Appendix R-E

Biological Resources

R-E1 – Surveys for Nuttall's Acmispon

April 6, 2018

Ted Anasis, AICP
Manager, Airport Planning
San Diego County Regional Airport Authority,
P.O. Box 82776
San Diego, CA 92138-2776

RE: Surveys for Nuttall's Acmispon at the California Least Tern nesting ovals at San Diego International Airport (SDIA).

Dear Mr. Anasis:

This letter report summarizes findings of a focused survey for Nuttall's acmispon (*Acmispon prostratus*) on the California Least Tern nesting ovals at the San Diego International Airport (SDIA). Nuttall's Acmispon, formerly known as Nuttall's Lotus [*Lotus nuttallianus*], is a prostrate, annual plant, blooming from March to June. It is restricted to sandy coastal dunes from northern San Diego County south into Baja California, Mexico. This species is threatened by development, non-native plants, and land management activities such as beach raking. It is considered rare and endangered by the California Native Plant Society, but is not listed under the state or federal Endangered Species Act.

A site visit was conducted on March 31, 2018 from 8:00-10:00 A.M. The survey was conducted by Kevin Clark, Director of BioServices, and Jon Rebman, Curator of Botany at the San Diego Natural History Museum. Areas surveyed included nesting ovals O-2S and O-3S, as well as a strip of open ground west of O-3S, south of the taxiway, where a historical Least Tern nest was located (Figure 1).

Figure 1. California Least Tern nesting ovals at the San Diego International Airport. Nuttall's Acmispon surveys were conducted on the two southern ovals that supported 2017 tern nests.

The substrate of the sites is primarily old cracked asphalt, with a mix of sand and gravel forming a matrix between the asphalt cracks. The vegetation of the sites is relatively homogenous, and is dominated by filaree (*Erodium moschatum*), Heermann's acmispon (*Acmispon heermannii* var. *heermannii*), cut-leaf evening-primrose (*Oenothera laciniata*), white sweet clover (*Melilotus albus*), and wild heliotrope (*Heliotropium curassavicum* var. *oculatum*; Figure 2).

Figure 2. The vegetation at the nesting ovals is sparse and open. The substrate is composed of cracked asphalt, with a mix of sandy and rocky soils. Photo taken March 31, 2018.

No Nuttall's acmispon were found during the surveys. The superficially similar Heermann's acmispon was very common across the sites (Figure 3).

Figure 3. *Acmispon heermannii* was common across the sites. Photo taken March 31, 2018.

Nesting ovals 0-1S and O-4S, located between the taxiway and runway, were not accessible for surveys. These sites were observed from across the taxiway at the north end of the surveyed ovals, and appear to have similar vegetation to the surveyed ovals. Given the homogenous vegetation and similar substrate across the sites surveyed, it is extremely unlikely that a rare plant such as Nuttall's acmispon occurs in these ovals, without also occurring on the larger ovals to the south.

A complete list of plants found during the survey is included in Appendix 1 (below).

If you have any questions about this report please feel free to contact me at (619) 255-0296 or kclark@sdnhm.org.

Sincerely,

Kevin B. Clark
Director of Bioservices
San Diego Natural History Museum

Appendix 1. Plants Observed in Tern Sites at San Diego Airport

Observation Date: 30 March 2018

Surveyors: Jon Rebman & Kevin Clark, san Diego Natural History Museum

Observed	Family	Plant Name	Common Name
x	Asteraceae	Erigeron bonariensis	Flax-Leaf Fleabane
x	Asteraceae	Erigeron canadensis	Horseweed
x	Asteraceae	Heterotheca grandiflora	Telegraph Weed
x	Asteraceae	Hypochaeris glabra	Smooth Cat's Ear
x	Asteraceae	Lactuca serriola	Prickly Lettuce
x	Asteraceae	Senecio vulgaris	Common Groundsel
x	Asteraceae	Sonchus oleraceus	Common Sow-Thistle
x	Brassicaceae	Brassica nigra	Black Mustard
x	Brassicaceae	Hirschfeldia incana	Short-Pod Mustard
x	Chenopodiaceae	Bassia hyssopifolia	Five-Hook Bassia
x	Euphorbiaceae	Euphorbia maculata	Spotted Spurge
x	Fabaceae	Acmispon heermannii var. heermannii	Heermann's Lotus
x	Fabaceae	Lupinus bicolor	Miniature Lupine
x	Fabaceae	Lupinus hirsutissimus	Stinging Lupine
x	Fabaceae	Lupinus succulentus	Arroyo Lupine
x	Fabaceae	Lupinus truncatus	Collar Lupine
x	Fabaceae	Medicago lupulina	Black Medick, Yellow Trefoil
x	Fabaceae	Melilotus albus	White Sweetclover
x	Fabaceae	Melilotus indicus	Indian Sweetclover
x	Geraniaceae	Erodium cicutarium	Red-Stem Filaree/Storksbill
x	Geraniaceae	Erodium moschatum	White-Stem Filaree/Storksbill
x	Heliotropaceae	Heliotropium curassavicum var. oculatum	Salt Heliotrope
x	Malvaceae	Malva parviflora	Cheeseweed
x	Onagraceae	Oenothera laciniata	Cut-Leaf Evening-Primrose
x	Plantaginaceae	Plantago lanceolata	English Plantain, Rib-Grass
x	Poaceae	Chloris virgata	Showy Chloris
x	Poaceae	Eragrostis barrelieri	Mediterranean Lovegrass
x	Poaceae	Melinis repens ssp. repens	Natal Grass

R-E2 – ADP Effects Analysis

September 3, 2019

Ted Anasis, AICP
Manager, Airport Planning
Planning & Environmental Affairs Department
San Diego County Regional Airport Authority

RE: Evaluation of impacts of proposed Airport Development Plan at the San Diego International Airport to California Least Tern

Dear Mr. Anasis:

The San Diego Natural History Museum has prepared this document for the San Diego County Regional Airport Authority (SDCRAA), to evaluate the effects of the proposed Airport Development Plan (ADP) at the San Diego International Airport (SDIA) on the federally endangered California Least Tern (*Sternula antillarum browni*; CLT). The presence of a breeding population of CLT at the SDIA requires that federal agencies determine what effects projects may have on the species. This document provides an analysis of the potential effects of the ADP on the tern, and whether these impacts adversely affect the tern in the context of its protections under the Endangered Species Act (ESA).

Background on the ESA and its requirement for a Biological Assessment

Under Section 7 of the Endangered Species Act (ESA), as administered by the U.S. Fish and Wildlife Service (USFWS), federal agencies that propose or permit a project must determine whether the proposed actions "may affect" listed species or designated critical habitat. This determination is made by the federal agency permitting or proposing the project, and is forwarded in writing to the

USFWS. If there is no effect, and the USFWS concurs, no further action is necessary. If either the federal action agency or the USFWS determine that the proposed project "may affect" the listed species, a Biological Assessment is required to be prepared so that the USFWS may determine whether the project will "adversely affect" the listed species. If no adverse effects are found, then this results in an "informal consultation", and a letter from the USFWS determining that the proposed project "may affect, but not likely to adversely affect" the listed species is issued, and the project may move forward. If adverse effects are found, then a "formal consultation" between the federal agencies is required.

This formal consultation is initiated in writing between the two federal agencies, and by law lasts 90 days. Often for complex projects the consultations last much longer by mutual agreement of the parties. During the consultation, the USFWS may ask for all relevant project plans, reports, studies, or any other information relevant to assessing the impacts of the project on the species. The USFWS will then determine, in a written Biological Opinion (BO), whether the adverse effects rise to a level that may "jeopardize the continued existence" of a species. Should the USFWS make this determination, they are required to propose a "reasonable and prudent alternative" to the proposed action that would reduce the impact below the level of jeopardizing the species.

Should the USFWS make a determination that the project will not jeopardize the species, the BO will include "reasonable and prudent measures" that minimize harm to the species. The BO may also include "take" authorization that exempts the action agency from prosecution should the proposed project harm the endangered species. This is the process that resulted in the previous 1993 Biological Opinion at SDIA that is currently followed in management of the CLT nesting ovals.

