5.9 BIOLOGICAL RESOURCES

This section discusses the presence of any species located on Gnoss 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. An "endangered species" is any species that is in danger of extinction throughout all or a significant portion of its range, and the term "threatened species" means any species which is likely to become an "endangered species" within the foreseeable future throughout all or a significant portion of its range. 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 SIGNIFICANCE CRITERIA

Federal Aviation Administration (FAA) Order 1050.1F, *Environmental Impacts: Policies and Procedures,* states impacts to biological resources are considered significant when the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) determines that the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species, or would result in the destruction or adverse modification of federally designated critical habitat.

FAA Order 1050.1F identifies factors to consider when determining whether an action would have the potential to have a significant impact on Biological Resources, which includes when an action would have the potential to:

- Induce a long-term or permanent loss of unlisted plant or wildlife species, i.e., extirpation of the species from a large project area (e.g., a new commercial service airport);

- Adverse impacts to special status species (e.g., state species of concern, species proposed for listing, migratory birds, bald and golden eagles) or their habitats;

- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or

- Adverse impacts on a species' reproductive success rates, natural mortality rates, non-natural mortality (e.g. road kills and hunting), or ability to sustain the minimum population levels required for population maintenance.

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 FAA completed ESA, Section 7, interagency consultations with the USFWS during preparation of the June 2014 Final Environmental Impact Statement (EIS) regarding endangered and threatened species that could be affected by the Sponsor's Proposed Project, and the results of these consultations are described in this section.

The USFWS issued a no-jeopardy Biological Opinion[1] for Alternative B (Sponsor's Proposed Project), which includes habitat compensation ratios to address impacts to threatened or endangered species impacted by implementation of Alternative B. The Biological Opinion also requires that a habitat compensation plan be submitted to the USFWS for review and approval. Marin County, the airport sponsor, would be responsible for preparing the habitat compensation plan. As USFWS approval of a specific habitat compensation plan is already required as part of the previously completed ESA, Section 7 consultation, additional consultation is not required unless one of the criteria for re-initiation of consultation described in 50 CFR § 402.16 is met.[2]

MAGNUSON-STEVENS 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

[1] USFWS, Biological Opinion, April 3, 2013.

[2] As discussed in detail in 50 CFR Section 402.16 (a) to (d), the reasons for reinitiating ESA, Section 7 consultation includes: (a) extent of incidental take exceeds incidental take statement, (b) new information reveals additional impacts to listed species or their habitat, (c) action is modified to cause an effect on listed species or habitat not previously considered, or (d) a new species is listed or critical habitat designated that was not previously considered.

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 Wildlife (CDFW) 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 CDFW on projects or actions that could affect listed species, directs CDFW to determine whether jeopardy would occur, and allows CDFW to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. CESA allows CDFW 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 (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 CDFW 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 CDFW, 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. Gnoss Field falls under this portion of the Countywide Plan.[3] Applicable executive summaries of the County guidelines to Gnoss 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 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.

[3] Marin County Community Development Agency, *Marin Countywide Plan*, adopted November 6, 2007, amended September 24, 2013, Map 3-1a, Environmental Features Focusing Development within the City-Centered Corridor.

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.

5.9.2 BIOLOGICAL 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 conducted in 2011 for the DSA, which can be found in Appendix I, *Biological Resources.*[4] Since the publication of the June 2014 Final EIS, there have been no changes in Airport actions that potentially change/impact the biological communities occurring within DVO. Furthermore, a review of the Federal and state threatened and endangered species list confirmed no new federally threatened or endangered species have been listed in the DSA. Therefore, pursuant to 50 CFR Section 402.16(a) – (d), the Biological Opinion issued April 3, 2013 remains valid.

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

[4] Foothill Associates, *Biological Resources Assessment, Marin County Airport*, 2011. See Appendix I.

described in Chapter Four, *Affected Environment*. Locations of biotic communities and wildlife habitats within the DSA are shown in that chapter on Exhibit 4-15, *Vegetation and Wildlife Habitats*.

5.9.2.2 Federally listed Threatened and Endangered Species

A summary of the Federally listed 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 (CCR) (*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. 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.

