

5.9 FISH, WILDLIFE, AND PLANTS

This section discusses the presence of any species located on GROSS Field Airport (DVO or Airport) listed as threatened or endangered pursuant to the *Endangered Species Act of 1973* (ESA), and describes the habitat necessary to support these species. "Threatened" means that surviving populations of the species are so small that the species could become extinct without protection, while "endangered" means that the entire species is in danger of extinction. In addition, other species that hold a special status either through other Federal laws or through State of California protection are assessed for potential impacts.

5.9.1 REGULATORY SETTING

5.9.1.1 Federal Laws and Policies

ENDANGERED SPECIES ACT OF 1973

The U.S. Congress passed the ESA in 1973 to protect those species that are endangered or threatened with extinction (Federally listed species). ESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

ESA prohibits the unauthorized "take" of endangered or threatened wildlife species. "Take" is defined to include harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct (ESA Section 3 [(3)(19)]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (Title 50 Code of Federal Regulations (CFR) §17.3). Harassment is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR §17.3). Actions that result in an unauthorized take can result in civil or criminal penalties.

The Federal Aviation Administration (FAA) completed ESA, Section 7, interagency consultations with the U.S. Fish and Wildlife Service (USFWS) regarding endangered and threatened species that could be affected by the Proposed Project, and the results of these consultations are described in this section.

MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

In 1996, acknowledging the importance of fish habitat to the productivity and sustainability of marine fisheries, Congress added new habitat conservation provisions to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Federal law that governs U.S. marine fisheries management. The act mandates the identification of Essential Fish Habitat (EFH) for managed species, as well as measures to conserve and enhance the habitat necessary for fish to carry out their life cycles. Section 303(a)(7) of the

Magnuson-Stevens Act requires Regional Fishery Management Councils to be formed for purposes of describing and identifying EFH for each Federally managed species.

MIGRATORY BIRD TREATY ACT

The Federal Migratory Bird Treaty Act (MBTA), first enacted in 1916, prohibits any person, unless permitted by regulations, to: "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention for the protection of migratory birds...or any part, nest, or egg of any such bird." (16 USC 703).

The list of migratory birds includes nearly all bird species native to the U.S. The statute was extended in 1974 to include parts of birds, as well as eggs and nests. Thus, it is illegal under MBTA to directly kill, or destroy a migratory bird, or the active nest of a migratory bird without a permit. Activities that result in removal or destruction of an active nest (a nest with eggs or young being attended by one or more adults) would violate the MBTA. Removal of unoccupied nests, or bird mortality resulting indirectly from disturbance activities, is not considered a violation of the MBTA. The Migratory Bird Treaty Reform Act (MBTRA) of 2004 further defined species protected under the act and excluded all non-native species.

5.9.1.2 State of California Laws and Policies

CALIFORNIA ENDANGERED SPECIES ACT

The State of California enacted the California Endangered Species Act (CESA) in 1984. CESA is similar to ESA but pertains to state-listed endangered and threatened species. CESA requires state agencies to consult with the California Department of Fish and Game (CDFG)¹ when preparing environmental documents. The purpose is to ensure that the lead agency's actions do not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of habitat essential to the continued existence of those species if there are reasonable and prudent alternatives available (Fish and Game Code §2080). CESA directs agencies to consult with CDFG on projects or actions that could affect listed species, directs CDFG to determine whether jeopardy would occur, and allows CDFG to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. CESA allows CDFG to authorize exceptions to the state's prohibition against take of a listed species if the "take" of a listed species is incidental to carrying out an otherwise lawful project that has been approved

¹ Renamed California Department of Fish and Wildlife January 1, 2013. In order to remain consistent with the Draft EIS and to reduce confusion, the Final EIS continues to use the previous name - California Department of Fish and Game.

(Fish & Game Code § 2081). The California Fish and Game Code also lists fully protected species. The California Fish and Game Code does not provide a method for the CDFG to authorize the "take" of individuals of any fully protected species.

CALIFORNIA FISH AND GAME CODE

Section 3503.5 of the California Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Disturbance activities that result in abandonment of an active bird-of-prey nest in areas adjacent to the disturbance may also be considered a violation of the Fish and Game Code.

CALIFORNIA SPECIAL STATUS SPECIES

In addition to formal listing under ESA and CESA, species receive additional consideration by CDFG, USFWS and lead agencies during the environmental process. Species that may be considered for review are included on a list of "Species of Special Concern," developed by these resource agencies. This list tracks species in California whose numbers, reproductive success, or habitat may be in decline.

5.9.1.3 Marin County Laws and Policies

The Marin Countywide Plan provides guidance and recommendations regarding preservation and management of natural resources within the County. The City-Centered Corridor along Highway 101 and adjacent to the Bay is designated for concentrated urban development and for protection of designated environmental resources. Gness Field falls under this portion of the Countywide Plan.² Applicable executive summaries of the County guidelines to Gness Field are provided below. Additional detail is available in the Marin Countywide Plan including goals and objectives for preservation of specific biological resources within the County.

BAYFRONT CONSERVATION ZONE

The Bayfront Conservation Zone includes tidal marshes, seasonal marshes, lagoons, natural wetlands, and low-lying grasslands overlying historic marshlands. Three subzones exist within the Bayfront Conservation Zone: 1) the Tidelands Subzone, areas subject to tidal action; 2) the Diked Bay Marshlands and Agricultural Subzone, which includes DVO, are former marshlands which have been diked and often filled for agricultural and urban uses; and 3) the Shoreline Subzone, steep shoreline areas between roadways and Tidelands Subzones. The County has adopted a zoning overlay district in unincorporated bayfront areas, requiring environmental assessment of existing conditions within the Bayfront

² Marin County Community Development Agency, *Marin Countywide Plan*, , adopted November 6, 2007, Map 3-1a, Environmental Features Focusing Development within the City-Centered Corridor.

Conservation Zone prior to preparation of master plans and development plans. Policies in this Plan encourage land uses that enhance wildlife and aquatic habitat, such as agriculture, wastewater reclamation, restoration of lands to tidal status, and flood basin.

In the Diked Bay Subzone, land uses are encouraged which provide or protect wetlands and which do not require diking, filling, or dredging. Other uses may be allowed if they are consistent with zoning designations and impacts are minimized and mitigated. Uses must also conform to applicable Federal and state regulations. Restoration of bay marshlands offers significant potential for habitat value and would be encouraged whenever possible. Policies in this document preserve the dramatic viewsheds and coastal habitats in the Shoreline Subzone.

STREAM AND CREEKSIDE CONSERVATION AREAS

Policies in the Marin Countywide Plan establish buffer zones called Stream Conservation Areas (SCAs) for the protection of riparian systems, streams, and related habitats. SCAs exist along perennial and intermittent streams, as defined by solid and dashed blue lines on U.S. Geological Survey (USGS) quad maps. A SCA consists of a watercourse, surrounding banks, and a strip of land extending laterally from the top of both banks. Uses allowable in the SCA include: necessary water supply and flood control projects, improvements to fish and wildlife habitat, grazing, agriculture, maintenance of channels for erosion control, water monitoring installations, and trails. Prohibited uses include, but are not limited to: roads and utility lines (except at crossings), confinement of livestock, dumping, use of motorized vehicles, and new structures.

5.9.1.4 FAA Significance Criteria

FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures* provides guidance regarding FAA policies and procedures for achieving compliance with NEPA and regulations issued by the Council on Environmental Quality for all FAA-administered projects. The Order provides requirements the FAA must meet in respect to analyzing project-related impacts to fish, wildlife, and plant species under NEPA and determining whether project-related impacts are significant.

A significant impact to Federally-listed threatened and endangered species would occur when the USFWS or National Marine Fisheries Service determines that the proposed action would be likely to jeopardize the continued existence of the species in question, or would result in the destruction or adverse modification of Federally-designated critical habitat in the affected area. The involvement of Federally listed threatened or endangered species and the possibility of impacts as potentially serious as extinction or extirpation, or destruction or adverse modification of designated critical habitat, are factors weighing in favor of a finding of significance. However, an action need not involve a threat of extinction to Federally listed species to meet the NEPA standard of significance. Lesser impacts including impacts on non-listed species could also constitute a significant impact. In consultation with agencies and organizations having jurisdiction or special expertise concerning the protection and/or management of the affected species,

NEPA practitioners should consider factors affecting population dynamics and sustainability for the affected species such as reproductive success rates, natural mortality rates, non-natural mortality (e.g., road kills and hunting), and the minimum population levels required for population maintenance.

5.9.2 EXISTING CONDITIONS

The Detailed Study Area (DSA) was evaluated for the potential for existence of Federal and State of California protected plant or animal species, and their respective habitats. This information is based upon the biological resources assessment for the DSA, which can be found in Appendix I, *Biological Resources*.³

5.9.2.1 Existing Habitat

Two major biological communities occur within the immediate vicinity of DVO including annual grassland and high brackish marsh. Annual grassland is the dominant upland plant community within the DSA and is characterized primarily by an assemblage of non-native grasses and forbs and typically supports breeding, foraging, and shelter habitat for several species of wildlife. High brackish marsh, a wetland community, is the major plant community within the DSA outside of the developed airfield. Lesser amounts of other wetland types are also present. High brackish marsh typically supports breeding and foraging habitat for a variety of wildlife. Each of the biological communities including associated common plant and wildlife species observed, or that are expected to occur within these communities are described in Chapter Four, *Affected Environment*. Locations of biotic communities and wildlife habitats within the DSA are shown in that chapter on Exhibit 4-14, *Vegetation and Wildlife Habitats*.

5.9.2.2 Federal Threatened and Endangered Species

A summary of the Federally threatened and endangered species that have the potential to be located in the DSA can be found in Chapter Four, *Affected Environment*. Consultation with the USFWS has resulted in identifying portions of the project site as potential habitat for the salt marsh harvest mouse (*Reithrodontomys raviventris*) and California clapper rail (*Rallus longirostris obsoletus*). The salt marsh harvest mouse (SMHM) is strongly associated with pickleweed-dominated salt and brackish water marshes of San Francisco, Suisun, and San Pablo Bay. California clapper rail (CCR) is also found in salt and brackish water marshes of San Francisco, San Pablo, and Suisun Bays, particularly in cordgrass habitats. In addition, while there is no freshwater breeding habitat for the California red-legged frog (*Rana aurora draytonii*) in the DSA, there is a low potential for it to be present onsite during the winter months as a result of dispersing from nearby areas.

³ Foothill Associates, *Biological Resources Assessment, Marin County Airport*, 2011. See Appendix I.

