DRAFT

ENVIRONMENTAL ASSESSMENT

For

Renovation of the South Course

At

Admiral Baker Golf Course, San Diego, California

October 2019

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Abstract

Designation:	Environmental Assessment
Title of Proposed Action:	Renovation of the South Course
Project Location:	Admiral Baker Golf Course, San Diego, California
Lead Agency for the EA:	Department of the Navy
Cooperating Agency:	None
Affected Region:	San Diego, California
Action Proponent:	Naval Facilities Engineering Command Southwest, Naval Base San Diego
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Date:	October 2019

The Naval Facilities Engineering Command, Southwest, a Command of the United States Navy (hereinafter, jointly referred to as the Navy), has prepared this Environmental Assessment in accordance with the National Environmental Policy Act, as implemented by the Council on Environmental Quality Regulations and Navy regulations for implementing National Environmental Policy Act. The Proposed Action consists of construction of improvements to on-site water conveyance, retention, and storage; the irrigation and drainage systems; and player safety and course playability at the South Course. Construction of the Proposed Action would require up to 7 months, but the course would be closed for approximately 1 year to complete construction and allow for grow in of new greens. This Environmental Assessment evaluates the potential environmental impacts associated with the two action alternatives, Alternatives 2 and 3, and the No Action Alternative to the following resource areas: air quality, water resources, geological resources, cultural resources, biological resources, infrastructure, and hazardous materials and waste.

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EXECUTIVE SUMMARY

ES.1 Proposed Action

The Proposed Action consists of the renovation of the South Course at Admiral Baker Golf Course in San Diego, California. The Proposed Action would include construction of improvements to on-site water conveyance, retention, and storage; the irrigation and drainage systems; and player safety and course playability at the South Course. Construction of the Proposed Action would require up to 7 months, but the course would be closed for approximately 1 year to complete construction and allow for grow in of new greens. The U.S. Department of the Navy (Navy) is the lead agency for the Proposed Action.

ES.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to renovate the South Course at the Admiral Baker Golf Course to remedy flooding, standing water, and erosion issues; increase water retention in on-site ponds; and improve player safety and course playability through installation of new drainage features; replacement of the irrigation system and pumping station; and redesigning, regrading, and regrassing the course.

The need for the Proposed Action is to improve water management and water quality at the South Couse, and alleviate the player safety and playability challenges due to the course's outdated design features and limited site conditions in order for the course to continue operation. The proposed renovations to the South Course drainage system would improve on-site water retention capacity and storage, improve runoff conveyance, and reduce dependence on (and diversion of) irrigation water from the San Diego River. All proposed renovations would raise the condition and quality of play to enhance the player experience, improve general player safety, and extend the life of the operation. These improvements to the South Course contribute to delivering the highest standard of support and quality of life services to the Fleet, Warfighter and Family, and the general public, including recreational opportunities at Admiral Baker Golf Course.

ES.3 Alternatives Considered

Alternatives were developed for analysis based upon the following reasonable alternative screening factors:

- reduces or eliminates long-term flooding of the course
- increases water storage on Navy property and reduces the need to pump water from the San Diego River
- reduces maintenance of the course due to flooding, standing water, and erosion
- would not have ground-disturbing and grading activities that are so extensive that natural and cultural resources are significantly affected
- improves player safety and quality of play.

The Navy is considering two action alternatives that meet the purpose of and need for Admiral Baker Golf Course and a No Action Alternative (Alternative 1). Alternative 2, Project Validation Assessment Alternative, would construct specific drainage features, replace the irrigation system, conduct maintenance on the existing irrigation ponds, and redesign the course for improved player safety and course playability recommended as Option 2 within *Project Validation Assessment Admiral Baker South Golf Course Improvements* (Navy 2017). The drainage features include a new pond (West Pond), and

connections between West Pond and existing Pond B and between existing Ponds B and D. In addition, the South Course irrigation system, including the pumping station, would be replaced. Course redesign elements would include relocation and reconstruction of some tees, greens, and bunkers; regrading/reshaping and regrassing portions of the course; and additional improvements for player safety, course playability, and aesthetics. Alternative 3, Project Validation Assessment with Additional Features Alternative (Preferred Alternative), would construct all components identified as part of Alternative 2 and additional conveyance features that would provide more flood protection than Alternative 2. The additional conveyance features consist of a graded swale on the 14th fairway, a swale diversion from an existing swale that would cross the 1st, 2nd, and 9th fairways and drain to Pond D, and removal of the golf cart crossing and lowering the connection between Pond C and Pond D. The No Action Alternative would include routine maintenance and repair activities consisting of minor maintenance of drainage structures as is currently being performed. No activities would be undertaken to renovate and improve the South Course to eliminate flooding and drainage issues.