By letter of March 5, 2010, the NMFS concluded that the Sponsor's Proposed Project presented in the Final EIS (Alternative B) and the alternative projects considered in detail in the Final 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 NMFS (Appendix I). Although Alternative E was not included or evaluated in the Final EIS, Alternative E has the same Area of Potential Effect as Alternatives B and D which were evaluated in the Final EIS. As Alternative E affects less habitat than Alternative B or Alternative D, Alternative E does not have the potential to affect Federally listed fish species or designated critical habitat under the cognizance of the NMFS.

In the preparation of the Final EIS, the FAA initiated ESA, Section 7 consultation with the USFWS by letter of November 16, 2011 (Appendix I) for the Final EIS. The USFWS issued a non-jeopardy Biological Opinion[5] for Alternative B (Sponsor's Proposed Project), which includes habitat compensation ratios to address impacts to threatened or endangered species impacted by implementation of Alternative B. The Biological Opinion also requires that a habitat compensation plan be submitted to the USFWS for review and approval. Marin County, the airport sponsor, would be responsible for preparing the habitat compensation plan. As USFWS approval of a specific habitat compensation plan is already required as part of the previously completed ESA, Section 7 consultation, additional consultation is not required unless one of the criteria for reinitiation of consultation described in 50 CFR § 402.16 (a) – (d) is met.[6] The USFWS Biological Opinion requires implementation of the

[5] USFWS, Biological Opinion, April 3, 2013.

[6] As discussed in detail in 50 CFR 402.16 (a) to (d) the reasons for reinitiating ESA, Section 7 consultation include (a) extent of incidental take exceeds incidental take statement, (b) new information reveals additional impacts to listed species or their habitat, (c) action is modified to cause an effect on listed species or habitat not previously considered, or (d) a new species is listed or critical habitat designated that was not previously considered.

Reasonable and Prudent Measures and Terms and Conditions, which are provided in Section 5.9.5.

For the purpose of this analysis, the requirements of Biological Opinion for the implementation of Alternative B (Sponsor's Proposed Project) issued April 3, 2013 was previously applied to Alternative D in the Final EIS, and is applied to Alternative E in this Supplement to the Final EIS (SEIS).

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 NMFS 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

The MBTA, 16 U.S. Code (USC) § 703 *et seq.*, established in 1916, protects migratory birds by prohibiting any person from intentionally taking, selling, or conducting other activities that would harm migratory birds, their eggs, or nests (such as the removal of an active nest or nest tree), unless a permit has been obtained.[7] The list of migratory birds includes all bird species native to the United States The statute was extended in 1974 to include parts of birds, as well as eggs and nests. Although there is currently a split of opinion in various United States Courts of Appeals, the United States Ninth Circuit Court of Appeal (in which California is located) and the United States Department of Interior (USDOI) recognize that it is illegal under the act to intentionally 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 act. Removal of unoccupied nests, or bird mortality resulting indirectly from disturbance activities, is not considered a violation of the MBTA.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds

This Executive Order directs Federal agencies to take action to further implement the MBTA. This would require agencies that take actions that either directly or indirectly affect migratory birds to develop a Memorandum of Understanding (MOU), and to work with the USFWS, and other federal agencies to promote the conservation of migratory bird populations.

[7] 16 USC § 668 *et seq*.

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 rail[8], 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.

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 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. Therefore, this species would not be adversely affected by the implementation of any of the alternatives evaluated in detail in this SEIS.[9] 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: 2024

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 biological resources. 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.

[8] The California clapper rail and salt marsh harvest mouse are fully protected species under Fish and Wildlife Code Sections 3511 and 4700.

[9] Foothill Associates, *Biological Resources Assessment, Marin County Airport*, 2011. See Appendix I.

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 SMHM and 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 considered by the USFWS to be habitat for these species.[10] **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.

Based on the ESA, Section 7 consultation with the USFWS, this SEIS 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 and Streams* 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 and Streams* 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, D and E. See Section 5.10, *Wetlands and Streams* for additional discussion about the wetland impacts and potential mitigation. More detail about the permanent and temporary impacts for the alternatives is provided below.

[10] 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.

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

IMPACT AND HABITAT TYPE	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE D	ALTERNATIVE E
Permanent Impact Area – High Brackish Marsh/Annual Grassland	0.00	6.88	8.24	5.60
Permanent Impact Area – Open Water Ditch/Channel	0.00	1.54[1]	1.62[2]	1.80[3]
Temporary Impact Area	0.00	16.05	18.43	12.74
TOTAL	**0.00**	**24.47**	**28.29**	**20.14**

[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
[3] 1.80 acres Open Water Ditch/Channel Impacted = 2.36 acres of Permanent Impacts to Open Water Ditch/Channel – 0.56 acres On-site Open Water Ditch/Channel restoration

Note: Numbers may not sum due to rounding.