By letter of March 5, 2010 the National Marine Fisheries Service concluded that the Sponsor's Proposed Project, and the alternative projects considered in detail in this EIS, do not have the potential to affect Federally-listed fish species or designated critical habitat for Federally-listed fish species under the cognizance of the Service (Appendix I).

By letter of November 16, 2011 (Appendix I) the FAA initiated ESA, Section 7 consultation with the USFWS for the Proposed Project (Alternative B) and submitted a Biological Assessment for the Proposed Project. The USFWS issued a non-jeopardy Biological Opinion for implementation of Alternative B on April 3, 2013 (Appendix I). The USFWS Biological Opinion requires implementation of the Reasonable and Prudent Measures and Terms and Conditions which are provided in Section 5.9.5.

5.9.2.3 Magnuson-Stevens Fishery Conservation and Management Act

The biological resources assessment conducted a survey and literature review to identify if any fish species are present within the DSA and concluded that none existed due to a lack of suitable habitat (see Appendix I). By letter of March 5, 2010, the National Marine Fisheries Service stated that no EFH occurred on Airport property.

The Pacific Coast Groundfish Fishery Management Plan (FMP) was approved by the U.S. Secretary of Commerce on January 4, 1982. In that plan the Petaluma River is designated as an EFH for Groundfish. The Petaluma River is located approximately 4,000 feet from the Airport and therefore outside of the DSA.

5.9.2.4 Migratory Bird Treaty Act

As discussed above, the list of migratory birds protected under the MBTA includes nearly all bird species native to the United States. Appendix I includes a list of bird species observed during field surveys of the DSA.

5.9.2.5 California Special Status Species of Concern

The biological resources assessment identified a number of California special status species within the DSA, including: salt marsh harvest mouse, California clapper rail⁴, northern harrier (*Circus cyaneus*); San Pablo song sparrow (*Melospiza melodia samuelis*); western burrowing owl (*Athene cunicularia hypugaea*); white-tailed kite (*Elanus leucurus*); and other raptors (hawks, owls and vultures). In addition, there is low potential for the California red-legged frog (*Rana aurora draytonii*) to be present onsite during the winter months. Chapter Four, *Affected Environment*, discusses the presence of each species.

⁴ The California clapper rail and salt marsh harvest mouse are fully protected species under Fish and Game Code Sections 3511 and 4700.

5.9.2.6 Other Plant Species of Concern

Through the tribal coordination process conducted for the proposed project, the FAA and Marin County held a meeting in December 2008 with representatives of the Federated Indians of Graton Rancheria (FIGR) (see Appendix H, *Cultural Resources*). At that meeting, FIGR representatives identified 42 native plant species that they consider to be to be sacred and culturally significant. Of the 42 plant species identified by the FIGR as sacred and culturally significant, one species, the Showy Indian Clover (*Trifolium amoenum*), is both a Federal and State of California threatened or endangered plant species. However, based on field observations and literature review specific to the special-status plant species, it was determined that the DSA does not contain suitable habitat for this species, and so this species would not be adversely affected by the implementation of any of the alternatives evaluated in detail in this EIS.⁵ The remaining plant species identified by the FIGR as culturally important are not Federally-listed or State of California listed as threatened or endangered species, or as a State of California Species of Special Concern.

5.9.3 FUTURE CONDITIONS: 2018

The survey of Federal and State of California threatened and endangered species identified in Section 5.9.2, provides data against which to compare impacts between the future alternatives.

Alternative A: No Action

Alternative A includes no new construction or changes in operating procedures. Therefore, implementation of Alternative A would have no impact on the environment. Alternative A would have no effect on any Federal or state threatened or endangered species, no effect on any biotic or critical habitat supporting a Federal or state endangered or threatened species, and would not result in the development, conversion, or removal of any existing habitat.

Alternative B: Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

FEDERAL THREATENED AND ENDANGERED SPECIES

The USFWS has concluded that the undeveloped areas within the project site are considered habitat for both the salt marsh harvest mouse (SMHM) and California clapper rail (CCR) (USFWS 2013). These areas consist primarily of high brackish marsh, other wetlands, annual grasslands, and open water ditch/channels. Therefore, implementation of this alternative would adversely affect the SMHM and the CCR due to the permanent removal of 6.88 acres of vegetation and 1.54 acres of open water ditch/channel, and temporary removal of 16.05 acres of vegetation

⁵ Foothill Associates, *Biological Resources Assessment, Marin County Airport*, 2011. See Appendix I.

considered by the USFWS to be habitat for these species.⁶ **Table 5.9-1** provides a summary of the permanent and temporary impacts for Alternative B. **Exhibit 5.9-1, Permanent and Temporary Impact Areas – Alternative B**, depicts these impact areas. All of the permanent and temporary acreages in Table 5.9-1 and permanent and temporary impacts areas depicted in Exhibit 5-9.1 would be impacted.

**Table 5.9-1
VEGETATION TYPES (PLANT AND WILDLIFE HABITAT) PLUS OPEN WATER
HABITAT AND APPROXIMATE IMPACTS IN ACRES
Gross Field Airport**

IMPACT AND HABITAT TYPE	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE D
Permanent Impact Area – High Brackish Marsh/Annual Grassland	0.00	6.88	8.24
Permanent Impact Area – Open Water Ditch/Channel	0.00	1.54 ¹	1.62 ²
Temporary Impact Area	0.00	16.05	18.43
TOTAL	0.00	24.47	28.29

¹ 1.54 acres Open Water Ditch/Channel Impacted = 2.31 acres of Permanent Impacts to Open Water Ditch/Channel – 0.77 acres On-site Open Water Ditch/Channel restoration

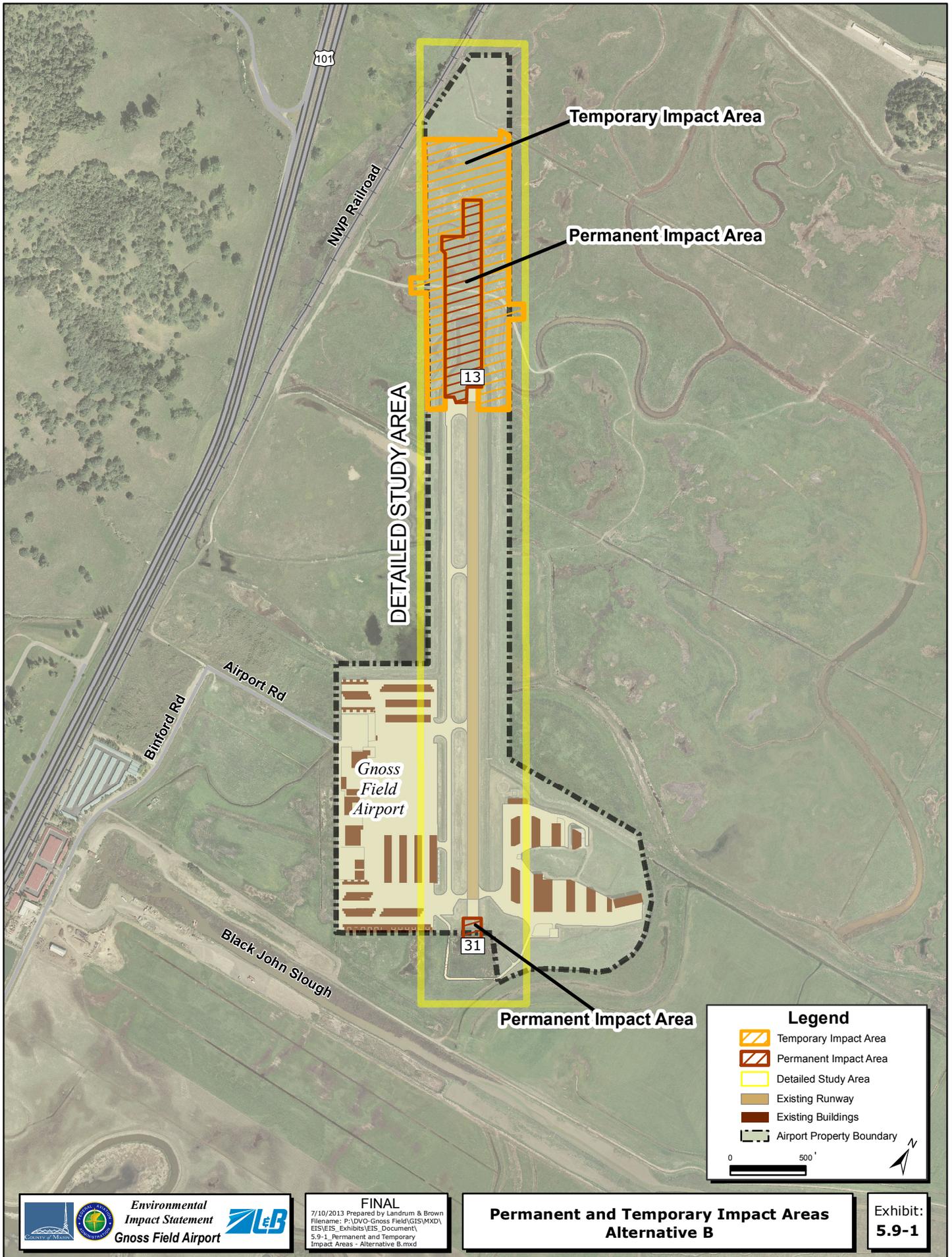
² 1.62 acres Open Water Ditch/Channel Impacted = 2.31 acres of Permanent Impacts to Open Water Ditch/Channel – 0.69 acres On-site Open Water Ditch/Channel restoration

Source: Foothill Associates and Landrum and Brown, 2011

Based on the ESA Section 7 consultation with the USFWS, this EIS considers the upland and wetland habitat being disturbed by the project to be habitat for the SMHM, and the upland, wetland, and open water ditch/channel habitat to be habitat for the CCR, even though some of the upland annual grassland habitat is of limited value to these species. Therefore, when these habitat areas of limited value are temporarily disturbed, and then revegetated, they are still considered threatened and endangered species habitat.

