

Airport South Industrial Project
Sacramento, California

DRAFT

**Analysis of Effects on the
Natomas Basin Habitat Conservation Plan**



City of Sacramento
Community Development Department
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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This Analysis of Effects on the Natomas Basin Habitat Conservation Plan Report (Effects Analysis) is an evaluation of the effects on each species covered by the Natomas Basin Habitat Conservation Plan (NBHCP), on the conservation strategy of the NBHCP, on specific conservation measures, and consequently on attainment of the NBHCP's goals and objectives as a result of implementing the proposed Airport South Industrial project. The U.S. Fish & Wildlife Service (Service) and the California Department of Fish & Wildlife (Department) approved the NBHCP in 2003. The NBHCP establishes the overall conservation program for the development of a 17,500 acre-portion of the Natomas Basin. The Airport South Industrial project site is located within the boundaries of the NBHCP plan area, but a 297-acre portion of the approximately 447-acre site is not within the specified authorized development "permit" delineated area for urban development per the 2003 NBHCP. This Effects Analysis is being provided in conjunction with the City of Sacramento's ("City") review of the Airport South Project development project approvals and request for annexation as evaluated in the *Airport South Industrial Project Sacramento, California: Proposed Final Environmental Impact Report* (FEIR) (2025). The Effects Analysis and the EIR evaluate the Airport South Industrial project's effects on biological resources for purposes of CEQA review, as well as the evaluation of the project's effects on the NBHCP. The Effects Analysis is organized in the following way:

- ▶ Section 1, Introduction
- ▶ Section 2, Evaluation Approach
- ▶ Section 3, Airport South Industrial Project's Alteration of Population and Habitat Attributes
- ▶ Section 4, Potential Effects of the Airport South Industrial Project on Covered Species
- ▶ Section 5, Potential Effects on the Conservation Strategy of the NBHCP
- ▶ Section 6, Potential Effects of the Airport South Industrial Project on NBHCP Goals and Objectives
- ▶ Section 7, Cumulative Effects
- ▶ Appendix A, Consistency of Airport South Industrial Project and NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts
- ▶ Appendix B, Change in Natomas Basin Land Cover

ES.2 OVERVIEW OF AIRPORT SOUTH INDUSTRIAL PROJECT

The Airport South Industrial project would consist of the following proposed actions:

- ▶ Annexation into the City boundary of approximately 447 acres of land all of which does not cause any exceedance of the City's 8,050-acre authorized development cap per the NBHCP.
- ▶ Development of approximately **278.4 acres (acreage consists of the undisturbed area)** located outside of the existing HCP "Permit Boundary". The 278.4 acres exclude the existing Metro Air Park Interchange, portion of Interstate 5, Powerline Road, Bayou Way and the 121.6-acre portion of the ASI annexation area located within the existing NBHCP Permit Boundary.
- ▶ Minimization of disturbance to and preservation of on-site canals.

- Dedication of 117.59 acres of off-site lands in the Natomas Basin to The Natomas Basin Conservancy (TNBC) for the preservation and management in perpetuity of open space/agricultural lands — the Rosa properties (APNs 225-020-015 and 225-020-014). The off-site dedication will complete a 400-acre reserve for The Natomas Basin Conservancy.

The proposed project includes measures to avoid, minimize, and mitigate impacts on the NBHCP conservation strategy. In addition, the City of Sacramento, as a condition of approving annexation of the Property and as documented in the EIR, has identified mitigation measures to avoid and reduce further the adverse effects of the proposed project. (Throughout this Effects Analysis, “mitigation” refers to the measures the developer voluntarily agreed to implement including those measures identified by the City of Sacramento in the Proposed Final EIR for the Airport South Industrial project [City of Sacramento September 2025].) The project’s avoidance, minimization, and mitigation measures include:

- Measures to reduce or offset effects within the annexation area including those preserving a connection with the Lone Tree Canal corridor that flows southward, where flows are conveyed under I-5 through a multi-cell concrete box culvert, through the project site to the West Drainage Canal. By implementing the NBHCP requirements related to giant garter snake (GGS), the proposed project will avoid potential impacts to the species, including those associated with the species’ use of the on-site canals as migratory corridors. As a result, implementation of the proposed project would not affect habitat connectivity within the canals.
- Measures to avoid and minimize construction-related effects on covered species; and
- Creation or enhancement, preservation, and management in perpetuity of high-quality habitat along existing canals within the project site.
- Participation in the NBHCP and compliance with the NBHCP’s requirements.
- Payment of NBHCP fees estimated at \$13.8 million (based on 2025 NBHCP fees per acre) for the entire undisturbed vacant land located within the annexation area.
- Dedication of 117.59 acres of land in the Natomas Basin that supports completion of a 400-acre reserve requirements of the NBHCP.

ES.3 SUMMARY OF FINDINGS

To evaluate the proposed project’s effects on the effectiveness of the NBHCP, this effects analysis performed an extensive analysis of the project’s potential effects on the future condition of the Natomas Basin (hereinafter “Basin”). This analysis used the 2001-2003 land cover data (2001 land cover mapping by CH2M HILL of the entire Natomas Basin) that represents baseline conditions of the NBHCP and considered 2003–2024 changes in land cover, and 2025 conditions. Interpretations of the project’s effects on the NBHCP were based on the sum of anticipated effects on the viability of populations of covered species using the Natomas Basin, on the effectiveness of the NBHCP’s conservation strategy, and on attainment of the goals and objectives of the NBHCP.

The proposed project would not reduce the viability of covered species, the efficacy of the NBHCP conservation strategy, or adversely affect attainment of the NBHCP goals and objectives. In part, it would have this outcome because its conservation strategy includes a substantial investment in the creation, enhancement, and management in perpetuity of high-quality habitat on the preserved land in the Natomas Basin, and in the avoidance, minimization, and mitigation of effects on the connectivity to the canals. For covered species, the increased habitat values on preserved lands offset the habitat values lost as a result of development at the Airport South Industrial site and thus prevent a net loss in resources in the Natomas Basin for these species. The conservation of

canals within the project site is essential for maintaining connectivity of aquatic habitat and movement of giant garter snakes between the southern and central Natomas Basin; without this connectivity, the effectiveness of the NBHCP's conservation strategy would be reduced.

The project's potential adverse and beneficial effects on the viability of populations of covered species using the Natomas Basin, on the effectiveness of the NBHCP's conservation strategy, and on attainment of the goals and objectives of the NBHCP are summarized in the following sections of text.

ES 3.1 EFFECT ON POPULATION VIABILITY OF COVERED SPECIES

The NBHCP provides for the conservation of Covered Species through the acquisition of open space lands located within the Basin, protection of open space/agricultural lands, and enhancement of existing habitats in the Natomas Basin, minimizing impacts of Covered Activities, including development activities, water facility maintenance, and reserve management activities, and focusing upon the preservation of the overall habitat values in the Basin.

The NBHCP allows urban development to occur, while ensuring that habitat values are maintained and increased, to the maximum extent practicable, within the Basin. The NBHCP sets forth guidelines and practices including the size and acreage of reserves to be established, acquisition criteria for upland and wetland areas to be acquired and managed by The Natomas Basin Conservancy (hereinafter "Conservancy"), and reserve management practices to be employed to ensure successful habitat enhancement to support the Covered Species.

From 2004 to present, the Conservancy conducts and prepares annual biological effectiveness monitoring (BEM) reports. The BEM reports are available on TNBC's website at <https://natomasbasin.org/reports/monitoring-reports/>. The purpose of monitoring reports is to evaluate the effectiveness of the NBHCP in meeting its biological goals and objectives, and to provide recommendations for adapting management strategies to ensure that the Plan's goals and objectives are met if concerns are identified. In general, monitoring is designed to establish annual conditions, track changes over time, and evaluate the effectiveness of current management actions.

During biological effectiveness monitoring surveys, **seven of the twenty-two Covered Species have been detected in the Basin**. Two Covered Species—Swainson's hawk and tricolored blackbird are currently listed under the California Endangered Species Act (CESA), while a third Covered Species—giant garter snake (*Thamnophis gigas*)—is listed under both CESA and the federal ESA (FESA). A fourth covered species, northwestern pond turtle (*Actinemys marmorata*), is currently proposed for listing as threatened under FESA. Three additional Covered Species are known to occur in the Basin: burrowing owl (*Athene cunicularia*), white-faced ibis (*Plegadis chihi*), and loggerhead shrike (*Lanius ludovicianus*).

No covered plant species have been found in the Basin since comprehensive monitoring began in 2004. Comprehensive floristic surveys conducted by the Conservancy were discontinued in 2023.

The NBHCP covered species that were observed during ASI biological surveys include the Swainson's Hawk (observed during April/May biological surveys, but no nesting activity) and Northwestern Pond Turtle (detected during surveys in canals). The project site supports suitable habitat for several Natomas Basin HCP Covered Species; however, the project site is adjacent to and largely surrounded by existing urbanized areas including residential neighborhoods, I-5, Metro Air Park, and the Sacramento International Airport master plan area. Where a potential impact could result to a Covered Species protected by the Natomas Basin HCP, the ASI project will comply with the applicable Natomas Basin HCP Take Avoidance, Minimization, and Mitigation Measures to address the impact, which includes coordination with the CDFW and USFWS. Additionally, for potential project impacts to protected species under the Natomas Basin HCP, the ASI project developer has agreed to voluntarily comply with the applicable NBHCP requirements.

The project would cause a variety of beneficial and potential effects on populations of four species covered by the NBHCP. For these species, the overall effect on population viability is summarized below.

Western Burrowing Owl - The ASI project would cause both adverse and beneficial effects on burrowing owl populations in the Basin, but effects due to the project would be insufficient to alter the viability of the population. The burrowing owl has a moderate potential for occurrence within the project site. No burrowing owls were observed during any of the ASI biological surveys. Based on 2001 land cover, the project would preserve approximately 200 acres within the Basin for mitigation, respectively, and this beneficial effect would offset the project's effects on these species. The ASI project would include a net loss of 278.4 acres of habitat (121.6 acres of the ASI annexation area are located within the existing NBHCP Permit Area) for the burrowing owl. However, the project's effects would be small relative to the quantity of habitat that would remain in the Natomas Basin, and the Natomas Basin represents only a small portion of the habitat for and population of this species in the Central Valley; thus, the project is unlikely to measurably alter the viability of the burrowing owl populations using the Natomas Basin.

Swainson's Hawk- Swainson's hawk was observed during the biological surveys conducted for the ASI project. Site. Foraging habitat within the project site is considered high quality. Nesting activity was not detected. Nesting habitat is limited in the project site. The project with the mitigation proposed in the ASI EIR would result in both adverse and beneficial effects on the Swainson's hawk population nesting and foraging in the Natomas Basin, but these effects would be insufficient to alter the population's viability. Potential effects would include a reduction in the total acreage of foraging habitat under the future condition (by 278.4 acres of undisturbed area outside of existing NBHCP Permit boundary), and a reduction in habitat available to hawks potentially nesting at reserves near the project site. However, the reduction in habitat available to hawks would be offset by the dedication and preservation of nearby foraging habitat for hawks that will provide for the completion of an NBHCP 400-acre reserve block. Swainson's hawk monitoring has been conducted under the auspices of the NBHCP since 1999. Because Swainson's hawk is a far-ranging species, it is intensively monitored throughout the Basin inclusive of both sides of the drainages that form the Basin's periphery. Beneficial effects would include an overall increase in the acreage of high-quality habitat, enhancing and preserving habitat within Conservancy reserves, and within the Basin.

Changes in the distribution and abundance of land cover and habitat types across the Basin have been primarily due to: (1) the fallowing of rice lands in 2006 and subsequent return to rice cultivation over the last decade; (2) the implementation of the Natomas Levee Improvement Program (NLIP), which resulted in a substantial increase in grasslands and managed marsh/wetland habitats; (3) the rapid resumption of development after the lifting of the moratorium on development in 2017; and (4) the fallowing of rice in 2022 due to extreme drought and subsequent rapid return to rice cultivation the next year due to historically high precipitation in the 2022–2023 winter. Despite these changes, as of 2023, acreages of suitable foraging habitat for Swainson's hawk have not dropped below the minimum acreage thresholds. The proposed ASI project would provide higher quality foraging habitat in the basin, and the ASI project foraging habitat is acreage that if developed does not result in an exceedance of the 8,050 authorized acres that was contemplated per the NBHCP. The ASI foraging habitat acreage is also located in an area that is heavily constrained by bordering urban uses including flights over the property from the Sacramento International Airport. These urban uses will increase over time with more flights, more traffic (Interstate 5, Bayou Way and Powerline Road) and human activity in the immediate area due to the residential neighborhoods. The existing foraging habitat of the ASI annexation area has already experienced these changes since 2001

According to the Conservancy's biological effectiveness monitoring report (2023), the total number of Swainson's hawk breeding pairs in the Basin declined slightly from 2022 to 2023 but remained well above the average and the overall trend of an increasing population over the monitoring period remains. However, all measures of reproductive success now exhibit a significant decline over the monitoring period, a phenomenon observed across the range of the species in California.

Giant Garter Snake (GGS) – The NBHCP emphasizes maintaining connectivity of aquatic habitat between Conservancy reserves to facilitate giant garter snake movement within the Basin. The species is focal for two reasons: (1) giant garter snake is the most prevalent Covered Species within the Natomas Basin that requires land/water connectivity to travel within the basin, and (2) if adequate connectivity is provided for giant garter

snake, then other Covered Species are anticipated to also be afforded adequate opportunities to migrate within the Natomas Basin.

The ASI project would not adversely affect GGS populations. Beneficial effects would include preserving, creating, and enhancing habitat Conservancy reserves, preserving connectivity of canals, and contributing to the connectivity of habitat and existing Conservancy reserves adjacent to or near the proposed reserves. The ASI EIR mitigation would reduce these adverse effects and ensure that connectivity of GGS habitat was conserved at the ASI site.

The loss of the limited habitat acreage would be offset by the increased habitat quality resulting from the preservation of HCP mitigation habitat. The project (with the EIR mitigation) also would conserve connectivity and habitat for giant garter snake through preserving the on-site canals, which is an important waterway connecting the southern and central Natomas Basin, and proposed reserves would contribute to connectivity of habitats and reserves in the southern and central Basin.

Northwestern Pond Turtle – Habitat on the project site is considered medium quality. The Northwestern Pond Turtle was detected during three field surveys in Canal-2 and Canal-3 within the ASI project site. Individuals of the turtle were observed sunning on floating debris and/or vegetation within the canals. Adjacent upland habitats are marginal for the species, many of the canal banks are vertical and undercut. In addition, the top of the canal banks is highly compacted and show evidence of repeated mowing and grading along many reaches. The pond turtle is known to have occurred in several areas of the Basin prior to the onset of comprehensive monitoring in 2005, including Fisherman’s Lake and near the Prichard Lake and Elkhorn pumping stations. Since 2013, large, adult northwestern pond turtles have been observed regularly in Fisherman’s Lake adjacent to the Rosa and Natomas Farms tracts during the summer months. Northwestern pond turtle has also been documented on the Cummings, Natomas Farms, and Rosa Central tracts of the Fisherman’s Lake. Implementation of the ASI EIR mitigation measures would reduce potential impacts to the pond turtle. Additionally, NBHCP measures would be applied to all project construction activities to address potential impacts to northwestern pond turtle.

Plant Species – Land cover monitoring on Conservancy reserve lands has historically included botanical surveys for covered plant species. Botanical surveys were conducted from 2005 through 2022 and no NBHCP covered plant species were detected. Botanical surveys were discontinued in 2023 because no covered plant species have been detected after 17 years of annual surveys. Comprehensive field surveys for ASI were conducted during the blooming period for all special status plant species.

Of the seven plant species covered by the NBHCP, the Airport South Industrial project would not affect the five vernal pool- associated species because these species are not known to occur in the vicinity of the ASI project, nor is suitable habitat present.

Of the 20 special-status plant species with potential to occur in the Regional Study Area, the following six species were determined to have low potential to occur in the project site: pappose tarplant, Heckard’s pepper-grass, San Joaquin spearscale, woolly rose-mallow, palmate-bracted bird’s beak, and Sanford’s arrowhead. Of the aforementioned species, only Sanford’s arrowhead is a Covered Species under the NBHCP.

Habitat on the project site for all the aforementioned plant species is considered low quality. In addition, the ongoing site disturbance (periodic agricultural uses, human and domestic animal trespassing) limits the potential for any of the species to occur within the site. None of the plant species were identified as part of the ASI field surveys conducted. Thus, pappose tarplant, Heckard’s pepper-grass, San Joaquin spearscale, woolly rose-mallow, palmate-bracted bird’s beak, and Sanford’s arrowhead are not anticipated to occur within the ASI project site. Regardless, preconstruction surveys are required to determine presence of NBHCP covered plant species and special-status plant species. If present, the developer is required to consult with USFWS and CDFW to determine appropriate measures to avoid and minimize loss of individuals.

ES 3.2 EFFECTS ON THE CONSERVATION STRATEGY OF THE NBHCP

The Airport South Industrial project would not adversely affect the effectiveness of the NBHCP's conservation strategy. In Section IV.C.1 (pages IV 5-15), the NBHCP describes the basis of the key components of the NBHCP's conservation strategy and how these components provide effective mitigation for 17,500 acres of urban development. These components are:

- ▶ basis for 0.5 to 1 mitigation ratio (Section IV.C.1.a),
- ▶ preparation of site-specific management plans (Section IV.C.1.b),
- ▶ buffers within the reserve lands (Section IV.C.1.c), connectivity (Section IV.C.1.d),
- ▶ foraging habitat (Section IV.C.1.e), and
- ▶ 2,500-acre/400-acre minimum habitat block size requirements (Section IV.C.1.f).

In describing the basis for the 0.5:1 mitigation ratio, the NBHCP states that the ratio mitigates the impacts of the incidental take authorized under the NBHCP because much of the land to be developed does not provide habitat or provides only marginal habitat, and because the TNBC-managed reserves will provide habitat of higher quality than the eliminated habitat. Because the Airport South Industrial project would not alter the habitat value of land authorized for development under the NBHCP and would not adversely affect the habitat value of TNBC reserves established under the NBHCP, the project would not affect the basis for the 0.5:1 mitigation ratio of the NBHCP. Although the project would result in the conversion of agricultural land and open space to urban development on 278.4 acres of land (not located within the City's existing NBHCP permit area) the acreage is included in the cap of 17,500 acres of authorized development under the NBHCP, this conversion to urban development would result in a minimal change to the conditions in which the NBHCP conservation strategy is being implemented as the total 17,500 acres would remain unchanged.

The ASI site is nearby existing TNBC reserves; however, the ASI project would dedicate approximately 117.59 acres that are immediately adjacent to the existing TNBC reserve. This future dedication would result in TNBC completing the required 400-acre minimum size reserve in proximity to Fisherman's Lake. In regards to the future condition of the Basin relative to the ASI site, the ASI property itself is already bordered by urban development, highways or major roads on all sides, development of the Airport South Industrial site could cause only very limited effects on the effectiveness of buffers near TNBC reserves, even if reserves were established on adjacent land to the north or southwest (i.e., adjacent land that would not be developed under the future condition of the Natomas Basin) as the ASI site is separated from nearby reserves by existing canals.

The future reserves associated with the ASI project would have site-specific management plans (SSMPs) prepared and implemented by The Natomas Basin Conservancy in compliance with the NBHCP. Overall, the project would not reduce connectivity of reserves or habitats within the Natomas Basin. The proposed off-site reserve sites would improve connectivity of habitats and TNBC reserves by providing for the completion of a 400-acre reserve block. The project does not result in conditions that would be subdividing the Basin's giant garter snake population into two smaller, and thus less viable, populations.

With the implementation of the measures included in the ASI Project and summarized in the EIR, the project would not reduce the overall availability of foraging resources for the Swainson's hawk in the Natomas Basin, and thus not affect reproduction or survival. Based on 2001-2003 land cover, the ASI project, however, would result in a net reduction of 278.4 acres (acreage that is outside of the existing NBHCP permit boundary) of upland land cover providing habitat for covered species, it would enhance or create, and preserve, at least 200 acres of upland land cover types. The project would increase the acreage of available foraging habitat, and the increased habitat values resulting from enhancement would be greater than the habitat values lost with development of the ASI Project. The ASI project would not compromise the NBHCP Operating Conservation Program, and thus actions such as those listed on pages IV-13 and IV-14 of the NBHCP would not be necessary.

Overall, the project would avoid, minimize and mitigate adverse effects of development by establishing large blocks of preserved habitat. It would enhance and preserve approximately 117.59 acres of additional habitat land with the dedication of the Rosa parcels (APN 225-0020-15 and APN 225-0020-14) which are nearby and adjacent to existing TNBC reserves. Dedication and preservation of the additional 117.59 acres of land as described in the *ASI EIR* would complete a 400-acre reserve block for TNBC.

The NBHCP requires that for completion of the conservation strategy all reserves must be a minimum of 400-acre blocks in size with one 2,500-acre reserve. The project would not adversely affect the preservation of large blocks of habitat but instead would assist in enabling the completion of a required 400-acre reserve block with the dedication of the Rosa parcels. The project would also not adversely affect the preservation of large blocks of habitat by developing existing habitat at the ASI considering the existing constraints of the habitat at the ASI site due to adjacent developed urban uses, roadways (Powerline Road, Bayou Way), Metro Airpark Interchange, Interstate 5 and airline flyovers from the operations of the nearby Sacramento International Airport. Under the future condition of the Natomas Basin, this land will continue to experience encroaching urban pressures with the County approved WattEV project (trucking center), increased overhead airplane flights and increased traffic on roadways and the Interstate 5. The ASI project includes design measures for the most ecologically important portion of the site consisting of the canals that provide connectivity to Lone Tree Canal and a pathway to Fisherman's Lake.

ES 3.3 EFFECTS ON ATTAINMENT OF NBHCP GOALS AND OBJECTIVES

For many of the same reasons that viability of populations and the effectiveness of the NBHCP's conservation strategy would not be reduced, the Airport South Industrial project would not reduce the likelihood of attaining the goals and objectives of the NBHCP. The overall effect resulting from the project is summarized for each goal or objective that could be affected.

Overall Goal 1. *Establish and manage in perpetuity a biologically sound and interconnected habitat reserve system that mitigates impacts on Covered Species resulting from Covered Activities and provides habitat for existing, and new viable populations of Covered Species. (NBHCP, p. I-15)*

The project would have an overall beneficial effect on the establishment and management of reserves for the NBHCP. Because the acreage of land in the Natomas Basin that is potentially available and suitable for preservation exceeds the 8,750 acres that will be preserved by the NBHCP, the project would not preclude the preservation of sufficient land to attain the NBHCP's goals and objectives. It would provide reserve lands adjacent to or near existing reserves, increasing the connectivity of habitats and the resources available to covered species using reserves established by the NBHCP; in addition, it would conserve f canals. The project also would increase opportunities to establish new reserves, particularly to create larger reserves by preserving additional land adjacent to the existing TNBC reserves (by dedication of the Rosa parcels) and implementing applicable NBHCP measures that would benefit future TNBC reserves.

Although the project would cause a net reduction in the acreage of upland and limited wetland habitats, the preservation and enhancement of habitat by the project would adequately mitigate for its effects on upland and wetland habitats of covered species. Based on 2001-2003 land cover mapping, the ASI project would eliminate 278.4 acres (acreage that is outside of existing NBHCP Permit boundary) foraging habitats but would mitigate this loss by the provision of higher quality habitat acreage within the Basin.

Overall Goal 3. *Preserve open space and habitat that may also benefit local, non-listed and transitory wildlife species not identified within the NBHCP. (NBHCP, page I-16)*

As described under Overall Goal 1 above, the project would have an overall beneficial effect on the TNBC reserve system. Furthermore, the project and its compliance with the NBHCP would provide off-site land dedication and payment of NBHCP fees. The off-site preservation lands would include more extensive creation,

enhancement, and management of habitat per the NBHCP. For these reasons, the project would have an overall beneficial effect on the attainment of this goal.

Overall Goal 4. *Ensure that direct impacts of Authorized Development upon Covered Species are avoided or minimized to the maximum extent practicable. (NBHCP, page I-16)*

The project would not adversely affect attainment of this goal because it would implement a comprehensive set of measures to avoid and minimize effects on covered species to the maximum extent practicable. The potential direct impacts are comparable to the potential direct impacts of the development authorized by the NBHCP. Thus, the ASI project would include all the applicable avoidance and minimization measures included in the NBHCP to avoid and minimize construction- related effects. The project also would not alter the effectiveness of any NBHCP conservation measures for avoiding and minimizing the effects of development authorized by the NBHCP.

Overall Objective 1. *Minimize conflicts between wildlife and human activities, including conflicts resulting from airplane traffic, roads and automobile traffic, predation by domestic pets, and harassment by people. (NBHCP, page I-16).*

The project would not adversely affect attainment of this objective because it would implement a comprehensive set of measures that would minimize human-wildlife conflicts. These measures include all the applicable measures that were included in the NBHCP to avoid and minimize construction- related effects and to reduce human-wildlife conflicts, plus additional measures (e.g., fencing and barriers) to reduce human-wildlife conflicts along the existing canals. Currently, the ASI project site does not contain existing fencing and as a result the area experiences human intrusion by trespassing activity. It is common to see people walking with their dogs through the ASI annexation area. The ASI project would not alter the effectiveness of any NBHCP conservation measures for minimizing human-wildlife conflicts resulting from development authorized by the NBHCP.

Overall Objective 3. *Ensure connectivity between TNBC reserves to minimize habitat fragmentation and species isolation. Connections between reserves will generally take the form of common property boundaries between reserves, waterways (primarily irrigation and drainage channels) passing between reserves, and/or an interlinking network of water supply channels or canals. (NBHCP, page I-16)*

The ASI project would cause beneficial effects on the attainment of this objective by the project design and implementation of the NBHCP avoidance, minimization and mitigation measures as applicable. The main beneficial effects would be increased connectivity of habitats and TNBC reserves due to preservation, creation and enhancement of habitat at the project's proposed reserves, two of which are adjacent to or near (i.e., within a half mile of) existing TNBC reserves. Adverse effects would include reducing the foraging habitat within a mile of a TNBC reserve; however, this would be offset by the dedication of the Rosa parcels which when added to the existing TNBC reserves adjacent to the ASI project completes a 400-acre reserve block as required by the NBHCP. The project design provides additional measures to ensure the connectivity along existing canals is sustained, and to preserve and enhance foraging habitat within a mile of existing TNBC reserve(s).

Wetland Species/Habitat Goal/Objective 1. *Acquire, enhance and create a mosaic of wetland habitats with adjacent uplands and connecting corridors to provide breeding, wintering, foraging, and cover areas for wetland species in the Plan Area. (NBHCP, page I-17)*

For wetland land cover (i.e., rice, canal, and ponds and seasonally wet areas), the net reduction in acreage resulting from the development of the Airport South Industrial site would be offset by creating and managing marsh at the project's proposed reserves. Based upon the aquatic resources' delineation conducted for the ASI project, a total of 1.501 acres (10,688 linear feet) of tributary waters and 0.58 acres (4,736 linear feet) of other waters potentially subject to USACE jurisdiction pursuant to CWA Section 404 are present. An acre of marsh, however, provides a greater quantity and variety of habitat values than an acreage impacted at the ASI site, and thus the additional habitat provided by the created marsh offsets the habitat lost. The wetland resources are located within Parcel 8 and the other non-participating smaller parcels that are bound by Interstate 5 and Bayou Way (Exhibit 3).

The project would provide for the off-site preservation and management of wetland acreage by the creation of marsh (i.e., about 1 acre for each acre lost), ensuring no net-loss and the long-term persistence of this habitat. The project would not have an overall adverse effect.

Wetland Species/Habitat Goal/Objective 2. *Provide habitat to maintain, attract and sustain viable populations of the Covered Species. The habitat areas should be configured to encompass natural species migration areas, minimize species isolation, and prevent future habitat fragmentation. (NBHCP, page I-17)*

The project would enhance and preserve habitat to offset its effects and that would sustain populations of the covered species and would not alter the population viability of any of the covered species. The habitat enhanced and preserved by the project and the project's effects on the TNBC reserve system are described under Overall Goal 1 above. The project's effect on the viability of each covered species is described under *Effects on Covered Species* above.

Upland Species/Habitat Goal/Objective 1. *Acquire, enhance and create a mosaic of upland habitat types for breeding, foraging, and cover for species dependent on upland habitats. (NBHCP, page I-17)*

The project will beneficially affect this goal/objective. Because the acreage of upland habitat in the Natomas Basin that is potentially available and suitable for preservation is substantially more than the acreage of upland habitat that would be preserved and enhanced by the NBHCP, and the project would affect only a small percentage of this land, the project would not preclude the preservation of sufficient land to attain the NBHCP's goals and objectives. The project would, however, increase opportunities to establish new and/or larger reserves, which would aid the attainment of this goal/objective.

Upland Species/Habitat Goal/Objective 2. *Ensure reserve land connectivity with travel corridors for upland-dependent species. The habitat areas should encompass grasslands, agricultural croplands, riparian habitats, and shelter and nesting habitat areas (fence rows, clusters of shrubs and small trees), as well as wetland areas to provide a year-round source of water for upland species. The upland areas should be configured to enhance natural species migration, minimize species isolation, and prevent future habitat fragmentation. (NBHCP, page I-17)*

The proposed changes at the Airport South Industrial site would have an effect on the movement and dispersal of upland species; however, the project would benefit the attainment of this goal/objective through project design and implementation of the off-site land dedication. The off-site land dedication will provide for the completion of a NBHCP required 400-acre reserve block meeting the attainment of this goal/objective.

ES.4 SUMMARY

In summary, the ASI project would not reduce the viability of populations of covered species using the Natomas Basin and would not reduce the effectiveness of the conservation strategy of the NBHCP. It also would have only small effects on the likelihood of attaining any of the goals and objectives of the NBHCP, and for most of these goals and objectives the overall effect would be beneficial.

1 INTRODUCTION

This section presents the scope of the effects analysis, an overview of the proposed Airport South Industrial project (ASI), and the intended uses of this document. This section also summarizes the organization of the Effects Analysis.

1.1 INTRODUCTION

This analysis of effects of the ASI project on the Natomas Basin Habitat Conservation plan (effects analysis) evaluates the effects of the ASI project on each species covered by the Natomas Basin Habitat Conservation Plan (NBHCP), on the conservation strategy of the NBHCP, and on attainment of the NBHCP's goals and objectives. The project would include development at the ASI site, which is located in the unincorporated Sacramento County portion of the NBHCP plan area. The project site is not zoned for development. The project (if developed) would provide for the dedication and establishment of offsite reserves in the Natomas Basin.

The purpose of this evaluation is to document the potential effects of the ASI project and evaluate its overall effect on the viability of populations of species covered by the NBHCP and on attainment of the goals and objectives of the NBHCP. Effects on the Metro Air Park Habitat Conservation Plan (MAP HCP) also were considered. However, the MAP HCP was designed to support and follow the regional conservation strategy of the NBHCP; its covered species are a subset of those covered by the NBHCP, and its biological goals and objectives largely represent a subset of the NBHCP's goals and objectives. (In fact, the MAP HCP has been superseded by the 2003 NBHCP.) Thus, the results of this effects analysis also document the project's potential effects on the MAP HCP's covered species and biological goals and objectives. Potential conflicts with and relationships with specific measures of the MAP HCP are also included in this evaluation.

The NBHCP satisfied the requirements of the Endangered Species Act (ESA) for a permit for the authorized incidental take of threatened and endangered species in the Natomas Basin permit area. It is intended to minimize and mitigate to the maximum extent practicable the loss of habitat and the incidental take of covered species that could result from urban development and management of reserves in the Natomas Basin. The NBHCP per authorization by the wildlife agencies (U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) allows 17,500 acres of urban development in the Natomas Basin allocated to MAP, City of Sacramento, and Sutter County. In exchange for this authorized development, 8,750 acres in the Natomas Basin will provide a reserve system surrounded by agricultural lands (Exhibit 1). The reserve system will consist of a combination of rice crops, created managed marsh and upland habitat. On behalf of the City of Sacramento, Sutter County, MAP and the wildlife agencies, The Natomas Basin Conservancy (TNBC) manages the reserve system to enhance its habitat values and to protect these lands in perpetuity. The future condition of the Natomas Basin resulting from the NBHCP would provide fewer acres of habitat for covered species than existed in 2001 because of the authorized development. However, USFWS and CDFW considers the reserve system with the high-quality habitat created and managed under the NBHCP to adequately mitigate and offset the effects of this habitat loss because most of the lost habitat would be of lower quality than the habitat preserved (USFWS and CDFW 2003). Consequently, most of the NBHCP's goals and objectives are related to creating a reserve system that provides high quality habitats and is likely to sustain populations of the covered species in the Natomas Basin for the foreseeable future. The NBHCP also includes numerous avoidance, minimization, and mitigation measures to reduce the effects of development on covered species and to ensure the creation and effective operation of the reserve system.

1.2 OVERVIEW OF AIRPORT SOUTH INDUSTRIAL PROJECT

The ASI project proposal is a request to allow the annexation and the future development of approximately 447 acres into the City of Sacramento from Sacramento County. The project site consists of undeveloped vacant land located southeast of the intersection of Powerline Road and Interstate 5 (I-5). The project would entail primarily light industrial and highway commercial development, allowing for construction of up to 5,204,500 square feet of

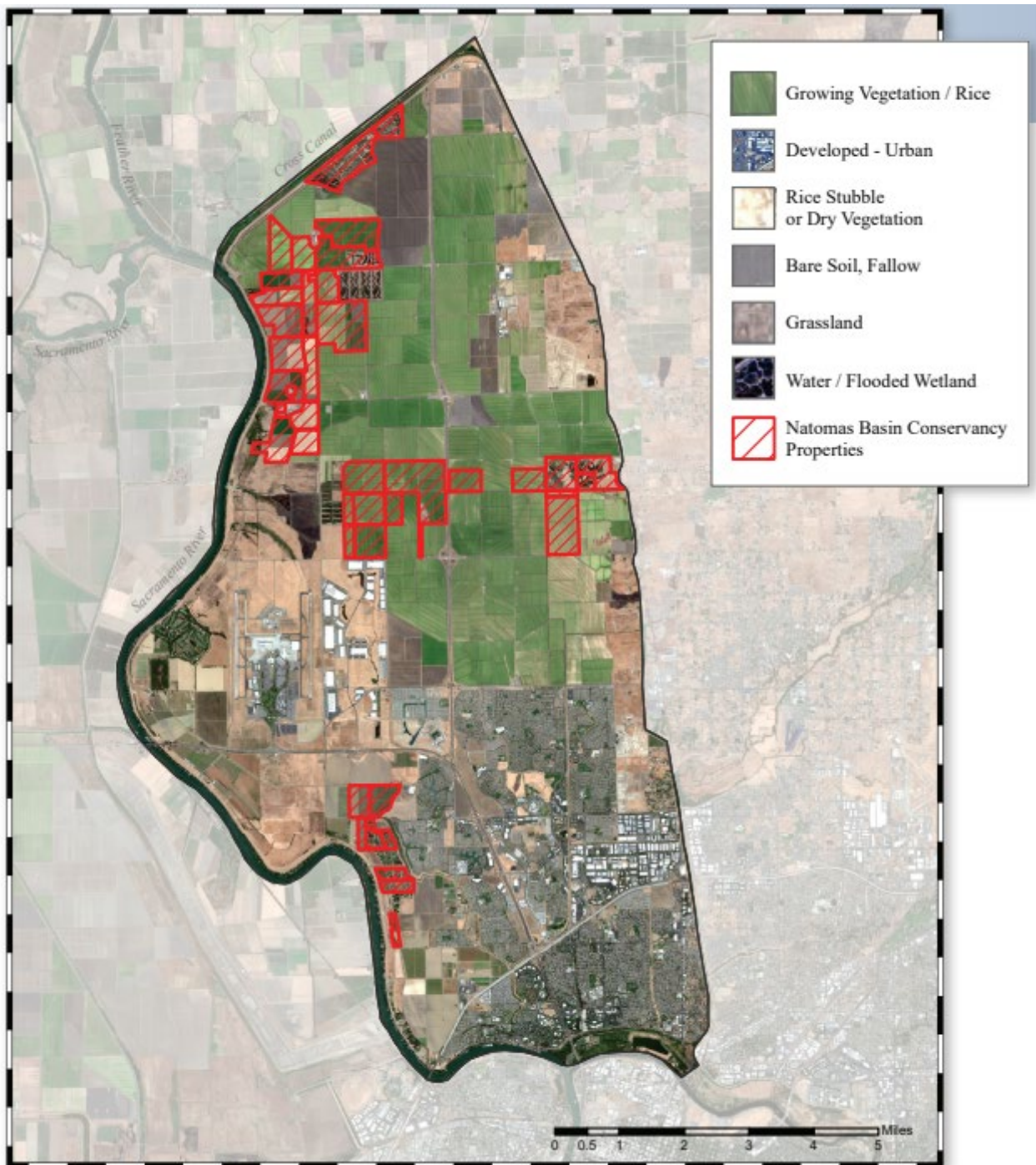
industrial uses and approximately 98,200 sf of retail/highway commercial uses.

The ASI project applicant has incorporated into the project layout specific design modifications to address many of the concerns raised during the CEQA review process to further minimize effects on biological resources. Specifically, the applicant revised its tentative map application to incorporate smaller parcels along the eastern edge of the project site adjacent to the nearby Westlake neighborhood and imposed maximum building size, maximum height limits, a 125-foot setback (in addition to the ±200-foot buffered Egret Park extension), and requires that truck bays be located away from the eastern property line. The land owned by the nonparticipating owner in the southeastern portion for the annexation area that abuts a portion of Paso Verde School includes a 125-foot buffer that is zoned Agriculture Open-Space and designated Open Space in the City's General Plan to ensure light industrial development is not developed within this buffer area.

A portion of the ASI project site (approximately 121.68 acres) comprising two parcels (Parcels 5A-5F and Parcel 8 (Scalora)) immediately adjacent to the City boundary are located within the NBHCP approved Incidental Take Permit (ITP) area (or permit area), while the remainder of the proposed annexation land is outside the City's permit area. However, the entire annexation area (447 acres in size) if annexed into the City limits and potentially developed in the future would not result in the City exceeding the 8,050 acres of authorized development under the NBHCP. For the portion within the City's ITP area, the project will comply with the NBHCP process, paying the required NBHCP fees (currently \$33,281 per acre with land dedication in 2025) and dedicating the reserve sites as required for projects over 50 acres. For portions of the site outside the City's permit area, the ASI project would not result in exceeding the City's 8,050-acres of authorized development. The proposed annexation could add over 200 acres of protected open space to TNBC's reserves in the Natomas Basin. The ASI project would pay approximately \$13,678,791 in HCP fees (based on the 2025 HCP fees).

The City's total remaining acreage of the NBHCP authorized 8,050 acres is 1,185.42 acres. Approximately, 533.85 acres of the total remaining 1,185.42 acres are unallocated acres that are not accounted for within the City's NBHCP Permit Boundary. There is an inconsistency between the City's existing HCP permit boundary and the total authorized 8,050 acres of development in the City of Sacramento. As such, with complete build out of North Natomas and South Natomas (the HCP permit area) there would still be 533.85 acres of authorized development remaining of the total 8,050 acres. The NBHCP contemplated 8,050 acres of development authorized to the City of Sacramento.

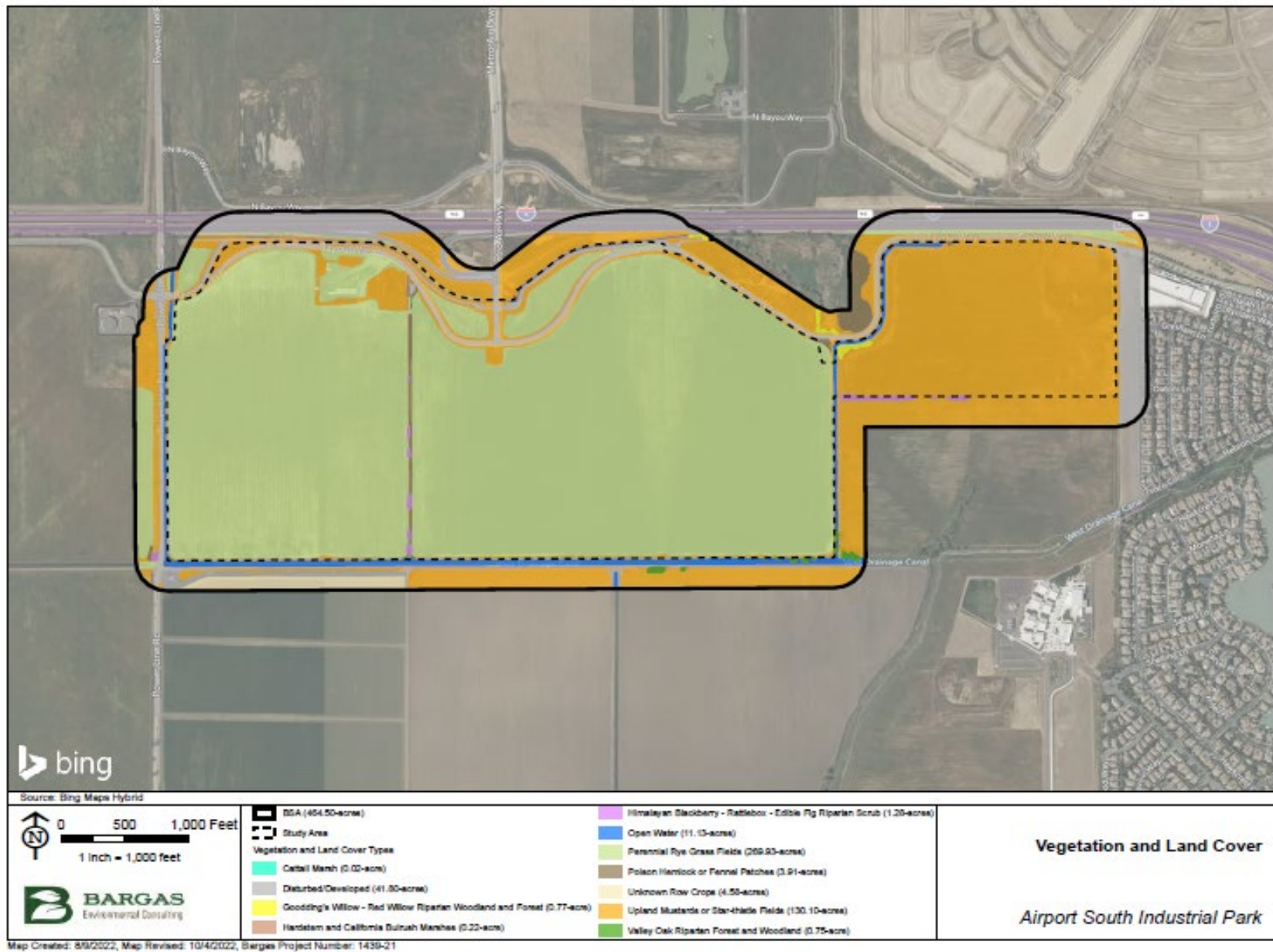
The EIR for the project requires pre-construction surveys for covered species and implementation of appropriate avoidance and minimization measures. If special-status plant species are identified during surveys, specific protection measures will be implemented in coordination with USFWS and CDFW. The project will preserve off-site agricultural/open space lands, which includes 86 acres of detention basins, 37.9 acres of freeway buffer, and 2.3 acres of canal buffers as on-site open space, plus off-site mitigation lands totaling approximately 259 acres.



Sentinel 2 Image - September 25, 2024, NATOMAS BASIN, CA 2024. Source: The Natomas Basin Conservancy 2024 Implementation Annual Report dated June 30, 2025.