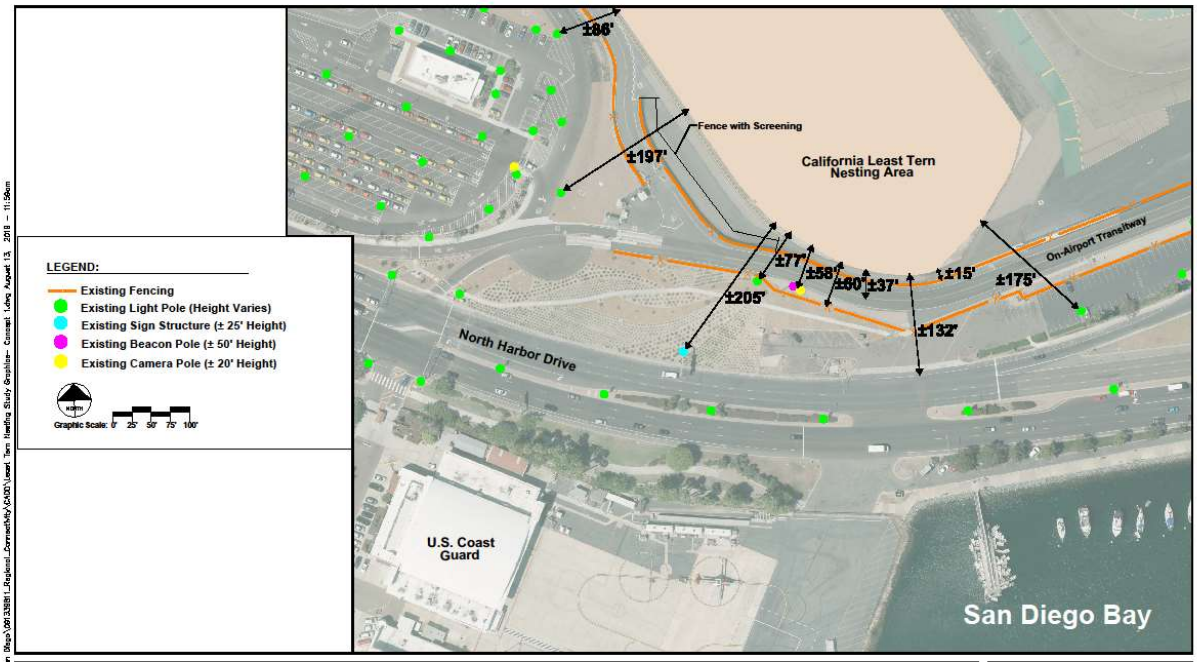
Airport Development Plan

The ADP provides a development framework to implement improvements that will enable the SDCRAA to accommodate future demand for air travel that is anticipated to occur at SDIA (Figure 1). The primary components of the proposed project, with regard to improvements that directly or indirectly relate to future activities in the general vicinity of the California least tern habitat areas in the southeast portion of SDIA, include the replacement of the existing Terminal 1 (T1), improvements to Taxiways A and B, stormwater drainage system improvements, and a new airport access roadway, as further described below.

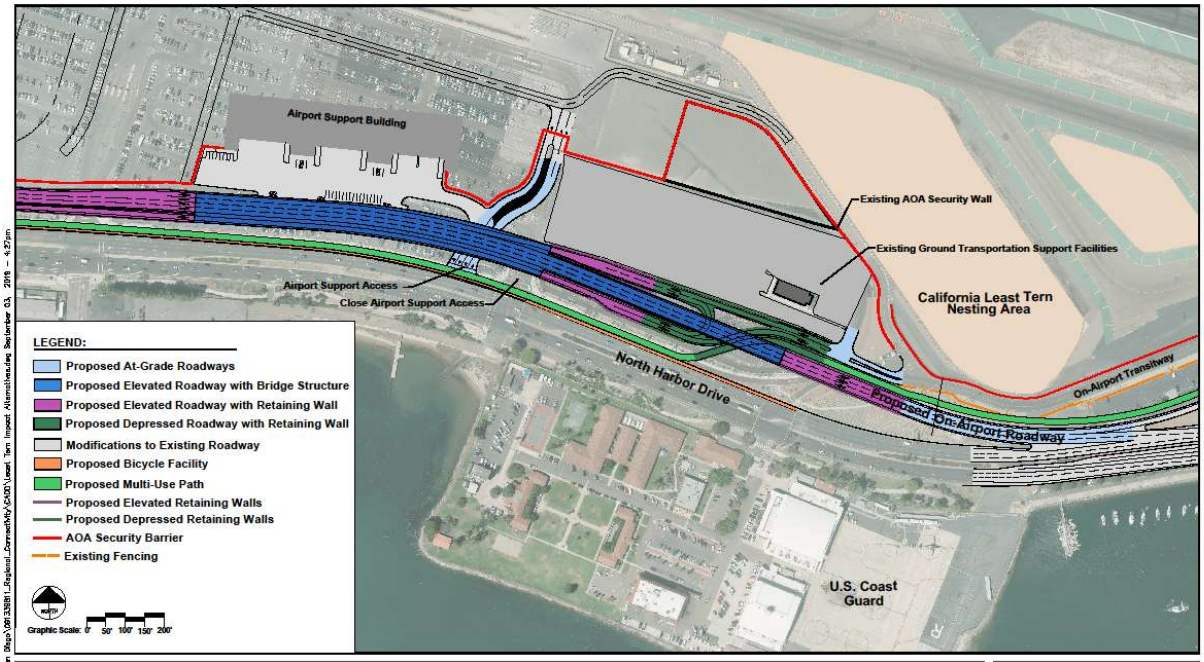
T1 is the oldest terminal at the Airport and does not meet current standards for customer service or passenger and gate capacity needs. Under the proposed project, the existing T1 would be demolished and replaced with a new terminal facility. As part of the T1 replacement, a new airport entry road and parking structure would be constructed (Figure 2).

The proposed project also includes a new on-airport entry roadway for airport-bound traffic traveling west on North Harbor Drive. The on-airport entry roadway would provide a new airport access point near the intersection of Laurel Street and North Harbor Drive, which would reduce congestion by removing a portion of westbound airport traffic from North Harbor Drive to the new on-airport entry roadway.

Other project improvements include an expanded central utility plant and other infrastructure upgrades; the demolition of airport support facilities and demolition/relocation of the administrative building to accommodate the terminal improvements; and the removal and/or



Least Tern Nesting View Graphics - Existing Conditions | Figure 1



Least Tern Nesting View Graphics - Concept 2 | Figure 2

reconfiguring of surface elements such as surface parking, access roads, aircraft aprons, and taxiways.

New Terminal 1

The proposed project would entail the demolition of the existing T1 and replacement with a new facility. Completed in 1967, the existing T1 is the oldest terminal at SDIA. It is outdated and does not meet current level of customer service standards or passenger and gate capacity needs. The former Commuter Terminal, which now accommodates SDCRAA administrative offices, and several air cargo and airline support buildings located east of the existing T1 would be removed to accommodate the new T1. Surface features, including surface parking lots and apron area, would also be removed or reconfigured to accommodate the new T1 building.

The new T1 would be a linear building that encompasses the footprint of the existing T1 and the area to the southeast. The new T1 would be up to approximately 90 feet in height and have three levels. Additionally, the apron improvements proposed along the north side of the new T1 concourse, as well as the provision of a new aircraft RON area to the east of the new concourse, would complement the realignment of Taxiway B and construction of a new Taxiway A proposed north and east of the new T1.

Ground Transportation Improvements

The proposed project modifications include a new on-airport entry roadway with an accompanying bicycle and pedestrian pathway that would connect to North Harbor Drive and allow westbound airport traffic to enter SDIA at the existing intersection of North Harbor Drive and Laurel Street This

would reduce the amount of westbound airport traffic using North Harbor Drive and, thus, help free up space on North Harbor Drive for a potential regional transit corridor along the waterfront in the future. Other improvements include a new airport entry road that would provide access to the existing terminals, new T1 and a new T1 parking structure and completion of the Terminal Link Road that allows high-occupancy buses and shuttles to travel between the north and south sides of SDIA without accessing public roads, as further described below.