However, as discussed in Section 5.10, *Wetlands* for purposes of determining wetland impacts to these same areas, the wetland losses are considered to be permanent losses. This difference in impact calculation occurs because it is assumed that the temporary impact areas would be re-vegetated in a way that would continue to provide upland habitat for endangered and threatened species, even though some of these areas that are being converted from high brackish marsh to upland annual grassland would no longer meet the definition of wetland habitat. Therefore, the discussion of wetland impacts in Section 5.10, *Wetlands*

⁶ Permanent impacts consist of areas that would be converted to pavement or other non-vegetated land. Temporary impacts consist of areas where vegetation would be removed during construction but would be revegetated through seeding and natural processes after construction.



and the acres of wetland impacts shown in Table 5.10-1 do not match the acres of habitat impacts shown in Table 5.9-1 for endangered and threatened species. This applies to Alternatives B and D. See Section 5.10, *Wetlands* for additional discussion about the wetland impacts and potential mitigation. More detail about the permanent and temporary impacts for Alternative B is provided below.

Salt Marsh Harvest Mouse

Permanent and Temporary Habitat Impacts

Alternative B would permanently remove 6.88 acres of SMHM habitat, which would be converted to pavement and other areas maintained for Airport uses. Within this area, there are wetlands and aquatic areas containing pickleweed, as well as adjacent upland annual grassland areas. This would be an adverse effect on the SMHM and in the absence of compensatory mitigation, the permanent loss of 6.88 acres of SMHM habitat, including annual grassland and wetlands, would be a significant impact. However as described in Section 5.9.4, compensatory habitat mitigation for this significant impact would reduce it to a not significant level.

An additional 16.05 acres of SMHM habitat would be temporarily impacted (up to two years) during which construction activities (construction staging, material and equipment storage, and haul routes) would remove the vegetation. Similar to the area where permanent impacts would occur, this area contains wetlands as well as adjacent upland annual grassland areas. This would be an adverse effect on the SMHM and in the absence of compensatory mitigation, the temporary loss of 16.05 acres of SMHM habitat would be a significant impact. Within this area, it is anticipated that vegetation would be removed and wetland areas would be filled due to the construction activities. Upon completion of the construction and removal of exclusion fencing, the temporarily impacted areas would be allowed to re-vegetate and would again be suitable habitat for the SMHM. The USFWS Biological Opinion requires compensatory habitat mitigation for this temporary habitat impact. With implementation of the protective and habitat compensation measures described in Section 5.9.4 and Section 5.9.5, these temporary impacts on the SMHM as a result of implementation of Alternative B would not be significant. See Section 5.10, *Wetlands* for additional discussion about wetland impacts and potential mitigation.

Construction Impacts

Individual SMHM may be harassed by noise and vibrations associated with construction activities and the operation of heavy equipment within and adjacent to the salt marsh. The most likely effect would be to displace SMHM as they move farther from these activities to avoid disturbance. The level of harassment of individual SMHM may vary depending on the type of equipment being used; different pieces of equipment have different noise levels and, thus, cause more or less disturbance. Noise and vibrations may result in displacement of SMHM from protective cover and their territories. These disturbances are likely to disrupt normal behavior patterns of breeding, foraging, sheltering, and dispersal. Displaced SMHM may have to compete for resources with other SMHM if they move

to adjacent occupied habitat, and may be more vulnerable to predators. Disturbance to female SMHM from March to November may cause abandonment or failure of the current litter. Thus, displaced SMHM may suffer from increased predation, competition, mortality, and reduced reproductive success during the construction period.

Construction activities could attract predators of the SMHM to the area if trash and food waste are left on the ground. Also SMHM may also become more susceptible to predation due to the temporary loss of cover.

Individual SMHM could be injured or killed during the operation of heavy equipment within the salt marsh. SMHM and their young could be injured or killed if motorized equipment is used to remove the marsh vegetation. Although adult SMHM may be able to escape injury if the mice are flushed out of the vegetation prior to removal, less mobile SMHM (e.g., young SMHM before they have been weaned) would not be able to escape injury and may be killed if a nest were crushed by vegetation removal activities conducted during the SMHM's breeding season (March 1 through November 30).

The use of nighttime lighting during nighttime work could result in the disturbance of SMHM activities by disrupting activity cycles and the internal circadian system. Disruption of the circadian clock from artificial night lighting can result in changes to foraging efficiency, risk of predation, and parental care, which could have adverse effects on the SMHM. These individuals would be out of sync with their neighbors living in a natural light-dark cycle and it could affect mating success. Artificial night lighting has been shown to affect nocturnal rodents. Several species of small rodents harvested an average of 21 percent less seed in response to a single fluorescent or gasoline camping lantern. Although small mammals can respond to bright moonlight by shifting foraging activities to darker conditions, this is not an option for animals subjected to artificially increased illumination throughout the night. Unless they leave the area, they are either at greater risk of predation from foraging in the lighted area, or reduce their food consumption to avoid increase predation risk.⁷

High brackish marsh and annual grassland habitat within the area could become degraded if construction activities result in a spill of fuel or other hazardous materials or an increase in sedimentation in the marsh.

These construction impacts could result in an adverse impact on the SMHM and therefore could result in a significant impact on the SMHM. However, with implementation of the protective and habitat compensation measures described in Section 5.9.4 and Section 5.9.5, the impacts to the SMHM would be reduced to a not significant level.

⁷ Rich, C. and T. Longcore, *Ecological Consequences of Artificial Night Lighting*, 2006. Island Press, Washington, D.C.

California Clapper Rail

Permanent and Temporary Habitat Impacts

Alternative B would permanently remove 6.88 acres of marginal foraging and dispersal CCR habitat and result in a net loss of 1.54 acres of open water ditch/channel foraging habitat, which would be converted to pavement and other areas maintained for Airport uses. Within this area there are wetlands, as well as adjacent upland grassland areas. This would be an adverse effect on the CCR and in the absence of mitigation, the permanent loss of 6.88 acres of high brackish marsh/annual grassland habitat and 1.54 acres of open water ditch/channel would be a significant impact. However, as described in Section 5.9.4 and Section 5.9.5, compensatory habitat mitigation for this impact would reduce this impact to a not significant level.

An additional 16.05 acres of CCR habitat would be temporarily impacted (up to two years) during which construction activities would remove the vegetation. This would be an adverse effect on the CCR and in the absence of compensatory mitigation, the temporary loss of 16.05 acres of CCR habitat would be a significant impact. Similar to the area where permanent impacts would occur, this area contains wetlands, open water ditch/channel, as well as adjacent upland annual grassland areas. Upon completion of the construction and removal of exclusion fencing, the temporarily impacted areas would be allowed to re-vegetate and would again be suitable habitat for the CCR.

The USFWS Biological Opinion requires compensatory habitat mitigation for this temporary habitat impact. These impacts could result in a significant impact to the CCR. However, with implementation of the protective and habitat compensation measures described in Section 5.9.4 and Section 5.9.5, these temporary impacts on the CCR as a result of implementation of Alternative B would not be significant. See Section 5.10, *Wetlands* for additional discussion about wetland impacts and potential mitigation.

Construction Impacts

Individual CCRs may be harassed by noise and vibrations associated with construction activities and the operation of heavy equipment within and adjacent to the salt marsh. The most likely effect would be to displace CCRs as they move farther from these activities to avoid disturbance. The level of harassment of individual CCRs may vary depending on the type of equipment being used; different pieces of equipment have different noise levels and, thus, cause more or less disturbance. Noise and vibrations may result in displacement of CCRs from protective cover and their territories. These disturbances are likely to disrupt normal behavior patterns. Displaced CCRs may have to compete for resources in occupied habitat, and may be more vulnerable to predators. No nesting CCRs will be disturbed by the implementation of Alternative B because the area does not contain suitable breeding habitat for the CCR.

Construction activities could attract predators of the CCRs to the area if trash and food waste are left on the ground. Also CCRs may also become more susceptible to predation due to the temporary loss of cover.

The use of nighttime lighting during nighttime work could result in the disturbance of CCR activities by disrupting activity cycles and the internal circadian system. Disruption of the circadian clock from artificial night lighting can result in changes to foraging efficiency and risk of predation, which could have adverse effects on the CCR.

High brackish marsh and annual grassland habitat within the area could become degraded if construction activities result in a spill of fuel or other hazardous materials or an increase in sedimentation in the marsh.

These construction impacts could result in an adverse impact on the CCR and therefore could result in a significant impact on the CCR. However, with implementation of the protective and habitat compensation measures described in Section 5.9.4 and Section 5.9.5, the impacts to the CCR during construction would be reduced to a not significant level.

Table 5.9-2 provides acreage of habitat disturbed and the acreage of habitat compensation required by the USFWS Biological Opinion for impacts to SMHM and the CCR habitat resulting from implementation of Alternative B. A range of acreage for the off-site habitat compensation is shown in Table 5.9-2 because the USFWS Biological Opinion requires higher habitat compensation for temporary habitat impacts that last 1 to 2 years as compared to temporary habitat impacts that last less than 1 year. These differences in habitat compensation requirements are discussed in detail in Section 5.9.4 and Appendix I.

**Table 5.9-2
ALTERNATIVE B ACRES OF SALT MARSH HARVEST MOUSE AND
CALIFORNIA CLAPPER RAIL HABITAT DISTURBED AND
RESTORED/COMPENSATED
Gross Field Airport**

HABITAT TYPE	PERMANENT IMPACTS¹ (ACRES)	TEMPORARY IMPACTS² (ACRES)	ON-SITE RESTORATION³ (ACRES)	OFF-SITE RESTORATION/ COMPENSATION⁴ (ACRES)
High Brackish Marsh/ Annual Grassland	6.88	16.05	16.05	38.3-52.7
Open Water Ditch/ Channel⁵	2.31	0.00	0.77	4.6

- ¹ Permanent Impacts = effects to habitat lasting for more than 2 years.
- ² Temporary Impacts = includes short-term temporary effects (lasting for less than 1 year) and long-term temporary effects (lasting for more than 1 year but less than 2 years).
- ³ The Proposed Project will result in a net loss of 1.54 acres of open water ditch/channel habitat.
- ⁴ The total amount of off-site restoration depends on how quickly the areas of high brackish marsh/annual grassland habitat are restored on-site. See Appendix I, Table I-2 and Table I-3 for details of calculations.
- ⁵ The open water ditch/channel habitat is considered habitat for the California clapper rail, but not the salt marsh harvest mouse (USFWS Biological Opinion April 3, 2013).

California Red-Legged Frog

There are no localized occurrences of the California Red-legged frog documented west of the Petaluma River. However, it was determined by the USFWS that there is low potential for the frog to be present onsite during the winter months as a result of dispersing from adjacent localized freshwater habitat areas. If the species migrates into the site outside of the winter months (i.e., during the region’s dry period), it is not anticipated to survive. Therefore, construction of Alternative B would not be likely to adversely affect the California Red-legged frog. The USFWS concurred with this determination in their Biological Opinion issued on April 3, 2013. The environmental impact of Alternative B on the California Red-legged Frog is not significant.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

Since the designated EFH for Groundfish is well outside of the DSA and the area of development, Alternative B would not affect EFH. Additionally, since Alternative B would not exceed water quality standards or create water quality problems that cannot be eliminated or mitigated, there would be no physical, chemical, or biological alterations of the waters (see Section 5.6, *Water Quality*). Therefore, Alternative B would not have a significant impact on fish species and would have no effect on EFH.