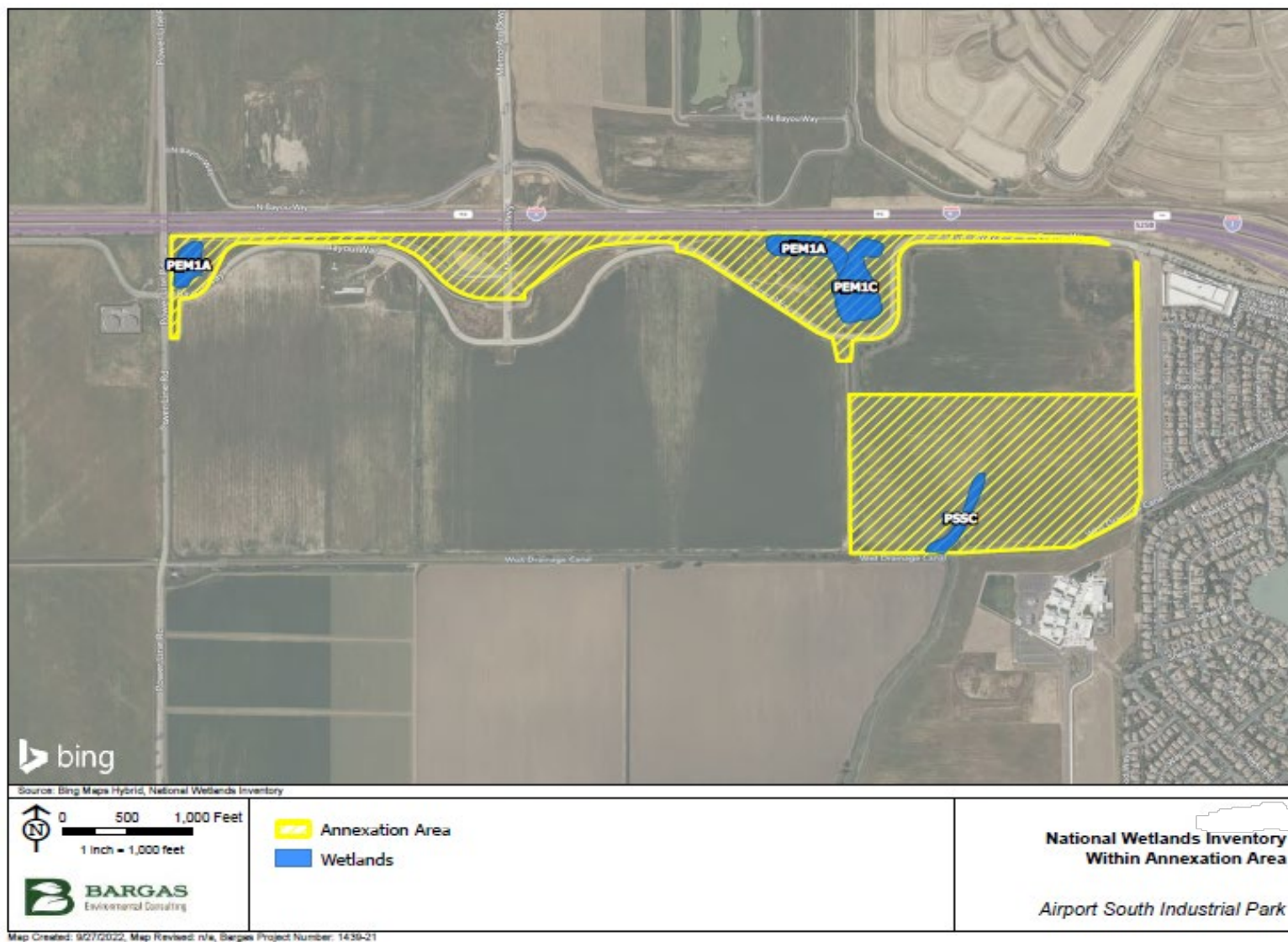
Location TNBC Reserves & Land Cover in the Natomas Basin

Exhibit 1



Airport South Industrial Site Vegetation and Land Cover

Exhibit 2



Airport South Industrial Annexation Area - Wetlands

Exhibit 3

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In addition to the proposed reserves and measures incorporated as part of the proposed ASI project, the City of Sacramento has summarized the mitigation measures that the developer will implement as part of the project and conditions of the annexation approval to reduce further the project's adverse effects. These measures include the developer's dedication of 117.59-acre Rosa parcels (APN 225-0020-15 and APN 225-0020-14) which are nearby and adjacent to existing TNBC reserves. The dedication of the Rosa parcels will enable TNBC to complete a 400-acre reserve block and provide Swainson's hawk foraging habitat. The dedication of 117.59 acres (Rosa parcels) would become part of TNBC reserve system. The properties within the annexation area that potentially develop in the future would comply with the requirements of the NBHCP. This includes but is not limited to payment of NBHCP fees, off-site land dedication, pre-construction biological surveys and NBHCP avoidance and minimization measures as applicable.

1.3 USE OF THIS DOCUMENT

The Effects Analysis evaluates the effects of implementation of the Airport South Industrial project on biological resources as further documented in the EIR, and in a manner consistent with the NBHCP, the IA and ITP. The ASI site is approximately 447 acres in size of which 121.6 are located within the existing approved City Permit Area. The remaining portion of the ASI site is located outside of the 17,500-acre NBHCP permit area. As described throughout this document, the total 447-acre annexation area would not result in the City exceeding the NBHCP authorized cap of 8,050-acres.

The NBHCP, Implementation Agreement, Biological Opinion and ITPs provide that because the NBHCP's Operating Conservation Plan is based upon the City limiting total development to 8,050 acres within the City's Permit Area, approval by the City of future urban development beyond the 8,050 acres or outside of its Permit Area would "constitute a significant departure from the NBHCP's OCP" and would trigger reevaluation of the NBHCP, a new effects analysis, potential amendments and/or revisions to the NBHCP and ITPs, a separate conservation strategy and the need to obtain a new ITP by the Permittee for that additional development, and/or possible suspension or revocation of the City's ITP in the event the City were to violate such limitations without having completed the required reevaluation, and amendments or revisions if necessary, or having obtained a new permit. (See e.g., Implementation Agreement for the NBHCP, Section 3.1.1[a].)

This Effects Analysis of the Airport South Industrial project takes into consideration of the NBHCP, IA and ITP requirements and is based upon the ASI EIR with biological resource information provided by ASI project biologists in addition to over 20 years of NBHCP biological effectiveness monitoring and data conducted by The Natomas Basin Conservancy in consultation with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. The purpose of this effects analysis is to provide the foundation for the preparation of an amendment or revision (if applicable) to the NBHCP for the addition of the ASI annexation area that is outside of the existing NBHCP Permit area to include the additional 278.4 acres in the City's permit area.

If the Sacramento Local Agency Formation Commission (LAFCo) approves the ASI annexation, the area would be included in the City limits. Following completion of the annexation and if determined applicable by the wildlife agencies, an amendment or revision to the NBHCP would be initiated with USFWS and CDFW, the Effects Analysis will be reviewed by the USFWS and CDFW through the appropriate permit processes to assure the ASI project's consistency with federal and state endangered species act requirements and the wildlife agencies' determination that the ASI project does not compromise the effectiveness of the NBHCP. The ASI project will require review and applicable approvals from the wildlife resource agencies before the project could advance and commence development.

1.4 ORGANIZATION

This report presents the results of an analysis of the effects of the ASI project (with the EIR mitigation) on the future condition of the Natomas Basin, and how those changes would affect species covered by the NBHCP and

attainment of the NBHCP's goals and objectives.

The Effects Analysis is organized as follows:

- ▶ Section 1, Introduction
- ▶ Section 2, Evaluation Approach
- ▶ Section 3, ASI Project's Alteration of Population and Habitat Attributes
- ▶ Section 4, Potential Effects of the ASI project on Covered Species
- ▶ Section 5, Potential Effects of the ASI project on the Conservation Strategy of the NBHCP
- ▶ Section 6, Potential Effects of the ASI project on the NBHCP Goals and Objectives
- ▶ Section 7, Cumulative Effects
- ▶ Appendix A, Assessment of Avoidance and Minimization of Construction-related Effects and Human-Wildlife Conflicts
- ▶ Appendix B, Biological Resources Mitigation Measures

2 EVALUATION APPROACH

2.1 OVERVIEW

The ASI project could affect covered species, effectiveness of the NBHCP conservation strategy, effectiveness of specific conservation measures, attainment of NBHCP goals and objectives, or cumulative effects by altering any of several population or habitat attributes based on the following considerations:

- ▶ Construction-related effects on survival and reproduction,
- ▶ Zones with human-wildlife conflicts (i.e., areas adjacent to developed lands and roads),
- ▶ Acreage of habitat in Natomas Basin,
- ▶ Quality of habitat in the Natomas Basin,
- ▶ Connectivity of habitat in Natomas Basin,
- ▶ Connectivity of existing TNBC reserves,
- ▶ Habitat value of existing TNBC reserves,
- ▶ Water availability at TNBC reserves, and
- ▶ Opportunities to establish additional TNBC reserves.

For each of the above attributes, alterations resulting from the ASI project were analyzed. The findings of this effects analysis of the effects on covered species, effectiveness of the NBHCP conservation strategy, effectiveness of specific conservation measures, and NBHCP goals and objectives were based on the results of the analyses of the above attributes. The methodologies and the basis for the interpretations of effects on covered species and NBHCP goals and objectives are described below. In addition, this analysis of effects on covered species was also based on available information on the distribution of these species in the Natomas Basin and on their ecology.

Several NBHCP covered species were evaluated in the EIR but determined to have no potential to occur on the project site due to absence of suitable habitat, lack of documented occurrences within the Natomas Basin, or location outside their known range. Because these species have no potential to occur on the project site, they would not be affected by the project, and no further analysis is necessary for HCP viability assessment purposes. Complete species accounts are provided in the ASI EIR and the EIR's Biological Resources Assessment.

Analyses of cumulative effects also were based on the results of these analyses together with additional analyses of land cover, and the compilation and review of projects proposed in the Natomas Basin.

2.2 DESCRIPTION OF AIRPORT SOUTH INDUSTRIAL PROJECT

The analysis of the effects of the ASI project is based on a description of the project (including the mitigation measures proposed as part of the project design) that was compiled from multiple sources. The primary source was the ASI proposed Final Environmental Impact Report (FEIR, 2025) and the ASI Biological Resources Assessment (BRA) (Bargas, 2023).

The proposed off-site mitigation reserves would be dedicated to TNBC, with payment of NBHCP fees that provide for an endowment sufficient for required restoration and management in perpetuity. The management of these reserves would be as described in sections VI-D, V-B, VI-E, VI-F, and VI-G of the NBHCP (Conservation Plan – Reserve/Management/Site Specific Management Plans; Take Avoidance, Minimization, and Mitigation; and Plan Implementation-Monitoring of the NBHCP, Adaptive Management, Annual Report, respectively) or that comparable management would be developed in consultation with USFWS and incorporated into an HCP for the project. As described in sections VI-D, V-B, VI-E, VI-F, and VI-G of the NBHCP, this management would include:

- ▶ Development of a site-specific management plan;

- ▶ Implementation of measures to reduce take of covered species as a result of restoration and reserve management;
- ▶ Implementation of the NBHCP's conservation strategies for covered species on the reserves;
- ▶ Management activities that include invasive plant control, domestic/feral animal control, and restricting public access and patrolling reserves to enforce restrictions;
- ▶ Compliance and biological effectiveness monitoring; and
- ▶ An annual reporting and review meeting to cover progress toward meeting goals, implementation, monitoring, and adaptive management measures.

The dedication of the proposed reserves would occur prior to the City of Sacramento issuance of a Notice to Proceed (NTP) for any grading (ground disturbance) per the requirements of the NBHCP IA.

2.3 METHODOLOGY FOR ANALYZING ALTERATIONS OF POPULATIONS AND HABITATS

2.3.1 CONSTRUCTION-RELATED EFFECTS ON SURVIVAL AND REPRODUCTION

Information regarding the presence of covered species or potentially suitable habitat for these species at the ASI site and adjacent lands includes information contained in the ASI Proposed Final Environmental Impact Report (FEIR) (Raney, 2025), and the ASI Biological Resources Assessment (BRA) (Bargas 2023). These documents were based on site assessments by wildlife biologists and compilation and analysis of the best available data.

Each species was considered to be either likely, possibly, or not affected by construction-activities based on evidence of its presence and of the presence of potentially suitable habitat. Species documented recently (i.e., in the past 4 years) at or adjacent to the ASI or proposed reserve sites were considered to still be using suitable habitat at that site; these species were considered likely to be affected by construction-related activities. The land area considered adjacent to the ASI or proposed reserve sites differed among species according to their ecology (i.e., their territory and home range sizes, daily and seasonal movements, and their susceptibility to disturbance).

Species not recently documented at or adjacent to the ASI site, but for which potentially suitable habitat has been documented at or adjacent to the site, were considered potentially present and thus individuals of those species may be affected by construction activities. (These species were considered potentially present because surveys performed to date have not been adequate to determine absence of these species.)

Species not recently documented at or adjacent to the ASI site, and for which no potentially suitable habitat was located on or adjacent to the site, were considered to not be affected by construction activities.

For species likely to be or possibly affected by construction-related activities, the avoidance and mitigation measures proposed for the ASI project were evaluated. The extent of construction-related effects is reduced through appropriate avoidance and minimization measures. Where combinations of construction activities and affected species and habitats would be similar to those addressed by the NBHCP, this analysis considered the applicable avoidance and minimization measures in the NBHCP (Chapter V) that address construction-related effects to be a complete set of appropriate (and feasible) avoidance and minimization measures for comparable effects potentially caused by the Airport South Industrial project. Thus, a table of measures in the NBHCP was compiled, measures applicable to the project were identified, and inclusion of each measure in the project and its mitigation was evaluated. This table was used in evaluating the project's effects on attainment of NBHCP goals and objectives that address the implementation of avoidance and minimization measures. The analysis also considered the need for different measures to address effects that would be likely and that would differ from those addressed by the NBHCP, and the potential for the ASI project to alter the efficacy of the NBHCP measures

(Appendix A).

2.3.2 ZONES WITH HUMAN-WILDLIFE CONFLICTS

Considerable conflicts between wildlife use and human activities (e.g., animal-vehicle collisions, harassment and predation by pets, degradation of water quality) normally occur in habitat areas adjacent to developed land uses and major roads. These effects diminish with distance, but the distance at which they are no longer significant is debatable.

In this document, the widths used to evaluate human-wildlife conflicts, alterations of vegetation and other habitat conditions, habitat fragmentation, and effects on existing reserves, were based on the ecological literature regarding effects on habitat adjacent to developed land uses and roads, and on the distances used in previous analyses related to the NBHCP or incorporated into the NBHCP itself. The effects of developed land uses on adjacent land diminish with distance. The different types of effects, however, extend different distances onto adjacent land; these distances can be from tens to thousands of feet, and differ not only among mechanisms but among sites as well (because of variation in site attributes such as the presence of barriers and the quantity of impervious surfaces). Thus, in a regional analysis, the use of a specific width only indicates the area within which effects of adjacent developed land are often sufficient to alter habitats.

In the evaluation, two widths were used, 800 feet and one mile. The 800-foot width was used in evaluating zones where increased human disturbance, predation from cats and dogs, vehicle collisions, dumping, and alterations to soils, hydrology and vegetation were likely to occur. The one-mile width was used in evaluating the effects on foraging habitat for animals with large home ranges, such as raptors. Both widths are consistent with the ecological literature regarding these effects and the ecology of species in the Natomas Basin and were previously used in comparable analyses supporting the NBHCP.

The ASI project could cause human-wildlife conflicts in this zone by altering the acreage in the zone (because of an altered perimeter of development) or by altering the intensity of wildlife-human conflicts (because of the avoidance and minimization measures implemented or a change in land cover types in this zone). Change in the extent of the 800-foot-wide zone was calculated from the acreage in this zone MAP, City of Sacramento and Sutter County permit areas for urban development from the Final NBHCP (City of Sacramento et al. 2003) and around these permit areas plus a developed ASI site. Changes to the intensity of wildlife-human conflicts in the 800-foot-wide zone were assessed by calculating changes in land cover types within these zones and by comparing the project's avoidance and minimization measures with those in the NBHCP that address these conflicts. The ASI site itself experiences human-wildlife conflicts due to the proximity to urbanization particularly the nearby residential neighborhoods. It's common to see people along with their domestic pets such as dogs trespassing through the ASI area. The ASI project site experiences human-wildlife conflicts as a result of the urbanized surroundings to the site (residences, roadways, freeway interchange, I-5 freeway, and airplane flights over the site).

An increase in land cover providing higher quality habitat (or land cover more sensitive to human disturbance) would increase human-wildlife conflicts, while a decrease in such land cover types would reduce human-wildlife conflicts. Similarly, a less comprehensive or stringent set of measures would increase the intensity of conflicts, while a more comprehensive or stringent set of measures would reduce the intensity of conflicts. Any reduction in the efficacy of specific NBHCP measures addressing human-wildlife conflicts also could increase conflicts; potential effects on the efficacy of these measures were evaluated in Appendix A.

2.3.3 ACREAGE OF HABITAT IN THE NATOMAS BASIN

A major component of the effects analysis in the NBHCP was an analysis of change in habitat acreage. For each covered species, the NBHCP analyzed the habitat that was available under baseline conditions and that would be available in the expected future condition of the Natomas Basin. The NBHCP documented baseline land cover in the Natomas Basin as of 2001. The data sources and methods used to do so are described in *Natomas Basin*

Conservation Plan Impacts to Proposed Covered Species (CH2M HILL 2002) that was attached to the Final NBHCP as Appendix H. The Natomas Basin covers approximately 53,538 acres. The future condition evaluated was the result of developing an additional 17,500 acres of this land in the MAP, City of Sacramento, and Sutter County permit areas and establishing an 8,750-acre reserve system in the Natomas Basin outside of those permit areas. For each covered species, changes in habitat acreages were derived from the changes in the acreage of land cover types by identifying those land cover types that provide habitat for that species. Additional analyses were performed for Swainson's hawk that included assessment of changes in habitat within 1 mile of existing reserves and nests, quality of foraging habitat, and seasonal availability of foraging habitat.

The ASI project would alter these future conditions by developing additional land and by preserving and enhancing additional land as part of the TNBC reserve system. Thus, for this project's effects analysis, for each covered species, the future condition of the Natomas Basin with the NBHCP and the ASI project was compared to the future condition analyzed in the NBHCP and to the 2001 NBHCP baseline.

For the ASI project and proposed reserve sites, these comparisons were based primarily on 2001 land cover to be consistent with and comparable to the NBHCP's effects analysis, and because 2001 conditions were used as the NBHCP baseline. These comparisons allow assessment of both the extent of future habitat under the future condition resulting from the NBHCP and under the future condition resulting from the NBHCP plus the ASI project.

This assessment indicated that land cover changes since 2001 have occurred primarily within the MAP, City of Sacramento, Sutter County permit areas for urban development, and at TNBC reserves in addition to the SAFCA Natomas Levee Improvement Project (NLIP). To assess the future condition of the Natomas Basin with the ASI project, several assumptions were made regarding changes in land cover. These assumptions included the following.

- ▶ All land in the MAP, City of Sacramento, and Sutter County permit areas were assumed to be developed, or otherwise no longer providing habitat for covered species.
- ▶ Land at the ASI site was assumed to be developed, or otherwise no longer providing habitat for covered species.
- ▶ All other areas were treated as in the effects analysis for the NBHCP, except that 8,750 acres (not including the project's proposed reserves) would be incorporated into a reserve system. The reserve system would be approximately 25% managed marsh, 50% rice and 25% upland land cover types as required per the NBHCP. For estimating acreage changes, the managed marsh and rice was considered to come out of the baseline rice acreage.
- ▶ Under future conditions, land at the project's dedicated reserve sites was assigned to land cover types based on continued agricultural uses.
- ▶ Preserved land would be dedicated to TNBC and payment of NBHCP fees would provide for an endowment, enhancement, operations, maintenance, and administration of preserved land in perpetuity.

Thus, the future condition that was analyzed assumes that the project, all development proposed under the NBHCP, and all associated mitigation would occur, and that current agricultural land uses are representative of future agricultural land uses. These or comparable assumptions were also made in the effects analyses supporting the NBHCP (e.g., sections 3 and 4 of Appendix H of the NBHCP, and Section 2 of Appendix K).

Changes in the acreage of habitat for a covered species were the sum of changes in land cover types providing habitat for that species. The habitat-land cover relationships used in analyses supporting the NBHCP were also applied to analyses for the ASI project. These relationships are summarized in Table 2-1. Vernal pool-associated species were not considered in these analyses because the ASI and proposed reserve sites do not contain vernal pool habitats nor have vernal-pool associated species been documented in the vicinity of these sites.

Additional data that was considered includes the more detailed site-specific information provided in the ASI EIR, BRA, and the TNBC monitoring reports.

Species	Land Cover Types															
	Airport	Alfalfa	Canals	Grassland	Highways	Idle	Non-rice Crops	Oak Groves	Orchards	Other	Pasture	Ponds and Seasonally Wet	Rice	Riparian	Ruderal	Tree Groves
Giant garter snake			X									X	X			
Swainson's hawk		X		X		X	X	X			X			X	X	X
Burrowing owl		X	X	X		X					X				X	
Loggerhead shrike		X	X	X		X	X	X	X		X	X		X	X	X
Tricolored blackbird		X		X			X				X		X			
Aleutian Canada goose							X				X		X			
White-faced ibis		X	X									X	X			
Bank swallow		X	X	X			X				X	X	X	X		
Valley elderberry longhorn beetle														X		
Northwestern pond turtle			X									X	X	X		
Sanford's arrowhead			X									X				
Delta tule pea			X									X				

2.3.4 QUALITY OF HABITAT IN THE NATOMAS BASIN

Changes in habitat quality can result from changes in land cover, connectivity, adjacent land uses, and the preservation and management of land to enhance its habitat quality, changes in connectivity, and adjacent land uses. In this report, changes in the acreage of land cover types providing different quality habitat and changes in the acreage of land preserved and managed to enhance habitat quality were derived from the analyses of change in habitat acreages described in the preceding section (*Acreage of Habitat in the Natomas Basin*). Changes in habitat quality resulting from changes in connectivity or adjacent land uses were evaluated separately, and these evaluations are described in other sections.

For these analyses, the habitat value of the ASI project was based on the same data sources as the analysis conducted for the NBHCP (i.e., 1993 DWR mapping of croplands and 2001 land cover mapping by CH2M HILL of the entire Natomas Basin). The habitat value of the ASI project was based on an assumed future condition derived from the project description and the NBHCP. The project will provide on-site and off-site agricultural/open space preservation including: 50 acres of habitat mitigation property (APN 225-0020-014), 67.59 acres of habitat mitigation property (APN 225-0020-015), and currently unidentified agricultural/open space mitigation property to address potential impacts to Swainson's Hawk foraging habitat that occurs on-site, but outside of the Natomas Basin HCP permit area for authorized development. The project applicant has agreed to preserve Swainson's Hawk foraging habitat off-site at a 1:1 ratio.

Additionally, the project would contribute to the NBHCP reserve system through mitigation fees supporting the acquisition, enhancement, and management of habitat reserves.

Table 2-2 Habitat Classification and Species Function			
Vegetation Community	Scientific Name	Project Site Acres	NBHCP Land Use Class
Perennial Rye Grass Fields	<i>Lolium perenne</i> Herbaceous Semi-Natural Alliance	269.49	Ruderal or Grassland
Upland Mustards/Star-thistle Fields	<i>Brassica nigra</i> - <i>Centaurea (solstitialis, melitensis)</i> Herbaceous Semi-Natural Alliance	130.10	Ruderal
Disturbed/Developed	Disturbed/Developed	41.81	Other
Open Water	Open Water	11.13	Canals
Unknown Row Crops	Unknown Row Crops	4.58	Non-Rice Crops
Poison Hemlock or fennel Patches	<i>Conium maculatum</i> - <i>Foeniculum vulgare</i> Herbaceous Semi-Natural Alliance	3.91	Ruderal
Himalayan Blackberry – Rattlebox – Edible Fig Riparian Scrub	<i>Rubus armeniacus</i> - <i>Sesbania punicea</i> - <i>Ficus carica</i> Shrubland Semi-Natural Alliance	1.28	Riparian
Goodding's Willow – Red Willow Riparian Woodland and Forest	<i>Salix gooddingii</i> - <i>Salix laevigata</i> Forest & Woodland Alliance	0.77	Riparian
Valley Oak Riparian Forest and Woodland	<i>Quercus lobata</i> Riparian Forest & Woodland Alliance	0.75	Riparian
Hardstem and California Bulrush Marshes	<i>Schoenoplectus (acutus, californicus)</i> Herbaceous Alliance	0.22	Emergent Wetland
Cattail Marsh	<i>Typha (angustifolia, domingensis, latifolia)</i> Herbaceous Alliance	0.02	Emergent Wetland
TOTAL	339.58*		
*Represents total acreage as examined in the Biological Resources Assessment			

The Biological Resources Assessment documented that the ASI annexation site currently supports approximately 331.21 acres (includes the entire annexation area) of ruderal habitat consisting of 260.49 acres of Perennial Rye Grass Fields, 69.44 acres of Upland Mustards/Star-thistle Fields, and 1.28 acres of Poison Hemlock/Fennel Patches (These areas have been subject to ongoing management including mowing and shallow tilling for fire fuel abatement, resulting in vegetation communities dominated by non-native species). 1.93 acres of canal systems and 0.24 acres of emergent wetland habitat (0.22 acres of Hardstem/California Bulrush Marsh and 0.02 acres of Cattail Marsh), and 0.97 acres of riparian woodland consisting of 0.37 acres of Goodding's Willow Riparian Woodland, 0.07 acres of Valley Oak Riparian Forest, and 0.53 acres of Himalayan Blackberry Riparian Scrub along canal banks. Of the 53 plant species documented on-site “No special status plant taxa from desktop analysis were determined to be present in the Biological Study Area” meaning no plant species covered under the HCP were determined to be present. The ruderal areas provide foraging habitat for Swainson's hawk and potential habitat for burrowing owl, while the aquatic features provide habitat and movement corridors for giant garter snake and northwestern pond turtle. However, the current habitat quality is limited by ongoing mechanical disturbance, non-native species dominance, and the engineered nature of the canal systems with steep banks that restrict wildlife access.

Swainson's Hawk Habitat

The ASI project would result in the loss of 278.4 acres of Swainson's hawk foraging habitat currently classified as ruderal land. The biological assessment documents that these ruderal areas consist of managed agricultural fallows and disturbed lands dominated by non-native plant species. Within the context of the NBHCP, this loss represents approximately 4.2% of the City of Sacramento's allocated 6,925 acres of Swainson's hawk foraging habitat loss anticipated under the plan (NBHCP, VII-16).

The loss would be offset through the project's contribution to the NBHCP reserve system, which provides enhanced foraging habitat through active management specifically designed to support Swainson's hawk prey species. As stated in Section IV-6 of the NBHCP, reserve system foraging habitat would be of greater value than existing agricultural lands because "TNBC reserves will be specifically managed to create habitat to support the covered species, and species friendly management practices will be utilized by TNBC for the rice reserves operated by TNBC" with "greater opportunities for species survival by providing a refuge from persistent mechanical or in some cases chemical disturbance often associated with common agricultural practices" (NBHCP, IV-6).

Giant Garter Snake Habitat

The ASI project would impact 2.17 acres of potential giant garter snake habitat consisting of 1.93 acres of canal systems and 0.24 acres of emergent wetlands (0.22 acres of Hardstem/California Bulrush Marsh and 0.02 acres of Cattail Marsh). The existing habitat is of marginal quality due to the engineered nature of the canals with steep banks, limited burrow sites for overwintering, and regular maintenance activities by Reclamation District 1000 that disturb vegetation and substrate conditions.

The biological resources assessment noted that while giant garter snake has been previously documented in the West Drainage Canal system adjacent to the project site, the on-site habitat is unlikely to support a permanent population due to the lack of suitable burrows and high levels of vegetation management. The habitat functions primarily as a movement corridor connecting occupied sites to the north and south within the Natomas Basin.

The NBHCP provides mitigation for impacts to giant garter snake habitat through the creation of managed marsh reserves specifically designed to meet the species' biological needs. The NBHCP notes that "managed marsh habitat would provide more habitat for snakes than rice fields on an acre-for-acre basis because of the larger amount of edge habitat" (NBHCP, VII-7)

Other Covered Species Habitat

The ASI project would have minimal direct effects on other NBHCP covered species due to the limited habitat quality present on-site. Northwestern pond turtle was observed during biological surveys, but the adjacent upland habitats are marginal due to steep canal banks and ongoing vegetation management. The project site provides potential foraging habitat for burrowing owl, loggerhead shrike, and other upland species, but no active use by these species was documented during field surveys.

The NBHCP reserve system would provide enhanced habitat opportunities for these species through the creation of managed upland reserves with reduced disturbance and active management to maintain suitable vegetation structure and prey availability. The reserve system's emphasis on habitat connectivity and landscape-scale conservation provides greater benefits for covered species populations than preservation of the existing fragmented and disturbed agricultural landscape.

Overall, the NBHCP reserve system will be of greater habitat value than the existing agricultural land that will be converted to urban development under the plan. The reserve system will be specifically managed to create habitat to support covered species, while much of the land to be developed is either of limited value as habitat or serves as habitat to a limited number of covered species. The reserves provide habitat for species restoration and reintroduction where appropriate, minimize take related to agricultural and land management activities, and offer refuge from persistent mechanical and chemical disturbance often associated with common agricultural practices.

2.3.5 CONNECTIVITY OF HABITAT IN THE NATOMAS BASIN

The ASI project could affect the connectivity of habitat by eliminating or creating waterways, affecting the use of waterways by covered species, or by altering the length, width, or habitat attributes of existing corridors of natural vegetation. In assessing these effects, several assumptions were made including the following.

- ▶ The majority of the ASI site would be developed, with specific habitat preservation and mitigation as outlined in the project's mitigation measures, including 126.2 acres of on-site open space (86 acres of detention basins, 37.9 acres of freeway buffer, and 2.3 acres of canal buffers)
- ▶ Waterways within the developed portion of the ASI site would be substantially impacted, including Canal-1, Canal-2, Canal-3 (West Drainage Canal), Ditch-1, and Ditch-2, totaling approximately 2.081 acres of aquatic features.
- ▶ To offset habitat impacts, the project will provide off-site agricultural/open space mitigation, including 141.51 acres of currently unidentified agricultural/open space mitigation property and two identified habitat mitigation properties totaling 117.59 acres (APNs 225-0020-014 and 225-0020-015). This mitigation will be preserved in perpetuity through conservation easements or fee title and must consist of land of comparable agricultural and habitat value.
- ▶ In the absence of avoidance and minimization measures, all waterways and uplands within 800 feet of the ASI site could potentially be affected by the project. (Ecologically significant effects caused by developed land uses were considered to not extend beyond an 800-foot-wide zone adjacent to developed landcover and highways, and the basis for selecting this width is further described in Section 2.2.2 Zones with Human-Wildlife Conflicts.)

Interpretations of effects on connectivity were based on general ecological literature regarding wildlife use of corridors, recent reviews of the ecology of covered species, and consultations with species experts. Along canals, potential changes in physical conditions (e.g., flow regime, culvert dimensions), vegetation structure and extent, human disturbance, and predation were all evaluated as factors potentially altering connectivity.

2.3.6 CONNECTIVITY OF TNBC RESERVES

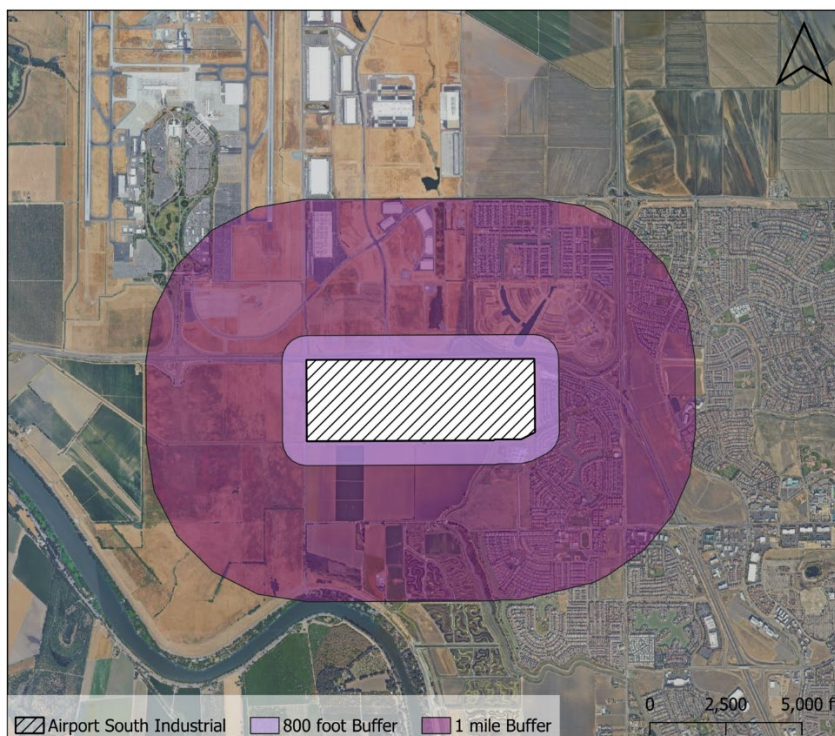
The connectivity of TNBC reserves can be altered by altering upland corridors or waterways between existing reserves. Upland corridors are affected by narrowing their width, altering the habitat attributes of the land in them, or by altering their length. The assessment of these potential effects was based on the same assumptions and conducted in the same manner as previously described for Connectivity of Habitat in the Natomas Basin, except that only effects on corridors between existing reserves were considered rather than effects on all lands. (Corridors were considered to not pass through urban land.) It was assumed that the most ecologically important upland corridors include the shortest paths between reserves.

Waterways are also important corridors connecting TNBC reserves. Thus, altering the location or habitat value of waterways could affect the connectivity of existing reserves. This effect was evaluated by identifying all waterways within 800 feet of the ASI site and determining if they were part of the shortest path along waterways between reserves, in a corridor between reserves with multiple waterways, or otherwise could be important for species movement between reserves (e.g., species use of the waterway has been documented). The analysis of waterways connecting TNBC reserves was based on analysis of GIS data for waterways in the Natomas Basin, and on boundaries of existing TNBC reserves, MAP, City of Sacramento, and Sutter County permit areas, and of the Airport South Industrial site, and on species distribution data and consultation with knowledgeable individuals. For this analysis, ecologically significant effects of developed land uses and roads were not considered to extend in general beyond an 800-foot zone of adjacent land; the basis for selecting this width is further described in the section describing the evaluation of zones with human-wildlife conflicts.

2.3.7 HABITAT VALUE OF EXISTING TNBC RESERVES

Changes in adjacent land cover can affect existing TNBC reserves by altering foraging habitat accessible from a reserve or by altering the habitat values of reserve lands through development or preservation of adjacent lands. Thus, we performed three analyses to evaluate effects on the habitat value of existing TNBC reserves. These analyses are described below.

- ▶ The effects of the project on foraging habitat were evaluated based on changes in land cover because of the project within 800 feet and 1 mile of existing reserves. Most effects of developed land uses and roads were considered to not extend beyond an 800-foot wide zone of adjacent land. (The basis for selecting this width is described in the section describing the evaluation of zones with human-wildlife conflicts.) Furthermore, as summarized in Section 4 of this document (*Potential Effects of the Airport South Industrial Project on Covered Species*), the territories and home ranges of some covered (and many other) species residing at the reserves are unlikely to extend more than 800 feet from reserve boundaries. However, Swainson's hawk and other raptors have much larger home ranges and territories; for these species, land within 1 mile of reserves was considered to include the most important habitat for individuals nesting on reserves. (This premise is comparable to that underlying the analysis of Swainson's hawk habitat in the Natomas Basin presented in *Natomas Basin Conservation Plan Impacts to Proposed Covered Species* [CH2M HILL 2003] and included in Appendix K of the NBHCP).
- ▶ The effects of additional development on habitat values of TNBC reserves were evaluated by calculating the acreage of existing TNBC reserves within 800 feet of additional developed land cover that would result from the project. This 800-foot criterion is the desired distance of reserves from urban land (described on page IV-16 of the NBHCP) and also includes the area that would experience ecologically significant effects caused by adjacent developed land uses and roads.
- ▶ The proximity and characteristics of the project's off-site mitigation lands, including identified properties APNs 225-0020-014 and 225-0020-015 were examined to determine their relationship to existing reserves and their potential contribution to overall habitat connectivity and reserve system effectiveness.



2.3.8 WATER AVAILABILITY AT TNBC RESERVES

The project could alter water availability at TNBC reserves if it were to eliminate sections of canals that are required for water deliveries to TNBC reserves, contribute to the elimination of other canals by affecting demand for water deliveries and increase the land ownership of TNBC and its corresponding water use and ownership of stock in Natomas Mutual.

It was assumed that all canals in developed portions of the Airport South Industrial site would be eliminated, including Canal-1, Canal-2, and portions of Canal-3 (West Drainage Canal), totaling approximately 2.081 acres of aquatic features, and that consequently, sections of canal off-site but directly connected to these canal segments on the Airport South Industrial site could be abandoned. The connection of each of these eliminated or potentially abandoned canal segments to TNBC reserves was evaluated, and the effect on water availability to reserves was assessed. In addition, Natomas Mutual and RD 1000 were contacted regarding waterways that could be eliminated because of the project. Elimination of canals or drains by these water agencies or due to a development project, however, would likely require mitigation under either Section 7 or Section 10 of the Endangered Species Act, and therefore their effects would likely be mitigated even if their elimination occurred separately from the project.

The project's effect on TNBC stock ownership in Natomas Mutual also was considered. Natomas Mutual is a privately held water company comprised of landowner stockholders. As TNBC acquires mitigation lands in the Natomas Basin, it increases its shares in Natomas Mutual. This increased ownership could result in TNBC changing operations and maintenance practices to support the goals and objectives of the NBHCP. The project would increase TNBC ownership and thus its influence on the operations of Natomas Mutual. The magnitude of this increase in ownership and its likely effects were assessed.

2.3.9 OPPORTUNITIES TO ESTABLISH ADDITIONAL TNBC RESERVES

The ASI project could affect opportunities to establish additional TNBC reserves by reducing the acreage of land available for satisfying the mitigation requirements of the development permitted through the NBHCP, or by expanding existing reserves so that more interconnected reserves can be established that exceed the 400-acre minimum desired size.

The acreage potentially available for NBHCP mitigation without the project was estimated by subtracting the following areas from the Natomas Basin's total acreage of land suitable for preservation followed by restoration or enhancement: MAP, City of Sacramento, and Sutter County permit areas for urban development, the County-owned airport buffer, and levee slopes around the perimeter of the plan area. Land cover considered unsuitable for restoration or enhancement included existing developed land cover outside of permit areas, and other, ruderal and rural residential land cover.

The location of the proposed reserves was examined to determine if these lands expanded existing TNBC reserves, could contribute to the expansion of TNBC reserves in the future or could be expanded into a reserve that was 400 acres in size or greater, or if they were isolated from TNBC reserves by developed lands or other barriers.

2.4 BASIS FOR INTERPRETATIONS OF EFFECTS ON COVERED SPECIES

For each covered species, we evaluated:

- ▶ construction-related effects on individuals using the ASI site or adjacent lands,
- ▶ change in habitat quantity, and
- ▶ change in habitat quality.

For this evaluation, the available information on the ecology and distribution of each covered species was compiled, reviewed, and summarized. Interpretations of construction-related effects on individuals were based on the analysis of the likely alterations of survival and reproduction of individuals using the ASI site or adjacent lands. Interpretations of effects on habitat availability were based on the analysis of alterations to habitat acreage that was described previously.

Interpretations of change in habitat quality were based on the analyses of land cover acreages and connectivity of habitat in the Natomas Basin, and of the acreage in zones with human activity-wildlife conflicts. We also considered changes in the acreage of preserved lands, and in the acreage of high-quality habitat.

For each covered species, the interpretations of effects on habitat acreage and quality (and of construction-related effects and human-wildlife conflicts) were used to evaluate the project's overall effect on the viability of the population using the Natomas Basin. A population's viability (i.e., its likelihood of long-term persistence) is strongly influenced by population size, population demography, and environmental variability (which in turn has a strong influence on reproduction and mortality). In the Natomas Basin, fluctuations in the acreage of crop types and changes in agricultural practices cause substantial environmental variability affecting the populations that rely on agricultural habitats. By reducing the quantity or quality of habitat, urban development can reduce population size and adversely affect demography.

2.5 BASIS FOR INTERPRETATIONS OF EFFECTS ON NBHCP CONSERVATION STRATEGY

The previously described analyses of effects on population and habitat attributes, and on covered species, were used to evaluate the potential effect of the ASI project on the effectiveness of the NBHCP conservation strategy. This strategy is described in Section IV.C of the NBHCP. This section describes six key components of the NBHCP's conservation strategy for effectively mitigating 17,500 acres of urban development. These components are:

- ▶ basis for 0.5 to 1 mitigation ratio (Section IV.C.1.a),
- ▶ preparation of site specific management plans (Section IV.C.1.b),
- ▶ buffers within the reserve lands (Section IV.C.1.c),
- ▶ connectivity (Section IV.C.1.d),
- ▶ foraging habitat (Section IV.C.1.e), and
- ▶ 2,500-acre/400-acre minimum habitat block size requirements (Section IV.C.1.f).

Potential effects of the ASI project on each of these components was assessed individually (using the results of the analyses described in Section 2.3 *Methodology for Analyzing Alterations of Populations and Habitats*); these effects were then synthesized into an overall effect of the ASI project on the effectiveness of the NBHCP's conservation strategy.

2.6 BASIS FOR INTERPRETATIONS OF EFFECTS ON HCP GOALS AND OBJECTIVES

The NBHCP's goals and objectives represent the desired outcomes from implementation of the NBHCP's conservation strategy. This effects analysis evaluated the effects of the ASI project on goals and objectives of the NBHCP. None of the goals nor objectives would be precluded from attainment because of the ASI development. The ASI development incorporates design components in addition to the ASI EIR mitigation to avoid and minimize potential effects of the project.

A complete list of these measures are provided in Appendix A of this Effects Analysis. Interpretations of the project's overall effect on the attainment of a goal or objective were based primarily on the sum of these anticipated effects. Substantial effects (beneficial or adverse) could alter the viability of a covered species or interfere with attainment of a goal or objective. Effects that would reduce the viability of a covered species, preclude attainment of a goal or objective, or otherwise result in a change to the NBHCP's conservation strategy were considered significant effects that would conflict with the NBHCP.

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3 PROJECT'S ALTERATION OF POPULATION AND HABITAT ATTRIBUTES

3.1 CONSTRUCTION-RELATED EFFECTS ON SURVIVAL AND REPRODUCTION

Based on CNDDB, surveys of the ASI project site, and other data on the distribution of species in the Natomas Basin, species covered by the NBHCP that likely use the project site include Swainson's hawk, burrowing owl, Northwestern pond turtle, and the giant garter snake is presumed to be present (although not detected in any biological surveys). NBHCP species that may potentially occur (low potential based on habitat) include Loggerhead Shrike, Tricolored Blackbird, Cackling Goose, and White-faced Ibis. These potential effects are summarized below and described in detail in the sections addressing potential effects for each covered species.

Swainson's hawk was observed during the April and May 2022 surveys. Although nesting activity was not detected, a nesting survey was not conducted as part of the BRA. As such, in the event the species is nesting within the project site, which contains limited nesting habitat, the proposed project could directly affect the success of nesting hawks through destruction of pre-existing nests, active nests, and young or visual and/or audible disturbance from construction activities. Furthermore, the ASI BRA found that high-quality foraging habitat occurs on-site, which would be converted to industrial uses as part of the proposed project. As such, the project would result in potential impacts related to the loss of Swainson's hawk foraging habitat.