ES.4 Summary of Environmental Resources Evaluated in the EA

Council on Environmental Quality regulations, National Environmental Policy Act, and Navy instructions for implementing the National Environmental Policy Act, specify that an Environmental Assessment (EA) should address those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact.

The following resource areas have been addressed in this EA: air quality, water resources, geological resources, cultural resources, biological resources, infrastructure, and hazardous materials and waste. Because potential impacts were considered to be negligible or nonexistent, the following resources were not evaluated in this EA: land use, coastal resources, visual resources, airspace, noise, transportation, public health and safety, socioeconomics, and environmental justice.

ES.5 Summary of Potential Environmental Consequences of the Action Alternatives and Major Mitigating Actions

Table ES-1 provides a tabular summary of the potential impacts to the resources associated with each of the alternative actions analyzed.

ES.6 Public Involvement

The Navy circulated the Draft EA for public review from October 18, 2019, to November 4, 2019.

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*Alternative 1: No Action Alternative*	*Alternative 2: Project Validation Assessment*	*Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative)*
Air Quality	Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline air quality. No significant impacts related to air quality would occur.	Alternative 2 would result in emissions of air pollutants that would be below *de minimis* values, and greenhouse gases that would fall below a 75,000-metric ton per year increase used as an indicator. Therefore, Alternative 2 would not result in significant impacts related to air quality.	Alternative 3 would result in emissions of air pollutants similar to those for Alternative 2 and, therefore, would have similar impacts. Alternative 3 would not result in significant impacts related to air quality.
Water Resources	Under the No Action Alternative, the Proposed Action would not occur and there would be no change in baseline water resources. The South Course would continue to experience flooding and drainage issues during heavy precipitation events, which have the potential to reduce water quality, and would continue to rely on water from the San Diego River for irrigation.	Alternative 2 would not result in significant impacts related to groundwater, surface waters, wetlands, floodplains, and shorelines. Stormwater retention would improve and groundwater infiltration would not be impeded. Sediment in runoff would be allowed to settle out in onsite ponds, thereby potentially improving water quality. Permanent loss of fringe wetlands could have an impact on water quality; therefore, permanent loss would be mitigated at a minimum 1:1 establishment ratio. Permanent discharge of fill would result from construction of Alternative 2; however, newly constructed features would be expected to meet the definition of Waters of the U.S. and, therefore, no net loss of Waters of the U.S. is anticipated. Although Alternative 2 would be constructed within the 100-year floodplain, it would reduce flooding.	Alternative 3 is similar to Alternative 2, except it would increase onsite stormwater capacity. Alternative 3 would result in similar less than significant impacts related to groundwater, surface waters, wetlands, floodplains, and shorelines as Alternative 2.
Geological Resources	Under the No Action Alternative, the Proposed Action would not occur and there would be no change to existing topography, geology, or soils.	Alternative 2 would not result in significant impacts related to topography or soils and erosion. Negligible impacts on topography would occur due to new features and grading. Construction of drainage	Alternative 3 would have similar less than significant impacts related to topography or soils and erosion; however, it would include clearing of 200,428 square feet and

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*Alternative 1: No Action Alternative*	*Alternative 2: Project Validation Assessment*	*Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative)*
	Flooding and drainage issues would continue, thereby increasing the potential for erosion. No significant impacts to geological resources would occur.	features would include clearing of 95,500 square feet and excavation of 33,833 cubic yards, and additional ground disturbance would be needed to complete the other project components. However, overall improved stormwater control would have long-term, beneficial impacts and implementation of best management practices would minimize potential for erosion. No impacts on geology would occur.	excavation of 39,299 cubic yards for construction of drainage and conveyance features. No impacts on geology would occur.
Cultural Resources	Under the No Action Alternative, the Proposed Action would not occur and there would be no change to cultural resources. No significant impacts to cultural resources would occur.	Two recorded archaeological sites intersect with the area of potential effect; however, none of the proposed features intersect with any known cultural resources. Alternative 2 could potentially impact prehistoric archaeological sites by disturbing or destroying unknown buried cultural deposits; however, implementation of a cultural resources monitoring program during construction would reduce the impacts to less than significant. It is anticipated there would be no impacts on architectural resources or traditional cultural properties.	Alternative 3 would have similar less than significant impacts on cultural resources with the implementation of a cultural resources monitoring program during construction. It is anticipated there would be no impacts on architectural resources or traditional cultural properties.
Biological Resources	Under the No Action Alternative, the Proposed Action would not occur and there would be no change to biological resources. No significant impacts to biological resources would occur.	There would be no significant impacts on federal- or state-listed threatened and endangered species or candidate species with the implementation of avoidance and minimization measures such as surveys for protected birds before and during construction, establishment of a 500-foot buffer or installation of noise attenuation structures around	The impacts of Alternative 3 would be similar to Alternative 2, except it includes additional conveyance features. Therefore, Alternative 3 would disturb more soil and turf, and impact additional vegetation. The Navy has determined that Alternative 3, the Preferred Alternative,