MIGRATORY BIRD TREATY ACT

The MBTA prohibits the destruction of active bird nests with eggs or young birds, or the killing of adult birds without a permit. Under Alternative B, if initial clearing and grubbing of the construction area occurs during the nesting season for migratory birds (February 1 to August 31), a preconstruction survey for active bird nests would be necessary to determine if migratory bird nests were present. If active bird nests were present, initial clearing and grubbing of the site would need to be delayed until the nests were vacated or a MBTA permit authorization was obtained to remove any active nests. Once the initial clearing and grubbing of the project area has occurred, the area would no longer be suitable for migratory bird nesting activity due to the lack of vegetation. Potential impacts to burrowing owls are described in the next section.

Alternative B would remove annual grassland and wetland habitat that could serve as nesting areas for birds protected by the MBTA. The annual grassland habitat eliminated under Alternative B is a common habitat in the area. Substantial amounts of annual grassland would remain available after completion of Alternative B. Compensatory habitat mitigation for losses of annual grassland, wetland habitat, and open water ditch/channel habitat for endangered species associated with implementation of Alternative B would be completed to meet ESA, NEPA and Clean Water Act requirements as discussed in Section 5.10, *Wetlands*. Implementation of the compensatory habitat mitigation requirements to compensate for endangered species habitat losses would also compensate for the loss of migratory bird habitat. Therefore, the impact of Alternative B on migratory birds would not be significant.

CALIFORNIA SPECIAL STATUS SPECIES

California Special Status Species potentially affected by the Sponsor's Proposed Project include the Western Burrowing Owl, Northern Harrier, San Pablo Song Sparrow, American kestrel, Red-Tailed Hawk, and White-Tailed Kite.

Burrowing owls were observed during the site survey on the levees surrounding the runway. Potential impacts would be associated with loss of burrows and/or foraging habitat. However, the area surrounding the Airport and the DSA includes habitat similar to the habitat that would be removed due to Alternative B. Proven methods for relocating western burrowing owls exist that minimize long-term impacts to individuals and communities of owls. A pre-construction survey would be conducted prior to construction to verify the presence of any western burrowing owls within the area of construction. If any active owl burrows are located during the survey, a 250-foot buffer zone would be established around each burrow until the young have fledged and are able to exit the burrow. If the burrows are occupied without active nesting, passive relocation of the birds would be performed. Passive relocation is performed by installing a one-way door at the burrow entrance which encourages the owls to move from the burrow. The CDFG would be consulted prior to relocation to ensure compliance with current guidelines and methods.

Several other species of birds and raptors forage and may nest on or immediately adjacent to the DSA. A northern harrier, an American kestrel, a red-tailed hawk, a San Pablo Song sparrow, and a white-tailed kite were observed foraging within the DSA during site surveys. There are some suitable nesting sites within the airfield and in scattered locations of the DSA. Active raptor nests are protected by the California Fish and Game code Section 3503.5 and the MBTA. Therefore, if vegetation removal occurs during the typical nesting season (February 1 to August 31), these special status species could be adversely impacted. However, the area surrounding the Airport and the DSA includes habitat similar to the habitat that would be removed due to Alternative B and if vegetation removal occurs during non-nesting seasons (September 1 to January 31) then no impacts are anticipated. Under Alternative B, if initial clearing and grubbing of the construction area occurs during the nesting season for raptors (February 1 to August 31), a preconstruction survey for active bird nests would be necessary to determine if nests were present. If active bird nests were present, initial clearing and grubbing of the site would need to be delayed until the nests were vacated or a MBTA permit authorization, and any necessary California Fish and Game Code authorization were obtained to remove any active nests. Therefore, with implementation of the avoidance and minimization measures described here, the impact of Alternative B on California special status species would not be significant.

OTHER PLANT SPECIES OF CONCERN

Of the 42 native plant species identified by the FIGR as sacred and culturally significant, one species, the Showy Indian Clover (*Trifolium amoenum*), is both a Federal and State of California threatened or endangered plant species. However, based on field observations and literature review specific to the special-status plant species, it was determined that the DSA does not contain suitable habitat for this species. As the plant species of concern to the FIGR are native plant species, they would be more likely to occur in the brackish marsh, as opposed to upland annual grassland dominated by non-native species.

As shown in Table 5.9-2, Section 5.9.4 and Section 5.10 implementation of Alternative B will require habitat compensation for losses of endangered species and wetland habitat. While no habitat compensation is specifically required for native plant species that are not Federally-listed or State of California listed as threatened or endangered species, or State of California Species of Special Concern, the habitat compensation required for environmental impacts to endangered species habitat and wetland habitat will provide replacement habitat suitable for colonization by native plant species including those identified by FIGR. As a result, the environmental impact of implementation of Alternative B on plant species of cultural significance to the FIGR is not significant.

**Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet**

The USFWS has concluded that the undeveloped areas within the project site are considered habitat for both the SMHM and CCR (USFWS 2013). These areas consist primarily of high brackish marsh, other wetlands, upland annual grasslands, and open water ditch/channels. This alternative would adversely affect the SMHM and the CCR due to the permanent removal of 8.24 acres of vegetation and 1.62 acres of open water ditch/channel, and temporary removal of 18.43 acres of vegetation considered by the USFWS to be habitat for these species. More detail about the permanent and temporary impacts for this alternative is provided below.

Salt Marsh Harvest Mouse

Permanent and Temporary Impacts

Alternative D would permanently remove 8.24 acres of SMHM habitat, which would be converted to pavement and other areas maintained for Airport uses. Within this area, there are wetlands and aquatic areas containing pickleweed, as well as adjacent upland annual grassland areas. This would be an adverse effect on the SMHM and in the absence of mitigation, the permanent loss of 8.24 acres of SMHM habitat, including wetlands, would be considered a significant impact. Providing endangered species habitat compensation at the same ratios as the USFWS identified as acceptable in its Biological Opinion for implementation of Alternative B would reduce this impact to a not significant level. These measures are described in more detail in Section 5.9.4 and Section 5.9.5.

An additional 18.43 acres of SMHM habitat would be temporarily impacted (up to two years) during which construction activities (construction staging, material and equipment storage, and haul routes) would remove the vegetation. Similar to the area where permanent impacts would occur, this area contains wetlands, as well as adjacent upland annual grassland areas. This would be an adverse effect on the SMHM and in the absence of compensatory mitigation, the temporary loss of 18.43 acres of SMHM habitat would be a significant impact. Within this area, it is anticipated that vegetation would be removed and wetland areas would be filled due to the construction activities. Upon completion of the construction and removal of exclusion fencing, the temporarily impacted areas would be allowed to re-vegetate and would again be suitable habitat for the SMHM.

Providing endangered species habitat compensation at the same ratios as required by the USFWS Biological Opinion for the Proposed Project (Alternative B), and implementing the same protective measures as the USFWS required for implementation of the Proposed Project, would reduce these temporary impacts to a not significant level. These habitat compensation and protective measures are described in Section 5.9.4 and Section 5.9.5. See Section 5.10, *Wetlands* for additional discussion about wetland impacts and potential mitigation.

Construction Impacts

Individual SMHM may be harassed by noise and vibrations associated with construction activities and the operation of heavy equipment within and adjacent to the salt marsh. The most likely effect would be to displace SMHM as they move farther from these activities to avoid disturbance. The level of harassment of individual SMHM may vary depending on the type of equipment being used; different pieces of equipment have different noise levels and, thus, cause more or less disturbance. Noise and vibrations may result in displacement of SMHM from protective cover and their territories. These disturbances are likely to disrupt normal behavior patterns of breeding, foraging, sheltering, and dispersal. Displaced SMHM may have to compete for resources in occupied habitat, and may be more vulnerable to predators. Disturbance to female SMHM from March to November may cause abandonment or failure of the current litter. Thus, displaced SMHM may suffer from increased predation, competition, mortality, and reduced reproductive success during the construction period.

Construction activities could attract predators of the SMHM to the area if trash and food waste are left on the ground. Also SMHM may also become more susceptible to predation due to the temporary loss of cover.

Individual SMHM could be injured or killed during the operation of heavy equipment within the salt marsh. SMHM and their young could be injured or killed if motorized equipment is used to remove the marsh vegetation. Although adult SMHM may be able to escape injury if the mice are flushed out of the vegetation prior to removal, less mobile SMHM (e.g., young SMHM before they have been weaned) would not be able to escape injury and may be killed if a nest were crushed by vegetation removal activities conducted during the SMHM's breeding season (March 1 through November 30).

The use of nighttime lighting during nighttime work could result in the disturbance of SMHM activities by disrupting activity cycles and the internal circadian system. Disruption of the circadian clock from artificial night lighting can result in changes to foraging efficiency, risk of predation, and parental care, which could have adverse effects on the SMHM. These individuals would be out of sync with their neighbors living in a natural light-dark cycle and it could affect mating success. Artificial night lighting has been shown to affect nocturnal rodents. Several species of small rodents harvested an average of 21 percent less seed in response to a single fluorescent or gasoline camping lantern. Although small mammals can respond to bright moonlight by shifting foraging activities to darker conditions, this is not an option for animals subjected to artificially increased illumination throughout the night. Unless they leave the area, they are either at greater risk of predation from foraging in the lighted area, or reduce their food consumption to avoid increase predation risk.⁸

⁸ Rich, C. and T. Longcore, *Ecological Consequences of Artificial Night Lighting*, 2006. Island Press, Washington, D.C.

High brackish marsh and annual grassland habitat within the area could become degraded if construction activities result in a spill of fuel or other hazardous materials or an increase in sedimentation in the marsh.

These construction impacts could result in an adverse impact on the SMHM and therefore could result in a significant impact on the SMHM. However, with implementation of the protective and habitat compensation measures described in Section 5.9.4, the impacts to the SMHM during construction would be reduced to a not significant level.