To avoid and minimize these potential effects, the project includes the same measures that were included in the NBHCP to avoid and minimize construction-related effects on Swainson's hawk.

Burrowing owls nesting on or near and foraging on the Airport South Industrial site could be affected by the project's construction activities. Although suitable burrows and ground-squirrels were not observed during the field surveys conducted for the ASI BRA, the project site contains some open disturbed areas, primarily in the construction staging area along the south side of Bayou Way and west of Metro Air Parkway, which provide marginal habitat for burrowing owl. In addition, in the event that ground squirrels move into the property from adjacent undeveloped land and establish burrows prior to project construction activities, burrowing owl could use burrows within the site. Therefore, the proposed project could directly impact the species through destruction of burrows containing overwintering or nesting individuals or visual and/or audible disturbance from construction activities. Construction of the project could cause nest abandonment or trap or injure owls in their burrows. To avoid and minimize these potential effects, the ASI EIR mitigation includes the same measures that were included in the NBHCP to avoid and minimize construction-related effects on burrowing owls.

Loggerhead shrikes the nearest documented CNDDB occurrences of loggerhead shrike are more than 50 miles from the project site, the loggerhead shrike occurs sparingly in the Natomas Basin. Although the species is unlikely to be present on-site due to the lack of scrubby habitat to accommodate the species, the ASI BRA determined that the possibility of active loggerhead shrike nests occurring on-site could not be ruled out. In addition, the BRA found that the proposed project could potentially impact the species through the loss of suitable foraging habitat within the site. As such, the project could result in impacts to loggerhead shrike. To avoid and minimize this potential effect, the project includes the same measures that were included in the NBHCP to avoid and minimize construction-related effects on loggerhead shrike.

Giant garter snakes foraging or residing on the Airport South Industrial site could be affected by the project's construction activities. The giant garter snake is an endemic species of wetlands in the Central Valley. Historically, the species The giant garter snake forages in marshes, low-gradient open waterways, and flooded rice fields, and hibernates in canal berms and other uplands.

Giant garter snake was not observed during the five field surveys conducted as part of the ASI BRA. However, the CNDDB contains several records documenting the species within the previous 20 years as having occurred in the West Drainage Canal in the project vicinity. The canal hydrologically connects to Fisherman's Lake, which contains a known population of giant garter snake.

Habitat for the species in the project site consists of interconnected drainage canals (i.e., Canal-1, Canal-2, and Canal-3), which are inundated under typical circumstances during the summer, as they collect irrigation and stormwater runoff from surrounding lands during the growing season. All canals were observed during the BRA field surveys to contain some cover of emergent aquatic vegetation dominated by floating water primrose (*Ludwigia peploides*), with small areas of cattail, and common tule. Although the cover of the emergent aquatic species was low at the time of the April 2022 survey, large areas of open water had remnants of floating water primrose from the previous growing season, indicating that the cover of giant garter snake may be substantial in mid-summer.

The BRA found that habitat in the project site is unlikely to support a permanent giant garter snake population, as suitable burrows do not occur within the site and the project site is subject to ongoing high levels of vegetation management. For instance, much of the on-site canal banks are vertical and undercut with few visible burrows suitable for the species. Additionally, the tops of the canal banks are highly compacted and show evidence of repeated mowing and grading along many reaches. Furthermore, burrows capable of supporting overwintering giant garter snake were not observed during the April 2022 survey.

Habitat within the on-site canals for the species is best described as marginal, containing some of elements required by the species and capable of supporting transient individuals. Based on the supporting habitat (& canals) located within and adjacent to the ASI project site, the giant garter snake is assumed to be *present* within the ASI property. Because giant garter snakes in the Natomas Basin travel widely (i.e., several miles or further) ensuring their daily and seasonal movements, the canals are an important movement corridor for this species.

The construction activities associated with the Airport South Industrial project would be comparable to those covered by the NBHCP, as are the species and habitats affected by these activities. Therefore, the applicable measures from the NBHCP would be appropriate for avoiding and minimizing this project's construction-related effects, and the project includes the same measures that were included in the NBHCP to avoid and minimize construction-related effects on giant garter snake.

3.2 ZONES WITH HUMAN-WILDLIFE CONFLICTS

As described in the methodology, areas within 800 feet of the ASI site, existing development, major highways, and the Sacramento International Airport (flights over the property) were considered to be areas with high levels of potential human-wildlife conflicts. The ASI project would reduce the total area, and the area of most land cover types, in these zones, and would include measures to reduce effects on adjacent habitats. Overall, the project with the ASI EIR mitigation would not significantly increase human-wildlife conflicts in the Natomas Basin.

3.2.1 FUTURE CONDITIONS UNDER THE NBHCP

Under future conditions resulting from implementation of the NBHCP, a portion of the ASI site would be adjacent to urban development or major highways, and thus potentially experiencing high levels of human-wildlife conflicts. Urban development would be adjacent to the Airport South Industrial site along its eastern and western sides, northern side and part of its southern side (Exhibit 1). Interstate 5 runs parallel to the ASI property to the north, a City owned 200' wide buffer and residential development is located to the west, and the agricultural or natural vegetation remaining to the southwest that includes the Paso Verde School.

The east of the ASI site is Powerline Road and Sacramento International Airport owned lands that have been approved for a WattEV Transportation Terminal that will include electric trucking vehicle facilities, a

convenience center, operations/maintenance building, and a 92-acre solar field for 58,880 solar panels.

Under the future conditions resulting from implementation of the NBHCP and development approved by other non-HCP agencies (County, Caltrans etc.), the ASI annexation area will be within 800 feet of urban development in the City of Sacramento's NBHCP permit area, Metro Air Park, Greenbriar (Northlake development), Interstate 5, Paso Verde School, Powerline Road, Sacramento International Airport owned lands, WattEV Transportation Terminal, TNBC reserves, and Fisherman's Lake.

3.2.2 POTENTIAL EFFECTS OF AIRPORT SOUTH INDUSTRIAL PROJECT UNDER FUTURE CONDITION

Development of the ASI project would reduce the area of habitat in zones with potentially high levels of human-wildlife conflicts. Under the future condition resulting from the NBHCP along with the existing developed lands (I-5, roadways, MAP, airport owned lands), the ASI site would be within 800 feet of urban development or major highways with the exception of the open space to the west owned by TNBC and the open space airport owned buffer lands that are not designated for development.

Without mitigation, the ASI project also could increase human-wildlife conflicts along the existing canals adjacent to and within the annexation area. The project's potential effects on this canal, and measures to reduce those effects, are discussed in detail in Section 3.4 *Connectivity of Habitat in the Natomas Basin*.

The project and its mitigation would also implement measures to reduce human-wildlife conflicts. The project includes all the applicable measures incorporated into the NBHCP to avoid and minimize human-wildlife conflicts. An evaluation of the applicability of NBHCP measures and their inclusion in the Airport South Industrial project or the ASI EIR mitigation is presented in Appendix A..

Overall, the ASI project, with the EIR mitigation, would not cause a significant increase in human- wildlife conflicts in the Natomas Basin. This is in part because much of the ASI site is, or under NBHCP and MAP permit conditions would be, bordered by urban development, highways, and major roads under the future condition, and in part because of the measures incorporated into the project and the EIR mitigation.

3.3 HABITAT ACREAGE IN THE NATOMAS BASIN

The project would reduce the acreage of habitat available in the Natomas Basin for several species covered by the NBHCP. These losses would result from changes in land cover at the ASI site.

3.3.1 CHANGE IN HABITAT ACREAGE AT THE AIRPORT SOUTH INDUSTRIAL SITE

Most of the ASI site would be converted to urban land cover (Exhibit 2, Table 3-1). But on-site areas along canals and setback buffers from nearby urban uses (residential and school) would be conserved. If the Airport South Industrial site were to remain predominantly in agricultural land cover, a variety of crops probably would be cultivated on it, and portions of the site would be idle in many years. Land cover in 2001 and 2005 indicates the range of habitat values the Airport South Industrial site could provide over the long-term, and thus that would be lost by the site's development. In 2001, the site contained idle, pasture, ruderal, canal, non-rice crops, and rural residential land cover (Table 3-1). In 2025, pasture and rice were no longer present, and the area of idle and non-rice cropland had expanded.

Estimates of habitat loss depend on whether they are based on 2001 or 2025 land cover. For some species (e.g., giant garter snake), estimates of habitat loss would be greater if based on 2001 land cover than if based on 2025 land cover. For other species (e.g., Swainson's hawk), estimates of habitat loss would be greater if based on 2025 land cover. For evaluating how the project would alter the future condition of the Natomas Basin, changes from 2001 land cover were used because 2001 land cover was the baseline for the NBHCP's estimates of future habitat conditions.

To evaluate the proposed project's effects on the effectiveness of the NBHCP, this effects analysis performed an extensive analysis of the project's potential effects on the future condition of the Natomas Basin. This analysis used the 2001 land cover data that represents baseline conditions of the NBHCP and considered 2001–2025 changes in land cover, and 2025 conditions. To comply with CEQA requirements and to assure that the proposed project does not compromise the effectiveness of the NBHCP, the impact analysis in the ASI EIR evaluated conditions documented in 2022 when the Notice of Preparation (NOP) was released, and provides mitigation designed to reduce impacts to less than significant under both 2022 conditions (for CEQA purposes) and 2001 conditions (to assure that the project does not compromise the effectiveness of the NBHCP).

3.3.2 CHANGE IN HABITAT ACREAGE AT PROPOSED RESERVE SITES

Land cover would also be altered at the future mitigation reserve sites. The reserve sites would potentially be converted to habitat consistent with the NBHCP conservation strategy in support of the HCP covered species. All TNBC owned reserve sites require site specific management plans (SSMP) which are subject to review and approval by the wildlife agencies (CDFW and USFWS).

3.3.3 OVERALL CHANGE IN HABITAT ACREAGE

The site contains perennial rye grass field, upland mustards or star-thistle fields, developed/disturbed land covers, open water, unknown row crops, poison hemlock or fennel patches, Himalayan blackberry – rattlebox – edible fig riparian scrub, Goodding's willow – red willow riparian woodland and forest, valley oak riparian forest woodland, hardstem and California bulrush marsh, and cattail marsh. In addition, a total of 2.018 acres of potential jurisdictional tributary drainages and other waters of the U.S. were identified within the project site. Development of the proposed industrial park and future development of the nonparticipating parcels could result in potential impacts to portions of the foregoing areas. The ASI EIR provides a wide range of mitigation to minimize all potential adverse effects to habitat for special-status species that could occur as part of the proposed project. With respect to potential impacts that could occur to special-status plant and wildlife species, mitigation measures would require implementation of applicable Natomas Basin HCP Take Avoidance, Minimization, and Mitigation Measures for Covered Species to address potential impacts that could occur as a result of all project-associated construction activities, regardless of whether they occur within or outside of the Natomas Basin HCP permit area. Compliance with the aforementioned Take Avoidance, Minimization, and Mitigation Measures would reduce potential impacts to protected plant species, giant garter snake, northwestern pond turtle, Swainson's hawk, burrowing owl, and loggerhead shrike to a less-than-significant level.

3.4 HABITAT QUALITY IN THE NATOMAS BASIN

Besides these changes in habitat acreage, changes in the quality of the remaining habitat also would occur. In part, changes in habitat quality result from changes in the acreage of land cover types providing higher habitat quality. For example, the project includes dedication of agricultural lands that would be protected in perpetuity providing habitat for Swainson's hawk, burrowing owl, and loggerhead shrike. The dedicated lands would be in a location that is not bounded by Interstate 5 and adjacent to residential areas. The habitat lands would be of higher quality and better suited to benefit the HCP covered species. Canal habitats within the ASI site will not be eliminated due to the project and will continue to provide habitat for species (e.g., northwestern pond turtle and white-faced ibis).

3.4.1 HABITAT QUALITY ADJACENT TO THE AIRPORT SOUTH INDUSTRIAL SITE

Habitat quality would not be significantly reduced on land adjacent to development at the ASI site. The ASI site is predominately surrounded by urban uses including a freeway, interchange, roadways, residential, school, traffic adjacent to and through the ASI site as well as overhead flights from Sacramento International Airport. The existing surrounding land uses detrimentally affects the provision of wildlife habitat and other ecosystem functions not only within the ASI site but also on the adjacent lands as well. These effects are caused by a wide variety of mechanisms that include alteration of hydrology, water quality, disturbance regimes, and vegetation

structure, and the introduction of non-native species, collisions with vehicles, noise disturbance, and harassment by humans, and predation by cats, dogs, and wildlife associated with human land uses. The ASI project includes a buffer its southern and western borders between its development and the nearby land uses that include residential, school and TNBC owned HCP reserves.

3.4.2 HABITAT QUALITY AT PROPOSED RESERVES

Habitat quality would be increased through preservation and management of at least 200 acres of mitigation lands. Habitat quality would increase at these sites because:

1. Habitat would be preserved in perpetuity;
2. Habitat would be monitored and actively managed for the benefit of covered species;
3. Habitat would not be subject to continuous disturbance caused by farming or canal maintenance activities; and
4. Habitat would be relatively free of human intrusion (USFWS 2003).

In addition to the increase in habitat quality resulting from preservation, habitat quality would be increased at the proposed reserves as a result of habitat enhancement and conversion to land cover types that provide higher quality habitat. The effects of changes in the quality of habitat provided by enhanced and preserved land, are further described in the sections of this report that address potential effects on each covered species.

3.4.3 HABITAT QUALITY FOR SWAINSON'S HAWK FORAGING

Habitat land would be enhanced and managed to provide high quality foraging habitat for Swainson's hawk as a result of the ASI EIR mitigation. These lands will be managed and protected in perpetuity and be located in areas that are better suited for Swainson's Hawk since the lands will be part of larger preserve areas. The ASI site currently is constrained by Interstate 5, roadway traffic on Powerline Road and Bayou Way, nearby residential uses and the Sacramento International Airport. The habitat quality for Swainson's Hawk foraging will be of higher quality, part of larger reserves, protected which the ASI site habitat does not provide.

3.5 CONNECTIVITY OF HABITAT IN THE NATOMAS BASIN

The ASI project would provide beneficial effects on connectivity of habitats in the Natomas Basin. The ASI project preserves on-site canals while ensuring continued connectivity for species. Overall, the project (with the mitigation included as part of the project design and with the EIR mitigation) is unlikely to significantly reduce connectivity of habitat for covered bird species. Adherence to the NBHCP measures, will ensure that the ASI project mitigation land provides foraging habitat for Swainson's hawk including connectivity of habitat for covered bird species since the reserve lands are required to be a minimum 400-acre in size per the NBHCP.

The following sections provide a detailed description of the Airport South Industrial project's effects on connectivity at the regional and local levels. This section also evaluates the effect of the Airport South Industrial project on the implementation of the connectivity measures in the NBHCP's conservation strategy.

3.5.1 OVERVIEW OF EXISTING AND FUTURE CONDITIONS

In 2001 and currently, the proposed Airport South Industrial site provides agricultural and canal habitats, as do some adjacent lands. However, because the Airport South Industrial site is bordered to the north by Interstate 5, to the west residential, to the east Powerline Road, and to a portion of the south by a school, habitats for less mobile animals, or those highly sensitive to human disturbance, are at least partially isolated from similar habitats to the east or south. Birds, including covered species, can fly over these highways and existing urban land uses. The ASI site's canal habitats are connected to similar habitats to the north by a culvert under Interstate 5 through which ultimately connects to the Lone Tree Canal flows, and the site's canal habitats are also connected to habitats south, west and east of the site. The existing canals provide a movement corridor and habitat for giant

garter snake.

Under the future condition, the ASI site would occupy much of one of two remaining corridors connecting the southern and central Natomas Basin. Except for these two corridors, the Sacramento International Airport, Metro Air Park and City of Sacramento would separate the southern and central Basin (Exhibit 1). A western corridor, between the airport and the Sacramento River, would be 0.4–1.6 miles wide. This western corridor may not contain sufficient canal, rice and wetland habitats to provide for connectivity of populations of giant garter snake, western pond turtle and other wetland and aquatic species between the southern and central portions of the Natomas Basin. To the east, another corridor would pass between the Metro Air Park and the City of Sacramento.

3.5.2 CONNECTIVITY OF AQUATIC, WETLAND, AND RICE HABITATS WITHIN THE NATOMAS BASIN

Within the Natomas Basin, aquatic, wetland, and rice habitats are connected by a series of irrigation and drainage canals. Most of these waterways are suitable for use and movement of a variety of animals, including giant garter snake and western pond turtle, and thus provide movement corridors for these animals between wetland and rice habitats.

In the Natomas Basin, irrigation water is provided by Natomas Central Mutual Water Company (Natomas Mutual), a private water company. Natomas Mutual diverts water from five locations along the Sacramento River and the Natomas Cross Canal, and distributes this water throughout the Basin through a series of canals and pump stations.

Drainage and flood control is provided by Reclamation District (RD) 1000, a public agency. RD 1000 operates the primary drainage canals within the Natomas Basin and is responsible for conveying and pumping nonurban stormwater runoff from the Basin. Runoff from agricultural lands within the Natomas Basin flows into numerous local drainage ditches that ultimately flow into the primary RD 1000 canals.

Although the canal network hydrologically connects aquatic and wetland habitats throughout the Natomas Basin, roads impede or block the movement of many animals through aquatic or wetland habitats. Even for animals that could attempt crossing a road surface, such as turtles and snakes, major roads are effectively impassable. For major roads, passage is restricted to the culverts through which the canal waters flow. Culverts are themselves obstacles to animal movement; although a wide variety of animals will move through culverts, for most species, the frequency of these movements is low (Yanes 1995, Rodriguez et al. 1996, Clevenger et al. 2001). The use of culverts increases with presence of adjacent habitat or cover, roadside fencing that “funnels” animals towards culverts, and with increased visibility through the culvert (Yanes 1995, Rodriguez et al. 1996, Clevenger et al. 2001).

Within the Natomas Basin, Interstate 5 (I-5) and State Route 99 (SR 99) are major barriers to animal movement that are crossed by only a few long culverts. Thus, habitat south of I-5 (i.e., in the southern Natomas Basin), such as at Fisherman’s Lake, is partially isolated from habitat north of I-5. Similarly, habitats west of SR 99 (i.e., in the northwestern Natomas Basin), such as at Pritchard Lake, are partially isolated from habitat east of SR 99 (i.e., in the northeastern Natomas basin), such as Snake Alley.

In 2001 and presently, habitats east and west of SR 99 are linked by culverts on the V Drain, R Drain, H1 Drain, and Central Main Canal; each of these canals in turn connects to a series of drains and ditches.

In 2001, aquatic habitats north and south of I-5 were linked through culverts by the West Drainage Canal, the N Drain (parallel to Powerline Road), and the Lone Tree Canal. The West Drainage Canal passes north under I-5 to the west of the airport. The N Drain and Lone Tree Canal pass north under I-5 to the west and east of MAP where each is connected to a series of ditches, drains, and canals (including Meister Canal) throughout the northwestern portion of the Basin, and to the culverts under SR 99 to the northeastern portion of the Basin. After it passes under Interstate 5, the N Drain, via Powerline Ditch, also connects giant garter snake habitats south of I-5 to those in the northwestern portion of the Basin.

However, as the development authorized by the MAP HCP and the NBHCP has occurred, and will occur, the system of canals connected to the culverts under I-5 has been changing and will continue to change. Except for the West Drainage Canal, all corridors connecting giant garter snake habitats in the southern Natomas Basin to habitats north of I-5 pass through or drain the MAP, and thus they all will be altered under the future condition of the Natomas Basin permitted by the NBHCP. Development authorized by the MAP HCP and NBHCP will eliminate the Powerline Ditch, No. 4 and 4a ditches, and Meister Canal, eliminate water sources to the Airport East Ditch, and replace the open Central Main Canal with an underground pipe.

Thus, under the future conditions permitted by the NBHCP, giant garter snake habitat south of Interstate 5 would be largely isolated from habitat north of Interstate 5. Two possible corridors would remain: the West Drainage Canal and Lone Tree Canal. Both corridors could connect important habitats in the southern Natomas Basin (such as Fisherman's Lake which is along the West Drainage Canal) with those in the northwestern and northeastern portions of the Basin. Along both of these corridors, there will be obstacles to giant garter snake movement. Both waterways will pass under Interstate 5 through long culverts (over 300 feet long). The West Drainage Canal currently has limited connection to other waterways north of Interstate 5; in the future, it will probably remain isolated because zones of canals and drainage ditches that are currently not suitable habitat for giant garter snake will likely continue to separate it from habitats north and east of the airport. Lone Tree Canal will pass through a culvert under Elkhorn Boulevard. Development of the Metro Air Park will also affect water flow within Lone Tree Canal, however, the MAP HCP includes provisions under changed circumstances (pages 70-71 in Thomas Reid Associates 2001) that address these effects if water levels are less than 12 inches.

Even if snake movement along these north-south corridors were a rare event, this movement would be very important. It would allow genetic interchange between the Basin's northern and southern subpopulations of giant garter snake, and it would allow giant garter snakes to reestablish in the southern Natomas Basin if that smaller subpopulation were to become extirpated (e.g., due to environmental fluctuations or demographic stochasticity).

Thus, although the relative importance for connectivity of the Lone Tree Canal was not described in the NBHCP, the opportunity for giant garter snakes to move along Lone Tree Canal will be important for the viability of the giant garter snake population in the Natomas Basin.

Under the future condition, water in Lone Tree Canal would flow south under Elkhorn Boulevard through a 4-foot diameter culvert 115 feet long. It would then flow in a waterway 12 feet wide at the bottom and about 6 feet deep. Along this waterway, set back 25 feet from its western bank will be a low wall 3 feet high, on the other side of which will be Lone Tree Road and commercial and industrial development. Along the eastern bank will be agricultural, ruderal, or natural vegetation. This vegetation would extend for nearly a mile and if cultivated it would include waterways that irrigate and drain the area. Across Interstate 5, water from the Metro Air Park would enter the canal, and together these waters would flow into three box culverts and two pipes, and pass under Interstate 5.

The ASI project site contains marginal habitat for giant garter snake. As stated on page 4.4-25 of the ASI EIR, although giant garter snake was not observed during the field surveys conducted as part of the ASI BRA, due to documented occurrences of giant garter snake in the West Drainage Canal, the ASI EIR concluded that the on-site canals could provide potential habitat for transient individuals. Bridge and culvert installation for the ASI project could cause temporary impacts to Canal 2, which is within the current Natomas Basin HCP Permit Area, while potential impacts to Ditches 1 and 2 would occur in the western portion of the project site. Ditches 1 and 2 comprise approximately 0.58-acre. The project proposes off-site mitigation for impacts to agricultural and open space resources. In addition, the two parcels currently identified for off-site reserves are located immediately south of the project site and adjacent to the existing Natomas Basic Conservancy (TNBC) reserve lands. This proximity would assist TNBC in assembling a 400-acre habitat block in the area (when combined with the Souza, Natomas Farms, Rosa East, and Rosa Central reserves, the block would total roughly 418 acres), and would provide additional qualitative species benefits due to preserving larger blocks of habitat in perpetuity.

3.5.3 POTENTIAL CONSEQUENCES OF THE AIRPORT SOUTH INDUSTRIAL PROJECT FOR FUTURE CONNECTIVITY

Development of the ASI site, and the creation, enhancement and preservation of habitat at the proposed reserves, could affect the connectivity of habitats at local and regional scales. At a local scale, both development and habitat enhancement/restoration alter the spatial distribution of habitat. Development reduces connectivity and the quantity of habitat accessible to individuals on nearby lands, increases the distance individuals must travel to meet their needs for food and shelter, and increases the risks individuals are exposed to during these movements. Conversely, the enhancement and creation of habitat can increase connectivity, by creating larger areas of contiguous habitat, increasing the food and shelter provided by habitat, or by facilitating movement of individuals. Preservation and active management for habitat values also can maintain connectivity.

POTENTIAL EFFECTS ON CONNECTIVITY AT A LOCAL SCALE

The connectivity of habitats at a local scale would be increased by the creation, enhancement, and preservation of habitat at the proposed off-site reserves. Based on the evaluation contained in this effects analysis, on balance, the proposed project would not adversely affect habitat connectivity within the Natomas Basin.

POTENTIAL EFFECTS ON CONNECTIVITY AT A REGIONAL SCALE, development can create barriers that isolate areas of otherwise suitable habitat or can subdivide a population into two smaller, and thus less viable, populations. Conversely, habitat creation and enhancement as a result of a conservation strategy associated with development can reduce or eliminate barriers, and can increase connectivity at a regional scale.

If connectivity of habitats were reduced at the Airport South Industrial site, relatively few species would be adversely affected. First, most species in the Natomas Basin are abundant, widely distributed and highly mobile. (The species observed during monitoring for TNBC support this characterization) This is largely a consequence of the Natomas Basin being primarily an agricultural (and developed) landscape that is frequently disturbed. Second, Interstate 5 (which is along the entire northern border of the site), adjacent development to the west, portion of the south and County approved to start construction (WattEV) to the west, already reduces use of the site as a movement corridor by terrestrial animals that are less mobile or are highly sensitive to human disturbance.

At a regional scale, the mitigation for the ASI project also could improve connectivity through creation of marsh habitat at TNBC reserves. Reserve sites are connected to the regional system of waterways; thus, the restoration, enhancement and preservation of habitat at these sites could facilitate the movement of covered species along these waterways.

The potential effects on connectivity of giant garter snake habitat are further evaluated in the following section.

POTENTIAL EFFECTS ON CONNECTIVITY OF GIANT GARTER SNAKE HABITAT AT THE AIRPORT SOUTH INDUSTRIAL SITE

The effects analysis for the connectivity of giant garter snake habitats are based on several assumptions including:

1. Giant garter snakes currently use existing canals at the Airport South Industrial site and are likely to continue to do so under the future condition resulting from the NBHCP (note: GGS were not observed during any of the ASI biological surveys);
2. Occasionally snakes cross through the culverts under Interstate 5;
3. The level of snake use is affected by the habitat features provided by canals and immediately adjacent land (i.e., movement along the canal is not independent of habitat availability and condition along the canal); and

To offset the effects resulting from these changes and to retain giant garter snake habitats and the movement corridor, measures are included in the ASI EIR. ASI EIR biological measures are presented in Appendix A.

3.6 CONNECTIVITY OF EXISTING TNBC RESERVES

The drainage canals and ditches present in the ASI annexation area could serve as movement corridors to aquatic or semi-aquatic wildlife species such as Giant Gartersnake and Northwestern Pond Turtle, the latter of which was observed during the three of the five Bargas biological surveys within both Canal-2 and Canal-3. Both ditches and Canal-1 and Canal-2 are all ultimately hydrologically connected to Canal-3, the West Drainage Canal. There are several CNDDB records within the past 20 years documenting the presence of Giant Gartersnake in the West Drainage Canal. The West Drainage Canal is hydrologically connected to Fisherman's Lake, located approximately 0.5-mile south of the Project site, where there is a known presence of Giant Gartersnake. The West Drainage Canal and other canals have steep banks that may impede use of adjacent uplands by both species. Further, the uplands adjacent to the canals and ditches are heavily disturbed and provide low quality habitat for use in nesting / egg-laying by both species and winter aestivation by Giant Gartersnake. Regardless, the Canal-1, Canal-2 and both ditches (when inundated) may be used by both species for foraging and dispersal. The ASI annexation area does not function as a movement corridor for terrestrial wildlife in general. The ASI project site contains three large agricultural fields, either fallowed or occasionally being utilized for hay production (or most recently an area had tomato crops), that are bordered by either paved roads or large drainage canals which functionally serve as barriers to the movement of terrestrial wildlife outside of birds. On all sides of the Project site lie either additional active agricultural fields or urban development which generally do not serve high quality larger habitat areas which would potentially attract wildlife.

The closest reserves to the ASI site are the Rosa East and Rosa Central properties owned by TNBC. The ASI annexation area will preserve on-site canals and will continue to provide connectivity between reserves and in the Basin.

However, as described in the preceding section that addressed effects on habitat connectivity, the Airport South Industrial project would include a set of measures to reduce any potential effects on connectivity and preserve canal and adjacent upland habitats in a manner consistent with the NBHCP. Therefore, significant effects on the connectivity of existing TNBC reserves would be unlikely.

The project's proposed off-site reserve lands also could cause some positive effects on connectivity. The preservation of additional land to provide Swainson's hawk foraging habitat also could increase connectivity of existing TNBC reserves provided that the reserves are located in a manner consistent with the NBHCP reserve siting criteria.

3.7 HABITAT VALUE OF EXISTING TNBC RESERVES

The ASI project provides for the dedication of nearby agricultural/open space lands that would be beneficial to the existing TNBC reserves. The beneficial effects would result from preserving, creating and enhancing habitat adjacent to or near existing TNBC reserves. The ASI off-site land dedication to TNBC will enable a 400-acre reserve block to be completed as required by the NBHCP. This addition to complete the large reserve block provides significant habitat value to the existing TNBC reserves.

3.7.1 EFFECTS OF DEVELOPMENT AT AIRPORT SOUTH INDUSTRIAL SITE

Swainson's hawk was observed during the April and May 2022 biological surveys. Nesting activity was not detected. The ASI site contains foraging habitat that would be developed. The project and EIR measures will offset these effects. For Swainson's hawk foraging habitat lost, preservation of habitat that provides equal or greater habitat values than the habitat lost at the Airport South Industrial site will be provided. To provide equal or greater foraging habitat values, this would require enhancement and preservation to provide high quality habitat within one mile of an existing TNBC reserve (or of the Swainson's hawk zone along the Sacramento River). The ASI EIR identifies that the project proponent (Northpoint) will provide dedicated lands nearby that

will complete a 400-acre reserve for TNBC as required by the NBHCP. The habitat provided by the off-site land dedication will offset the project's effect on Swainson's hawks and other raptors residing at or near existing reserves, though the reserves benefiting from habitat enhancements may differ from those adversely affected by the loss of foraging habitat on the ASI site.

3.7.2 EFFECTS OF PROPOSED RESERVES

The ASI project applicant has voluntarily agreed to dedicate 117.59 acres of off-site lands to The Natomas Basin Conservancy (TNBC) for the purpose of preserving and managing open space/agricultural lands in accordance with the NBHCP. The reserve sites consist of the 117.59-acre Rosa properties (APNs 225-020-015 and 225-020-014). The off-site dedication will complete a 400-acre reserve for The Natomas Basin Conservancy. The dedication of the Rosa properties will increase the size of the TNBC adjacent existing reserve and is also connected to them via canals and drains; thus, it would increase their connectivity. By increasing the size and connectivity of existing reserves, and by increasing the area of preserved land in the vicinity of existing reserves, the project would beneficially affect the habitat value of existing reserves.

3.7.3 OVERALL EFFECT ON HABITAT VALUE OF TNBC RESERVES

Overall, the ASI project would not adversely affect the habitat quality of the existing TNBC reserve system, and could have a beneficial effect by preserving, creating, and enhancing habitat on adjacent or nearby lands that would benefit wildlife residing at or using existing TNBC reserves. The ASI project will participate in the NBHCP and provide open space dedication to TNBC completing a 400-acre reserve block. This open space addition to the TNBC reserves will benefit the overall habitat value of the reserve area that is also in the vicinity of the Fisherman's Lake area. The ASI project will benefit the habitat value of the TNBC reserves as a result of increasing and expanding the open space lands that are protected in perpetuity per the NBHCP. WATER

AVAILABILITY AT TNBC RESERVES

The ASI project does not eliminate any canals on the site but would convert this site from predominantly vacant land to urban land cover. These changes, however, would not alter water availability to TNBC reserves or cause additional canals to be eliminated outside of the ASI site. Water supply to the ASI site is being provided by the City of Sacramento.

The project would alter drainage of the Airport South Industrial site. Water supply for the ASI project will be provided by the City of Sacramento. The ASI would not eliminate delivery of irrigation water by canals. The ASI project does not result in any changes that would affect water levels in canals and drains connected to the site.

OPPORTUNITIES TO ESTABLISH ADDITIONAL TNBC RESERVES

The ASI project would have beneficial effects on opportunities to establish additional TNBC reserves. The beneficial effects would result from increasing the total acreage of reserves in the Natomas Basin and thus increasing opportunities to establish larger reserves.

3.7.4 EFFECTS ON AVAILABILITY OF LAND FOR NBHCP RESERVE ESTABLISHMENT

Mitigation for the NBHCP consists of 8,750 acres of managed marsh, rice, and uplands. Based on the acreage of the Metro Air Park, City of Sacramento, and Sutter County permit areas for urban development, and of existing development outside of those areas determined for the NBHCP base line (2001). The total authorized acreage for the basin per the NBHCP and the Metro Air Park (MAP) HCP is 17,500 acres. The Natomas Basin contains more than 8,750 acres of land potentially suitable as and potentially available for mitigation. Of the Natomas Basin's 53,537 acres, about 26,376 are outside of permit areas and in land cover types suitable for preservation. However, at least approximately 5,205 acres of these lands are unavailable for preservation as NBHCP mitigation (e.g., lands in suitable land cover that are owned by the Sacramento International Airport). Thus, there are about 21,171 acres of land that are both potentially suitable as mitigation and potentially available. The following provides a

summary breakdown of the acreages:

Table 3-1 <i>Natomas Basin Acreage Summary</i>	
Natomas Basin Size	53,537 acres
Existing Disturbed Acres (Exempt)	12,193 acres
NBHCP & MAP HCP Authorized Development	17,500 acres*
Required Mitigation	8,750 acres (.5 to 1 acre ratio for the 17,500 acres)**
Sacramento International Airport Owned Lands	6,000 acres***
Acreage Remaining	9094 acres

*City of Sacramento authorized development acreage is 8,050 per the NBHCP and issued Incidental Take Permits (ITPs) approved by CDFW and USFWS.

**TNBC has acquire 5,374 acres of HCP mitigation as of January 28, 2025 (source: TNBC 2025 Base Map)

The acreage shown in the table as remaining 9,094 acres is the amount after the authorized development is built out, TNBC has acquired all mitigation required for authorized urban development that has proceeded with grading and construction. The ASI development project acreage would not cause the City to exceed the 8,050-acre authorized permit area for the City of Sacramento. The ASI annexation area is approximately 445 acres in total size. Two of the parcels consisting of 121.68 acres located within the annexation area are located within the NBHCP Permit Boundary. The remaining acreage of the annexation area that is undisturbed land is 278.4 acres since portions of the annexation area consist of roadways, freeway interchange, Interstate 5, and canals.

The Airport South Industrial project would reduce vacant open space acreage by 278.4 acres; however, this land is held in private ownership and not available for preservation acquisition. More importantly, the ASI site consists of land that would not be suitable as quality HCP mitigation lands to acquire considering the surrounding urban uses, limited viability to be utilized for productive HCP habitat resource such as rice crops or marsh. The ASI site is often subject to trespassing which is disruptive to any onsite habitat and species. The ASI project does not affect the availability of land for NBHCP reserves since the ASI site itself would not be viable mitigation land and the ASI project will provide off-site land dedication for NBHCP reserves. The ASI development itself will not exceed the 8,050 acres of urban development that the NBHCP authorized for the City of Sacramento.

3.7.5 EFFECTS OF AIRPORT SOUTH INDUSTRIAL SITE DEVELOPMENT ON TNBC RESERVE ESTABLISHMENT

Though the NBHCP did not identify the Airport South Industrial site as a potential reserve, the NBHCP also did not identify a complete set of potential reserve sites; therefore, most land outside of areas permitted for urban development, including the ASI site, could be considered a potential reserve site. There are multiple factors that have to be considered for acquiring potential reserve sites. The land must meet stringent HCP criteria to be suitable for HCP reserves. Acquisition of the property also involves a process that can be complicated and requires the cooperation and willingness of the landowner.

The Airport South Industrial site has, or could be enhanced to provide, conservation values for wildlife and habitat however, the ASI site is heavily constrained with several major limitations on the habitat values that it could provide. Much of the Airport South Industrial site. Portions of the site are completely unsuitable for preservation and subsequent restoration or enhancement to the disturbed existing land cover and the urban pressures placed on the site due to existing roadways, Interstate 5, airport operations, residential uses, and the nearby school. Under the future condition of the Basin would be adjacent to urban development, and these areas would potentially experience high levels of human-wildlife conflicts. Though it would develop most of the site, the project would preserve the most important portion of the site for connectivity which are the canals. The canals provide the giant garter snake connectivity throughout the Natomas Basin. The ASI project also will provide land dedication to TNBC that will enable the completion of a 400-acre reserve block as required by the NBHCP. The ASI project would contribute to the progress of acquiring the 8,750 acres of HCP land reserves and provide ecologically important habitat resource area that benefits HCP covered species.

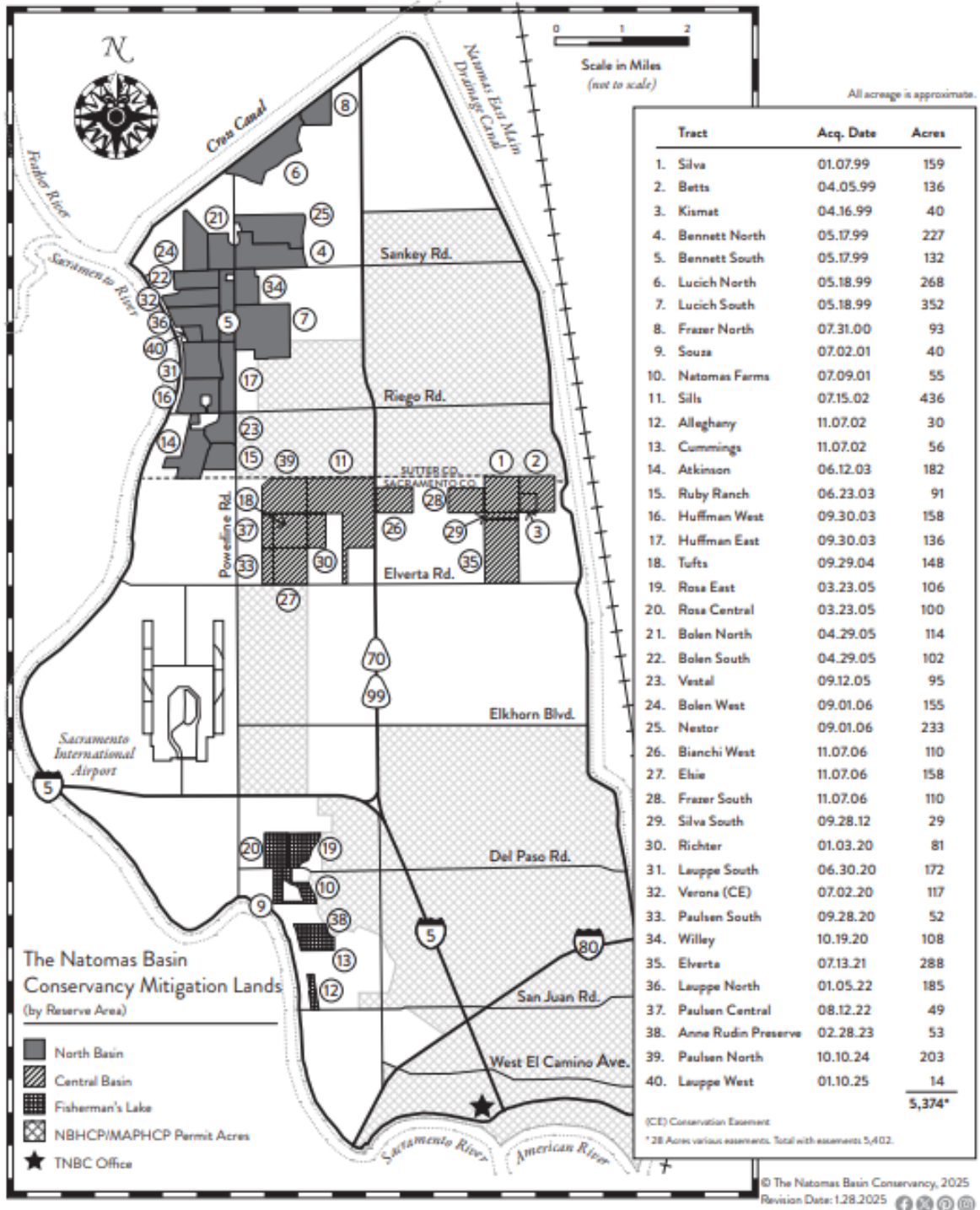
3.7.6 EFFECTS OF PROPOSED RESERVES ON NBHCP RESERVE ESTABLISHMENT

The ASI project's reserves will contribute to the size and connectivity of future reserves. By preserving additional land adjacent to TNBC reserves, the project creates additional opportunities to create reserves of a given size and to create larger reserves (which would tend to have greater habitat values per acre than smaller reserves). For example, the dedication of the Rosa parcels will enable the completion of a larger 400-acre HCP reserve.

Overall, the ASI project will not reduce opportunities for establishing additional reserves for the NBHCP because sufficient suitable land is available to provide reserves both for the NBHCP and for the ASI project, the project would preserve the most ecologically important portion of the Airport South Industrial site (the canals), and the project's reserves would increase opportunities to establish larger reserves.

2025 BASE MAP

THE NATOMAS BASIN CONSERVANCY



Source: 2025 Base Map. TNBC.

Location of TNBC Reserves

Exhibit 4

4 POTENTIAL EFFECTS OF THE AIRPORT SOUTH INDUSTRIAL PROJECT ON COVERED SPECIES

Several NBHCP covered species were evaluated in the EIR's Biological Resources Assessment but determined to have no potential to occur on the project site. These species include Vernal Pool Fairy Shrimp, Midvalley Fairy Shrimp, Vernal Pool Tadpole Shrimp, Valley Elderberry Longhorn Beetle, Western Spadefoot, California Tiger Salamander, Bank Swallow, and the following plant species: Boggs Lake Hedge-Hyssop, Colusa Grass, Slender Orcutt Grass, Sacramento Orcutt Grass, Legenere, and Delta Tule Pea. The biological assessment determined that these species either: (1) require specific habitat types not present on the project site, (2) have no documented occurrences within the Natomas Basin despite being NBHCP covered species, or (3) have nearest documented occurrences located many miles from the project site, indicating the area is outside their current range. The project site consists primarily of fallowed agricultural fields and disturbed areas that do not provide suitable habitat for these species' requirements. Because the purpose of this effects analysis is to determine whether the project would adversely affect the viability of the NBHCP and these species have no potential to occur on the project site, no further species-specific analysis is necessary. Detailed species accounts, habitat requirements, distribution information, and occurrence potential determinations for each of these species are provided in the ASI EIR as well as the EIR's Biological Resources Assessment.

4.1 GIANT GARTER SNAKE

4.1.1 SPECIES ECOLOGY

HABITAT ASSOCIATIONS/REQUIREMENTS

Habitat Type

Giant garter snakes (*Thamnophis gigas*) typically inhabit sloughs, marshes, and drainage canals characterized by slow flowing or standing water, permanent summer water, mud bottoms, earthen banks, and an abundance of preferred forage species.

During their active season (May through October), mature giant garter snakes typically spend the majority of their time in canals and sloughs (Wylie and Casazza 2000). During late spring and summer, rice fields also provide foraging habitat for this species (Brode and Hansen 1992). Use of rice, however, is concentrated around the perimeter of the fields (Wylie and Casazza 2000; E. Hansen, pers. comm.). (Rice may, however, be an important source of prey and may export prey with drain waters into connected canals.) Giant garter snakes avoid areas of dense riparian overstory, and use burrows, crevices, undercut banks and large rocks to hide from predators. Winter hibernaculæ include small burrows and soil crevices above prevailing flood elevations; these are typically located near aquatic habitat and in grassland or ruderal vegetation. (In the Natomas Basin, most canal banks have small burrows and crevices, and thus the banks of canals that are dewatered in winter can provide hibernaculæ.)