Source: Foothill Associates and Landrum and Brown, 2018

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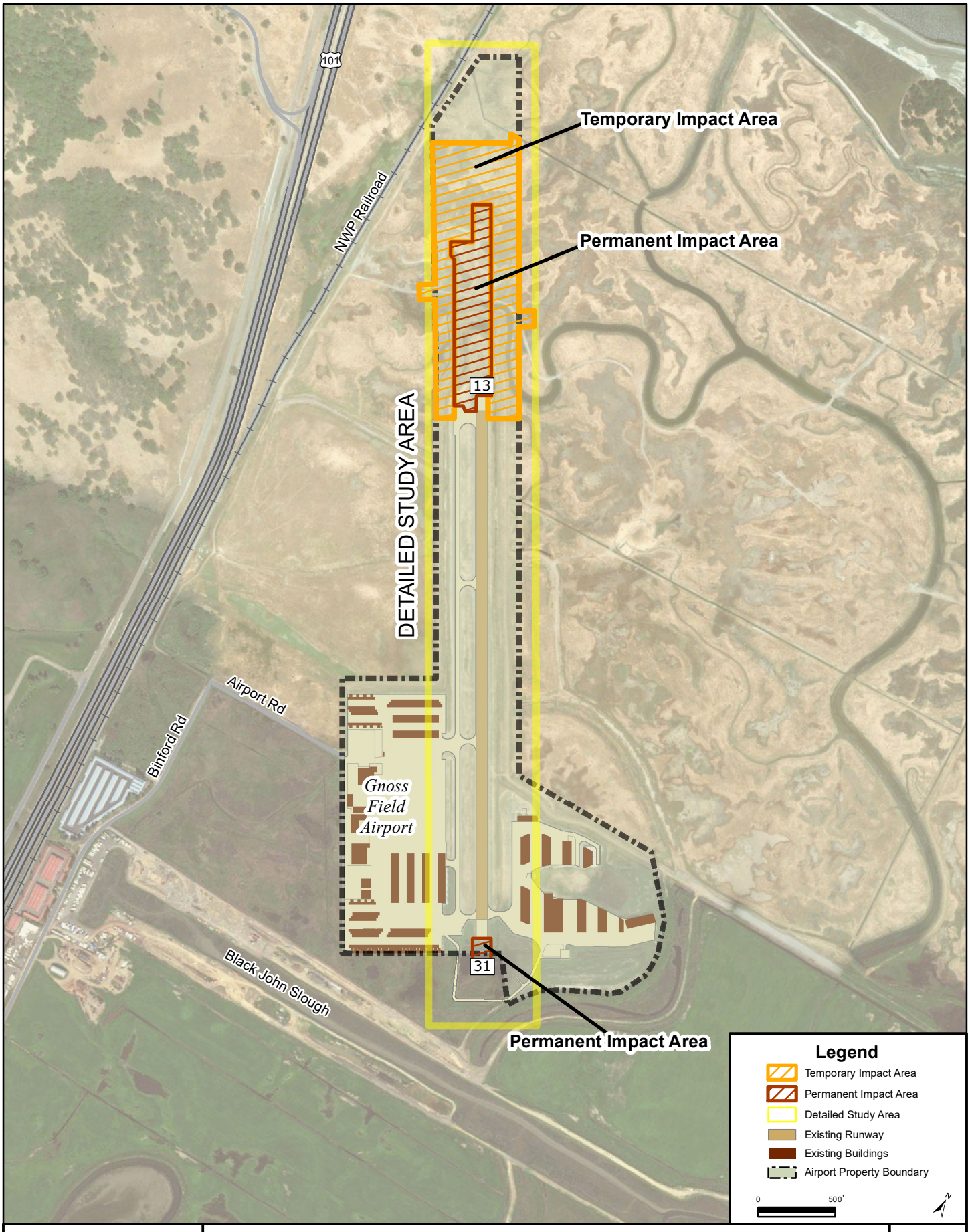

Supplement to the Final Environmental Impact Statement
Gnoss Field Airport

Permanent and Temporary Impact Areas
Alternative B

EXHIBIT:
5.9-1

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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 adverse effect would reduce it to a not significant level.

