFW 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 CDFW regulations and permits. 4. CDFW will be notified within 48 hours of any western pond turtle observations.
BR-15	Vernal Pool Fairy Shrimp and Longhorn Fairy Shrimp Avoidance and Impact Minimization Measures	1. A qualified biological monitor will be present if work is conducted outside of designated work corridors or off of existing access roads. 2. If vernal pools, clay flats, alkaline pools, ephemeral stock tanks, or sandstone pools, or roadside ditches are present, a qualified biologist will stake and flag an exclusion zone prior to construction activities. The exclusion zone will be fenced with orange construction zone and erosion control fencing (to be installed by construction crew). The exclusion zone will encompass the maximum practicable distance from the worksite and at least 250 feet from the aquatic feature wet or dry. 3. Work will be avoided after the first significant rain until June 1, or until pools remain dry for 72 hours. 4. No herbicide will be applied within 100 feet of exclusion zones, except when applied to cut stumps or frilled stems or injected into stems. No broadcast applications will be applied. 5. Avoid modifying or changing the hydrology of the habitat.
BR-16	Callippe Silverspot Butterfly Avoidance and Impact Minimization Measures	1. No herbicide will be applied within 100 feet of host plant populations. Spot application to cut stumps, frilled stems, or injected into stems are acceptable. No broadcast applications will be applied. 2. Cut trees that are removed in the vicinity of host plants will be hand carried rather than dragged to disposal areas. 3. Avoid or minimize the removal of host plant, Johnny jump-up (*Viola pedunculata*). 4. Avoid work in suitable habitat during the flight and mating season (mid-May to mid-July); establish a minimum 300-foot buffer around host plants.

BMP ID	Name	BMP
BR-17	Golden Eagle Avoidance and Impact Minimization Measures	1. If an active nest is identified near a proposed work area work will be conducted outside of the nesting season (February 1 to September 1). 2. If an active nest is identified near a proposed work area and work cannot be conducted outside of the nesting season, a no-activity zone will be established by a qualified biologist. The no-activity zone will be large enough to avoid nest abandonment and will at a minimum be 250-feet radius from the nest. 3. If an effective no-activity zone cannot be established in either case, an experienced golden eagle biologist will develop a site-specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the eagles, and the dissimilarity of the proposed activity with background activities) to avoid the potential to affect the reproductive success of the eagles.
BR-18	Tricolored Blackbird Avoidance and Impact Minimization Measures	1. If an active nest colony is identified near a proposed work area work will be conducted outside of the nesting season (February 1to September 1).
BR-19	Burrowing Owl Avoidance and Impact Minimization Measures	1. If an active nest is identified near a proposed work area work will be conducted outside of the nesting season (February 1to September 1). 2. If an active nest is identified near a proposed work area and work cannot be conducted outside of the nesting season, a no-activity zone will be established by a qualified biologist. The no-activity zone will be large enough to avoid nest abandonment and will at a minimum be 250-feet radius from the nest. 3. If burrowing owls are present at the site during the non-breeding period, a qualified biologist will establish a no-activity zone of at least 150 feet. 4. If an effective no-activity zone cannot be established in either case, an experienced burrowing owl biologist will develop a site-specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls. 5. All burrowing owl surveys will be completed consistent with the CDFW Staff Report on Burrowing Owl Mitigation (2012).
BR-20	Den Avoidance for American Badger and San Joaquin Kit Fox	1. A qualified biologist will survey proposed work areas within suitable American badger and San Joaquin kit fox habitat in the species' ranges immediately prior to SMP activities that are planned to affect such dens or the immediate area. Dens will be scoped and confirmation that they are empty will be made prior to disturbance of the den. 2. San Joaquin kit fox exclusion zones will be implemented following USFWS procedures (U.S. Fish and Wildlife Service 1999) or the latest USFWS procedures available at the time. The radius of these zones will follow current standards or will be as follows: Potential Den—50 feet; Known Den—100 feet; Natal or Pupping Den—to be determined on a case-by-case basis in coordination with USFWS and CDFW. Such exclusions zones will also apply to potential and known American badger burrows.