Managed marsh also provides habitat for giant garter snake. In contrast to rice, managed marsh provides habitat year-round, and habitat elements (such as dense cover, basking sites, and refugia) to meet all of the giant garter snakes daily and seasonal needs. Managed marshes in the Natomas Basin have been designed to provide these habitat elements throughout the marsh, as opposed to the limited availability of the same elements in rice, which contributes to the use of rice primarily around the perimeter of rice fields.

The USFWS (1997) has determined that essential habitat components consist of the following:

- ▶ Adequate water during the snake's active period (early spring through mid-fall) to provide a prey base and cover;
- ▶ Emergent, herbaceous wetland vegetation, such as cattail and bulrushes, for escape cover and foraging

habitat;

- ▶ Upland habitat for basking, cover, and retreat sites; and
- ▶ Higher elevation uplands for cover and refuge from flood waters.

Land cover types designated as giant garter snake habitat in the NBHCP include canals, ponds and seasonally wet areas and rice. Managed marsh also provides habitat. Small fish are the primary prey of this species; they will also take amphibians when available.

Home Range Size and Movement

Based on radio-telemetry studies by Wylie and Casazza (2000), the size of giant garter snake home ranges were between 32 and 215 acres (median = 86 acres) at Elverta and Fisherman's Lake sites. For comparison, home ranges were between 5 and 213 acres (median = 39.5 acres) at Gilsizer Slough in Sutter County, and 22 and 2,070 acres (median = 128 acres) at the Colusa National Wildlife Refuge. Most giant garter snake activity within these home ranges is concentrated along canals, sloughs, and the edge of aquatic habitats (Wylie and Casazza 2000; Wylie et al. 2000;).

Giant garter snakes rely on canals and ditches as movement corridors. These corridors provide important habitat, are used during daily movements within a home range, and are necessary for giant garter snake dispersal and the resulting exchange of individuals and alleles between subpopulations. Unvegetated canals may be used as dispersal corridors, but snakes typically do not remain in exposed canals because of increased vulnerability to predators. Giant garter snakes have been reported traveling over one mile, and may move as much as two miles in a day (Hansen and Brode 1992).

The USFWS has previously considered 200 feet as the width of upland vegetation providing habitat along the borders of aquatic habitat for giant garter snake (USFWS 1997). However, the width of uplands used by giant garter snakes varies considerably. Many summer basking and refuge areas used by this snake are immediately adjacent to canals and other aquatic habitats, and may even be located in the upper canal banks (Eric Hansen, pers. comm.). Giant garter snakes have also been observed hibernating as far as 820 feet (250 m) from water, however, and any land within this distance may be important for snake survival in some cases (Hansen 1988). (Hibernaculae this distant from water, however, are most often found in areas with high winter floods.) Giant garter snakes also seek refuge in upland burrows during hot summer weather (Hansen and Brode 1993), and have been documented up to 164 feet from aquatic habitat during this time (Wylie et al. 1997).

Mechanisms of Habitat Degradation

Increased Predation

Known predators of giant garter snake include raccoons, skunks, opossums, foxes, hawks, egrets, herons, and bitterns (USFWS 1999a). All of the mammalian predators in this list increase in proximity to residential areas as a result of supplemental food sources and reduced coyote abundance (Crooks and Soule 1999). Domestic dogs may also prey on giant garter snakes, and cats may prey on juveniles. Although predation of giant garter snake by cats and dogs has not been studied scientifically, the effects of cats and dogs on small animals has been documented in a variety of ecosystems, and based on current understanding, cat and dog predation on giant garter snake is highly likely.

Disturbance from Human Activity

Giant garter snakes are highly sensitive to human disturbance and will abandon otherwise suitable habitat as a result of increased human activity such as fishing (Eric Hansen, pers. comm.). Human visits to areas occupied by snakes may result in lowered snake abundance even when the visits are brief in duration and no more than one person, once per day (Eric Hansen, pers. comm.). Human activities can also degrade giant garter snake habitats by

trampling vegetation, compacting soils, destabilizing banks, and crushing burrows, and can cause vehicle collisions with snakes.

Habitat Fragmentation

In a dynamic habitat such as the Natomas Basin, giant garter snakes frequently move in response to changing conditions in their rice, marsh, canal, and ditch habitats, especially during the dry summer months (Wylie and Casazza 2000). Connectivity between these areas is thus extremely important for snake survival and reproduction, as well as the genetic interchange and patch-recolonization ability necessary for the viability of the overall Basin population. Any loss or degradation of snake movement corridors may thus cause effects that far outreach the area of the directly impacted corridors.

Operation and Maintenance of Waterways

Water channels lose their habitat value for giant garter snakes when cleaned of aquatic vegetation, during low/no flow periods or when high water releases eliminate or alter basking sites, refugia, foraging areas or juvenile microhabitat (USFWS 1999a). In the Natomas Basin, canal and drain maintenance, and irrigation practices, involve periodic clearing of vegetation along waterways, and short-term, seasonal and inter-annual changes in flow in waterways. Water diversions may also reduce the abundance of the snakes' aquatic prey. Water diversions or changes in land use within the area served by a canal or drain watershed may alter flows or even cause a canal or drain to be abandoned.

Water Quality

Aquatic communities may be greatly affected by surrounding land use. Urban areas can exert different and in some cases stronger effects than agricultural lands (Bury 1972, Moore and Palmer 2005). Residential developments typically result in increased runoff of hydrocarbons and of chemicals used for lawns and gardens, and increased stormwater volume (and associated increases in flow depths and velocities) because of high coverage of impervious surfaces.

DISTRIBUTION

Information on CNDDDB Occurrences

The California Natural Diversity Database (CNDDDB) contains Giant Garter Snake occurrence records within the Natomas Basin. According to the Biological Resources Assessment prepared for the ASI project, there are several CNDDDB records within the past 20 years documenting the presence of Giant Garter Snake in the West Drainage Canal in the vicinity of the project site. The West Drainage Canal is hydrologically connected to Fisherman's Lake, located approximately 0.5-mile south of the project site, where there is a known population of Giant Garter Snake.

Other Information on Distribution and Abundance in Natomas Basin

Recent USGS monitoring data from 2024 shows that 131 individual Giant Garter Snakes were captured 216 times at 44 sites throughout the Natomas Basin during comprehensive surveys. The 2024 monitoring indicates that Giant Garter Snakes were detected at 20 of 44 sites sampled, with an estimated 21 sites occupied basin-wide. Giant garter snake was not observed during any of the five biological surveys conducted for the ASI project. However, the species is assumed to be present within the project site based on several CNDDDB records within the past 20 years documenting the presence of giant garter snake in the West Drainage Canal in the vicinity of the project site.

Within the ASI project area, the site contains interconnected drainage canals (Canal-1, Canal-2, and Canal-3/West Drainage Canal) that provide marginal habitat for Giant Garter Snake. While no Giant Garter Snakes were directly observed during the biological surveys conducted for this project, the canals are likely inundated during

summer months as they collect irrigation and stormwater runoff from surrounding lands during the growing season. The canals contain some emergent aquatic vegetation including Floating Water Primrose, Cattail, and Common Tule, though with limited coverage and highly managed banks that reduce habitat quality for overwintering burrows.

The 2024 USGS monitoring data reveals concerning trends for Giant Garter Snake populations basin-wide. Occupancy estimates show an overall declining trend of 3% per year from 2011-2024, with particularly low occupancy in the Fisherman's Lake Reserve area where the posterior probability indicates most sampled sites were likely unoccupied. This trend suggests ongoing challenges for population viability across the basin, with habitat fragmentation and management practices continuing to affect population dynamics.

4.1.2 PROJECT EFFECTS ON SPECIES

LONG-TERM EFFECTS ON HABITAT

Effect on Quantity of Habitat

Changes in habitat acreages for ASI Project involve impacts to approximately 2.081 acres (1.501 acres of tributary drainages and 0.58 acres of other waters) of aquatic features that provide marginal Giant Garter Snake habitat. The project includes mitigation requirements under the NBHCP, with off-site habitat preservation that could potentially provide higher quality habitat than the existing marginal canal habitat being impacted. The specific management of these mitigation lands would be determined through the NBHCP compliance process to ensure net benefit to Giant Garter Snake populations in the Natomas Basin.

Effects on Quality of Habitat

Areas Adjacent to Developed Land or Highways

The ASI Project would impact approximately 2.081 acres of aquatic features (canals and ditches) that currently provide marginal Giant Garter Snake habitat. The project site contains Canal-1, Canal-2, and Canal-3 (West Drainage Canal), which are interconnected drainage features managed by Reclamation District 1000. Giant Garter Snakes potentially using these canal systems could be affected through habitat loss and potential changes to hydrology and water management in the drainage system. The canal banks are already highly disturbed with evidence of repeated mowing and grading, and the proposed development would reduce the terrestrial habitat adjacent to these aquatic features that could be used for overwintering or nesting.

However, the project's location adjacent to Sacramento International Airport and existing industrial development means the area is already subject to significant human disturbance. The project does, however, include measures to reduce these effects, and the mitigation includes additional measures. These measures are described in the following section (*Effects on Connectivity*). The project also could affect continued management of adjacent agricultural lands and canal maintenance activities. This issue is discussed further under *Habitat Quality in the Natomas Basin* in Chapter 3 of this report.

Alteration of Habitat Quality at Proposed Reserve Sites

The project includes mitigation measures compliant with the NBHCP that would provide off-site habitat preservation and enhancement opportunities. Under Mitigation Measure 4.2-1, the project must preserve off-site mitigation lands consisting of "land of comparable agricultural and habitat value" and ensure preservation in perpetuity via conservation easement. This ensures these mitigation lands will provide meaningful habitat value through established management standards. The 2024 USGS monitoring report demonstrates that Giant Garter Snake populations benefit most from managed marsh and that managed marshes provide significantly higher quality habitat than canal systems.

Under TNBC management, mitigation lands can be actively managed to create optimal conditions for Giant

Garter Snake, including water level management and vegetation control. Though some uncertainty exists regarding the magnitude of benefits resulting from these mitigation measures, the NBHCP ensures that properly sited and managed off-site lands will offset the habitat values lost by development at the ASI site.

Effects on Connectivity

The project would include a new bridge crossing over the (Canal-2 as part of construction of the new Airport South Industrial Drive, which would include installation of a new culvert to the canal. However, through compliance with NBHCP Take Avoidance, Minimization, and Mitigation Measures, the project would not affect habitat connectivity within the canal. The ASI project's potential effects on connectivity of giant garter snake habitat are described in detail in Section 3.5 Connectivity of Habitat in the Natomas Basin.

Effects of Construction-Related Activities

During construction at the ASI site, Giant Garter Snakes could be killed or injured by vehicle strikes (Leidy 1992), crushed beneath heavy machinery, or entombed in or excavated from their winter retreats (Wylie and Casazza 2000). The ASI project includes measures required by the NBHCP to avoid and minimize direct loss of Giant Garter Snakes through construction. These measures include implementation of NBHCP Take Avoidance, Minimization, and Mitigation Measures as specified in Mitigation Measure 4.4-3(a), including:

- All construction activity involving disturbance of habitat is restricted to the period between May 1 and September 30, when Giant Garter Snakes are active and expected to actively move and avoid danger
- Pre-construction surveys must be completed for all development projects by a qualified biologist approved by USFWS, with additional measures implemented if Giant Garter Snake habitat is found
- Between April 15 and September 30, all irrigation ditches, canals, or other aquatic habitat must be completely dewatered with no puddled water remaining for at least 15 consecutive days prior to excavation or filling. The dewatered habitat must not continue to support Giant Garter Snake prey that could attract snakes to the area
- No more than 24 hours prior to start of construction activities, the project area shall be surveyed for Giant Garter Snakes. If construction stops for two weeks or more, a new survey is required before restarting
- Clearing shall be confined to the minimal area necessary, with avoided Giant Garter Snake habitat flagged as Environmentally Sensitive Areas
- Construction personnel must receive USFWS-approved environmental awareness training on identifying Giant Garter Snakes and response procedures, with designation of an on-site biological monitor
- If a live Giant Garter Snake is found, construction must stop in the vicinity, USFWS and the biological monitor must be notified, and the snake must be allowed to leave on its own with monitoring for the remainder of the work day
- Any dead, injured, or sick Giant Garter Snakes must be reported to USFWS within 1 working day, with written notification within 3 calendar days
- Temporary fill and construction debris must be removed upon completion, with inspection by a qualified biologist if removal occurs during the dormant season (October 1 to April 30) to ensure Giant Garter Snakes are not using materials as hibernaculae
- Plastic, monofilament, jute, or similar erosion control matting that could entangle snakes is prohibited within 200 feet of snake habitat

EFFECTS OF HUMAN-WILDLIFE CONFLICTS

Snake mortality from vehicle strikes (Leidy 1992) may increase on existing roads due to increased heavy truck traffic associated with the industrial operations. The project's industrial nature means larger vehicles and more frequent deliveries, potentially creating greater risks for any snakes attempting to cross roadways. However, the project's impacts to existing Giant Garter Snake habitat are limited to marginal canal habitat that is already subject to regular maintenance and disturbance by Reclamation District 1000. The canal banks show evidence of repeated mowing, indicating ongoing human management activities.

The project does, however, include measures to reduce these effects through NBHCP compliance and mitigation measures. These measures are described in the preceding section (*Direct Effects During Construction*) and following sections.

OVERALL EFFECT ON POPULATION VIABILITY

The project would cause potential effects on the Giant Garter Snake population of the Natomas Basin. Beneficial effects would include preserving and enhancing habitat through off-site mitigation lands and contributing to the connectivity of habitat and existing TNBC reserves. Potential effects would also include a reduction in the total acreage of habitat (approximately 2.081 acres of canals and ditches, includes temporary impacts).

Overall, the project would not adversely affect Giant Garter Snake, and its overall effect on population viability could be beneficial. The loss of habitat acreage would probably be offset by the increased habitat quality resulting from the preservation and potential enhancement of off-site mitigation lands under TNBC management.

The proposed preservation of off-site mitigation lands would likely offset the loss of 2.081 acres of marginal canal habitat. The basis of this interpretation is the greater habitat value of properly managed habitat relative to existing drainage canals and the general benefits of habitat preservation under the NBHCP framework. Managed marsh provides substantially greater habitat values for giant garter snakes than rice for several reasons. These reasons include:

- ▶ Giant garter snakes primarily use the margins of rice fields, whereas they use the full extent of managed marshes. These marshes are designed to provide open water, foraging habitat, dense cover, basking sites, and refugia in close proximity throughout the marsh. (For example, an acre of managed marsh provides several times the edge habitat than does a rice field.)
- ▶ Marshes provide habitat throughout the active period of the snake. Rice fields do not provide habitat during early and mid-spring, and are typically drained before the end of the snake's active period. Thus, for a portion of their active period, giant garter snakes must rely entirely on non-rice habitats. In the Natomas Basin, these habitats are canals and managed marsh. In contrast, managed marshes provide habitat year-round.
- ▶ Rice is fallowed periodically, and thus does not provide habitat in all years; in contrast, a managed marsh does provide habitat in all years.

Preservation of habitat has benefits in addition to those of habitat enhancement. In the Natomas Basin, a particularly important benefit of habitat preservation is that it ensures that the habitat will continue to exist, and it buffers total habitat availability from year to year fluctuations. For giant garter snake, privately owned habitat in the Natomas Basin is primarily rice and associated canals, and there are no assurances that rice cultivation will continue on any particular site. Furthermore, agricultural markets will cause the total acreage of rice, and consequently of giant garter snake habitat, to fluctuate substantially from year to year. Such environmental fluctuations strongly influence populations and reduce their viability. In contrast, preserved lands will provide habitat on a much more consistent basis, and thus reduce the magnitude of fluctuations in habitat availability.

Both habitat enhancement and preservation also can contribute to population viability by reducing anthropogenic causes of mortality. Preservation reduces human disturbance, and minimizes activities that could harm or kill snakes. Habitat enhancement also reduces or eliminates agricultural activities that can harm or kill snakes. In addition, the preservation and enhancement of habitat typically results in larger blocks of higher quality habitat, and this should reduce long distance movements by snakes, which would also reduce the risk of mortality associated with those movements. (Dispersal and other long distance movements are dangerous for snakes, particularly where road crossings are involved [Bonnet et al. 1999, Rosen and Lowe 1994].)

The project is also unlikely to reduce the viability of the Giant Garter Snake population due to adverse effects on connectivity. The NBHCP mitigation framework would ensure that off-site preservation contributes to the overall connectivity of habitats and reserves in the Basin, potentially providing greater long-term connectivity benefits than the existing managed drainage system.

4.2 NORTHWESTERN POND TURTLE

4.2.1 SPECIES ECOLOGY

HABITAT ASSOCIATIONS/REQUIREMENTS

Habitat Type

Northwestern pond turtles (*Clemmys marmorata marmorata*) are most commonly found in permanent or nearly permanent wetlands, ponds, slow-moving streams and irrigation ditches (Zeiner et al. 1988). Adjacent upland areas are also used for basking and egg-laying. Land cover types designated as pond turtle habitat in the NBHCP include canals, ponds and seasonally wet areas, rice and riparian. Special habitat features that improve turtle abundance, survival and reproductive success are rocks, logs, open mud banks, emergent aquatic vegetation and streamside vegetation. These features provide the turtles with basking sites and cover from predators (Stebbins 1972). Although pond turtles feed primarily on aquatic invertebrates (USFWS 1992), they also feed on plants, small fish and carrion.

Home Range Size and Movement

Upland areas adjacent to aquatic habitat are essential for reproduction, and eggs may be laid as far as 1,319 feet (0.25 mi) from water (Hays et al. 1999). Hatchling and adult turtles may winter in upland sites, and turtles may move more than one mile overland in response to desiccation of local water bodies or other forms of habitat loss or degradation.

Mechanisms of Habitat Degradation

Increased Predation

Hayes et al. (1999) documented predation on pond turtles by domestic dogs; unattended dogs have been recorded between 590–1,083 feet (180–330 m) from homes (Odell and Knight 2001). These distances indicate the project would likely result in increased predation of any pond turtles using Lone Tree Canal for movement between habitat areas to the north and south of the property. Populations of native pond turtle predators such as raccoons and opossums also typically increase in proximity to residential areas as a result of supplemental food sources and reduced coyote abundance (Crooks and Soule 1999).

Disturbance from Human Activity

Pond turtle observations have been known to decline in areas with increased human activity (Eric Hansen, pers. comm.). Human visits to areas occupied by turtles may result in lowered turtle abundance even when the visits are

brief in duration and no more than one person, once per day (Eric Hansen, pers. comm.).

Habitat Fragmentation

Although pond turtles may travel less frequently than giant garter snakes, turtles occupying dynamic habitats such as the Natomas Basin may need to travel in response to changing conditions in their aquatic habitats, especially during the dry summer months. Connectivity between these areas may thus be important for turtle survival and reproduction, as well as the genetic interchange and patch-recolonization ability that may be necessary for the viability of the overall Basin population. Any loss or degradation of turtle movement corridors may thus yield effects that outreach the area of the directly impacted corridors.

Operation and Maintenance of Waterways

Water channels lose their habitat value for pond turtles when cleaned of aquatic vegetation, during low/no flow periods and when high water releases eliminate or alter basking sites, refugia, foraging areas or hatchling microhabitat (Holland 1991a; USFWS 1999). Water diversions or changes in land use within the area served by a canal or drain watershed may alter flows or even cause a canal or drain to be abandoned.

Water Quality

Aquatic communities may be greatly affected by surrounding land use. Urban areas can exert different and in some cases stronger effects than agricultural lands (Bury 1972; Moore and Palmer 2005). Residential developments typically result in increased traffic and fuel runoff, runoff of chemicals used for lawns and gardens, and increased stormwater volume and currents because of high coverage of impervious surfaces. Increased exposure to contaminants has been implicated in pond turtle population declines (Bury 1972; Holland 1991).

DISTRIBUTION

Information on CNDDDB Occurrences

When information was compiled for the NBHCP in 2001, there were 117 known occurrences in California, of which 116 were considered extant. At that time, CNDDDB did not list northwestern pond turtle occurrences in the Natomas Basin. According to the Biological Resources Assessment prepared for the ASI project, there is one CNDDDB record for Northwestern Pond Turtle within 1 to 3 miles of the project site. The species is currently proposed for listing as threatened under the federal Endangered Species Act.

Other Information on Distribution and Abundance in Natomas Basin

Recent monitoring data from the Natomas Basin Conservancy indicates that Northwestern Pond Turtle now occurs on most if not all TNBC tracts with a wetland component. The 2023 TNBC Biological Effectiveness Monitoring Report documents Northwestern Pond Turtle on the Cummings, Natomas Farms, and Rosa Central tracts of the Fisherman's Lake Reserve, the BKS and Sills tracts of the Central Basin Reserve, and the Lucich North, Lucich South, Bennett North, Bennett South, and Frazer tracts of the North Basin Reserve.

Within the ASI project area, Northwestern Pond Turtle was detected during three of the five biological surveys conducted by Bargas Environmental Consulting in Canal-2 and Canal-3 (West Drainage Canal) within the Biological Study Area. Individuals were observed sunning on floating debris and vegetation within the canals. The monitoring data indicate that the creation of marsh and wetland habitats has benefited the population of Northwestern Pond Turtle in the Basin, though adjacent upland habitats at the project site are marginal for this species due to vertical and undercut canal banks with evidence of repeated mowing and grading.

4.2.2 PROJECT EFFECTS ON SPECIES

LONG-TERM EFFECTS ON HABITAT

Effect on Quantity of Habitat

The ASI Project would result in impacts to Northwestern Pond Turtle habitat within the drainage canal system at the project site. The project would directly impact approximately 2.081 acres of aquatic features (canals and ditches) that provide habitat for Northwestern Pond Turtle. While the BRA indicates that adjacent upland habitats are marginal for this species due to vertical and undercut canal banks with evidence of repeated mowing and grading, Northwestern Pond Turtle was confirmed present during field surveys. Individuals were observed sunning on floating debris and vegetation within Canal-2 and Canal-3 (West Drainage Canal), demonstrating that these aquatic features do provide habitat value despite their limitations.

The project includes off-site mitigation under the NBHCP. Under Mitigation Measure 4.2-1, these lands must consist of "land of comparable agricultural and habitat value" and be preserved in perpetuity. If these mitigation lands include wetland or aquatic components managed appropriately for Northwestern Pond Turtle, they could provide substantially higher quality habitat than the existing canal system being impacted.

The 2023 TNBC monitoring data indicates that "the creation of marsh and wetland habitats has benefited the population of northwestern pond turtle in the Basin." Therefore, properly designed and managed off-site mitigation could result in a net benefit for Northwestern Pond Turtle habitat quantity and quality compared to the marginal canal habitat being lost at the project site.

Effects on Quality of Habitat

Areas Adjacent to Developed Land or Highways

As discussed above in *Mechanisms of Habitat Degradation*, Northwestern Pond Turtles inhabiting Canal-2 and Canal-3 (West Drainage Canal) would be directly affected by the proposed industrial development through elimination of occupied habitat. The project involves industrial development, which would result in direct impacts to approximately 2.081 acres of aquatic features where Northwestern Pond Turtle has been confirmed present. Development of the ASI site would eliminate the canal segments where Northwestern Pond Turtle individuals were observed sunning on floating debris and vegetation during biological surveys. This would result in the loss of documented turtle habitat and could affect movement corridors within the interconnected canal system managed by Reclamation District 1000. The existing canal habitat is already subject to regular maintenance and management activities by Reclamation District 1000, as evidenced by the repeated mowing and grading observed along canal banks.

The project does, however, include measures to reduce these effects through mitigation. These measures are described under *Connectivity of Habitats* and include off-site habitat preservation that could provide higher quality habitat than the existing managed drainage system.

Alteration of Habitat Quality at Proposed Reserve Sites

The ASI project includes off-site mitigation that would preserve and potentially enhance Northwestern Pond Turtle habitat. These preserved and enhanced habitat would be managed for habitat values under in accordance with the NBHCP. 2023 monitoring data indicates that "the creation of marsh and wetland habitats has benefited the population of northwestern pond turtle in the Basin." Enhanced marsh habitat would provide much higher quality habitat for Northwestern Pond Turtle than the existing canal system, primarily because managed marshes offer better nesting and overwintering opportunities and reduced human disturbance. Though some uncertainty exists regarding the magnitude of benefits resulting from these mitigation measures, it is likely that they offset the habitat values that would be lost by development at the ASI site.

Effects on Connectivity

The importance of habitat connectivity for this species is discussed in *Mechanisms of Habitat Degradation*, above. The project would reduce connectivity of Northwestern Pond Turtle habitat by eliminating approximately 2.081 acres of canal habitat that provides movement corridors within the Reclamation District 1000 drainage system. The loss of Canal-2 and portions of Canal-3 would directly impact areas where Northwestern Pond Turtle has been documented and could fragment connectivity within the interconnected canal network. However, as described under *Connectivity of Habitats in the Natomas Basin* (in Section 3 of this report), the project includes mitigation measures under the NBHCP that would substantially reduce these effects on regional connectivity. These measures include off-site preservation of mitigation lands that could provide enhanced connectivity between existing Northwestern Pond Turtle populations and reserves in the Basin.

EFFECTS OF CONSTRUCTION-RELATED ACTIVITIES

Construction-related activities associated with the ASI project could directly affect Northwestern Pond Turtle, as the species has been confirmed present in Canal-2 and Canal-3 where construction impacts would occur. Also, construction-related degradation of water quality in the interconnected drainage canal system could affect turtles in downstream areas of the Reclamation District 1000 network. Northwestern Pond Turtles could be harmed during construction activities by crushing under heavy machinery or disturbance of individuals using the canal habitat for sunning, foraging, or movement.

Measures to avoid and minimize take of Northwestern Pond Turtle, described in the NBHCP, would reduce direct construction-related effects on this species. These measures include implementation of NBHCP Take Avoidance, Minimization, and Mitigation Measures as described in Mitigation Measure 4.4-4(a) and MMRP to further assure that the Project will implement the NBHCP avoidance and minimization measures, which requires dewatering of aquatic habitat for at least 15 consecutive days prior to excavation to allow turtles to leave on their own. Additional measures are described in Section 4.1 *Giant Garter Snake* under *Effects of Construction-related Activities*, as many of the construction timing restrictions and biological monitoring requirements apply to both species.

EFFECTS OF HUMAN-WILDLIFE CONFLICTS

As discussed above in *Mechanisms of Habitat Degradation*, Northwestern Pond Turtles would be directly affected by the elimination of their habitat through industrial development rather than experiencing increased predation from nearby development. The project involves industrial development rather than residential development, which creates different types of impacts including heavy vehicle traffic, noise, and complete habitat elimination.

However, as described under *Connectivity of Habitats in the Natomas Basin* (in Section 3 of this report), the project and the EIR mitigation include measures that would substantially reduce these effects.

OVERALL EFFECT ON POPULATION VIABILITY

The ASI project would cause both adverse and beneficial effects on the Northwestern Pond Turtle population in the Natomas Basin. Beneficial effects would include preserving and potentially enhancing habitat through off-site mitigation lands under the NBHCP, and contributing to the connectivity of habitat and existing TNBC reserves. Potential effects would include a reduction in acreage of habitat (approximately 2.081 acres includes temporary impacts), and habitat including areas where individuals were observed sunning and foraging.

Overall, the project would not adversely affect Northwestern Pond Turtle. The loss of habitat acreage would be more than offset by the increased habitat quality resulting from the preservation and potential enhancement of off-site mitigation lands under NBHCP management. The project would have a beneficial effect on Northwestern Pond Turtle habitat because properly managed wetland or marsh habitat would provide much higher quality habitat than the existing canal system with its steep, frequently maintained banks.

4.3 SWAINSON'S HAWK

4.3.1 SPECIES ECOLOGY

HABITAT ASSOCIATIONS/REQUIREMENTS

Habitat Type

Swainson's hawks (*Buteo swainsoni*) are most commonly found in grasslands, low shrublands, and agricultural habitats that include large trees for nesting. Land cover types designated as Swainson's hawk nesting habitat in the NBHCP include oak groves, tree groves, and riparian. These habitats are suitable for nesting only where adjacent to adequate foraging habitat. Land cover types designated as Swainson's hawk foraging habitat in the NBHCP include alfalfa, grassland, idle, non-rice crops, pasture, and ruderal. Swainson's hawks will also nest in these foraging habitats if large trees are available; however, isolated trees may be less suitable for nesting than trees in groves or riparian areas.

Prey abundance and accessibility (for capture) are the most important features determining the suitability of hawk foraging habitat. In addition, agricultural operations (e.g., mowing, flood irrigation) have a substantial influence on the accessibility of prey and thus create important foraging opportunities for Swainson's hawk (Estep 1989). Crops which are tall and dense enough to preclude the capture of prey (e.g., corn) do not provide suitable habitat except around field margins, but prey in these habitats are accessible during and immediately following harvest. Other crops (e.g., tomato, sugar beet) are tall and dense enough to inhibit but not to prevent the capture of prey during the growing season, and also provide valuable foraging opportunities during their harvest. Alfalfa, idle crop land, and most ruderal land and grassland have low and or open vegetation that doesn't impede prey capture, but prey abundance varies among these habitats and so does the frequency of agricultural operations (which are absent from ruderal land and grassland).

Home Range Size and Movement

Although the most important foraging habitat for Swainson's hawks lies within a one-mile radius of each nest (City of Sacramento et al. 2003), Swainson's hawks have been recorded foraging up to 18.6 miles from nest sites (Estep 1989). Any habitat within this foraging distance may provide food at some time in the breeding season that is necessary for reproductive success. In a dynamic agricultural environment such as the Natomas Basin, the area required for hawk foraging depends on the time of season, crop cycle, crop type, and discing/harvest schedule, as these factors affect the abundance and availability of prey (City of Sacramento et al. 2003). Swainson's hawk foraging ranges during the breeding season have been estimated at approximately 1,000-7,000 acres (Bechard 1982, Estep 1989, Johnsgard 1990).

Mechanisms of Habitat Degradation

Reduction of Prey Base

The order of habitat suitability for Swainson's hawks listed above was determined by the abundance and availability of prey. Conversion of higher-suitability habitats to lower-suitability habitats would be accompanied by a reduction in prey base that may reduce nest survival or the fat reserves required by hawks for their fall migration to Central Mexico (Swainson's Hawk Technical Advisory Committee 2001), without any change in overall habitat acreage.

Changes in the hawks' rodent prey base may also result from impacts of industrial development to adjacent mammalian predator communities. Crooks and Soule (1999) quantified the impacts of domestic cats on rodents and other small animals. They estimated that the average domestic cat population in moderately sized fragments (~50 acres of upland habitat bordered by 100 residences) returns about 840 rodents, 525 birds, and 595 lizards to residences each year. Assuming that cats do not bring back all prey that they kill, actual impacts to hawk prey numbers are probably even greater. Crooks and Soule (1999) also documented increased extirpations of songbird

species in habitat fragments with higher densities of cats, raccoons and opossums, all of which often increase in proximity to development. Although rodents are the primary prey of breeding Swainson's hawks in the Natomas Basin, songbirds also contribute to their diets.

Several studies indicate that the abundance of bird species is lower near development. Compared to undeveloped areas at least 2,297 feet from development, Odell and Knight (2001) demonstrated lower densities of the hawks' secondary songbird prey within 1,083 feet of sparse development (less than 0.4 dwelling units/acre); impacts of higher density development are expected to be greater. Similarly, Blair (1996) reported 1/3 fewer bird species in lands adjacent to development, when compared to habitat preserves in the same area. Increased predation on the hawks' rodent prey is likely to extend between 98–590 feet from homes because of domestic cats, 590–1,083 feet from homes because of domestic dogs, and farther because of increased populations of small wild predators such as opossums and foxes (Odell and Knight 2001).

Habitat Fragmentation and Reduced Patch Size

The contiguity of foraging habitat and its placement near nest sites may also affect hawk foraging (and subsequently breeding) success. Longer foraging flights carry higher energetic costs than foraging closer to nests, and reduce the amount of time adults are present to defend nests from predators. Similarly, there may be a threshold of required habitat area near each nest, related to the foraging ranges discussed above, such that habitat loss beyond this threshold would result in a greater impact to nest survival than habitat loss from a larger area. The diversity and abundance of Swainson's hawk prey have also been reported to decline in fragmented habitat (Crooks et al. 2001; Helzer and Jelinski 1999; Hinsley et al. 1995).

Increased Predation

Corvids (crows, magpies) and great horned owls are the most common predators of Swainson's hawk eggs and nestlings (England et al. 1997). Corvid populations typically increase near human settlement because of the supplemental food source of human refuse and additional perches provided by urban trees, streetlights, and other infrastructure (Steenhof et al. 1993; Marzluff et al. 2001). This increase in predator abundance may result in increased nest predation near residential development.

Nest Disturbance

Swainson's hawk responses to nest disturbance vary with each nesting pair and the timing, regularity, and nature of the disturbance. Although some researchers have described disturbed nest sites that successfully fledge young (Estep 1989; England et al. 1995), others have recorded nest abandonment in response to human activity, especially during nest building and incubation (Bent 1937; Stahlecker 1975). In addition to nest abandonment, significant disturbances near hawk nests may interfere with parental care and feeding of young in a way that reduces nest success.

DISTRIBUTION

Information on CNDDDB Occurrences

When information was compiled for the NBHCP in 2001, there were 892 known occurrences in California, of which 882 were considered extant. The NBHCP did not list CNDDDB occurrences for the Natomas Basin, but local surveys (described below) provided extensive data. As of 2024, The Natomas Basin Conservancy has documented 152 current and historical Swainson's hawk nesting territories in the Basin, with 68 territories occupied in 2023.

Estep (2001) indicates that nesting sites and foraging activity occur throughout the Basin, depending on the availability of suitable nest trees in proximity to upland foraging areas. The most recent survey of the Natomas Basin at the time the Habitat Conservation Plan was prepared located 62 breeding sites in or immediately adjacent to the Basin (Swainson's Hawk Technical Advisory Committee 2001). Hawks nesting at the 35 sites adjacent to

the Basin were located along the Sacramento River and may have depended on the Basin's foraging habitat for their survival and reproduction. The NBHCP asserts that the Swainson's hawk population supported by the Natomas Basin is "important to the continued viability" of the species, which has been estimated by the California Department of Fish and Game to have declined by 94% from historical conditions in the state (Bloom 1980, California Department of Fish and Game 1989).

The most recent survey published by the Natomas Basin Conservancy documented 68 occupied territories in the Basin in 2024, up from 62 in 2023. A total of 152 current and historical Swainson's hawk nesting territories have been monitored. Each of these nests is within the 18.6 mile recorded foraging distance from the ASI and may be affected by changes in land cover at the site. Based on the biological surveys conducted for the ASI Industrial project, Swainson's hawks were observed at the project site during April and May surveys, but nesting activity was not detected and a formal nesting survey has not been conducted.

The most recent monitoring report prepared for The Natomas Basin Conservancy (Estep 2024) contains information on population trends in the Natomas Basin. In 2024, following the largest decline in successful nests and reproductive metrics in 2023 since monitoring began, activity and reproductive metrics rebounded significantly. The number of occupied territories (68) was the third highest reported and well above the 24-year average of 57 occupied territories. The number of successful nests (49) was among the highest reported, and the total number of fledglings (75) was the highest reported since monitoring began. However, despite these population rebounds, reproductive metrics continue to exhibit a significant downward trend over the monitoring period, with the number of young produced per occupied territory, per active nest, and per successful nest all showing declining trends from 2001-2024.

4.3.2 PROJECT EFFECTS ON SPECIES

LONG-TERM EFFECTS ON HABITAT

Effect on Quantity of Habitat

The proposed development at the ASI site would reduce foraging habitat through the conversion of agricultural fields to industrial uses. However, the ASI project developer voluntarily agrees to preserve foraging habitat at the Rosa properties as further described in the mitigation measures 4.4-5(b) and 4.2-1 would preserve and enhance foraging habitat at off-site mitigation properties to ensure that habitat losses are fully compensated.

Under the mitigation framework, suitable Swainson's hawk foraging habitat would be preserved through conservation easements or fee title acquisition, and agricultural/open space mitigation lands would provide comparable habitat value to support foraging activities. The mitigation properties would be managed to maintain their suitability as foraging habitat, potentially improving habitat quality over baseline conditions.

Effects on Quality of Habitat

Areas Adjacent to Developed Land or Highways

The impacts to Swainson's hawk prey in this area that could occur as a result of proximity to development are discussed under *Mechanisms of Habitat Degradation*, above. However, the existing roads that border the site and canals, would function as partial barriers that limit the extent of urban influences on adjacent agricultural lands.

Altered Habitat Quality at Proposed Reserve and Mitigation Sites

The project developer voluntarily would implement habitat preservation and enhancement measures that include agricultural and habitat mitigation lands described in Mitigation Measure 4.2-1, consisting of currently unidentified agricultural/open space mitigation property to be located in unincorporated Sacramento County and/or Sutter County, plus identified habitat mitigation properties. Additional lands with suitable Swainson's

hawk foraging habitat would be preserved as required by the NBHCP to achieve a 1:1 ratio for habitat replacement.

Conservation of the agricultural/open space mitigation properties may improve their value as foraging habitat because they would be preserved and managed as comparable agricultural and habitat value lands. These properties, however, may be located at distance from the project site in unincorporated Sacramento County and/or Sutter County, and this setting might limit their direct benefit to hawks affected by the project.

Based on the analysis approach in the NBHCP, the project also would result in greater availability of foraging habitat during April–September. (However, this approach assumes that row and field crops are not available to foraging hawks except at harvest, and thus underestimates the acreage of foraging habitat available, particularly during April–May, which is prior to the harvest of row and field crops in the Natomas Basin.)

Based on the analysis approach, total foraging resources would be comparable with and without the project. At the ASI site and proposed mitigation sites, during April–June, slightly greater foraging resources would be available with the project, while during July–September there would be comparable resources available. (Throughout the Natomas Basin, during July–September, more foraging resources are available because that is when most crops are harvested.)

Effects on Connectivity

The ASI site would become urban land cover, converting 340 acres of agricultural fields that currently provide foraging habitat for Swainson's hawk. However, based on the biological assessment, the project site does not currently function as a significant wildlife movement corridor for terrestrial species, including considerations relevant to Swainson's hawk habitat connectivity. The project site contains three large agricultural fields that are bordered by paved roads and large drainage canals which already function as barriers to terrestrial wildlife movement. The site is bounded by Powerline Road on the west, Interstate 5 on the north, a fire break along Lanfranco Circle on the east, and the West Drainage Canal on the south. On all sides of the project site lie either additional active agricultural fields or urban development, which do not serve as high quality larger habitat areas.

For Swainson's hawk specifically, the existing roads and canals would not present barriers to movement since hawks can fly over these features. The development of the ASI site would result in the loss of foraging habitat but would not significantly alter existing movement patterns, as the site does not currently provide a critical habitat corridor function. The project site does contain foraging habitat that attracts various bird species year-round, including during migration periods. However, there are limited habitat features to support nesting birds, and the existing semi-natural vegetation communities do not provide continuous natural land cover that would constitute a high-quality wildlife movement corridor for birds when considered in the context of surrounding land uses.

The conversion of agricultural fields to industrial development would reduce the overall availability of foraging habitat in this portion of the Natomas Basin, but the biological assessment indicates this change would not substantially fragment existing wildlife movement corridors or significantly alter Swainson's hawk movement patterns across the landscape.

The potential effects of habitat fragmentation and reduced upland connectivity on Swainson's hawk prey are discussed under *Mechanisms of Habitat Degradation*, above.

EFFECTS OF CONSTRUCTION-RELATED ACTIVITIES

Construction at the ASI site and habitat management at the proposed reserve sites has the potential to displace and/or disturb nesting Swainson's hawks. Nest disturbance from the operation of heavy construction equipment and continued activity near nest sites could cause nest abandonment or interfere with the incubation and feeding of young in a way that reduces nesting success.

The NBHCP includes measures to avoid and minimize construction-related effects on Swainson's hawks. The

EIR summarizes these measures which include:

- ▶ **Mitigation Measure 4.4-5(a) :** Pre-construction surveys shall be conducted according to the Swainson's Hawk Technical Advisory Committee methodology using experienced Swainson's hawk surveyors. If breeding Swainson's hawks are identified, no new disturbances will occur within ½ mile of an active nest between March 15 and September 15, or until a qualified biologist determines that young have fledged or the nest is no longer occupied. If the active nest is within ¼ mile of existing urban development, the no-disturbance zone can be limited to ¼ mile versus ½ mile. Intensive monitoring by a CDFW-approved raptor biologist will be required if construction activities are proposed within the ¼ mile buffer zone.
- ▶ **Mitigation Measure 4.4-9(a) for other raptors:** Focused surveys shall be conducted within seven days prior to construction activities during nesting season (February 1 to August 31) within 0.5-mile of construction areas. If active nests are found, construction shall not commence within 0.5-mile until young have fledged or nesting has failed.

These NBHCP measures should adequately reduce the impacts to Swainson's hawks that may result specifically from construction-related activities. Any construction-related displacement of hawks from foraging habitat is akin to habitat loss, as discussed above.

EFFECTS OF HUMAN-WILDLIFE CONFLICTS

The proposed development is located within a ½ mile of two Swainson's hawk nest active in 2024. These nests are located in an area that human disturbance from nearby residential uses, K-8 school, transportation activity and noise (aircraft, interstate freeway and local roadways), in addition to the potential effect of future development of the ASI site may cause nest abandonment (Bent 1937; Stahlecker 1975) or interfere with incubation and feeding of young in a way that reduces reproductive success. Predation of eggs and young chicks by crows and other corvids may also increase as a result of increased human refuse and infrastructure at the ASI (Steenhof et al. 1993; Marzluff et al. 2001).

OVERALL EFFECT ON POPULATION VIABILITY

The project would cause both adverse and beneficial effects on the Swainson's hawk population nesting and foraging in the Natomas Basin. Adverse effects would include a reduction in the total acreage of foraging habitat and a loss of 340 acres of high quality foraging habitat at the ASI site. Beneficial effects would include the preservation and potential enhancement of foraging habitat at the mitigation sites consistent with the requirements of the NBHCP, which would provide equivalent acreage of suitable Swainson's hawk foraging habitat.

Overall, based on the USFWS interpretation of effects on Swainson's hawk due to the NBHCP (USFWS 2003), the ASI project would not be expected to adversely affect the viability of the Swainson's hawk population in the Natomas Basin. Through compliance with the Natomas Basin HCP, including the 1:1 mitigation ratio for foraging habitat loss, the project would maintain habitat availability for the Swainson's hawk population while ensuring protection of any nesting hawks through pre-construction survey requirements and construction buffers.

4.4 BURROWING OWL

4.4.1 SPECIES ECOLOGY

HABITAT ASSOCIATIONS/REQUIREMENTS

Habitat Type

Burrowing owls (*Athene cunicularia hypugea*) typically inhabit grasslands, savannahs and other open habitats with low-lying vegetation. Land cover types designated as burrowing owl habitat in the NBHCP include alfalfa,

grassland and pasture. Owls are also known to nest and forage in idle agricultural fields, ruderal fields and the edges of cultivated fields, although these areas provide lower quality habitat than native grasslands. The NBHCP also describes canals as potential nesting habitat for burrowing owls, although it does not include canals in the habitat table for this species. Levees and upper banks of canals and ditches provide burrowing owl nesting habitat when canal maintenance activities are limited, water levels remain below nesting burrows and the area remains relatively undisturbed. Small mammal populations (particularly California ground squirrels) are the most important feature in burrowing owl habitat, as these mammals provide both food and nesting burrows for the owls. When natural burrows are scarce, burrowing owls will also nest in artificial structures such as culverts. They often nest in elevated areas such as berms and levees, where they may scan adjacent lands for predators and prey. Burrowing owls feed primarily on large insects and rodents, and will also feed opportunistically on birds, reptiles and amphibians (NatureServe 2005).