California Clapper Rail

Permanent and Temporary Impacts

Alternative D would permanently remove 8.24 acres of marginal foraging and dispersal CCR habitat and 1.62 acres of open water ditch/channel foraging habitat, which would be converted to pavement and other areas maintained for Airport uses. Within this area there are wetlands, as well as adjacent upland grassland areas. This would be an adverse effect on the CCR and in the absence of mitigation, the permanent loss of 8.24 acres of habitat, including wetlands, and 1.62 acres of open water ditch/channel would be considered a significant impact.

Providing endangered species habitat compensation at the same ratios as required by the USFWS Biological Opinion for the Proposed Project (Alternative B), and implementing the same protective measures as the USFWS required for implementation of the Proposed Project, would reduce these temporary impacts to a not significant level. These habitat compensation and protective measures are described in Section 5.9.4 and Section 5.9.5. See Section 5.10, *Wetlands* for additional discussion about wetland impacts and potential mitigation.

An additional 18.43 acres of CCR habitat would be temporarily impacted (up to two years) during which construction activities would remove the vegetation. Similar to the area where permanent impacts would occur, this area contains wetlands, open water ditch/channel, as well as adjacent upland annual grassland areas. This would be an adverse effect on the CCR and in the absence of compensatory mitigation, the temporary loss of 18.43 acres of CCR habitat would be a significant impact.

Upon completion of the construction and removal of exclusion fencing, the temporarily impacted areas would be allowed to re-vegetate and would return to the same quality of CCR habitat as before the temporary disturbance. Providing endangered species habitat compensation at the same ratios as required by the USFWS Biological Opinion for the Proposed Project (Alternative B), and implementing the same protective measures as the USFWS required for implementation of the Proposed Project, would reduce these temporary impacts to a not significant level. These habitat compensation and protective measures are described in Section 5.9.4 and Section 5.9.5. See Section 5.10, *Wetlands* for additional discussion about wetland impacts and potential mitigation.

Construction Impacts

Individual CCRs may be harassed by noise and vibrations associated with construction activities and the operation of heavy equipment within and adjacent to the salt marsh. The most likely effect would be to displace CCRs as they move farther from these activities to avoid disturbance. The level of harassment of individual CCRs may vary depending on the type of equipment being used; different pieces of equipment have different noise levels and, thus, cause more or less disturbance. Noise and vibrations may result in displacement of CCRs from protective cover and their territories. These disturbances are likely to disrupt normal behavior patterns. Displaced CCRs may have to compete for resources in occupied habitat, and may be more vulnerable to predators. No nesting CCRs will be disturbed by the implementation of Alternative D because the areas does not contain suitable breeding habitat for the CCR.

Construction activities could attract predators of the CCRs to the area if trash and food waste are left on the ground. Also CCRs may also become more susceptible to predation due to the temporary loss of cover. The use of nighttime lighting during nighttime work could result in the disturbance of CCR activities by disrupting activity cycles and the internal circadian system. Disruption of the circadian clock from artificial night lighting can result in changes to foraging efficiency, and risk of predation, which could have adverse effects on the CCR. These individuals would be out of sync with their neighbors living in a natural light-dark cycle.

High brackish marsh and annual grassland habitat within the area could become degraded if construction activities result in a spill of fuel or other hazardous materials or an increase in sedimentation in the marsh.

These construction impacts could result in an adverse impact on the CCR and therefore could result in a significant impact on the CCR. However, with implementation of the protective and habitat compensation measures described in Section 5.9.4 and 5.9.5, the impacts to the CCR during construction would be reduced to a not significant level.

Table 5.9-1 provides a summary of the permanent and temporary impacts for Alternative D. **Exhibit 5.9-2, Permanent and Temporary Impact Areas – Alternative D**, depicts these impact areas. All of the permanent and temporary acreages in Table 5.9-1 and permanent and temporary impacts areas depicted in Exhibit 5.9.2 would be impacted.

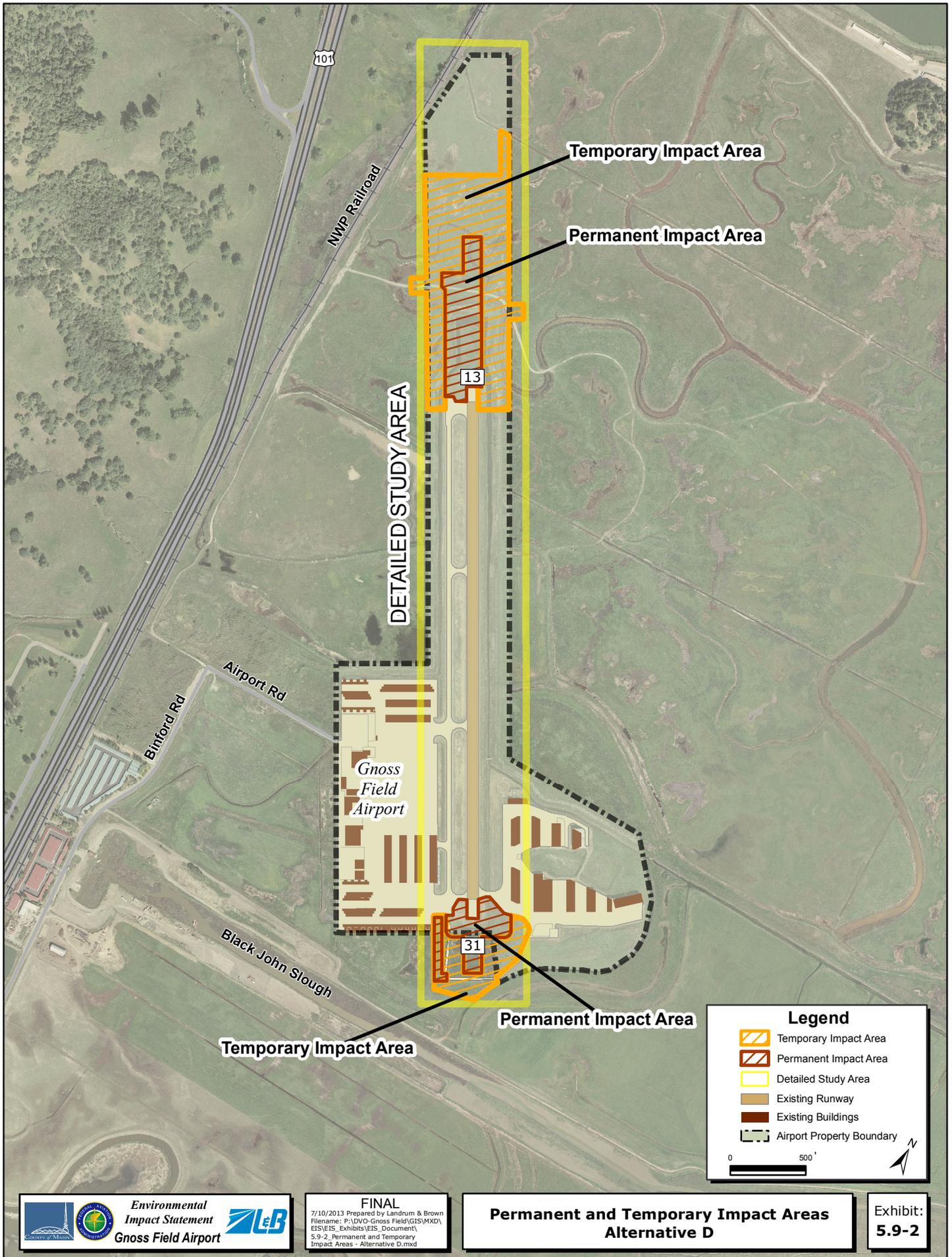
Table 5.9-3 provides acreage of habitat disturbed and the acreage habitat compensation required for the SMHM and the CCR with the implementation of Alternative D. Table 5.9-3 uses the same habitat compensation ratios identified by the USFWS in the Biological Opinion for the Proposed Project (Alternative B) issued April 3, 2013. The USFWS only issues a Biological Opinion for a specific Proposed Project. If the FAA chooses Alternative D instead of Alternative B, the ESA, Section 7, consultation with the USFWS would need to be reinitiated to confirm the habitat compensation ratios approved by the USFWS for Alternative B are considered appropriate by the USFWS for impacts associated with implementation of Alternative D.

A range of acreage for the off-site habitat compensation is shown in Table 5.9-3 because the USFWS Biological Opinion requires higher habitat compensation for temporary habitat impacts that last one to two years as compared to temporary habitat impacts that last less than one year. These differences in habitat compensation requirements are discussed in detail in Section 5.9.4 and Appendix I.

**Table 5.9-3
ALTERNATIVE D ACRES OF SALT MARSH HARVEST MOUSE AND
CALIFORNIA CLAPPER RAIL HABITAT DISTURBED AND
RESTORED/COMPENSATED
Gross Field Airport**

HABITAT TYPE	PERMANENT IMPACTS¹ (ACRES)	TEMPORARY IMPACTS² (ACRES)	ON-SITE RESTORATION³ (ACRES)	OFF-SITE RESTORATION/ COMPENSATION⁴ (ACRES)
High Brackish Marsh/ Annual Grassland	8.24	18.43	18.43	45.0-61.6
Open Water Ditch/ Channel⁵	2.31	0.00	0.69	4.9

- ¹ Permanent Impacts = effects to habitat lasting for more than 2 years.
- ² Temporary Impacts = includes short-term temporary effects (lasting for less than 1 year) and long-term temporary effects (lasting for more than 1 year but less than 2 years).
- ³ The Proposed Project will result in a net loss of 1.62 acres of open water ditch/channel habitat.
- ⁴ The total amount of off-site restoration depends on how quickly the areas of high brackish marsh/annual grassland habitat are restored on-site. See Appendix I, Table I-4 and Table I-5 for details of calculations.
- ⁵ The open water ditch/channel habitat is considered habitat for the California clapper rail, but not the salt marsh harvest mouse (USFWS Biological Opinion April 3, 2013).



California Red-Legged Frog

There are no localized occurrences of the California Red-legged frog documented west of the Petaluma River. However, it was determined by the USFWS that there is low potential for the frog to be present onsite during the winter months as a result of dispersing from adjacent localized freshwater habitat areas. If the species migrates into the site outside of the winter months (i.e., during the region's dry period), it is not anticipated to survive. Therefore, construction of Alternative D would not be likely to adversely affect the California Red-legged frog.

MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

As with Alternative B, Alternative D would have no effect on protected fish species or EFH and therefore would not have a significant impact on the environment.

MIGRATORY BIRD TREATY ACT

As with Alternative B, the impact of Alternative D on migratory birds would not be significant.

CALIFORNIA SPECIAL STATUS SPECIES

As with Alternative B, the impact of Alternative D on California special status would not be significant.