An additional 16.05 acres of SMHM habitat would be temporarily adversely affected (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 issued April 3, 2013 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 and Streams* 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.[11]

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 likely adversely affect the SMHM and therefore could result in a significant impact on the SMHM. However, with implementation of the protective and habitat mitigation 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.

California Clapper Rail[12]

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

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

[12] In 2014, the American Ornithologists' Union (now the American Ornithological Society) changed the common and scientific name of the California clapper rail to Ridgeway's rail [Rallus obsoletus]. The name California clapper rail has been retained for this document as it is consistent with the earlier Draft and Final EIS documents.

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 and Streams* 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 likely adversely affect 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 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 5.9-2
ALTERNATIVE B ACRES OF SALT MARSH HARVEST MOUSE AND CALIFORNIA CLAPPER RAIL HABITAT DISTURBED AND RESTORED/COMPENSATED
Gnoss Field Airport

HABITAT TYPE	PERMANENT IMPACTS[1] (ACRES)	TEMPORARY IMPACTS[2] (ACRES)	ON-SITE RESTORATION[3] (ACRES)	OFF-SITE RESTORATION/ COMPENSATION[4] (ACRES)
High Brackish Marsh/ Annual Grassland	6.88	16.05	16.05	38.3-52.7
Open Water Ditch/ Channel[5]	2.31	0.00	0.77	4.6

1 Permanent Impacts = effects to habitat lasting for more than two years.
2 Temporary Impacts = includes short-term temporary effects (lasting for less than one year) and long-term temporary effects (lasting for more than one year but less than two years).
3 Alternative B (Sponsor's Proposed Project) would 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-1, Table I-2 and Table I-3 for details of calculations.
5 The open water ditch/channel habitat is considered habitat for the California Ridgway's 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 CWA requirements as discussed in Section 5.10, *Wetlands and Streams*. 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 CDFW 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 Wildlife 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 any necessary MBTA permit authorization, and any necessary California Fish and Wildlife 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 issued April 3, 2013 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 issued April 3, 2013 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 and Streams* 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 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 of 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.[13]

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 issued April 3, 2013 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 and Streams* 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.

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

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 issued April 3, 2013 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 and Streams* for additional discussion about wetland impacts and potential mitigation.