On-Airport Vehicle Circulation

The ADP includes proposed circulation and roadway improvements to enhance mobility to the existing and proposed terminals from North Harbor Drive. The circulation and roadway improvements include:

- Inbound on-airport road with multi-use pedestrian and bicycle path;
- On-airport circulation roadways and curbfronts connecting vehicle users and emergency responders to the terminals, parking, and transit stops; and
- Outbound airport circulation, including completion of the Terminal Link Road that is reserved for high-occupancy vehicles traveling to SDIA's north side.

Pedestrian and Bicycle Circulation

Safe, recognizable, and continuous connections along North Harbor Drive and to SDIA terminals would be provided for bicycles and pedestrians. Existing pedestrian and bicycle connections would be retained, while, additionally, new connections would also be established. For westbound passengers accessing SDIA, at the intersection of North Harbor Drive and Laurel Street, a pedestrian/bicycle crossing would be provided along the on-airport entry ramp. From the entry

ramp, pedestrians and bicycles could travel on a multi-use path along the north side of the on-airport entry roadway. At the intersection of Terminal Link Road, the multi-use path would cross under the on-airport entry road, where it would continue along the north side of North Harbor Drive. At the intersection of North Harbor Drive and Harbor Island Drive, there would be a crossing that connects to the T1 Parking Structure. From there, pedestrians and bicyclists could access all new T1 facilities.

Utilities

Underground utilities required for Airport facilities include: electric; natural gas; water; sanitary sewer; heating, ventilation, and air conditioning (HVAC); telecommunications, and stormwater. In conjunction with implementation of the proposed project, improvements to existing utilities serving the project area would occur. The proposed improvements would require removing existing underground utility lines to accommodate the new and modified structures, and installing new lines and new connections to connect the new and modified structures with the existing lines. Utility improvements would occur in coordination with the applicable service provider.

In addition, in conjunction with the above terminal improvements, the existing Central Utility Plant (CUP), located along Airport Terminal Road adjacent to the existing T2 Parking Plaza, would be expanded by 12,000 square feet at its existing location in order to increase its capacity for providing heated and chilled water for building heating and cooling.

Stormwater Capture and Reuse System

To comply with the post-construction stormwater treatment control requirements for new development, the proposed project would expand the capture area of the SAN Stormwater Capture

and Reuse System. When completed by the proposed project, the system would capture runoff from approximately 200 acres of the SDIA's 661-acre site. The SAN Stormwater Capture and Reuse System would reduce the amount of potable water currently used for non-potable purposes at SDIA. In addition, the SAN Stormwater Capture and Reuse System would reduce the discharge of stormwater runoff from SDIA into San Diego Bay.

The project-related elements of the SAN Stormwater Capture and Reuse System include the construction of an underground storage tank with approximately 3.4 million gallons of storage and an underground infiltration area that would temporarily store approximately 3 million gallons of stormwater, while simultaneously allowing the stormwater to infiltrate into the ground. The SAN Stormwater Capture and Reuse System improvements would occur throughout much of the southern and eastern portions of SDIA, encompassing the new T1 facility and the adjacent aircraft RON parking area, the Taxiways A and B improvements area, as well as a 3.6-acre portion of the least tern nesting habitat.

Instead of discharging into San Diego Bay, stormwater captured in the storage tank would be conveyed (piped) to the stormwater treatment facility that was constructed as part of the T2 Parking Plaza Project and reused in the cooling towers of the CUP or potentially for irrigation on the south side of SDIA. At final build-out, the total storage capacity of the SAN Stormwater Capture and Reuse System would be approximately 9.4 million gallons and allow for the capture and reuse (or infiltration) of approximately 43 million gallons of stormwater per year.

The overall purpose, intent, and design of the SAN Stormwater Capture and Reuse System is three-fold: (i) to obtain the credits needed to accommodate the post-construction stormwater treatment control requirements of the Municipal Permit for new developments/ redevelopments applicable to the proposed project; (ii) to provide a stormwater treatment control process to address copper and zinc and meet the Numeric Action Levels (NALs) in the Industrial General Permit and the Airport Authority's goals listed in the San Diego Bay Watershed Management Area Water Quality Improvement Plan (WQIP); and (iii) to offset the amount of potable water being used for non-potable purposes at SDIA.

Development of the SAN Stormwater Capture and Reuse System would require excavation of approximately 66,000 cubic yards of soil to allow for construction of the 3.4-million-gallon underground storage tank and the 3-million gallon underground storage/infiltration area. It is anticipated that the excavated soil would be exported to Otay Landfill in Chula Vista for reuse and alternative daily cover. The storage tank and the storage area would each be constructed over an approximately 6-month period. In addition to construction of the underground storage tank and storage/infiltration area, development of the proposed stormwater capture and reuse system would include trenching to reconfigure or install new storm drain line infrastructure. The system would require the installation of approximately 20,000 linear feet of storm drain pipe, the largest pipes being 24 inches in diameter. Installation of storm drain pipe would occur during the same periods as underground storage tank installation.

Effects of the ADP on the California Least Tern

The purpose of this analysis is to analyze the effects of the proposed ADP on the CLT. The proposed project incorporates a number of separate but connected airport improvements that are analyzed below. Environmental effects of the proposed ADP outside of effects to the CLT, such as effects to air quality, water quality, etc. are outside the scope of this analysis.

New Terminal 1

The eastern end of the new Terminal 1 would be over 2,800 feet from the western edge of the main nesting oval O3-S. This would be too far for potential predators that may perch on the building to affect the nesting colony. The proposed new T1 would also be located to the west of the nesting oval, a direction that the CLT do not typically commute when traveling to or from foraging areas. Therefore no direct or indirect effects on the nesting oval or foraging terns are anticipated due to this proposed building.

Traffic frequency

The Terminal Link Road immediately adjacent to the south end of the nesting oval currently supports buses on approximate five-minute intervals, or 12 buses per hour. These buses are proposed to be converted from the current diesel engines to electric motors, which will reduce the ambient noise level adjacent to the colony. The ADP also proposes to increase the frequency of buses on the existing Terminal Link Road by four bus trips per hour by adding a dedicated shuttle bus for transit passengers between the Old Town Transit Center and Airport terminals with a shuttle fleet of all-electric zero-emission vehicles. This modest increase in bus frequency is not

expected to inhibit CLT commuting over the Terminal Link Road to the foraging areas in San Diego Bay.

Stormwater Capture and Reuse System

As noted above, the Stormwater Capture and Reuse System would require excavation of approximately 22,000 cubic yards of soil to allow for construction of the 3.4-million-gallon underground storage tank and approximately 44,000 cubic yards of soil to allow for construction of the 3-million gallon underground storage/infiltration area. The system would also require the installation of approximately 20,000 linear feet of storm drain pipe, the largest pipes being 24 inches in diameter. The underground storage storage/infiltration area would be constructed under 3.6 acres of the most southeastern portion of the least tern nesting habitat, specifically, nesting oval O3-S. The underground storage area is actually a series of hollow chambers with open bottoms to allow water percolation into the soil. As the water table below the nesting area is approximately five feet below ground, the chambers would be placed just above this level. The approximate 34-inch tall tanks would allow about 24-26 inches, or more, of sand and other material to be placed above them.

Currently the substrate in the CLT breeding ovals is composed primarily of poorly-graded sand, gravel, and old cracked asphalt, with a mix of sand and gravel forming a matrix between the asphalt cracks. The CLT place their nests in these sand and gravel areas and the sandy areas within the asphalt cracks, however a portion of the site is unsuitable for nest placement due to the amount of asphalt present. The ADP proposes that after the removal of the existing substrate across 3.6 acres of nesting oval O3-S during the construction of the Stormwater Capture and Reuse System, the

construction area would be capped with high quality beach sand, providing a much more suitable nesting substrate in this area. It is not clear if the number of breeding pairs of CLT nesting on the SDIA are currently limited by the amount of suitable nesting substrate or other extrinsic factors such as the availability of forage fish suitable for feeding chicks in nearby foraging areas in San Diego Bay. However, increasing the amount of suitable nesting substrate would increase the opportunities for nest placement and potentially decrease competition for nesting sites by CLT pairs.