BMP ID	Name	BMP
Cultural Resources Protection		
CR-1	Cultural Resources Investigation	1. For maintenance activities which require excavation into native soils, and for all new sediment disposal sites, a cultural resources investigation shall be conducted by a qualified professional archaeologist prior to performing the maintenance activity. The cultural resources investigation shall include the following elements: a. **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 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. b. **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 creek or 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 ¼-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). c. **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 documentation, a copy will be provided

BMP ID	Name	BMP
		t othe 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 the City 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. d. **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. e. **Archaeological and Native American Monitoring.** The City 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 the City 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 the City. 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. f. **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 the plan, 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: o Training program for all construction involved in site disturbance and field workers; o Person(s) responsible for conducting monitoring activities, including Native American monitors; o How the monitoring shall be conducted and the required format; o Content of monitoring reports, including any necessary archaeological resurvey; o Person(s) responsible for overseeing and directing the monitors; o Schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports; o Procedures and construction methods to avoid sensitive cultural resource areas;

BMP ID	Name	BMP
		○ 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 the City, 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, the City 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, the City, 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 the City for review and approval. Prior to finalization of the ADRP, 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	1. **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 tool-making 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 the City. Maintenance will not resume until authorization is received from the City. 2. In the event of unanticipated discovery of archaeological indicators during construction, the City 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.

BMP ID	Name	BMP
		3. 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, the City will implement an ADRP, prepared by a qualified archaeologist, as outlined under BMP CR-1. 4. **Discovery of Human Remains.** If potential human remains are encountered, the City 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	1. 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. The City 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. The City shall be responsible for ensuring that the recommendations of the paleontologist regarding treatment and reporting are implemented.
Hazardous Materials Safety		
HAZ-1	Spill Prevention and Response Plan	1. The City 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: a. 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. b. 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. c. 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. d. 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 City will routinely inspect the work site to verify that the Spill Prevention and Response Plan is properly implemented and maintained. The City 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

BMP ID	Name	BMP
		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. If a spill is reportable, the contractor's superintendent will notify the City, and the City 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 SFBRWQCB 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 City 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 City, DTSC, and the SFBRWQCB.
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 or 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 creek or 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, gravel bags, 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 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.

BMP ID	Name	BMP
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 the City maintenance center.
HAZ-4	Refueling	1. Vehicles or equipment will not be refueled within 100 feet of a wetland, creek, channel, or other waterway unless a bermed and lined refueling area is constructed. 2. 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 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	1. The City 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) when new maintenance sites are identified. For any proposed maintenance sites located within 1,500 feet of any "open" sites where contamination has not been remediated, the City will contact the SFBRWQCB case manager listed in the database. The City will work with the case manager to ensure maintenance activities would not affect cleanup or monitoring activities or threaten the public or environment. 2. If hazardous materials, such as oil or paint cans, are encountered at the maintenance sites, the City will carefully remove and dispose of them according to the Spill Prevention and Response plan. City staff will wear proper

BMP ID	Name	BMP
		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, 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 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	1. After selecting potential sediment disposal locations and prior to disposing of excavated sediment, the City 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. 2. 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. 2. Only vegetation that is noxious, invasive, hazardous, or could obstruct creek or 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.) or Western sycamores (*Platanus racemosa*) 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.

BMP ID	Name	BMP
		4. Vegetation will be removed and/or pruned in such a manner that creek or 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 removal 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 creek and channel shading, and add vertical complexity to the riparian corridor. This includes species such as Western sycamore which shall be avoided whenever feasible. 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	Invasive Plant Species Control Measures	1. Construction equipment shall arrive at the maintenance project site clean and free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species. 2. Any imported fill material, soil amendments, gravel, etc., required for construction and/or restoration activities that would be placed within the upper 12 inches of the ground surface shall be free of vegetation and plant material. 3. Certified weed-free imported erosion-control materials shall be used. 4. Invasive species (such as pampas grass [*Cortaderia* spp.], giant reed [*Arundo donax*]), occurring within sediment or vegetation management locations shall be flagged for removal by a biologist familiar with the identification of such species. Invasive species shall then be removed consistent with the recommendations of the California Invasive Plant Council (Cal-IPC; http://www.cal-ipc.org). Invasive species, along with associated duff and topsoil shall be disposed of at the County landfill. These materials shall not be allowed to be integrated with other onsite topsoil materials intended for salvage and replacement. 5. Invasive species removal shall occur before weed species seed set whenever feasible. 6. Invasive species removed from the maintenance project site shall be handled in a manner to prevent spread of seed and shall be contained such that stray plant parts do not leave the site or contaminate adjacent areas.