Construction Impacts

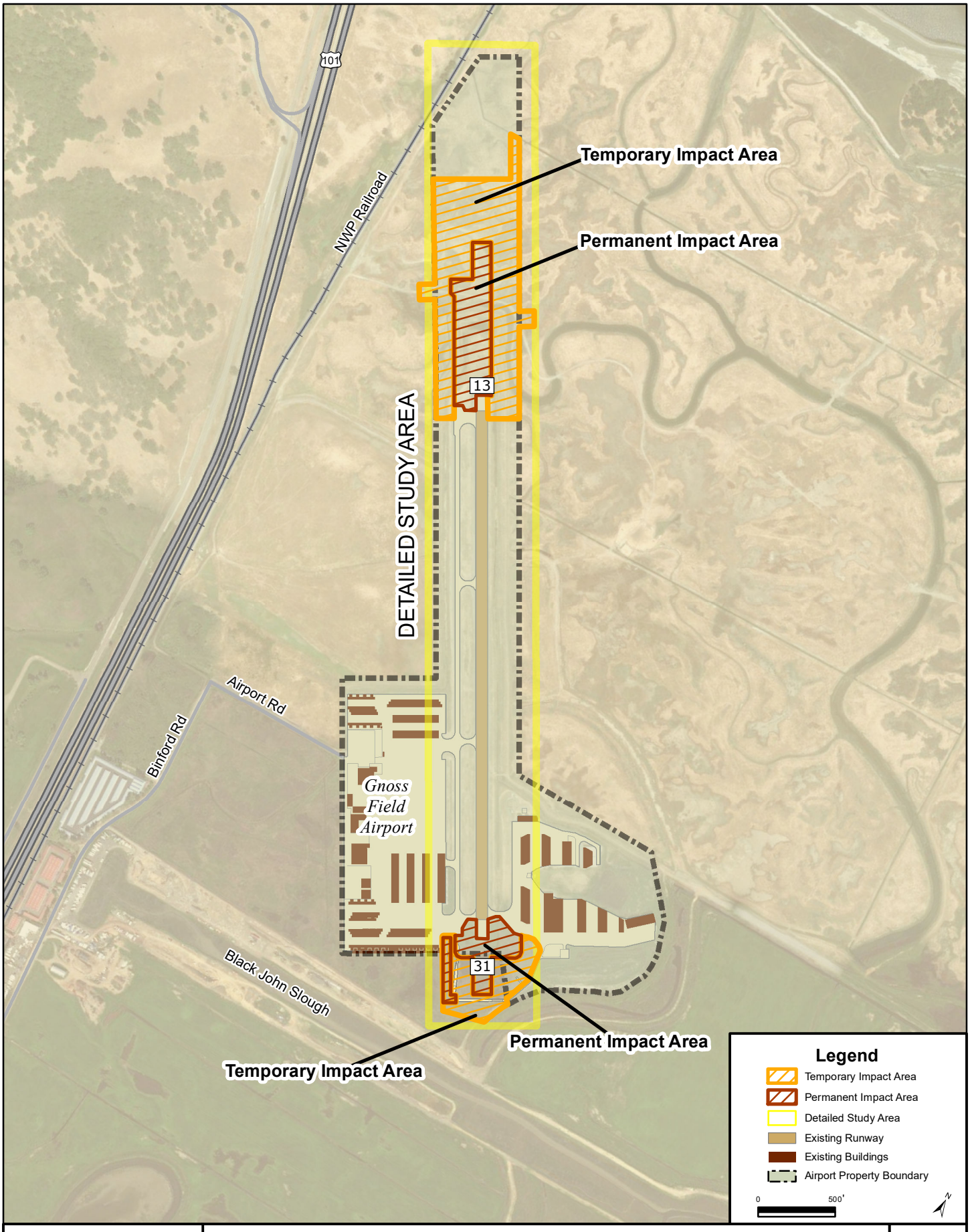
Individual CCRs may be harassed by noise and vibrations associated with construction activities and the operation of heavy equipment within and adjacent to the salt marsh. The most likely effect would be to displace CCRs as they move farther from these activities to avoid disturbance. The level of harassment 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 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.



Supplement to the Final Environmental Impact Statement
Gnoss Field Airport

Permanent and Temporary Impact Areas
Alternative D

EXHIBIT:
5.9-2

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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 issued April 3, 2013.

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
Gnoss Field Airport

HABITAT TYPE	PERMANENT IMPACTS[1] (ACRES)	TEMPORARY IMPACTS[2] (ACRES)	ON-SITE RESTORATION[3] (ACRES)	OFF-SITE RESTORATION/ COMPENSATION[4] (ACRES)
High Brackish Marsh/ Annual Grassland	8.24	18.43	18.43	45.0-61.6
Open Water Ditch/ Channel[5]	2.31	0.00	0.69	4.9

1 Permanent Impacts = effects to habitat lasting for more than two years.
2 Temporary Impacts = includes short-term temporary effects (lasting for less than one year) and long-term temporary effects (lasting for more than one year but less than two years).
3 Alternative D would 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-1, 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-STEVENS 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

Alternative E:
Extend Runway to the Northwest by 300 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 5.60 acres of vegetation and 2.36 acres of open water ditch/channel, and temporary removal of 12.74 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 E would permanently remove 5.60 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 5.60 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 issued April 3, 2013 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 12.74 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 12.74 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 issued April 3, 2013 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 and Streams* 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 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 of 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.[14]

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 E would permanently remove 5.60 acres of marginal foraging and dispersal CCR habitat and 2.36 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 5.60 acres of habitat, including wetlands, and 2.36 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 issued April 3, 2013 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 and Streams* for additional discussion about wetland impacts and potential mitigation.

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

An additional 12.74 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 12.74 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 issued April 3, 2013 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 and Streams* 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 E 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 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 E. **Exhibit 5.9-3, *Permanent and Temporary Impact Areas – Alternative E***, 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 5-9.3 would be impacted.

