BIOLOGICAL ASSESSMENT FOR ROUTINE FLOOD CONTROL MAINTENANCE ACTIVITIES MARIN COUNTY, CALIFORNIA

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Prepared by:
County of Marin
Department of Public Works
P.O. Box 4186
San Rafael, CA 94913-4186
(415) 473-4301
lwilliams@marincounty.org

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SUMMARY

The Marin County Flood Control and Water Conservation District (District) is proposing to conduct annual vegetation maintenance, vegetation removal, and sediment removal activities at 96 project sites along several creeks in Eastern Marin County and Stinson Beach area within its jurisdiction. We prepared this biological assessment of the study area to determine the potential for the occurrence of special-status plant or animal species, or sensitive vegetation communities, within the areas to be affected by the project.

The majority of the vegetation maintenance and sediment removal work occurs in eastern county creeks draining into San Pablo Bay, from Novato Creek in the north to Coyote Creek in the south. There are only three project sites in western Marin County on Easkoot Creek in Stinson Beach, draining to the Pacific Ocean. Most of the maintenance activities occur within urbanized, residential and commercial land uses. Some of the lower reaches include tidally-influenced land reserved for wildlife and flood control purposes; these lands, while having been subject to human activity, now represent the more natural areas within the program scope. Most of the land in the upper reaches is largely undeveloped open space or grazing land.

Vegetation communities present within and adjacent to the study area include California annual grassland, northern coastal salt marsh, diked baylands, north coast riparian scrub/forest, and mixed evergreen forest.

We pulled endangered species listings from the USFWS for the following USGS quads: Bolinas, Petaluma Point, Novato, San Rafael, and San Quentin. We also checked the State and Federally Listed Endangered, Threatened, and Rare Plants of California (CDFG 2010a), Special Vascular Plants, Bryophytes, and Lichens (CDFG 2010b), State and Federally Listed Endangered and Threatened Animals of California (CDFG 2010c), Special Animals (CDFG 2009) lists and the California Wildlife Habitat Relationship System (CDFG 2008), as well as the online Inventory of Rare and Endangered Plants (CNPS 2010) for Marin County. Based on these searches, a literature and database review and a familiarity with the flora within the project region, we created the list of special status species. Altogether, there are 113 species on the list, of which 41 are listed or candidates for listing, and 72 are federal or state species of concern. Special Status Species Reported or Potentially Occurring at the Project Sites is included in Appendix A.

For plants, there are 12 listed species in the selected USGS quadrangles. From the species of concern lists, which are not linked to quad maps, we pulled the species that occur in Marin County, based on CNPS lists, records in the CNDDB, and/or range information from CWHR, resulting in 21 species of concern. Based on the data available, none of the listed species and four of the species of concern are likely or somewhat likely to occur in the project sites.

Similarly, for animals, there are 29 listed species in the selected quads, and 46 species of concern. Based on the data available, eight of the listed species and six of the species of concern are likely or somewhat likely to occur in the project sites.

The project sites in West Marin at Easkoot Creek are the only locations where two of the listed species (coho salmon and California red-legged frog) and two species of concern (monarch butterfly and marsh milk-vetch) could potentially occur.

An analysis is presented for each of the work sites and their potential to support special-status species. The potential for special-status plant or wildlife species to occur within or immediately adjacent to each individual project work site is in most cases based on the presence of suitable habitat or the known presence of a species within the vicinity of the work site. Therefore, within the site-specific analysis, unless otherwise noted, those species that are listed for each work site are considered to have at least some potential to occur within the work site.

Based on the actual or potential presence of certain special-status wildlife species within the project site, recommendations are made to either avoid or minimize potential impacts to them. Appropriate site-specific and species-specific recommendations are given for certain species, including work windows, pre-construction surveys, additional focused surveys, avoidance measures, disturbance minimization, exclusionary fencing, and construction monitoring, among others.

Based on our assessment of habitats in the project sites, certain special-status plant and animal species are not expected to occur or can be ruled out. However, focused wildlife surveys or botanical surveys were not conducted as part of this reconnaissance-level site evaluation. The methods employed would not necessarily rule out some special-status species.

We have made a preliminary determination of project sites that we believe to fall under the under the jurisdiction of the U.S. Army Corps of Engineers (USACE), as well as the identification of potential waters of the State of California, which are anticipated to fall within the jurisdictions of California Department of Fish and Game (CDFG) and/or the Regional Water Quality Control Board (RWQCB). These determinations are listed in Appendix B.

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities are considered sensitive biological resources and can fall under the jurisdiction of several regulatory agencies. Within or adjacent to the project sites proposed for vegetation maintenance, sediment removal, and levee maintenance there are two sensitive natural communities that have the potential to be affected by project activities. These include northern coastal salt marsh at Almonte Marsh in Tam Valley, Estancia Ditch in Santa Venetia, and lower Novato Creek; and coastal brackish marsh adjacent and downstream of the Coyote Creek project site. Almost all of the work sites are expected to fall under federal and/or state jurisdictions as wetlands or waters of the U.S. or waters of the state, and will thus require permits from various state and federal agencies including the USACE, CDFG, and RWQCB.

A copy of this report should be submitted to the USACE, North Branch, San Francisco District, with a request for field verification of the preliminary wetland delineation.

1.0 INTRODUCTION AND METHODS

The County of Marin Department of Public Works (DPW) in conjunction with the Marin County Flood Control and Water Conservation District (District) is proposing to conduct vegetation maintenance and sediment removal activities along several creeks in Marin County, California in order to clear debris and to maintain flood conveyance and stream flow. The maintenance work primarily occurs on parcels owned in fee title or held as easements by the District, the County, other County agencies, or partnering city jurisdictions; however, there are four project sites where the District has no formal jurisdiction and therefore will secure landowner access agreements before commencing work. These sites are Reed Creek (project site 3-REED-1; 99 landowners), Sutton Manor/Shell Rd (project site 3-SUT-5; 15 landowners), East Creek (project site 4-EAST-2), and Zone 7 Gallinas South Fork levees (project site 7-GAL; total of 110 landowners, but generally only 5-10 parcels per year will need to be accessed). The purpose of the biological assessment is to determine the potential for the occurrence of special-status plant or animal species, or sensitive vegetation communities within the areas affected by the project. This report presents the results of our field investigations.

The study area includes a total of 96 project sites in six Flood Control Zones (zones 1, 3, 4, 5, 7, and 9) and one non-Flood Zone project site in County Service Area 13 Upper Lucas Valley (Figure 1). There are 26 project sites located in Flood Control Zone 1 in the Novato Creek watershed, 33 project sites in Flood Control Zone 3 in Mill Valley, six project sites in Flood Control Zone 4 in Bel Aire/Strawberry, three project sites along Easkoot Creek in Flood Control Zone 5 in Stinson Beach, 13 project sites in Flood Control 7 in Santa Venetia, 14 project sites in Flood Control Zone 9 in the Corte Madera Creek watershed, and one project site falls outside the flood control zones along Miller Creek in the Miller Creek watershed. Aside from the project sites in Stinson Beach, all the other project sites are located in eastern Marin County.

Nomenclature used throughout this report conforms to Hickman (1993) for plants unless otherwise noted. Nomenclature for special-status plant species conforms to CDFG (2010a,b) and CNPS (2010); nomenclature for special-status animals conforms to CDFG (2009 and 2010c); nomenclature for special-status natural communities conforms to CDFG (2011). Nomenclature for wildlife conforms to Sibley (2000) for birds, Stebbins (2003) for reptiles and amphibians, and Jameson Jr. and Peeters (1988) for mammals. Plant community descriptions generally follow Holland (1986).

District biologists performed a reconnaissance-level survey at all project sites. All distinctive plant communities were noted and described, and all plant and wildlife species detected were identified and recorded. Appendix D lists the plant species detected and Appendix E lists the wildlife species detected. See Appendix F for a copy of the site assessment data sheet.

The surveys were intended as an initial evaluation of on-site habitat types at the project sites and an assessment of the potential for occurrence of special-status plant and wildlife species at those project sites. The evaluation did not include focused wildlife surveys or botanical

Figure 1. Project Areas

surveys, and therefore is not considered adequate to report negative findings for some special-status species. However, based on the surveys conducted to date and an assessment of available habitats on site, certain special-status plant and animal species are not expected to occur or can be entirely ruled out.

An inventory of plant species noted within the immediate vicinity of the project sites is presented in Appendix D. Wildlife species noted on site are listed in Appendix E.

Based primarily on visual inspections, a preliminary determination will be made as to the extent of jurisdictional waters or wetlands at project sites that may be subject to Corps jurisdiction. For sites with a well-defined, often unvegetated, stream channel is present, the extent of waters of the U.S. will be estimated based on the apparent limits of "ordinary high water," as indicated by scour marks on opposite sides of the banks, alluvial deposits, drift lines or debris, or shelving. In other cases, where strongly hydrophytic vegetation is dominant and there is obvious wetland hydrology (e.g. inundation or soils saturated at the surface), it will be reasonable to assume that hydric soils are present, and that the parameters will be met for the classification of the site as a wetland under federal guidelines (Environmental Laboratory 1987).

A formal wetland delineation and preliminary jurisdictional determination has not yet been conducted. When completed, the extent, where applicable, of waters of the U.S. expected to fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE), will be identified within each of the sites. When the wetlands delineation is conducted, potential waters of the State of California, which are anticipated to fall under the jurisdiction of the California Department of Fish and Game (CDFG) and/or the Regional Water Quality Control Board (RWQCB) will also be identified.

A routine wetland delineation and preliminary jurisdictional determination will be performed in accordance with the procedures outlined in the USACE Wetlands Delineation Manual (Environmental Laboratory 1987). Based on topography and the presence or absence of field indicators including vegetation, hydrology, and soils, the limits of potentially jurisdictional waters of the U.S. will be determined.

2.0 EXISTING CONDITIONS

2.1 Setting

The District's flood control routine maintenance activity area covers several creeks draining eastward to San Pablo Bay, extending from the Novato Creek watershed in the north to the Richardson Bay watershed in the south in the largely urbanized eastern portions of the county, and a portion along Easkoot Creek draining into the Pacific Ocean at Stinson Beach.

Development patterns in Marin County are such that much of the valley floors are urbanized, with housing, commercial developments, and roads. Stream corridors sometimes have tree cover, but are sometimes more open through these areas; in almost all cases they are heavily impacted by human use, with concrete channelization, straightening, building piles in the creek, constrained riparian corridors, impacted floodplains, and nonnative invasive species. The upper reaches of creeks extend past the developed areas into woodlands and forests; many creek headwaters begin in Marin County Open Space lands. The lower reaches of creeks are tidally influenced, often with very little topographic relief, and while less developed, are often constrained by roads (such as Highways 101 and 37), levees, and other human-induced development.

The San Andreas Fault, running offshore through Bolinas Lagoon and up Tomales Bay, splits the County into two distinct geologic landscapes: the Pacific Plate lies on the west side of the fault and is comprised of Cretaceous granitic rock of the Monterey formation overlain with Cenozoic marine sedimentary deposits. All of the proposed project sites are located east of the fault on the North American Plate, which is comprised of Cretaceous sedimentary and metamorphic rocks of the Franciscan Complex (Sloan 2006) with Mesozoic marine sandstones and shales, cherts, and serpentines (Shuford & Tomassi 1989).

2.2 Plant Communities and Wildlife Habitats

The work sites proposed as part of this project can be separated into two basic groups: areas that are located within largely urbanized areas (where work may occur on easements adjacent to residential backyards, road rights of way, etc.), and areas in more natural settings, such as lower Novato Creek where we maintain levees surrounded by open water. In both instances, vegetation maintenance activities have been undertaken for a number of years; these work sites have been subjected to limbing and trimming, mowing, and trash clearing. The levees experience infrequent vehicle use from Flood Control, as well as Vector Control, utilities, and city/town jurisdictions to perform their duties. While these sites often support native species, it should be clear that these sites are not pristine and have been heavily impacted by urban development.

The vegetation communities described below are present within or adjacent to work sites. The descriptions generally follow Holland (1986). Diked baylands follow work by the Goals Project (2000) and BAASMA (2006). These communities include annual grassland, northern coastal salt marsh, north coast riparian scrub/forest, and mixed evergreen forest.

California Annual Grassland

Historically, grasslands in California were dominated by perennial bunchgrasses. However, the vast majority of grasslands have converted from native perennial species to Mediterranean annual grass species, resulting in an annual grassland habitat dominated by nonnative *Bromus* and *Erodium* species and others (Bartolome 2007). The low-elevation grasslands are especially prone to host nonnative species, with some 400 nonnative taxa included in grasslands species.

In addition to areas of open grassland, this habitat also describes many of the habitat remnants found in the easements where maintenance activities occur, such as between residential properties, in open disturbed areas on the landside of levees, and in areas where ditches have been constructed to direct water (where water would not have flowed before development).

Nonnative grassland species include wild oats (*Avena sp.*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), filaree (*Erodium sp*.), star thistle (*Centaurea sp*.), bull thistle (*Cirsium vulgare*), Italian thistle (*Carduus pycnocephalus*), rattlesnake grass (*Briza maxima*), little rattlesnake grass (*Briza minor*), foxtail (*Hordeum murinum*), dandelion (*Taraxacum officinale),* Italian ryegrass *(Lolium multiflorum*), and wild mustards *(Brassica spp. and Hirschfeldia incana).*

Native grassland species include wild hyacinths, clovers (*Trifolium sp*.), ground iris (*Iris macrosiphon*), owl's clover, goldfields (*Lasthenia sp*.), blue wild-rye (*Elymus glaucus ssp. Glaucus*), purple needlegrass (*Nassella pulchra*), melic grass (*Melica californica*), creeping wildrye *(Leymus triticoides*), and annual fescue (*Vulpia microstachys*).

Project sites in this habitat are generally found in upland areas that are now predominately converted to urban development, such as San Marin and San Ramon creeks in Novato, the Castro and Mabry ditches in Santa Venetia, and the Sutton Manor area of Mill Valley.

Northern Coastal Salt Marsh

Northern coastal salt marsh is defined by fluctuating water and salinity levels. The dominant plants are those that have adapted to tolerate high salt levels. There are three main parts to the salt marsh, with each part containing different mixes of species: low, middle, and high, though these parts intergrade depending on topography.

Few plants can tolerate the salinities present in the low marsh areas, generally defined as the area between mean sea level to mean high water (Baye et al 2000). Native Pacific cordgrass (*Spartina foliosa),* nonnative (and invasive) smooth cordgrass (*Spartina alterniflora*), and annual pickleweed (*Salicornia europaea)* can be found in the low marsh zone where salinities are highest.

Mid-marsh zones are dominated by pickleweed (*Salicornia virginica)* but also include native species such as saltgrass (*Distichlis spicata),* Pacific cordgrass (*Spartina foliosa),* salt marsh

dodder (*Cuscuta salina),* jaumea (*Jaumea carnosa),* spear scale (*Atriplex triangularis*), and alkali-heath (*Frankenia salina).* Nonnative dense-flowered cordgrass (*Spartina densiflora)* is also common to the middle zones.

Natural upper marsh habitats such as upland marsh edges or ecotones are no longer common, with much urban development taking their place. Human-made areas of high marsh include levee banks which often significantly shorten the area available. Characteristic native species in the upper marsh include gumplant (*Grindelia stricta var. angustifolia),* sea lavender (*Limonium californicum),* saltgrass (*Distichlis spicata),* spear scale (*Atriplex triangularis*), alkali-heath (*Frankenia salina),* cattails (*Typha spp*), and salt rush (*Juncus lesueurii).* Nonnative species include pepper grass (*Lepidium latifolium)* and fennel (*Foeniculum vulgare*)

Project sites in this habitat are found in the tidal reaches of the following creeks: Rush, Novato, Warner, Gallinas, Corte Madera, East, West, Almont Marsh, Arroyo Corte Madera del Presidio, and Coyote Creeks in East Marin, and in Easkoot Creek at Bolinas Lagoon upstream almost to Calle de Pinos in West Marin.

Diked Baylands

Formerly tidally-influenced salt marsh, some baylands along San Pablo Bay were diked in order to reclaim land for pasture and hayfields in the late 1800's (Baye 2000). Now severed from natural tidal processes by levees and water control structures, these diked baylands constitute a mixed community. The construction of levees and inland ditches, along with the locations of natural tidal creeks, diverse topography, differing quantities of peat, varying amounts of freshwater inputs, and varying amounts of saltwater intrusion result in a patchwork of plants, some more characteristic of salt marsh and others more characteristic of brackish or freshwater marsh (Baye 2000).

Past uses of the diked lands as pasture and nonnative hay fields have resulted in largely nonnative weedy species composition. These areas do not generally support important salt marsh species such as Pacific cordgrass (*Spartina folioso*), Mason's lilaeopsis (*Lilaeopsis masonii), s*mooth goldfields (*Lasthenia glabrata).*

In the more saline areas, native species such as saltgrass (*Distichlis spicata),* pickleweed (*Salicornia virginica),* alkali-heath (*Frankenia salina),* spear scale (*Atriplex triangularis*), dodder (*Cuscuta salina),* alkali bulrush (*Scirpus maritimus*) and cattails *(Typha spp)* are common.

Species common to the brackish habitats include Baltic rush (*Juncus balticus),* goosefoot *(Chenopodium berlandieri),* purslane (*Sesuvium verrucosum*), dock *(Rumex crispus),* barley *(Hordeum marinum var. gussoneanum),* poison hemlock *(Conium maculatum),* sago pondweed *(Potamogeton pectinatus*), and rabbitfoot grass *(Polypogon monspeliensis).*

Native freshwater species such as popcorn flower (*Plagiobothrys stipitatus*), toad rush (*Juncus bufonius*), flowering quillwort (*Lilaea scilloides*), and nonnative species such as

brass-buttons *(Cotula coronopifolia)*, dittrichia *(Dittrichia graveolens)*, bird's foot trefoil *(Lotus corniculatus)*, oat bent-grass *(Agrostis avenacea)*, wild mustards *(Brassica spp. and Hirschfeldia incana)*, loosestrife *(Lythrum hyssopifolia)*, and sweet fennel *(Foeniculum vulgare*) may be found in areas of diked baylands.

Project sites in this habitat are found in stream reaches and baylands now behind levees and tidegates: Arroyo de San Jose, Baccaglio Basin, Lynwood Slough, Pacheco, Ryan, and various sites within Santa Venetia.