Home Range Size and Movement

Although the more northern burrowing owl populations migrate seasonally, burrowing owls are year-round residents of the Natomas Basin. The owls often form loose colonies, with nest burrows 46–2,952 feet apart (Ross 1974; Gleason 1978). Surprisingly few data are available on home range size for this species. Published estimates vary from 0.05–1.86 square miles (Haug and Oliphant 1990).

Mechanisms of Habitat Degradation

Increased Predation

Ground- and burrow-nesting birds such as burrowing owls are particularly vulnerable to predation by domestic dogs and cats. Many wild predators of burrowing owls also increase near human habitation. In proximity to residential development, dominant carnivores such as coyotes are typically replaced by foxes, opossums, skunks, and other small predators that feed on burrowing owls (Sheffield 1997; Wellicome 1997b; Crooks and Soule 1999). Avian predators such as great-horned owls and crows may also increase in proximity to residential development, in response to introduced nesting trees, increased food supplies and increased hunting perches such as street lights and other infrastructure (Steenhof et al. 1993; Marzluff et al. 2001). This increase in predator abundance would likely result in increased predation of burrowing owl nests and adults near residential development.

Reduction of Prey Base

Changes in the owls' prey base may result from residential development affecting adjacent mammalian predator communities. Rodents and insects are the primary prey of burrowing owls; songbirds also contribute to their diets (NatureServe 2005). Crooks and Soule (1999) quantified the effects of domestic cats on small animals. They estimated that the average domestic cat population in moderately sized fragments (~50 acres of upland habitat bordered by 100 residences) returns about 840 rodents, 525 birds and 595 lizards to residences each year. Assuming that cats do not bring back all prey that they kill, actual effects on prey numbers are probably even greater. Crooks and Soule (1999) documented increased extirpations of songbird species in habitat fragments with higher densities of cats, raccoons and opossums, all of which often increase in proximity to residential development.

Compared to undeveloped areas at least 2,296 feet from development, Odell and Knight (2001) demonstrated lower densities of the owls' secondary songbird prey within 1,083 feet of sparse residential development (about 0.4 houses per acre); impacts of higher density development are expected to be greater. Similarly, Blair (1996) reported 1/3 fewer bird species in lands adjacent to residential development, when compared to habitat preserves in the same area.

Habitat Fragmentation and Reduced Patch Size

Habitat fragmentation has been implicated as a major cause of population decline in grassland birds in general,

and is likely to specifically impact burrowing owls. Helzer and Jelinski (1999) found both overall avian species richness and the presence of several common grassland species to increase with the size of habitat patches (especially when >124 acres) and decrease with the perimeter-area ratio of these patches, which reflects the proportion of habitat influenced by edge effects.

In fragments 5–250 acres in size, Crooks et al. (2001) found fragment size to be the most important factor determining extinction and colonization of songbirds. No fragments up to 247 acres in size were large enough to support the full complement of native bird species with 95% probability over a 100-year period. Burrowing owls forage in larger habitat patches than the smaller birds studied by Crooks et al. (2001), and are likely to be similarly affected by fragmentation. Hinsley et al. (1995) also demonstrated the instability of bird populations in habitat fragments.

Nest Disturbance

Although burrowing owls are tolerant of human activity outside of the breeding season, they have been shown to abandon nests if disturbed during incubation. In addition to nest abandonment, significant disturbances near owl nests may interfere with parental care and feeding of young in a way that reduces nest success.

DISTRIBUTION

Information on CNDDB Occurrences

When information was compiled for the NBHCP in 2001, there were 370 known occurrences in California, of which 300 were considered extant. At that time, three occurrences were known from the Natomas Basin, all of which were considered extant. As of 2005, there are 709 known occurrences in California, of which 671 are considered extant. At this time, seven occurrences are known in the Natomas Basin, of which six are considered extant. Of these occurrences, one is within a mile of the ASI site, and none are within a mile of the proposed reserve sites.

Other Information on Distribution and Abundance in Natomas Basin

Systematic surveys conducted for NBHCP biological effectiveness monitoring from 2005-2023 show that burrowing owl has all but disappeared from the Basin on both reserve and non-reserve lands. Detection rates have declined dramatically, with a 0.000 detection rate recorded in 2023 surveys compared to higher detection rates in earlier years of monitoring. The factors influencing these declines are unknown, though the decline occurs on both reserve and non-reserve lands, suggesting that factors beyond TNBC's control, such as climate change or widespread use of biocides, may be contributing. During biological surveys conducted for the ASI project, no burrowing owls were observed, though the Biological Resources Assessment indicates the species has moderate potential to occur in open disturbed areas within the project site.

Most regional CNDDB records are east of Highway 99, however, recent CNDDB records exist from the Sacramento International Airport adjacent to the project site. The project site contains some open disturbed areas, primarily in the construction staging area along the south side of Bayou Way and west of Metro Air Parkway, that provide marginal habitat for this species; however, existing suitable burrows and ground squirrels were not observed. The absence of California ground squirrel burrows, which are essential for burrowing owl nesting and escape, limits the habitat value of the project site despite the presence of open grassland areas.

4.4.2 PROJECT EFFECTS ON SPECIES

LONG-TERM EFFECTS ON HABITAT

Effect on Quantity of Habitat

The ASI project's effects on Burrowing Owl habitat must be considered in the context of the species' near-complete disappearance from the Natomas Basin. The ASI project would impact approximately 278.4 acres (undisturbed area outside of the NBHCP permit boundary) at the project site, though the BRA indicates this provides only marginal habitat due to the absence of suitable burrows and ground squirrels. The proposed development at the ASI site would eliminate potential foraging habitat, though no Burrowing Owls were observed during biological surveys and the species has not been detected in Basin-wide monitoring since 2022. The project includes off-site mitigation under the NBHCP that would preserve mitigation lands that could potentially provide Burrowing Owl habitat if managed appropriately. Given the species' basin-wide population collapse and 0.000 detection rate in 2023 monitoring, the creation of habitat acreage alone would be insufficient without active management measures.

Effects on Quality of Habitat

Areas Adjacent to Developed Land or Highways

The current land use immediately adjacent to the ASI site includes agricultural fields and managed areas that could theoretically support Burrowing Owl habitat if suitable conditions were present. However, the absence of ground squirrel burrows and the species' basin-wide population decline suggest limited current habitat value. The project site contains some open disturbed areas that provide marginal habitat, though no existing suitable burrows or ground squirrels were observed during biological surveys.

Altered Habitat Quality at Proposed Reserve and Mitigation Sites

In addition to habitat lost due to development of the ASI site, the quality of Burrowing Owl habitat could be altered at the off-site mitigation lands required under the NBHCP. The off-site preservation lands may improve habitat value for Burrowing Owl if managed appropriately. However, given the species' basin-wide population collapse and 0.000 detection rate in 2023 monitoring, habitat enhancement alone would be insufficient without active restoration measures. At the off-site mitigation lands, NBHCP management practices as described in Mitigation Measure 4.4-6 could enhance habitat for Burrowing Owl. Mitigation Measure 4.4-6 requires pre-construction surveys and implementation of NBHCP measures including establishment of buffer zones around active nests, relocation planning if approved by USFWS and CDFW, and creation of suitable habitat including artificial burrows with adequate foraging areas. The mitigation lands would be managed under the NBHCP standards, which benefit Burrowing Owls through creation of appropriate grassland habitat with ground squirrel populations and artificial burrow systems if active restoration efforts were implemented.

Effects on Connectivity

The development at the ASI site would result in impacts to the existing contiguity of upland habitats, though the significance of this impact must be considered in the context of Burrowing Owl's near-complete absence from the Basin. This connectivity is already substantially reduced by development at the Metro Air Park and Sacramento International Airport, which have fragmented habitat corridors in this portion of the Basin. Owl survival and reproduction are likely to be higher in larger, more contiguous habitat areas. Connectivity benefits owls by providing greater ease of locating mates, greater flexibility in year-round foraging opportunities, and safer passages for juvenile dispersal. The potential effects of reduced connectivity on upland birds in general are discussed under *Mechanisms of Habitat Degradation*, above.

Given that Burrowing Owl has not been detected in Basin-wide monitoring since 2022 and showed a 0.000

detection rate in 2023, the project's effects on connectivity are unlikely to impact existing populations, which appear to be functionally extirpated from the area.

EFFECTS OF CONSTRUCTION-RELATED ACTIVITIES

Earth-moving activities may trap or injure owls in their burrows, and disturbance near nests may cause nest abandonment. However, given that Burrowing Owl has not been detected in Basin-wide monitoring since 2022 and showed a 0.000 detection rate in 2023, construction impacts to this species are unlikely given its apparent absence from the project area. The ASI project implements the NBHCP measures comparable to standard protocols for avoiding impacts to Burrowing Owls during construction. These measures include:

- Pre-construction surveys by qualified biologists approved by CDFW to determine if any Burrowing Owls are using the site for foraging or nesting, with mitigation programs developed in consultation with the City prior to construction
- Occupied burrows shall not be disturbed during nesting season (February 1 through August 31) unless verified through non-invasive measures that birds have not begun egg-laying or that juveniles are capable of independent survival
- If nest sites are found, USFWS and CDFW shall be contacted regarding suitable mitigation measures, which may include a 300-foot buffer during breeding season or relocation efforts if birds have not begun nesting
- If relocation is approved, a qualified biologist shall prepare a relocation plan including site preparations such as enhancement of existing burrows or creation of artificial burrows, and monitoring of the relocation effort
- Disturbance and destruction of burrows shall be offset through development of suitable habitat including creation of new burrows with adequate foraging area (minimum of 6.5 acres)

By following these measures, the potential for injury, entrapment, and nest abandonment would be reduced. However, given the species' current absence from the Basin, these measures would primarily serve as precautionary protocols should Burrowing Owl populations be restored to the area in the future.

EFFECTS OF HUMAN-WILDLIFE CONFLICTS

On the remaining habitat adjacent to the proposed development, human activity may cause owl nest abandonment or interfere with the incubation and feeding of young in a way that reduces reproductive success. Increased owl predation would also likely occur in proximity to the proposed development, as a result of the typical increase in human-associated owl predators discussed above under *Mechanisms of Habitat Degradation*. However, given that Burrowing Owl has not been detected in Basin-wide monitoring since 2022 and showed a 0.000 detection rate in 2023, these human-wildlife conflicts are unlikely to affect existing populations, which appear to be functionally absent from the area.

OVERALL EFFECT ON POPULATION VIABILITY

The ASI project with the NBHCP mitigation would cause both adverse and beneficial effects on Burrowing Owl. Adverse effects would include loss of potential habitat and fragmentation of remaining open areas adjacent to development at the ASI site. Beneficial effects would include preservation of off-site mitigation lands that could provide suitable habitat if actively managed for Burrowing Owl.

Overall, the project is unlikely to have a substantial effect on Burrowing Owls using the Natomas Basin, given that the species showed a 0.000 detection rate in 2023 monitoring and has essentially disappeared from both reserve and non-reserve lands. Since the Basin currently supports essentially no Burrowing Owl population and

comprises a small portion of the Central Valley's burrowing owl population and habitat (USFWS 2003), the project would not alter the viability of the Burrowing Owl population using the Natomas Basin.

4.5 LOGGERHEAD SHRIKE

4.5.1 SPECIES ECOLOGY

HABITAT ASSOCIATIONS/REQUIREMENTS

Habitat Type

Loggerhead shrikes (*Lanius ludovicianus*) are most commonly found in grasslands, agricultural lands, open shrublands, and open woodlands (Bent 1950). Land cover types designated as shrike habitat in the NBHCP include alfalfa, grassland, non-rice crops, oak groves, orchard, pasture, ponds and seasonally wet areas, riparian, ruderal, rural residential, tree groves, and canals. Special habitat features that improve shrike abundance, survival, and reproductive success are hunting perches, low nesting trees and shrubs, thorny vegetation, and/or barbed wire on which to impale their prey. Shrikes select a variety of prey including insects, reptiles, mammals, and birds.

Home Range Size and Movement

The mean territory size of breeding loggerhead shrikes in mainland California is 22 acres (Miller 1931). The range-wide maximum and minimum breeding territory sizes recorded are 1.7 and 44 acres (Yosef and Grubb 1994). Territory size varies with habitat quality, prey abundance and availability, and density of hunting perches (Kridelbaugh 1982, Yosef and Grubb 1992). Loggerhead shrikes have been observed foraging up to a quarter mile from active nests (Brooks 1988). Shrikes are year-round residents in California, and breeding pairs disband in autumn to defend separate, adjacent, winter territories (Miller 1951, Craig 1978). As food availability decreases in winter, seasonal home ranges may increase to 128 acres (Blumton et al. 1989). Juvenile shrikes move an average of 3.4 miles from their natal territories to their fall territories.

Mechanisms of Habitat Degradation

Increased Predation

Domestic cats are a common predator of loggerhead shrike adults, juveniles and nests (Luukkonen 1987, Novak 1989), and would increase in abundance following the proposed development. Crooks and Soule (1999) quantified the impacts of domestic cat predation on songbirds such as loggerhead shrikes, and estimated that the average domestic cat population in moderately sized fragments (~50 acres of upland habitat bordered by 100 residences) returns about 525 birds to human residences each year. Assuming that cats do not bring back all prey that they kill, actual impacts to birds are probably even greater.

Many wild mammalian predators of shrikes also increase near human habitation. In proximity to development, dominant, larger carnivores such as coyotes are typically replaced by foxes, opossums, skunks, and other small predators that feed on shrikes and other songbirds. Crooks and Soule (1999) have recorded increased avian extirpation rates in habitat fragments as a result of these predator increases.

Shrike nest predators such as crows also typically increase in proximity to development, in response to introduced nesting trees, increased food supplies, and increased hunting perches such as street lights and other infrastructure (Steenhof et al. 1993; Marzluff et al. 2001). Predation of loggerhead shrike nests is also more intense along roads, urban edges, and other linear habitats (DeGeus 1990), presumably because of the increased use of linear rights-of-way by crows and mammalian predators (Knight et al. 1995). Of loggerhead shrike nest failures, 40–90% have been attributed to predation in the various studies of this species (NatureServe). Shrike mortality from vehicle collisions has also been significant in some areas (NatureServe), and may increase with increased traffic generated by the proposed development.

Nest Disturbance

Loggerhead shrikes will abandon nests if disturbed by humans during egg-laying or early in incubation. Shrikes are generally tolerant of human activity near nests later in the breeding season, however, and nest abandonment is not generally a significant factor in nest failure (Collister 1994).

Habitat Fragmentation

Habitat fragmentation has been implicated as a major cause of population decline in grassland birds in general, and is likely to specifically affect loggerhead shrikes. Helzer and Jelinski (1999) found both overall avian species richness and the presence of several common grassland species to increase with the size of habitat patches (especially when >50 ha) and decrease with the perimeter-area ratio of these patches, which reflects the proportion of habitat influenced by edge effects. Hinsley et al. (1995) and Crooks et al. (2001) also demonstrated the instability of upland bird populations in habitat fragments.

DISTRIBUTION

Information on CNDDDB Occurrences

Although loggerhead shrikes are known to occur in open habitats throughout California (California Department of Fish and Game 1990), they have not been extensively surveyed and few occurrence data are available in the state. The CNDDDB lists five occurrences for this species, all in southern California.

Other Information on Distribution and Abundance in Natomas Basin

In 2023 there were two detections on the southern edge of the Bennett North tract. In both cases the flushed bird flew south to the SCAS Willey Wetlands Preserve.

4.5.2 PROJECT EFFECTS ON SPECIES

LONG-TERM EFFECTS ON HABITAT

Effect on Quantity of Habitat

The ASI project would have minimal effects on loggerhead shrike habitat quantity due to the species' low potential for occurrence in the project area. The BRA determined that the species is unlikely to be present on the project site due to lack of suitable scrubby habitat, which is normally present in the species' preferred areas. The project site consists primarily of fallowed agricultural fields that do not provide the open habitats with scattered shrubs, trees, posts, or other perches typically required by loggerhead shrikes.

The conversion of the project site from agricultural fields to industrial development would not significantly reduce loggerhead shrike habitat since the site does not currently provide suitable habitat for this species. The agricultural and open space mitigation lands preserved under Measures 4.4-5(b) and 4.2-1 would maintain the regional availability of agricultural landscapes that could potentially support loggerhead shrikes if suitable perching structures and prey resources are present.

Effects on Quality of Habitat

Areas Adjacent to Developed Land or Highways

The project site is bounded by existing infrastructure including Interstate 5 to the north, Powerline Road to the west, and agricultural fields to the south. The conversion to industrial development would not significantly alter the habitat gradient for loggerhead shrikes since suitable habitat is not present in the immediate project vicinity.

Altered Habitat Quality at Proposed Reserve and Mitigation Sites

Given that loggerhead shrike has low potential for occurrence in the project area, habitat quality changes at mitigation sites would have minimal effects on this species. The BRA indicates that suitable scrubby habitat typically preferred by loggerhead shrikes is not present on the project site or in the immediate vicinity.

The applicant agrees to preserve agricultural and open space mitigation lands consistent with the NBHCP that would maintain regional habitat availability. The specific habitat quality benefits for loggerhead shrike would depend on the presence of suitable perching structures and prey resources. These mitigation properties would consist of lands with comparable agricultural and habitat value to the impacted areas. Management of these mitigation lands to support various species, including measures to provide high-quality foraging habitat for Swainson's hawk, could potentially create habitat features that might benefit loggerhead shrikes if they occur in the area. However, given the species' apparent absence from the Natomas Basin and the low occurrence potential documented in the BRA, these habitat improvements would not significantly affect loggerhead shrike populations.

Effects on Connectivity

Given that loggerhead shrike has low potential for occurrence in the project area and lacks suitable habitat on the project site, connectivity effects for this species would be minimal. The BRA indicates that the species is unlikely to be present due to the absence of scrubby habitat and suitable perching structures typically required by loggerhead shrikes. The BRA determined that the project site does not currently function as a significant wildlife movement corridor for terrestrial species, including considerations relevant to loggerhead shrike habitat connectivity. The project site consists of fallowed agricultural fields bounded by existing infrastructure including roads and drainage canals that already limit habitat continuity.

The agricultural and open space mitigation lands preserved as part of the project would help maintain regional landscape connectivity by preserving agricultural and open space areas elsewhere that could potentially support loggerhead shrikes if suitable habitat features are present. However, given the species' apparent absence from the Natomas Basin and low occurrence potential documented in the BRA, these connectivity benefits would not significantly affect loggerhead shrike populations.

EFFECTS OF CONSTRUCTION-RELATED ACTIVITIES

Construction activities associated with the proposed development or the proposed habitat creation on proposed reserve sites could disturb or displace loggerhead shrikes and may cause nest abandonment. In the Natomas Basin HCP, preconstruction surveys for loggerhead shrikes would be conducted before construction. If shrikes are found, disturbance would be avoided during the nesting season to the maximum extent possible.

EFFECTS OF HUMAN-WILDLIFE CONFLICTS

On the remaining habitat adjacent to the proposed development, human activity may cause shrike nest abandonment or interfere with the incubation and feeding of young in a way that reduces reproductive success. Increased shrike predation would also be likely to occur in proximity to the proposed development, as a result of the typical increase in human-associated predators discussed above under *Mechanisms of Habitat Degradation*. Human-wildlife conflicts are unlikely to occur at the proposed reserve sites.

OVERALL EFFECT ON POPULATION VIABILITY

The ASI project would have minimal effects on loggerhead shrike population viability due to the species' low potential for occurrence in the project area. The BRA determined that the species is unlikely to be present on the project site due to the absence of suitable scrubby habitat and perching structures typically required by loggerhead shrikes. The species occurs sparingly in the Natomas Basin and is under-reported in the CNDDDB, with the nearest records located more than 50 miles from the project site.

The project would result in the conversion of agricultural fields that do not currently provide suitable loggerhead shrike habitat. The agricultural and open space mitigation lands preserved by the project would maintain regional habitat availability and could potentially support loggerhead shrikes if suitable habitat features become available at these locations. However, given the species' apparent absence from the project area and low occurrence potential, these effects would be negligible.

4.6 TRICOLORED BLACKBIRD

4.6.1 SPECIES ECOLOGY

HABITAT ASSOCIATIONS/REQUIREMENTS

Habitat Type

Tricolored blackbirds (*Agelaius tricolor*) nest in dense colonies that range from less than 25 individuals to over 80,000. As nesting and foraging habitat differ for this species, we analyzed these habitats separately. Common nesting substrates include tule and cattail marsh, blackberry, thistle, willow, nettle, and some grain crops (Beedy and Hayworth 1991). Because patches of dense nesting substrate do not necessarily correlate with the land cover types defined by the NBHCP, the NBHCP analyzed these patches separately as “tricolored blackbird nesting habitat.” Special habitat features that improve nesting blackbird abundance, survival and reproductive success include dense nesting substrates and proximity to concentrated insect populations large enough to sustain the colony (Grinnell and Miller 1944, DeHaven 2000).

Tricolored blackbirds forage in grassland, pasture, silage, wetlands and flooded fields, rice, and other grain fields (Zeiner et al. 1990). Land cover types designated as tricolored blackbird foraging habitat in the NBHCP include alfalfa, grassland, non-rice crops, pasture, and rice. As they represent a transition between cropland and grassland habitats, idle and ruderal fields may also provide marginal foraging habitat. Tricolored blackbirds are primarily insectivorous, with grasshoppers, beetles, and weevils dominating their diet (Beedy and Hayworth 1991).

Home Range Size and Movement

Breeding tricolored blackbirds concentrate foraging activity in proximity to nesting colonies and may travel up to 4 miles from nest or roost sites to forage. The species is generally nomadic when not breeding and may be found year-round throughout lowland California.

Mechanisms of Habitat Degradation

Increased Predation

Abundance of blackbird predators such as domestic cats and foxes typically increases in proximity to development (Crooks and Soule 1999). Although increased predation near residential would likely be much less for vigilant, mobile flocks of foraging blackbirds than for more stationary nesting birds such as loggerhead shrikes or burrowing owls, predation rates would be expected to increase for all small bird species near residential development.

Nest Disturbance

Nesting colonies of tricolored blackbirds are highly sensitive to disturbance, which may cause nest abandonment or interfere with the incubation and feeding of young in a way that reduces reproductive success (NBHCP 2001).

Water Diversion and Runoff

Water diversions may degrade wetland habitat for tricolored blackbirds nesting downstream from a diversion.

DISTRIBUTION

Information on Distribution and Abundance in Natomas Basin

When the NBHCP analysis was prepared in 2001, the Betts-Kismat-Silva reserve on the eastern edge of the Natomas Basin supported a tricolored blackbird colony of approximately 4,000 nesting birds (NBHCP 2001). At the time of the most recent TNBC monitoring report in 2023, the blackbirds did not nest at this site, although the Average Number of Observations per Survey Recorded during Monthly Basin-Wide Surveys showed a record of 367 observations. Tricolored blackbirds are known to forage throughout the Basin (NBHCP) and have been observed foraging on the Metro Air Park site near the ASI site (Thomas Reid Associates, 2000).

4.6.2 PROJECT EFFECTS ON SPECIES

LONG-TERM EFFECTS ON HABITAT

Effect on Quantity of Habitat

The ASI site does not currently support tricolored blackbird nesting habitat. The BRA determined that appropriate breeding habitat is not present on the project site, though the species may occasionally use agricultural fields for foraging, especially during winter months. The project's mitigation sites would preserve agricultural and open space lands that could provide suitable foraging habitat. Given the species' low potential for occurrence on the project site and the absence of suitable breeding habitat, the project would not significantly affect tricolored blackbird habitat quantity in the Natomas Basin.

Effects on Quality of Habitat

Areas Adjacent to Developed Land or Highways

The ASI development would convert agricultural fields to industrial uses but given that tricolored blackbird has low potential for occurrence and lacks suitable breeding habitat on the project site, the urban development would not significantly affect this species. The BRA indicates that tricolored blackbirds may occasionally forage in agricultural fields, especially during winter months, but appropriate breeding habitat is not present in the project vicinity.

The project site is currently composed of fallowed agricultural fields that do not provide high-quality blackbird foraging habitat. The surrounding land uses include additional agricultural areas, urban development, and transportation infrastructure. The conversion of the project site from agricultural to industrial use would reduce potential foraging habitat locally, but this loss would be offset by the agricultural and open space mitigation lands preserved by the project.

The project site is bounded by existing infrastructure including Interstate 5 to the north and Powerline Road to the west, which already creates some separation between the project area and adjacent agricultural lands. Given the species' low occurrence potential and the limited habitat value of the current site conditions, the project's effects on tricolored blackbird would be minimal and would not significantly impact the species' population in the Natomas Basin.

Effects on Connectivity

Because tricolored blackbirds are largely nomadic when not nesting, connectivity for this species is mostly pertinent to a 4-mile radius of foraging habitat surrounding nesting colonies. The ASI site is at the edge of this radius from the TNBC Rosa Central and Rosa North, neither of which currently support nesting habitat. Given that tricolored blackbird has low potential for occurrence on the project site and lacks suitable breeding habitat in the project vicinity, connectivity effects for this species would be minimal. The BRA indicates that the species

may occasionally forage in agricultural fields but does not nest in the area. The agricultural and open space mitigation lands preserved by the project in accordance with the NBHCP would maintain habitat connectivity by preserving agricultural lands elsewhere in the region that could support occasional foraging by transient tricolored blackbirds.

EFFECTS OF CONSTRUCTION-RELATED ACTIVITIES

Construction-related activities are unlikely to affect tricolored blackbirds because they do not nest in the vicinity of the ASI and proposed reserve sites. Potential effects would be limited to displacement of birds foraging or roosting on the sites during the initial phases of construction when fields are graded. This impact is largely akin to habitat loss, as the physical flight of the birds from these areas would not cause a significant effect.

EFFECTS OF HUMAN-WILDLIFE CONFLICTS

Because tricolored blackbirds do not currently nest in the vicinity of the proposed development or reserve sites, nest disturbance by humans would not be created by the project. Increased populations of human-associated predators may result in increased predation of foraging blackbirds near a developed ASI site, as discussed in *Mechanisms of Habitat Degradation*, above.

OVERALL EFFECT ON POPULATION VIABILITY

The ASI project would have minimal effects on tricolored blackbird population viability due to the species' low potential for occurrence in the project area and absence of suitable breeding habitat. The BRA determined that appropriate breeding habitat is not present on the project site, and the species would only occasionally use the area for foraging, primarily during winter months when agricultural fields may attract transient individuals. The project would result in the loss of potential foraging habitat through conversion of agricultural fields to industrial development. However, this loss would be offset by the preservation of agricultural and open space mitigation lands, which would maintain suitable foraging habitat elsewhere in the region. These mitigation lands would consist of comparable agricultural and habitat value that could support occasional foraging by tricolored blackbirds.

4.7 WHITE-FACED IBIS

4.7.1 SPECIES ECOLOGY

HABITAT ASSOCIATIONS/REQUIREMENTS

Habitat Type

White-faced ibis (*Plegadis chihi*) breed in wetlands with dense emergent vegetation such as cattails and rushes. They forage in shallow wetlands, irrigation ditches and a variety of irrigated crops and flooded agricultural fields (Ryder and Manry 1994, Cogswell 1977). Land cover types designated as ibis habitat in the NBHCP include alfalfa, canals, ponds and seasonally wet areas, and rice. White-faced ibis feed on aquatic and moist-soil invertebrates such as earthworms, larval insects, snails, and bivalves. Although white-faced ibis feed intensively in rice fields, rice seeds have not been noted in food samples and only trace, incidental amounts of vegetation have been recorded in ibis diets (Belknap 1957).

Home Range Size and Movement

Nesting colonies have ranged in size from 1.3 acres to 600 acres (USFWS 1985e). Foraging distances from nesting sites vary widely and depend on the availability of food. Some colonies concentrate their foraging activity within 2–4 miles of their breeding sites (Bray 1986, Bray and Klebenow 1988), while others forage 25–30 miles from nest sites (Trost 1989). Some colony locations are used for nesting year after year, while others are used

more sporadically depending on water conditions and the availability of food (Ryder 1967).

Mechanisms of Habitat Degradation

Water Quality and Water Diversion

White-faced ibis depend on healthy populations of aquatic invertebrate prey, which in turn may be greatly affected by surrounding land use. Urban areas can cause different and in some cases stronger effects than agricultural lands (Bury 1972, Moore and Palmer 2005). Residential developments typically result in increased runoff of hydrocarbons and of chemicals used for lawns and gardens, and increased stormwater volume (and associated increased depths and velocities) because of high coverage of impervious surfaces. Water diversions may also reduce the abundance of ibis prey. Decreased abundance of aquatic invertebrates has been shown to impact insectivorous birds in both observational field studies and controlled field experiments (Baxter et al. 2004, in press and in review).

DISTRIBUTION

Information on CNDDDB Occurrences

When information was compiled for the NBHCP in 2001, there were seven known breeding colonies in California, all of which were considered extant. At that time, no colonies were known in the Natomas Basin, and the nearest known nesting occurrence was in Yolo County, north of Woodland. White-faced ibis was not detected on non-reserve lands in 2023.

White-faced ibis are common winter foragers in the Natomas Basin (NBHCP), and 10,000 to 11,000 ibis have been estimated in the Sacramento Valley as a whole (Hickey and Shufford 1996, Thomas Reid Associates 2000).

4.7.2 PROJECT EFFECTS ON SPECIES

LONG-TERM EFFECTS ON HABITAT

Effect on Quantity of Habitat

The ASI site does not currently support potential nesting habitat for white-faced ibis. The project site consists primarily of fallowed agricultural fields and semi-natural vegetation communities that do not provide the emergent wetland habitat required for nesting. The proposed detention basins could potentially provide some foraging habitat, though these engineered facilities would not constitute suitable nesting habitat due to their design and management for stormwater purposes.

The project's effects on white-faced ibis foraging habitat would result in impacts to agricultural and semi-natural habitat that could serve as foraging areas during the species' presence in the Basin from May through September. While white-faced ibis has low detection rates in the area (0.039 proportion of surveys detected in 2023 on reserve lands), the agricultural fields within the project site represent the type of habitat where the species has been observed foraging in small numbers.

Areas Adjacent to Developed Land or Highways

Potential impacts to white-faced ibis that forage near developed areas are discussed under *Mechanisms of Habitat Degradation*, above. They are primarily associated with canal and wetland habitats, but also forage in rice, and these habitats exist near the ASI site.

Habitat Alteration at Proposed Reserves and Mitigation Sites

The preserved lands would consist primarily of agricultural fields and associated features such as canals and ditches that provide foraging opportunities for HCP species. In addition, habitat values would be improved through habitat enhancement activities implemented as part of the overall mitigation strategy, including enhancements that benefit multiple covered species within the preserved areas.

Effects on Connectivity

Habitat connectivity is of lesser importance to foraging ibis than to nesting or less mobile animals. Ibis survival is likely to be higher, however, in larger, more contiguous foraging habitat where prey is more abundant and the energetic costs of travel are decreased.

EFFECTS OF CONSTRUCTION-RELATED ACTIVITIES

Construction-related activities are unlikely to affect white-faced ibis because they do not nest in the vicinity of the ASI and proposed reserve sites. Potential effects would be limited to displacement of birds foraging or roosting on the sites during the initial phases of construction when fields are graded. This would be largely akin to habitat loss, as the physical flight of the birds from these areas would not cause a significant effect.

EFFECTS OF HUMAN-WILDLIFE CONFLICTS

Humans entering active colonies may cause partial or total desertion of the colony, particularly during nest-site selection, nest-building, and incubation (Ryder and Manry 1994). Because white-faced ibis do not currently nest in the Basin, the project is unlikely to affect human conflicts with this species. (Foraging ibis are less sensitive to disturbance than nesting birds.) Similarly, changes in predator communities associated with residential development would be unlikely to affect large ibis as much as smaller birds such as burrowing owls and loggerhead shrikes.

OVERALL EFFECT ON POPULATION VIABILITY

The ASI project is not likely to affect the viability of the white-faced ibis population using the Natomas Basin. Currently, white-faced ibis uses the Natomas Basin primarily for seasonal foraging from May through September. The project would reduce foraging habitat but would offset this effect with off-site mitigation properties, which preserve comparable agricultural habitat that benefits white-faced ibis foraging. The abundance of white-faced ibis is not considered limited by the availability of foraging habitat in the Natomas Basin, as evidenced by low detection rates (0.039 proportion of surveys in 2023) and variable presence over the monitoring period. The project would not substantially alter the overall quantity of foraging habitat available to the species in the broader region; thus, the project's effect is not likely to alter population viability. The project would not create nesting habitat, as detention basins are engineered stormwater facilities unsuitable for nesting. Given that no nesting has occurred in the Basin since 2010, the project would not affect existing nesting opportunities.

4.8 ALEUTIAN CANADA GOOSE

4.8.1 SPECIES ECOLOGY

HABITAT ASSOCIATIONS/REQUIREMENTS

Habitat Type

Aleutian Canada geese (*Branta canadensis leucopareia*) winter in California's central valley. They forage primarily in pasture, corn, wheat, rice and other grain crops, wetlands, and grasslands, and typically prefer short vegetation. Wintering geese roost in large ponds and lakes, flooded fields, and rice checks. Land cover types

designated as Aleutian Canada goose habitat in the NBHCP include non-rice crops, pasture, and rice. While Aleutian Canada geese feed primarily on grasses and wetland sedges during their Alaskan summer, they forage primarily on seeds and agricultural grains while in California in fall and winter (NatureServe 2005).

Home Range Size and Movement

Aleutian Canada geese nest in the western Aleutian Islands and migrate through coastal Oregon and northern California after the breeding season. Most wintering Aleutian Canada geese concentrate in the Modesto, Los Banos, and Colusa areas of California; the Natomas Basin may provide important foraging and roosting habitat during goose migration.

Mechanisms of Habitat Degradation

Because Canada geese are particularly well-adapted to foraging in agricultural landscapes and may persist in small numbers in suburban parks, habitat loss is a greater issue for this species than habitat degradation. This species is similarly not dependent on animal prey populations or sensitive to the increases in small mammalian or corvid predators that typically occur near residential developments.

DISTRIBUTION

Information on CNDDDB Occurrences

When information was compiled for the NBHCP in 2001, there were 13 known occurrences in California, all of which were considered extant. At that time, no occurrences were known from the Natomas Basin. As of 2005, there are 10 known occurrences in California, all of which are considered extant. At this time, CNDDDB does not list Aleutian Canada goose occurrences within one mile of the Natomas Basin.

Other Information on Distribution and Abundance in Natomas Basin

Although Aleutian Canada geese have not been recorded in the Basin, its proximity to important wintering areas suggests that they are likely to forage and roost in the Basin during migration.

4.8.2 PROJECT EFFECTS ON SPECIES

LONG-TERM EFFECTS ON HABITAT

Effect on Quantity of Habitat

The proposed development would eliminate agricultural foraging habitat. However, this reduction would be offset by the project's preservation and enhancement of agricultural habitat at the off-site mitigation properties, which would maintain suitable foraging habitat for Aleutian cackling goose.

Effects on Quality of Habitat

Areas Adjacent Developed Land or Highways

As discussed above under Mechanisms of Habitat Degradation, the predominant impacts typically associated with areas adjacent to housing developments are unlikely to adversely affect Canada geese. This species is especially well-adapted to foraging in close proximity to humans.

Habitat Alteration at Proposed Reserve and Mitigation Sites

Aleutian goose habitat probably would not be preserved or enhanced at the proposed reserve and EIR mitigation sites. However, habitat would be preserved and enhanced at the off-site mitigation properties through active

management to maintain high quality foraging habitat. The preserved agricultural lands would provide goose habitat values similar to or better than existing conditions.

Effects on Connectivity

Habitat connectivity is of lesser importance to foraging geese than to nesting or less mobile animals. Goose survival is likely to be higher, however, in larger, more contiguous foraging habitat where food is more abundant and the energetic costs of travel are decreased.

EFFECTS OF CONSTRUCTION-RELATED ACTIVITIES

Construction-related activities are unlikely to affect Aleutian Canada geese because they do not nest in the vicinity of the ASI and proposed reserve sites. Potential effects would be limited to displacement of birds foraging or roosting on the sites during the initial phases of construction when fields are graded. This effect is largely akin to temporary habitat loss.

EFFECTS OF HUMAN-WILDLIFE CONFLICTS

Because Aleutian Canada geese do not nest in the Basin, the project would not likely result in human conflicts with this species, other than the changes in habitat. Foraging geese are less sensitive to disturbance than nesting birds. Similarly, changes in predator communities associated with residential development would be unlikely to affect large geese as significantly as smaller birds such as burrowing owls and loggerhead shrikes.

OVERALL EFFECT ON POPULATION VIABILITY

Currently, Aleutian cackling geese do not nest in the Natomas Basin, but may roost and forage in the Basin during seasonal migration to a limited extent, though the species has not been detected since comprehensive monitoring began in 2004. Although the ASI project would reduce foraging habitat in the Natomas Basin, an effect on the population's viability is unlikely because the population's size is not considered to be limited by the quantity of foraging habitat available during migration. The off-site mitigation measures would preserve comparable foraging habitat, and foraging habitat remains abundant in the broader Natomas Basin region.

4.9 COVERED PLANT SPECIES

Of the seven plant species covered by the NBHCP, the ASI project would not affect the five vernal pool-associated species because these species are not known to occur in the vicinity of the project site, nor is suitable habitat present at the site. These plant species are: Boggs Lake hedge-hyssop, Sacramento Orcutt grass, slender Orcutt grass, Colusa grass and legenere. The BRA determined these species have no potential for occurrence due to the absence of required vernal pool habitat. The other two covered plant species (delta tule pea and Sanford's arrowhead) are not known to occur at the project site or in the Natomas Basin. No covered plant species have been found in the Basin since comprehensive monitoring began in 2004. However, potentially suitable habitat for Sanford's arrowhead may occur in the canals and ditches present on-site. The BRA identified Sanford's arrowhead as having low potential for occurrence, noting that while it is known to occur along roadside ditches and canals, all records are to the east and southeast and the project site appears to be at the edge or outside of its distribution. Delta tule pea was determined to have no potential for occurrence, with the nearest record 25 miles to the south and outside the species' known distribution range. Therefore, the NBHCP mitigation includes pre-construction survey requirements as required by the NBHCP, including provisions for Sanford's arrowhead transplantation if identified. The project would eliminate aquatic habitat within canals and ditches on-site but would not create new marsh habitat. Nonetheless, because these species are not known to occur in the Natomas Basin and have not been detected despite years of monitoring, the project would not alter the viability of any of their populations.

Table 4-1
Primary Habitats and Distribution of Plant Species Covered by the NBHCP

Species	Growth form	Primary Habitat(s)	Distribution
Delta tule pea (<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>)	Biennial-perennial, herbaceous vine in the pea family (Fabaceae)	Riparian scrub, marsh (primarily tidal, fresh or brackish)	Alameda, Contra Costa, Napa, Sacramento, San Joaquin, and Solano Counties; not known from the Natomas Basin
Sanford's arrowhead (<i>Sagittaria sanfordii</i>)	Perennial, rhizomatous aquatic with emergent leaves, in the water-plantain family (Alismataceae)	Marsh and other shallow freshwater habitats	Butte, Del Norte, Fresno, Kern, Merced, Orange, Sacramento, Shasta, San Joaquin, and Tehama Counties; not known from the Natomas Basin
Bogg's Lake hedge-hyssop (<i>Gratiola heterosepala</i>)	Small semi-aquatic annual, up to 4 inches in height, in the figwort family (Scrophulariaceae)	Vernal pools and swallow lake margins	Fresno, Lake, Lassen, Madera, Merced, Modoc, Placer, Sacramento, San Joaquin, Shasta, Siskiyou, Solano, and Tehama Counties; not known from the Natomas Basin
Sacramento Orcutt grass (<i>Orcuttia viscida</i>)	Annual in the grass family (Poaceae)	Vernal pools (generally larger, deeper pools)	Sacramento County; not known from the Natomas Basin
Slender Orcutt grass (<i>Orcuttia tenuis</i>)	Annual in the grass family (Poaceae)	Vernal pools (generally larger, deeper pools)	Butte, Lake, Lassen, Modoc, Plumas, Sacramento, Shasta, Siskiyou, and Tehama Counties; not known from the Natomas Basin
Colusa grass (<i>Neostapfia colusana</i>)	Annual in the grass family (Poaceae)	Vernal pools (generally larger, deeper pools)	Colusa, Merced, Solano, Stanislaus, and Yolo Counties; not known from the Natomas Basin or Sacramento County
Legenere (<i>Legenere limosa</i>)	Annual, in the bellflower family (Campanulaceae)	Vernal pools and swales, seasonal marshes, artificial ponds, floodplains of intermittent streams, and other seasonally inundated habitats	Lake, Napa, Placer, Sacramento, San Joaquin, San Mateo, Santa Clara, Shasta, Solano, Sonoma, Stanislaus, Tehama, and Yuba Counties; not known from the Natomas Basin

5 POTENTIAL EFFECTS ON THE CONSERVATION STRATEGY OF THE NBHCP

Based on the analyses presented in sections 3 (Alteration of Population and Habitat Attributes by the Airport South Industrial Project) and 4 (Potential Effects of the Airport South Industrial Project on Covered Species), this section summarizes the effect of the Airport South Industrial project on the NBHCP conservation strategy that is described in section IV.C of the NBHCP. Overall, the Airport South Industrial project would not adversely affect the effectiveness of the NBHCP's conservation strategy for the reasons discussed below. In Section IV.C.1 (pages IV 5-15), the NBHCP describes the basis of the key components of the NBHCP's conservation strategy and how these components provide effective mitigation to offset the impacts of take associated with the 17,500 acres of authorized urban development in the Natomas Basin. These components are:

- ▶ Basis for 0.5 to 1 mitigation ratio (Section IV.C.1.a),
- ▶ Preparation of site specific management plans (Section IV.C.1.b),
- ▶ Buffers within the reserve lands (Section IV.C.1.c),
- ▶ Connectivity (Section IV.C.1.d),
- ▶ Foraging habitat (Section IV.C.1.e), and
- ▶ 2,500-acre/400-acre minimum habitat block size requirements (Section IV.C.1.f).

The effects of the ASI project on each of these components is described in the following sections, and then these effects are synthesized, along with the effects on population viability of the covered species (see chapters 3 and 4) to confirm that the ASI project would not compromise the effectiveness of the NBHCP's conservation strategy.

5.1 BASIS FOR 0.5 TO 1 MITIGATION RATIO

On pages IV-6 and IV-7, the NBHCP describes eight key considerations for determining that the 0.5 to 1 mitigation ratio mitigates the impacts of incidental take authorized under the NBHCP. These eight key considerations are summarized below.

1. Overall, reserves will provide greater habitat value than the agricultural land that will be converted to urban development. (This consideration overlaps with other considerations.)
2. Much of the land to be developed is either of limited value as habitat or serves as habitat to a limited number of species.
3. For several wetland and vernal pool-associated species, reserves will provide opportunities for reintroduction to the Basin.
4. Reserves would provide habitat for migratory bird species that have limited habitat in the Basin.
5. Reserves would be managed to avoid and minimize take related to agricultural and land management activities.
6. Reserves would provide permanent habitat for covered species.
7. Reserves would be monitored and adaptively managed.
8. Reserves would be consolidated into large blocks of habitat consistent with the NBHCP conservation strategy.