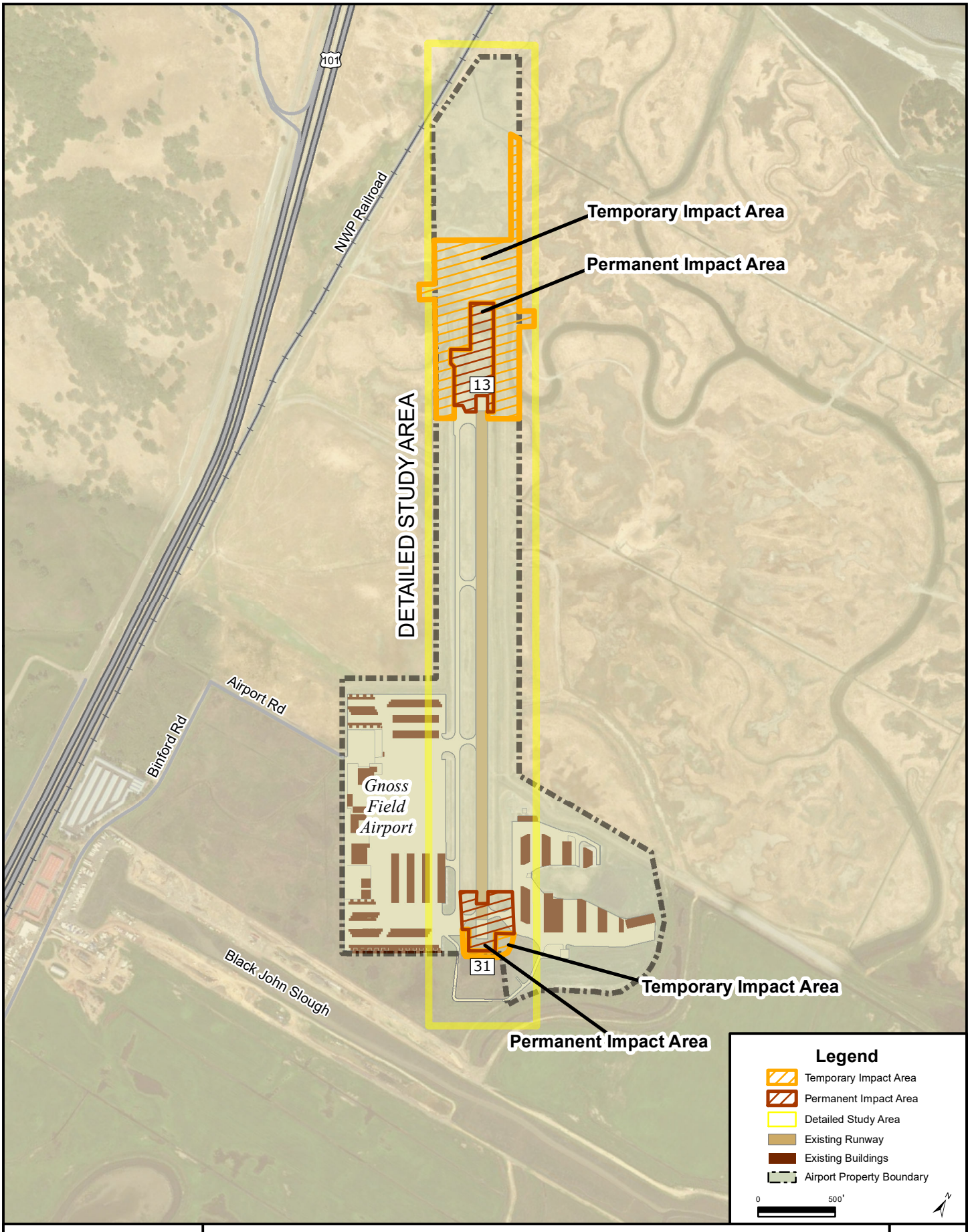
Table 5.9-4 provides acreage of habitat disturbed and the acreage habitat compensation required for the SMHM and the CCR with the implementation of Alternative E. Table 5.9-4 uses the same habitat compensation ratios identified by the USFWS in the Biological Opinion issued April 3, 2013. The USFWS only issued a Biological Opinion for the Sponsor's Proposed Project (Alternative B).