North Coast Riparian Scrub/Forest

Riparian habitats are found on gravelly stream banks. Dominate tree species are willow (*Salix sp.*) and alders (*Alnus sp.*). Other tree and shrub species include western sycamore *(Platanus racemosa)*, bigleaf maple *(Acer macrophylum)*, cottonwood *(Populus fremontii)*, box elder *(Acer negundo californicum)*, elderberry *(Sambucus caerulea)*, California bay laurel *(Umbellularia californica)*, and valley oak *(Quercus lobata)*. Understory species commonly include horsetail (*Equisetum* sp.), lady fern (*Athyrium filix-femina* var. *cyclosorum*), California blackberry *(Rubus vitifolius)*, creeping snowberry (*Symphoricarpos albus* var. *laevigatus*), and poison oak *(Toxicodendron diversilobum*). Nonnative species such as Himalayan blackberry (*Rubus armeniacus*) and periwinkle (*Vinca minor*) are common understory species.

Most of the project sites included in the Program are in riparian habitat, which is generally found in the non-tidal reaches of creeks: Novato Creek, Arroyo de San Jose, Pacheco Creek, Miller Creek, and Nyhan Creek in East Marin and Easkoot Creek upstream of Highway 1 in West Marin.

Mixed Evergreen Forest

This community is dominated by broadleaved evergreen trees. Coast live oak (*Quercus agrifolia*) and California bay (*Umbellularia californica*) are the dominant canopy species; understory species include madrone *(Arbutus menzeisii*), bigleaf maple *(Acer macrophylum)*, California blackberry *(Rubus vitifolius)*, poison oak *(Toxicodendron diversilobum*) and sword fern (*Polystichum munitum*). Black oak (*Quercus kelloggii*), chinquapin (*Chrysolepis chrysophylla*), California huckleberry *(Vaccinium ovatum)* and wild rose (*Rosa gymnocarpa*), and are also common species in this community.

Project sites in this habitat are found in Crest Marin Creek in Mill Valley and at the Thompson trash rack, Meadow Way trash rack, and La Pasada inlet in Santa Venetia.

3.0 SPECIAL-STATUS BIOLOGICAL RESOURCES

Prior to conducting fieldwork, the California Natural Diversity Data Base (CNDDB) (CDFG 2011) was reviewed for the most recent distribution information for special-status plant and animal species within the Petaluma River, Novato, San Rafael, San Quentin, Point Bonita, and Bolinas quadrangles.

Other information on special-status plant species was compiled through a review of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California* (CNPS 2010), the California Department of Fish and Game's (CDFG) *State and Federally Listed Endangered, Threatened, and Rare Plants of California* (CDFG 2010a) and *Special Vascular Plants, Bryophytes, and Lichens List* (CDFG 2010b), and the U.S. Fish and Wildlife Service's (USFWS) *Endangered and Threatened Plant and Animal Taxa; Proposed Rule* (USFWS 1996a, 1999b). Also reviewed for special-status plant occurrences was *Marin Flora* (Howell et al. 2007).

Additional information on special-status animal species was compiled through a review of the CNDDB (CDFG 2011), CDFG's *State and Federally Listed Endangered and Threatened Animals of California* (CDFG 2010c), *Special Animals List* (CDFG 2009), and California Wildlife Habitat Relationship System (CDFG 2008), and USFWS's *Endangered and Threatened Wildlife and Plant*s (USFWS 1996a, 1999b).

3.1 Special-Status Plants

Special-status plant species include those listed as Endangered, Threatened, Rare or those species proposed for listing by the USFWS (2001b), the CDFG (2010a,b) and the CNPS (2010). The CNPS listing is sanctioned by the CDFG and serves essentially as their list of "candidate" plant species. CNPS List 1B and List 2 species are considered eligible for state listing as endangered or threatened under the CDFG Code. Such species should be fully considered during preparation of environmental documents subject to the California Environmental Quality Act (CEQA). CNPS List 3 and List 4 species are considered to be either plants about which more information is needed or are uncommon enough that their status should be regularly monitored. Such plants may be eligible or may become eligible for state listing, and CNPS and CDFG recommend that these species be evaluated for consideration during the preparation of CEQA documents.

Based on quad searches and special status species listings from federal and state agencies searches, 33 plant species have been identified as having some potential of occurring within the project sites (Appendix A). Of these, only four species, based on literature and database reviews and familiarity with local flora, are considered likely to occur within the project sites. None are listed; all are species of concern.

Based on a reconnaissance-level survey and habitat assessment, many of the 33 species with at least some potential to occur within the region can be ruled out from the work sites due to the lack of suitable habitat within the project corridor. Specialized habitats such as playas, coastal dunes, lower montane coniferous forest, vernal pools, coastal bluff scrub, coastal

prairie, and serpentine-derived soils or outcrops are not present within the study area or work sites.

Although location data for several special-status plant species places them within the study corridor, the presence of some of these within the work sites remains highly unlikely. In many cases, the location data from CNDDB represent historic data from the time period before large-scale development. In other cases, the CNDDB data represent best guesses as to location, and while shown as covering our project sites, the required habitat may not be present within the work sites.

Nevertheless, certain special-status plant species, have at least some potential to occur within some of the project sites, and cannot be ruled out without appropriately timed, focused botanical surveys, if work is occurring in these specific habitat types.

Special Status Plant Species

The following is a brief discussion of the four special status plant species noted in Appendix A for additional analysis. These species are considered to have some potential to occur within one or more of the work sites, due to the presence of suitable habitat, the plant was detected during the site reconnaissance, and/or the species has been reported within the vicinity of the work sites.

Point Reyes bird's-beak (*Cordylanthus maritimus ssp. palustris*)

STATUS. Point Reyes bird's beak is a federal species of special concern and is listed by the CNPS as 1B.

PROJECT SITE OCCURRENCE. The CNDDB lists 42 occurrences of Point Reyes bird's beak in Marin County; the majority of these are on the western coast. Sites near CNDDB occurrences include: 3-BM, 3-MIL-3, 3-RYC-1, 3-SUT-1, 5-EAS-1, 5-EAS-2, 5-EAS-3.

SPECIES ACCOUNT. The species has recently had a name change; CNPS now refers to the Point Reyes bird's beak as *Chloropyron maritimum ssp. palustre.* It is an annual plant that grows in **c**oastal salt marsh from Oregon to California. In Marin, there are populations along the coast and San Pablo Bay. The plant blooms June to October.

POSSIBLE IMPACTS. Point Reyes bird's beak may be exposed to impacts during project implementation including sediment and debris removal, vegetation management and maintenance, and repair, rehabilitation, and replacement of structures. Impacts may include habitat degradation, trampling or crushing, and temporary loss of habitat which may result in disturbance or mortality.

Pale Yellow/Hayfield tarplant (*Hemizonia congesta ssp. congesta*)

STATUS. The pale yellow tarplant is not listed by the federal or state governments but is listed by the CNPS as 1B.

PROJECT SITE OCCURRENCE. The CNDDB lists a record in Ignacio near sites 1-ASJ-1, 1-ASJ-2, and 1-ASJ-3.

SPECIES ACCOUNT. An annual herb, the pale yellow tarplant grows in coastal scrub/valley and foothill grassland habitats, and sometimes roadsides. The plant blooms from April to November. The petals are almost white, in contrast to the yellower petals of the closely related, but not listed, *Hemizonia congesta ssp. lutescens*; with which it hybridizes.

POSSIBLE IMPACTS. Pale yellow tarplant may be exposed to impacts during project implementation including sediment and debris removal, vegetation management and maintenance, and repair, rehabilitation, and replacement of structures. Impacts may include habitat degradation, trampling or crushing, and temporary loss of habitat which may result in disturbance or mortality.

Marsh microseris (*Microseris paludosa*)

STATUS. The marsh microseris is not listed by the federal or state governments but is listed by the CNPS as 1B.

PROJECT SITE OCCURRENCE. The CNDDB lists occurrences in the vicinity of sites: 3-CAS, 3-ACMP-3, and 9-LAR-2.

SPECIES ACCOUNT. The marsh microseris is a perennial herb that grows in moist grassland or open woods in **c**losed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland. The plant blooms from April to July. It is endemic to California and ranges from Marin County and San Francisco Bay Area south along the central coast to Santa Barbara.

POSSIBLE IMPACTS. Marsh microseris may be exposed to impacts during project implementation including sediment and debris removal, vegetation management and maintenance, and repair, rehabilitation, and replacement of structures. Impacts may include habitat degradation, trampling or crushing, and temporary loss of habitat which may result in disturbance or mortality.

Marin knotweed (*Polygonum marinense*)

STATUS. Marin knotweed is a federal species of special concern and is listed by the CNPS as 3 (needing taxonomic review).

PROJECT SITE OCCURRENCE. The CNDDB contains record for Marin knotweed on Corte Madera Creek, just downstream of site 9-CMC-1 and at the creek mouth.

SPECIES ACCOUNT. The Marin knotweed is an annual herb that grows in coastal salt or brackish marshes and swamps and blooms from April to October. Currently, there are fewer than twenty known occurrences. Its taxonomic status is uncertain; it is possibly a synonym of *P. robertii*, a non-native plant.

POSSIBLE IMPACTS. Marin knotweed may be exposed to impacts during project implementation including sediment and debris removal, vegetation management and

maintenance, and repair, rehabilitation, and replacement of structures. Impacts may include habitat degradation, trampling or crushing, and temporary loss of habitat which may result in disturbance or mortality.

3.2 Special-Status Wildlife

Special-status animal species include those listed by the USFWS under the federal Endangered Species Act (1996a, 1999b) and by the CDFG under the California Endangered Species Act (2009, 2010c). The USFWS officially lists species as either Threatened, Endangered, or as Candidates for listing. Additional species receive federal protection under the Bald Eagle Protection Act (*e.g.*, bald eagle, golden eagle), the Migratory Bird Treaty Act (MBTA) and state protection under CEQA §15380(d). All birds, except European starlings, English house sparrows, and rock doves (pigeons), are protected under the MBTA. In addition, many other species are considered by the CDFG to be Species of Special Concern; these are listed in Remsen (1978), Williams (1986), and CDFG (2009). Although such species are afforded no official legal status, they may receive special consideration during the CEQA review process. The CDFG further classifies some species under the following categories: "Fully Protected", "Protected birds" (CDFG Code §3511), "Protected mammals" (CDFG Code §4700), "Protected amphibian" (CDFG Code §5050 and Chapter 5, §41), "Protected reptile" (CDFG Code §5050 and Chapter 5, §42), and "Protected fish" (CDFG Code §5515). The designation "Protected" indicates that a species may not be taken or possessed except under special permit from CDFG; "Fully Protected" indicates that a species can be taken for scientific purposes by permit only (CDFG 2009). The Fish and Game Code §§3503, 3505, and 3800 prohibits the take, destruction or possession of any bird, nest or egg of any bird except English house sparrows and European starlings unless express authorization is obtained from CDFG.

Based on quad searches and special status species listings from federal and state agencies searches, 80 animal species have been identified as having some potential of occurring within the project sites (Appendix A). Of these, only 16 species, based on literature and database reviews and familiarity with local fauna, are considered likely to occur within the project sites. Eight of these are listed; eight others are species of concern. Those species with a moderate to high potential to occur, or those species prominent in the regulatory environment are discussed herein.

Special Status Wildlife Species

The following is a brief discussion of the special status wildlife species noted in Appendix A for additional analysis. These species are considered to have some potential to occur within one or more of the work sites, due to the presence of suitable habitat, the species was detected during the site reconnaissance, and/or the species has been reported within the vicinity of the work sites. Section 5.0 includes a discussion of each individual site and the potential to support those species discussed herein.

Invertebrates

Monarch butterfly (*Danaus plexippus*)

STATUS. The monarch butterfly is not federally or state listed; however, its roosting habitat is often reviewed under CEQA.

PROJECT SITE OCCURRENCE. The monarch butterfly is known to utilize the area near the two Easkoot Creek project sites for overwintering habitat from September to March (U.S. Department of the Interior 2002).

SPECIES ACCOUNT. Monarchs range from southern Canada, through North America and far into South America. They rely on the milkweed plant as a primary food source and for caterpillar hosting. The California coast is an important overwintering area for the monarchs west of the Rockies; migration starts in August and the butterflies are usually at the overwintering sites by October. The butterflies roost in trees and can form large aggregations with many individuals. Potentially suitable roosting habitat occurs adjacent to the Easkoot Creek project sites.

POSSIBLE IMPACTS. Proposed activities will not directly affect the butterflies but could produce disturbances and harassment to them. Most of the proposed maintenance activities will occur before the butterflies migrate into the area. Impacts can be avoided by completing work at the Easkoot Creek sites before September 1; otherwise, potential impacts can be mitigated by checking the sites for presence of monarchs, and if detected, allowing them to leave the area.

Fish

Central California Coast ESU Coho (*Oncorhynchus kisutch*)

STATUS. The Central California Coast ESU coho salmon (*Oncorhynchus kisutch*) is a federal and state endangered species. This ESU includes all naturally spawned populations of coho salmon from Punta Gorda in northern California south to the San Lorenzo River in central California (NOAA 2001). Critical habitat has been designated; for Marin County, critical habitat includes all river reaches draining to the Pacific Ocean (or bays) that are accessible to coho, as well as two rivers draining to San Pablo Bay: Arroyo Corte Madera del Presidio and Corte Madera Creek (DFG 2004).

PROJECT SITE OCCURRENCE. The project sites fall within the Central California Coast ESU, in particular the project sites on Easkoot, Arroyo Corte Madera del Presidio, and Corte Madera Creeks. While CNDDB lists only one record in Marin, on Redwood Creek in the San Rafael quad, coho are known in several additional west-draining creeks in Marin County. In 2002, 82 juvenile coho were observed in Easkoot Creek (NPS 2003). While they were historically known to populate Arroyo Corte Madera del Presidio and Corte Madera Creek, coho have not been observed in those creeks since 1981 (Leidy 2007).

SPECIES ACCOUNT. Coho salmon are anadromous, growing and maturing in the ocean before returning to their natal freshwater streams to spawn. The first heavy rains of the season set off the coho spawning season, generally between November and January but could be as long as September to March (Bettelheim 2002). Suitable nest sites are often located at riffles and have small to medium sized gravel. After coho fry emerge from their eggs, they remain

in the freshwater creeks, feeding and growing until the next spring. The following spring, almost a year after their emergence, juvenile coho make a seaward migration downstream to the ocean, where they will spend approximately 1 ½ years before returning to spawn (Bettelheim 2002).

POSSIBLE IMPACTS. Reduction in water quality, increased water temperatures, degradation or destruction of instream habitat, increased sedimentation, and dewatering could cause direct mortality of adult or juvenile fish or eggs as well as impair reproductive success.

Central California Coast DPS Steelhead (*Oncorhynchus mykiss irideus*)

STATUS. The Central California Coast Distinct Population Segment steelhead is a federal threatened species and a state special animal. Critical habitat has been designated for the following creeks in Marin County: Estero Americano, Easkoot Creek, Corte Madera Creek, Larkspur Creek, Cascade Creek, Old Mill Creek, Ross Creek, San Anselmo Creek, Sleepy Hollow Creek, Tamalpais Creek, Arroyo Corte Madera del Presidio. Novato Creek was proposed for critical habitat designation but was excluded due to an economic analysis by the Fish and Wildlife Service **(**USFWS 2005).

PROJECT SITE OCCURRENCE. There are no CNDDB records in the project quads, but Central California Coast steelhead are known to occur in Easkoot Creek (NPS 2002), and Novato Creek, Miller Creek, Gallinas Creek, Corte Madera Creek, Arroyo Corte Madera del Presidio, and Coyote Creek watersheds (Leidy 2007), although current habitat quality, availability, and accessibility, and thus population sizes, have been drastically reduced compared to historic levels.

SPECIES ACCOUNT. Steelhead trout are born in freshwater streams, where they mature and grow for 1-3 years before migrating to the ocean. They spend from 1-4 growing seasons in the ocean, where most of their growth occurs (USFWS 2010a). The fish then return to their natal streams to spawn. Spawning usually occurs from November to February. Steelhead require cool, clean water in streams that contain adequately sized spawning gravels, instream cover, and intact riparian forests for shading. Downed trees, rootwads, and undercut banks provide important habitat elements for steelhead, which must provide cover and low stream velocities as the fish are not strong enough to withstand heavy currents. Water quality and quantity are important habitat requirements for steelhead (Leidy 2000).

POSSIBLE IMPACTS. Reduction in water quality, increased water temperatures, degradation or destruction of instream habitat, increased sedimentation, and dewatering could cause direct mortality of adult or juvenile fish or eggs as well as impair reproductive success.

Amphibians

California red-legged frog (*Rana draytonii*)

STATUS. California red-legged frog is a federal threatened species and a California species of special concern. Critical habitat has been designated; however, no areas within the selected quads are within the critical habitat designation.

PROJECT SITE OCCURRENCE. In Marin County, red-legged frogs are more common in western than eastern Marin. Within the project site, the greatest potential for red-legged frogs is at the Easkoot Creek work sites.

SPECIES ACCOUNT. Optimal habitat includes ponds, stream courses, and permanent pools with largely intact emergent or shoreline vegetation, such as cattails, tules or willows, and absence of competitors/predators such as bullfrogs and largemouth bass. The species breeds in stock ponds, pools, and slow-moving streams with emergent vegetation for cover and egg attachment. Red-legged frogs have been found in less-optimal habitat such as concrete-lined pools, isolated wells, stock ponds absent of shoreline vegetation, and in refuse piles near ponds.

POSSIBLE IMPACTS. This species may be exposed to impacts during project implementation including sediment and debris removal, vegetation management and maintenance, repair, rehabilitation, and replacement of structures. Impacts may include habitat degradation, trampling or crushing of nests and young, and temporary loss of breeding habitat which may result in disturbance or mortality.

Reptiles

Northwestern pond turtle (*Clemmys* (*Actinemys*) *marmorata marmorata*)

STATUS**.** The northwestern pond turtle is a candidate for federal listing; the state lists it as a species of concern. No critical habitat has been designated.

PROJECT SITE OCCURRENCE**.** There are seven CNDDB records in the selected quads, five are north of the Petaluma River, one is well outside our project site in Redwood Creek, and one is at Phoenix Lake. None of the occurrences are located on or near the project sites.

SPECIES ACCOUNT**.** There are two subspecies of western pond turtle, with a zone of intergradation occurring from the San Joaquin Valley east to the San Francisco Bay Area. The northwestern pond turtle (*C. m. marmorata*) is the subspecies that occurs in Marin County (Michaud 2008). The southwestern pond turtle (*C. m. pallida*) fills out the southern range. Pond turtles have been observed in slow-moving streams, lakes, reservoirs, wetlands, stock ponds, and sewage treatment plant ponds. Their preferred aquatic habitat includes refugia such as undercut banks, submerged vegetation, rocks, logs, and mud banks; turtle densities can be higher with greater availability of basking sites (Jennings and Hayes 1994). Pond turtles are known to utilize upland terrestrial habitats, most often during the summer for mating, egg-laying, and overland dispersal, and in winter for overwintering (Holland 1994).

POSSIBLE IMPACTS. This species may be exposed to impacts during project implementation includes sediment and debris removal, vegetation management and maintenance, repair, rehabilitation, and replacement of structures. Impacts may include habitat degradation, trampling or crushing of nests and young, and temporary loss of breeding habitat which may result in disturbance or mortality.