Because the ASI project would not alter the habitat value of land authorized for development under the NBHCP, and would not adversely affect the habitat value of TNBC reserves established under the NBHCP, the project would not affect this basis for the 0.5:1 mitigation ratio for the 17,500 acres of urban development

Authorized under the NBHCP and the ITPs. Similarly, the project would not adversely affect the monitoring and management of reserves, or opportunities to consolidate reserves into large blocks of habitat as further discussed below.

Although not explicitly stated in section IV of the NBHCP, the 0.5:1 mitigation ratio mitigates for the cumulative effects of 17,500 acres of urban development and it is related to other elements of the conservation strategy (e.g., maintenance of habitat connectivity). The 0.5:1 mitigation ratio is an effective component of the NBHCP conservation strategy when considered in conjunction with the habitat values provided by the baseline open space and agricultural lands in the Natomas Basin (outside of reserves established through the NBHCP). The ASI project would not cause a net loss in habitat values for giant garter snake and Swainson's hawk in the Natomas Basin, and thus the project would not affect this basis of the 0.5:1 mitigation ratio for the reasons discussed throughout this Effects Analysis.

5.2 PREPARATION OF SITE SPECIFIC MANAGEMENT PLANS

For each reserve, TNBC prepares and implements a site-specific management plan (SSMP) that addresses the specific resources and habitat values of each reserve site, and how these will be managed in support of the goals and objectives of the NBHCP.

The potential effects of the ASI project that evaluated that could potentially affect reserve management include altering adjacent land uses, connectivity, water availability, or affecting opportunities to establish additional reserves. In brief, the project would not affect water availability since the water supply for the ASI property will be provided directly from the City of Sacramento. The ASI project will provide land dedication (future reserves) that could change adjacent land uses of existing reserves but the effect would be beneficial, and with the SSMPs and implementation of the NBHCP conservation measures it would not affect connectivity.

Also, where the proposed reserves could be consolidated into existing or future reserves, site-specific management plans (SSMPs) are prepared by TNBC in compliance with the NBHCP. These SSMPs would reflect the beneficial effects of the increase in reserve size. It is anticipated that with the ASI project's dedication of the Rosa Parcels to TNBC, the addition of the dedicated land to the existing reserves (TNBC's Rosa East and Rosa Central) would create a 400-acre reserve block. The SSMP would be prepared by TNBC for this larger reserve block following TNBC's acquisition of the land increasing the size of the consolidated reserve.

5.3 BUFFERS WITHIN RESERVE LANDS

Development at the ASI site would not significantly alter the need for or effectiveness of reserve buffers at existing reserves. The Airport South Industrial site is separated from the nearest existing Natomas Basin Conservancy reserves by the West Drainage Canal. The two closest reserves are the 106-acre "Rosa East" property and the approximately 100-acre "Rosa Central" reserve, both located south of the project site on the opposite side of the West Drainage Canal.

Areas proposed for disturbance closest to the existing Natomas Basin Conservancy reserve properties are planned to be located more than 300 feet from the West Drainage Canal that separates the project site from the reserves. The Natomas Basin Conservancy reserve lands closest to the project site do not currently include improved wetland habitats. The Natomas Basin HCP provides that buffers are to be "considered during the preparation of a site-specific management plan for each reserve site," and anticipates that such buffers would be used for reserve lands that include improved wetland habitat. The proposed project would not affect the Natomas Basin Conservancy's ability to buffer future wetland uses from the project site within the existing reserve lands pursuant to the NBHCP.

5.4 CONNECTIVITY

The conservation strategy of the NBHCP emphasizes the need for maintaining connectivity of reserves and the importance of existing canals and drains for providing that connectivity. But, the NBHCP would not preserve or enhance habitat along canals, although it does contemplate future needs to preserve habitat along canals in some instances. The NBHCP states (on page IV-8) that elimination of drains or canals would primarily be related to urban development and thus would be unlikely to affect reserves. Nonetheless, the NBHCP acknowledges (on page IV-9) that once reserves are established and key connectivity corridors have been identified, changes in water delivery and drainage along these waterways could occur, and thus these changes must be considered by TNBC and measures taken to ensure connectivity. Suggested measures include MOAs, easements, or purchase of land.

The Lone Tree Canal (Canal-2) is an indirect tributary to the Sacramento River by way of the West Drainage Canal. The canal flows southward through the project site to the West Drainage Canal. The project would include a new bridge crossing over the Lone Tree Canal as part of construction of the new Airport South Industrial Drive, which would include installation of a new culvert to the canal. Through compliance with the NBHCP Take Avoidance, Minimization, and Mitigation Measures related to effects on giant garter snake, potential impacts to the species, including those associated with the species' use of the on-site canals as migratory corridors, would be reduced to avoid any potential effects on the operating conservation strategy. Implementation of the proposed project would not affect habitat connectivity within the canals.

5.5 FORAGING HABITAT

As described on pages IV-11 through IV-13 of the NBHCP, the viability of populations of covered bird species, and in particular the Swainson's hawk, depends on foraging habitat both on TNBC reserves and on unpreserved agricultural lands in the Natomas Basin. Therefore, the NBHCP includes measures to be implemented if foraging habitat outside of the permit areas (i.e., the areas authorized for urban development under the NBHCP) is converted to urban land uses without adequate provisions to maintain foraging habitat values and the effectiveness of the operating conservation program is potentially compromised. These measures include modifying acquisition criteria, substituting impacted reserves with unaffected replacement sites, modifying the percentages of habitat types at TNBC reserves, and pursuing outside funding to acquire additional reserves.

The current County zoning designations for the ASI annexation area is for agriculture/open space uses. The project site was acknowledged by the NBHCP to provide foraging habitat for Swainson's hawk, but such "existing baseline foraging habitat is not considered mitigation under the [NBHCP]." Nonetheless, the effects analysis evaluates whether the proposed conversion of agriculture and open space lands to urban development for the area outside the City's permit area would result in an effect on the NBHCP operating conservation strategy. Although, there is a portion of the ASI annexation area (278.4 acres of vacant land) that is located outside of the City's NBHCP Permit boundary, the ASI project does not result in any exceedance of the City's 8,050-acre cap per the NBHCP nor the total 17,500-acre cap for Natomas Basin that the conservation strategy contemplated..

As demonstrated in this effects analysis, the ASI project includes adequate provisions to maintain foraging habitat values by requiring the ASI project to preserve lands providing Swainson's hawk foraging habitat that will provide a 1:1 ratio for agricultural (foraging habitat). As such, there will not be any net loss of foraging habitat. This mitigation would be accomplished through land dedication and purchase of conservation easements or fee title of lands with suitable Swainson's hawk foraging habitat, subject to review and approval by CDFW. Alternatively, should a portion of the City's surplus HCP coverage be made available to the project through participation in the NBHCP, the project applicant would pay the NBHCP mitigation fees for land acquisition, enhancement, and management and monitoring activities. The effects of the proposed project on foraging habitat would not alter the viability of any of the populations of NBHCP Covered Species as discussed in this Effects Analysis.

5.6 MINIMUM HABITAT BLOCK SIZE REQUIREMENTS

The NBHCP requires that by the end of the NBHCP's 50-year term, one habitat block within the reserve system will be at least 2,500 acres in size and the balance of reserve lands shall be in habitat blocks of at least 400 acres in size. The NBHCP (on page IV-14) provides the following four bases for this size requirement:

1. large blocks minimize the "perimeter effect",
2. large blocks promote biodiversity by allowing multiple species and niches to occupy the site,
3. the benefit to genetic diversity of dispersing interconnected reserves throughout the Natomas Basin, and
4. the 400-acre reserve size is considered the minimum size to allow persistence of covered species.

No aspect of the ASI project would alter any of these bases for the minimum habitat block size requirements of the NBHCP. Implementation of the proposed project would not prevent the Natomas Basin Conservancy from establishing 8,750 acres of reserves in the Natomas Basin, as identified in the NBHCP, as the project site constitutes only 0.89 percent of the acreage in the Natomas Basin and the Natomas Basin Conservancy is well on its way to securing all the reserve lands required to meet its obligations. The NBHCP is now just over 22 years into its 50-year timeframe (based on the ITPs expiring in 2053) and has already successfully completed its largest land acquisition milestone by completing the 2,500-acre block requirement. With regard to habitat blocks of at least 400 acres, the nearest NBHCP habitat blocks to the project site include the Rosa East, Rosa Central, Souza, and Natomas Farms reserves totaling approximately 301 acres, and the Cummings and Rudin reserves, totaling approximately 109 acres. The project site does not include the property lying between the aforementioned two nearby clusters of reserve land and would not preclude the future acquisition of connectivity between the two areas by The Natomas Basin Conservancy. The ASI project could be beneficial in completing a 400-acre reserve block with the future land dedication of parcels that are located adjacent to Rosa East and Rosa Central reserve area. This dedication would occur if the ASI project were implemented.

5.7 EFFECTIVENESS OF THE CONSERVATION STRATEGY OF THE NBHCP

As described in the preceding sections, effects on the key components of the NBHCP's conservation strategy resulting from the ASI project would be minor, and would not reduce the effectiveness of the conservation strategy. Therefore, no changes in the conservation strategy would be necessitated by the project.

The project would avoid affecting the effectiveness of the conservation strategy through compliance with applicable NBHCP Take Avoidance, Minimization, and Mitigation Measures for all project construction activities, regardless of whether they occur within or outside of the NBHCP permit area. The project includes an agriculture mitigation that will directly benefit preservation of Swainson's hawk foraging habitat at a total 1:1 ratio through purchase of conservation easements or fee title of lands with suitable habitat, as approved by CDFW. This mitigation provides for a no net loss of agricultural lands while ensuring the provision of foraging habitat that directly supports species such as Swainson's hawk. Alternatively, should a portion of the City's surplus HCP coverage be made available to the project, the applicant through participating in the NBHCP would pay NBHCP mitigation fees for land acquisition, enhancement, and management and monitoring activities.

6 POTENTIAL EFFECTS OF THE PROJECT ON NBHCP GOALS AND OBJECTIVES

For each applicable goal and objective in the NBHCP, this section summarizes the effects of the Airport South Industrial project on attainment of that goal or objective. These effects were analyzed in the preceding sections of this report that addressed effects on covered species, habitat acreage, human-wildlife conflicts, connectivity, habitat values at TNBC reserves, water availability at TNBC reserves, and the opportunity to establish additional reserves.

Although a portion of the ASI project (278.4 undisturbed acres) would be located outside of the areas where urban development was authorized (NBHCP Permit Boundary) under the NBHCP and ITPs, the ASI project acreage would be within the City's 8,050-acre authorized development contemplated in the NBHCP. As such, the ASI project does not result in a net increase of land potentially developed in the Natomas Basin based on the amount of acreage the NBHCP projected for authorized development. The project's avoidance, minimization and mitigation measures would be consistent with the NBHCP measures, and the ASI project could still contribute to the attainment of the NBHCP's goals and objectives.

For example, the 0.5 to 1 ratio of developed to conserved land in the NBHCP applies to the entire 17,500 acres of authorized development to address cumulative impacts in the Natomas Basin. The average habitat quality was lower in the areas permitted for development than in the areas that would be preserved (City of Sacramento et al. 2003). Similarly, the NBHCP conservation strategy was based in part on the assumption that most of the Natomas Basin was in agricultural use at the time of the NBHCP's approval and that this land would remain in agricultural land uses that provide habitat for most covered species (e.g., as described on page IV-11 of the NBHCP). Retaining a substantial acreage of existing agricultural habitats limits the risks associated with relying on enhancement and restoration efforts to offset habitat losses. It also retains, largely unaltered, the canals and upland corridors that connect habitats; and it would leave reserves surrounded by agricultural lands that increase the benefits of reserves for covered species. Therefore, development outside of areas permitted by the NBHCP could eliminate higher quality habitats, reduce habitat connectivity, and detrimentally affect reserves to a much greater degree than the development permitted by the NBHCP. Such development also could create conflicts with the continued use of adjacent lands for agriculture.

These examples illustrate that both the types and magnitudes of effects caused by development outside of the areas permitted by the NBHCP can differ from those caused by comparable development inside of the areas permitted by the NBHCP; thus, mitigation comparable to that in the NBHCP may not adequately offset these effects. This situation was anticipated during the development of the NBHCP and is reflected in the text of the NBHCP, BO, Final EIR/EIS and the implementation agreement for the NBHCP (e.g., page IV-12 of the NBHCP).

Therefore, evaluation and interpretations of the ASI project's effects on the NBHCP were based primarily on the sum of the anticipated effects on the TNBC reserve system, and on the sum of anticipated effects on the viability of populations of covered species using the Natomas Basin. An overall negative effect on the existing reserve system would be that which is considered adverse to the attainment of the NBHCP's goals and objectives. Effects that would preclude attainment of a goal or objective, reduce the viability of a covered species or otherwise necessitate a change in the NBHCP's conservation strategy would be considered substantial effects that could result in a conflict with the NBHCP.

Overall, the ASI project would not conflict with attainment of the goals and objectives of the NBHCP. The ASI project could provide beneficial effects on the goals and objectives of the NBHCP. Consequently, the ASI project would not cause an overall adverse effect on attainment of any of the goals or objectives of the NBHCP, and the project could provide an overall benefit towards the attainment of several goals. (For example, ASI developer's agreement to dedicate 117.59 acres of (APN 225-0020-15 and APN 225-0020-14) of preserve land would contribute to the connectivity and quality of habitat preserved under the NBHCP.)

In the following sections of text, the project's effects are assessed for the project's effects on each potentially affected goal and objective of the NBHCP. This assessment, in turn, is based on the analyses presented in Chapter 3 *Alteration of Population and Habitat Attributes by the Airport South Industrial Project* and Chapter 4 *Potential Effects of the Airport South Industrial Project on Covered Species*.

6.1 OVERALL GOALS

6.1.1 OVERALL GOAL 1

Establish and manage in perpetuity a biologically sound and interconnected habitat reserve system that mitigates impacts on Covered Species resulting from Covered Activities and provides habitat for existing, and new viable populations of Covered Species. (NBHCP, p. I-15)

A project could potentially affect attainment of this goal by affecting the:

- ▶ acreage of habitat in the Natomas Basin,
- ▶ quality of habitat in the Natomas Basin,
- ▶ connectivity of habitat in the Natomas Basin,
- ▶ connectivity of TNBC reserves,
- ▶ habitat value of TNBC reserves,
- ▶ water availability at TNBC reserves, and opportunities to establish additional TNBC reserves.

The ASI project would provide beneficial effects on the attainment of this goal through all of these mechanisms, except for water availability at TNBC reserves (which the project would not affect). The project's beneficial effects would include increased habitat quality resulting from the preservation, creation, and enhancement of habitats, increased connectivity of existing TNBC reserves and of habitats, and increased opportunities to establish additional TNBC reserves. The project's potential effects would include reducing the acreage of upland and foraging habitats in the Natomas Basin. A detailed assessment of these effects is provided in sections 3 *Alteration of Population and Habitat Attributes by the Airport South Industrial Project* and 4 *Potential Effects of the Airport South Industrial Project on Covered Species*.

The implementation of the NBHCP conservation measures will substantially lessen the project's potential effects by ensuring that connectivity of the canals are sustained (as described in Sections 3.5, 3.4, 4.1, and 4.2.), and to preserve and enhance foraging habitat within a mile of existing TNBC reserves (as described in Sections 3.4, 3.7, and 4.3). The NBHCP conservation measures also will cause additional beneficial effects (as described in Sections 3.6, 3.7, and 3.8), because the preserved and enhanced foraging habitat would not only lessen effects on foraging habitat and on TNBC reserves, but also could increase connectivity of habitat and of TNBC reserves. Similarly, by ensuring that connectivity of canals would be maintained, the project would conserve a portion of an important corridor connecting reserves and habitats of the southern and central Natomas Basin.

As described in Section 3.9, the project would have an overall beneficial effect on the establishment and management of reserves for the NBHCP. Because the acreage of land in the Natomas Basin that has already been acquired by TNBC and that is potentially available for preservation exceeds the 8,750 acres (as described in Section 4 of this Effects Analysis) that will be preserved by the NBHCP, the project would not preclude the preservation of sufficient land to attain the NBHCP's goals and objectives. The ASI project will provide additional reserve lands, with much of this acreage adjacent to or near existing reserves, which would increase the connectivity of habitats and the resources available to covered species using reserves established by the NBHCP. The project also would increase opportunities to establish new reserves, particularly to create larger reserves by preserving additional land adjacent to existing TNBC and project's proposed reserves. (Sections 3.6–3.9 provide a detailed assessment of effects on the management and establishment of TNBC reserves.)

The preservation and enhancement of habitat by the project would adequately address the projects effects on habitats for covered species. Effects on the acreage and quality of habitats are summarized below, and a detailed

assessment of these effects is presented in Sections 3.3 and 3.4. (These effects are also evaluated separately for each covered species in Chapter 4 *Potential Effects of the Greenbrier Project on Covered Species*.)

For wetland land cover (i.e., rice, canal, and ponds and seasonally wet areas), a total of 2.018 acres of potential jurisdictional tributary drainages and other waters of the U.S. were identified within the project site. The Natomas Basin HCP requires that a system of habitat mitigation lands or reserves be established to provide wetland and upland habitat values for giant garter snake, Swainson's hawk, and other species. The proposed Airport South Industrial Drive would include construction of a bridge and culvert across Canal 2, to the west of the Lot D detention/retention basin. In addition, construction of the proposed commercial lots (Parcels 6A through 6C and 7A through 7C) would result in disturbances to Ditch 1 and Ditch 2. For potential impacts to State- or federally protected wetlands, the proposed project would require a Clean Water Act (CWA) Section 404 permit from the U.S. Army Corps of Engineers (USACE) and a Section 401 permit from the Regional Water Quality Control Board (RWQCB) and would be subject to all the conditions set forth therein.

For upland land cover (i.e., alfalfa, grassland, idle, non-rice crop, pasture, and ruderal), the net reduction in acreage resulting from the project also would be offset by an increase in the quality of the habitat preserved and enhanced habitat. Based on 2001 land cover mapping, the ASI project would cause a net reduction of 278.4 acres (note: approximately 121 acres of the ASI annexation area is located within the NBHCP Permit Boundary which was already accounted for in the NBHCP 2001 baseline) of upland land cover providing habitat for covered species, but would dedicate the Rosa parcels completing a 400-acre reserve which provides protected habitat for HCP covered species such as Swainson's hawk, burrowing owl, and loggerhead shrike. For other covered species (including Aleutian Canada goose, tricolored blackbird, and bank swallow), the additional habitat values provided by the preservation and enhancement of the upland habitat would offset the habitat values of the upland acreage lost as a result of the project. (The analysis of the foraging habitat value lost at the Airport South Industrial site and of the value gained at the proposed reserve and mitigation sites is summarized in Section 3.4 *Habitat Quality in the Natomas Basin*.)

In light of the project's establishment of reserves that provide habitat for covered species and mitigate the project's impacts to those covered species, implementing the proposed project would either not alter or would improve the connectivity of the NBHCP reserve system and provide habitat for viable populations of covered species. In addition, because the viability of covered species would either be unaltered or improved (e.g., giant garter snake, northwestern pond turtle), the project would not adversely affect attainment of this goal.

6.1.2 OVERALL GOAL 3

Preserve open space and habitat that may also benefit local, non-listed and transitory wildlife species not identified within the NBHCP. (NBHCP, page I-16)

A project could potentially affect attainment of this goal by affecting the:

- ▶ Acreage of habitat in the Natomas Basin,
- ▶ Quality of habitat in the Natomas Basin,
- ▶ Connectivity of habitat in the Natomas Basin,
- ▶ Connectivity of TNBC reserves,
- ▶ Habitat value of existing TNBC reserves,
- ▶ Water availability at TNBC reserves, and
- ▶ Opportunities to establish additional TNBC reserves.

The ASI project would provide beneficial effects on the attainment of this goal through most of these mechanisms. By preserving, enhancing, and creating habitat, the project would increase the quality of habitats,

increase the connectivity of habitats and TNBC reserves, and create additional opportunities to establish additional TNBC reserves. Although, the development of the ASI site would reduce 278.4 acres of open space lands in the Natomas Basin, the ASI acreage is heavily constrained due to the Interstate 5, freeway interchange, residential, school and Sacramento International Airport operations. The urban pressures on the site limit the existing and any potential quality functional habitat of the site. The project developer's offer of dedication of land that would complete a 400-acre reserve block for TNBC as required by the NBHCP off-sets any effects of the ASI project.

As described in Sections 3.6–3.9, the project would have an overall beneficial effect on the establishment and management of reserves for the NBHCP. Because the acreage of land in the Natomas Basin that is potentially available and suitable for preservation exceeds the 8,750 acres that will be preserved by the NBHCP, the project would not preclude the preservation of sufficient land to attain the NBHCP's goals and objectives. It would provide reserve lands adjacent to or near existing reserves, increasing the connectivity of habitats and the resources available to covered species using reserves established by the NBHCP; in addition, it would conserve a portion of an important corridor of canal habitat that ensures the West Drain canal connectivity with the Lone Tree Canal. The project also would increase opportunities to establish new reserves, particularly to create larger reserves by preserving additional land adjacent to existing TNBC and project's proposed reserves.

Because the project would not reduce the likelihood that the NBHCP would be able to preserve sufficient habitat for non-listed species to attain this goal, the ASI project would not adversely affect the attainment of this goal.

6.1.3 OVERALL GOAL 4

Ensure that direct impacts of Authorized Development upon Covered Species are avoided or minimized to the maximum extent practicable. (NBHCP, page I-16)

A project could potentially affect attainment of this goal by causing construction-related effects on the survival or reproduction of individuals that are using the project or mitigation sites and adjacent lands.

Development of the Airport South Industrial site would likely affect giant garter snake, Swainson's hawk, burrowing owl, and loggerhead shrike, and could affect several other covered species including northwestern pond turtle, tricolored blackbird, white-faced ibis, Aleutian Canada goose, Sanford's arrowhead, and Delta tule pea. These potential effects (which are described in detail in Chapter 4) would be comparable to the construction-related effects that could be caused by development permitted by the NBHCP.

The avoidance and minimization measures incorporated into the project would substantially lessen these effects. These measures include all of the applicable avoidance and minimization measures that were included in the NBHCP to avoid and minimize construction-related effects, which are a comprehensive set of effective measures for reducing these effects. (An assessment of the applicability of these measures is in Appendix A.) With the implementation of the NBHCP conservation measures, the ASI project would not adversely affect attainment of this goal because it would implement a comprehensive set of measures to avoid and minimize effects on covered species. The Airport South Industrial project also would not alter the effectiveness of any NBHCP conservation measures for avoiding and minimizing the effects of development authorized by the NBHCP (Appendix A).

6.2 OVERALL OBJECTIVES

6.2.1 OVERALL OBJECTIVE 1

Minimize conflicts between wildlife and human activities, including conflicts resulting from airplane traffic, roads and automobile traffic, predation by domestic pets, and harassment by people. (NBHCP, page I-16)

A project could potentially affect attainment of this objective by causing construction-related effects on survival or reproduction of individuals using project sites and adjacent lands, or by altering the area, types of habitats, or

level of conflicts in zones with high levels of human-wildlife conflicts.

These human-wildlife conflicts and construction-related effects would be comparable to those resulting from the development authorized by the NBHCP. The project would implement the NBHCP avoidance and minimization measures which would substantially lessen these effects. These measures include all of the applicable measures that were included in the NBHCP to avoid and minimize construction-related effects and to reduce human-wildlife conflicts. (An assessment of the applicability of these measures is included as Appendix A.) As described in Section 3.1, these measures represent a comprehensive set of effective measures for avoiding and minimizing the project's effects.

Therefore, the project would not adversely affect attainment of this objective because it would implement a comprehensive set of measures that would minimize human-wildlife conflicts. The ASI project also would not substantially lessen the effectiveness of any NBHCP conservation measures for minimizing human-wildlife conflicts (Appendix A).

6.2.2 OVERALL OBJECTIVE 3

Ensure connectivity between TNBC reserves to minimize habitat fragmentation and species isolation. Connections between reserves will generally take the form of common property boundaries between reserves, waterways (primarily irrigation and drainage channels) passing between reserves, and/or an interlinking network of water supply channels or canals. (NBHCP, page I-16)

A project could potentially affect attainment of this goal by affecting:

- ▶ Connectivity of habitat in the Natomas Basin,
- ▶ Connectivity of TNBC reserves,
- ▶ Habitat value of TNBC reserves, and
- ▶ Water availability at TNBC reserves.

The ASI project would cause beneficial effects on the attainment of this objective through most of these mechanisms. The main beneficial effect would be increased connectivity of habitats and TNBC reserves due to preservation, the project's proposed reserves, two of which are adjacent to or near (i.e., within a half mile of) existing TNBC reserves. The canals within the ASI site will be preserved providing continued connectivity for species such as Giant Garter Snake. Therefore, the project's overall effect on the attainment of this objective would not be adverse.

6.3 WETLAND SPECIES/HABITAT GOALS AND OBJECTIVES

6.3.1 WETLAND SPECIES/HABITAT GOAL/OBJECTIVE 1

Acquire, enhance and create a mosaic of wetland habitats with adjacent uplands and connecting corridors to provide breeding, wintering, foraging, and cover areas for wetland species in the Plan Area. (NBHCP, page I-17)

A project could potentially affect attainment of this goal by affecting:

- ▶ Acreage of habitat in the Natomas Basin,
- ▶ Quality of habitat in the Natomas Basin,
- ▶ Connectivity of habitat in the Natomas Basin,
- ▶ Connectivity of TNBC reserves,
- ▶ Habitat value of TNBC reserves,
- ▶ Water availability at TNBC reserves, and
- ▶ Opportunities to establish additional TNBC reserves.

The project would increase the area of preserved land in the Natomas Basin, which would increase the connectivity of habitats and create additional opportunities to create larger reserves. By developing most of the ASI site, the project would reduce the acreage of wetland habitats of potential jurisdictional tributary drainages and other waters of the U.S. were identified within the project site (Table 6-1).

Table 6-1 Aquatic Features Observed in the Project Site		
Feature Name	Area (acres)	Length (linear feet)
Tributary Drainages		
Canal-1	0.04	2,149
Canal-2	1.46	3,204
Canal-3	0.001	5,335
Subtotal	1.501	10,688
Other Waters		
Ditch-1	0.19	2,278
Ditch-2	0.39	2,458
Subtotal	0.58	4,736
Overall Total	2.081	15,424
<i>Source: Bargas Environmental Consulting, 2023.</i>		
<i>*The acreage of 2.081 is the total acreage within the ASI site of which most will be avoided and a minimal amount temporarily impacted.</i>		

The reduction of wetland acreage will be fully mitigated in accordance with the NBHCP requirements to offset the loss of wetlands habitat caused by the development. Therefore, the project would not adversely affect the attainment of this goal.

This reduction in wetland acreage would not cause an effect on attainment of this goal/objective that would necessitate changes to the conservation strategy of the NBHCP, as the project includes wetland preservation in accordance with the NBHCP. Additionally, no reduction in the connectivity of wetland habitats or in opportunities to preserve, enhance, and acquire wetland habitats would result. The population viability of covered species using these habitats would not be reduced.

Because the project would contribute directly to the attainment of this goal and would not cause any adverse effects on the goal's attainment that would need to be offset by changes in the conservation strategy of the NBHCP, the project's overall effect on the attainment of this goal is not adverse.

6.3.2 WETLAND SPECIES/HABITAT GOAL/OBJECTIVE 2

Provide habitat to maintain, attract and sustain viable populations of the Covered Species. The habitat areas should be configured to encompass natural species migration areas, minimize species isolation, and prevent future habitat fragmentation. (NBHCP, page I-17)

A project could potentially affect attainment of this goal by affecting:

- ▶ Zones with human-wildlife conflicts,
- ▶ Acreage of habitat in the Natomas Basin,
- ▶ Quality of habitat in the Natomas Basin
- ▶ Connectivity of habitat in the Natomas Basin,
- ▶ Connectivity of TNBC reserves,
- ▶ Habitat value of TNBC reserves,
- ▶ Water availability at TNBC reserves, and
- ▶ Opportunities to establish additional TNBC reserves.

The ASI project would not cause an adverse effect on the attainment of this goal/objective through several of these mechanisms. Based on the analyses presented in Section 3 *Alteration of Habitat and Population Attributes*

by the Airport South Industrial Project, the project would not cause a net loss in the acreage of wetland habitats, and could improve connectivity of habitat and TNBC reserves, and increase opportunities to establish additional TNBC reserves. Overall, the project would not adversely affect attainment of this goal.

1. Habitat would be preserved in perpetuity;
2. Habitat would be monitored and actively managed for the benefit of covered species;
3. Habitat would not be subject to continuous disturbance caused by farming or canal maintenance activities; and
4. Habitat would be relatively free of human intrusion (USFWS 2003).

Consequently, as described in Section 4 *Potential Effects of the Airport South Industrial Project on Covered Species*, the project would either benefit or be unlikely to alter the viability of covered species using wetland cover (i.e., rice, canal, or ponds and seasonally wet areas). Because the project would not reduce the viability of covered species and creates additional reserves that contribute to efforts to sustain viable populations and prevent fragmentation of habitat, the project does not adversely affect this goal/objective.

6.4 UPLAND SPECIES/HABITAT GOALS AND OBJECTIVES

6.4.1 UPLAND SPECIES/HABITAT GOAL/OBJECTIVE 1

Acquire, enhance and create a mosaic of upland habitat types for breeding, foraging, and cover for species dependent on upland habitats. (NBHCP, page I-17)

A project could potentially affect attainment of this goal by affecting:

- ▶ Acreage of habitat in the Natomas Basin,
- ▶ Quality of habitat in the Natomas Basin,
- ▶ Habitat value of existing TNBC reserves, and
- ▶ Opportunities to establish additional TNBC reserves.

For upland habitats, the Airport South Industrial project would not affect the attainment of this goal through each of these mechanisms. The project's beneficial effects on the attainment of this goal/objective would include the preservation of habitats (through participation in the NBHCP providing land dedication and payment of NBHCP Fees) that contribute to the connectivity of existing TNBC reserves and increase opportunities to establish additional TNBC reserves. Sections 3 *Alteration of Population and Habitat Attributes by the Airport South Industrial Project* and 4 *Potential Effects of the Airport South Industrial Project on Covered Species* provide detailed assessments of these effects.

Overall, the project would not adversely (and could beneficially) affect this goal/objective. Because the acreage of upland habitat in the Natomas Basin that is potentially available and suitable for preservation is more than the acreage of upland habitat that would be preserved and enhanced by the NBHCP, and the project would affect only a small percentage of this land, the project would not preclude the preservation of sufficient land to attain the NBHCP's goals and objectives. The project would, however, increase opportunities to establish new reserves, which would aid the attainment of this goal/objective.

6.4.2 UPLAND SPECIES/HABITAT GOAL/OBJECTIVE 2

Ensure reserve land connectivity with travel corridors for upland-dependent species. The habitat areas should encompass grasslands, agricultural croplands, riparian habitats, and shelter and nesting habitat areas (fence rows, clusters of shrubs and small trees), as well as wetland areas to provide a year-round source of water for upland species. The upland areas should be configured to enhance natural species migration, minimize species isolation, and prevent future habitat fragmentation. (NBHCP, page I-17)

A project could potentially affect attainment of this goal by affecting:

- ▶ Connectivity of habitat in the Natomas Basin,

- ▶ Connectivity of existing TNBC reserves,
- ▶ Habitat value of existing TNBC reserves, and
- ▶ Opportunities to establish additional TNBC reserves.

The Airport South Industrial project would not affect the attainment of this goal/objective through each of these mechanisms. Beneficial effects would include the preservation, creation, and enhancement of upland habitats that contribute to the connectivity of existing TNBC reserves and of habitats and increase opportunities to establish additional TNBC reserves. Sections 3.5–3.7 and 3.9 provide a detailed assessment of these effects.

The project would preserve and enhance foraging habitat within a mile of existing TNBC reserves (or of the Swainson's hawk zone along the Sacramento River). This would cause additional beneficial effects because the preservation and enhancement of foraging habitat would not only offset effects on TNBC reserves but also could increase connectivity of habitat and of TNBC reserves.

Based on the assessments presented in Section 4 *Potential Effects of the Airport South Industrial Project on Covered Species*, a reduction in connectivity of upland habitats at the Airport South Industrial site also would be unlikely to alter the viability of the populations of covered species using upland habitats in the Natomas Basin. Of the covered species, Swainson's hawk, burrowing owl, and loggerhead shrike all could be affected, because they probably use the Airport South Industrial site. These are highly mobile animals that could fly over or around the site, though they may not choose to do so, may do so less frequently, or doing so may expose them to additional risks. The project would enhance and preserve upland habitat within a mile of existing TNBC reserves. This enhanced and preserved land would likely improve connectivity of upland habitats and could increase the survival or reproduction of individuals using those sites. Also, burrowing owls and loggerhead shrikes using the Natomas Basin are part of large populations, a reduction of connectivity at the Airport South Industrial site would affect a very small portion of their range and numbers, and their loss of habitat would be mitigated by habitat preservation, creation, and enhancement at proposed reserve sites. Thus, the project is unlikely to alter the viability of populations of covered species using the Natomas Basin.

7 CUMULATIVE EFFECTS

For the ASI project, Section 6 of the Airport South Industrial EIR, *Other CEQA-Required Analyses*, identifies and evaluates projects contributing to potential cumulative effects. The EIR analysis evaluates cumulative effects as defined by Section 15130 of the California Environmental Quality Act Guidelines (State CEQA Guidelines). Because that analysis addresses a range of resources and issues, it is broader and includes more detail on proposed projects than does the following analyses, which only address effects on species covered by the NBHCP.

7.1 ANALYSIS OF CUMULATIVE EFFECTS

7.1.1 CUMULATIVE CONTEXT

The Natomas Basin is one of the nine major basins in the Central Valley. Basins are flat, low-lying areas adjacent to the natural levees that form along the major rivers. These basins fill with flood waters and over time they accumulate the fine sediments carried by these waters. Prior to urban development, the Natomas Basin would regularly become inundated by the winter river flows and remain inundated for weeks to months during most years (Kelley 1989; Smith and Verrill 1996). The predominant vegetation was probably seasonal wetland with marsh growing at the lowest elevations, and riparian forest and scrub growing at higher elevations on alluvial soils near the Sacramento and American Rivers.

The City of Sacramento has developed over the past 150-plus years beginning in the late 1840s immediately following the discovery of gold. Over this time the City, and the Sacramento region, has shifted largely, though not entirely, from natural habitat to agriculture and urban development.

In the Natomas Basin, urbanization occurred much later than agricultural uses. In 1924, after almost the entire Natomas Basin had been converted to agricultural land uses, developed land uses were still almost nonexistent. There were few structures, and few roads, most of which were not paved (McClure 1925). By the 1960s, Sacramento International Airport, and major highways had been constructed, and some urban development had begun in the southern Basin, adjacent to Sacramento. Over the next 40 years, this urban development continued, primarily in the southern basin, and by 2001 approximately 21% of the Basin was occupied by developed land cover.

7.1.2 PROJECTS CONTRIBUTING TO CUMULATIVE IMPACTS

DEVELOPMENT AUTHORIZED BY THE NBHCP

The NBHCP authorized 17,500 acres of land in the Natomas Basin for development. Most of the authorized 17,500 acres of development that has occurred are located in the City of Sacramento and Metro Air Park. Development authorized in Sutter County under the NBHCP has recently commenced over the last couple of years. The development remaining under the NBHCP for the City of Sacramento is limited to less than 1,200 acres of the authorized 8,050 acres. Authorized development includes projects sponsored by either private developers or public entities that occur within these permitted areas.

This development is described in more detail below, and the effects of this development have previously been analyzed in conjunction with the NBHCP (CH2M HILL 2002). Additional information on the effects caused by this development is also provided in Section 3.3 *Habitat Acreage in the Natomas Basin*, and Appendix B *Change in Natomas Basin Land Cover in 2001–2025*.

North Natomas Community Plan & South Natomas Community Plan

Development projects in the North Natomas community that have been approved but are yet to be fully built out have been identified and evaluated by the NNCP and the associated environmental review documents prepared in

compliance primarily with CEQA.

The North Natomas community is bounded by Elkhorn Boulevard to the north, I-80 to the south, the Natomas East Main Drainage Canal to the east, and the West Main Drain Canal to the west, covering more than 9,000 acres in the northwest portion of the city that was predominantly in agricultural use prior to development. North Natomas was annexed by the City of Sacramento in the 1960s, and has developed quickly since the 1990s, when the City of Sacramento, working with FEMA and the Sacramento Area Flood Control Agency, participated in a flood control plan that allowed the eventual lifting of development restrictions in the area. The North Natomas Community Plan (NNCP) provides a long-term vision for the development of the North Natomas community. The environmental consequences from implementation of the NNCP were addressed in the 1986 NNCP EIR (certified by the Sacramento City Council in May 1986) as well as the 1993 Supplement to the 1986 NNCP EIR. Development within the NNCP started to take off in 1999.

In 2000, there were approximately 2,002 people, occupying 740 housing units in North Natomas (SACOG 2001). North Natomas is home to approximately 60,000 people and 18,000 housing units (source: 2040 General Plan, City of Sacramento, February 2024). Today, North Natomas is characterized by housing developments organized largely in residential subdivisions, with office parks and retail shopping centers near the freeways and along major arterials.

The South Natomas Community Plan Area is located just north of Downtown Sacramento and encompasses about eight square miles. The South Natomas Community Plan Area is bounded by Interstate 80 (I-80) to the west and north, the Ueda Parkway to the east, and the confluence of the Sacramento and American rivers to the south. Although neighborhoods existed as early as the 1920s, South Natomas was developed predominantly as residential subdivisions between 1950 and 1980 and was annexed by the City of Sacramento in the 1960s.

Today, South Natomas is home to approximately 46,000 residents. Because most of South Natomas is built out with established neighborhoods, there is relatively little vacant land. There are, however, still some opportunities for infill redevelopment of vacant and underutilized lots, as well as a few parcels west of I-5 that have not yet been developed (Source: 2040 General Plan, City of Sacramento, February 2024).

The NBHCP authorized development of 8,050 acres to the City of Sacramento completely covers the areas of North Natomas and South Natomas. Much of South Natomas was already developed by the time NBHCP was created.

Metro Air Park

In addition to development anticipated within the North Natomas community, the Metro Air Park (MAP) is a developing project located adjacent to the Sacramento International Airport and along the westerly edge of the Airport South Industrial site. The MAP total of 1,983 acres (MAP HCP) has been approved for development of approximately 20 million square feet of commercial and industrial development, and off-site infrastructure. MAP is located in an area that has historically been dominated by agricultural uses. Construction of the Metro Air Park began in September 2003.

Sutter County

In 2004, Sutter County voters passed Measure M, an advisory measure intended to provide the Board of Supervisors with an indication of how the citizens of Sutter County feel about the types and level of development in the 7,500-acre area of the South Sutter County Industrial / Commercial Reserve. The southern boundary of the Measure M area forms the Sutter/Sacramento county line. Sutter County is one of the signatory parties to the NBHCP and IA. The USFWS and CDFW authorized 7,467 acres of development in Sutter County under the HCP and issued Incidental Take Permits (ITPs). As of December 31, 2023, Sutter County has 6,948 acres remaining of the 7,467 authorized development acres (source: Sutter County NBHCP Annual Report, March 19, 2024).

OTHER PROPOSED AND APPROVED PROJECTS CONTRIBUTING TO CUMULATIVE EFFECTS

Several other projects are being planned or have been approved in the Sacramento County portion of the Natomas Basin outside of the areas permitted for development under the NBHCP. These projects are described below.

Sacramento International Airport Master Plan Update (Approved)

The Sacramento International Airport is in Natomas Basin in the unincorporated portion of Sacramento County. The project site is located approximately 10 miles north of downtown Sacramento, north of I-5 east of the Sacramento River. The fenced and developed portion of the airport covers approximately 2,800 acres. This area contains two 8,600-foot-long parallel runways (150-foot-wide) with full-length parallel taxiways and one Crossfield taxiway connecting the two runways and the passenger terminal aprons. Two terminal buildings (Terminals A and B) provide a total of 31 gates.

The runways and taxiways are designed to accommodate scheduled airlines and large cargo aircraft such as the Airbus A330-200 and McDonnell Douglas MD-11F, but under emergency circumstances can handle aircraft as large as the Boeing 747-400. A general aviation (GA) ramp, managed by a Fixed Base Operator provides access to the airport for non-commercial GA operations with space for approximately 50 very small aircraft or a few large aircraft. The Fixed Base Operator also manages a large corporate hangar. Other GA facilities include a Specialized Aviation Service Operator providing maintenance to GA aircraft, and three corporate hangars, which are rented. Three cargo buildings provide a total of approximately 81,500 square feet of space for integrated cargo carriers and the belly cargo of commercial passenger aircraft operations. SMF provides parking for over 15,000 cars. The airport also has rental car facilities, airline ground support facilities, shuttle bus service areas and a service station.

The remaining 3,200 acres of County property outside the Air Operations Area (AOA) and terminal complex area is kept in annual grasslands to reduce the potential for conflicts between aircraft and wildlife, or is under cultivation for rice, corn, safflower, and other crops. Land bordering the County property is used primarily for agriculture except for the Metro Air Park area development. The master plan update evaluated airport development and operation horizon of 20 years (2018 through 2038) with four Planning Activity Levels (PALs). The update largely consists of revisions to proposed airport projects and facilities based on revised aviation forecasts. The update looks at previously identified projects and projected growth at SMF. Many of the updates center on the timing of the project (planning phase) along with minor changes to locations and size of facilities. Notable changes are highlighted below:

- Removal of the third runway and taxiway system;
- Relocating the economy parking lot from south of I-5 to north of I-5, east of Airport Boulevard;
- Changing the economy parking lot south of I-5 to commercial uses and moving it to PAL 4;
- Changing the location of Elkhorn Boulevard extension;
- Construction of a third Concourse (C), adjacent to Concourse B;
- Construction of new airline maintenance, rehabilitation and overall MRO facilities;
- Construction of a new consolidated rental car facility;
- Revising the acreage, location and phasing of commercial development proposed north of I-5, from 77 acres to approximately 189 acres;
- Move phasing of 135 acres of commercial development north of Elverta Road to PAL 3; and

- Movement of the new cargo building and apron from the southwest side to the north airfield, east of Runway 16R and increasing the size from 226k thousand square feet (kft²) to 950kft². The Cargo Facility is comprised of three buildings (sortation building, a ground crew building, and an equipment maintenance building).

The updated master plan was approved by the Sacramento County Board of Supervisors in 2021.

Sacramento County WattEV Innovative Freight Terminal (SWIFT) Project (Approved)

The Sacramento County Department of Airports has formed a public/private partnership with WattEV to construct, own, operate, and cost share the Sacramento County WattEV Innovative Freight Terminal (SWIFT) project, located within the Sacramento International Airport Master Plan area in the northwest portion of Sacramento County. The project is located south of Interstate 5 (I-5) and immediately south of Sacramento International Airport. The project would provide a publicly accessible Electric Vehicle (EV) charging facility that would be built on a 118-acre parcel of land. The project includes deployment of advanced high-powered public charging stations and associated facilities powered by a 12.5 megawatt alternating current (MWac) solar generation field, with nameplate power of 31.2 megawatts of direct current (MWdc), to support zero-electric freight movement in Sacramento. The charging areas and associated support facilities would occupy approximately 24 acres of land on the northern portion of the project site while the remaining 94 acres of the site would be occupied by solar fields to accommodate 58,880 solar panels. The project site would be configured with two truck charging areas separated by a publicly accessible central plaza.