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*Alternative 1: No Action Alternative*	*Alternative 2: Project Validation Assessment*	*Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative)*
		active nests, and habitat avoidance measures. Temporary impacts on threatened and endangered species could occur from noise and habitat disturbances during construction; however, species are likely habituated to noise. Short-term impacts on terrestrial vegetation and terrestrial wildlife would occur during construction due vegetation removal and habitat loss, and temporary displacement of wildlife.	may affect, but is not likely to adversely affect coastal California gnatcatcher, least Bell's vireo, and Hermes copper butterfly; therefore, consultation with the U.S. Fish and Wildlife Service has been initiated.
Infrastructure	Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the existing infrastructure. The existing stormwater system would continue to be insufficient for irrigation water supply and stormwater management, including runoff storage. Stormwater features would continue to deteriorate, and adversely affect the South Course.	Alternative 2 would result in long-term, beneficial impacts on potable water and stormwater infrastructure due to the addition of drainage features and regrading of the South Course that would provide additional storage for stormwater runoff to prevent flooding, and supply the irrigation system during periods of drought. Replacement of the irrigation system would allow for more efficient use stormwater and minimization of potable water. No impacts on wastewater, solid waste management, energy, and communications and facilities.	Alternative 3 would result in similar long-term, beneficial impacts on potable water and stormwater infrastructure as Alternative 2; however, it would include additional features to accommodate onsite stormwater storage and prevent flooding. No impacts on wastewater, solid waste management, energy, and communications and facilities.
Hazardous Materials and Wastes	Under the No Action Alternative, the Proposed Action would not occur and there would be no change associated with hazardous materials and wastes. No significant impacts would occur.	Alternative 2 would not result in significant impacts related to hazardous materials and waste sites. Construction would involve an increase in the quantities of hazardous materials used and hazardous wastes generated, although it is anticipated that the quantities would be minimal and their use/generation would be temporary. Alternative 2 would	Alternative 3 would have similar less than significant impacts related to hazardous materials and wastes as Alternative 2.

Table ES-1 Summary of Potential Impacts to Resource Areas

Resource Area	*Alternative 1: No Action Alternative*	*Alternative 2: Project Validation Assessment*	*Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative)*
		comply with all appropriate regulations and policies for the management, storage, handling, and disposal of hazardous materials and wastes.	

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Abbreviations and Acronyms

Acronym	Definition
ACM	asbestos-containing material
APE	area of potential effect
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CFWO	Carlsbad Fish and Wildlife Office
CO	carbon monoxide
CO_2E	carbon dioxide equivalent
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dBA	A-weighted decibel(s)
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DPM	diesel particulate matter
EA	Environmental Assessment
EO	Executive Order
ERP	Environmental Restoration Program
FPPA	Farmland Protection Policy Act
GHG	greenhouse gas
HA	hydrological area
HAP	hazardous air pollutant
HUC	Hydrological Unit Code
I-	Interstate
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
lb	pound(s)
MBTA	Migratory Bird Treaty Act
MGRF	Mission Gorge Recreational Facility
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOx	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OHWM	ordinary high water mark
Pb	lead
PCB	polychlorinated biphenyl
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
ROI	region of influence
SCIC	South Coastal Information Center
SIP	State Implementation Plan
SO_2	sulfur dioxide
SWPPP	Storm Water Pollution Prevention Plan
tpy	tons per year
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

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1 Purpose of and Need for the Proposed Action

1.1 Introduction

The Naval Facilities Engineering Command Southwest, a Command of the United States (U.S.) Navy (hereinafter, jointly referred to as the Navy) proposes to renovate the South Course at Admiral Baker Golf Course in San Diego, California. The Proposed Action consists of improvements to on-site water conveyance, retention, and storage; the irrigation and drainage systems; and player safety and course playability at the South Course. Construction of the Proposed Action would require up to 7 months, but the course would be closed for approximately 1 year to complete construction and allow for grow in of new greens.

The Navy has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), as implemented by the Council on Environmental Quality (CEQ) Regulations and Navy regulations for implementing NEPA.

1.2 Background

Admiral Baker Golf Course, which is the responsibility of Naval Base San Diego, is a 390-acre golf course located in San Diego, California (Figure 1-1). It consists of two, par 72, 18-hole courses (North and South courses) with a full-service pro shop, driving range, and food and beverage program. On average, more than 95,000 rounds of golf are played each year at Admiral Baker Golf Course with approximately 60 percent of the play occurring on the North Course. The difference in play on the North and South courses is attributed to the poorer condition of the South Course (Navy 2017).

A major renovation occurred at the North Course in 2011 during which tees, greens, and bunkers were reconstructed and certain areas were regrassed and regraded to provide more contours to an otherwise flat and fairly nondescript course. Additionally, the North Course irrigation lake was improved during a previous project. However, the South Course has remained largely unimproved with the exception of normal repairs and maintenance.