Birds

California clapper rail (*Rallus longirostris obsoletus*)

STATUS. The California clapper rail is a federal and state listed endangered species. No critical habitat has been designated.

PROJECT SITE OCCURRENCE. Clapper rails have been reported in Bolinas, Petaluma River, Novato, San Rafael, and San Quentin quads. This species nests and forages in tidal wetlands with pickleweed, cordgrass, and bulrush

SPECIES ACCOUNT. California clapper rails occur almost exclusively in tidal salt and brackish marshes dominated by dense stands of cordgrass and pickleweed, with unrestricted daily tidal flows, well developed tidal channel networks, and suitable nesting and escape cover during extreme high tides. They utilize the lower marsh zone, typically consisting of sparse vegetation and tidal sloughs, for foraging, and the upper marsh zone, typically consisting of dense vegetation, for cover, breeding and high tide refugia (Albertson and Evens 2000). Networks of tidal channels are the most important element of foraging habitat, where they feed on invertebrates including mussels, clams, crabs, snails, insects and fish (Albertson and Evens 2000). Nests are constructed about 2 ft above the ground and generally within 10 ft of active channels or open bay water (Shuford 1993). The nests are often accessed through tunnels in the vegetation for additional protection.

The breeding season for California clapper rails extends from February to August, with most nesting activity typically between March and May. The birds are most active at sunrise and sunset.

Based on known occurrences and the presence of suitable habitat within or adjacent to several of the work sites, California clapper rail could potentially occur in certain project sites in the lower creek systems of Novato Creek, South Fork of Gallinas Creek, and Bothin Marsh.

At other project locations, the presence of this species is highly unlikely.

POSSIBLE IMPACTS. The most likely impact to California clapper rail is noise disturbance from maintenance activities. Sediment removal at approximately 15 sites may directly impact pickleweed and other salt marsh vegetation.

California black rail (*Laterallus jamaicensis coturniculus*)

STATUS. The California black rail is a federal species of concern and is listed as state threatened. No critical habitat has been designated.

PROJECT SITE OCCURRENCE. This species nests and forages in tidal emergent marshes with pickleweed and cordgrass. According to CNDDB records, there are18 occurrence records within the selected project quads.

SPECIES ACCOUNT. The California black rail is a year-round resident in the greater Bay Area. They are elusive birds and are more likely heard than seen. They are the smallest of the rails, about 5-6 inches in length. The species occurs in the higher elevation zones of tidal

salt marsh heavily vegetated with pickleweed, and freshwater and brackish marshes. These rails are strongly associated with areas of active tidal influence and avoid diked bayland areas that might contain stagnant water (Shuford 1993). Their nests are platforms in grasses or pickleweed that are generally as close to the ground as possible while staying above high tide; the nests are well-concealed from the sides and from above.

The California black rail has been reported throughout eastern Marin County (CDFG 2010c), within the vicinity of several of the work sites. As such, the California black rail is considered to be moderately likely to occur within or adjacent to these work sites.

POSSIBLE IMPACTS. The most likely impact to California black rail is noise disturbance from maintenance activities. Sediment removal at approximately 15 sites may directly impact pickleweed and other salt marsh vegetation.

Northern spotted owl (*Strix occidentalis caurina*)

STATUS**.** The northern spotted owl is a federal threatened species; critical habitat has been designated, but there is no designated habitat in Marin County.

PROJECT SITE OCCURRENCE. This species prefers to nest in older growth redwood/Douglas fir forests. One project site (9-LAR-2) is within 250 ft of a known (past) territory on Larkspur Creek; 7 other territories are approximately 1/5 to 1/3 of a mile from project sites on Bothin, Ross, Warner Canyon, Arroyo Corte Madera del Presidio, Old Mill, and Reed Creeks. In most cases, the maintenance activities take place amidst residential development; with territories upslope of the creek and residential zone.

SPECIES ACCOUNT. The range of the spotted owl extends from southwest British Columbia through the Cascade Mountains, coastal ranges, and intervening forested lands in Washington, Oregon, and California, as far south as Marin County (USFWS 2010b). Spotted owls generally rely on older forested habitats because these forests contain the structural complexity, presence of deadwood and snags, high canopy closure and density characteristics required for nesting, roosting, and foraging, though foraging habitat may also include areas with less structural diversity and less canopy cover. In Marin County, the owls prefer Douglas-fir, and redwoods, but they also use Bishop pine and mixed evergreen-deciduous hardwood forests.

Local land agencies (MMWD, MCOSD, NPS) contract with the Point Reyes Bird Observatory to conduct yearly surveys for northern spotted owls; observations are submitted to CNDDB.

POSSIBLE IMPACTS. The most likely routine maintenance impact during the non-breeding season would be noise-related. To avoid impacts, maintenance activities should be scheduled to avoid the nesting season of February through July, or, if owls are detected during site reconnaissance, handtools should be used rather than power tools.

Raptors and Wading Birds

Special-status raptors that have potential to occur within or adjacent to the project site include northern harrier (*Circus cyaneus*), a state species of concern, and white-tailed kite

(*Elanus caeruleus*), a California Fully Protected Species and federal Special Concern Species. Northern harriers prefer marshy areas and are often seen along San Pablo Bay from Santa Venetia to Novato. They nest in Point Reyes and near the Petaluma River, mostly in grass or cattails in wet meadows, or near lakes and streams. White-tailed kites are tree nesters (nests are approximately 20 ft above the ground); the breeding population in Marin County is very low (Shuford 1993).
Burrowing owls (*Athene cunicularia hypugaea*), a federal and state species of special concern, nest in abandoned rodent burrows in areas of sparse vegetation, often on levees. They are not known at the sites, and there are no CNDDB occurrence records for burrowing owls on or near the sites.

Special-status water and wading birds that have potential to occur within or adjacent to the project site include the great egret (*Casmerodius albus*), great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), and black-crowned night heron (*Nycticorax nycticorax*).
The great egret and great blue heron nest in rookeries in tall trees and secluded areas on marshes, such as Audubon Canyon Ranch at Bolinas Lagoon. The snowy egret and black-crowned night heron nest on West Marin Island, in San Pablo Bay offshore from San Rafael. Green herons (*Butorides virescens*) are known to occur within the project site.

POSSIBLE IMPACTS. The most likely routine maintenance impact during the non-breeding season would be noise-related. To avoid impacts, maintenance activities should be scheduled to avoid the nesting season of February through July, or, if owls are detected during site reconnaissance, handtools should be used rather than power tools.

Passerine and Non-passerine Landbirds

Nesting birds, their nests, and eggs are fully protected by the California Fish and Game Code (Sections 3503, 3503.5) and the Migratory Bird Treaty Act of 1918 (MBTA). The MBTA protects over 800 species, including geese, ducks, shorebirds, raptors, songbirds, and many relatively common species. Destruction or disturbance of a nest is a violation of these regulations and is considered a potentially significant impact. Nesting season is typically considered to extend from February 15th through August 31st in a particular year.

Special-status passerines and non-passerine landbirds that have potential to occur within or adjacent to the project site include saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), San Pablo song sparrow (*Melospiza melodia samuelis*), oak titmouse (*Baelophus inornatus*), and Nuttall's woodpecker (*Picoides nuttallii*).

In California, yellowthroats are found in freshwater marshes, coastal swales, swampy riparian thickets, brackish marshes, salt marshes, and the edges of disturbed weed fields and grasslands that border soggy habitats (Shuford 1993). In the San Francisco Bay region as a whole, about 60% of yellowthroats breed in brackish marsh, 20% in riparian woodland/swamp, 10% in freshwater marsh, 5% in salt marsh, and 5% in upland vegetation (Hobson *et al.* 1986, Shuford 1993). While a year round resident of Marin County, they are not known to breed in or near the project sites.

San Pablo song sparrows prefer tidal salt marshes with pickleweed. They make nest cups either in depressions on the ground or up to 3 ft high in vegetation; these nests may be on

ditch banks. There are several CNDDB records ranging from Novato Creek to Arroyo Corte Madera del Presidio.

Oak titmouse, a year-long resident of Marin County, prefers dry, open oak woodlands. They are cavity nesters; nests are normally 3-32 ft above the ground.

Nuttall's woodpecker prefers willow riparian and oak woodlands that are generally more open than dense; they nest in tree cavities in dead limbs or trunks, usually 3-45 ft above the ground.

POSSIBLE IMPACTS. The most likely routine maintenance impact during the non-breeding season would be noise-related. To avoid impacts, maintenance activities should be scheduled to avoid the nesting season of February through July, or, if nests are detected during site reconnaissance, handtools should be used rather than power tools.

Mammals

Salt marsh harvest mouse (*Reithrodontomys raviventris*)

STATUS**.** Salt marsh harvest mouse is a federal and state listed endangered species. Critical habitat has not been designated for this species.

PROJECT SITE OCCURRENCE. This species is found in saline emergent marsh with dense pickleweed. It is reported to occur within the project site in eastern Marin County. Lower reaches of Novato Creek levees, Gallinas Creek South Fork, Bothin Marsh sites. CNDDB contains 12 records in Petaluma River, San Rafael, and San Quentin quads.

SPECIES ACCOUNT. The harvest mouse is a rodent endemic to the salt and brackish marshes of the San Francisco Bay Estuary and adjacent tidally influenced areas. The harvest mouse typically weighs about 0.35 ounce with body length ranging from 2.7-2.9 inches. They depend mainly on dense pickleweed (*Sarcocornia pacifica*) as their primary cover and food source. However, harvest mice may utilize a broader source of food and cover which includes saltgrass (*Distichlis spicata*) and other vegetation typically found in the salt and brackish marshes of this region. In natural systems, harvest mice can be found in the middle tidal marsh and upland transition zones. Upland refugia is an essential habitat component during high tide events. The split of the northern (*R. raviventris halicoetes*) and southern (*R. raviventris raviventris*) subspecies occurs in Marin County around Point Pedro, with the northern subspecies in Novato and Santa Venetia, and the southern subspecies in Corte Madera and Richardson Bay marshes.

POSSIBLE IMPACTS. The most likely impact to salt marsh harvest mouse is noise disturbance from maintenance activities. Sediment removal at approximately 15 sites may directly impact pickleweed and other salt marsh vegetation.

Special-Status Bats

There are 24 known species of bats in California, all of which are protected under CDFG Code 4150 as indigenous, non-game mammal species. Each of these species use mature trees, snags, crevices and/or man-made structures such as buildings or bridges for roosting. Bats are site faithful and will not abandon an established roosting area unless disturbed.

Hibernation and roosting areas depend on the location of the roost and the species; potential roosting areas in the vicinity of project components include mature trees, snags and crevices within rock faces. Most of these species are ubiquitous in a variety of habitats, although not in large numbers. However, they often require species-specific roost requirements in terms of temperature, humidity, access, dimensions and height of the roosting area from the ground.

The pallid bat (*Antrozous pallidus*), a California Species of Special Concern, is a bridge-roosting bat species that is considered to have some potential to occur within the project site, due to the presence of bridges at several of the work sites. The species ranges from British Columbia and Montana to central Mexico, and east to Texas, Oklahoma and Kansas in habitats ranging from rocky arid deserts to grasslands into higher elevation coniferous forests. Pallid bats are gregarious, and often roost in colonies up to several hundred individuals. Pregnant females gather in summer maternity colonies within warm rock crevices, abandoned mines, caves, hollow trees and in cavern-like building features (e.g. attics). Females give birth between May and July. Young are generally weaned in mid to late August. Maternity colonies disband between August and October. The bats are relatively inactive during the winter and are not known to migrate. Pallid bats roost in rock crevices, tree hollows, mines, caves, and a variety of anthropogenic structures, including vacant and occupied buildings. Tree roosting has been documented in large conifer snags (e.g. ponderosa pine), inside basal hollows of redwoods and giant sequoias, and bole cavities in oaks. They are primarily insectivorous, feeding on large prey taken on the ground, or sometimes in flight.

Townsend's western big-eared bat (*Plecotus townsendii townsendii*) is a federal and state Species of Special Concern. The species occurs in humid habitats throughout the west, and is distributed from British Columbia south along the Pacific coast to central Mexico and east into the Great Plains. It has been reported in a wide variety of habitat types including mixed forests, riparian communities, agricultural areas, and coastal habitats. Distribution is strongly correlated with the availability of caves and cave-like roosting habitat, with population centers occurring in areas dominated by exposed, cavity forming rock and/or historic mining districts. Summer maternity colonies range in size from a few dozen to several hundred individuals. Maternity colonies form between March and June (based on local climactic factors), with a single pup born between May and July. Males remain solitary during the maternity period. Winter hibernating colonies are composed of mixed-sexed groups which can range in size from a single individual to colonies of several hundred animals. Mating generally takes place between October and February in both migratory sites and hibernacula. Its habit of roosting on open surfaces makes it readily detectable, and it is often the species most frequently observed (commonly in low numbers) in caves and abandoned mines throughout its range. It has also been reported to utilize buildings, bridges, rock crevices and hollow trees as roost sites. Foraging associations include: edge habitats along streams and areas adjacent to and within a variety of wooded habitats. It often travels large distances while foraging, including movements of over 10 miles during a single evening. It is a moth specialist with over 90% of its diet composed of lepidopterans.

Additionally, four tree-roosting myotis bat species are also considered to have some potential to occur within the project site due the presence of suitable tree and riparian

habitat. These species include long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), and Yuma myotis (*Myotis yumanensis*), all Federal Species of Concern. Most of these species utilizes tree cavities, hollows in tree snags, and exfoliating bark. The long-eared myotis will also roost under bridges. Fringed, long-eared, and long-legged myotis bats are less likely to be present in marsh/riparian vegetation (such as that which occurs in the proposed project site) and more likely to be found in mixed hardwood conifer/conifer habitat at higher elevations.

The Western red bat (*Lasiurus blossevillii),* a species of concern by the California Department of Fish and Game, roosts in riparian vegetation in Marin County.

There is potential for the pallid bat, Townsend's western big-eared bat, and Yuma myotis bat to roost in culverts; however, the culverts within the proposed project sites are generally too smooth in texture to be suitable habitat for these bat species.

Pallid bat has been reported near the upper reaches of Lagunitas Creek (CDFG 2011), within one mile of some of the work sites. Given the known presence of these bat species in the region and the presence of suitable habitat at several of the work sites, these and several other bat species are considered to have a moderate potential to occur within or adjacent to these work sites.

POSSIBLE IMPACTS: Bats may be disturbed by noise during vegetation maintenance activities, and their nesting and roosting areas may be destroyed by vegetation removal activities (of standing dead trees and/or invasive species).

3.3 Wildlife Movement Corridors and Habitat Fragmentation

The ability of wildlife to move through the landscape is important for migration (seasonal breeding and feeding), dispersal (new home ranges and long-term genetic exchange), and for daily movement within individual territories.

Habitat fragmentation creates a greater number of habitat patches that are smaller in size than the original contiguous habitat. This, in turn, can hinder regional wildlife movements, put stress on local populations, and increase the probability of extinction for these populations compared to those associated with non-fragmented landscapes. Considering the impacts resulting in potential fragmentation of primary habitat types and loss of valuable dispersal corridors is important when assessing the biological impacts of a project.

Because the activities proposed do not involve the loss of wetland and/or riparian habitat within the work sites, they are not likely to affect wildlife movement corridors or contribute to habitat fragmentation. Given that the proposed work is maintenance-related, the project will likely only result in short-term temporal impacts (1-2 days) to movement for aquatic species dependent the subject habitats. Movement through these areas will be restored as soon as maintenance activities are completed.

3.4 Sensitive Natural Communities

Sensitive natural communities are those that are considered rare in the region, support special-status plant or wildlife species, or receive regulatory protection (*i.e.*, §404 of the Clean Water Act and/or the §§1600 *et seq.* of the California Fish and Game Code).

Within the project sites, two sensitive natural communities have the potential to be affected by project activities: northern coastal salt marsh and coastal brackish marsh (CDFG 2011). These communities are found within or adjacent to some of the project sites and are expected to fall under federal and/or state jurisdictions as wetlands or waters of the U.S. or waters of the state.

3.5 Wetlands and Other Waters of the U.S.

Wetlands and other aquatic resources such as riparian areas and certain aquatic vegetation communities are considered sensitive biological resources and can fall under the jurisdiction of several regulatory agencies. For a longer discussion of jurisdictional waters, please see Section 6.0

Wetlands are generally defined by the USACE as "those areas that are inundated or saturated by surface or ground water… that under normal circumstances support a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3 [b]). Indicators of three wetland parameters determined by field investigation must be present for a site to be classified as a wetland by the USACE; these are hydric soils, hydrophytic vegetation, and wetlands hydrology.

Approximately 17 sites have been initially identified as possibly meeting the USACE definition of wetlands. A formal wetlands delineation for those sites will be completed in before seeking USACE permits. The following paragraphs set out the process which will be used to make the determinations.

Hydrophytic Vegetation

Hydrophytic vegetation includes those plant species that possess physiological features or reproductive adaptations that allow them to persist in soils subject to prolonged inundation and anaerobic soil conditions. Plant species are classified by their probability of being associated with wetlands or uplands. Obligate (OBL) species almost always (>99% of the time) occur in wetlands. Facultative Wetland (FACW) species occur in wetlands 67-99% of the time. Facultative (FAC) species have an equal probability 33-66% to occur in wetlands. Facultative Upland (FACU) and Obligate Upland (UPL) species occur in wetlands 1-33% and <1% of the time, respectively. A project site will meet this criterion if more than 50 percent of the dominant plant species in each of the strata are OBL, FACW, or FAC indicator species. Table 1 lists common wetland plant species and their indicator status.