A range of acreage for the off-site habitat compensation is shown in Table 5.9-3 because the USFWS Biological Opinion issued April 3, 2013 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 5.9-4
ALTERNATIVE E ACRES OF SALT MARSH HARVEST MOUSE AND CALIFORNIA CLAPPER RAIL HABITAT DISTURBED AND RESTORED/COMPENSATED
Gnoss Field Airport

HABITAT TYPE	PERMANENT IMPACTS[1] (ACRES)	TEMPORARY IMPACTS[2] (ACRES)	ON-SITE RESTORATION[3] (ACRES)	OFF-SITE RESTORATION/ COMPENSATION[4] (ACRES)
High Brackish Marsh/ Annual Grassland	5.60	12.74	12.74	30.8-42.28
Open Water Ditch/ Channel[5]	2.36	0.00	0.47	4.72

1 Permanent Impacts = effects to habitat lasting for more than two years.
2 Temporary Impacts = includes short-term temporary effects (lasting for less than one year) and long-term temporary effects (lasting for more than one year but less than two years).
3 Alternative E would result in a net loss of 2.36 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-1, Table I-1 for details of calculations.
5 The open water ditch/channel habitat is considered habitat for the California Ridgway's rail, but not the salt marsh harvest mouse (USFWS Biological Opinion April 3, 2013).



Supplement to the Final Environmental Impact Statement
Gnoss Field Airport

Permanent and Temporary Impact Areas
Alternative E

EXHIBIT:
5.9-3

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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 E would not be likely to adversely affect the California Red-legged frog.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

As with Alternative B, Alternative E 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 E on migratory birds would not be significant.

CALIFORNIA SPECIAL STATUS SPECIES

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

OTHER PLANT SPECIES OF CONCERN

As with Alternative B, the impact of Alternative E 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 mitigation 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 Alternative B, D, or E. 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 issued a no-jeopardy Biological Opinion[15] for Alternative B (Sponsor's Proposed Project), which includes habitat compensation ratios to address impacts to threatened or endangered species impacted by implementation of Alternative B. The Biological Opinion also requires that a habitat compensation plan be submitted to the USFWS for review and approval. Marin County, the airport sponsor, would be responsible for preparing the habitat compensation plan. As USFWS approval of a

[15] USFWS, Biological Opinion, April 3, 2013.

specific habitat compensation plan is already required as part of the previously completed ESA, Section 7 consultation, additional consultation is not required unless one of the criteria for reinitiation of consultation described in 50 CFR § 402.16 is met.[16] Therefore, when determining habitat compensation acreages for this SEIS, it was assumed the compensation ratios from the Biological Opinion issued April 3, 2013 would apply to Alternatives D and E.

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 CWA, 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 *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (USFWS *Recovery Plan*) (USFWS 2013) 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, D or E.

As discussed in more detail in Section 5.10, the habitat compensation requirements identified in the USFWS Biological Opinion issued April 3, 2013 are sufficient to also address the impacts to wetlands and aquatic resources resulting from implementation of Alternative B, D, or E.

SALT MARSH HARVEST MOUSE

Habitat Compensation Measures

The USFWS Biological Opinion issued April 3, 2013 requires on-site habitat restoration for short-term temporary impacts and long-term temporary impacts to SMHM habitat. The USFWS Biological Opinion also requires off-site habitat compensation for short-term temporary impacts, long-term temporary impacts, and permanent impacts to SMHM 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);

[16] As discussed in detail in 50 CFR 402.16 (a) to (d) the reasons for reinitiating ESA, Section 7 consultation include (a) extent of incidental take exceeds incidental take statement, (b) new information reveals additional impacts to listed species or their habitat, (c) action is modified to cause an effect on listed species or habitat not previously considered, or (d) a new species is listed or critical habitat designated that was not previously considered.

- 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).[17]

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 B,[18] between 49.9 acres and 66.5[19] acres for Alternative D, and between 33.3 acres and 44.6 acres for Alternative E.[20] 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, 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 or its alternatives. 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 issued April 3, 2013 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.

[17] USFWS, *Biological Opinion*, April 3, 2013, page 6, Table 1.
[18] See Table I-2 and Table I-3, in Appendix I for calculations of these acreage values.
[19] See Table I-4 and Table I-5, in Appendix I for calculations of these acreage values.
[20] The same methodology applied to determine off-site endangered species habitat compensation for Alternatives B and D was used to determine that of Alternative E.