The South Course was built in the 1950s on a flat rectangular parcel of approximately 110 acres that provides 6,129 yards of golf. The course design is a conventional parkland style layout with narrow fairways, shared roughs, and holes that run back and forth to optimize space. Over the years, the course has shown wear and tear with widespread bare spots, worn areas, and signs of poor drainage. Hazardous areas also are present because of the parallel hole layout and competing areas of play from adjacent holes. Irrigation ponds, which are fed by localized and off-site stormwater runoff and groundwater, are overgrown and partially silted in and contain water high in salt content due to runoff. The course maintenance team has carried out routine maintenance on the course while overcoming challenges of water management, water quality issues, outdated design features, and limited site conditions. Based on discussions with staff, golfers, and the maintenance team, the course conditions vary drastically due to regular periods of drought or heavy rainfall (Navy 2017).

Figure 1-1 Region and Vicinity

The South Course irrigation system, which was constructed in 1988, has an outdated control system and a non-functioning pumping station that requires the course to be irrigated by the North Course pumping station. During droughts, water from the irrigation ponds is supplemented by water from the San Diego River, which also has a high salt content. Currently, the Navy diverts 530 acre-feet of water from the river to irrigate the 225 acres of maintained turf at Admiral Baker Golf Course (Magnani Michael 2019). Because of the inefficient irrigation system and because some of the turf grass cannot tolerate the salt content in the irrigation water, potable water must supplement irrigation for proper maintenance of the greens.

Three main offsite sources of flooding affect the South Course, including the San Diego River, runoff from large off-site developed areas to the north (mainly residential areas of the community Tierrasanta; hereafter referred to as the North Basin), and runoff from undeveloped areas to the west (Navy 2019). The South Course is prone to significant flooding from the San Diego River, particularly on the 14th and 15th fairways that are east of the river and separated from the remainder of the course. The developed areas within the North Basin are on flat mesas and divided by steep sloped ravines that receive runoff from Tierrasanta. This runoff enters the northern end of the South Course at an outlet north of the tee box for the 3rd hole, and then flows unmanaged through the course and the golf course irrigation pond system (Ponds A, B, C, and D) during heavy rainfall (Figure 1-2). The undeveloped east-facing hills west of the South Course also contribute runoff to the course where it joins runoff originating within the course.

Drainage and flooding issues at the South Course include localized areas on most holes that hold water and more course-wide significant flooding and standing water at low areas on the course. Many of the localized areas that hold water have improperly sized drains or are not equipped with drain structures. Insufficient slopes around the existing drains are not adequate to avoid standing water during periods of high rainfall. Several areas on the South Course have significant standing water during major rainfall or periods of extended rainfall. These areas are low areas that were created over time through general settling or from poor grading. A well-defined grass swale runs from the spillway for the pond on the 3rd hole (Pond A) between the 2nd and 4th holes to the ponds behind (south of) the 1st green (Ponds B and C). The grass swale is subject to wet conditions, which interferes with play and creates maintenance problems. Water collects near the practice green of the practice hole between the 5th and 6th fairways, and around the 6th green. The closest point of discharge for this area is the pond behind the 1st green (Pond B). Overflow from the ponds behind the 1st green (Ponds B and C) drain to the main irrigation pond (Pond D), which is located within the 9th fairway, via a surface spillway. At the outlet of Pond D, flows enter a steep grassy swale towards the San Diego River. All four irrigation ponds were originally lined to retain water, but are currently in various states of disrepair. Figure 1-2 depicts the South Course irrigation pond system and the direction of flow through the ponds. There is evidence of flooding in these areas, which indicates the inability of the current drainage system to manage high flows.

The flooding/drainage and turf management issues at the South Course also affect player safety and playability. Other aspects of the South Course, including its style and layout, contribute to the course's inherent safety issues. The back and forth configuration of the course does not provide adequate separation, which exposes golfers to errant shots from opposing golfers on adjacent holes. The shared roughs and opposing play from adjacent holes make the play of the course slightly stressful and slow. Specific safety/playability issues include the following:

- The 3rd hole requires a long iron shot over a water hazard.
- The 4th tee is adjacent to the 3rd green, so golfers teeing off are in a landing area of errant shots from the 3rd tee.
- Golfers leaving the 17th green must return to the 18th tee on a cart path that runs against opposing play on the 17th fairway.
- A cart path and the 18th tee are subject to errant shots from the 17th fairway.

Other playability issues include the condition of the tees, greens, and bunkers, and unsightly condition of the irrigation ponds. The tees on the South Course are fairly indistinctive and poorly graded. Many of the tees are well worn from the amount of play and the lack of effective drainage and irrigation. The South Course greens are small circular greens that present maintenance problem due to the limited number of available pin placements. Bunkers are generally limited to several small bunkers around the greens, which are not distinctive and do not strongly influence the play of the hole. Vegetation overgrowth on the banks of the irrigation ponds, exposed mud bottoms in the ponds from drought conditions and sedimentation, and the absence of ornamental landscaping contribute to the decreased playability of the South Course.