Table 1.
Wetland Indicator Status of Common Plant Species
Detected Within and Adjacent to Potential Wetlands

Scientific Name	*Common Name*	*Indicator Status*
Alnus rubra	red alder	FACW
Athyrium felix-femina var.*cyclosorum*	lady fern	FAC
Atriplex patula	spearscale	FACW
Baccharis douglasii	herb	OBL
Cotula coronopifolia[1]	African brass-buttons	FACW+
Distichlis spicata	saltgrass	FACW
Epilobium ciliatum ssp. *ciliatum*	northern willow herb	FACW
Frankenia salina	alkali heath	FACW-
Grindelia stricta	marsh gum-plant	FACW
Holcus lanatus[1]	velvet grass	FAC
Jaumea carnosa	jaumea	OBL
Juncus balticus	wire rush	OBL
Juncus effusus	common rush	OBL
Juncus xiphioides	iris-leaf rush	OBL
Mentha piperata[1]	peppermint	OBL
Mentha pulegium[1]	pennyroyal	OBL
Mimulus guttatus	common large monkey-flower	OBL
Picris echioides[1]	bristly ox-tongue	FAC*
Polygonum punctatum	water smartweed	OBL
Polypogon monspeliensis[1]	rabbitfoot grass	FACW+
Potentilla anserina ssp. *pacifica*	silverweed	OBL
Rubus discolor[1]	Himalayan blackberry	FACW*
Rubus parviflorus	thimbleberry	FAC+
Rubus ursinus	California blackberry	FACW*
Rumex crispus[1]	curly dock	FACW-
Rorippa nasturtium-aquaticum	watercress	OBL
Salicornia virginica	pickleweed	OBL
Salix lasiolepis	arroyo willow	FACW
Salix lucida var. *lasiandra*	lance-leaf willow	OBL
Scirpus microcarpus	small-headed rush	OBL
Scirpus robustus	prairie bulrush	OBL
Stachys chamissonis	coast hedge-nettle	OBL
Typha angustifolia	narrow-leaf cattail	OBL
Typha latifolia	broad-leaf cattail	OBL
Urtica dioica ssp. *holosericea*	hoary nettle	FACW
Veronica anagallis-aquatica[1]	water speedwell	OBL

[1] indicates non-native species

Soils

A list of soil units mapped within the work sites and supporting potentially jurisdictional wetlands or other waters is presented in Table 2. Soils are indicated where listed as hydric in Marin County (USDA 1985).

Table 2. Soils Mapped at the Work Sites

Map Series Name	Unit and Phase	Hydric
Ballard-Urban Land Complex	0 - 9% slopes	Yes, drainageways
Blucher-Cole Complex	2 - 5% slopes	Yes, alluvial fans
Bressa Variant-Mcmullin Variant Complex	30 - 50% slopes	No
Cortina Gravelly Sandy Loam	0 - 5% slopes	Yes, depressions
Cronkhite-Barnabe Complex	15 - 30% slopes	No
Cronkhite-Barnabe Complex	30 - 50% slopes	No
Cronkhite-Barnabe Complex	50 - 75% slopes	No
Dipsea-Barnabe Very Gravelly Loams	50 - 75% slopes	No
Dipsea-Urban Land-Barnabe Complex	30 - 50% slopes	No
Dune Land	Dune land	Yes, basin floors
Los Osos-Bonnydoon Complex	30 - 50% slopes	No
Los Osos-Urban Land-Bonnydoon Complex	15 - 30% slopes	No
Maymen-Maymen Variant Gravelly Loams	30 - 75% slopes	No
Novato Clay	Novato clay	Yes, tidal marshes
Pits, Quarries	Pits, quarries	Yes, flood plains
Reyes Clay	Reyes clay	Yes, drainageways
Rock Outcrop-Xerorthents Complex	50 - 75% slopes	No
Saurin-Bonnydoon Complex	30 - 50% slopes	No
Saurin-Bonnydoon Complex	50 - 75% slopes	No
Saurin-Urban Land-Bonnydoon Complex	15 - 30% slopes	No
Saurin-Urban Land-Bonnydoon Complex	30 - 50% slopes	No
Tocaloma-Mcmullin Complex	15 - 30% slopes	No
Tocaloma-Mcmullin Complex	30 - 50% slopes	No
Tocaloma-Mcmullin Complex	50 - 75% slopes	No
Tocaloma-Mcmullin-Urban Land Complex	15 - 30% slopes	No
Tocaloma-Mcmullin-Urban Land Complex	30 - 50% slopes	No
Tocaloma-Saurin Association	Extremely steep	Yes, depressions
Tocaloma-Saurin Association	Steep	No
Tocaloma-Saurin Association	Very steep	Yes, depressions
Urban Land-Ballard Complex	0 - 9% slopes	Yes, tidal flats
Urban Land-Xerorthents Complex	0 - 9% slopes	Yes, tidal flats
Water	Water	No
Xerorthents, Fill		No
Xerorthents-Urban Land Complex	0 - 9% slopes	Yes, tidal flats

Hydrology

Surface hydrology within the study corridor is influenced by direct precipitation, headwater flows, backwater flooding, sheet flow, surface seepage due to a high water table, the presence of poorly drained soils, tidal fluctuation, and surface runoff from surrounding areas. Runoff from adjacent roadways also contributes to on-site hydrology.

Portions of the Eastern Marin project sites are immediately adjacent to San Pablo Bay. Several perennial streams, including Novato Creek, Corte Madera Creek, Coyote Creek, and Arroyo Corte Madera del Presidio flow into San Pablo Bay. In Western Marin, Easkoot Creek flows directly into the Pacific Ocean. Numerous unnamed intermittent tributaries flowing mostly eastward from their origins on Inverness Ridge are also present within many of the work sites.

Jurisdictional Determination

The CDFG exercises jurisdiction over wetland and riparian resources associated with rivers, streams, and lakes under California Fish and Game Code Sections 1600 to 1607. The CDFG has the authority to regulate work that will substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed. The CDFG's jurisdiction along a river, stream, creek, or other water body is usually bounded by the top-of-bank or the outermost edges of riparian vegetation.

Because all of the project sites are part of aquatic systems that ultimately flow into the Pacific Ocean, all of them are expected to fall under regulation of the CDFG and RWQCB as waters of the State.

4.0 AVOIDANCE AND MINIMIZATION MEASURES

4.1 General Measures

General avoidance and minimization measures apply to each site, regardless of maintenance activity type or special status species that may be present.

GEN-1: Designation of Environmental Compliance Coordinator

An Environmental Compliance Coordinator (ECC) will be designated. The ECC shall have an understanding of biological resources, missions of regulatory agencies and regulations as they may affect listed species, and the nature of the maintenance activities.

Before commencement of a maintenance activity, the ECC will review project specific information on the type, location, and extent of the activity and associated areas of disturbance. S/he will determine appropriate measures to implement, based on the type of activity, and will prescribe appropriate avoidance and minimization measures and general and activity-specific conditions and prohibitions.

GEN-2: Assessment, Buffers, and Stop Work Orders

The ECC shall assess field conditions at the start of each work day. If any special status species or nesting birds are observed, the ECC will coordinate with the contractor foreman to either establish buffers areas, if sufficient, or to stop any activity the ECC deems may result in take or destruction of habitat. Stopped work should not be allowed to resume until appropriate corrective measures have been completed or it has been determined that nesting is complete. The ECC shall immediately report any unauthorized impacts to the appropriate trustee agency (i.e.USACE, USFWS, NMFS, and/or CDFG).

GEN-3: Contractor Crew Training

The ECC will ensure that before work starts, all on-site maintenance activity personnel and contractors will receive instruction regarding the presence and description of listed species at each project site and the details of appropriate avoidance and minimization measures.

GEN-4: Site Preparation/Wildlife Reconnaissance

The ECC shall walk the site each day before maintenance activities commence to locate wildlife; if any special status wildlife species are noted, work will not commence until all individuals have left the work site on their own and/or it has been determined that they are not nesting within the project site.

All habitat improvements on salmon and steelhead streams shall be done in accordance with techniques in the California Salmonid Stream Habitat Restoration Manual (CDFG 2010d).

GEN-5: Monitoring and Reporting Program

The ECC will implement a monitoring and reporting program that shall include, but not be limited to: preparing each year's project list, scheduling pre-construction surveys, overseeing project activity during maintenance, preparing photo documentation, and evaluating post-maintenance restoration/revegetation, if necessary. Reporting regarding project impacts to California red-legged frogs will be performed in accordance with the terms and conditions issued by the USFWS.

GEN-6: Work Windows

To avoid impacts to special status species, the maintenance activities carried out should typically occur during the summer low flow season. In addition, species-specific work windows should be followed to avoid impacts. Table 3 shows the work windows for species that may be impacted by the proposed maintenance activities. Additional information can be found within the species-specific AMMS.

Monarch butterfly

Monarch butterflies are known to overwinter in areas adjacent to the Easkoot Creek project area. The work window is April 1st through August 31st; work after September 1st requires more vigilance.

Salmon and steelhead

Work in and around salmon and steelhead streams is restricted to the period of June 15th to October 15th or the first rains. This is to take advantage of low stream flow and avoid the spawning and egg/alevin incubation period in the fall and the outmigration period in spring. Work in non-salmonid streams may be conducted between April 15th and October 15th in each calendar year.

Upslope work generally occurs during the same period as stream work. Sediment reduction activities are dependent on soil moisture content and, in some areas, equipment access and effectiveness are constrained by wet conditions. .

The permissible work window for individual work sites will be further constrained as necessary to avoid adverse impacts to special-status species and the nesting or breeding seasons for native fish, birds, amphibians and terrestrial mammals. (see mitigation measures for specific timing of maintenance activities, by species)

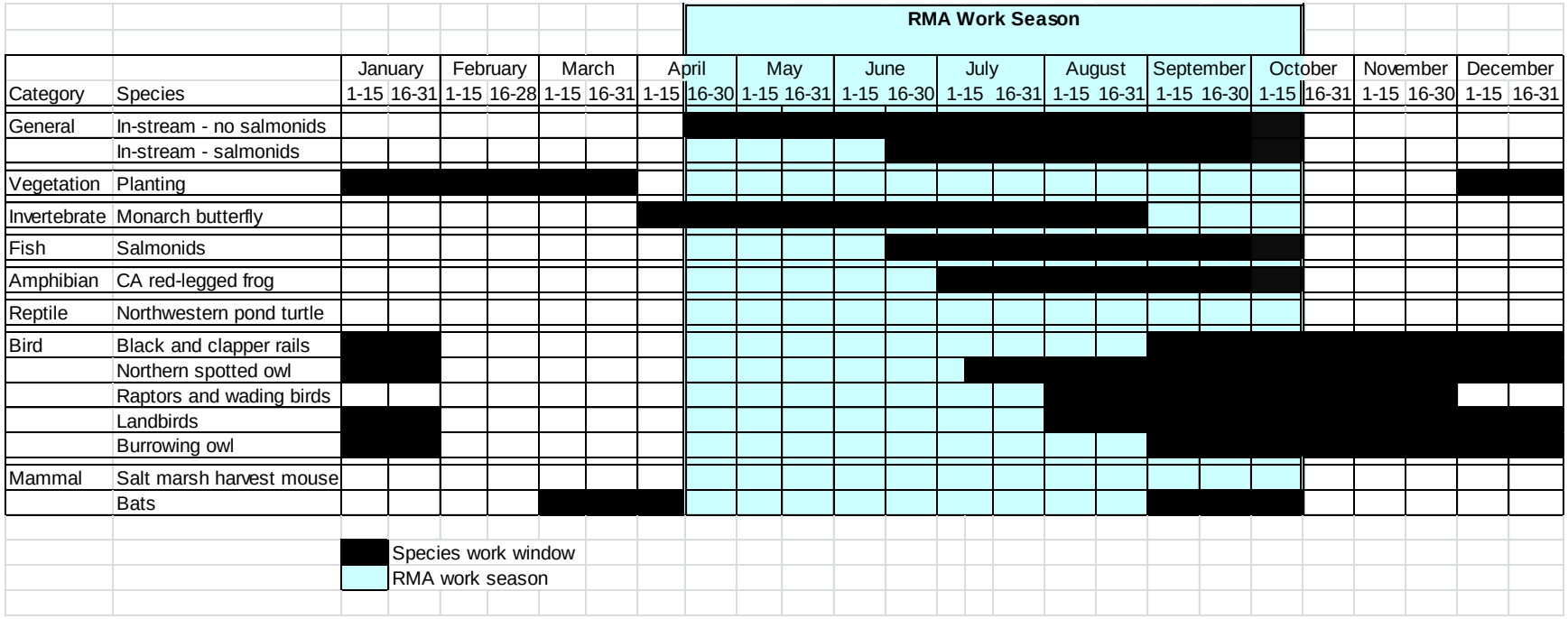
California Red-legged frog, northwestern pond turtle, and salt marsh harvest mouse

There are no work windows for these species; surveys may be required if species may be impacted. See species-specific AMMs for survey requirements.

California clapper and black rails

The work window for activities within rail habitat is September 1st through January 31st.

Table 3. Work Windows



Raptors, wading birds, and migratory birds

The work window for sites with potential for raptor and migratory bird nesting is August 1st through November 30th; therefore, if work is conditioned to start after July 31st potential impacts will be avoided and no surveys will be required. However, if work in the riparian zone or mowing of levees will occur between before July 31st the ECC will conduct a survey for nesting birds within one week prior to the proposed vegetation removal and/or maintenance activities and ensure no nesting birds will be impacted by the project. Work can proceed if surveys determine that nesting birds will not be impacted or if no nesting birds are observed. If active nests are found, the ECC should postpone maintenance activities for that site until young have left the nest and will no longer be impacted by the project.

Because the culverts in the proposed project sites are fairly small, there is minimal likelihood that they would provide suitable habitat for swallows. However, if any culverts show evidence of past or current swallow nesting, the ECC will identify them and maintenance activities will occur after August 31st or after all swallows have fledged to avoid impacts.

Roosting bats

The work window for activities at sites where bats are determined to be present is from March 1st through April 15th and September 1st through October 15th.

GEN-7: Trash Removal

During all activities at project sites, all trash that may attract predators shall be properly contained, removed from the work site, and disposed of regularly. Following maintenance activities, all trash and maintenance debris shall be removed from work sites and disposed of properly.

GEN-8: Equipment Staging

Staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the steam channel or adjacent to the stream, will be positioned over drip-pans. Equipment will be moved out of the normal high water area of the stream prior to refueling and lubricating. The ECC or crew supervisor shall ensure that contamination of habitat does not occur during such operations. Best Management Practices covering Chemical Use (Spill Prevention and Control), contained in the BASMAA Flood Control Facility Maintenance Best Management Practices Manual (BAASMA 2000) will be followed. These BMPs are designed to prevent the discharge of chemicals to flood control channels and storm drain systems and allow prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the proposed activity.

GEN-9: Invasive Species

The ECC shall ensure that the spread or introduction of invasive exotic plants shall be avoided to the maximum extent possible. When practicable, invasive exotic plants at the work site shall be removed.

For all activities in creeks and bay, all gear exposed to water should be allowed to dry for three days before being used again. Some disinfectants are OK to use per DFG and USFWS (users should check with those agencies). As a precaution against invasive quagga and zebra mussels, if kayaks or any other vessels are used in maintenance activities, crew will wash and dry them off-site prior to using them in another creek or tributary.

GEN-10: Water Quality

Any work using equipment within the stream channel shall be performed in isolation from the flowing stream. If there is any flow when the work is done, cofferdams should be constructed upstream and downstream of the excavation site to divert all flow from upstream of the upstream dam to downstream of the downstream dam. The cofferdams will be constructed with clean river gravel or sand bags and sealed with sheet plastic. Sand bags and any sheet plastic will be removed from the stream upon project completion. Clean river gravel may be left in the stream, but the cofferdams must be breached to return the stream flow to its natural channel.

For minor actions where the disturbance to construct cofferdams to isolate the work site would be greater than that which would occur in completing the proposed action, measures will be put in place immediately downstream of the work site to capture suspended sediment. This may include installation of silt catchment fences across the drainage or placement of a filter berm of clean river gravel, coir logs or their equivalent. Silt fences and other non-native materials will be removed from the stream following completion of the activity. Gravel berms may be left in place after breaching, provided they do not impede the stream flow.

Water quality will be protected through the use of sediment/erosion control measures, including sediment traps, turbidity curtains, silt fences, hay bales, hydro-seeding using a native mix, and use of seed-free straw mulch, as appropriate. These measures will be appropriately located to prevent transporting and depositing sediment disturbed during maintenance activities outside of the maintenance activity zone.

If it is necessary to divert flow around the work site, either by pump or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting CDFG and NOAA Fisheries' criteria to prevent entrainment or impingement of small fish (National Marine Fisheries Service 1997).

During dewatering, intakes and outlets of pumps should be designed to minimize turbidity and the potential to wash contaminants into the stream.

Any turbid water pumped from the work site itself to maintain it in a dewatered state shall be discharged in an upland location (e.g., vegetated upland area via flexible pipe) where it will be filtered before returning to the stream channel.

4.2 Avoidance and Minimization Measures for Plants

One avoidance and minimization measure covers listed and special status plants.

PLA-1: Special status plants

At sites where vegetation may be modified (such as mowing, clearing, or ground-breaking), and where special status plant species may potentially occur, a qualified biologist should conduct a habitat assessment during blooming periods to determine the presence of suitable habitat. If no potentially suitable habitat is identified during the habitat assessment, then avoidance has been accomplished and no further actions are necessary.

If suitable habitat is determined to be present within the maintenance site, botanical surveys should be conducted before activities commence to determine whether any special status plant species are present. Rare plant surveys, if necessary, should be conducted following the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG 2009b) and Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (U.S. Fish and Wildlife Service 2000).

Surveys should be conducted in the field when species are both evident and identifiable, normally during flowering or fruiting. Multiple visits to a site may be necessary to capture the floristic diversity present at the site.

If listed species are observed or presumed present, then the ECC should take such action as is necessary to protect the plants, using fencing, buffers, etc. If possible and practicable, the project should be redesigned to avoid listed plant species.

For all observed special status species, the ECC should complete and submit a California Native Species (or Community) Field Survey Form to the CNDDB documenting the species and location.

The ECC shall ensure that the Project Foreman is aware of these site-specific conditions, and will inspect the work site before, during, and after completion of the maintenance activities.

4.3 Avoidance and Minimization Measures for Invertebrates

INV-1: Monarch butterfly

The three Easkoot Creek project sites are adjacent to known overwintering sites for Monarch butterfly.

Avoidance will be accomplished if maintenance activities are scheduled for April 1st through August 31st

If work occurs during the butterfly overwintering season (October through March), the ECC should walk the area of proposed activity each day before maintenance activities begin to determine presence monarchs. If none are observed, avoidance can be assumed and work can proceed. If monarchs are observed within the site, work should not commence until all individuals have left the work site on their own.

4.4 Avoidance and Minimization Measures for Fish

The AMMs described below is designed specifically for coho salmon and steelhead trout, as these species are known to occur within some of the project sites, but the measures will also protect other fish species such as Chinook salmon, sturgeon, lampreys, and Sacramento splittail. There are two project sites at Easkoot Creek that may have coho salmon and several project sites in Easkoot Creek and creeks within the Novato Creek and Richardson Bay watersheds with steelhead trout.

FISH-1: Salmonids

If coho or steelhead are known to be absent from the project site based on CEMAR/DFG survey and there are long-standing natural or artificial downstream barriers sufficient to prevent upstream migration, then avoidance has been accomplished and no further actions are necessary.

If coho or steelhead are determined or presumed to be present in the project site, then the following Avoidance and Minimization Measures shall be implemented:

- All in-stream maintenance activities will be restricted to the low-flow period of June 15th through October 15th. Work above the top of bank or outside of the channel will not be subject to this modified work period.