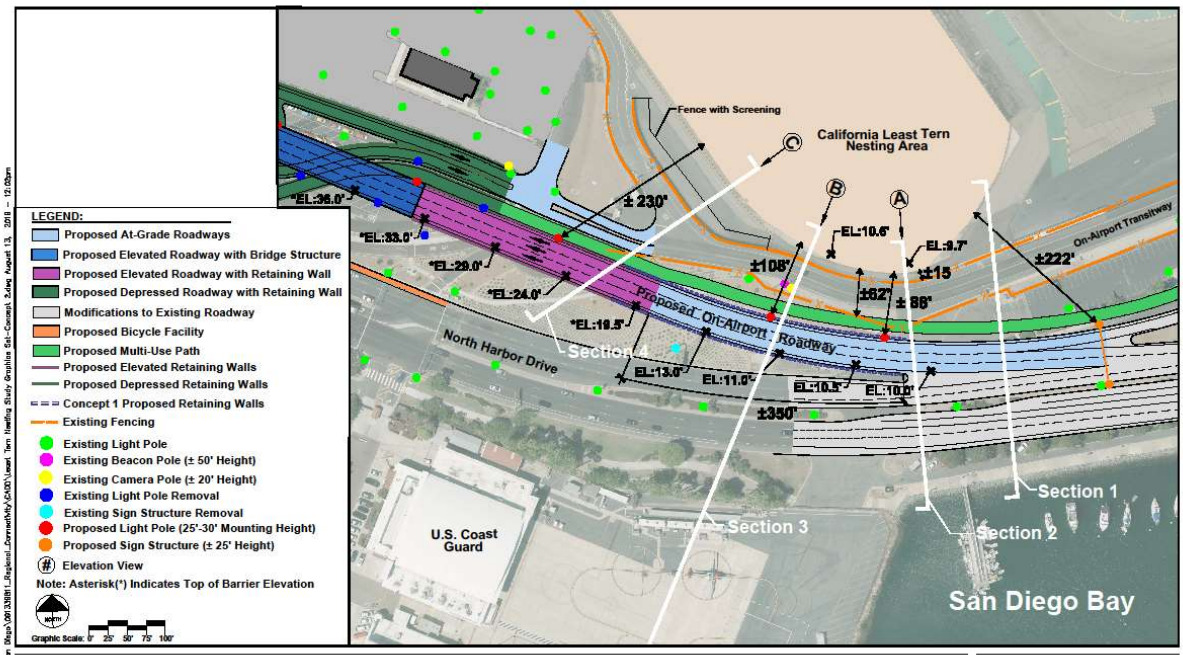
Construction of the Stormwater Capture and Reuse System would occur outside of the CLT breeding season, April 1-September 15. There would be no maintenance needs during the nesting season.

Multi-Use Path

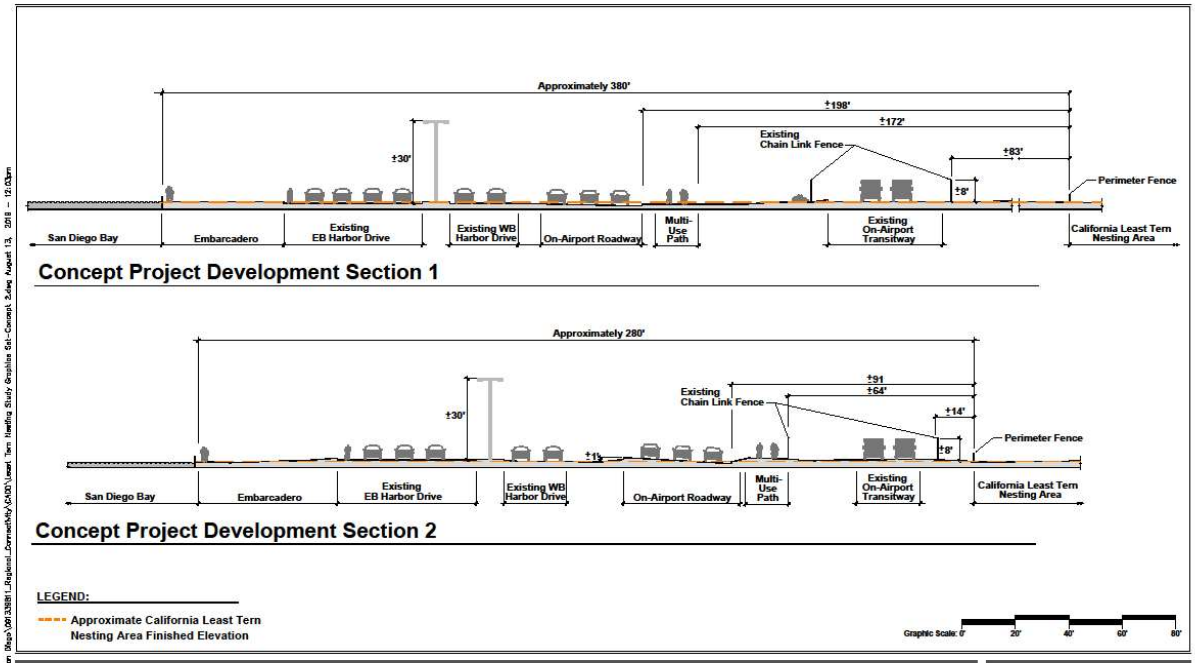
The proposed feature nearest to the nesting oval is the multi-use path, which would be positioned as close as 62 feet away on the far side of the existing Terminal Link Road (Figures 3-4). Because this path would be used by pedestrians and bicycles, and would be further from the nesting area than the buses using the Terminal Link Road, and would also be shielded from view by two eight foot tall fences, no visual or noise impacts to the nesting areas are anticipated.

On Airport Access Road

The new on-airport access road would be constructed to the south of the existing Terminal Link Road and multi-use path, which border the southern end of nesting oval O3-S. CLT nesting in the ovals on SDIA typically commute to the south, southeast, and southwest to reach the north end of San Diego Bay to forage for small fish to feed their young. Multiple studies have shown that commuting distance



Least Tern Nesting View Graphics - Concept 2 Plan | Figure 3



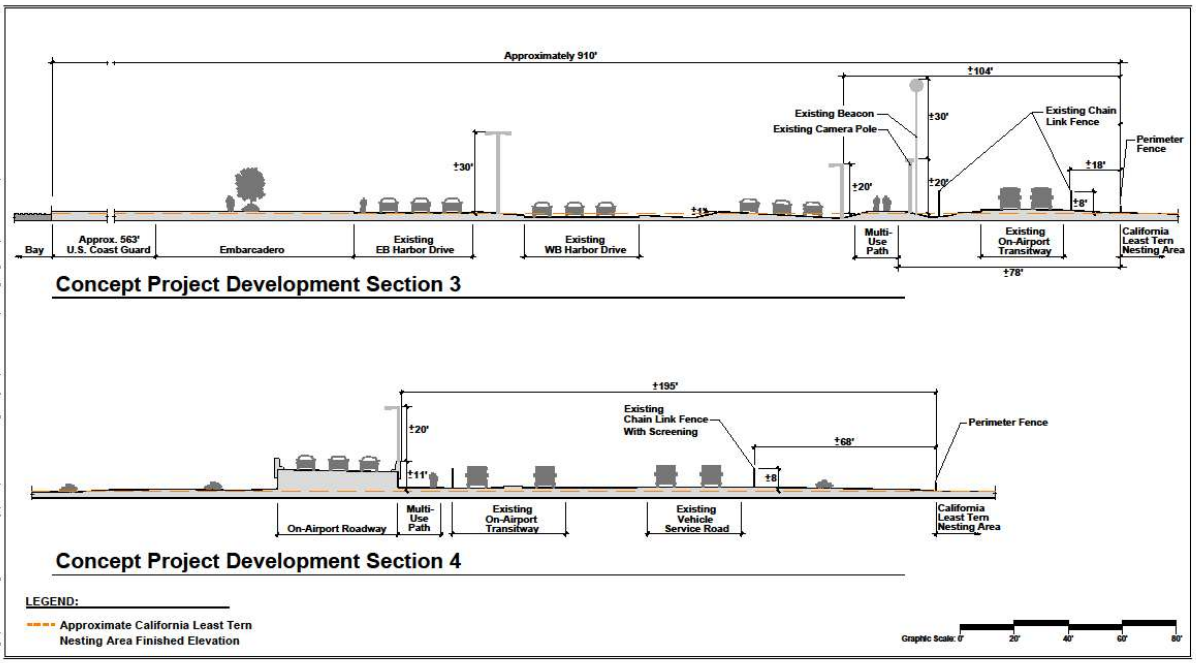
Least Tern Nesting View Graphics - Concept 2 Sections | Figure 4