OTHER PLANT SPECIES OF CONCERN

As with Alternative B, the impact of Alternative D on plant species of cultural significance to the FIGR is not significant.

5.9.4 PROTECTIVE AND HABITAT COMPENSATION MEASURES

The following provides an overview of protective and habitat compensation measures for impacts to Federally threatened and endangered species, as well as protective measures to avoid or minimize potential impacts to special status species that would be implemented under either Alternative B or Alternative D. Habitat compensation for the SMHM would occur in tandem with habitat compensation for the CCR, as they are both associated with the tidal salt marsh habitat. Creating functioning habitat for these species in a suitable location approved by the USFWS would contribute to the long term survival needs of these species.

The USFWS only issues a Biological Opinion for a specific project description (in this case Alternative B). If the FAA chooses Alternative D instead of Alternative B, the ESA, Section 7, consultation would need to be reinitiated to confirm the habitat compensation ratios proposed for Alternative B, were still considered acceptable to the USFWS for Alternative D. Therefore, when determining habitat compensation acreages for this EIS, it was assumed the compensation ratios from the Biological Opinion provided for Alternative B would apply to Alternative D.

As habitat compensation for both the CCR and SMHM requires off-site habitat compensation, and these species prefer tidal salt marsh, it is likely that Marin County will choose to coordinate endangered species habitat compensation requirements identified in the USFWS Biological Opinion with the wetland mitigation requirements that will be finalized in the Clean Water Act, Section 404 permit for the runway extension project. Such an approach is specifically allowed under the USACOE compensatory mitigation regulations at Title 33 CFR § 332. In general, replacing the high brackish marsh and annual grassland to be temporarily or permanently removed as a result of the DVO runway extension project at a compensatory mitigation site considered suitable for restoration to tidal salt marsh in the USFWS *Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California (USFWS Draft Recovery Plan)* (USFWS 2010a) would result in the establishment or enhancement of tidal salt marsh habitat that would provide greater wetland functions, and improved habitat for the CCR and SMHM, as compared to the wetlands and other habitat being removed by Alternative B or Alternative D.

As discussed in more detail in Section 5.10, the habitat compensation requirements identified in the USFWS Biological Opinion are sufficient to also address the impacts to wetlands and aquatic resources resulting from implementation of Alternative B or Alternative D.

SALT MARSH HARVEST MOUSE

Habitat Compensation Measures

The USFWS Biological Opinion requires on-site habitat restoration for short-term temporary impacts and long-term temporary impacts to SHMH habitat. The USFWS Biological Opinion also requires off-site habitat compensation for short-term temporary impacts, long-term temporary impacts, and permanent impacts to SHMH habitat. The Biological Opinion requires that Marin County develop a habitat compensation plan for USFWS approval using all the following compensation ratios:

- 1:1 ratio (replaced:removed) on-site habitat restoration or replacement for short-term temporary SMHM habitat impacts (lasting for less than one year);
- 1.1:1 ratio (replaced:removed) off-site habitat replacement for short-term temporary SMHM habitat impacts (lasting for less than one year);
- 1:1 ratio (replaced:removed) on-site habitat restoration or replacement for long-term temporary SMHM habitat impacts (lasting for more than one year but less than two years);
- 2:1 ratio (replaced:removed) off-site habitat restoration or replacement for long-term temporary SMHM habitat impacts (lasting for more than one year but less than two years); and
- 3:1 ratio (replaced:removed) off-site habitat restoration or replacement for permanent SMHM habitat impacts (lasting for more than two years).⁹

⁹ USFWS, *Biological Opinion*, April 3, 2013, page 6, Table 1.

Based on these ratios, the total amount of off-site endangered species habitat compensation would be between 42.9 acres and 57.3 acres for Alternative B¹⁰ and between 49.9 acres and 66.5¹¹ acres for Alternative D. The exact amount of off-site habitat compensation will depend on what percentage of temporary habitat impacts last one year or less, requiring only 1.1:1 off-site compensatory habitat replacement, as opposed to temporary habitat impacts that last between 1 to 2 years, and require 2:1 off-site compensatory habitat replacement. The habitat compensation will provide breeding, feeding, or sheltering habitat commensurate with or better than the habitat lost as a result of the construction of the Sponsor's Proposed Project. This additional habitat will help maintain the geographic distribution of the species and will contribute to the recovery of the species.

Protective Measures

To minimize effects to the SMHM, areas of disturbance related to the project would be completely fenced off with SMHM exclusion fencing as necessary. Prior to installation, the USFWS would review and approve location and design specifications for proposed SMHM exclusion fencing. A USFWS-approved biologist would monitor installation of the SMHM exclusion fencing to ensure no SMHM are harmed during fence construction. A USFWS-approved biologist would inspect and approve fence installation methods and the finished installation.

The USFWS Biological Opinion requires that only non-motorized hand tools be used to remove vegetation during the SMHM breeding season from March 1 to November 30. Mechanical or motorized equipment may be used to remove vegetation from December 1 to February 28, outside of the SMHM breeding season. A USFWS-approved biologist would be onsite during initial ground disturbance and vegetation removal to monitor for SMHM. Installation of exclusion fencing would occur in progression with land clearing activities. Vegetation clearing would occur from south to north and exclusion fencing would remain open on the northern end of the temporary impact area to provide an "escape route" for SMHM during initial clearing and excavation.

Upon completion of vegetation removal in the impact area the SMHM exclusion fencing would be closed to preclude SMHM from potentially re-entering the temporary impact area. Upon completion of vegetation removal/ground clearing activities and installation of the SMHM exclusion fencing, the construction area would no longer be considered habitat for SMHM and the biological monitor would no longer be required onsite. The USFWS-approved biologist would train the construction crew on approved avoidance measures and on the life history of SMHM and train Marin County and/or construction contractor staff in appropriate monitoring techniques and methods for SMHM protection so that these individuals can conduct daily monitoring on their own for the duration of the project work. The USFWS-approved biologist would be available on an "on-call" basis for the

¹⁰ See Table I-2 and Table I-3, in Appendix I for calculations of these acreage values.

¹¹ See Table I-4 and Table I-5, in Appendix I for calculations of these acreage values.

duration of the project. Upon completion of the Sponsor's Proposed Project and removal of the SMHM exclusion fencing the temporary impacted areas will be allowed to re-vegetate and will again be suitable habitat for the SMHM.

If a SMHM is observed on the project site, work would stop and the USFWS-approved biologist would be notified. If this species vacates the work area on its own volition, then work can proceed. If this species does not vacate the project site, then no work would be restarted until the USFWS has been notified and additional avoidance measures, if any, are discussed and implemented.

Incidental Take

The USFWS identified the measures described below and in Section 5.9.5 for the SMHM as nondiscretionary, and directed these measures must be implemented by FAA so that they become binding conditions of any grant or permit issued to Marin County, as appropriate, for the exemption from unauthorized take of listed species under ESA section 7(o)(2) to apply. The USFWS stated the FAA has a continuing duty to regulate the activity that is covered by the incidental take statement. If FAA (1) fails to require Marin County or any of its contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of ESA section 7(o)(2) may lapse.

The Biological Opinion requires the FAA ensure that Marin County implement Conservation Measures 1, 2, 3, 4, and 5 identified and described in detail in the Description of the Proposed Project in the Biological Opinion and summarized here as follows:

- Conservation Measure 1: Construction Stormwater Pollution Plan: The proposed project will be designed to minimize off-site stormwater runoff that might otherwise impact surrounding habitat and water quality.
- Conservation Measure 2: Hand Removal of Vegetation and Installation of Temporary Exclusion Fencing: To minimize effects to the salt marsh harvest mouse the perimeter of the construction area will be fenced to exclude the salt marsh harvest mouse.
- Conservation Measure 3: Provide Environmental Awareness Training: A USFWS-approved biologist will train the construction crew on approved avoidance measures and on the life history of salt marsh harvest mouse and California clapper rails and train the County of Marin and/or construction contractor staff in appropriate monitoring techniques and methods for salt marsh harvest mouse and California clapper rail protection so that these individuals can conduct daily monitoring on their own for the duration of project work.
- Conservation Measure 4: Halting Work if Federally-Listed Species Observed: If a salt marsh harvest mouse or California clapper rail is observed on the project site, work will stop and the USFWS-permitted or approved biologist will be notified.

- Conservation Measure 5: Off-site Tidal Marsh Restoration: The FAA proposes to require the County of Marin, prior to initiating construction or otherwise taking actions associated with this project that result in adverse effects to the SHMH or CCR, to develop and submit to the USFWS for their review and approval a revegetation plan and habitat compensation plan based on the habitat compensation ratios in the Biological Opinion.

The USFWS provided the following incidental take statement in the Biological Opinion received on April 3, 2013. The USFWS anticipated incidental take of individual SMHM would be difficult to detect or quantify because of the variable, unknown size of any resident population over time, their elusive and cryptic behavior, and the difficulty of finding killed or injured animals. Due to the difficulty in quantifying the number of SMHM that will be taken as a result of the implementation of Alternative B, the USFWS quantified the take of listed species incidental to Alternative B as the following:

- The harassment and harm of all SMHM within the 22.93 acres of marginal quality high brackish marsh/annual grassland habitat disturbed during construction of the Proposed Project (Alternative B.)

The USFWS determined that this level of anticipated take resulting from Alternative B is not likely to jeopardize the continued existence of the SMHM.

CALIFORNIA CLAPPER RAIL

Habitat Compensation Measures

The USFWS Biological Opinion requires on-site habitat restoration for short-term temporary impacts and long-term temporary impacts to CCR habitat. The USFWS Biological Opinion also requires off-site habitat compensation for short-term temporary impacts, long-term temporary impacts, and permanent impacts to CCR habitat. The Biological Opinion requires that Marin County develop a habitat compensation plan for USFWS approval using all the following compensation ratios:

- 1:1 ratio (replaced:removed) on-site habitat restoration or replacement for short-term temporary California clapper rail habitat impacts (lasting for less than one year);
- 1.1:1 ratio (replaced:removed) off-site habitat replacement for short-term temporary California clapper rail habitat impacts (lasting for less than one year);
- 1:1 ratio (replaced:removed) on-site habitat restoration or replacement for long-term temporary California clapper rail habitat impacts (lasting for more than one year but less than two years);
- 2:1 ratio (replaced:removed) off-site habitat restoration or replacement for long-term temporary California clapper rail habitat impacts (lasting for more than one year but less than two years); and

- 3:1 ratio (replaced:removed) off-site habitat restoration or replacement for permanent California clapper rail habitat impacts (lasting for more than two years).¹²

Based on these ratios, the total amount of off-site habitat compensation will be between 42.9 acres and 57.3¹³ acres for Alternative B and between 49.9 acres and 66.5 acres for Alternative D¹⁴. The exact amount of off-site habitat compensation will depend on what percentage of temporary habitat impacts last one year or less, requiring only 1.1:1 off-site compensatory habitat replacement, as opposed to temporary habitat impacts that last between one to two years, which require 2:1 off-site compensatory habitat replacement. The habitat compensation will provide breeding, feeding, or sheltering habitat commensurate with or better than the habitat lost as a result of the effects from the construction of the Sponsor's Proposed Project. This additional habitat will help maintain the geographic distribution of the species and will contribute to the recovery of the species.