- No equipment is to be operated from within the active stream channel unless the stream has been dewatered and fish have been relocated by a qualified biologist.

- To minimize turbidity and stress to special status species, personnel will avoid walking through stream pools and thalwegs, and will instead walk across riffles or outside of the stream bed to access a project site.

- To minimize disturbance during sediment removal activities, if there is flow or seepage in a work site, a reach of creek may have to be de-watered. Before construction of the de-watering system, a qualified biologist with appropriate permit(s) will conduct fish relocation activities, and immediately release captured fish to a suitable habitat near the project site.

- Screens shall be placed on all pumps used for dewatering the work site in accordance with NOAA Fisheries' Fish Screening Criteria for Anadromous Salmonids (NMFS, 1997).

- If used, coffer dams should be constructed upstream of the entire work site within the stream banks, and should be constructed with clean river gravel or sand bags and sealed with sheet plastic.

- Intakes and outlets should be designed to minimize turbidity and the potential to wash contaminants into streams.

- Pump discharge must be directed into a settling basin to allow silt removal. Once the project work is complete, water should slowly released back into the creek to prevent erosion and limit turbidity.

4.5 Avoidance and Minimization Measures for Amphibians

AMPH-1: California red-legged frog (CRLF)

CRLF absence is presumed for all project sites in eastern Marin. Therefore, impacts are avoided, and no further surveys, studies or CRLF protection measures are required and the maintenance activities can proceed.

For the Easkoot Creek sites, 5-EAS-1, 5-EAS-2 and 5-EAS-3, where there is potential for California red-legged frog to occur, pre-construction aquatic surveys should be conducted by a qualified biologist prior to the onset of any disturbance related activities, following the protocol outlined in the Revised Guidelines on Site Assessments and Field Surveys for the California Red-legged Frog (USFWS 2005):

- Pre-construction surveys should consist of two separate daytime and nighttime surveys extending 300 ft upstream and downstream (where feasible) of the proposed work sites. If special-status species are found, CDFG and/or USFWS should be contacted to determine what actions are to be taken. The 2005 Guidance recommends a total of up to eight (8) surveys to determine the presence of CRLF at or near a project site. Two (2) day surveys and four (4) night surveys are recommended during the breeding season; one (1) day and one (1) night survey is recommended during the non-breeding season. Each survey must take place at least seven (7) days apart. At least one survey must be conducted prior to August 15th. The survey period must be over a minimum period of 6 weeks (i.e., the time between the first and last survey must be at least 6 weeks). Throughout the species' range, the non-breeding season is defined as between July 1st and September 30th.

- If California red-legged frogs, tadpoles, or eggs are found, the appropriate state and federal agencies will be contacted to determine what actions should be taken. If the USFWS approves the moving of animals, the ECC shall be allowed sufficient time to move CRLF from the work site before maintenance activities begin. The USFWS should be contacted during the permitting phase to determine if additional measures would be required.

- The project sponsor shall designate a person, which may or may not be the ECC, to monitor on-site compliance as long as that individual has undergone training in CRLF identification. The monitor shall coordinate with the contractor to halt any action that

might result in more than incidental take of CRLF. If work is stopped, the Corps and USFWS shall be notified immediately by the ECC.

- If a maintenance activity site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh no larger than five millimeters to prevent CRLF from entering the pump system.

- A biological monitor should on site to oversee aspects of the project that disturbs CRLF habitat, e.g. disturbance of aquatic vegetation.

- Training sessions should be given to all workers to inform them of protective measures, instruct them in identification of red-legged frogs, their upland and aquatic habitat requirements, and inform them of when work needs to be stopped and appropriate officials informed of species presence.

4.6 Avoidance and Minimization Measures for Reptiles

REP-1: Northwestern pond turtle

Several sites may contain suitable habitat for northwestern pond turtle, and they have been known to occur at sites 1-ASJ-1, 1-LYC, and 1-WAR-2

Pre-construction surveys for northwestern pond turtle should be conducted by a qualified biologist in accordance with USFWS protocols within 72 hours of the start of maintenance. The creek should be surveyed for presence of turtles and the creek banks surveyed for presence of burrows; all locations of observed turtles and burrows should be noted.

Each day, before maintenance activities begin, the ECC should make a quick survey for turtles, paying close attention to areas where turtles or burrows had been noted during the pre-construction survey. If turtles are observed, the ECC should use any means necessary to avoid "take" of these species, including hand removal, installation of fencing, or other measures. The ECC should assess the likelihood of project impacts to these species and coordinate findings with the USFWS and CDFG to ensure that appropriate protective measures are applied.

At any time during maintenance activities, if a northwestern pond turtle is observed by the ECC, maintenance crew, or other knowledgeable persons, maintenance activities should stop to avert the avoidable take of these species.

All staging areas for all heavy equipment, storage of materials, and any maintenance/fueling of heavy equipment should be clearly identified on the grading and building plans in order to minimize impacts to upland habitats outside the project site.

Training sessions should be given to all workers to inform them of protective measures, instruct them in identification of northwestern pond turtles, their upland and aquatic habitat requirements, and inform them of when work needs to be stopped and appropriate officials informed of species presence.

4.7 Avoidance and Minimization Measures for Birds

Following are avoidance and minimization measures for birds. Some of these relate directly to listed species with the potential to occur within one or more project sites (the rails, northern spotted owl); however, others relate more generally to a class of species, such as raptors and wading birds and land birds.

BIRD-1: California clapper rail and California black rail

Several of the sites are within (5-10 sites) or immediately adjacent (15-20 sites) to suitable habitat for California clapper rail and California black rails. The following measures apply to all sites in or near salt or brackish marshland and will also serve to protect other tidal-marsh dependent species such as saltmarsh common yellowthroat and San Pablo song sparrow.

When working within 250 ft of salt or brackish marshland during the period February 1st through August 31st, presence for either rail species should be assumed.

For all maintenance activities except for mowing of levees:

Maintenance activities should be scheduled to occur between September 1st and January 31st to avoid the rail breeding season.

Work should be scheduled to occur between 8:00 AM and 4:00 PM in order to avoid early morning and late afternoon/evening hours when rails are most active.

Work should be scheduled to avoid periods of high tides, as the high water reduces the amount of refugial habitat for the rails. No work should occur near salt marsh habitats within two hours before or after predicted extreme high tides of 6.5 ft above the National Geodetic Vertical Datum (NGVD), as measured at the Golden Gate Bridge, and adjusted to the timing of local extreme high tide events at the project sites.

Activities should proceed as quickly as possible to reduce disturbance from noise, dust, etc.

Removal or disturbance of emergent tidal marsh vegetation should be avoided, and removal or disturbance of vegetation at the tidal marsh/upland interface should be avoided to provide a buffer of refugial habitat within as wide a swath as possible (3 meter minimum) from the Mean Higher High Water (MHHW) line. If removal is necessary, the work should be scheduled outside of the breeding season (February 1 – August 31st); all vegetation should be removed by hand, and should be salvaged and retained for replacement after work is completed.

If, for any reason other than fire fuel reduction levee mowing, the District must perform maintenance activities within 250 ft of salt or brackish marshland during the rail breeding season, the District will retain a qualified biologist to conduct clapper rail surveys in accordance to most currently available protocols from the Department of Fish and Game and the US Fish and Wildlife Service.

For fire fuel reduction mowing on levee crowns

Mowing of levees for fire fuel reduction and access to facilities normally occurs during the rail breeding season (usually before July 1st). For all mowing activities, a biological monitor should first walk the entire site to determine presence of any rails and/or rail nests. If rails and/or nests are observed, work should not be allowed to proceed until the following steps are followed: if nests are observed, work should not proceed and should be rescheduled for after young have fledged; if rails are observed but not nests, the birds should be allowed to leave the area on their own before work begins.

If no rails or nests are detected, the biological monitor should walk in front of the mower as work proceeds and ensure that all Avoidance and Minimization Measures are implemented and documented.

When mowing on levees within 250 ft of salt or brackish tidal marshlands, work should be scheduled to occur between 8:00 AM and 4:00 PM in order to avoid early morning and late afternoon/evening hours when rails are most active. Mowing activities should proceed quickly within an area to reduce disturbance from noise, dust, etc. Mowing of levees within 250 ft of salt or brackish tidal marsh habitat will only occur on the tops of the levees and not on the side-slopes down into the marsh.

In addition, work should be scheduled to avoid periods of high tides, as the high water reduces the amount of refugial habitat for the rails. No work should occur near salt marsh habitats within two hours before or after predicted extreme high tides of 6.5 ft above the National Geodetic Vertical Datum (NGVD), as measured at the Golden Gate Bridge, and adjusted to the timing of local extreme high tide events at the project sites.

BIRD-2: Northern Spotted Owl

Per the "2011 Protocol for Surveying Proposed Management Activities that May Affect Northern Spotted Owls", project sites for activities that do not modify spotted owl habitat but may cause disturbance to spotted owls (such as noise from weed-whackers) are defined as 0.25 mi buffers of project footprints. Several of the work sites are within 0.25 mi (1320 ft) of known locations of northern spotted owl activity centers on Old Mill Creek, Cascade Creek, Warner Canyon Creek, Bothin Creek, Larkspur Creek, and Ross Creek (sites 3-OMC; 3-CAS; 3-WAR; 9-BOTH; 9-LAR-2; and 9-ROS).

To avoid impacts to breeding northern spotted owls, maintenance activities at sites adjacent to habitat for northern spotted owl should follow a limited operating period (LOP) with no vegetation maintenance scheduled from February 1st through July 9th. Disturbance can also be minimized by the use of non-motorized hand tools.

If a biological evaluation determines that vegetation projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location, or where a biological evaluation determines that topographic features may shield nest sites, the LOP may be waived or the buffer distance modified.

BIRD-3: Raptors and wading birds

Several of the sites are adjacent to suitable habitat for raptors and wading birds. Although none of these species are listed, they are protected by the Migratory Bird Act, and impacts to them should be minimized.

Burrowing owls, a federal and state species of special concern, are not known at the sites, and there are no CNDDB occurrence records for burrowing owls on or near the sites. However, if burrowing owls and/or if signs are found, then guidelines as detailed in the DFG 2012 Staff Report on Burrowing Owl Mitigation should be followed.

If work is scheduled to occur between August 31 – January 31 after the nesting season, then avoidance has been achieved and work can proceed; however, to protect late- or second-nesters, the ECC should walk the site before work occurs to check for nests and presence of birds at the work site.

If work in the riparian zone or mowing on levees will occur before July 31st, the ECC should conduct a survey for nesting birds within one week prior to the proposed vegetation removal and/or maintenance activities and ensure no nesting birds will be impacted by the project. Work can proceed if surveys determine that nesting birds will not be impacted or if no nesting birds are observed. If active nests are found, the ECC shall postpone maintenance activities for that site until the young have left the nest and will no longer be impacted by the project.

During nesting season, (February 1st - September 1st), the ECC should walk the area of proposed activity each day before maintenance activities begin to determine presence of nesting raptors and wading birds. If none are observed, avoidance can be assumed and work can proceed.

BIRD-4: Landbirds

Many of the project sites are along riparian corridors that potentially support many passerine and non-passerine birds, some of which are seasonal and some of which are year-round residents. These project sites include: 1-NOV-3, 3-ACMP-3, 3-NYH-2, 5-EAS-1, 5-EAS-2, 9-CMC-4, and many more.

Any removal of trees or shrubs, or maintenance activities in the vicinity of active bird nests, could result in nest abandonment, nest failure, or premature fledging. Destruction or disturbance of active nests would violate the federal Migratory Bird Treaty Act (MBTA) and California Department of Fish and Game (CDFG) Code.

Avoidance will be achieved if maintenance activities are scheduled for August 1st to January 31st to avoid the nesting season (February 1st - July 31st).

If maintenance activities are scheduled during the nesting season, then the following AMMs should be followed:

- The removal of any trees or shrubs should occur in August, after the nesting season. If removal of trees or shrubs occurs, or maintenance begins between February 1st and July 31st (includes nesting season for passerine or non-passerine birds, and raptors), a nesting bird survey should be performed by a qualified biologist within 14 days prior to the removal or disturbance of potential nesting trees or shrubs.

- If work in the riparian zone or mowing on levees will occur before July 31st, the ECC should conduct a survey for nesting birds within one week prior to the proposed vegetation removal and/or maintenance activities and ensure no nesting birds will be impacted by the project. Work can proceed if surveys determine that nesting birds will not be impacted or if no nesting birds are observed. If active nests are found, the ECC shall postpone maintenance activities for that site until the young have left the nest and will no longer be impacted by the project.

- All trees with active nests should be flagged and a non-disturbance buffer zone should be established around the nesting tree, or the site should be avoided until it has been determined that the young have fledged. Buffer zones typically range between 50-90 ft for passerines and non-passerine land birds. Active nests should be monitored by a qualified biologist to determine when the young have fledged and are feeding on their own.

- In addition to surveying trees and shrubs for nesting birds, surveys should be conducted for ground nesting birds by walking narrow transects through the grassland adjacent to the project site within 14 days prior to the commencement of project related activities by a qualified biologist.

- The ECC should be present at the commencement of maintenance-related activities to ensure that nesting birds and sensitive bird species have not inhabited the project site during the window following pre-construction surveys and commencement of maintenance activities. The ECC should also review all staging areas to ensure nesting and special status birds are not present.

- Training sessions should be given to all workers to inform them of protective measures, instruct them in identification of sensitive habitat and bird species, and inform them of when work needs to be stopped and appropriate officials informed of species presence. .

4.8 Avoidance and Minimization Measures for Mammals

There is only one listed mammal in the project quad maps; and the mammals on the species of concern list are all bat species. AMMs for mammals are below.

MAMM-1: Salt Marsh Harvest Mouse (SMHM)

The majority of the sites are not in, nor adjacent to, salt marsh harvest mouse habitat; avoidance has been achieved for those sites.

For sites where work includes removal of pickleweed or may otherwise impact salt marsh harvest mouse habitat, the following AMMS should be followed:

- When implementing maintenance activities in uplands adjacent to salt or brackish marshland, vehicles will be confined to existing roads where possible, and disturbed areas should be revegetated with brackish marsh species. Crews will use matting, pontoon boards or other comparable methods whenever feasible to minimize impacts to the existing vegetation. The placement of mats will be verified by a qualified biologist before their placement to minimize habitat impacts. Crews will work exclusively from mat boards and boardwalks to minimize trampling of vegetation. A qualified biologist will be available during the course of the maintenance work.

- If maintenance activities are conducted outside the breeding season, in coordination with USFWS and CDFG, a qualified biologist should conduct a pre-construction survey within 5 days of the start of maintenance activities to check for presence of mice within the project sites. In addition, a biological monitor should be present during maintenance-related activities along and adjacent to all suitable nesting habitat areas to ensure that salt marsh harvest mice are not present.

- Work should be scheduled to avoid periods of high tides, as the high water reduces the amount of refugial habitat for SMHM.

- Removal or disturbance of emergent tidal marsh vegetation should be avoided, and removal or disturbance of vegetation at the tidal marsh/upland interface should be avoided to provide a buffer of refugial habitat within as wide a swath as possible.

- Training sessions should be given to all workers to inform them of protective measures, instruct them in identification of the salt marsh harvest mouse and its habitat requirements, and inform them of when work needs to be stopped and appropriate officials informed of species presence.

- For project sites where work will intrude into tidal marsh habitat, a qualified biologist should survey the site prior to beginning work in order to determine the presence/absence of SMHM, and the following measures should be implemented:

- Under the supervision of the qualified biologist, vegetation should be removed only with non-mechanized hand tools; no motorized equipment should be used. Vegetation removal may begin only when no mice are observed, or with DFG approval, and shall start at the edge farthest from the salt marsh and work its way towards the salt marsh. If a mouse of any species is observed within the areas being removed of vegetation, work should stop and DFG should be notified. Unless otherwise approved by DFG, the mouse shall be allowed to leave on its own volition. Removal of pickleweed will generally follow Zedler (2001).

- If trenching takes place within 50 ft of pickleweed areas, visqueen fencing should be installed around worksites within pickleweed before excavation activities begin.

DFG will approve the size and placement of fencing. An escape ramp should be placed in any open trench at the end of the day to allow any entrapped animals to escape.

- A biological monitor should be on-site who will have the authority to halt project activities in order to comply with these terms.

MAMM-2: Roosting bats

Some of the sites may be within or adjacent to suitable habitat for roosting bats.

Pre-construction surveys for roosting bats should be conducted concurrent with those for land birds. If surveys occur during the daytime, the biologist should look for presence of bat droppings at likely roost sites (under bridges and trees (in layers of bark, woodpecker holes, and hollow branches). The droppings are black and small, about 4 – 8 mm long. Bat droppings crumble into powder when crushed, as they consist of insect remains (in contrast, mouse droppings are sticky when fresh and hard when old). During evening hours bats may be confirmed visually at dusk although species identification cannot be ascertained without the use of sonar recordings and specialized software.

If no signs of bats are detected during the pre-construction surveys, avoidance has been achieved and maintenance activities can proceed.

If bats were detected during the pre-construction survey, and removal of trees, shrubs, or dense ivy is scheduled to occur during bat breeding season, a qualified biologist should conduct a bat presence-absence survey. If bats are detected, work should be re-scheduled to occur within these dates: March 1st – April 15th and/or September 1st – October 15th in order to avoid the breeding season. Removal of vegetation should follow the two-phased removal system: Day 1, in the afternoon, limbs and branches would be removed by a tree cutter using chainsaws only. Limbs with cavities, crevices, or deep bark fissures would be avoided, and only branches or limbs with those features would be removed. Day 2: the entire tree would be removed.

Training sessions should be given to all workers during bat breeding season to inform them of protective measures, details about the two-phase tree removal protocol, and inform them of when work needs to be stopped and appropriate officials informed of species presence.

5.0 SITE-SPECIFIC ANALYSIS

Following is an analysis for each of the 95 project sites describing the site, listing the existing vegetation communities and wildlife habitats, noting the potential extent of jurisdictional wetlands or waters, listing potentially occurring special status species, and referencing appropriate avoidance and minimization measures (AMMs) and best management practices (BMPs).

The potential for special-status wildlife species to occur within or immediately adjacent to each individual project site is in most cases based on the presence of suitable habitat or the known presence of a species within the vicinity of the work site. Therefore, within the following site-specific analysis, unless otherwise noted, those species that are listed for each work site are considered to have at least some potential to occur within the work site.

See Appendix D in Programmatic Approach to Routine Flood Control Maintenance Activities document for the Site Fact Sheets.