1.3 Location

Admiral Baker Golf Course is located in the Mission Valley area of San Diego, California, east of the Interstate (I-) 15 and north of the I-8 corridors (Figure 1-1). The South Course is in the southeastern portion of Admiral Baker Golf Course, and is bounded to the west by Admiral Baker Road, to the north by the North Course, and to the east by the San Diego River and Mission Gorge Road. The project area includes the existing South Course and associated features including fairways, putting greens, sand traps and water hazards, a portion of the asphalt clubhouse parking lot, and the San Diego River.

1.4 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to renovate the South Course at the Admiral Baker Golf Course to remedy flooding, standing water, and erosion issues; increase water retention in on-site ponds; and improve player safety and course playability through installation of new drainage features; replacement of the irrigation system and pumping station; and redesigning, regrading, and regrassing the course.

The need for the Proposed Action is to improve water management and water quality at the South Couse, and alleviate the player safety and playability challenges due to the course's outdated design features and limited site conditions in order for the course to continue operation. The proposed renovations to the South Course drainage system would improve on-site water retention capacity and storage, improve runoff conveyance, and reduce dependence on (and diversion of) irrigation water from the San Diego River. All proposed renovations would raise the condition and quality of play to enhance the player experience, improve general player safety, and extend the life of the operation. These improvements to the South Course contribute to delivering the highest standard of support and quality of life services to the Fleet, Fighter and Family and the general public, including recreational opportunities at Admiral Baker Golf Course.

Figure 1-2 South Golf Course

1.5 Scope of Environmental Analysis

This EA includes an analysis of potential environmental impacts associated with the action alternatives and the No Action Alternative. The environmental resource areas analyzed in this EA include: air quality, water resources, geological resources, cultural resources, biological resources, land use (coastal resources), infrastructure, and hazardous materials and waste.

Seven additional resource areas were considered but were not carried forward for detailed analysis in this EA because there would be no impacts (or only negligible impacts) on these resources from implementation of the alternatives. The introduction to Chapter 3 contains brief descriptions of these resource areas, their relationship to the action alternatives, and the basis for eliminating them from detailed analysis.

1.6 Key Documents

Key documents are sources of information incorporated into this EA. Documents are considered to be key because of similar actions, analyses, or impacts that may apply to this Proposed Action. CEQ guidance encourages incorporating documents by reference. Documents incorporated by reference in part or in whole include the following:

- *Admiral Baker South Golf Course Improvements Project Validation Assessment*; April 2017 (Navy 2017). The Project Validation Assessment was prepared to determine the market, financial, and economic feasibility of the proposed renovation of the South Course at Admiral Baker Golf Course. The assessment evaluated the existing conditions and facilities at the South Course and the overall financial health of the golf program at Admiral Baker Golf Course, analyzed the supported market and available competition, recommended facilities for the South Course, and proposed utilization and financial analysis of associated with the recommendations.
- *Final Hydrology and Hydraulic Engineering Study and Report for Admiral Baker Golf Course Renovation Project*; February 2019 (Navy 2019). The Hydrology and Hydraulic Engineering Study and Report includes an evaluation of the hydrology and hydraulics of the proposed renovation of the South Course at Admiral Baker Golf Course. It was completed to determine the appropriate course of action (i.e., renovation) and support NEPA analysis of the Proposed Action. The study and report establish and quantify the 100-year existing offsite and onsite flood sources; analyze the existing drainage hydraulics and flood conditions for the 100-year event; propose grading alternatives and conceptual features to meet project objectives; evaluate the hydraulics for proposed improvements, including on-site water retention; and justify the need of drainage improvements to the South Course.
- *Final Integrated Natural Resources Management Plan, Naval Base San Diego, California*, June 2014 (Navy 2014). The Integrated Natural Resources Management Plan (INRMP) provides for management and stewardship of all natural resources present on Naval Base San Diego. The document provides a description of installation facilities (e.g., location, history, and mission), information about the surrounding physical and biotic environment, and an assessment of the impacts on natural resources as a result of mission activities. The INRMP recommends various management practices, in compliance with federal, state and local standards, designed to mitigate impacts of the mission on local ecosystems. The goal of the INRMP is to provide an adaptive ecosystem based conservation program that will support the Naval Base San Diego mission and provide for the sustainability of natural resources.

- *Draft Jurisdictional Delineation Report for the Proposed Renovation of Admiral Baker South Golf Course, Naval Base San Diego, California*, November 2018 (Navy 2018a). The delineation report summarizes the extent of the U.S. Army Corps of Engineers and Regional Water Quality Control Board jurisdiction pursuant to Sections 404 and 401 of the Clean Water Act, respectively, within the proposed renovation of the Admiral Baker South Golf Course survey area (project area).