Three buildings would be included within the public plaza. The first building would include offices housing operations staff, a trucker refreshment area, trucker restrooms, and a resting lounge. It would consist of a single story and have a footprint of approximately 2,700 square feet. The second building would include a convenience store, food outlets, restrooms, and a relaxation lounge for the public. It would also consist of a single story and have a footprint of approximately 7,000 square feet. The third building would contain two stories and be designated as a public visitor center. The project has completed CEQA and NEPA requirements, received Sacramento County Board of Supervisors' approval and is fully funded for construction. Construction is anticipated to commence in late 2025 or early 2026.

Natomas Levee Improvement Project (Approved)

The Natomas Basin is surrounded by 42 miles of levees that provide protection from the American River, Sacramento River, Natomas Cross Canal and Natomas East Main Drain Canal. Improvements to the levees were constructed in the early 1990's, which consisted of raising levees along the streams and canal systems. However, as other risk factors, including susceptibility to under seepage, began to generate increased concern, particularly following the 1997 flood event in the Sacramento Valley, it became clear that additional levee improvements would be needed in the Natomas Basin.

In 2006, the U.S. Army Corps of Engineers (USACE) determined the Natomas Basin had less than a 100-year level of flood protection due to the threat of deep under seepage. In 2007, SAFCA and the State of California began constructing levee improvements while USACE sought Congressional approval and appropriations for the work. These improvements included the construction of deep cutoff walls, landside berms, and a new adjacent levee along a portion of the Sacramento River East Levee to prevent under seepage.

By 2013, SAFCA and the state completed 18.3 of the 42 miles of levee improvements required to meet current flood control standards. In 2019, USACE began construction on the additional 24 miles of levee improvements necessary to provide a minimum 200-year level of flood protection to the Natomas Basin.

The Sacramento Area Flood Control Agency (SAFCA) and Central Valley Flood Protection Board (CVFPB) are cooperating with the U.S. Army Corps of Engineers (USACE) to construct the Federal phase of the American River Watershed Project, Natomas Basin Project (NBP). The NBP began as SAFCA's Natomas Levee Improvement Program (NLIP), including the Landside Improvements Project, Phases 1, 2, 3, 4a, and 4b.

The overall purpose of the NBP and NLIP is to bring the Natomas Basin's entire 42-mile perimeter levee system into compliance with applicable Federal and State standards for levees protecting urban areas.

The Natomas Levee Improvement Project is well underway, with significant construction completed and ongoing efforts to achieve 200-year flood protection for the Natomas Basin. Construction in parts of Reach B is nearing completion, while other areas, including Reach D and parts of Reach A, are also seeing major work on pumping plants, seepage cutoff walls, and levee widening. The project is expected to continue through 2028

The following summarizes the latest construction updates by project reach:

Active construction (2025)

Reach A (Garden Highway): Levee improvements began in 2022 and are expected to continue until spring 2028. Temporary road closures are in effect on Garden Highway for ongoing work on a vault system until October 2025.

Reach D (Pumping Plant #4 & Highway 99): Construction for the Highway 99 segment began in summer 2024 and is projected to be finished by fall 2025. The rebuilding of Pumping Plant #4, which started in August 2021, is also estimated to be completed by fall 2025.

Reach E (Pleasant Grove Creek Canal): Construction started in June 2023, with an estimated completion in fall 2025. The cutoff wall installation was finished in July 2024.

Reach I (American River north levee) - Contract 2, which includes landside improvements, is scheduled for the 2025 construction season.

Upcoming construction

Reach B (Pumping Plant #5): Construction for the replacement of Pumping Plant #5 is anticipated to begin in 2026.

Reaches F and G (Natomas East Main Drainage Canal): Levee slope improvements and upgrades to Pumping Plant #6 are projected to begin in 2028.

Reach C (Pritchard Lake Pumping Plant): Relocation of the pumping plant's discharge pipes is scheduled for the second phase of construction in spring 2027.

Greenbriar – Northlake (Approved)

The Greenbriar Development Project encompasses approximately 577 acres located northwest of the intersection of SR 70/99 and I-5 in the North Natomas area of the City of Sacramento. The Greenbriar project is an approved, master planned community with residential, commercial, recreational parks and open space, and public/quasi-public land uses located in North Natomas in the City of Sacramento. The Sacramento City Council approved the Greenbriar Development project in 2008 after certifying the Environmental Impact Report (EIR) for the project. The annexation of the 577 acres into the City of Sacramento was approved by the Sacramento Local Agency Formation Commission in 2008. In 2018, the Greenbriar development commenced construction. The development Project is now known as Northlake and the land use plan was revised in April of 2019. The master planned development consists of approximately 2,836 residential units. The development project also contains two commercial sites of 7.8 acres and 1.5 acres, combined to create a total of approximately 98,010 square feet (sf) of commercial uses. The project includes over 20 acres of public parks, along with private recreational facilities including paseos/mini parks, a walkway around the private lake, a community center, open space and shared use trails to be maintained by the homeowners' association. The Greenbriar project obtained separate regulatory resource permits issued by the wildlife resource agencies (USFWS, CDFW, ACOE, CRWQCB). The Greenbriar project did not

participate in the NBHCP (NBHCP land dedication, payment of NBHCP fees) nor are any of the Greenbriar open space mitigation lands owned/maintained by The Natomas Basin Conservancy.

FUTURE POTENTIAL CUMULATIVE PROJECTS

The County of Sacramento is currently processing proposed land use entitlements, including Development Agreements, that are being requested by landowners within the NJVA to allow the future development of approximately 7,783 acres of land adjacent to the City's boundary. The potential development would construct more than 31,000 residential units with an estimated population of over 80,000 persons and more than 500 acres of commercial uses. The following describes these pending development proposals that are in planning process with Sacramento County:

Upper Westside Specific Plan (UWSP) – (Proposed)

The proposed UWSP would include development of approximately 1,532± acres within a 2,066 acres project area located north and west of Interstate 80 and north and east of Garden Highway. This area is also referred to as “The Boot” precinct of the Natomas Joint Vision Area. The proposal includes the addition of 9,356 dwelling units (25,460 population) and 3,106,700± square feet of commercial uses into the unincorporated Natomas area immediately adjacent to the City's North Natomas Community Plan Area. The project plan includes development consisting of residential, neighborhood mixed-use, neighborhood commercial, community mixed-use, office mixed-use and health & hospitality mixed-use. The plan includes three K-8 school sites, one high school site, several parks, and a 10.0± acre urban farm site on property owned by the Los Rios Community College District that is envisioned to be part of a 16.0± vocational training campus.

Grandpark Southwest Specific Plan (Proposed)

The proposed Grandpark Southwest Specific Plan (GSSP) encompasses approximately 1,871.2 acres located immediately north of the City's North Natomas Community Plan Area, bounded by West Elverta Road to the north, Highway 99 to the west, the City of Sacramento to the south, and the proposed GrandPark Brookfield Specific Plan to the east. The GSSP area is located in what was previously referred to as the North Precinct of the Natomas Joint Vision Area. The GSSP project proposes 8,589 dwelling units, 133.8 acres of Health & Hospitality Mixed Use, 99.7 acres of Office & Entertainment Mixed Use, 26.0 acres of Neighborhood Mixed Use, 22.4 acres of Neighborhood Commercial, 25.3 acres of Schools, and approximately 443 acres of parks and open space. An Environmental Impact Report (EIR) is currently being prepared. The proposed development application is being processed with Sacramento County.

Grandpark Trails Specific Plan (Proposed)

The proposed Grandpark Trails Specific Plan (GTSP) encompasses approximately 3,517 acres located immediately north of the City's North Natomas Community Plan Area, bounded by Sutter County to the north, Highway 99 to the west, Elkhorn Boulevard and the City of Sacramento to the south, and East Levee Road to the east. The GSSP area is located in what was previously referred to as the North Precinct of the Natomas Joint Vision Area. The project proposes 16,056 dwelling units, approximately 1.2 million square feet of commercial and mixed-use development, four K-8 school sites, and approximately 1,369 acres of parks and open space. An Environmental Impact Report (EIR) is currently being prepared. The proposed development application is being processed with Sacramento County.

RiverArc (Proposed)

The RiverArc partners (City of Sacramento, Placer County Water Agency [PCWA], City of Roseville, and Sacramento County Water Agency [SCWA]) are proposing the RiverArc Project to support water supply and environmental benefits in the Sacramento Region.

The proposed project begins at the Natomas Mutual Water Company's (NMWC's) existing Pritchard Lake Diversion intake facility located at river mile (RM) 75.15 on the eastern bank of the Sacramento River north of the Sacramento International Airport. From the diversion facility, the project components (a new raw water booster pumping station and raw water pipeline) extend eastward through agricultural lands and along existing roads to the proposed water treatment plant (WTP) site (located at the northwest corner of West Elverta Road and State Route 70/99). From the proposed WTP site, two treated water transmission pipelines would be installed in and along existing public roads. One of the water transmission pipelines runs south towards the City of Sacramento point of interconnection (POI) and the second pipeline extends east towards the PCWA and City of Roseville POIs.

An alternative WTP site has been identified on an agricultural parcel east of and adjacent to Power Line Road and immediately north of the Sacramento-Sutter County line. The alternative WTP site and associated water transmission pipelines will be described and evaluated in equal level of detail in the EIR that is currently being prepared.

The proposed project would shift a portion of existing and planned regional water demand from the Lower American River to the Sacramento River. To accomplish this shift, the proposed project would divert water through the existing NMWC Pritchard Lake Diversion intake facility at RM 75.15 on the Sacramento River, deliver the river water via a new raw water pipeline to a new regional WTP, and distribute the treated surface water east and south through new and existing pipelines to service areas of the RiverArc partners.

The purpose of the proposed project is to meet the Water Forum Agreement (WFA) objectives of pursuing a Sacramento River diversion to meet water supply needs of the Placer-Sacramento region while reducing Lower American River diversion impacts and improving river flows to protect and enhance the Lower American River ecosystem in drier years. The WFA includes a solution package to achieve its two co-equal objectives: (1) providing a reliable and safe water supply for the region's economic health and planned development to 2030, and (2) preserving the fishery, wildlife, recreational, and aesthetic values of the Lower American River. Local agencies and interested parties have been implementing measures from the WFA since its inception in 2000.

An additional point of diversion for domestic water supply on the Sacramento River would help address long-term water supply reliability in the region while reducing reliance on American River diversions. Without these coordinated actions, the WFA's co-equal goals of regional water supply reliability and preserving the health of the Lower American River will be more difficult to attain.

The proposed project is currently expected to be implemented in three phases over a 30-year period, starting around 2030.

Downtown Sacramento-North Natomas-Airport Light Rail (Green Line Extension)

Since the early 1990s, the Sacramento Regional Transit District has been considering a light rail line that would connect downtown Sacramento, North Natomas, and the Sacramento International Airport (SACOG 2000). The route proposed for this rail line would pass through areas that have existing and planned development in North Natomas, Metro Air Park, and then run along Interstate 5, and enter the Sacramento International Airport. This project would affect only a small area of habitat for covered species because most of this route is within existing development, areas permitted for development by the NBHCP, or the likely footprint of other proposed projects.

Assuming a 100-foot wide corridor of habitat was lost along this route, the project would eliminate roughly 21 acres outside of areas permitted for development by the NBHCP. About half of this acreage (10 acres) is located within the Greenbriar (Northlake) development, and a portion of the remainder may be within areas considered for development under the recommended Sacramento International Airport Master Plan.

Because this rail line has not been designed nor has any environmental review been performed, it is not known what the effects on canals and connectivity would be. Based on the general location of the proposed route, however, these effects appear to be limited.

The project is identified in regional and city planning documents, but it remains in the early planning stages due to an estimated cost of approximately \$2 billion. The project requires a sustainable local funding source to move forward and secure state and federal grants. To provide transit service sooner, SacRT is exploring the possibility of a phased approach. The first phase could involve a Bus Rapid Transit (BRT) service along the proposed Green Line route, which would be significantly less expensive to implement. The extension would run about 13 miles north from the current terminus at Township 9, through the River District, and into the Natomas communities before ending at Sacramento International Airport. Different routes have been evaluated, including alignments near Highway 160 or Interstate 5.

CUMULATIVE EFFECTS OF PROPOSED AND POTENTIAL PROJECTS

Because the extent of habitat prior to conversion to agriculture is unknown, and the location and design of proposed projects has not been fully determined, the total percentage reduction in habitat acreage for covered species cannot be calculated. The percentage of the Natomas Basin that has been converted from agricultural land and open space to developed land uses provides a rough approximation of the percentage of habitat for covered species that has been lost in the Natomas Basin.

NBHCP Section 3.3 *Habitat Acreage in the Natomas Basin* summarizes the estimated changes in habitat acreage from 2001 to this future condition. The following provides a summary from 2001-2025:

Table 7-1 Natomas Basin Acreage Summary 2001-2025			
Description	Acres	Land Cover Type	Remaining Acres
Natomas Basin Size	53,357	53,357 acres	53,357
NBHCP & MAP HCP Authorized Development	17,500*	8,291 acres urban development (graded acres)	9,209
Exempt Development	12,193	12,193 acres Existing urban development	n/a
NBHCP & MAP HCP Mitigation (TNBC)	8,750	5,402 acres Agriculture/Open Space	3,348
Remaining Agriculture/Open Space (2001 Baseline)	15,095	589 acres (Greenbriar Annexation) 452 acres (Greenbriar Off-site Open Space) 38 acres (NUSD Paso Verde K-8 School) 1,600 acres (SAFCA, Open Space) 6,000 acres (Sacramento Int	11,668**

		Airport, 2,800 acres occupied by airport)	
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*City of Sacramento has 1,185.42 acres of authorized development remaining, Sutter County has 6,948.46 acres remaining of authorized development, Metro Air Park has 1,075 (per communications w/TNBC on 3/10/25).

**The remaining open space of 11,668 (after all HCP mitigation, development build-out etc.) includes open space acres owned by SAFCA, and airport open space buffer lands.

In addition to the development permitted by the NBHCP, other projects proposed in the Natomas Basin (and described in the section *Other Proposed Projects Contributing to Cumulative Effects*) would increase the extent of developed land cover in the Natomas Basin. If approved, these urban development projects would convert open space and agricultural lands and further reduce the remaining open space by approximately 7,618 acres which is more than 50% of the remaining open space that the 2001 baseline account for in determining the effectiveness of the overall NBHCP conservation strategy. The Airport South Industrial project would not increase the amount of developed acreage above the level of authorized development under the NBHCP because the total acreage of the proposed ASI annexation area would be included in and not exceed the 8,050 acres of authorized development in the City's permit area under the NBHCP. Thus, the ASI project would not contribute to cumulative development in the Natomas Basin from an acreage perspective because the acreage was already authorized within the 17,500 acres of urban development.

The Airport South Industrial project must minimize and fully mitigate impacts to biological resources to comply with the federal Endangered Species Act and California Endangered Species Act. Additionally, the ASI project developer voluntarily agreed that the project would comply with the NBHCP conservation measures consistent with the NBHCP conservation strategy as a condition of the City's annexation of the project so that the development does not exceed the 8,050 acres of authorized development in the City's permit area. To the extent that the project's 278.4 acres of land is located immediately adjacent to the City's NBHCP permit area but outside the permit area, the ASI project causes the conversion of lower quality agricultural land to urban uses. The project also proposes to dedicate and preserve 117.59 acres of land which will complete a 400-acre reserve block for the NBHCP to offset the loss of agricultural land outside the existing HCP permit boundary but that is already included in the cap of 17,500 acres of authorized development. The ASI project would also implement the NBHCP conservation measures in accordance with the NBHCP conservation strategy. Because this minimization and mitigation would lessen the Airport South Industrial project's impacts on biological resources, the Airport South Industrial project would not contribute to a cumulatively significant impact on these biological resources.

Proposed projects would be required to comply with the federal Endangered Species Act and the California Endangered Species Act. Both of these acts require that impacts to endangered species are minimized and fully mitigated. This minimization and mitigation would lessen the impacts of the proposed projects on biological resources, to the extent that they are not considerable. These projects, therefore, would not be expected to proceed unless authorized by the USFWS and CDFW.

In addition to the development authorized by the NBHCP and additional proposed projects, the proposed development in the Joint Vision area in process with Sacramento County (proposed Upper Westside, Grandpark Southwest, Grandpark Trails) represents reasonably foreseeable projects. Development within the Joint Vision area could result in the conversion of thousands of acres of open space land that provides various levels of habitat for Swainson's hawk, giant garter snake, burrowing owls, and other species that are currently covered by the NBHCP. It would create a landscape in which it would be more difficult to maintain connectivity among TNBC reserves and to sustain the habitat quality of TNBC reserves. It also would create the need to preserve most other privately owned agricultural land in the Natomas Basin as mitigation for species covered by the NBHCP.

The pending development projects in unincorporated Sacramento County total approximately 7,618.4 acres of additional cumulative development in the Natomas Basin. Any development within this area would require a new habitat conservation plan or an amendment to the NBHCP consistent with the federal Endangered Species Act and the California Endangered Species Act. As stated above, compliance with these laws require that impacts

to endangered species are minimized and fully mitigated. Unlike the cumulative development projects pending Sacramento County approval, the ASI project includes habitat preserves in the Natomas Basin for the NBHCP species. The ASI development itself does not cause any exceedance of the NBHCP cap of 17,500 acres. The ASI project does not change the authorized acreage cap of the NBHCP's baseline and provides higher quality habitat preserves that will directly support and benefit HCP covered species to avoid an adverse effect on the NBHCP conservation strategy.

Cumulative development pending approval by Sacramento County would be expected to have residual environmental impacts to the various species in the NBHCP and affect the effectiveness of the NBHCP conservation strategy contribute to these cumulative impacts because the other development projects would not participate in the NBHCP , nor have preserve sites been proposed in the Natomas Basin to off-set the loss of open space and agricultural lands in the Basin. The ASI project does not contribute to these cumulative impacts because the preserves sites in the Natomas Basin are included in the project which is not the case with the pending developments in process with Sacramento County. The Sacramento County developments do not propose preserves in the Basin, nor has there been an evaluation to demonstrate in whether the level of proposed development and conversion of open space and agricultural land can be supported in the Natomas Basin without compromising the effectiveness of the NBHCP.

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Department of Fish and Game.

Appendix A

Assessment of Avoidance and Minimization of
Construction-Related Effects and Human Wildlife Conflicts

APPENDIX A

ASSESSMENT OF AVOIDANCE AND MINIMIZATION OF CONSTRUCTION-RELATED EFFECTS AND HUMAN-WILDLIFE CONFLICTS

The effects analysis evaluates the overall effect of the Airport South Industrial project on the viability of species covered by the NBHCP, on the effectiveness of the NBHCP conservation strategy, and on the attainment of the goals and objectives of the NBHCP. As part of that evaluation, this appendix evaluates the effectiveness and completeness of the Airport South Industrial project's avoidance and minimization measures.

The NBHCP includes a goal and objective that address avoidance and minimization of direct impacts and of human wildlife conflicts. These are listed below.

Overall Goal 4. Ensure that direct impacts of Authorized Development upon Covered Species are avoided or minimized to the maximum extent practicable. (NBHCP, page I-16)

Overall Objective 1. Minimize conflicts between wildlife and human activities, including conflicts resulting from airplane traffic, roads and automobile traffic, predation by domestic pets, and harassment by people. (NBHCP, page I-16).

To attain this goal and this objective, the NBHCP includes a set of avoidance and minimization measures to be implemented where applicable. For these measures, we assessed the effects of the Airport South Industrial Project on their effectiveness as avoidance and minimization measures for activities covered by the NBHCP. We also used this set of measures from the NBHCP to assess the effectiveness and completeness of the Airport South Industrial project's avoidance and minimization measures.

EFFECTIVENESS OF NBHCP MEASURES WITH THE AIRPORT SOUTH INDUSTRIAL PROJECT

For each of the NBHCP's land use agency's conservation measures, the potential for the Airport South Industrial project to reduce the measure's effectiveness as a means of avoiding or minimizing construction-related effects or human-wildlife conflicts was evaluated. The Airport South Industrial project would not alter the effectiveness of any of these measures. Most of these NBHCP measures are seasonal avoidance or exclusion zone measures based on the ecology of the species and the nature of construction activities. Because no individual construction project alters this basis, there are few means by which one construction project could affect the effectiveness of these measures. For example, the effectiveness of pre-construction surveys for a particular species is largely unaffected by the extent or location of development. Similarly, the effectiveness of requiring that developers consult with the USFWS regarding covered species observed during preconstruction surveys also is unaffected by development on other sites. Similarly, the ability to apply these measures to a development project in general would not be altered by the effects of another development project.

It is possible, however, that by fragmenting habitat, a development project can create barriers to animal movement to and from a future development site. In this instance, the effectiveness measures that reduce construction-caused mortality by allowing animals to leave construction sites would likely be reduced because animals may no longer be able to move to habitat outside of the construction site. For example, NBHCP measures 3 and 7 are intended to increase the movement of giant garter snakes off of construction sites. If a construction site is isolated from other giant garter snake habitat, these measures would be ineffective. The Airport South Industrial project is not more likely to cause this set of circumstances than are projects permitted by the NBHCP. The Airport South Industrial site is isolated from the development authorized by the NBHCP by Interstate 5, and development of the Airport South Industrial site therefore would not reduce the connectivity of areas authorized for development by the NBHCP to habitat in the remainder of the Natomas Basin.

The assessment of all of the land use agency's conservation measures of the NBHCP is summarized below.

MEASURES FOR PRE-CONSTRUCTION SURVEYS

The effectiveness of pre-construction surveys is based on each species' ecology and on the attributes of the site being surveyed and the biologist's conduct of the survey. The Airport South Industrial project would not affect this basis of the effectiveness of pre-construction surveys, nor would it affect the ability to implement pre-construction surveys for development authorized by the NBHCP.

GENERAL MEASURES TO MINIMIZE TAKE

The NBHCP includes four general measures to minimize take. These measures are to 1) protect large trees, 2) incorporate native plants into buffers, developed areas and parks, 3) schedule construction activities to avoid the raptor nesting season, and 4) conduct pre-construction surveys at an appropriate time of year. The Airport South Industrial project would not affect the ability to implement these measures.

MEASURES TO MINIMIZE TAKE OF VERNAL POOL SPECIES

The Airport South Industrial project would not affect vernal pool habitat, is not near vernal pool habitat, and would not affect the ability to implement the measures in the NBHCP. Therefore, the Airport South Industrial project would not alter the effectiveness of measures for minimizing the take of vernal pool-associated species or alter the effectiveness of these measures.

MEASURES TO REDUCE TAKE FOR INDIVIDUAL SPECIES

MEASURES TO REDUCE TAKE OF GIANT GARTER SNAKE

The NBHCP includes twelve measures to reduce take of giant garter snake by construction activities. Construction of the Airport South Industrial project will not reduce the effectiveness of these measures at sites authorized for development by the NBHCP. These measures include a seasonal restriction on site preparation and grading, preconstruction surveys, dewatering of canals prior to excavation, minimization of grading, construction monitoring, a restriction on the use of materials that could entangle giant garter snakes.

The effectiveness of seasonal restrictions, preconstruction surveys and of restrictions on materials that could entangle snakes are based on the ecology of giant garter snakes, site attributes, how the conduct of the survey is conducted, and the nature of construction activities. Individual construction projects, including the Airport South Industrial project, would not alter this basis, or otherwise affect the effectiveness of these measures.

Measures for dewatering of canals or to cease development if a construction monitor locates a giant garter snake on-site also, in general would not be affected by other development projects. But, if another development project were to fragment habitat and thus reduce the ability of a snake to move from a construction site to suitable habitat off-site, then the effectiveness of these measures would be reduced. The Airport South Industrial project is not likely to cause this situation for development projects authorized by the NBHCP. The Airport South Industrial site is isolated from the development authorized by the NBHCP by I-5 and development of the Airport South Industrial site therefore would not reduce the connectivity of areas authorized for development by the NBHCP to habitat in the remainder of the Natomas Basin. Thus, the effectiveness of these measures would not be reduced.

MEASURES TO REDUCE TAKE OF SWAINSON'S HAWK

The NBHCP includes a measure to reduce cumulative effects on Swainson's hawk foraging habitat, five measures to reduce disturbance of nest trees, and seven measures to prevent or mitigate the loss of nest trees.

The measure to reduce cumulative effects established a 1 mile-wide Swainson's hawk zone along the Sacramento River along within which there would be no development. This zone was established because Swainson hawk nests are concentrated along the Sacramento River. The Airport South Industrial project does not propose development of any structures within the Swainson's Hawk zone nor are there any existing trees within the zone area near Powerline Road and the ASI site, and thus it would not alter its effectiveness.

The measures to reduce disturbance of nest trees are based on the ecology of Swainson's hawk and the nature of construction activities; this basis would not be altered by the ASI project. The Airport South Industrial project also would not affect the ability to implement these measures.

MEASURES TO REDUCE TAKE TO VALLEY ELDERBERRY LONGHORN BEETLE (VELB)

These measures include the avoidance of VELB habitat, and measures for the transplanting of elderberry bushes and for the planting and monitoring of elderberry bushes. The ASI project would not affect the ability to avoid, transplant, plant, or monitor elderberry bushes, nor would it affect the effectiveness of those measures for reducing the take of VELB. The project does not affect VELB habitat.

MEASURES TO REDUCE TAKE ON TRICOLORED BLACKBIRD

Measures for pre-construction surveys and exclusion zones around nesting colonies are included in the NBHCP as measures to reduce the take of tricolored blackbird. The ASI project would not affect the ability to conduct pre-construction surveys or establish exclusion zones at construction sites in areas that were authorized for development by the NBHCP.

MEASURES TO REDUCE TAKE ON ALEUTIAN CANADA GOOSE

Measures for pre-construction surveys and consultation with USFWS and CDFW (if Aleutian Canada goose is present) are included in the NBHCP as measures to reduce the take of Aleutian Canada goose. The ASI project would not affect the ability to conduct pre-construction surveys at construction sites in areas that were authorized for development by the NBHCP or to consult with USFWS or CDFW if Aleutian Canada goose is present.

MEASURES TO REDUCE TAKE ON WHITE-FACED IBIS

Measures for pre-construction surveys and a seasonal restriction on construction activities within a ¼ mile of active nests were included in the NBHCP. The ASI project would not affect the ability to conduct pre-construction surveys at construction sites in areas that were authorized for development by the NBHCP or to seasonally restrict construction at sites authorized for development by the NBHCP.

MEASURES TO REDUCE TAKE ON LOGGERHEAD SHRIKE

Measures for pre-construction surveys and exclusion zones around active nests are included in the NBHCP as measures to reduce the take of loggerhead shrike. The ASI project would not affect the ability to conduct pre-construction surveys or establish exclusion zones at construction sites in areas that were authorized for development by the NBHCP.

MEASURES TO REDUCE TAKE OF BURROWING OWL

Several measures to reduce the take of burrowing owls are included in the NBHCP. These measures include, pre-construction surveys, establishment of exclusion zones, seasonal restrictions on the disturbance of occupied nests, relocation of owls, and mitigation for disturbed nests. The ASI project would not affect the ability to conduct preconstruction surveys, restrict activities, or establish exclusion zones at construction sites in areas that were authorized for development by the NBHCP. The ASI project also would not affect the feasibility or potential benefits of relocating owls or of mitigating effects on burrowing owls. Therefore, the Airport South Industrial

project would not affect the effectiveness of measures for reducing the take of burrowing owl.

MEASURES TO REDUCE TAKE ON BANK SWALLOW

Pre-construction surveys and establishment of an exclusion zone (if a bank swallow colony is present) are included in the NBHCP as measures to reduce the take of bank swallow. The ASI project would not affect the ability to conduct pre-construction surveys or establish exclusion zones at construction sites in areas that were authorized for development by the NBHCP.

MEASURES TO REDUCE TAKE ON NORTHWESTERN POND TURTLE

The only measure included in the NBHCP to reduce take of northwestern pond turtle is the canal dewatering requirement that was included for giant garter snake. The ASI project would not affect the dewatering of canals in areas authorized for development by the NBHCP, or the ability of animals to move from dewatered canals to suitable habitat off-site.

MEASURES TO REDUCE TAKE ON CALIFORNIA TIGER SALAMANDER

The ASI project would not affect California tiger salamander habitat, is not near California tiger salamander habitat, and would not affect the ability to implement the measures in the NBHCP. Therefore, the ASI project would not alter the effectiveness of measures for minimizing the take of California tiger salamander.

MEASURES TO REDUCE TAKE ON WESTERN SPADEFOOT TOAD

The ASI project would not affect western spadefoot toad habitat, is not near western spadefoot toad habitat, and would not affect the ability to implement the measures in the NBHCP. Therefore, the ASI project would not alter the ability to implement measures for minimizing the take of western spadefoot toad.

MEASURES TO REDUCE TAKE OF VERNAL POOL FAIRY SHRIMP, VERNAL POOL TADPOLE SHRIMP, AND MIDVALLEY FAIRY SHRIMP

The ASI project would not affect habitat for these branchiopod species, is not near habitat for these branchiopod species, and would not affect the ability to implement the measures in the NBHCP. Therefore, the ASI project would not alter the effectiveness of measures for minimizing the take of vernal pool fairy shrimp, vernal pool tadpole shrimp, and midvalley fairy shrimp.

MEASURES TO REDUCE TAKE OF DELTA TULE PEA

The NBHCP includes a pre-construction survey and the opportunity to transplant any Delta tule pea located during the survey as measures to reduce take of Delta tule pea. The ASI project would not affect the ability to conduct pre-construction surveys of sites authorized for development by the NBHCP, or to transplant Delta tule pea to suitable habitat elsewhere. Therefore, the ASI project would not affect the effectiveness of these measures at reducing take of Delta tule pea.

MEASURES TO REDUCE TAKE ON SANFORD'S ARROWHEAD

The NBHCP includes a pre-construction survey and the opportunity to transplant any Delta tule pea located during the survey as measures to reduce take of Sanford's arrowhead. The ASI project would not affect the ability to conduct pre-construction surveys of sites authorized for development by the NBHCP, or to transplant Sanford's arrowhead to suitable habitat elsewhere. Therefore, the ASI project would not affect the effectiveness of these measures at reducing take of Sanford's arrowhead.

MEASURES TO REDUCE TAKE ON BOGGS LAKE HEDGE-HYSSOP, SACRAMENTO ORCUTT GRASS, SLENDER ORCUTT GRASS, COLUSA GRASS, AND LEGENERE

The ASI project would not affect habitat for these vernal pool-associated plant species, is not near vernal pool habitat, and would not affect the ability to implement the measures in the NBHCP for minimizing the take of these species. Therefore, the ASI project would not alter the effectiveness of these measures.

ASSESSMENT OF AVOIDANCE AND MINIMIZATION BY THE AIRPORT SOUTH INDUSTRIAL PROJECT

For this assessment, the avoidance and minimization measures in the NBHCP were considered a comprehensive set of effective measures to avoid and minimize the construction-related effects and human-wildlife conflicts potentially resulting from the NBHCP. Development at the ASI site is comparable to the development permitted by the NBHCP, and the construction-related effects and human-wildlife conflicts potentially caused by the ASI are the same as those potentially caused by the development permitted by the NBHCP. All applicable NBHCP measures have been incorporated in the mitigation measures of the ASI EIR. The table on the following page provides a complete listing of all the mitigation measures for biological resources.

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
4.4 Biological Resources					
4.4-1	Impacts to special-status plant species, either directly (e.g., threaten to eliminate a plant community) or through substantial habitat modifications.	<i>Industrial Park and Nonparticipating Parcels</i> <i>4.4-1(a) Prior to the issuance of any grading permit and commencement of ground-disturbing activities associated with development of the industrial park footprint and nonparticipating parcels, the following Natomas Basin Habitat Conservation Plan (HCP) Take Avoidance, Minimization, and Mitigation Measures shall be implemented, as applicable:</i> <u><i>Natomas Basin HCP Section V.A.1:</i></u> <i>Not less than 30 days or more than 6 months prior to commencement of construction activities, a pre-construction survey of the portion of the site to be disturbed shall be conducted to determine the status and presence of, and likely impacts to, all Covered Species on the site. However, pre-construction surveys for an individual species may be completed up to one year in advance if the sole period for reliable detection of that species is between May 1 and December 31. The project proponent will be responsible for contracting with qualified biological consultants to carry out the pre-construction surveys, and as necessary, to implement specific take minimization, and other Conservation Measures set forth in the Natomas Basin HCP and approved by the Wildlife Agencies.</i> <i>The results of the pre-construction surveys</i>	City of Sacramento Community Development Department U.S. Fish and Wildlife Service (USFWS) California Department of Fish and Wildlife (CDFW) Natomas Basin Conservancy	Prior to the issuance of any grading permit and commencement of ground-disturbing activities	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		<i>along with recommended take minimization measures shall be documented in a report and shall be submitted to the City, USFWS, CDFG and the Natomas Basin Conservancy. Based upon the survey results, the City will identify applicable take avoidance and other site-specific Conservation Measures, consistent with the Natomas Basin HCP, required to be carried out on the site. The approved pre-construction survey documents and list of Conservation Measures will be submitted by the developer to the City to demonstrate compliance with the Natomas Basin HCP.</i> <u>Natomas Basin HCP Section V.A.5.o:</u> <i>If Sanford's arrowhead plants are identified through a pre-construction survey, the City shall provide notice to USFWS, CDFG and the California Native Plant Society. Under such circumstances, the development proponent shall allow the transplantation of plants prior to site disturbance.</i> <u>Natomas Basin HCP Section V.A.5.p:</u> <i>Prior to issuance of a grading permit, the City shall require a pre-construction survey. If such survey determines Boggs Lake hedge-hyssop, Sacramento orcutt grass, Slender orcutt grass, Colusa grass, or legenere are present, the City shall require the developer to consult with USFWS to determine appropriate measures to avoid and minimize loss of individuals.</i>			
		4.4-1(b) <i>With respect to special-status plant species not covered under the Natomas Basin HCP, prior</i>	City of Sacramento Community	Prior to the commencement of construction activities associated with the nonparticipating parcels	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		<i>to the commencement of construction activities associated with the nonparticipating parcels, a qualified biologist shall conduct preconstruction protocol-level surveys for special-status plants with potential to occur on-site. The surveys may be conducted concurrently with the preconstruction surveys set forth by Mitigation Measure 4.4-1(a). The results of the surveys shall be submitted for review and approval to the City of Sacramento Community Development Department and shall be valid for two years. If special-status plant species are not found, further mitigation shall not be required.</i> <i>If any special-status plants are located during the foregoing surveys, the appropriate agency (i.e., CDFW and/or USFWS, depending on the species) shall be consulted to develop appropriate mitigation for the proposed project for expected impacts. If special-status plants would be impacted, as determined by the qualified biologist, a mitigation plan shall be developed in coordination with the appropriate agency and submitted for review and approval to the City of Sacramento Community Development Department. Mitigation shall include that if special-status perennial species are found in areas proposed for disturbance, the plants shall be dug up and transplanted into a suitable avoided area on-site prior to construction. If the plant found is an annual, then mitigation shall consist of collecting seed-bearing soil and spreading it into a suitable location.</i>	Development Department CDFW USFWS		
4.4-3	Have a substantial	Industrial Park and Nonparticipating Parcels			

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
	adverse effect, either directly or through habitat modifications, on giant garter snake.	4.4-3(a) Prior to the issuance of any grading permit and commencement of ground-disturbing activities, the project applicant shall ensure that the following Natomas Basin HCP Take Avoidance, Minimization, and Mitigation Measures have been implemented: <u>Natomas Basin HCP Section V.A.5.a:</u> 1. Within the Natomas Basin, all construction activity involving disturbance of habitat, such as site preparation and initial grading, is restricted to the period between May 1 and September 30. This is the active period for the giant garter snake and direct mortality is lessened, because snakes are expected to actively move and avoid danger. 2. Pre-construction surveys for giant garter snake, as well as other NBHCP Covered Species, must be completed for all development projects by a qualified biologist approved by USFWS. If any giant garter snake habitat is found within a specific site, the following additional measures shall be implemented to minimize disturbance of habitat and harassment of giant garter snake, unless such project is specifically exempted by USFWS. 3. Between April 15 and September 30, all irrigation ditches, canals, or other aquatic habitat should be completely dewatered, with no puddled water remaining, for at least 15 consecutive days prior to the excavation or filling in of the dewatered habitat. Make sure dewatered habitat does not continue to support giant garter snake prey, which could detain or attract snakes into the area. If a site cannot be completely dewatered, netting and salvage of prey items may be necessary. This measure removes aquatic habitat component and allows giant garter snake to leave on their own. 4. For sites that contain giant garter snake habitat, no more than 24-hours prior to start of construction activities (site preparation and/or grading), the project area shall be surveyed for the presence of giant garter snake. If construction activities stop on the project site for a period of two weeks or more, a new giant garter snake survey shall be completed no more than 24-hours prior to the re-start of construction activities. 5. Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent	City of Sacramento Community Development Department USFWS	Prior to the issuance of any grading permit and commencement of ground-disturbing activities	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		to the project as Environmentally Sensitive Areas. This area shall be avoided by all construction personnel. 6. Construction personnel completing site preparation and grading operations shall receive USFWS approved environmental awareness training. This training instructs workers on how to identify giant garter snakes and their habitats, and what to do if a giant garter snake is encountered during construction activities. During this training an on-site biological monitor shall be designated. 7. If a live giant garter snake is found during construction activities, immediately notify the USFWS and the project's biological monitor. The biological monitor, or his/her assignee, shall do the following: a. Stop construction in the vicinity of the snake. Monitor the snake and allow the snake to leave on its own. The monitor shall remain in the area for the remainder of the work day to make sure the snake is not harmed or if it leaves the site, does not return. Escape routes for giant garter snake should be determined in advance of construction and snakes should always be allowed to leave on their own. If a giant garter snake does not leave on its own within 1 working day, further consultation with USFWS is required. 8. Upon locating dead, injured or sick threatened or endangered wildlife species, the project applicant must notify within 1 working day the Service's Division of Law Enforcement (2800 Cottage Way, Sacramento CA 95825) or the Sacramento Fish and Wildlife Office (2800 Cottage Way, Room W2605, Sacramento, CA 95825, telephone 916 414-6600). Written notification to both offices must be made within 3 calendar days and must include the date, time, and location of the finding of a specimen and any other pertinent information. 9. Fill or construction debris may be used by giant garter snake as an over-wintering site. Therefore, upon completion of construction activities remove any temporary fill and/or construction debris from the site. If this material is situated near undisturbed giant garter snake habitat and it is to be removed between October 1 and April 30, it shall be inspected			

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		by a qualified biologist to assure that giant garter snake are not using it as hibernaculae. 10. No plastic, monofilament, jute, or similar erosion control matting that could entangle snakes will be placed on a project site when working within 200 feet of snake aquatic or rice habitat. Possible substitutions include coconut coir matting, tactified hydroseeding compounds, or other material approved by the Wildlife Agencies. 4.4-3(b) To address potential impacts to giant garter snake on-site, but outside of the Natomas Basin HCP permit area, the project applicant shall retain a qualified biologist to conduct pre-construction surveys for giant garter snake prior to the issuance of any grading permit and commencement of project-related ground-disturbing activities outside of the Natomas Basin HCP Permit Area. If giant garter snake habitat is not identified on-site and giant garter snakes are not detected, the project may commence as scheduled. If giant garter snake habitat is found and/or giant garter snake individuals are detected, in areas outside of the Natomas Basin HCP Permit Area that would be impacted by the project, the project applicant shall either: <i>(1) provide on- and or off-site preservation of giant garter snake habitat at a ratio determined by USFWS and CDFW, and as subject to regulatory permitting requirements of the CDFW, USACE, and or RWQCB, as prescribed by Mitigation Measures 4.4-10(a) through 4.4-10(c) and 4.4-11(a) through 4.4-11(d), as applicable. Applicant purchase of conservation easements or fee title of lands shall be acceptable if approved by the applicable permit-issuing regulatory agency. Final mitigation requirements shall be determined by the permit-issuing regulatory agency.</i>			

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		OR (2) <i>Should a portion of the City's surplus HCP coverage be made available to the proposed project, the project applicant for development projects less than 50-acres in size shall pay the Natomas Basin HCP mitigation fees for land acquisition, enhancement, and management and monitoring activities; otherwise, off-site land dedication and payment of NBHCP fees are required for project greater than 50-acres in size.</i>		Prior to issuance of any grading permit and commencement of project-related ground-disturbing activities outside of the Natomas Basin HCP	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
			City of Sacramento Community Development Department USFWS CDFW U.S. Army Corps of Engineers (USACE) Central Valley Regional Water Quality Control Board (RWQCB)		
4.4-4	Have a substantial adverse effect, either directly or through habitat modifications, on northwestern pond turtle.	<i>Industrial Park and Nonparticipating Parcels</i> 4.4-4(a) Prior to the issuance of any grading permit and commencement of ground-disturbing activities, the project applicant shall ensure that the following Natomas Basin HCP Take Avoidance, Minimization, and Mitigation Measure has been implemented: <u>Natomas Basin HCP Section V.A.5.j:</u> 1. Take of the northwestern pond turtle as a result of habitat destruction during construction activities, including the removal of irrigation ditches and drains, and during ditch and drain maintenance, will be minimized by the dewatering requirement	City of Sacramento Community Development Department	Prior to the issuance of any grading permit and commencement of ground-disturbing activities	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		described above for giant garter snake (see Section 5.a.(3)). 4.4-4(b) Implement Mitigation Measures 4.4-1(a), 4.4-3(a), 4.4-3(b).	See Mitigation Measures 4.4-1(a), 4.4-3(a), and 4.4-3(b)	See Mitigation Measures 4.4-1(a), 4.4-3(a), and 4.4-3(b)	
4.4-5	Have a substantial adverse effect, either directly or through habitat modifications, on Swainson's hawk.	<i>Industrial Park and Nonparticipating Parcels</i> 4.4-5(a) Prior to the issuance of any grading permit and commencement of ground-disturbing activities, the project applicant shall ensure that the following Natomas Basin HCP Take Avoidance, Minimization, and Mitigation Measure has been implemented: <u>Natomas Basin HCP Section V.A.5.b:</u> <u>Measures to Reduce Nest Disturbance</u> 1. Prior to the commencement of development activities, a pre-construction survey shall be completed to determine whether any Swainson's hawk nest trees will be removed on-site, or active Swainson's hawk nest sites occur on or within ½ mile of the development site. These surveys shall be conducted according to the Swainson's Hawk Technical Advisory Committee's (May 31, 2000) methodology or updated methodologies, as approved by the Service and CDFG, using experienced Swainson's hawk surveyors. 2. If breeding Swainson's hawks (i.e. exhibiting nest building or nesting behavior) are identified, no new disturbances (e.g., heavy equipment operation associated with construction) will occur within ½ mile of an active nest between March 15 and September 15, or until a qualified biologist, with concurrence by CDFG, has determined that young have fledged or that the nest is no longer occupied. If	City of Sacramento Community Development Department	Prior to the issuance of any grading permit and commencement of ground-disturbing activities	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		the active nest site is located within 1/4 mile of existing urban development, the no new disturbance zone can be limited to the ¼ mile versus ½ mile. Routine disturbances such as agricultural activities, commuter traffic, and routine facility maintenance activities within ½ mile of an active nest are not restricted. 3. Where disturbance of a Swainson's hawk nest cannot be avoided, such disturbance shall be temporarily avoided (i.e., defer construction activities until after the nesting season) and then, if unavoidable, the nest tree may be destroyed during the non-nesting season. For purposes of this provision the Swainson's hawk nesting season is defined as March 15 to September 15. If a nest tree (any tree that has an active nest in the year the impact is to occur) must be removed, tree removal shall only occur between September 15 and February 1. 4. If a Swainson's hawk nest tree is to be removed and fledglings are present, the tree may not be removed until September 15 or until the California Department of Fish and Game has concurred that the young have fledged and are no longer dependent upon the nest tree. 5. If construction or other project related activities which may cause nest abandonment or forced fledgling are proposed within the ¼ mile buffer zone, intensive monitoring (funded by the project sponsor) by a Department of Fish and Game approved raptor biologist will be required. Exact implementation of this measure will be based on specific information at the project site. <i>4.4-5(b) To address potential impacts to Swainson's hawk foraging habitat that occurs on-site, but outside of the Natomas Basin HCP permit area, the project applicant shall preserve Swainson's hawk foraging habitat off-site at a 1:1 ratio, which shall consist of a minimum 0.5:1 ratio habitat preservation off-site plus 0.5:1 ratio as prescribed by Mitigation Measure 4.2-1. The preserved habitat shall be provided through applicant purchase of conservation easements or fee title of lands with suitable Swainson's hawk foraging</i>			