and energy expenditure while transiting from nesting to foraging areas are a primary determinant of colony nesting success among a wide variety of seabirds, including the California Least Tern.

The proposed access road incorporates a raised overpass that begins its elevation above grade to the southwest and west of nesting oval O3-S, approximately 195 feet away from the edge of the CLT nesting area (Figure 5). The overpass reaches is top height of approximately 23 feet above grade over 300 feet to the west of the nesting oval.

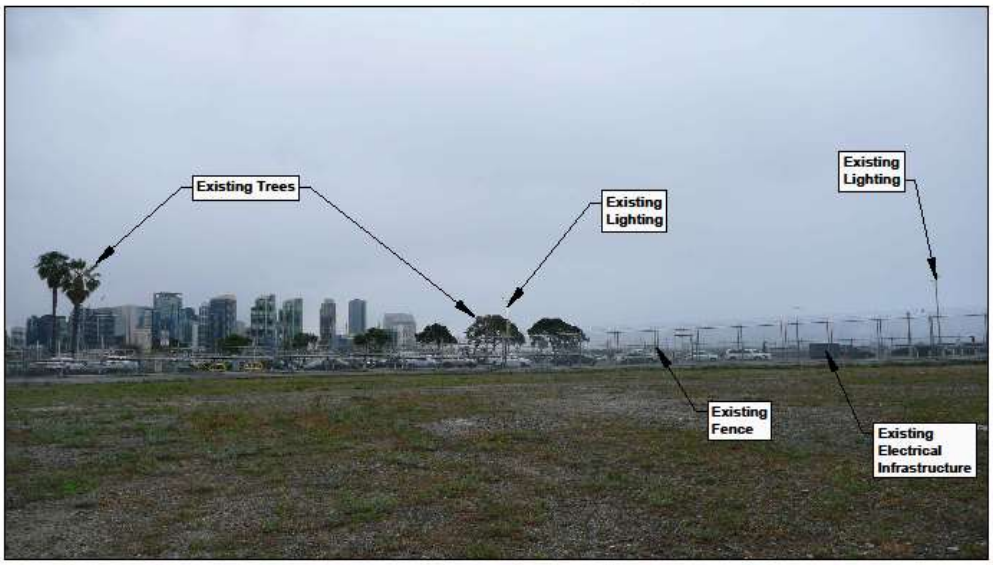
As shown in Figure 3, the shortest distance from the nesting ovals to San Diego Bay for terns commuting between the two sites is to the south and southeast of oval O3-S, as close as 280 feet away. In this area, the proposed on-airport roadway is at grade, and no new structures taller than the existing eight foot fences are proposed. Commuting terns would have no additional impediments in transiting this area between foraging bouts.

Three photo renderings have been created to show the difference before and after the proposed project is completed from the vantage point of nesting CLT at the south end of the nesting oval O3-S, looking to the south (View A), southwest (View B), and west-southwest (View C; Figures 6-8). These photo renderings show that to the southeast and south (Views A and B), the proposed roadway is at grade. Therefore. no changes to tern commuting patterns are anticipated in these directions, which include the closest direct flying distances to San Diego Bay (280-380 ft). To the southwest (View B) the nearest portion of San Diego Bay is 910 feet away, and commuting terns must also cross the U.S. Coast Guard facility to the south of Harbor Drive. To the west-southwest (View C), the rendering shows that the elevated roadway begins its rise to just above the level of the existing fenceline. Here,

