

## Minimization and Mitigation Measures

The following Minimization and Mitigation Measures will be implemented; they are taken from the Biological Assessment that was prepared for this project (ESA, 2010a):

### General Measures

1. A qualified, Service-approved biological monitor will be present during all project-related activities. The biological monitor will conduct Worker Environmental Awareness Training for construction personnel to provide guidance about federally-listed species and their habitats. The biological monitor will monitor all activities to ensure that no federally-listed species is harassed, killed, or injured, and to ensure that the project conforms to the conservation measures outlined in this document. The biological monitor will notify responsible construction management personnel when any aspect of the project will result in unauthorized take of federally-listed species..
2. The amount of disturbance at the staging area will be reduced to the absolute minimum necessary to accomplish the project. When practicable, existing vegetation will be salvaged from the temporarily impacted tidal wetlands and stored for replanting after earthmoving activities are completed. Topsoil will be removed, stockpiled, covered, and encircled with silt fencing to prevent loss or movement of the soil into the habitats of federally-listed species. All disturbed soils will undergo erosion control treatment prior to the rainy season (e.g., October 15<sup>th</sup>) and after construction is terminated, typically including seeding with native species and sterile straw mulch. Topsoil will be replaced in a manner that as closely as possible represents pre-disturbance conditions.
3. Native vegetation in temporary fill areas will be protected by placing a protective mat between the vegetation and the introduced fill.
4. The temporarily impacted areas, including staging areas, construction areas, and areas of temporary fill, will be revegetated with locally-acquired sources of native seeds and plants, and the site will be returned to pre-construction conditions. Restoration will occur during the season optimal for the species being planted. An eighty percent (80%) or greater survival rate over a period of five years will be the performance goal for restoration efforts. Nonnative invasive plant species will be controlled to the maximum extent feasible to accomplish restoration.
5. The Biological Assessment also includes the preparation of a Revegetation Plan, which is included in Section 4 of this MMP, as a required conservation measure to minimize impacts to federally-listed species on the project site.
6. All standardized Regional Water Quality Control Board California Stormwater Best Management Practices will be implemented.
7. Sediment-control devices will be installed, inspected daily, and properly maintained. For example, once sediment has reached one-third of the exposed height of the control the sediment will be removed and disposed of via an approved method and location. Damaged

sediment controls will be immediately repaired or replaced, and additional controls installed as necessary.

8. Every reasonable precaution will be exercised to protect federally-listed species and their habitats from pollution due to fuels, oils, lubricants, and other harmful materials. Vehicles and equipment will be serviced and refueled in a designated area at least 75 feet from aquatic environments. Spills, leaks, and similar problems will be resolved immediately. A plan for the emergency cleanup of any hazardous spills will be available on site from the project foreman, and adequate materials for spill cleanup will also be maintained on site.
9. Every reasonable precaution will be exercised to protect federally-listed species and their habitats from construction by-products and pollutants such as construction chemicals, cement, or other deleterious materials. Water containing mud, silt, concrete, or other construction material will be treated by filtration, retention in a settling pond, or other approved method; these materials will be restricted from entering aquatic habitat. Construction pollutants will be collected and transported to an authorized disposal area per all applicable regulations.
10. Hazardous material will be stored in properly-designed containers in a storage locale with an impermeable membrane between the ground and the hazardous material. The storage area will be encircled by a berm to prevent the discharge of pollutants to groundwater or runoff. A plan for the emergency cleanup of any hazardous spills will be available on site from the project foreman, and adequate materials for spill cleanup will also be maintained on site.
11. All construction material including fill material, waste, debris, sediment, fencing, and other materials will be removed from the site upon project completion, and transported to an authorized disposal area. Trash will be removed from the construction area daily.
12. All concrete or other similar rubble shall be free of trash and reinforcement steel. No petroleum-based products will be used for bank stabilization.

### **Conservation Measures Specific to California Clapper Rail**

1. Construction activities will occur during the non-breeding season (construction may occur September 1 through January 31).
2. Prior to the placement of temporary fill in marsh vegetation, the area will be visually surveyed for rails. Fill placement will not commence until the area has been adequately surveyed by a qualified biologist and determined to be free of clapper rails.
3. All temporarily impacted California clapper rail habitat will be restored to pre-project conditions or enhanced and result in 1:1 onsite mitigation for temporary impacts.
4. Construction personnel will receive environmental awareness training specific to the identification of rails and their habitat.

## **5.2.2 Salt Marsh Harvest Mouse**

### **Temporary Impacts**

As stated in Section 3 of this MMP, salt marsh harvest mouse habitat is also present within the project site (ESA, 2010a). The proposed action has the potential to impact salt marsh harvest mice during vegetation removal, at staging areas, and during project construction. Potential effects include

direct mortality from equipment, entrapment in pipe sections or trenches, exposure due to vegetation removal, and harassment due to noise and vibrations.

The work staging area and reroute of the Bay Trail during construction will result in temporary disturbance to salt marsh harvest mouse habitat; this includes the tidal wetland as well as the transition zone where salt marsh harvest mice may occur.

## **Minimization and Mitigation Measures**

In addition to the general conservation measures described above for clapper rail, the following specific conservation measures will be implemented to avoid potential adverse effects on salt marsh harvest mouse.

### **Conservation Measures Specific to Salt Marsh Harvest Mouse**

1. In the temporary-fill area, vegetation will be hand-removed using hand-tools prior to the start of any construction-related activities. Hand tools may include hand-operated mechanical trimming devices, when appropriate. Colonies of invasive species, specifically stinkwort and perennial pepperweed at the west and east staging areas, will be collected and bagged onsite prior to use of the staging areas, and transported to a suitable offsite facility. See Section 4.5.9 of this MMP, Invasive Plant Species, for instructions on removing invasive plant species.
2. A qualified, Service-approved biological monitor will be present during all clearing and construction-related activities associated with potential salt marsh harvest mouse suitable habitat. The biological monitor will meet with the project contractor and equipment operators to discuss protection of adjacent salt marsh habitat prior to the start of the project.
3. Every morning prior to the start of construction, a qualified biologist will inspect all areas within 250 feet of emergent pickleweed habitat.
4. At the close of each workday, escape ramps/boards will be provided in all open trenches.
5. Vehicle use and disturbance within suitable habitat will be minimized to the maximum extent practicable. Salt marsh harvest mouse exclusion fencing (e.g. silt fence) shall be installed along the entire length of the work area as an erosion control measure to prevent material from inadvertently entering salt marsh harvest mouse habitat, and to discourage salt marsh harvest mice from entering the project area.
6. Affected salt marsh harvest mouse habitat will be restored to pre-disturbance conditions or enhanced, following completion of construction activities (1:1 onsite restoration).