6.0 PERMITTING IMPLICATIONS

Several state and federal regulatory agencies have jurisdiction over sensitive biological resources such as riparian areas, wetlands, waters of the United States, waters of the State, and special-status species and natural communities. Depending on the extent and type of impacts, project activities often require federal, state, and/or local permits. However, at the discretion of the lead agency in the CEQA review process, prior to the issuance of any permit for actions that would result in impacts to wetlands, waters, special-status species, or sensitive vegetation communities, notification to all or some of the following agencies is likely to be required:

Federal Jurisdiction – United States Army Corps of Engineers (USACE)

The USACE has primary federal responsibility for administering regulations that concern "waters of the U.S." within the project sites. Waters of the United States include: 1) all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide; 2) all interstate waters including interstate wetlands; 3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, wetlands, sloughs, vernal pools, wet meadows, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce; 4) tributaries of the above; and 5) territorial seas.

The USACE acts under two statutory authorities: the Rivers and Harbors Act (Sections 9 and 10), which governs specified activities in "Navigable Waters of the U.S.;" and the Clean Water Act Section 404, which governs specified activities in "other waters of the United States" including wetlands. The USACE requires that a permit be obtained if a project proposes placing structures within, over, or under navigable waters and/or discharging dredged or fill material into "waters of the U.S." below the ordinary high-water mark in non-tidal waters. The Environmental Protection Agency (EPA), United States Fish and Wildlife Service (USFWS), the National Marine Fisheries Services (NMFS), and several other agencies provide comment on USACE permit applications.

For jurisdictional purposes, Section 404 defines wetlands as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] 328.3[b] and 40 CFR 230.3). The federal definition of wetlands requires three wetland identification parameters to be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a hydrologic link to “other waters of the U.S”.

"Other waters of the U.S." refers to hydric features that are regulated by the Clean Water Act but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank and an ordinary high-water mark. Examples include rivers, creeks, intermittent and ephemeral channels, ponds, and lakes. Wet areas that are *not*

regulated under the Clean Water Act would include stock watering ponds, agricultural ditches created in upland areas, and isolated wetlands that do not have a hydrologic link to other waters of the U.S.

While the USACE is the responsible agency for regulating wetlands under Section 404 of the Clean Water Act, the EPA has overall responsibility for the Act. The USACE has the option to issue a permit on a case-by-case basis (individual permit) or at a program level (general permit). Nationwide permits (NWPs) are an example of general permits; they cover specific activities that generally have minimal environmental effects. Activities covered under a particular NWP must fulfill several general and specific conditions, as defined by the NWP. If a proposed Project cannot meet these conditions, an individual permit may be required.

For residential, commercial, and institutional development projects a standard Individual Permit is required if there are discharges that will result in the fill of any tidal waters or wetlands; or impacts to more than one-half acre of non-tidal waters or wetlands, and/or impacts to greater than 300 linear ft of non-tidal waters or wetlands, including creeks (either perennial intermittent or ephemeral), arroyos or vegetated and unvegetated tributaries.

In contrast, projects that result in impacts of less than one-half acre and/or less than 300 linear ft may be authorized under one of the existing NWPs if they meet all of the NWP General Conditions.

Regardless of the permits required, careful project design and efforts to avoid and minimize impacts to special-status species and wetland resources will streamline the permitting process and significantly improve the likelihood of rapid project approval.

Federal Jurisdiction - United States Fish and Wildlife Service (USFWS)

Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 USC 1533[c]). Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species could be present in the project site and determine whether the proposed project would have a potentially significant impact on such species. FESA prohibits "take" of federally-listed Threatened or Endangered wildlife species. The FESA defines "take" to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or attempt to engage in any such conduct" 16 U.S.C. §1532(19). The FESA requires that actions authorized, funded or carried out by federal agencies do not jeopardize the continued existence of a federally-listed species or adversely modify designated Critical Habitat for such species. If a federal agency determines that a proposed federal action (i.e., issuance of a Clean Water Act Section 404 permit for wetland fill) "may affect" a listed species and/or designated Critical Habitat, the agency must consult with the USFWS and/or NMFS for protected marine and anadromous fish species in accordance with Section 7 of the FESA. If take of a federally-listed species may occur, the applicant may be required to obtain an Incidental Take Permit from the USFWS. Such take authorization is available through the Section 7 consultation process for projects involving a federal action, or through the Section

10 process (requiring development of a Habitat Conservation Plan) for other projects. The Incidental Take Permit allows taking of federally-listed species if the take is "incidental to and not the purpose of, the carrying out of an otherwise lawful activity" 16 U.S.C. §1539(a)(1)(B).

The USWFS also affords protection to migratory birds through the Migratory Bird Treaty Act (MBTA). The MBTA protects all resident and migratory wild birds found in the United States, except the house sparrow, starling, feral pigeon, and resident game birds. Resident game birds are managed separately by each state. The MBTA makes it unlawful for anyone to kill, capture, collect, possess, buy, sell, trade, ship, import or export any migratory bird including feathers, parts, nests or eggs.

State Jurisdiction - California Department of Fish and Game (CDFG)

CDFG is authorized under the California Fish and Game Code, Sections 1600-1607 to develop mitigation measures and enter into Streambed Alteration Agreements with applicants who propose projects that would obstruct the flow of, or alter the bed, channel, or bank of a river or stream in which there is a fish or wildlife resource, including intermittent and ephemeral streams. The CDFG has the authority to regulate work that will divert, obstruct, or change the natural flow of a river, stream, or lake; change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed. Typical activities regulated by CDFG under Sections 1600-1607 authority include implementing flood control projects, stabilizing banks, creek restoration, constructing river and stream crossings, diverting water, damming streams, and jack-and-boring.

Streams are defined by the presence of a channel bed and bank, and at least an intermittent flow of water. CDFG extends the limits of its jurisdiction either from top-of-bank or to the outermost edges of riparian vegetation. CDFG regulates wetland areas only to the extent that those wetlands are a part of a river, stream, or lake as defined by CDFG. While seasonal ponds are within the CDFG definition of wetlands, they are not part of a river, stream, or lake, and may, or may not, be subject to the jurisdiction of the CDFG under Sections 1601-1603 of the Fish and Game Code.

The California Department of Fish and Game (CDFG) administers the California Endangered Species Act (CESA). The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is likely to become an endangered species in the near future in the absence of special protection or management, and a rare species is one that may become endangered if its present environment worsens. Rare species applies to California native plants. Species that are fully protected by California include those protected by special legislation for various reasons, such as the California condor. There is no incidental take allowed for fully protected species. Species of Special Concern is an informal designation used by CDFG for some declining wildlife species that are not proposed for listing as threatened or endangered, such as the burrowing owl. This designation does not provide legal protection, but signifies that these species are recognized as sensitive by CDFG.

In coordination with the USFWS the CDFG also administers the MBTA which provides protections for nesting birds that are both residents and migrants, whether or not they are considered sensitive by resource agencies. The CDFG code 3503 makes it illegal to destroy any birds' nest or any birds' eggs. Code 3503.5 further protects all birds in the orders Falconiformes and Strigiformes (Birds of Prey, such as hawks and owls) and their eggs and nests from any form of take.

State Jurisdiction - Regional Water Quality Control Board (RWQCB)

The RWQCB's regulatory jurisdiction is pursuant to Section 401 of the Federal CWA. The RWQCB typically regulates discharges of dredged or fill material into waters of the U.S., however they also have regulatory authority over waste discharges into Waters of the State, which may be isolated, under the Porter-Cologne Water Quality Control Act issued by the State Water Resources Board. In the absence of a nexus with the Corps, the Regional Board requires the submittal of a Waste Discharge Requirement (WDR) application, which must include a copy of the project Stormwater Pollution Prevention Plan (SWPPP) and a copy of the project Water Quality Management Plan (WQMP), otherwise called a Standard Urban Stormwater Management Plan (SUSMP). The Regional Board's role is to ensure that disturbances in the stream channel do not cause water quality degradation.

7.0 CONCLUSION

The proposed routine maintenance activities cover 96 sites in Marin County. Although the proposed work program is temporary and designed to work around seasonal presence and nesting periods, activities may still result in impacts to sensitive habitat and special status species. There are current records of coho, steelhead, California red-legged frog, salt marsh harvest mouse, California clapper rail and California black rail in or near some of the project sites.

To avoid and minimize impacts to sensitive species and habitats, classroom and field training of contractor staff, protocols for surveying species, and continual site monitoring are recommended.

An appropriate staff member of the Marin County Flood Control and Water Conservation District should be designated as the Environmental Compliance Coordinator (ECC). The ECC will be knowledgeable about and qualified to determine habitat types, identify the special status plant and wildlife species, and follow appropriate protocols. The ECC will conduct pre-construction surveys; conduct trainings for the contractors' supervisors and crew members on special status species, habitat types, and work processes; and direct the implementation of avoidance and minimization measures.

Each Spring, before the work season begins, the ECC should walk each project site segment and note where work needs to occur that year, and what kinds of maintenance activities need to be conducted. At this time, any species present should be noted (see Appendix F for the site assessment data sheet), as well as presence of tree or ground nests, signs of bats, pond turtle burrows, etc.

Each year, the ECC should meet with the contractor foreman and crew supervisors to discuss the proposed maintenance activities and schedule. At this time, the ECC should communicate which special status species may be present at the project sites, what impacts the maintenance activities may have on those special status species, and the avoidance and minimization measures to implement if necessary.

Each year before maintenance activities begin, the ECC should conduct trainings for the contracted personnel. The trainings should include information about the habitat types in which they will be working, the special status species that may be present, how to identify those special status species, and which avoidance and minimization measures to implement in case any special status species are present when maintenance activities are scheduled to begin.

A few days before work is scheduled for a particular project site, the ECC should walk the project site length and search for special status species, ground and tree nests, signs of bats, and active burrows. If necessary, avoidance and minimization measures should be implemented to fence off plants, trees with nests, etc, in order to protect sensitive resources.

Each day before maintenance activities begin, the ECC should walk the project site with the crew supervisors to check for presence of special status species; the appropriate avoidance

and minimization measures should be implemented as necessary to protect sensitive resources.

As the work proceeds, the ECC and crew should take note of any issues that arise and should implement avoidance and minimization measures as required.

Sensitive Vegetation Communities

Impacts to sensitive vegetation communities, including wetlands or other waters of the U.S., or waters of the state, might require mitigation for temporal losses of wetland functions such as wildlife habitat value, water filtration, or groundwater recharge. However, many of the sites are anticipated to be self-mitigating, as wetland vegetation is expected to become re-established following completion of maintenance activities.

Potentially Occurring Special-Status Plant Species

Based on background research, a reconnaissance-level survey, and the presence of suitable habitat, a total of four special-status plant species are considered to have at least some potential to occur within the vicinity of the study area, including within the limits of some of the work sites. These species cannot be ruled out without focused surveys conducted during the appropriate blooming seasons when these species can be readily recognized and identified in the field.

In order to avoid impacts to special-status plant species, botanical surveys are recommended to be conducted in April, May, June, and July for those project sites with the potential for these species, in order to ensure that the potentially occurring special-status plant species, if present, will not be overlooked.

Potentially Occurring Special-Status Wildlife Species

Based on background research, a reconnaissance-level survey, and the presence of suitable habitat, a total of fourteen special-status wildlife species are considered to have at least some potential to occur within the limits of some of the work sites. Two of these species, including California red-legged frog and western pond turtle were detected within the study area. Based on the actual or potential presence, the following recommendations are made to either avoid or minimize potential impacts to special-status wildlife species.

Pre-construction Survey Recommendations

Given the temporary nature of the proposed maintenance activities, specifically those sites where maintenance will be concluded in a very short time period (*i.e.* less than two days), it is recommended that a biological monitor be present on site, prior to the commencement of and during maintenance activities, in lieu of pre-construction surveys. The USFWS, NOAA Fisheries and CDFG should be consulted to approve any of the recommended avoidance recommendations.

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APPENDIX A

FEDERAL AND STATE SPECIAL STATUS SPECIES

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
SPECIES LISTED OR PROPOSED FOR LISTING			
INVERTEBRATES			
Mission blue butterfly *Icaricia icarioides missionensis*	FE/--	Grassland with *Lupinus albifrons* , *L. formosa* , and *L. varicolor*	**Low; removed from analysis.** No occurrences within the project area (CDFG 2010a).
San Bruno elfin butterfly *Incisalia mossii bayensis*	FE/--	Steep north facing slopes within the fog belt with grassy ground cover. Larval host plant is *Sedum spathulifolium* .	**Low; removed from analysis.** There is one known occurrence in the Bolinas quad, on the upper reaches of Lagunitas Creek, which is not near project areas.
Myrtle's silverspot butterfly *Speyeria zerene myrtleae* Pt. Reyes silverspot butterfly *Speyeria zerene puntareyes*	FE/--	Restricted to the foggy coastal dunes/hills of Pt. Reyes Peninsula; Extirpated from coastal San Mateo County.	**Low; removed from analysis.** No occurrences within the project area (CDFG 2010a) and no suitable habitat.
California freshwater shrimp *Syncaris pacifica*	FE/CE	Permanent streams with fishes. Pool areas of low-elevation, low-gradient streams, among exposed live tree roots of undercut banks, overhanging woody debris, or overhanging vegetation. Found in 17 stream segments within Marin, Napa and Sonoma counties. Many of these stream segments are isolated from the others by barriers, dewatered areas and low quality habitat.	**Low; removed from analysis.** No occurrences within the project area (CDFG 2010a).
FISH			
Green sturgeon – southern DPS *Acipenser medirostros* Critical Habitat designated	FT/CSSC	Spawn in the Sacramento River and its tributaries; the San Francisco Bay system provides rearing habitat for juveniles.	**Low, removed from analysis.** No occurrences in project area (CDFG, 2004); Marin streams too small.
Tidewater goby *Eucyclogobius newberryi*	FE/CSC	Shallow waters of bays and estuaries, in lower, primarily tidal, stream reaches.	**Low; removed from analysis.** Historical presence in Corte Madera and Novato Creeks, but now extinct in those watersheds (Leidy 2007).
Delta smelt *Hypomesus transpacificus* Critical habitat designated	FT/CT	Restricted to the Sacramento-San Joaquin Delta, including Suisun and San Pablo Bays and the Carquinez Strait.	**Low; removed from analysis.** Not known to occur in the project area (CDFG 2010a, Leidy 2007).
Coho salmon—Central CA coast ESU *Oncorhynchus kisutch* Critical Habitat designated	FE/CE	Accessible Bay Area and coastal rivers and streams with cover, cool water and sufficient dissolved oxygen. Require beds of loose, silt-free gravel for spawning.	**Moderate; retained in analysis.** Known and potential occurrences in Easkoot Creek project area only (Bolinas quad).

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
Steelhead – Central CA Coast DPS *Oncorhynchus mykiss irideus* Critical Habitat designated	FT/CSC	Accessible Bay Area and coastal rivers and streams	**High; retained in analysis.** Known and potential occurrences project area quads within the project area.
Steelhead-Central Valley DPS *Oncorhynchus mykiss irideus* Critical Habitat designated	FT/--	Spawn in the Sacramento and San Joaquin Rivers and their tributaries, migrate through San Francisco and Suisun Bays, as well as the Delta region	**Low; removed from analysis.** Migrators through the bay; management activities that benefit other salmonids will benefit any stragglers.
Chinook salmon—Central Valley spring-run Oncorhynchus tshawytscha Critical Habitat designated	FT/CT	Spawning and rearing restricted to Sacramento River basin, migrate through San Francisco Bay and Sacramento-San Joaquin Delta	**Low; removed from analysis.** Project area does not extend into the range of the ESU. Management activities that benefit other salmonids will benefit any stragglers.
Chinook salmon—fall/late fall-run *Oncorhynchus tshawytscha*	FC/CSC	Spawning and rearing restricted to Sacramento River basin, migrate through San Francisco Bay and Sacramento-SanJoaquin Delta, require clean, cold water and gravel beds	**Low; removed from analysis.** Chinook are known in the lower reaches of Novato and Corte Madera Creeks. Management activities that benefit other salmonids will benefit them.
Chinook salmon—winter run *Oncorhynchus tshawytscha* Critical Habitat designated	FE/CE	Spawning restricted to the Sacramento River. Requires clean, cold water with gravel beds.	**Low; removed from analysis.** Project area does not extend into the range of the ESU. Critical Habitat extends from Golden Gate Bridge to Delta. Management activities that benefit other salmonids will benefit any stragglers.
Sacramento splittail *Pogonichthys macrolepidotus*	FT/CSC	Slow moving river sections and dead-end sloughs with flooded vegetation for spawning and foraging for young.	**Low; removed from analysis.** .Possible in lower reaches of Novato Creek and Simmons Slough; management activities that benefit salmonids will benefit any stragglers.
Longfin smelt *Spirinchus thaleichthys*	FSC/CT	Sacramento-San Joaquin estuary in the salt or brackish water portions of the estuary, require fresh water, sandy-gravel substrates, rocks, and aquatic vegetation for spawning	**Low; removed from analysis.** No occurrences in the project area (CDFG 2010a; Leidy 2007).