Protective Measures

To avoid potential impacts to the species, initial excavation and grading associated with the project would be scheduled during annual summer and fall dry periods when standing water and seasonally available foraging areas are not present. Once that work is complete the runway extension area would no longer be suitable habitat for CCR and no further seasonal restriction for CCR would be required. Following rainfall events, consolidated precipitation is pumped off the site and into the Petaluma River (which happens during the winter and spring of every year). Due to the absence of suitable foraging habitat during the summer and fall dry period, the CCR would not occur within the Airport runway extension area during that period, and would not be negatively affected by summer/fall (dry period) construction.

Incidental Take

The general conditions regarding incidental take of CCR under the ESA are the same as described above for the general conditions of incidental take regarding the SMHM.

The USFWS identified the measures described below as nondiscretionary, and directed these measures must be implemented by FAA so that they become binding conditions of any grant or permit issued to Marin County, as appropriate, for the exemption under ESA section 7(o)(2) to apply. The USFWS stated the FAA has a continuing duty to regulate the activity that is covered by the incidental take statement. If FAA (1) fails to require Marin County or any of its contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of ESA section 7(o)(2) may lapse.

¹² USFWS, *Biological Opinion*, April 3, 2013, page 6, Table 1.

¹³ See Table I-2 and I-3, in Appendix I for calculations of these acreage values.

¹⁴ See Table I-4 and I-5, in Appendix I for calculations of these acreage values

The Biological Opinion requires the FAA ensure that Marin County implement Conservation Measures 1, 2, 3, 4, and 5 identified and described in detail in the Description of the Proposed Project in the Biological Opinion. These conservation measures are the same conservation measures as those discussed under SMHM Incidental Take section earlier in Section 5.9.4.

The USFWS provided the following incidental take statement in the Biological Opinion received on April 3, 2013. The USFWS anticipated incidental take of individual CCRs will be difficult to detect or quantify because of the variable, unknown size of any resident population over time, their elusive and cryptic behavior, and the difficulty of finding killed or injured animals. Due to the difficulty in quantifying the number of CCRs that will be taken as a result of the implementation of Alternative B, the USFWS is quantifying take incidental to Alternative B as the following:

- The harassment of all California clapper rails within the 25.24 acres of non-breeding high brackish marsh/annual grassland and open water ditch/channel habitats disturbed during construction of the Proposed Project (Alternative B).

The USFWS determined that the level of anticipated take resulting from Alternative B is not likely to jeopardize the continued existence of the CCR.

CALIFORNIA RED-LEGGED FROG

There is a potential for the California red-legged frog to disperse onto the Airport site during winter months. The preferred season for construction activities would be the dry season work window of May 15 to October 15, because there is a lesser potential for water quality impacts, even though that timing overlaps with the migratory bird nesting season. However, if work activities cannot be confined to this work window, no direct or incidental take of the California red-legged frog is expected because the exclusion fence for the SMHM would be installed around the work area, precluding the California red-legged frog from entering the area of disturbance associated with the project.

WESTERN BURROWING OWL

Relocation of burrowing owls and loss of burrows and/or foraging habitat may occur as a result of implementing either of the development alternatives. In the event that this occurs, CDFG recommends 6.5 acres of foraging habitat for burrowing owl to be preserved for each active burrow that would be impacted by project activities. Marin County as the sponsor of the project, in coordination with CDFG, would be responsible for prescribing appropriate mitigation for any project-related impacts to burrowing owls.

A pre-construction clearance survey of burrowing owls would be conducted no more than 30 days prior to the onset of construction. Burrowing owls can be present during all times of the year in California, so this survey would be completed even if the initiation of construction is outside of the typical February 1 to August 31 migratory bird breeding season. If active owl burrows are located during the

pre-construction survey, a 250-foot buffer zone would be established around each burrow with an active nest until the young have fledged and are able to exit the burrow. In the case of occupied burrows without active nesting, active burrows after the young have fledged, or if development commences after the breeding season (typically February 1 to August 31), passive relocation of the birds would be performed. Passive relocation involves installing a one-way door at the burrow entrance, which encourages the owls to move from the occupied burrow. CDFG would be consulted for current guidelines and methods for passive relocation of any burrowing owls found on the site.

5.9.5 BIOLOGICAL OPINION TERMS AND CONDITIONS

The USFWS provided its Biological Opinion for the Proposed Project, dated April 3, 2013, to the FAA. Although the USFWS Biological Opinion was specific to the Proposed Project (Alternative B), for purposes of this EIS the FAA assumes that it would require Marin County to implement these same terms and conditions if Alternative D was implemented instead of Alternative B. The USFWS determined the following two reasonable and prudent measures in their Biological Opinion are necessary and appropriate to minimize the effects of the proposed project on the SMHM and the CCR:

1. FAA through the applicant will implement the Conservation Measures in the *Description of the Proposed Project* in this biological opinion.
2. FAA through the applicant will minimize the effects of the proposed project on the salt marsh harvest mouse, California clapper rail, and their habitats.

The April 3, 2013 Biological Opinion included the following terms and conditions to implement the reasonable and prudent measures:

1. Measure Number One (1):
 - a. FAA shall ensure that the salt marsh harvest mouse exclusion fencing is made of a heavy plastic sheeting material that does not allow salt marsh harvest mice to pass through or climb, and the bottom shall be buried to a depth of at least 4 inches so that the listed mouse cannot crawl under the fence. Fence height shall be at least 12 inches higher than the highest adjacent vegetation with a maximum height of 4 feet. All supports for the exclusion fencing shall be placed on the inside of the work area. FAA shall ensure that the exclusion fencing is inspected and secured before the start of each work day and that no salt marsh harvest mice are able to enter the work area.
 - b. FAA shall ensure that a compensation plan is finalized and approved by the Service prior to the initiation of construction of the proposed project. FAA shall ensure that the funding for the compensation plan is provided prior to the initiation of construction of the proposed project and that any required tidal marsh restoration is initiated within 1 year of the initiation of construction of the proposed project.

2. Measure Number Two (2):
 - a. FAA shall ensure that in order to avoid the potential for disturbing any salt marsh harvest mice nests and injuring or killing any young salt marsh harvest mice before they have weaned that the contractor uses only non-motorized hand tools to remove salt marsh vegetation during the mouse's breeding season (March 1 through November 30) under the supervision of a USFWS-approved biological monitor. If a salt marsh harvest mouse nest is observed, all work shall cease within 100 feet of the nest until the USFWS-approved biological monitor has determined that the young salt marsh harvest mice have been weaned and left the nest. Vegetation removal occurring outside of the salt marsh harvest mouse's breeding season (December 1 - February 28) may utilize mechanized or motorized equipment. The USFWS-approved biological monitor shall supervise the vegetation removal, walk ahead of the vegetation removal equipment, and flush any salt marsh harvest mice out of the way.
 - b. FAA shall ensure that all salt marsh and upland refugia habitat temporarily disturbed during construction of the proposed project is replanted or reseeded with appropriate local native plant species. The applicant shall install native salt marsh plant species including salt grass, dwarf spikerush, alkali heath, gumplant, and pickleweed as appropriate for the location of the disturbed areas and per a USFWS-approved revegetation and monitoring plan with success criteria. The revegetation monitoring plan shall be submitted to and approved by the USFWS prior to the initiation of construction of the proposed project. The revegetation and monitoring plan shall include photographs and annual reporting documenting the site conditions pre- and post-project. Any areas temporarily disturbed that do not meet the success criteria in the revegetation and monitoring plan within 2 years will be considered a permanent effect and shall be compensated off-site at USFWS-approved location at a 3:1 ratio.
 - c. FAA shall ensure that in addition to compensating for the temporary disturbance and permanent loss of high brackish marsh and annual grassland habitat for the salt marsh harvest mouse and California clapper rail, that Marin County also compensates at a 3:1 ratio for the permanent loss of 1.54 acres of open water ditch/channel foraging habitat for the California Clapper rail.
 - d. FAA shall ensure that the applicant develops and implements a USFWS-approved invasive plant species control plan. The invasive plant species control shall include measures to minimize the introduction and spread of perennial pepperweed and other invasive plant species.
 - e. FAA shall ensure that the applicant implements the following BMPs:
 - (1) All food and food-related trash items shall be enclosed in sealed trash containers and removed completely from the site at the end of the day.

- (2) Construction and project personnel shall not bring any pets anywhere in the proposed project work area.
- (3) All equipment shall be maintained in order to prevent leaks of automotive fluids such as gasoline, oils, or solvents. A Spill Response Plan shall be prepared. Hazardous materials such as fuels, oils, solvents, etc. shall be stored in sealable containers and designated locations at least 100 feet from wetlands and aquatic habitats.
- (4) Servicing of vehicles and construction equipment including fueling, cleaning, and maintenance shall occur at least 100 feet from any aquatic habitat, unless the activities are separated by a topographic or drainage barrier. Staging areas may occur closer to the proposed project activities as required.
- (5) If nighttime work is required, FAA shall ensure that the lighting is directed away from the marsh and shielded to prevent spillover into the marsh.

The USFWS Biological Opinion page 6 provides for increasing or decreasing habitat compensation mitigation ratios for compensation of losses of SMHM and CCR habitat as follows:

“These compensation ratios may be adjusted by the USFWS based on the quality of the habitat being removed and the quality of the habitat to be created or enhanced to replace it. If after review of a habitat compensation plan, the USFWS determines that adequate high quality habitat acceptable to the USFWS can be provided at a lower compensation ratio, the FAA proposes to utilize a lower habitat compensation ratio if such a ratio is acceptable to the USFWS. The USFWS would likely increase these compensation ratios if the proposed off-site restoration area was outside of the San Pablo Bay Recovery Unit identified in the *Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California*, which extends from Gallanis Creek in Marin County (at the southwestern end of the recovery unit) around San Pablo Bay north and east to Mare Island in Solano County.”