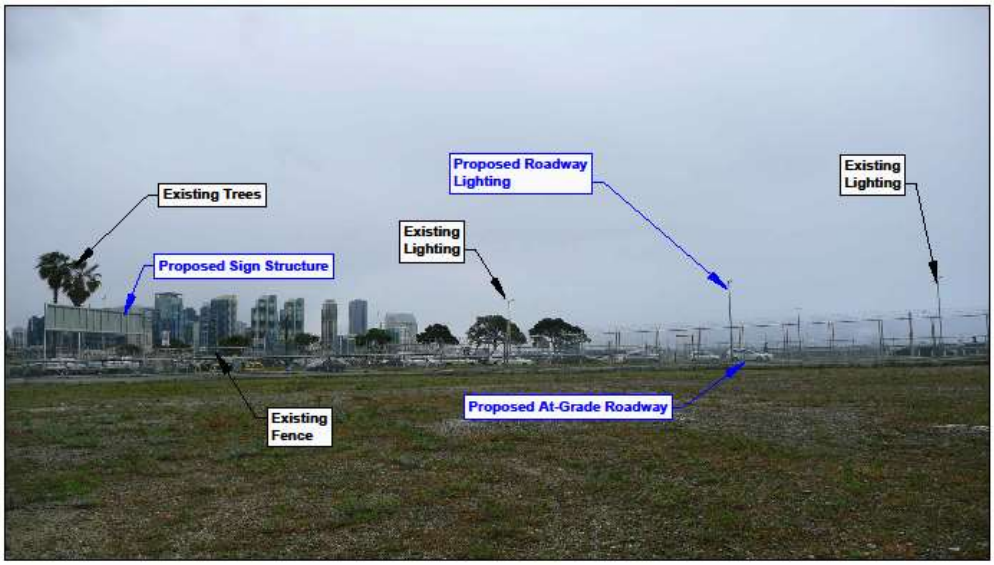


Least Tern Nesting View Graphics - Concept 2 Sections | Figure 5

View A - Existing



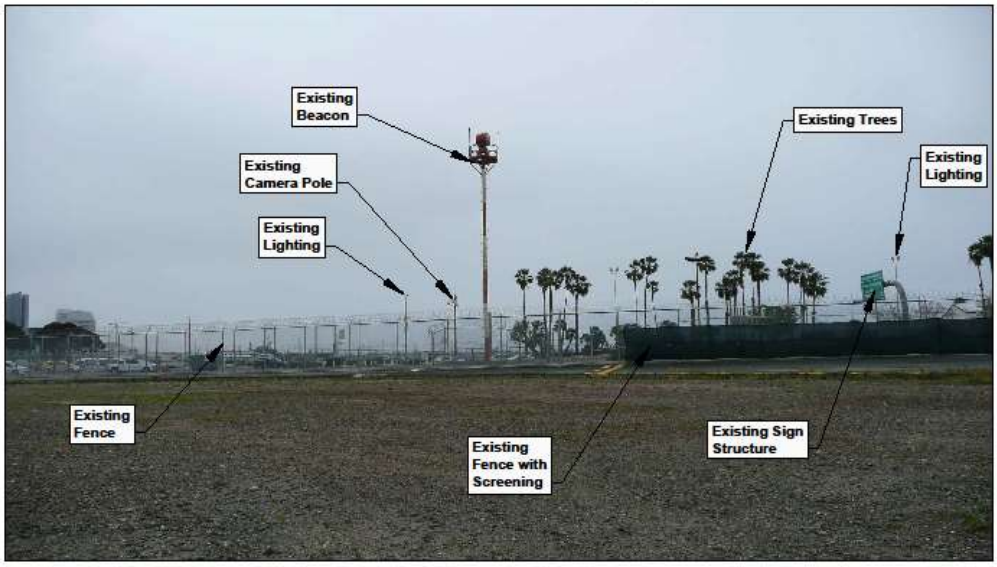
View A - Concept 2



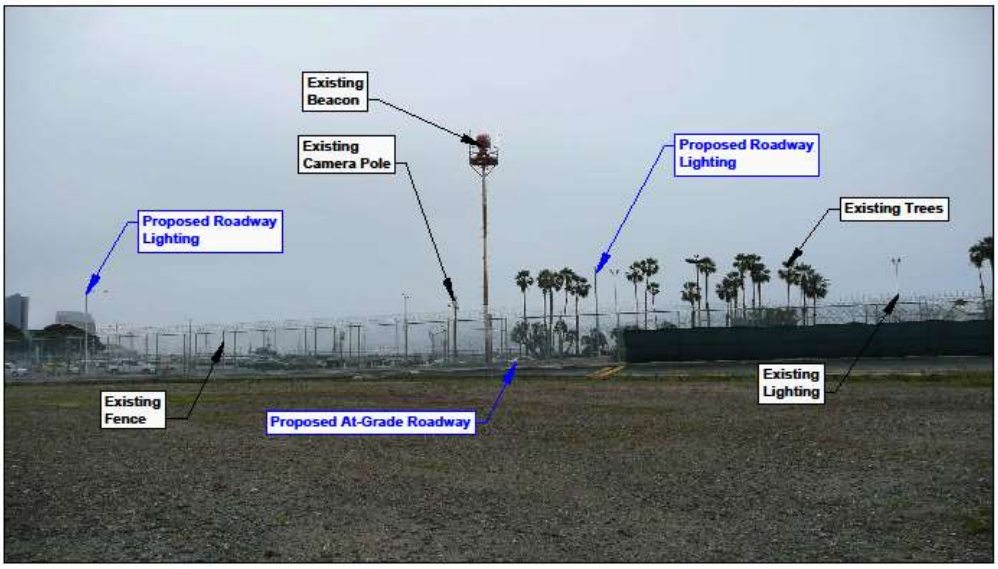
Least Tern Nesting View Graphics
Photo Simulation Concept 2 View A

Figure 6

View B - Existing



View B - Concept 2



Least Tern Nesting View Graphics
Photo Simulation Concept 2 View B

Figure 7

View C - Existing

View C - Concept 2

Least Tern Nesting View Graphics Photo Simulation Concept 2 View C

Figure 8

at approximately 195 from the edge of the nesting area, the roadway and retaining walls are approximately 11 feet above grade. In this direction the nearest access to the bay is over 1,100 feet away over the U.S. Coast Guard Facility. However terns flying to foraging areas around Harbor Island and to the west fly directly over this area to reach their foraging sites in order to expend as little energy as possible.

Other CLT colonies are located adjacent to significant structures. The CLT colony at Venice Beach in Los Angeles County is approximately 160 feet to the west of an intensely developed residential area composed of three and four-story apartment buildings. The terns at this site have access to close foraging areas to the south and west, but also routinely commute over the buildings to the east in order to access foraging areas in Marina Del Rey. They also return with prey items frequently by flying over these buildings on their approach to the colony.

Just across the bay from SDIA, Naval Air Station North Island supports an approximately twenty acre CLT breeding colony (the MAT site) that is surrounded by numerous buildings of various sizes and an active airfield. It is also more isolated from foraging areas than the nesting ovals at SDIA as it is approximately one-half mile from the nearest foraging areas on San Diego Bay. These two examples show that CLT are adaptable to human modified landscapes and can successfully breed despite needing to navigate significant vertical structures between their breeding and foraging areas. It should be noted that these two sites are the exceptions, however, as most California Least Tern breeding colonies are located on flat, sandy coastal locations with immediate access to foraging areas.

Several new light poles are proposed along the roadway. Currently to the south of the nesting oval there is a 25 foot tall light pole and a 50 foot tall beacon within 80 feet of the nesting area, and another light pole and one sign structure within approximately 200 feet (Figure 1). Additionally at least eight light poles are located within 200 feet to the west of the nesting oval (Figure 1). The closest proposed new light poles adjacent to the airport access road would be 88, 108, and 230 feet at their closest point to the ovals (Figure 3). Therefore, the total number of light poles or beacons within 200 feet of the nesting ovals would change from 11 to 13. As with the current light poles, these would be topped with predator deterrents such as nixalite. All proposed lighting adjacent to the nesting ovals would be shielded to prevent any direct illumination of the breeding area. The existing sign structure (25 ft tall) that is approximately 205 feet to the southwest of the oval would be replaced with a similar sign structure approximately 222 feet to the southeast of the oval (Figure 3). No additional effects to the CLT nesting colony are anticipated with this relocation of the sign.

Elevated structures such as light poles provide attractive perches for predators of CLT adults, chicks, and eggs. The principal predators affecting the CLT nesting success over the past ten years at SDIA include Peregrine Falcon (*Falco peregrinus*), Cooper's Hawk (*Accipiter cooperii*), American Kestrel (*Falco sparverius*), Common Raven (*Corvus corax*), American Crow (*Corvus brachyrhynchos*), and Western Gull (*Larus occidentalis*). The first three species are raptors that often hunt from perches and have been documented taking both adult terns and young chicks from the SDIA colony in most years in the recent past. However the area immediately surrounding the nesting oval already contains numerous predator perches, including at least eleven beacons or light poles, a sign structure, and numerous tall trees such as palms (Figures 6-8). The addition of two more light poles within 200

feet of the nesting oval would not significantly change the opportunity for predators to perch near the colony.

Summary of proposed minimization measures around oval O3-S:

1. Soil removed from the oval will be replaced with beach sand suitable for tern nesting substrate, improving upon the existing crack asphalt substrate.

2. All construction on or adjacent to the CLT nesting ovals would occur outside the breeding season, April 1 –September 15.

3. All structures taller than ten feet and within 200 feet of the nesting ovals, including light poles and sign structures, will include predator deterrence features, such as nixalite.

4. Converting existing diesel engine buses to electric motors, which would reduce ambient noise levels next to the colony.

Conclusion

The proposed ADP includes elements that potentially enhance the breeding success on the primary nesting oval O3-S, primarily the capping of much of the nesting area with more suitable nesting substrate. The proposed new roadway and light poles to the south of the nesting oval, while increasing the number of light poles and beacons adjacent to the colony from 11 to 13, would add additional infrastructure between the nesting oval and foraging areas in the bay. However these infrastructure elements are not anticipated to present an adverse effect on the CLT colony.

If you have any questions or would like to discuss this further, please do not hesitate to contact Kevin Clark at **kclark@sdnhm.org** or (619) 255-0296.

Sincerely,

Kevin Clark
Director of BioServices

R-E3 – Wetlands Assessment Survey Technical Memo

Wetlands Assessment Survey Technical Memorandum

August 2019

Prepared for:

San Diego County Regional Airport Authority

Prepared by:

Wood Environment & Infrastructure Solutions, Inc.
San Diego, California

Wood Environment & Infrastructure Solutions, Inc. Project Number 5025192018

Memo

To **Richard Gilb**
Planning & Environmental Affairs Manager
San Diego County Regional Airport Authority

Wood Project No. **5025192018**

From **Jason Erlich**
Biologist
Wood Environment & Infrastructure Solutions, Inc.

Date **August 26, 2019**

Subject **Results of the Wetlands Assessment Survey at the San Diego International Airport, San Diego, California**

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. (Wood) was contracted by the San Diego County Regional Airport Authority (SDCRAA) to evaluate the San Diego International Airport (SDIA) property for the presence of wetlands and other potentially jurisdictional waters (i.e., waters that would be regulated by the U.S. Army Corps of Engineers [USACE], the Regional Water Quality Control Board [RWQCB], the California Department of Fish and Wildlife [CDFW], or the California Coastal Commission [CCC]) within its boundaries (Figures 1 and 2).