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
AMPHIBIANS			
California red-legged frog Rana aurora draytonii	FT/CSC	Breed in stock ponds, pools, and slow-moving streams with emergent vegetation for escape cover and egg attachment. Where water is seasonal often utilizes mammal burrows in upland habitat for aestivation	**Moderate; retained in analysis.** Reported to occur within the project action area (Bolinas quad).
REPTILES			
Northwestern pond turtle *Clemmys marmorata marmorata*	FC/CSSC	Live in or near ponds or slow-moving creeks and need suitable rocks or logs for basking sites and underwater retreats	**Moderate; retained in analysis.** Known to occur within the project area.
BIRDS			
Marbled murrelet *Brachyramphus marmoratus* Critical Habitat designated	FT/CE	Nests in burrows or crevices. Common resident of northwestern coastal forests (temperate rainforest)	**Low; removed from analysis.** No occurrences within the project area (CDFG 2010a); critical habitat is upland of project area.
Swainson's hawk *Buteo swansoni*	--/CT	Breeds in riparian areas and oak savannah, requires adjacent foraging habitat such as grasslands or fields supporting rodent populations	**Low; removed from analysis.** Possible winter resident; no occurrences within the project area; (CDFG 2010a).
Western snowy plover *Charadrius alexandrinus nivosus*	FT/CSC	Nests and forages on sandy beaches on marine and estuarine shores - requires sandy, gravely, or friable soils for nesting	**Low; removed from analysis.** Known to occur at Seadrift near Easkoot Creek; no suitable habitat in the project areas.
Short-tailed albatross *Diomedea albatrus*	FE/CSC		**Low; removed from analysis.** No occurrences within the project area (CDFG 2010a).
Bald eagle *Haliaeetus leucocephalus*	delisted/CE	Nests and forages on inland lakes, reservoirs, and rivers; winter foraging at lakes and along major rivers	**Delisted, removed from analysis.**
California black rail *Laterallus jamaicensis coturniculus*	FSC/CT	Nests and forages in tidal emergent wetland with pickleweed and cordgrass	**Moderate; retained in analysis.** Reported to occur within the project action area in eastern Marin County (San Quentin and San Rafael quads).
California brown pelican *Pelecanus occidentalis californicus*	delisted/3511	Nests on coastal islands of small to moderate size that afford protection from predators.	**Delisted; removed from analysis.**

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
California clapper rail *Rallus longirostris obsoletus*	FE/CE	Nests and forages in emergent wetlands with pickleweed, cordgrass, and bulrush	**Moderate; retained in analysis.** Reported to occur within the project action area in eastern Marin County (San Quentin, Novato and San Rafael quads).
Bank swallow *Riparia riparia*	--/CT	Nests primarily in riparian and other lowland habitat. Requires vertical banks or cliffs with fine textured or sandy soils near water.	**Low; removed from analysis.** No occurrences within the project area (CDFG 2010a).
California least tern *Sterna antillarum browni*	FE/CE	Colonial breeder on bare or sparsely vegetated flat substrates including sand beaches, alkali flats, land fills, or paved areas	**Low; removed from analysis.** No occurrences within the project area (CDFG 2010a).
Northern spotted owl *Strix occidentalis caurina*	FT/--	Nests in old growth forests	**Low; retained in analysis.** Known territories within 1/3 mile of eight project areas (CDFG 2010a).
MAMMALS			
Salt marsh harvest mouse *Reithrodontomys raviventris*	FE/CE	Saline emergent marsh with dense pickleweed	**Moderate; retained in analysis.** Potentially occurs within the project action area in eastern Marin County (San Quentin, San Rafael quads).
PLANTS			
Sonoma alopecurus *Alopecurus aequalis var. sonomensis*	FE/--/List 1B	Freshwater marshes and swamps, riparian scrub	**Low; removed from analysis.** Historically occurred north from Point Reyes Peninsula (Fed. Reg.,1997), outside the project area.
Tiburon mariposa lily *Calochortus tiburonensis*	FT/CT/List 1B	Serpentine grassland	**Low; removed from analysis.** No occurrences within the project area (CDFG, 2004); project areas not in serpentine areas.
Tiburon Indian paintbrush *Castilleja affinis ssp. neglecta*	FE/CT/List 1B	Open serpentine slopes	**Low; removed from analysis.** No occurrences within the project area (CDFG, 2004); project areas not in serpentine areas.
Sonoma spineflower *Chorizanthe valida*	FE/CE/List 1B	Sandy soils in coastal grassland	**Low; removed from analysis.** Known only from occurrences at Pt. Reyes National Seashore (CDFG), outside project action area.

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
Soft bird's beak *Cordylanthus mollis ssp. Mollis*	FE/CR/List 1B	Coastal salt marsh	**Low; removed from analysis.** Known in Marin from only two occurrences near San Antonio Creek (CDFG); CNPS presumes extirpated in Marin.
Marin dwarf flax *Hesperolinon congestum*	FT/CT/List 1B	Grasslands and openings in chaparral, often on serpentinite	**Low; removed from analysis.** 10 occurrences in Marin County, in uplands away from creeks. Project areas not in serpentine.
Santa Cruz tarplant *Holocarpha macradenia* Critical Habitat designated (none in Marin County)	FT/CE/List 1B	Coastal scrub, coastal sand dunes, openings in oak woodlands with sandy or gravelly soil	**Low; removed from analysis.** Historically occurred near Ross Creek (1883 record). CNPS presumes extirpated in Marin County.
Contra Costa goldfields *Lasthenia conjugens*	FE/--/List 1B	Moist grasslands, vernal pools, cismontane woodlands, alkaline playas	**Low; removed from analysis.** USFWS lists this species for the project quads, but there are no occurrences within those quads (CDFG; CNPS).
Mason's lilaeopsis *Lilaeopsis masonii*	--/CR/List 1B	Brackish or freshwater marshes and swamps, riparian scrub	**Low; removed from analysis.** No occurrences within the project quads (CDFG; CNPS).
White-rayed pentachaeta *Pentachaeta bellidiflora*	FE/CE/List 1B	Open dry rocky slopes and grassland, often on soils derived from serpentinite.	**Low; removed from analysis.** Historically occurred from Santa Cruz to Marin counties; currently known only from one occurrence in San Mateo. CNPS presumes extirpated in Marin County.
Tiburon jewelflower *Streptanthus niger*	FE/CE/List 1B	Serpentine outcrops in grasslands	**Low; removed from analysis.** No occurrences within the project area (CDFG, 2004); project areas not in serpentine areas.
Showy indian clover *Trifolium amoenum*	FE/--/List 1B	Coastal bluff scrub; valley and foothill grasslands	**Low; removed from analysis.** One record in Stinson Beach area from 1927; CNPS presumes extirpated in Bolinas quad. Habitat at site is not suitable.

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
FEDERAL OR STATE SPECIES OF SPECIAL CONCERN			
INVERTEBRATES			
Sonoma arctic skipper *Carterocephalus palaemon ssp. Magnus*	FSC/--	Prefers shady redwood forest. Inhabits openings in heavily forested woods, moist meadows, and streamsides; larval host plants include purple reedgrass and bromes.	**Low.** No suitable habitat in the project areas (Baye and Wright 2004).
Monarch butterfly *Danaus plexippus*	--/*	Winter in California. Roost in wind protected eucalyptus, Monterey pine, and cypress groves, with water and nectar sources nearby.	**Low.** Known to occur near the Easkoot Creek project areas from September to March. Avoid work past September 1st.
Marin elfin butterfly *Incisalia mossii marinensis*	FSC/--	Rocky outcrops, woody canyons, cliffs; host plant includes stonecrop (*Sedum, Sedella, Dudleya,* and *Parvisedum*) species	**Low.** No habitat in the project areas.
San Francisco lacewing *Nothochrysa californica*	FSC/--	Inhabits moist woodlands near the coast with coast live oak or pine.	**Low.** Suitable habitat is not present in the project areas.
Mimic tryonia *Tryonia imitator*	FSC/--	Coastal lagoons, estuaries, and salt marshes from Sonoma County to San Diego County.	**Low.** Known in Petaluma River and San Rafael Creek, but not in project areas.
FISH			
Sacramento perch *Archoplites interruptus*	FSC/CSC	Slow moving sloughs, streams, rivers, and lakes	**Low.** Native but extinct in Corte Madera Creek (Leidy 2007)
River lamprey *Lampetra ayresi*	FSC/--	Larger coastal streams in the San Francisco Bay drainage system	**Low**. Low density in SF Bay.
Pacific lamprey *Lampetra tridentata*	FSC/--	Pacific Ocean and estuaries; spawning in coastal streams from Alaska to Baja California	**Low.** Low density in SF Bay. Possibly in Corte Madera Creek (Leidy 2007).
AMPHIBIANS			
Foothill yellow-legged frog *Rana boylii*	FSC/CSC	Partly shaded streams with riffles and quiet pools absent of predatory fish	**Low.** Present in Marin, but not known in the project areas; habitat not suitable..
BIRDS			
Cooper's hawk *Accipiter cooperi*	--/CSC	Nests in riparian growths of deciduous trees and live oak woodlands	**Low.** No habitat in project areas.
Sharp-shinned hawk *Accipiter striatus*	--/CSC	Nests in riparian growths of deciduous trees and live oaks	**Low.** No habitat in project areas.
Tricolored blackbird *Agelaius tricolor*	FSC/CSC	Riparian thickets and emergent vegetation near open water	**Low.** Winter in Marin, especially in Pt. Reyes, but not in project areas (PRBO).
Grasshopper sparrow *Ammodramus savannarum*	FSC/--	Favors grasslands and pastures over 100 acres.	**Low.** No habitat in project areas.

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
Golden eagle *Aquila chrysaetos*	CSC/3511	Open hills with grassland, open scrub, adequate prey base, large trees or cliffs for nesting	**Low.** Not known in project areas.
Great egret *Ardea alba*	--/*	Colonial nesters in large trees near marshes, tidal flats, or irrigated pastures	**Low.** Nest in Bolinas Lagoon, possibly near Santa Venetia, but not in other project areas.
Great blue heron *Ardea herodias*	--/*	Nests in trees along lakes and estuaries	**Low.** Nest in Bolinas Lagoon, possibly near Santa Venetia, but not in other project areas.
Short-eared owl *Asio flammeus*	--/CSC	Fresh water and salt marshes and swamps, lowland meadows, irrigated fields	**Low.** Not known to breed in Marin; no CNDDB records in Marin.
Western burrowing owl *Athene cunicularia hypugaea*	FSC/CSC	Nests in mammal burrows in open, arid grasslands	**Low.** Not known to breed in Marin.
Oak titmouse *Baelophus inornatus*	FSLC/--	Prefers open woodlands of warm, dry oak and oak-pine.	**Moderate.** Known to be yearlong resident in Marin
Ferruginous hawk Buteo regalis	FSC/CSC	Dry open country with a variety of habitats.	**Low.** Possible winter resident in Marin County.
Lawrence's goldfinch Carduelis lawrencei	FSC/--	Dry grassy slopes and chaparral; prefers fiddlenecks	**Low.** Not likely to be found in project areas.
Vaux's swift *Chaetura vauxi*	FSC/--	Riparian woodlands and woodlands near lakes	**Low.** Mostly in West Marin; no confirmed breeding records.
Northern harrier *Circus cyaneus*	--/CSC	Mostly nests in emergent vegetation, wet meadows or near rivers and lakes, but may nest in grasslands away from water.	**Moderate**; known to breed in Pt Reyes; often observed from Santa Venetia to Novato along San Pablo Bay.
Black swift Cypseloides niger	FSC/CSC	Colonial breeders using cliffs in deep canyons	**Low.** Known in Boinas quad, but no suitable habitat at project area.
Yellow warbler *Dendroica petechia brewsteri*	--/CSC	Prefers dense riparian habitat with willows, cottonwoods, or alders for nesting and foraging	**Low.** Not known to breed in or near the project areas.
Snowy egret *Egretta thula*	--/*	Marshes, tidal flats, lakes, streams	**Low.** Nest on West Marin Island, but not in project areas.
White-tailed kite *Elanus leucurus*	--/3511	Found in open grasslands with scattered trees for nesting and perching.	**Low.** No nesting habitat, could be forager.
California horned lark *Eremophila alpestris actia*	--/CSC	Short grass prairie, fallow grain fields, open areas with short vegetation	**Low.** No suitable habitat within the project areas.
American peregrine falcon *Falco peregrinus anatum*	Delisted/3511	Nests near wetlands, lakes, rivers, or other water on cliffs, banks, human structures	**Low.** No nesting habitat, could be forager.
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	FSC/CSC	Saline and freshwater marshes with adjacent riparian thickets.	**Low.** Yearlong resident in Marin County, but not known to breed in project areas.

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
Harlequin duck *Histrionicus histrionicus*	FSC/CSC	Nests along shores of shallow, swift rivers with plentiful aquatic invertebrates.	**Low.** Possible winter resident only.
Loggerhead shrike *Lanius ludovicianus*	FSC/CSC	Nests in shrublands and forages in open grasslands	**Low.** Locally present but not abundant.
Lewis's woodpecker *Melanerpes lewis*	FSC/--	Open woodlands in interior foothills and valleys	**Low.** Project areas are not in normal range.
San Pablo song sparrow *Melospiza melodia samuelis*	FSC/CSC	Tidal sloughs in salt marshes with pickleweed, restricted to north side of San Francisco Bay and Suisun Bay	**Moderate.** Known to occur in the Eastern Marin project areas.
Long-billed curlew *Numenius americanus*	FSC/--	Lake beaches, nests in both dry and wet uplands	**Low.** Marin is winter range only.
Black-crowned night heron *Nycticorax nycticorax*	--/*	Lake margins, mud bordered bays, marshy areas	**Moderate.** Known to forage in tidal project areas (breed offshore).
Ashy storm petrel *Oceanodrama homochroa*	FSC/CSC	Coastal/oceanic habitats. Nests on islands with natural cavities or provided burrows	**Low.** No habitat in project areas.
Osprey *Pandion haliaetus*	--/CSC	Along rivers, lakes, and coasts	**Low.** Breeds at Kent Lake; not present in project areas.
Double-crested cormorant *Phalacrocorax auritus*	--/CSC	Nests along coast on isolated islands or in trees along lake margins.	**Low.** Potentially adjacent to tidal project areas.
Nuttall's woodpecker *Picoides nuttallii*	FSLC/--	Oak woodland, chaparral, riparian (esp-willow-cottonwood) woodland; often foothill canyons.	**Moderate.** Known to occur in project areas in eastern Marin, especially Novato; breed through June.
Allen's hummingbird *Selasphorus sasin*	FSC/--	Near the coast in mixed evergreen, riparian woodlands, eucalyptus and cypress groves, oak woodlands, and coastal scrub.	**Low.** Possible summer resident in Easkoot Creek project areas.
Caspian tern *Sterna caspia*	--/*	Protected coastal waters, lakes, rivers, fresh and salt water wetlands, especially estuaries, coastal bays and beaches. Nest on low sand or gravel with sparse vegetation.	**Low.** Possible summer resident in Marin; project areas do not have suitable habitat.
Elegant tern *Sterna elegans*	FSC/CSC	Does not nest in northern California, forages in inshore coastal waters, bays, and estuaries	**Low.** Possible summer resident in Marin; project areas do not have suitable habitat.
MAMMALS			
Pallid bat *Antrozous pallidus*	--/CSC	Open, dry habitats with rocky outcrops, cliffs, caverns, and crevices for roosting	**Moderate.** Known in Ross Creek project area; widespread but not abundant.
Townsend's western big-eared bat *Corynorhinus townsendi townsendii*	FSC/CSC	Humid coastal regions, will only roost in the open, extremely sensitive to disturbance	**Low.** Known well NW of Easkoot Creek project areas.

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
Greater western mastiff bat *Eumops perotis californicus*	FSC/CSC	Open arid to semi-arid habitats, including woodlands, coastal scrub, chaparral, and grasslands. Roosts in trees, cliffs, dwellings	**Low.** No records in CNDDB for Marin County. Wide range but not abundant.
Small-footed myotis *Myotis ciliolabrum*	FSC/--	Open arid habitats. Nursery colonies in caves, crevices, clay banks. Roosts in caves, dwellings, crevices.	**Low.** No records in CNDDB for Marin County. Wide range but not abundant.
Long-eared myotis *Myotis evotis*	FSC/--	Brush, woodland, and forest habitats, prefers coniferous habitat types. Nursery colonies in buildings, crevices, spaces under tree bark, and snags.	**Low.** No records in CNDDB for Marin County. Wide range but not abundant.
Fringed myotis *Myotis thysanodes*	FSC/--	A wide variety of habitats. Optimal habitats are valley-foothill hardwood and hardwood-conifer types. Uses caves, buildings, or crevices for roosting and nursery colonies.	**Low.** No records in CNDDB for Marin County. Wide range but not abundant.
Long-legged myotis *Myotis volans*	FSC/--	Most common in woodland and forest habitats above 4000 feet. Use trees and caves for roosting, hollow trees or spaces under tree bark for nursery colonies.	**Low.** No records in CNDDB for Marin County. Wide range but not abundant.
Yuma myotis *Myotis yumanensis*	FSC/--	Optimal habitat is open forests or woodlands with sources of water and flying insects. Nursery colonies in caves, buildings, or crevices.	**Low.** No records in CNDDB for Marin County. Wide range but not abundant.
PLANTS			
Napa false indigo *Amorpha californica var. napensis*	--/--/List 1B	Dry slopes in yellow pine forest, chaparral, mixed evergreen forest, northern oak woodland	**Low.** Known in Marin, but no suitable habitat in project areas.
Bent-flowered fiddleneck *Amsinckia lunaris*	--/--List 1B	Coastal bluff scrub, cismontane woodland, valley and foothill grassland	**Low.** Known in Marin County, but not within project areas.
Marsh milk-vetch *Astragalus pychnostachyus var. Pychnostachyus*	FSLC/--/List 1B	Coastal and saltmarsh habitats	**Low.** Known historically to occur near Easkoot Creek project areas, but CNPS presumes it extirpated in Bolinas quad..
Small groundcone *Boschniakia hookeri*	--/--/List 2	Redwood forests	**Low.** Known to occur near Larkspur Cr and Arroyo Corte Madera del Presidio project areas..
Salt marsh owl's clover *Castilleja ambigua ssp. ambigua*	FSLC/--List 1B	Salt marshes	**Low.** Known to occur in Marin; no records in CNDDB.

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
Point Reyes bird's beak *Cordylanthus maritimus ssp. palustris*	FSC/--/List 1B	Coastal salt marsh	**Moderate.** Known to occur in west and east Marin County project areas.
Western leatherwood *Dirca occidentalis*	--/--/List 1B	Broadleafed upland forests, closed-cone coniferous forests, chaparral, cismontane woodland, North coast coniferous forests, riparian forests, riparian woodland; mesic sites	**Low.** Known to occur in Bolinas quad, but well upslope of Easkoot Creek project areas.
Streamside daisy *Erigeron biolettii*	--/--/List 3	Rocky, mesic sites in broadleafed upland forest, cismontane woodland, and North Coast coniferous forest	**Low.** Known to occur in Marin; no records in CNDDB. No suitable habitat in project areas.
Marin checker lily *Fritillaria affinis var. tristulis = F. lanceolata*	--/--/List 1B	Coastal prairie, northern coastal scrub	**Low.** Known in Bolinas quad, but no suitable habitat in the Easkoot Creek project areas.
Dune gilia *Gilia capitata ssp. chamissonis*	--/--/List 1B	Coastal dunes and coastal scrub	**Low.** 1905 occurrence at Easkoot Creek project area, but habitat is not suitable.
Diablo helianthella *Helianthella castanea*	FSC/--/List 1B	Openings in chaparral and broadleaved upland forest	**Low.** Known in Mill Valley project areas; habitat at project areas is not good for this species.
Hayfield tarplant *Hemizonia congesta ssp. leucocephala*	--/--/List 1B	Coastal scrub, valley and foothill grassland	**Moderate.** Known near Arroyo San Jose project area.
Tiburon tarplant *Hemizonia multicaulis ssp. vernalis*	FSC/--/--	Highly restricted distribution in coastal scrub and grassland habitats	**Low.** No records in CNDDB.
Delta mudwort *Limosella subulata*	--/--/List 2	On mud banks in freshwater and brackish marshes and swamps, riparian scrub	**Low.** Known to occur in Marin; no records in CNDDB.
Marsh microseris *Microseris paludosa*	--/--/List 1B	Wet areas in a variety of habitats, including coastal scrub and valley and foothill grassland	**Moderate.** Known near Larkspur Cr, Arroyo Corte Madera del Presidio, and Cascade Cr project areas.
Hairless popcorn-flower *Plagiobothrys glaber*	--/--/List 1A	Coastal salt-marsh, alkaline flats, meadows, and seeps	**Low.** Historic record (1924) in Coyote Creek area; presumed extirpated in Marin (CNPS).
Marin knotweed *Polygonum marinense*	FSC/--/List 3	Marshes and swamps	**Moderate.** Known in Corte Madera Creek project area.
Tamalpais oak *Quercus parvula var. tamalpaisensis*	--/--/List 1B	Known only from Mt. Tamalpais, lower montane coniferous forest	**Low.** Known in upland parts of San Rafael quad; no suitable habitat in project areas.
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	--/--/List 1B	Coastal freshwater marshes and swamps	**Low.** Known in upper San Anselmo and Lagunitas Creeks, but no suitable habitat in project areas.

SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING AT THE PROJECT SITES

Common Name *Scientific Name*	Listing Status FWS/DFG/CNPS	Habitat Requirements	Potential Occurrence
Marin checkerbloom *Sidalcea hickmanii ssp. viridis*	FSC/--/List 1B	Chaparral, usually on serpentinite	**Low.** Known to occur near Easkoot Creek, but no suitable habitat in project areas.
Pacific cordgrass *Spartina foliosa*	FSLC/--/--	Salt marshes	**Low.** Known near baylands project areas, but outside of project work areas.

APPENDIX B

PRELIMINARY LIST OF PROJECT SITES WITHIN THE JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS

Project Sites within USACE Jurisdiction

Site ID	Creek	Location Description	Tidal Character	Natural bottom	Concrete bottom
FLOOD CONTROL ZONE 1 - NOVATO					
1-ASJ-2	Arroyo de San Jose	Hwy 101 to silt basin US of Ignacio Blvd	Non-tidal		X
FLOOD CONTROL ZONE 3 - RICHARDSON BAY					
3-BM	Bothin Marsh	E. Blithedale Ave at Roque Moraes Dr	Tidal	X	
3-COY-2	Coyote Creek	Start of concrete channel to Laurel Way	Tidal		X
3-COY-3	Coyote Creek	Laurel Way to US of Ash St	Non-tidal		X
3-MIL-1	Miller Ave drainage	Just S of Miller Ave/Camino Alto intersection	Tidal	X	X
3-MIL-2	Miller Ave drainage	E side of Miller Ave across from Tamalpais HS	Tidal	X	
3-MIL-3	Miller Ave drainage	Across from Tamalpais HS track between Miller Ave and Bothin Marsh multiuse path	Tidal	X	
3-REED-1	Reed Creek	ACMP confluence US approximately 200 ft	Tidal	X	
3-SUT-1	Sutton Manor	Roque Moraes Dr just S of E. Blithedale Ave	Tidal	X	
3-SUT-2	Sutton Manor	Roque Moraes Dr to Ashford Ave	Tidal	X	
3-SUT-3	Sutton Manor	Ashford Ave to Dorset Ln	Tidal		X
FLOOD CONTROL ZONE 4 - BEL AIRE AND STRAWBERRY CIRCLE					
4-EAST-2	East Creek	From tidal extent to end of Karen Way	Non-tidal	X	
4-WEST-1	West Creek	From Tiburon Blvd US to tidal extent (approx 425 ft)	Tidal	X	
FLOOD CONTROL ZONE 7 - SANTA VENETIA					
7-EST	Estancia Ditch	Pump Station 4 to Pump Station 5	Non-tidal	X	
7-LAP-1	Gallinas Creek South Fork	La Pasada Way intersection with Vendola Dr	Tidal	X	
7-MEA-1	Gallinas Creek South Fork	Meadow Way Interceptor Outlet; end of Meadow Way at Gallinas Creek	Tidal	X	
FLOOD CONTROL ZONE 9 - ROSS VALLEY					
9-CMC-2	Corte Madera Creek	Start of concrete channel to tidal extent	Tidal		X

APPENDIX C

PROJECT AREA AND SITE MAPS

Please see Appendix C in Programmatic Approach to Routine Maintenance Activities document for the maps.

APPENDIX D

PLANT SPECIES DETECTED

Plant Species Detected at the RMA Sites

Family ***Scientific Name***	**Common Name**	
Aceraceae (Maple family)		
Acer negundo	box-elder maple	
Acer macrophyllum	big-leaf maple	
Anacardiaceae (Sumac Family)		
Toxicodendron diversilobum	poison-oak	
Apiaceae (Parsley Family)		
Conium maculatum	poison hemlock	*
Daucus carota	Queen Anne's lace	*
Foeniculum vulgare	sweet fennel	*
Heracleum maximum	cow parsnip	
Oenanthe sarmentosa	water parsley	
Osmorhiza (berteroi) chilensis	sweet cicely	
Apocynaceae (Dogbane Family)		
Vinca major	periwinkle	*
Aquifoliaceae (Holly Family)		
Ilex aquifolium	English holly	*
Araliaceae (Aralia Family)		
Hedera helix	English ivy	*
Aristolochiaceae (Birthwort Family)		
Aristolochia californica	California pipe-vine	
Asteraceae (Sunflower Family)		
Achillea millefolium (A. borealis)	yarrow	
Anaphalis margaritacea	pearly everlasting	
Artemisia californica	California sagebrush	
Baccharis pilularis	coyotebrush	
Carduus pycnocephalus	Italian thistle	*
Centaurea calcitrapa	purple star-thistle	*
Chamomilla suaveolens (Matricaria matricarioides)	pineapple weed	*
Cirsium vulgare	bull thistle	*
Cotula coronopifolia	brass-buttons	*
Delairea odorata	Cape ivy	*
Euthamia occidentalis	Western goldenrod	
Gnaphalium spp	cudweed	
Grindelia stricta var. angustifolia	shrubby saltmarsh gumplant	

Plant Species Detected at the RMA Sites

Family *Scientific Name*	**Common Name**	
Jaumea carnosa	jaumea	
Lasthenia californica/ L. gracilis	goldfields	
Madia sativa	tall tarplant	
Microseris sp	dandelion	
Picris echioides	bristly ox-tongue	*
Senecio vulgaris	common groundsel	*
Taraxacum officinale	dandelion	*
Betulaceae (Birch Family)		
Alnus rhombifolia	white alder	
Alnus rubra	red alder	
Corylus cornuta var. californica	California hazelnut	
Berberidaceae		
Berberis nervosa	longleaf Oregon grape	
Berberis pinnata	shortleaf Oregon grape	
Boraginaceae (Borage Family)		
Echium candicans (E. fastuosum)	Pride of Madeira	*
Brassicaceae (Mustard Family)		
Brassica nigra	black mustard	*
Brassica rapa	field mustard	*
Cardamine californica var. californica	woodland milkmaids	
Lepidium strictum (L. pubescens)	peppergrass	*
Lepidium latifolium	perennial peppergrass	*
Raphanus sativus	wild radish	*
Rorippa nasturtium-aquaticum	watercress	*
Caprifoliaceae Honeysuckle Family)		
Lonicera hispidula var. vacillans	California honeysuckle	
Sambucus nigra var caerulea	blue-berried elderberry	
Symphoricarpus albus var. laevigatus	tall snowberry	
Symphoricarpos mollis	creeping snowberry	
Chenopodiaceae (Goosefoot Family)		
Calystegia purpurata ssp. purpurata	common morning glory	
Convolvulus arvensis	field bindweed	*
Salicornia virginica	perennial pickleweed	

Plant Species Detected at the RMA Sites

Family *Scientific Name*	Common Name	
Cornaceae		
Cornus sericea	creek dogwood	
Cyperaceae (Sedge Family)		
Carex globosa	round-fruited sedge	
Carex gracilior	slender sedge	
Carex obnupta	tall sedge	
Carex praegracilis	turf sedge	
Cyperus eragrostis	umbrella sedge	
Scirpus microcarpus	broadleafed bulrush	
Scirpus (Schenoplectus) robustus (or S. maritimus)	saltmarsh bulrush	
Dennstaedtiaceae (Bracken-Fern Family)		
Pteridium aquilinum var. pubescens	western bracken-fern	
Dipsacaceae (Teasel Family)		
Dipsacus sativus	teasel	*
Dryopteridaceae (Woodfern Family)		
Polystichum californicum	California sword fern	
Ericaceae		
Arbutus menziesii	madrone	
Arctostaphylos manzanita	common manzanita	
Rhododendron macrophyllum	western rhododendron	
Rhododendron occidentale	western azalea	
Equisetaceae (Horsetail Family)		
Equisetum arvense	common horsetail	
Equisetum telmateia ssp. braunii	giant horsetail	
Fabaceae (Pea Family)		
Acacia spp.	acacia spp.	*
Cytisus scoparius	Scot's broom	*
Genista monspessulana	French broom	*
Lotus corniculatus	bird's-foot trefoil	*
Lupinus albifrons	silverleaf lupine	
Lupinus formosus	lupine	
Medicago polymorpha	bur clover	*
Melilotus indica	yellow sweet clover	*
Spartium junceum	Spanish broom	*

Plant Species Detected at the RMA Sites

Family *Scientific Name*	Common Name	
Trifolium albopurpureum var. albopurpureum	Indian clover	
Ulex europaeus	gorse	*
Vicia sativa ssp. Nigra	narrow-leaved common vetch	*
Vicia sativa ssp. Sativa	broad-leaved common vetch	*
Fagaceae (Oak Family)		
Chrysopsis chrysophylla	giant chinquapin	
Lithocarpus densiflorus	tanbark oak	
Quercus agrifolia	coast live oak	
Quercus berberidifolia	scrub oak	
Quercus chrysolepis	canyon live oak	
Quercus douglasii	blue oak	
Quercus garryana	Oregon oak	
Quercus lobata	valley oak	
Quercus kelloggii	black oak	
Frankeniaceae (Frankenia Family)		
Frankenia salina	alkali heath	
Geraniaceae (Geranium Family)		
Erodium botrys	broad-leaf filaree	*
Erodium cicutarium	red-stem filaree	*
Geranium dissectum	cut-leaved cranesbill	*
Grossulariaceae Gooseberry Family)		
Ribes californicum	California gooseberry	
Ribes sanguineum var. glutinosum	pink flowering currant	
Hippocastanaceae		
Aesculus californica	California buckeye	
Iridaceae (Iris Family)		
Sisyrinchium bellum	blue-eyed grass	
Juncaceae (Rush Family)		
Juncus patens	blue-green rush	
Juncus tenuis (was occidentalis)	western rush	
Juncus xiphioides	iris-leaved rush	
Lamiaceae/Labiatae (Mint Family)		
Mentha pulegium	pennyroyal	*

Plant Species Detected at the RMA Sites

Family *Scientific Name*	Common Name	
Monardella villosa ssp. villosa	coyote mint	
Stachys ajugoides var. rigida	hedge-nettle	
Lauraceae		
Umbellularia californica	California bay-laurel	
Lemnaceae (Duckweed Family)		
Lemna minor	duckweed	
Liliaceae (Lily Family)		
Chlorogalum pomeridianum var. pomeridianum	soap plant	
Malvaceae (Mallow Family)		
Malva nicaeensis	common mallow	*
Myricaceae		
Morella californica	California wax myrtle	
Myrtaceae		
Eucalyptus globulus	blue-gum eucalyptus	*
Oleaceae		
Fraxinus latifolia	Oregon ash	
Olea europaea	olive	*
Onagraceae (Evening Primrose Family)		
Camissonia (Oenothera) ovata	sun-cups	
Epilobium canum ssp. canum	California fuchsia	
Oxalidaceae (Oxalis Family)		
Oxalis albicans ssp. pilosa	Wood-sorrel	
Papaveraceae (Poppy Family)		
Eschscholzia californica	California poppy	
Pinaceae (Pine Family)		
Pinus radiata	Monterey pine	*
Pseudotsuga menziesii	Douglas-fir	
Plantaginaceae (Plantain Family)		
Digitalis purpurea	foxglove	*

Plant Species Detected at the RMA Sites

Family *Scientific Name*	Common Name	
Plantago erecta	dwarf plantain	
Plantago lanceolata	English plantain	*
Plantago major	common broadleaf plantain	*
Poaceae/Gramineae (Grass Family)		
Agrostis sp.	bentgrass	*
Avena barbata	slim oat	*
Avena fatua	fat oat	*
Briza maxima	rattlesnake grass	*
Briza minor	little rattlesnake grass	*
Bromus diandrus	ripgut brome	*
Bromus hordeaceus	soft brome, chess	*
Bromus rubens	foxtail chess	*
Cortaderia sp	pampas grass	*
Cynodon dactylon	Bermuda grass	*
Cynosurus echinatus	dogtail grass	*
Dactylis glomerata	orchard grass	*
Distichlis spicata	saltgrass	
Elymus glaucus ssp. glaucus	blue wild-rye	
Festuca arundinacea	tall fescue	*
Holcus lanatus	velvet grass	*
Hordeum marinum ssp. Gussoneanum	Mediterranean barley	*
Hordeum murinum ssp. Leporinum	farmers' foxtail	*
Leymus triticoides	wheatgrass leymus	
Lolium multiflorum	Italian annual ryegrass	*
Lolium perenne	perennial ryegrass	*
Melica californica	grassland melicgrass	
Melica torreyana	slender melicgrass	
Nassella lepida	slender needlegrass	
Nassella (Stipa) pulchra	purple needlegrass	
Phalaris aquatica (P. tuberosa var. stenoptera)	Harding grass	*
Spartina foliosa	Pacific cordgrass	
Vulpia bromoides	brome-like annual fescue	*
Polygonaceae (Buckwheat Family)		
Eriogonum fasciculatum	bush buckwheat	
Eriogonum nudum var. nudum	nude buckwheat	
Rumex conglomeratus	clusterd dock	*
Rumex crispus	curly dock	*

Plant Species Detected at the RMA Sites

Family ***Scientific Name***	**Common Name**	
Polemoniaceae (Gilia/Phlox Family)		
Gilia clivorum	small gilia	
Navarretia squarrosa	skunkweed	
Polypodiaceae		
Polypodium californicum	California polypody	
Portulacaceae (Purslane Family)		
Claytonia perfoliata	miners' lettuce	
Primulaceae (Primrose Family)		
Anagallis arvensis	scarlet pimpernel	*
Dodecatheon hendersonii	shooting star	
Pteridaceae		
Adiantum jordanii	California maidenhair	
Ranunculaceae (Buttercup/Crowfoot Family)		
Ranunculus californicus	California buttercup	
Rhamnaceae		
Ceanothus foliosus var. foliosus	indigo bush	
Ceanothus thyrsiflorus	blueblossom	
Rhamnus (Frangula) californica	coffee-berry	
Rosaceae (Rose Family)		
Adenostoma fasciculatum	chamise	
Amelanthier utahensis	service berry	
Heteromeles arbutifolia	toyon	
Pyracantha spp.	firethorn	*
Rosa californica	California wild rose	
Rubus armeniacus	Himalaya blackberry	*
Rubus ursinus	California wild blackberry	
Rubiaceae		
Galium trifidum	marsh bedstraw	
Salicaceae Willow Family)		
Salix exigua	narrow-leaved willow	
Salix laevigata	red willow	
Salix lasiolepis	arroyo willow	

Plant Species Detected at the RMA Sites

Family ***Scientific Name***	**Common Name**
Salix lucida lasiandra	yellow willow
Salix scouleriana	Scouler's willow
Salix sitchensis	Sitka willow
Scrophulariaceae (Figwort Family)	
Castilleja densiflora var. densiflora	common owl's clover
Mimulus aurantiacus	sticky monkeyflower
Mimulus guttatus	common monkeyflower
Scrophularia californica ssp. californica	bee-plant
Taxodiaceae	
Sequoia sempervirens	coast redwood
Taxaceae	
Torreya californica	California nutmeg
Typhaceae (Cattail Family)	
Typha angustifolia	narrow-leaf cattail
Typha latifolia	broad-leaf cattail

Notes

* denotes non-native plants or natives planted out of natural native location.

APPENDIX E

WILDLIFE SPECIES DETECTED

Wildlife Species Detected at the RMA Sites

CLASS **Family** ***Scientific Name***	**Common Name**
INSECTA	
Vespidae	
Vespula sp.	Yellowjacket
OSTEICHTHYES	
Salmonidae	
Oncorhynchus mykiss irideus	Steelhead
AMPHIBIA	
Ranidae	
Rana draytonii	California red-legged frog
Rana catesbeiana	Bullfrog
Hylidae	
Pseudacris regilla	Pacific chorus frog
REPTILIA	
Emydidae	
Clemmys marmorata marmorata	Northwestrn pond turtle
AVES	
Anatidae	
Anas platyrhynchos	Mallard
Ardeidae	
Egreta thule	Snowy egret
Cathartidae	
Cathartes aura	Turkey vulture
Accipitridae	
Accipiter striatus	Sharp-shinned hawk
Buteo jamaicensis	Red-tailed hawk
Rallidae	
Laterallus jamaicensis coturniculus	California black rail
Rallus longirostria obsoletus	California clapper rail
Columbidae	
Zenaida macroura	Mourning dove
Trochilidae	
Calypte anna	Anna's hummingbird
Picidae	
Picoides nuttalli	Nuttall's woodpecker
Melanerpes formicivorus	Acorn woodpecker

Wildlife Species Detected at the RMA Sites

CLASS **Family** ***Scientific Name***	**Common Name**
Corvidae	
Aphelocoma coerulescens	Westren scrub jay
Cyanocitta stelleri	Steller's jay
Corvus brachyrhynchos	American crow
Paridae	
Parus rufescens	Chestnut-backed chickadee
Mimidae	
Mimus polyglottos	Northern mockingbird
Parulidae	
Dendroica coronata	Yellow-rumped warbler
Emberizidae	
Junco hyemalis	Dark-eyed junco
Pipilo crissalis	California towhee
Regulidae	
Regulus calendula	Ruby-crowned kinglet
Icteridae	
Euphagus cyanocephalus	Brewer's blackbird
Fringillidae	
Carpodacus mexicanus	House finch
MAMMALIA	
Cervidae	
Odocoileus hemionus	Mule deee
Sciuridae	
Sciurus carolinensis	Gray squirrel

APPENDIX F

SITE ASSESSMENT DATA SHEET

Marin County / Department of Public Works / Flood Control and Water Conservation District
Routine Maintenance Agreement Site Assessment Data Sheet

Site ID: _____ Date: _____

Staff Name: _____ Photo#: _____

Site Notes: _____

_____

_____

Wetlands / US: _____

VEGETATION

Shading of stream: None Low Moderate High

Riparian Vegetation Trees > 10m Present Absent

Percentage Cover: Dominant species:

Trees _____ % _____

Shrubs / vines / rushes _____ % _____

Grasses / herbs / ferns _____ % _____

Barren _____ %

Weeds observed _____

_____

Special status species observed: _____

_____

ANIMALS

Habitat present: Coho / SH / CH Rails / SMHM Birds (tree-nesting)

NWPT Bats BUOW

_____

_____

Species observed:

Birds _____

_____

Amph / Reptiles _____

Mammals _____

Other _____