1.7 Relevant Laws and Regulations

The Navy has prepared this EA based upon federal and state laws, statutes, regulations, and policies pertinent to the implementation of the Proposed Action, including the following:

- National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] sections 4321–4370h), which requires an environmental analysis for major federal actions that have the potential to significantly impact the quality of the human environment
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] sections 1500–1508)
- Navy regulations for implementing NEPA (32 CFR section 775), which provides Navy policy for implementing CEQ regulations and NEPA
- Clean Air Act (42 U.S.C. section 7401 et seq.)
- Clean Water Act (33 U.S.C. section 1251 et seq.)
- Rivers and Harbors Act (33 U.S.C. section 407)
- Coastal Zone Management Act (16 U.S.C. section 1451 et seq.)
- National Historic Preservation Act (54 U.S.C. section 306108 et seq.)
- Endangered Species Act (16 U.S.C. section 1531 et seq.)
- Migratory Bird Treaty Act (16 U.S.C. section 703–712)
- Bald and Golden Eagle Protection Act (16 U.S.C. section 668–668d)
- Comprehensive Environmental Response and Liability Act (42 U.S.C. section 9601 et seq.)
- Emergency Planning and Community Right-to-Know Act (42 U.S.C. sections 11001–11050)
- Resource Conservation and Recovery Act (42 U.S.C. section 6901 et seq.)
- Toxic Substances Control Act (15 U.S.C. sections 2601–2629)
- Executive Order (EO) 11988, Floodplain Management
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 13175, Consultation and Coordination with Indian Tribal Governments
- EO 13693, Planning for Federal Sustainability in the Next Decade.

A description of the Proposed Action's consistency with these laws, policies and regulations, as well as the names of regulatory agencies responsible for their implementation, is presented in Chapter 5 (Table 5-1).

1.8 Public and Agency Participation and Intergovernmental Coordination

Regulations from CEQ direct agencies to involve the public in preparing and implementing their NEPA procedures.

The Navy has prepared this Draft EA to inform the public of the Proposed Action and to allow the opportunity for public review and comment. The Draft EA review period begins with a public notice published in *San Diego Union Tribune* indicating the availability of the Draft EA and the locations where public review copies are available. The Draft EA also will be made available on the following website, http://cnic.navy.mil/regions/cnrsw.html.

The Navy published a Notice of Availability of the Draft EA for two consecutive days in the *San Diego Union Tribune* on the dates of October, 18–November 4, 2019. The notice described the Proposed Action, solicited public comments on the Draft EA, provided dates of the public comment period, and announced that a copy of the EA would be available for review at the San Diego Central Library, the Allied Gardens/Benjamin Branch Library, and the Admiral Baker Golf Course Clubhouse.

The Navy has consulted with the U.S. Fish and Wildlife Service regarding the Preferred Alternative.

2 Proposed Action and Alternatives

2.1 Proposed Action

The Navy proposes to close the South Course at Admiral Baker Golf Course for approximately 1 year to renovate sections of the course to improve on-site water conveyance, retention, and storage; the irrigation and drainage systems; and player safety and course playability. Construction of the Proposed Action would require up to 7 months. Multiple alternatives have been designed and are discussed in more detail below.

2.2 Screening Factors

The National Environmental Policy Act's (NEPA's) implementing regulations provide guidance on the consideration of alternatives to a federally proposed action and require rigorous exploration and objective evaluation of reasonable alternatives. Only those alternatives determined to be reasonable and to meet the purpose and need require detailed analysis.

Potential alternatives that meet the purpose and need were evaluated against the following screening factors:

- reduces or eliminates long-term flooding of the course
- increases water storage on Navy property and reduces the need to pump water from the San Diego River
- reduces maintenance of the course due to flooding, standing water, and erosion
- would not have ground-disturbing and grading activities that are so extensive that natural and cultural resources are significantly affected
- improves player safety and quality of play.

Various alternatives were evaluated against the screening factors. The alternatives considered include the following:

- Alternative 1 – No Action Alternative
- Alternative 2 – Project Validation Assessment
- Alternative 3 – Project Validation Assessment with Additional Features (Preferred Alternative).

2.3 Alternatives Carried Forward for Analysis

Based on the reasonable alternative screening factors and meeting the purpose of and need for the Proposed Action, two action alternatives were identified and are analyzed within this EA.

2.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no activities undertaken to renovate the South Course to eliminate flooding and drainage issues and improve player safety and course playability. However, minor maintenance of drainage structures would continue under routine maintenance and repair activities. The No Action Alternative would not meet the purpose of and need for the Proposed Action; however, as required by NEPA, the No Action Alternative is carried forward for analysis in this EA. The No Action Alternative is used to analyze the consequences of not

undertaking the Proposed Action, not simply conclude no impact, and serves to establish a comparative baseline for analysis.