This memorandum summarizes the regulatory framework, methods, results, and conclusions of the assessment of the jurisdictional waters survey conducted by Wood scientists on July 23, 2019. As part of this study, Wood was also requested to evaluate the SDIA property for potential for fish habitat. Representative site photographs are provided in Appendix A.

2.0 REGULATORY FRAMEWORK

Wetlands and other waters of the United States (WOTUS) are regulated by the USACE and the RWQCB under Section 404 of the Clean Water Act (CWA). The CDFW regulates impacts to waters under Section 1602 of the State Fish and Game Code, and the CCC regulates impacts to waters within its jurisdiction under the California Coastal Act.

2.1 Federal Jurisdiction

The USACE and the U.S. Environmental Protection Agency (USEPA) regulate the discharge of dredged or fill material in WOTUS pursuant to Section 404 of the CWA. The CWA (33 Code of Federal Regulations [CFR] 328.3(a)) defines WOTUS as follows:

1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2) All interstate waters including interstate wetlands;
3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters: (i) Which are or could be used by interstate or foreign travellers for recreational or other purposes; or (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (iii) Which are used or could be used for industrial purpose by industries in interstate commerce;
4) All impoundments of waters otherwise defined as WOTUS under the definition;
5) Tributaries of WOTUS;
6) The territorial seas;
7) Wetlands adjacent to WOTUS (other than waters that are themselves wetlands).
8) All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1) through (3) of this section and all waters located within 4,000 feet of the high tide line or ordinary high water mark of a water identified in paragraphs (a)(1) through (5) of this section where they are determined on a case-specific basis to have a significant nexus to a water identified in paragraphs (a)(1) through (3) of this section.

Additionally, the CWA CFR 328.3(b) states that the following are not “WOTUS” even when they otherwise meet the terms of paragraphs CWA CFR 328.3(a)(4) through (8)**.**

3) The following ditches:
    i. Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary.
    ii. Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands.
    iii. Ditches that do not flow, either directly or through another water, into a water identified in paragraphs (a)(1) through (3) of this section.
4) The following features:

i. Artificially irrigated areas that would revert to dry land should application of water to that area cease;

ii. Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds;

iii. Artificial reflecting pools or swimming pools created in dry land;

iv. Small ornamental waters created in dry land;

v. Water-filled depressions created in dry land incidental to mining or construction activity, including pits excavated for obtaining fill, sand, or gravel that fill with water;

vi. Erosional features, including gullies, rills, and other ephemeral features that do not meet the definition of tributary, non-wetland swales, and lawfully constructed grassed waterways; and

vii. Puddles.

5) Groundwater, including groundwater drained through subsurface drainage systems.

6) Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.

The USACE delineates non-wetland waters in the Arid West Region by identifying the ordinary high water mark (OHWM) in ephemeral and intermittent channels (Lichvar and McColley 2008; Curtis and Lichvar 2010). The OHWM is defined in 33 CFR 328.3(c) as:

> "…that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

Identification of the OHWM involves assessments of stream geomorphology and vegetation response to the dominant stream discharge. Effective discharge events that are capable of moving the greatest proportion of sediment over time establish the OHWM. In the Arid West region these ordinary high flows are low- to moderate-discharge events (Lichvar and McCooley 2008). Low to moderate effective discharges are characterized as occurring roughly every 5 to 10 years to an inundation extent that correlates with the limit of the active floodplain (Lichvar and McCooley 2008).

2.1.1 Wetlands and Other Special Aquatic Sites

Additionally, the USACE asserts jurisdiction over wetlands adjacent to WOTUS. Wetlands are defined in 33 CFR 328.3(c) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." Three criteria must be fulfilled

under normal circumstances to classify an area as a wetland under the jurisdiction of the USACE: 1) a predominance of hydrophytic vegetation, 2) the presence of hydric soils, and 3) the presence of wetland hydrology (USACE 1987 and 2008). Special aquatic sites are defined in 40 CFR 230 Subpart E and include wetlands, sanctuaries and refuges, and riffle and pool complexes within stream channels.

2.1.2 Regulatory Rules

On January 9, 2001, the Supreme Court of the United States issued a decision on *Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers, et al.* with respect to whether the USACE could assert jurisdiction over isolated waters. The SWANCC ruling stated that the USACE does not have jurisdiction over “non-navigable, isolated, intrastate” waters.

In 2006, in the case of *Rapanos v. United States*, the Supreme Court attempted to clarify the extent of USACE jurisdiction under the CWA. Based on a plurality opinion, the USACE asserts jurisdiction over traditional navigable waterways (TNW), wetlands adjacent to TNWs, non-navigable tributaries of TNWs that are a relatively permanent waterway (RPW) where the tributaries typically flow year-round or have continuous flow at least seasonally (typically three months), and wetlands that directly abut such tributaries. The USACE decides jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a TNW: non-navigable tributaries that are not RPWs, wetlands adjacent to tributaries that are not RPWs, and wetlands adjacent to but that do not directly abut a RPW.

On June 22, 2015, the USACE and USEPA published the *Clean Water Rule: Definition of “Waters of the United States”; Final Rule* (40 CFR Parts 110, 112, 116, 117, 122, 230, 232, 300, 302, and 401). The Clean Water Rule was put on hold by federal injunction in 2015 but was reinstated in California in August 2018. The Clean Water Rule finds waters to be jurisdictional under the CWA as summarized below:

1) Jurisdictional By Rule: TNWs, Interstate Waters, Territorial Seas, and Impoundments of Jurisdictional Waters.

2) Tributaries: Waters characterised by the presence of physical indicators of flow, including bed, bank, and OHWM, that contribute flow directly or indirectly to waters listed in 1) above.

3) Connected Waters: Adjacent or neighbouring waters that have a significant nexus to waters listed in 1) above.

4) Other Waters: Waters that, individually or as a group, significantly affect the chemical, physical, or biological integrity of waters listed in 1) above.

2.2 State Jurisdiction

2.2.1 Regional Water Quality Control Board

The RWQCB regulates impacts to water quality under Section 401 of the CWA. A project must comply with Section 401 of the CWA before the USACE can issue a Section 404 Permit. The RWQCB will issue a Section 401 Water Quality Certification or Waiver of Certification, depending upon the extent of impacts to WOTUS. The RWQCB also regulates impacts to "waters of the State" (usually limited to "isolated" waters or swales that may not fall under USACE jurisdiction) under the Porter Cologne Water Quality Control Act.

2.2.2 California Department of Fish and Wildlife

The CDFW regulates water resources under Section 1602 of the California Fish and Game Code (CDFW 2017). Section 1602 states:

> "An entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake."

Evaluation of CDFW jurisdiction followed guidance in the Fish and Game Code and *A Review of Stream Processes and Forms in Dryland Watersheds* (CDFW 2010). In general, under 1602 of the Fish and Game Code, CDFW jurisdiction extends to the maximum extent or expression of a stream on the landscape (CDFW 2010). It is CDFW's practice to define the channel based on the topography or elevations of land that confine the water to a definite course when the waters of a creek rise to their highest point. CDFW extends jurisdiction to the outer limits of riparian vegetation when present.

2.2.3 California Coastal Commission

The CCC regulates the alteration of wetlands within the California coastal zone under jurisdiction of the California Coastal Act (Coastal Act) which defines wetlands as:

> "Lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, or fens."

The CCC, which enforces the Coastal Act, uses a more specific definition for coastal wetlands based on a "one-parameter" definition, which only requires evidence of a single parameter to establish wetland conditions:

> "Wetlands are lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deepwater habitats".

3.0 METHODS

3.1 Survey Preparation

Existing information pertaining to potentially jurisdictional waters located on SDIA was gathered and reviewed prior to the field survey. Review of pertinent information assists with identifying areas that may support wetlands or other jurisdictional waters. In support of this effort, the following literature and sources were reviewed by Wood scientists:

- Draft Environmental Impact Report, Airport Development Plan, San Diego International Airport, July 2018;
- Historic and current aerial imagery;
- U.S. Geological Survey (USGS) Streamer application;
- U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) mapping application (Figure 3);
- USDA soil mapping data; and
- USGS topographic maps; used to determine the presence of mapped water features.