BMP ID	Name	BMP
VEG-3	Use of Herbicides and Pesticides	1. All herbicide and pesticide use shall be consistent with all Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) label instructions and any use conditions issued by the Alameda County Agricultural Commissioner. 2. Herbicide use will be restricted to the minimum amount needed to ensure adequate control of vegetation. 3. Application of herbicides or pesticides to upland areas shall not be made within 72 hours of predicted rainfall. 4. Herbicides and pesticides will not be directly applied to waters of the U.S. 5. No herbicide will be applied within 100 feet of exclusion zones (see BR-1), except when applied to cut stumps or frilled stems or injected into stems. No broadcast applications will be applied. 6. Herbicides and pesticides, 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. The City will review the details and exceptions in the court order and comply with the herbicide use buffers as appropriate.
VEG-4	Use of Grazing Animals	1. Grazing animals may include use of sheep, goats, or cows. Grazing animals will be restricted to adults (i.e., no young under 6 months to reduce the potential for introducing pathogens into the water source). 2. Grazing will be allowed only when the channel is dry. In instances where there is a perennial flow, grazing must be limited to sheep or goats and temporary electric fencing must be installed to keep animals out of the wetted channel. 3. Water will be provided for grazing animals from sources other than the wetted channel to reduce the pressure on the wetted area. 4. A shepherd will be present with the animals at all times.
VEG-5	Planting and Revegetation After Soil Disturbance	This BMP applies to revegetation activities not associated with mitigation actions. Mitigation actions will have project-specific requirements and success criteria. 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. To discourage the introduction and establishment of invasive plant species, seed mixtures/straw used within natural vegetation will be either rice straw or weed-free straw. 6. When erosion control matting is required, plastic mono-filament netting or similar material containing netting shall not be used at the project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

BMP ID	Name	BMP
		7. Revegetation shall be regularly monitored for survival for at five years or until 80% minimum survival/cover (80% revegetation coverage is relative to natural coverage of the associated habitat) 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.
Water Quality and Creek/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 creek or 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. Plastic mono-filament netting or similar material containing netting shall not be used at the project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds. 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	1. After sediment removal, the creek or channel shall be graded so that the transition between the existing creek or 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 creek or channel.
WQ-3	In-Channel Grading	1. Where pre-maintenance creek or channel form exhibited desirable features, the creek or channel bed will be regraded to mimic the creek or channel form before work was conducted. 2. Where possible, grading may include creek or channel enhancements such as excavation of a low-flow channel, development of a meander, or riffle/pool configurations. No creek or channel grading will occur below the as-built design for the flood control creeks or channels. 3. 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.

BMP ID	Name	BMP
		4. Significant earth moving-activities will not be conducted in riparian areas within 24 hours of predicted storms or after major storms (defined as 1-inch of rain or more).
WQ-4	Dechlorination Procedures for Discharges into Creeks and Channels	1. Bazooka (or equivalent) dechlorination equipment will be attached to potable water supplies used to perform maintenance activities in and around creeks and channels. 2. Chlorine residual will be sampled following attachment of the dechlorination equipment, and shall not exceed 0.05 mg/l. Chlorine residual levels shall be monitored 15 minutes after start-up and every half hour during the steady-state discharge of water from a dechlorinating device to verify proper performance during the entire period of discharge. 3. Use the minimum amount of water necessary to complete maintenance activities in and around creeks and channels. When feasible, use vacuum trucks to collect "flush" waters.
Good Neighbor Policies		
GN-1	Work Site Housekeeping	1. The City 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, the City will post and update information about the SMP and maintenance activities on their website. 2. Each spring, once maintenance sites have been selected for the annual work season, information on the maintenance sites, approximate work dates, and contact information will be posted on the City's website.
GN-3	Noise Control	1. The City 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 scheduled outside of peak traffic hours (7:00–10:00 a.m. and 3:00–6:00 p.m.) to the maximum extent practicable, and advance warning signage, a detour route, and flaggers will be provided in both directions. 2. 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.

BMP ID	Name	BMP
		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. 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	1. 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 other odor sensitive land uses.