2.3.2 Alternative 2: Project Validation Assessment

The Project Validation Assessment alternative is based on the specific drainage features, irrigation system replacement, maintenance to existing irrigation ponds, and course redesign recommended as Option 2 within *Project Validation Assessment Admiral Baker South Golf Course Improvements* (Navy 2017). The following sections provided additional information on this alternative.

Specific Drainage Features. The drainage features that would be constructed under this alternative include a new pond (West Pond), and connections between West Pond and existing Pond B and between existing Ponds B and D (Figure 2-1). These features would facilitate the establishment at the South Course of a proven hydraulic solution to managing water on flat golf courses – integrating a system of ponds or detention areas with a network of zero grade interconnecting pipes to allow the water in all ponds and detention areas to rise and fall as a single system. Equipment that may be necessary to construct these drainage features include backhoes, graders, trenchers, and dump trucks for all features as well as excavators and bulldozers for construction of West Pond.

- **West Pond.** West Pond is a proposed new 2.1-acre pond that would be constructed in the center of the 4th fairway with an approximate volume of 11.5 acre-feet. The pond would have a connection to Pond B (see below for detailed description of this connection). The pond's primary purpose is retention of storm water runoff for future use. Runoff would be collected directly from the hillside to the west and from the proposed pipe connected to Pond B. The West Pond would not be lined to allow water to infiltrate the soil.
- **West Pond/Pond B Connection Pipe.** The proposed West Pond and existing Pond B would be connected by two proposed pipes. One pipe connection would be an 18-inch diameter sloped pipe, which would serve to fill the West Pond during the peak of larger storm events. The inlet would be set at an elevation of 83.0 feet above sea level and the outlet at 76.0 feet above sea level to prevent filling the West Pond prematurely causing overflow during flood events. The second pipe connection would be a 12-inch diameter pipe set at zero grade, which would serve as a means to equalize the water levels between the West Pond and Pond B. This pipe would need to include a valve to control flow. If this pipe was open during flood events, there is potential to overfill the West Pond.
- **Pond B/Pond D Connection Pipe.** Ponds B and D would be connected by a 12-inch diameter pipe set at zero grade, which would serve as a means to equalize the water levels between Pond B and Pond D. This pipe would allow for better management of retained storm water for irrigation purposes amongst the South Course's pond system. This pipe would allow water from the West Pond to get to Pond D where pumping facilities are currently located.

Clearing, grubbing, and grading would be needed to construct these major drainage features. Approximately 95,500 square feet of land would be disturbed for clearing, grubbing, and grading and 33,833 cubic yards of soils would be excavated during construction of the proposed West Pond and pond connections (Table 2-1) (Navy 2019). No grubbing, clearing, or tree removal would occur in the riparian areas along the San Diego River.

Figure 2-1 Alternative 2 Drainage Features

Table 2-1 Ground Disturbance from Construction of Alternatives 2 and 3 Drainage and Conveyance Features

Activity	*Alternative 2*	*Alternative 3*
Clearing and Grubbing (square feet)	95,508	200,428
Excavation (cubic yards)	33,833	39,299
Tree Removal/Replacement (quantity)	9	24

Source: Navy 2019

Irrigation System Replacement. The South Course irrigation system, including the pumping station, would be replaced. The new system would include an increased number of irrigation sprinkler heads to approximately 1,200 with 60 to 65 feet between heads, a master control that allows for more individual sprinkler head control, and a new pumping station capable of delivering adequate water volume and consistent operating pressure. The new system would be compatible with irrigation equipment used on the North Course. Equipment needed to replace the irrigation system may include backhoes, graders, trenchers, and dump trucks.

Maintenance to Existing Irrigation Ponds. The storage capacity of the existing irrigation ponds has been compromised by failed liners, excessive plant growth, and sedimentation. All existing irrigation ponds (Ponds A, B, C, D) would be excavated or dredged to clear the excess debris and silt, and re-lined with an industrial liner. This would increase storage capacity, retain water, decrease flooding, and reduce the need for irrigation water from the San Diego River. Clearing and reshaping the pond edges would also improve the course aesthetics. Excavation and dredging of the ponds would also facilitate other project components by producing material that can be used in regrading and design changes to improve player safety and playability. Approximately 30,000 cubic yards of material is expected to be dredged from the ponds (Navy 2017). Some ponds may need to be drained in order to excavate the excess silt. Table 2-2 describes the proposed activities that would occur at each pond. Equipment that may be necessary to complete these activities include excavators, backhoes, bulldozers, graders, trenchers, and dump trucks.