The FAA anticipates that the ESA, Section 7, consultation would be reinitiated and the Biological Opinion updated or supplemented with revised *Terms and Conditions* for the *Reasonable and Prudent Measures* of the *Incidental Take Statement* if the USFWS determined revised habitat compensation ratios were appropriate.

5.9.6 HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR PUBLIC USE AIRPORTS

The FAA AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Public Use Airports*, has advisory guidelines that relate to the proximity of landfills near airports. Landfills have the potential to attract wildlife that may be hazardous to air navigation. The southern edge of the Redwood Landfill and Recycling Center (RLI) is currently located approximately 3,460 feet northwest of Runway 13/31 at DVO. This separation is less than the 5,000 feet recommended by the FAA. The current

operating elevation at the RLI landfill is approximately 86-88 feet, with permitted maximum land fill height of 160 feet. Critical to the nature of the Redwood Landfill facility, with respect to aviation related activity at DVO, is the landfill's 'working face'. The working face at RLI at any given time is typically smaller than 1 acre, or less than 0.5 percent of the total area of the waste disposal/landfill. The working face delineates the exposed area of the landfill which is known to be an attractant to scavenging birds, particularly gulls. According to FAA National Wildlife Strike Database, January 1990–April 2003, gulls rank low on the FAA's relative hazard score with a ranking of 24 out of 100. To discourage gull populations, RLI currently has the following operational controls available as part of its wildlife hazard management plan.

- Minimize the area of the working face and push distance when possible;
- Use pyrotechnic devices to discourage scavenging gulls during refuse placement and compaction;
- Place daily cover consisting of a 6-inch thickness of compacted soil or approved alternative;
- Employ an outside contractor in the winter months who uses falcons to deter gulls from the landfill; and
- A propane gas-fired cannon may be used in conjunction with the pyrotechnic devices. The cannon emits a loud blast that discourages gulls from approaching the active face of the landfill.

Currently, aircraft fly over all portions of the RLI when arriving to and departing from DVO. There have been no reported bird strikes related to activity at the RLI. RLI's adaptive bird management plan is required by the Local Enforcement Agency (LEA) through its permitting approval authority over the RLI. The LEA has the authority under the provisions of RLI's operation permit to direct the landfill to undertake additional management measures if the existing measures at the landfill prove insufficient in preventing the area from becoming an attractant to birds.

RLI operates under the Solid Waste Facilities Permit #21-AA-0001, issued by the LEA on December 18, 2008, with concurrence by the State of California Integrated Waste Management Board.¹⁵ RLI's Joint Technical Document, which describes operating practices at the facility, states that minimizing the size of the working face is one of the operational controls in RLI's vector and bird control management plan. Mitigation Measures 3.6.2a and 3.6.2d of the November 17, 2008 Mitigation Monitoring and Report Program, which is incorporated into the Solid Waste Facilities Permit, references bird control measures.

As a part of the application for an updated Solid Waste Facilities Permit, RLI underwent extensive environmental review including the preparation of an Environmental Impact Report (Redwood EIR), which was certified by Marin County on June 10, 2008. In 2009 the landfill received and updated Waste Discharge

¹⁵ *Marin County Solid Waste Facilities Permit #21-AA-0001.*

Requirements from the San Francisco Regional Water Quality Control Board and received a Title 5 Air Permit from the Bay Area Air Quality Management District in 2010.¹⁶

The Redwood EIR identified the proximity of the landfill to DVO as a potential conflict with airport operations at DVO. Associated mitigation measures included in the Mitigation Monitoring and Reporting Program (MMRP) of the Redwood EIR, relative to the working face and the bird control measures, became part of the enforceable solid waste facility permit conditions, as required under CEQA.¹⁷

Marin County developed a local Airport Land Use Plan in 1991¹⁸. As stated in the Redwood EIR, the RLI site is located within the Marin County Airport Land Use Plan designated safety zones for DVO. These safety zones, established by Marin County in the 1991 Airport Land Use Plan, are areas in the vicinity of the Airport in which land use and/or zoning restrictions are established to protect public safety on the ground by limiting exposure to aircraft crash hazards. Five zones are established, with Zone 1 (Clear Zone) the closest to the Airport and Zone 5 (Referral) the farthest. The southern half (roughly) of the RLI landfill site is located in Zone 3, Traffic Pattern Zone, and the northern half is within Zone 4, Overflight Zone. Zone 5, Referral Area, extends 2 miles from DVO and therefore, RLI also falls within this zone. The proposed 1,100-foot runway extension to the north would bring the runway into closer proximity with RLI; however, the RLI would remain in Zone 3, Traffic Pattern Zone, Zone 4, Overflight Zone, and Zone 5, Referral Area.¹⁹

As referenced in the Redwood EIR, in addition to FAA distance criteria, the US Environmental Protection Agency adopted amendments to the Resource Conservation and Recovery Act, adding Title 40 CFR § 258.10 effective October 1993, to require FAA notification for proposed new or expanded municipal solid waste landfill units (MSWLF). Section 258.10 requires:

- (a) owners or operators of new MSWLF units, existing MSWLF units, and lateral expansions that are located within 10,000 feet (3,048 meters) of any airport runway end used by turbojet aircraft or within 5,000 feet (1,524 meters) of any airport runway end used by only piston-type aircraft to demonstrate that the units are designed and operated so that the MSWLF unit does not pose a bird hazard to aircraft;
- (b) owners or operators proposing to site new MSWLF units and lateral expansions within a five-mile radius of any airport runway end used by turbojet or piston-type aircraft to notify the affected airport and the FAA; and

¹⁶ *Redwood Landfill Final Environmental Impact Report*. On-line at: <http://www.ciwmb.ca.gov/permittoolbox/Notices/RedwoodLF/default.htm>. California Integrated Waste Management Board. September 26, 2011.

¹⁷ *Redwood Landfill Solid Waste Facilities Permit Revision, Mitigation Monitoring and Report Program*, November 17, 2008.

¹⁸ Prepared for the Marin County Planning Department by Cortright & Seibold in association with Brown-Buntin Associates, Inc, *Airport Land Use Plan, Marin County Airport Gness Field*, Adopted June 10, 1991.

¹⁹ *Redwood Landfill Solid Waste Facilities Permit Revision EIR*, July 2005.

- (c) the owner or operator to place the demonstration in paragraph (a) in the operating record and notify the State Director that it has been placed in the operating record.

The combined State Water Resources Control Board/California Integrated Waste Management Board (CIWMB) regulations concerning facility siting and classification (Division 2, Title 27, §20270) include language nearly identical to items (a) through (c) above.²⁰

The Redwood EIR states that because RLI is located in DVO Zones 3, 4, and 5, changes to the existing operations at RLI could potentially conflict with Airport operations. Originally, there were concerns that a potential increase in the working face and an increase in daily waste would result in more birds. However, the mitigated alternative did not include a lateral expansion of the landfill and the volume of material accepted for composting did not increase. Finally, the increased amount of light that would be needed to accommodate more frequent nighttime operations at the larger working face could potentially interfere with nighttime aircraft operations at DVO.²¹

Mitigation measures included in the MMRP of the Redwood EIR, and subsequently incorporated into the landfill's current operating Permit are listed below. The standards in the Permit also meet the requirements of the CIWMB pursuant to Public Resources Code Section 44009. The owner of RLI (Waste Management, Inc.) has agreed to comply with the mitigation measures contained in the MMRP of the Redwood EIR. Redwood Landfill is implementing the following bird control mitigation measures:

- Redwood Landfill will continue their existing bird control program, which has been discussed above.
- To ensure that nighttime activities do not interfere with operations at DVO, lights used during nighttime landfill operations will not be colored, will be shielded and directed downward to reduce glare, and will be placed in an irregular pattern in order not to appear to be a runway. Redwood Landfill will notify the DVO prior to any change in the way lighting is used for nighttime operations.
- If bird activity at the landfill, including the areas outside the permitted landfill footprint proposed for composting, increases as a result of the project, as determined by the LEA during regular site inspections, RLI shall adjust its existing bird control program as necessary to ensure that the facility does not pose a bird hazard to aircraft. RLI shall modify as necessary the demonstration required in 40 CFR Part 258, §258.10 (a) and 27 CCR, §20270(a) (that the landfill does not pose a bird hazard to aircraft).

²⁰ Redwood Landfill Solid Waste Facilities Permit Revision EIR, July 2005.

²¹ Redwood Landfill Solid Waste Facilities Permit Revision EIR, July 2005.

The proposed extension of Runway 13/31 by 1,100 feet to the northwest would result in the north end of the runway being located 2,500 feet from the southern edge of the RLI. This would decrease the distance between the end of the runway and the RLI as compared to existing conditions. Aircraft currently fly over the landfill at an altitude of approximately 300-400 feet Above Ground Level (AGL) on approach from the northwest. When departing to the northwest, aircraft are at an altitude of approximately 500-700 feet AGL when they fly over the landfill. With the proposed runway extension, all aircraft landing at DVO from the northwest would overfly the landfill at an approximate altitude of 250-350 feet AGL. Some of the aircraft operating at DVO today would be able to accommodate heavier payloads or more fuel as a result of the extended runway. Due to these heavier overall weights, these aircraft would be at an approximate altitude of 475-675 feet AGL on departure to the northwest. Because there would be no change in the flight patterns and only a small change in altitude (25 - 50 feet) of aircraft as they overfly the landfill, the change in operational distance from aircraft in flight and the landfill would be relatively small. In addition, the RLI will continue the measures included in the bird management plan that have proven effective to date.²²

The LEA previously authorized the continued operation of RLI near DVO, but in so doing, identified mitigation measures in the MMRP to minimize the attractiveness of the area to wildlife, especially birds, so as to avoid creation of a wildlife aircraft strike hazard at RLI and to prevent RLI from becoming an incompatible land use. The permit issued to RLI requires mitigation measures including ongoing management efforts to prevent minimize bird attractants. If deemed ineffective over time, the mitigation measures will change per the permit requirements. With the current measures in place it is not anticipated that there would be an increase in bird strikes due to the implementation of the Sponsor's Proposed Project or any of its alternatives. Therefore, the potential for implementation of Alternative B or Alternative D to result in an increase in wildlife-aircraft strikes between aircraft using DVO and hazardous wildlife potentially attracted to the RLI facility is not significant.

²² Based on conversation between with John Roberto, Marin County Environmental Consultant, and Mark Janofsky, Marin County Environmental Health Services staff documented in EIS administrative file.