3.2 Field Survey

A field survey was conducted by Wood Biologist Jason Erlich on July 23, 2019, along with Wood Staff Scientist Nancy Phu, to investigate the SDIA property for the presence of wetlands and/or other jurisdictional waters. The field survey included driving all areas of the SDIA property and walking portions of the property that were not accessible by truck. Areas of the property that were vegetated or undeveloped were further investigated on foot to examine the potential for presence of vegetation, saturation of soils, or signs of wetland hydrology. The wetland indicator status was determined for plant species using the *National Wetland Plant List for the Arid West Region* (Lichvar *et al*. 2016). Wetland Indicator Status is summarized in Table 2-1.

Table 2-1. Wetland Indicator Status for Plants

Indicator Status	Symbol	Definition	Percent Occurrence in Wetlands
Obligate	OBL	Almost always occur in wetlands	99
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands	67-99
Facultative	FAC	Occur in wetlands and non-wetlands	34-66
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands	1-33
Upland	UPL	Almost never occur in wetlands	1
Not Listed	NL	Indicates a species is not listed on the National Wetland Plant List	NA
No Indicator	NI	Species for which insufficient information was available to determine an indicator status.	NA

4.0 RESULTS

Land within the SDIA boundary is almost entirely developed and paved over with the exception of landscaped areas near buildings and parking lots containing irrigated and maintained ornamental plantings (Appendix A, Photographs 1 and 2), as well as several relatively small areas of undeveloped lands containing sparse vegetation.

Many of the landscaped areas located around buildings and parking lots have been designed and constructed as stormwater best management practices (BMPs) known as bioswales and bioretention basins. These features are lined with pebble and cobble and are planted with ornamental landscape plants (Appendix A, Photographs 3 through 6). The bioretention basins capture and infiltrate stormwater runoff during periods of significant rain. In the event that the bioretention basins reach their capacity, overflow boxes drain excess water back into the stormwater drainage system. These features are inspected and maintained according to their established maintenance plan.

Areas of undeveloped lands (Appendix A Photographs 5 through 10) are predominately located in the southeast and northwest corners of SDIA but also exist as several small pockets in otherwise developed areas of the property. These areas tend to be sparsely vegetated with native and non-native species typical of disturbed upland areas. Typical species found in these areas include spotted spurge (*Euphorbia maculate*; UPL), prickly lettuce *(Lactuca serriola*; FACU), telegraph weed (*Heterotheca grandiflora*; NL), Canada horseweed (*Erigeron canadensis*; FACU), and smooth cats ear (*Hypochaeris glabra*; NL). The undeveloped lands in the southeast corner of SDIA serve as nesting grounds for the state and federally endangered California least tern (*Sterna antillarum browni*) during their nesting season (SDCRAA 2018).

None of the undeveloped lands within SDIA support wetland vegetation; show signs of saturated soils; have hydrology or evidence of hydrology present; or have depressions or channels that may collect water. Rather, these areas support natural vegetation typical of disturbed uplands.

5.0 CONCLUSIONS

The SDIA property is almost entirely developed and covered with impervious materials such as concrete and asphalt. The limited undeveloped areas that do exist on the property are sparsely vegetated with species that occur in upland habitats.

No wetlands that would be potentially regulated by the USACE, RWQCB, CDFW, or CCC were observed to be present in the undeveloped areas of the SDIA property.

The bioswales and bioretention basins that are part of the stormwater BMPs within the property are not considered WOTUS based on CWA CFR 328.3(b)(6) which states that stormwater features constructed to convey, treat, or store stormwater that are created in dry land are not WOTUS.

Based on the findings of this assessment that there were no wetlands observed on the property or areas that show signs of water ponding for any significant amount of time, it is not likely that habitat for fish exists within the SDIA boundary.

6.0 REFERENCES AND LITERATURE CITED

California Department of Fish and Wildlife (CDFW). 2010. A Review of Stream Processes and Forms in Dryland Watersheds. Prepared by Kris Vyverberg, Conservation Engineering.

CDFW. 2017. Fish and Game Code of California. Accessed from: http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=FGC&division=2.&title=&part=&chapter=6.&article=&op_statues=&op_chapter=&op_section=

Curtis, K.E., and R.W. Lichvar. 2010. Updated Datasheet for the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States. U.S. Army Corps of Engineers Wetland Regulatory Assistance Program. July 2010.

Google Earth Version 7.3.2. San Diego International Airport and surrounding areas, San Diego County, California 32°44’02.03” N, 117°11’35.89” W, elevation 0 feet. Viewed June, July, and August 2019.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016.

Lichvar R.W., and S.M. McColley. 2008. A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States. A Delineation Manual. Lichvar and McColley. U.S. Army Corps of Engineers. August

San Diego County Regional Airport Authority (SDCRAA). 2018. Draft Environmental Impact Report, Airport Development Plan San Diego International Airport, San Diego, California. July 2018.

U.S. Army Corps of Engineers (USACE). 1987. Wetlands Delineation Manual, Technical Report Y-8. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. + append.

USACE. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. September.

USACE. 2016. National Wetland Plant List, version 3.3 http://wetland-plants.usace.army.mil/. U.S. Army Corps of Engineers Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH.

U.S. Department of Agriculture (USDA). 2018. Web Soil Survey. USDA Natural Resources Conservation Service. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

U.S. Fish and Wildlife Service (USFWS). 2018. National Wetlands Inventory Mapper. From: http://www.fws.gov/wetlands/Data/Mapper.html. Accessed October 12, 2018.

U.S. Geological Survey (USGS) 2018a. Streamer application. Available at: https://txpub.usgs.gov/DSS/streamer/web/. Accessed May, June, July, and August 2018.

Please do not hesitate to contact us if you have any questions concerning this memo.

Respectfully submitted,

Wood Environment & Infrastructure Solutions, Inc.

Jason Erlich
Wood Environment & Infrastructure Solutions, Inc., Biologist

Attachments

Figure 1. Regional Location
Figure 2. San Diego International Airport Boundary
Figure 3. National Wetlands Inventory Map
Appendix A. Site Photographs

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia,

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1 inch = 1 miles

0 0.5 1 Miles

wood.

San Diego International Airport Boundary

FIGURE 1

Regional Location
Wetlands Assessment
San Diego International Airport
San Diego, California

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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1 inch = 1,200 feet

0 600 1,200 Feet

wood.

San Diego International Airport Boundary

FIGURE 2

Overview of SDIA
Wetlands Assessment
San Diego International Airport
San Diego, California

U.S. Fish and Wildlife Service
National Wetlands Inventory

San Diego International Airport

June 13, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

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wood.

FIGURE 3

National Wetlands Inventory Map
Wetlands Assessment
San Diego International Airport
San Diego, California

APPENDIX A

SITE PHOTOGRAPHS

Photo 1. Example of landscaped area with irrigated ornamental species.

Photo 2. Another example of landscaped area with irrigated ornamental species.

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Photo 3. Example of a maintained stormwater bioretention basin at SDIA.

Photo 4. Another example of a maintained stormwater bioretention basin at SDIA.

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Photo 5. Example of a maintained stormwater bioswale at SDIA.

Photo 6. Another example of a maintained stormwater bioswale at SDIA.

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Photo 7. Looking west across undeveloped vegetated area in southeast corner of SDIA.

Photo 8. Looking northwest across undeveloped vegetated area in southeast corner of SDIA.

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Photo 9. Example of a small pocket of undeveloped land sparsely vegetated with upland species.

Photo 10. Another example of a small pocket of undeveloped land with upland species.

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Photo 11. Example of undeveloped land sparsely vegetated with upland species at northwest corner of SDIA.

Photo 12. Looking west across sparsely vegetated undeveloped land near the northwest corner of SDIA.

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