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		<i>habitat as approved by CDFW (consistent with CDFW guidelines). Additionally, prior to the issuance of any grading permit and commencement of project-related ground-disturbing activities outside of the Natomas Basin HCP permit area the project applicant shall consult with CDFW for a Section 2081 Incidental Take Permit, or demonstrate to the City that none was required by CDFW.</i> <i>OR</i> Should a portion of the City's surplus HCP coverage be made available to the proposed project, the project applicant shall pay the Natomas Basin HCP mitigation fees for land acquisition, enhancement, and management and monitoring activities for development projects less than 50-acres in size; otherwise off-site land dedication and payment of NBHCP fees are required for projects greater than 50-acres in size.	City of Sacramento Community Development Department CDFW	Prior to the issuance of any grading permit and commencement of project-related ground-disturbing activities outside of the Natomas Basin HCP permit area	
4.4-6	Have a substantial adverse effect, either directly or through habitat modifications, on burrowing owl.	<i>Industrial Park and Nonparticipating Parcels</i> 4.4-6 Prior to the issuance of any grading permit and commencement of ground-disturbing activities, the project applicant shall comply with applicable portions of Measure 4.4-5(b) regarding consultation with CDFW, demonstration that no incidental take permit was required, or payment of fees (with or without land dedication as applicable) under the Natomas Basin HCP and shall ensure that the following Natomas Basin HCP Take	City of Sacramento Community Development Department	Prior to the issuance of any grading permit and commencement of ground-disturbing activities	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		Avoidance, Minimization, and Mitigation Measure has been implemented: <u>Natomas Basin HCP Section V.A.5.h:</u> 1. Prior to the initiation of grading or earth disturbing activities, the applicant/developer shall hire a CDFG approved qualified biologist to perform a pre-construction survey of the site to determine if any burrowing owls are using the site for foraging or nesting. The pre-construction survey shall be submitted to the City prior to the developer's commencement of construction activities and a mitigation program shall be developed and agreed to by the City and developer prior to initiation of any physical disturbance on the site. 2. Occupied burrows shall not be disturbed during nesting season (February 1 through August 31) unless a qualified biologist approved by the CDFG verifies through non-invasive measures that either: 1) the birds have not begun egg-laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival. 3. If nest sites are found, the USFWS and CDFG shall be contacted regarding suitable mitigation measures, which may include a 300 foot buffer from the nest site during the breeding season (February 1 - August 31), or a relocation effort for the burrowing owls if the birds have not begun egg-laying and incubation or the juveniles from the occupied burrows are foraging independently and are capable of independent survival. If on-site avoidance is required, the location of the buffer zone will be determined by a qualified biologist. The developer shall mark the limit of the buffer zone with yellow caution tape, stakes, or temporary fencing. The buffer will be maintained throughout the construction period. 4. If relocation of the owls is approved for the site by USFWS and CDFG, the developer shall hire a qualified biologist to prepare a plan for relocating the owls to a suitable site. The relocation plan must include: (a) the location of the nest and owls proposed for relocation; (b) the location of the proposed relocation site; (c) the number of owls involved and the time of year when the relocation is proposed to take place; (d) the name and credentials	USFWS CDFW		

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		of the biologist who will be retained to supervise the relocation; (e) the proposed method of capture and transport for the owls to the new site; (f) a description of the site preparations at the relocation site (e.g., enhancement of existing burrows, creation of artificial burrows, one-time or long-term vegetation control, etc.); and (g) a description of efforts and funding support proposed to monitor the relocation. Relocation options may include passive relocation to another area of the site not subject to disturbance through one way doors on burrow openings, or construction of artificial burrows in accordance with the CDFG's October 17, 1995, Staff Report on Burrowing Owls Mitigation (see Appendix D). 5. Where on-site avoidance is not possible, disturbance and/or destruction of burrows shall be offset through development of suitable habitat on TNBC upland reserves or in other suitable preserved uplands. Such habitat shall include creation of new burrows with adequate foraging area (a minimum of 6.5 acres) or 300 feet radii around the newly created burrows. Additional habitat design and mitigation measures are described in CDFW's March 7, 2012, Staff Report on Burrowing Owl Mitigation.			
4.4-8	Have a substantial adverse effect, either directly or through habitat modifications, on loggerhead shrike.	<i>Industrial Park and Nonparticipating Parcels</i> 4.4-8 Prior to the issuance of any grading permit and commencement of ground-disturbing activities, the project applicant shall ensure that the following Natomas Basin HCP Take Avoidance, Minimization, and Mitigation Measure has been implemented: <u>Natomas Basin HCP Section V.A.5.g:</u> 1. Prior to issuance of a grading permit, the City shall require a pre-construction survey. 2. If surveys identify an active loggerhead shrike nest that will be impacted by development, the developer shall install brightly colored construction fencing that establishes a boundary 100 feet from the active nest. No disturbance associated with development shall occur within the 100 foot fenced area during the nesting season of March 1 through July 31. A qualified biologist, with concurrence of USFWS must determine young have fledged or that the nest	City of Sacramento Community Development Department USFWS	Prior to the issuance of any grading permit and commencement of ground-disturbing activities	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		is no longer occupied prior to disturbance of the nest site.			
4.4-9	Have a substantial adverse effect, either directly or through habitat modifications, on northern harrier, white-tailed kite, song sparrow, and other nesting birds and raptors protected under the MBTA and CFGC.	Industrial Park and Nonparticipating Parcels 4.4-9(a) Raptors: If ground disturbance or other construction activities are proposed during the nesting season (February 1 to August 31), a focused survey for nesting raptors protected under the California Fish and Game Code (CFGF) and Migratory Bird Treaty Act (MBTA) shall be conducted by a qualified biologist within seven days prior to the beginning of construction activities in order to identify active nests. The survey shall be conducted within the proposed construction area and all accessible areas within 0.5-mile. A report summarizing the results of the survey shall be submitted for review and approval to the City of Sacramento Community Development Department. If active nests are not found during the focused survey(s), additional mitigation shall not be required. For any period of project inactivity of more than seven days, the qualified biologist shall conduct a field check of the previously surveyed area before construction activities recommence to confirm nesting raptors have not entered during the interim. If active raptor nests are found within 0.5-mile of a construction area, construction shall not commence within 0.5-mile of the nest until a qualified biologist determines that the young have fledged, or the biologist has determined that the nesting attempt has failed. If construction activities within 0.5-mile of the nest are necessary, the qualified biologist shall be consulted to determine if the nest buffer can be reduced. The applicant and qualified biologist shall jointly determine the nest avoidance buffer, and what (if any) nest monitoring is necessary. If an active raptor nest is found within the project area prior to construction and is in a tree that is proposed for removal, then the project applicant shall implement additional mitigation recommended by a qualified biologist based on CDFW guidelines and obtain any required permits from CDFW. 4.4-9(b) Songbirds: If ground disturbance or other construction activities are proposed during the nesting season (February 1 to August 31), a focused survey for birds protected under the MBTA shall be conducted by a qualified biologist within seven days prior to the beginning of construction activities in order to identify active nests. The survey shall be conducted within the proposed construction area and all accessible areas within 500 feet. A report summarizing the results of the survey shall be submitted for review and approval to the City of Sacramento	City of Sacramento Community Development Department	If ground disturbance or other construction activities are proposed during the nesting season (February 1 to August 31)	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		Community Development Department. If active nests are not found during the focused survey(s), additional mitigation shall not be required. For any period of project inactivity of more than seven days, the qualified biologist shall conduct a field check of the previously surveyed area before construction activities recommence to confirm nesting songbirds have not entered during the interim. If active special-status species nests/nesting colonies are located during the survey, the project applicant shall work with a qualified biologist to determine a suitable avoidance buffer and the extent and duration of nest monitoring needed. The perimeter of the protected area shall be indicated by bright orange temporary fencing and signage. Construction activities and/or personnel shall not enter the protected area, except with approval of the biologist. If trees containing nests or burrows must be removed as a result of project implementation, removal shall be completed during the nonbreeding season (late September to January 31). If active songbird nests are found, a qualified biologist shall establish a 100-foot non-disturbance buffer. The non-disturbance buffers may be reduced based on consultation and approval by the City of Sacramento Community Development Department. The perimeter of the protected area shall be indicated by bright orange temporary fencing. Construction activities or personnel shall not enter the protected area, except with approval of the biologist. If trees containing nests must be removed as a result of project implementation, removal shall be completed during the nonbreeding season (late September to January 31) or after the adults and young are not dependent on the nest site, as determined by a qualified biologist.	City of Sacramento Community Development Department	If ground disturbance or other construction activities are proposed during the nesting season (February 1 to August 31)	
4.4-10	Have a substantial adverse effect on any riparian habitat or other Sensitive Natural Community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.	Industrial Park 4.4-10(a) Prior to the commencement of ground-disturbing activities, the project applicant shall notify CDFW, pursuant to CFGC Section 1600. The notification shall include a description of all of the activities associated with the proposed industrial park, not just those associated with the drainages and/or riparian vegetation. Impacts shall be outlined in the notification and are expected to be in substantial conformance with the impacts to biological resources outlined in the Biological Resources Assessment prepared for the Airport South Industrial Project by Bargas Environmental Consulting. Impacts for each activity shall be broken down by temporary and permanent impacts. A description of the proposed mitigation for biological resource impacts shall be outlined per activity and then by temporary	City of Sacramento Community Development Department CDFW	Prior to the commencement of ground-disturbing activities within Industrial Park	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		and permanent impact. Information regarding project-specific drainage and hydrology changes resulting from project implementation shall be provided, as well as a description of stormwater treatment methods. Minimization and avoidance measures shall be proposed, as appropriate, and may include preconstruction species surveys and reporting, protective fencing around avoided biological resources, worker environmental awareness training, seeding disturbed areas adjacent to open space areas with native seed, and installation of project-specific stormwater Best Management Practices (BMPs). Mitigation for impacts to Goodding's willow – red willow riparian woodland and forest, valley oak riparian forest woodland, and California bulrush marsh may include restoration or enhancement of resources on- or off-site, or any other method acceptable to CDFW. Mitigation shall not result in a net loss of a Sensitive Natural Community. If CDFW determines through the course of the CFGC Section 1600 notification process that the project does not require a Lake or Streambed Alteration Agreement (LSAA) to address potential impacts to Goodding's willow – red willow riparian woodland and forest, valley oak riparian forest woodland, and California bulrush marsh, further mitigation regarding the aforementioned vegetation communities shall not be required. Written verification of the applicant's compliance with the Section 1600 LSAA process shall be submitted to the City of Sacramento Community Development Department. <i>Nonparticipating Parcels</i> 4.4-10(b) As part of any application associated with development of the nonparticipating parcels, the applicant shall ensure that a qualified biologist has reviewed areas proposed for disturbance to identify vegetation communities that occur in the development footprint and confirm the presence and acreages of Sensitive Natural Communities. If a Sensitive Natural Community would not be impacted, further mitigation shall not be required. The qualified biologist shall detail any recommendations to avoid impacts to identified Sensitive Natural Communities in a report, which shall be submitted for review and approval to the City of Sacramento Community Development Department. 4.4-10(c) If a Sensitive Natural Community or potentially jurisdictional aquatic resource is identified in a nonparticipating parcel for which a development application has been submitted, the applicant shall implement Mitigation Measure 4.4-10(a).			

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
			City of Sacramento Community Development Department	As part of any application associated with development of the nonparticipating parcels	
			See Mitigation Measure 4.4-10(a)	If a Sensitive Natural Community is identified in a nonparticipating parcel for which a development application has been submitted	
4.4-11	Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh,	Industrial Park 4.4-11(a) Prior to the issuance of grading permits, the project applicant shall submit the Aquatic Resources Delineation (ARD) prepared for the proposed project by Bargas Environmental Consulting to the U.S. Army Corps of Engineers (USACE) for a Preliminary Jurisdictional Determination and obtain authorization for the fill of jurisdictional waters of the U.S.	City of Sacramento Community Development	Prior to the issuance of grading permits	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
	vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	through the Clean Water Act (CWA) Section 404 permitting process. Timing for compliance with the specific conditions of the Section 404 permit shall be pursuant to the conditions specified by USACE as part of permit issuance. Proof of compliance with the requirements established herein shall be submitted for review and approval to the City of Sacramento Community Development Department. 4.4-11(b) Prior to construction in any areas containing wetlands or waters of the U.S. and/or State, the project applicant shall obtain a water quality certification pursuant to Section 401 of the CWA. Any measures required as part of the issuance of the water quality certification shall be implemented. 4.4-11(c) Prior to construction in any areas containing wetlands or waters of the U.S. and/or State, the project applicant shall file a report of waste discharge with the Central Valley Regional Water Quality Control Board (RWQCB) for activities affecting wetlands or waters of the State that are not also under USACE jurisdiction, if applicable. 4.4-11(d) Implement Mitigation Measure 4.4-10(a). <i>Nonparticipating Parcels</i> 4.4-11(e) As part of any application associated with development of the nonparticipating parcels, the applicant shall ensure that a qualified biologist has conducted an Aquatic Resources Delineation (ARD) for areas proposed for disturbance to identify potential waters of the U.S. and/or State. The ARD shall be conducted in accordance with the minimum standards set forth by the USACE South Pacific Division and Sacramento District Regulatory Program, as well as the Corps of Engineers Wetlands Delineation Manual, Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States or any manuals that supplement or replace these manuals.	Department USACE RWQCB RWQCB See Mitigation Measure 4.4-10(a)	Prior to construction in any areas containing wetlands or waters of the U.S. and/or State Prior to construction in any areas containing wetlands or waters of the U.S. and/or State See Mitigation Measure 4.4-10(a) As part of any application associated with	

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		If potential waters of the U.S. and/or State are not identified, further mitigation shall not be required. The ARD shall be submitted for review and approval to the City of Sacramento Community Development Department and USACE Sacramento District Regulatory Division. 4.4-11(f) If waters of the U.S. and/or State are identified within areas proposed for disturbance, the project applicant shall implement Mitigation Measures 4.4-11(a) through 4.4-11(d), as applicable.	City of Sacramento Community Development Department USACE See Mitigation Measures 4.4-11(a) through 4.4-11(d)	development of the nonparticipating parcels If waters of the U.S. and/or State are identified within areas proposed for disturbance	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
4.4-12	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	4.4-12 Implement Mitigation Measure 4.4-3.	See Mitigation Measure 4.4-3	See Mitigation Measure 4.4-3	
4.4-13	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	Industrial Park 4.4-13(a) <i>Prior to the issuance of any grading permit and commencement of ground-disturbing activities, the project applicant shall hire a qualified arborist to evaluate all trees within areas proposed for disturbance to confirm if the trees meet the definition of a Private Protected Tree, as set forth by Sacramento City Code Section 12.56.020. Results of the tree survey shall be submitted for review and approval to the City of Sacramento Department of Public Works' Urban Forestry section. Should any on-site tree that would be potentially impacted by the proposed project be found to qualify as a Private Protected Tree, the project applicant shall obtain a Tree Permit from the City of Sacramento Community Development Department and comply with the permit requirements in effect at the time of project grading for removal, pruning, or soil disturbance within the canopy dripline of a Private Protected Tree.</i> Nonparticipating Parcels 4.4-13(b) <i>As part of any application associated with development of the nonparticipating</i>	City of Sacramento Community Development Department City of Sacramento	Prior to the issuance of any grading permit and commencement of ground-disturbing activities within Industrial Park As part of any application associated with development of the	

MITIGATION MONITORING AND REPORTING PROGRAM
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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		<i>parcels, the applicant shall hire a qualified arborist to conduct a tree survey of areas proposed for disturbance to identify any trees that meet the definition of a Private Protected Tree, as established by Sacramento City Code Section 12.56.020. A report detailing the results of the survey shall be submitted for review and approval to the City of Sacramento Community Development Department. If protected trees are not identified, further mitigation shall not be required.</i> 4.4-13(c) If protected trees are identified in areas proposed for disturbance of nonparticipating parcels, the applicant shall implement Mitigation Measure 4.4-13(a).	Community Development Department See Mitigation Measure 4.4-13(a)	nonparticipating parcels If protected trees are identified in areas proposed for disturbance of nonparticipating parcels	
4.4-15	Cumulative loss of habitat for special-status species.	Industrial Park 4.4-15(a) <i>Implement Mitigation Measures 4.4-1(a) and 4.4-1(b), 4.4-3, 4.4-4(a), 4.4-5(a) and 4.4-5(b), 4.4-6, 4.4-8, 4.4-9(a) and 4.4-9(b), 4.4-10(a), 4.4-11(a) through 4.4-11(c), and 4.4-13(a).</i> Nonparticipating Parcels 4.4-15(b) <i>Implement Mitigation Measures 4.4-1(a) and 4.4-1(b), 4.4-3, 4.4-4(a), 4.4-5(a) and 4.4-5(b), 4.4-6, 4.4-8, 4.4-9(a) and 4.4-9(b), 4.4-10(b) and 4.4-10(c), 4.4-11(e) and 4.4-</i>	See Mitigation Measures 4.4-1(a) and 4.4-1(b), 4.4-3, 4.4-4(a), 4.4-5(a) and 4.4-5(b), 4.4-6, 4.4-8, 4.4-9(a) and 4.4-9(b), 4.4-10(a), 4.4-11(a) through 4.4-11(c), and 4.4-13(a). See Mitigation Measures 4.4-1(a) and 4.4-1(b), 4.4-3,	See Mitigation Measures 4.4-1(a) and 4.4-1(b), 4.4-3, 4.4-4(a), 4.4-5(a) and 4.4-5(b), 4.4-6, 4.4-8, 4.4-9(a) and 4.4-9(b), 4.4-10(a), 4.4-11(a) through 4.4-11(c), and 4.4-13(a). See Mitigation Measures 4.4-1(a) and 4.4-1(b), 4.4-3, 4.4-4(a), 4.4-5(a) and 4.4-5(b), 4.4-6, 4.4-8, 4.4-9(a) and	

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Impact Number	Impact	Mitigation Measures	Monitoring Agency	Implementation Schedule	Sign-off
		<i>11(f), and 4.4-13(b) and 4.4-13(c).</i>	4.4-4(a), 4.4-5(a) and 4.4-5(b), 4.4-6, 4.4-8, 4.4-9(a) and 4.4-9(b), 4.4-10(b) and 4.4-10(c), 4.4-11(e) and 4.4-11(f), and 4.4-13(b) and 4.4-13(c)	4.4-9(b), 4.4-10(b) and 4.4-10(c), 4.4-11(e) and 4.4-11(f), and 4.4-13(b) and 4.4-13(c)	

Table A-1
Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project

Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
and abundance of species present.			
1. Where site investigations indicate vernal pool species may occur, the developer shall notify the Land Use Agency regarding the potential for impacts to vernal pool species.	N/A		No vernal pool habitat exists on site.
2. USFWS and CDFG shall identify specific measures required to avoid, minimize and mitigate impacts to vernal pool species to be implemented prior to disturbance and in accordance with adopted standards or established guidelines.	N/A		No vernal pool habitat exists on site.
3. The requirement by USFWS to preserve a vernal pool within development would be based on identification of an intact vernal pool with minimal disturbance where the presence of one or more of the following species is recorded: slender orcutt grass, Sacramento orcutt grass, Colusa grass, or vernal pool tadpole shrimp. No such preservation requirement shall be made unless the vernal pool is a suitable site for TNBC Mitigation Lands.	N/A		No vernal pool habitat exists on site.
4. Such vernal pool areas, including any required buffer land dedication, shall apply toward the Land Acquisition Fee component of the development project's NBHCP mitigation obligation.	N/A		No vernal pool habitat exists on site.
b. Mitigation Strategies (p. V-5)	N/A		No vernal pool habitat exists on site.
1. Avoidance and Preservation On-Site to Minimize Impacts: In the event USFWS requires on-site preservation in accordance with Section a.3 above, on-site mitigation shall be required. In the event USFWS does not require on-site mitigation, a developer or private land owner may still propose to dedicate fee title or conservation easement for that portion of the property with vernal pool resources and an associated 250-foot buffer surrounding the vernal pool resource to the TNBC. If the dedication is accepted, a reduction in the Land Acquisition Fee portion of the habitat Mitigation Fee shall be granted the developer for the portion (calculated on an acreage basis) of the site permanently preserved by easement or dedication. However, habitat Mitigation Fees, in full, must be paid on the remaining developable acreage on the site, and all fees other than Land Acquisition Fees shall be paid	N/A		No vernal pool habitat exists on site.

Table A-1 Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the EIR Mitigation for the Project			
Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
for all acres on the site. Additional conditions to preserve the biological integrity of the site (such as reasonable drainage conditions) may be imposed by the Land Use Agency in consultation with TNBC and the TAC. 2. Construction Period Avoidance and Relocation of Vernal Pool Resources (p. V-6). a. No grading, development or modification of the vernal pool site or the buffer area extending 250 feet around the perimeter of the vernal pool site may occur during the vernal pool “wet” season as identified by USFWS. Protective fencing shall be established around the perimeter of the vernal pool site and the buffer area during the vernal pool wet season. b. In consultation with TNBC and the TAC, soils and cysts from the vernal pool may be relocated as soon as practicable during the dry season to a suitable TNBC or other reserve site provided the relocation/recreation site is approved by TNBC, and the USFWS. 3. Payment Into a USFWS Approved Conservation Bank (p. V-6). In the event all of the above approaches are not appropriate for the site, the Land Use Agency shall require the developer to purchase credits from a USFWS-approved mitigation bank in accordance with the following mitigation ratios: 2:1 for preservation in mitigation banks, 1:1 for creation in mitigation banks, 3:1 for preservation in acres outside of mitigation banks, 2:1 for creation in acres outside of mitigation banks. 2. Measures to Reduce Take for Individual Species (p. V-7) a. Measures to Reduce Take of Giant Garter Snake (p. V-7) 1. Within the Natomas Basin, all construction activity involving disturbance of habitat, such as site preparation and initial grading, is restricted to the period between May 1 and September 30. This is the active period for the giant garter snake and direct mortality is lessened, because snakes are expected to actively move and avoid danger.	N/A N/A N/A N/A	No vernal pool habitat exists on site. No vernal pool habitat exists on site. No vernal pool habitat exists on site. No vernal pool habitat exists on site.	A comparable and more detailed measure has been included in the mitigation proposed in the project’s EIR.

Table A-1 Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project			
Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
2. Pre-construction surveys for giant garter snake, as well as other NBHCP Covered Species, must be completed for all development projects by a qualified biologist approved by USFWS. If any giant garter snake habitat is found within a specific site, the following additional measures shall be implemented to minimize disturbance of habitat and harassment of giant garter snake, unless such project is specifically exempted by USFWS.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR, combined with measure 4 below.
3. Between April 15 and September 30, all irrigation ditches, canals, or other aquatic habitat should be completely dewatered, with no puddled water remaining, for at least 15 consecutive days prior to the excavation or filling in of the dewatered habitat. Make sure dewatered habitat does not continue to support giant garter snake prey, which could detain or attract snakes into the area. If a site cannot be completely dewatered, netting and salvage of prey items may be necessary. This measure removes aquatic habitat component and allows giant garter snakes to leave on their own.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
4. For sites that contain giant garter snake habitat, no more than 24-hours prior to start of construction activities (site preparation and/or grading), the project area shall be surveyed for the presence of giant garter snake. If construction activities stop on the project site for a period of two weeks or more, a new giant garter snake survey shall be completed no more than 24-hours prior to the re-start of construction activities.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
5. Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project as Environmentally Sensitive Areas. This area shall be avoided by all construction personnel.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
6. Construction personnel completing site preparation and grading operations shall receive USFWS approved environmental awareness training. This training instructs workers on how to identify giant garter snakes and their habitats, and what to do if a giant garter snake is encountered during construction activities. During this training an on-site biological monitor shall be	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.

Table A-1
Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project

Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
designated.			
7. If a live giant garter snake is found during construction activities, immediately notify the USFWS and the project's biological monitor. The biological monitor, or his/her assignee, shall do the following:	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
a. Stop construction in the vicinity of the snake. Monitor the snake and allow the snake to leave on its own. The monitor shall remain in the area for the remainder of the work day to make sure the snake is not harmed or if it leaves the site, does not return. Escape routes for giant garter snake should be determined in advance of construction and snakes should always be allowed to leave on their own. If a giant garter snake does not leave on its own within one working day, further consultation with USFWS is required.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
8. Upon locating dead, injured or sick threatened or endangered wildlife species, the Permittees or their designated agents must notify within one working day the Service's Division of Law Enforcement and Sacramento Fish and Wildlife Office. Written notification to both offices must be made within 3 calendar days and must include the date, time, and location of the finding of a specimen and any other pertinent information.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
9. Fill or construction debris may be used by giant garter snake as an over-wintering site. Therefore, upon completion of construction activities remove any temporary fill and/or construction debris from the site. If this material is situated near undisturbed giant garter snake habitat and it is to be removed between October 1 and April 30, it shall be inspected by a qualified biologist to assure that giant garter snake are not using it as hibernaculae.	Applicable	Included	A comparable and more stringent measure has been included in the mitigation proposed in the project's EIR.
10. No plastic, monofilament, jute, or similar erosion control matting that could entangle snakes will be placed on a project site when working within 200 feet of snake aquatic or rice habitat. Possible substitutions include coconut coir matting, tactified hydroseeding compounds, or other material approved by the Wildlife Agencies.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.

Table A-1 Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project			
Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
11. Fences will be constructed along the shared boundary of urban development and the North Drainage Canal and the East Drainage Canal within Sutter County's Permit Area.	N/A		This measure is specific to locations outside the project area.
a. A minimum of 100 feet will be provided from fence-to-fence and access to the canals shall be limited by gates.	N/A		This measure is specific to locations outside the project area.
b. A snake deterrent will be placed along the fences on the North Drainage Canal and the East Drainage Canal (i.e., fence construction that restricts snake movement or an appropriate vegetative barrier either inside or outside of the boundary fence). The design of the deterrent shall be subject to approval by the Wildlife Agencies.	N/A		This measure is specific to locations outside the project area.
c. The specific fence/snake barrier design adjacent to a given development will be determined within Sutter County's review of the proposed development and the fence/barrier shall be installed immediately after site grading is completed.	N/A		This measure is specific to locations outside the project area.
12. At the time of urban development along the North and East Drainage Canals, Sutter County shall consult with the Wildlife Agencies to determine design strategies that would enhance conditions for giant garter snake movement through the North and East Drainage Canals. Possible strategies may include expanded buffer areas and modified canal cross sections if such measures are, in the determination of Sutter and the Water Agencies, found to be feasible.	N/A		This measure is specific to locations outside the project area.
b. Measures to Reduce Take of Swainson's Hawk (V-9)			
1. Measures to Reduce Cumulative Impacts to Foraging Habitat (V-9): Sutter County and the City of Sacramento will not will not grant development approvals within the one-mile wide Swainson's Hawk Zone adjacent to the Sacramento River.	N/A		This measure is specific to locations outside the project area.
2. Measures to Reduce Nest Disturbance (V-10)			
1. Pre-construction surveys shall be completed by the respective developer to determine whether any Swainson's hawk nest trees will be removed on-site, or active Swainson's hawk nest sites occur on or within ½ mile of the	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.

Table A-1 Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project				
Natomas Basin HCP Measure		Applicability	Inclusion	Rationale
development site.				
2.	If breeding Swainson's hawks (i.e. exhibiting nest building or nesting behavior) are identified, no new disturbances (e.g., heavy equipment operation associated with construction) will occur within ½ mile of an active nest between March 15 and September 15, or until a qualified biologist, with concurrence by CDFG, has determined that young have fledged or that the nest is no longer occupied. Routine disturbances such as agricultural activities, commuter traffic, and routine facility maintenance activities within ½ mile of an active nest are not restricted.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
3.	Where disturbance of a Swainson's hawk nest cannot be avoided, the nest tree may be destroyed during the non-nesting season. For purposes of this provision the Swainson's hawk nesting season is defined as March 15 to September 15. If a nest tree (any tree that has an active nest in the year the impact is to occur) must be removed, tree removal shall only occur between September 15 and February 1.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
4.	If a Swainson's hawk nest tree is to be removed and fledglings are present, the tree may not be removed until September 15 or until the California Department of Fish and Game has determined that the young have fledged and are no longer dependent upon the nest tree.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
5.	If construction or other project related activities which may cause nest abandonment or forced fledgling are proposed within the 1/4 mile buffer zone, intensive monitoring (funded by the project sponsor) by a Department of Fish and Game approved raptor biologist will be required. Exact implementation of this measure will be based on specific information at the project site.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
3.	Measures to Prevent the Loss of Nest Trees	Section heading		
1.	Valley oaks, tree groves, riparian habitat and other large trees will be preserved wherever possible, particularly near Fisherman's Lake and elsewhere where large oak groves,	N/A		There are currently no large trees at the Airport South Industrial site.

Table A-1
Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project

Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
tree groves and riparian habitat have been identified.			
2. The raptor nesting season shall be avoided when scheduling construction near nests in accordance with applicable guidelines published by the Wildlife Agencies or through consultation with the Wildlife Agencies.	Applicable	Included	A comparable and more detailed measure has been included in the mitigation proposed in the project's EIR, combined with measure 2.2 above.
4. Measures to Mitigate the Loss of Nest Trees (V-11)	N/A		No Swainson's hawk nesting trees exist on site.
1. Fifteen trees (five gallon container size) must be planted, maintained and monitored within the habitat reserves for every Swainson's hawk nesting tree anticipated to be impacted by Authorized Development.	N/A		No Swainson's hawk nesting trees exist on site.
2. The Land Use Agency Permittee approving a project that impacts an existing Swainson's hawk nest tree shall provide funding sufficient for monitoring survival success of trees for a period of 5 years. For every tree lost during this time period, a replacement tree must be planted immediately upon the detection of failure. Trees planted to replace trees lost shall be monitored for an additional 5-year period to ensure survival until the end of the monitoring period. A 100% success rate shall be achieved. All necessary planting requirements and maintenance (i.e., fertilizing, irrigation) to ensure success shall be provided. Trees must be irrigated for a minimum of the first 5 years after planting, and then gradually weaned off the irrigation in an approximate 2-year period. If larger stock is planted, the number of years of irrigation must be increased accordingly. In addition, 10 years after planting, a survey of the trees shall be completed to assure 100% establishment success. Remediation of any dead trees shall include completion of the survival and establishment process described.	N/A		No Swainson's hawk nesting trees exist on site.
3. Of the replacement trees planted, a variety of native tree species will be planted to provide trees with differing growth rates, maturation, and life span. This will ensure that nesting habitat will be available quickly (5-10 years in the case of cottonwoods and willows), and in the long term (i.e., valley			

Table A-1
Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project

Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
oaks, black walnut and sycamores). Trees shall be sited on reserves in proximity to hawk foraging areas. Trees planted shall be planted in clumps of 3 trees each. Planting stock shall be a minimum of 5-gallon container stock for oak and walnut species.			
4. In order to reduce temporal impacts resulting from the loss of mature nest trees, the City of Sacramento will fund mitigation planting within 14 months of permit of the NBHCP and ITP's, to be reimbursed by private developers at the time of approval of their development projects that impact mature nest trees.	N/A		No Swainson's hawk nesting trees exist on site.
5. For each additional nesting tree removed by Land Use Agencies' Covered Activities, the Land Use Agency shall fund and provide for the planting of 15 native sapling trees of suitable species with differing growth rates at suitable locations on TNBC preserves. Funding for such plantings shall be provided by the applicable Permittee within 30 days of approving a Covered Activity that will impact a Swainson's hawk nesting tree.	N/A		No Swainson's hawk nesting trees exist on site.
c. Measures to Reduce Take to Valley Elderberry Longhorn Beetle (VELB) (p. V-13): developers must comply with conservation practices for VELB set forth in the conditions of the "USFWS Compensation Guidelines for the Valley Elderberry Longhorn Beetle," dated 1999. This policy assumes that any elderberry bushes found within the range of the species are likely to provide beetle habitat, and any destruction or loss of such elderberry shrub habitat must be mitigated according to the Guidelines. The principle conditions of the Guidelines are summarized below.	N/A		No elderberry shrubs exist on site.
1. Any direct or indirect impacts to VELB habitat will be avoided whenever possible. To the maximum extent practicable, projects will be designed to avoid stands of elderberry bushes and to avoid isolation of the plants from other nearby populations. Pre-construction surveys at the construction impact site will be conducted to assess the appropriate amount of mitigation.	N/A		No elderberry shrubs exist on site.
2. If elderberry plants cannot be avoided, they shall be transplanted	N/A		No elderberry shrubs exist on site.

Table A-1 Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project			
Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
during the dormant season (November 1 to February 15) to an area protected in perpetuity and approved by the USFWS.			
3. Replacement seedling plants will be provided at a ratio between 2:1 and 5:1 depending on the extent of beetle utilization of the plants moved or lost. A 1,800-square-foot area will be provided for each transplanted elderberry shrub or every five elderberry seedling plants.	N/A		No elderberry shrubs exist on site.
4. Annual monitoring of VELB habitat will be provided in the planted mitigation sites for a ten year period.	N/A		No elderberry shrubs exist on site.
5. Replacement elderberry shrubs will meet a 60% survival rate by the end of the ten year period and the 60% survival rate shall be required for the term of the applicable permit.	N/A		No elderberry shrubs exist on site.
d. Measures to Reduce Take on Tricolored Blackbird (V-13)	Section heading		
1. A pre-construction survey is required for potential nesting habitat and presence of nesting tricolored blackbirds.	Applicable		Suitable tricolored blackbird nesting habitat does not exist on site.
2. If surveys determine tricolored blackbirds are present, the following measures shall be implemented in accordance with the Migratory Bird Treaty Act, to avoid disturbance to occupied nesting colonies during the nesting season. A boundary shall be marked by brightly colored construction fencing that establishes a boundary 500 feet from the active colony. No disturbance associated with Authorized Development shall occur within the 500 foot fenced area during the nesting season to July 1, or while birds are present. A qualified biologist, with concurrence of USFWS, must determine young have fledged and nest sites are no longer active before the nest site may be disturbed.	Applicable		Suitable tricolored blackbird nesting habitat does not exist on site.
e. Measures to Reduce Take on Aleutian Canada Goose (V-14)			
1. A pre-construction survey for Aleutian Canada geese will be required. If geese are present, the developer must consult with USFWS and CDFG to determine appropriate measures to avoid and minimize take of individuals. Such measures shall be appropriate for the use (e.g., foraging, roosting, etc.) and activity of the species, since this species is a seasonal visitor to the Basin.	Applicable		This subspecies is not expected to occur on site.

Table A-1
Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project

Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
f. Measures to Reduce Take on White-faced Ibis (V-14)			
1. Prior to approval of an Urban Development Permit, a pre-construction survey will be required.	N/A		Suitable white-faced ibis nesting habitat does not exist on site.
2. If surveys determine the presence of active nest sites of White-faced ibis, disturbance by Authorized Development within 1/4 mile of nests will be avoided within the nesting season of May 15 through August 31 or until a qualified biologist, with concurrence of Wildlife Agencies, has determined that young have fledged or that the nest is no longer occupied.	N/A		Suitable white-faced ibis nesting habitat does not exist on site.
g. Measures to Reduce Take on Loggerhead Shrike (V-14)			
1. Prior to approval of an Urban Development Permit, a pre-construction survey will be required.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
2. If surveys identify an active loggerhead shrike nest that will be impacted by Authorized Development, the developer shall install brightly colored construction fencing that establishes a boundary 100 feet from the active nest. No disturbance associated with Authorized Development shall occur within the 100 foot fenced area during the nesting season of March 1 through July 31. A qualified biologist, with concurrence of USFWS must determine young have fledged or that the nest is no longer occupied prior to disturbance of the nest site.	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
h. Measures to Reduce Take of Burrowing Owl (V-15)			
1. Prior to the initiation of grading or earth disturbing activities, the applicant/developer shall hire a CDFG approved qualified biologist to perform a pre-construction survey of the site to determine if any burrowing owls are using the site for foraging or nesting. The preconstruction survey shall be submitted to the Land Use Agency with jurisdiction over the site prior to the developer's commencement of construction activities and a mitigation program shall be developed and agreed to by the Land Use Agency and developer prior to initiation of any physical disturbance on the site.	Applicable	Included	A comparable and more stringent measure has been included in the mitigation proposed in the project's EIR.

Table A-1 Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project				
Natomas Basin HCP Measure		Applicability	Inclusion	Rationale
2. Occupied burrows shall not be disturbed during nesting season (February 1 through August 31) unless a qualified biologist approved by the CDFG verifies through noninvasive measures that either: 1) the birds have not begun egg-laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.		Applicable	Included	A comparable and more stringent measure has been included in the mitigation proposed in the project's EIR.
		Applicable	Included	A comparable and more stringent measure has been included in the mitigation proposed in the project's EIR.
3. If nest sites are found, the USFWS and CDFG shall be contacted regarding suitable mitigation measures, which may include a 300 foot buffer from the nest site during the breeding season (February 1 - August 31), or a relocation effort for the burrowing owls if the birds have not begun egg-laying and incubation or the juveniles from the occupied burrows are foraging independently and are capable of independent survival. If on-site avoidance is required, the location of the buffer zone will be determined by a qualified biologist. The developer shall mark the limit of the buffer zone with yellow caution tape, stakes, or temporary fencing. The buffer will be maintained throughout the construction period.		Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
4. If relocation of the owls is approved for the site by USFWS and CDFG, the developer shall hire a qualified biologist to prepare a plan for relocating the owls to a suitable site. The relocation plan must include: (a) the location of the nest and owls proposed for relocation; (b) the location of the proposed relocation site; (c) the number of owls involved and the time of year when the relocation is proposed to take place; (d) the name and credentials of the biologist who will be retained to supervise the relocation; (e) the proposed method of capture and transport for the owls to the new site; (f) a description of the site preparations at the relocation site (e.g., enhancement of existing burrows, creation of artificial burrows, one-time or long-term vegetation control, etc.); and (g) a description of efforts and funding support proposed to monitor the relocation. Relocation options may include passive relocation to another area of the site not subject to disturbance through one way doors on burrow openings, or construction of artificial burrows in accordance with the CDFG's October 17, 1995, Staff Report on Burrowing Owls Mitigation (see Appendix				

Table A-1 Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project			
Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
D).	Applicable	Included	A comparable and more stringent measure has been included in the mitigation proposed in the project's EIR.
5. Where on-site avoidance is not possible, disturbance and/or destruction of burrows shall be offset through development of suitable habitat on TNBC upland reserves. Such habitat shall include creation of new burrows with adequate foraging area (a minimum of 6.5 acres) or 300 feet radii around the newly created burrows. Additional habitat design and mitigation measures are described in the CDFG's October 17, 1995, Staff Report on Burrowing Owl Mitigation (see Appendix D).			
i. Measures to Reduce Take on Bank Swallow (V-16)	N/A		Suitable bank swallow nesting habitat does not exist on site.
1. Disturbance to bank swallows nesting colonies will be avoided within the nesting season of May 1 through August 31 (or until a qualified biologist, with concurrence of USFWS and CDFG, has determined that young have fledged or that the nest is no longer occupied) during all Authorized Development activities conducted in the Permit Areas.	N/A		Suitable bank swallow nesting habitat does not exist on site.
2. If surveys identify an active bank swallow nesting colony that will be impacted by Authorized Development, the developer shall install brightly colored construction fencing that establishes a boundary 250 feet from the active nesting colony. No disturbance associated with Authorized Development shall occur within the 250 foot fenced area during the nesting season of May 1 through August 31. Additionally, disturbance within ½ mile upstream or downstream of the colony will be avoided if the colony is located upon a natural waterway.			
j. Measures to Reduce Take on Northwestern Pond Turtle (V-16)	Applicable		The NBHCP measure has been included in the mitigation proposed in the project's EIR.
1. Take of the northwestern pond turtle as a result of habitat destruction during construction activities, including the removal of irrigation ditches and drains, and during ditch and drain maintenance, will be minimized by the dewatering requirement described above for giant garter snake (see Section 5.a.(3)).			
k. Measures to Reduce Take on California Tiger Salamander (V-16)			
1. Prior to approval of an Urban Development Permit, the involved	N/A		Suitable California tiger salamander

Table A-1 Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project			
Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
Land Use Agency shall require a pre-construction survey. If a future survey determines the presence of California tiger salamander, the Land Use Agency shall require the developer to consult with USFWS and CDFG to determine appropriate measures to avoid and minimize take of individuals. l. Measures to Reduce Take on Western Spadefoot Toad (V-16) 1. Prior to approval of an Urban Development Permit, the involved Land Use Agency shall require a pre-construction survey. If such survey determines western spadefoot toad are present, the Land Use Agency shall require the developer to consult with CDFG and USFWS to determine appropriate measures to avoid and minimize take of individuals. m. Measures to Reduce Take of Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp, and Midvalley Fairy Shrimp (V-17) 1. Prior to approval of an Urban Development Permit, the involved Land Use Agency shall require a pre-construction survey. If such survey determines vernal pool fairy shrimp, vernal pool tadpole shrimp, and midvalley fairy shrimp are present, the Land Use Agency shall require the developer to consult with USFWS to determine appropriate measures to avoid and minimize take of individuals. Procedures for reviewing projects that could affect vernal pools and vernal pool species are discussed under Section V.A.4 above. n. Measures to Reduce Take of Delta Tule Pea (V-17) 1. If Delta tule pea plants are identified through a pre-construction survey, the involved Land Use Agency shall provide notice to USFWS, CDFG and the California Native Plant Society. Under such circumstances, the development proponent shall allow the transplantation of plants prior to site disturbance. o. Measures to Reduce Take on Sanford's Arrowhead (V-17)	N/A N/A Applicable	habitat does not exist on site. Suitable western spadefoot toad habitat does not exist on site. No vernal pool habitat exists on site. Included	habitat does not exist on site. Suitable western spadefoot toad habitat does not exist on site. No vernal pool habitat exists on site. The NBHCP measure has been included in the mitigation proposed in the project's EIR.

Table A-1
Inclusion of NBHCP Measures to Reduce Construction-related Effects and Human-Wildlife Conflicts in the Airport South Industrial Project or the DEIR Mitigation for the Project

Natomas Basin HCP Measure	Applicability	Inclusion	Rationale
1. If Sanford's arrowhead plants are identified through a pre-construction survey, the involved Land Use Agency shall provide notice to USFWS, CDFG and the California Native Plant Society. Under such circumstances, the development proponent shall allow the transplantation of plants prior to site disturbance. p. Measures to Reduce Take on Boggs Lake Hedge-Hyssop, Sacramento Orcutt Grass, Slender Orcutt Grass, Colusa Grass, and Legenere (V-17)	Applicable	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.
1. Prior to approval of an Urban Development Permit, the involved Land Use Agency shall require a pre-construction survey. If such survey determines Boggs Lake hedge-hyssop, Sacramento orcutt grass, Slender orcutt grass, Colusa grass, or legenere are present, the Land Use Agency shall require the developer to consult with USFWS to determine appropriate measures to avoid and minimize loss of individuals. If Authorized Development is proposed for areas containing vernal pools, the applicant will be required to complete additional review, permitting and mitigation as described under Section V.A.4.	N/A	Included	The NBHCP measure has been included in the mitigation proposed in the project's EIR.