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 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 issued April 3, 2013 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 for the Sponsor's Proposed Project (Alternative B). 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 Sponsor's 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 issued April 3, 2013 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 CCR habitat impacts (lasting for less than one year);
- 1.1:1 ratio (replaced:removed) off-site habitat replacement for short-term temporary CCR habitat impacts (lasting for less than one year);

- 1:1 ratio (replaced:removed) on-site habitat restoration or replacement for long-term temporary CCR 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 CCR 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 CCR habitat impacts (lasting for more than two years).[21]

Based on these ratios, the total amount of off-site habitat compensation will be between 42.9 acres and 57.3[22] acres for Alternative B, between 49.9 acres and 66.5 acres for Alternative D,[23] and between 35.52 acres and 47.02 acres for Alternative E.[24] 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 or its alternatives. 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

[21] USFWS, *Biological Opinion*, April 3, 2013, page 6, Table 1.
[22] See Table I-2 and I-3, in Appendix I for calculations of these acreage values
[23] See Table I-4 and I-5, in Appendix I for calculations of these acreage values
[24] See Table I-6 and I-7, in Appendix I-1 for calculations of these acreage values

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 issued April 3, 2013 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 CCRs within the 25.24 acres of non-breeding high brackish marsh/annual grassland and open water ditch/channel habitats disturbed during construction of the Sponsor's 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 Alternative B, D, or E. In the event that this occurs, CDFW 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 CDFW, 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 February 1 to August 31 breeding season, 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. CDFW 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 on April 3, 2013 to the FAA. Although the USFWS Biological Opinion was specific to the Sponsor's Proposed Project (Alternative B), for purposes of this SEIS, the FAA assumes that it would require Marin County to implement these same terms and conditions if Alternative D or Alternative E were implemented instead of Alternative B because the scope of these Alternatives is smaller and both Alternatives also occur within the GSA. 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. In addition, Marin County has implemented a Wildlife Hazard Management Plan (WHMP) for DVO (Mead and Hunt 2018).[25] In accordance with the plan, DVO staff manage Marin County property on and near DVO in a manner to discourage hazardous wildlife. DVO staff disperse hazardous wildlife when observed within the DVO perimeter fence and on County-owned property nearby outside the perimeter fence, provide advisories regarding hazardous wildlife to pilots, and make operational changes as necessary to address the presence of hazardous wildlife. The DVO staff also reviews its WHMP at least once every 12 months with a DVO Wildlife Hazard Working Group that, in addition to DVO and other Marin County staff, seeks representation from other local agencies, airport users, and nearby landowners.

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 166 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

[25] *Wildlife Hazard Management Plan, Gnoss Field, Marin County Airport, Final*, Mead and Hunt, October 2018.

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, which was updated through the issuance of a Modified Solid Waste Facilities Permit by the LEA on October 13, 2014, with concurrence by the State of California Integrated Waste Management Board.[26] 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 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.[27]

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.[28]

Marin County developed a local Airport Land Use Plan in 1991.[29] 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,

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[26] *Marin County Solid Waste Facilities Permit* #21-AA-0001.

[27] *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.

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

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

extends 2 miles from DVO and therefore, RLI also falls within this zone. The runway extension alternatives would bring the runway into closer proximity with RLI.[30]

As referenced in the Redwood EIR, in addition to FAA distance criteria, the USEPA adopted amendments to the Resource Conservation and Recovery Act (RCRA), 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

(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 (SWRCB)/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.[31]

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.[32]

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:

[30] *Redwood Landfill Solid Waste Facilities Permit Revision EIR*, July 2005.
[31] *Redwood Landfill Solid Waste Facilities Permit Revision EIR*, July 2005.
[32] *Redwood Landfill Solid Waste Facilities Permit Revision EIR*, July 2005.

- 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).

The proposed extension of Runway 13/31 to the northwest under Alternative B, D, or E, would result in the north end of the runway being located closer to the southern edge of the RLI. This would decrease the distance between the end of the runway and the RLI as compared to No Action alternative. 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. Those altitudes would be unchanged under the No Action alternative. With the proposed runway extension, all aircraft landing at DVO from the northwest would overfly the landfill at approximately the same altitude as under the No Action Alternative. Because there would be no change in the flight patterns and a negligible change in altitude 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.[33]

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 implementation of the DVO WHMP, and the current measures in place at RLI to minimize wildlife/aircraft strike hazards, it is not anticipated that there would be an increase in bird strikes due to the implementation of Alternative B, D, or E. Therefore, the potential for implementation of Alternative B, D, or E 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.

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