Table 2-2 Proposed Maintenance to Existing Irrigation Ponds under Alternative 2

Pond	*Existing Pond Area (acres)*	*Activity*
A	0.85	Contouring, excavation of sediment and debris, and relining with an industrial liner. Potential activities include planting native wetland plants along the perimeter, and installation of a sediment trap that can be accessed regularly.
B	0.27	Pond B may be drained prior to excavation. Excavation of sediment and debris, and relining with an industrial liner. Potential activities include planting native wetland plants along the perimeter.
C	0.66	Pond C may be drained prior to excavation. Excavation of sediment and debris, and relining with an industrial liner. Potential activities include planting native wetland plants along the perimeter.
D	1.15	Pond D may be drained prior to excavation. Excavation of sediment and debris, and relining with an industrial liner. Potential activities include planting native wetland plants along the perimeter.

Course Redesign. The proposed redesign of the South Course would include course-wide regrading/reshaping and regrassing; improvements to tees, greens, bunkers; and additional improvements for player safety, course playability, and aesthetics. In addition to grading needed for the specific drainage features, other areas on the South Course would be regraded to eliminate standing water. Localized areas that hold water would be filled with clean fill to achieve proper runoff, and then landscape drains and piping to outfall points would be installed. Any areas where a landscape drain is added would be regraded to ensure sufficient slopes to prevent standing water at the drain. Areas with significant ponding during major rainfall events would be regraded to relocate the ponding to other locations that would have a reduced impact on play. Some tees and greens would be relocated to eliminate hazard areas and provide safer playing conditions. Tees would be regraded or reconstructed to provide larger tee boxes and level teeing conditions. Greens would be reconstructed with larger greens, and new bunker structures similar to those on the North Course would be added adjacent to the greens. Larger greens would allow for increased options for hole placement. Bunkers adjacent to existing greens that are not reconstructed would be reshaped. New bunkers may be added to some fairways. Because of the proposed course redesign improvements and other project components, the entire South Course would be regrassed with salt tolerant turf grass (e.g., SeaDwarf™ Seashore Paspalum for tees, fairways, and greens, bent grass for reconstructed greens). Mounding, additional landscaping, and additional hazards (to redirect the target) would be used to improve general player safety and playability. Additional components to improve course aesthetics, such as signage, architectural edging, and shoreline planting, would also be completed as necessary.

Conservatively, it is assumed that the entire project area at the South Course—excluding non-turf areas, natural areas, and areas not disturbed during construction—would be disturbed as result of construction of the specific drainage features, irrigation system replacement, existing irrigation pond maintenance, or course redesign under Alternative 2. Excess soil that is not used for the balance of fill for all project components would be stored and used at the South Course for other improvements not included in the Proposed Action. A Storm Water Pollution Prevention Plan (SWPPP) would be developed and best management practices (BMPs) would be implemented to control erosion and sedimentation, and minimize runoff from construction sites. It is proposed that nine trees would be removed during construction of these features, but some would be replaced after completion of construction.

2.3.3 Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative)

The Project Validation Assessment with Additional Features alternative would include all components identified as part of Alternative 2 (i.e., specific drainage features [West Pond, West Pond/Pond B connection, Pond B/Pond D connection], irrigation system replacement, maintenance to existing irrigation ponds, and course redesign) and additional conveyance features that would provide more flood protection than Alternative 2. The additional conveyance features that would be constructed as part of Alternative 3 are depicted in Figure 2-2 and consist of the following:

Figure 2-2 Alternative 3 Drainage and Conveyance Features

- **14th Fairway Swale.** A graded swale on the 14th fairway would be constructed to alleviate standing water on the 14th and 15th fairways and allow the water to enter a side channel of the San Diego River. This swale would be turf lined.
- **Swale Diversion.** A new turf-lined swale would be constructed that would divert a portion of the flood flows from the existing grassy swale draining the North Basin directly to Pond D. This existing grassy swale, which is located between the 2nd and 4th fairways, connects Pond A to Pond B as described in Section 1.2. The diversion channel would intersect the existing swale approximately halfway between Pond A and Pond B and cross the 1st, 2nd, and 9th fairways before draining to Pond D (Figure 2-2). The diversion channel would be sized to accommodate the 100-year event of 1,264 cubic feet per second (cfs). The 100-year swale diversion would have a 60-foot bottom width with 5:1 side slopes and varied depth but with a minimum of 1 foot (Figure 2-3). The bottom elevation at the upstream end of the swale diversion would be set at an equal bottom elevation of the grassy swale, such that water can flow freely in either direction. A smaller diversion channel that could accommodate 250 cfs of the 2-year event peak flow of 333 cfs was also developed. Its footprint and capacity is covered by the 100-year diversion channel and, therefore, is not analyzed in this EA.

  Construction of the swale diversion would also include expansion of the northern portion of Pond D to allow for more storage and adequate draining of the new swale diversion, and replacement of the existing golf cart path located adjacent to the existing grassy swale with either a free span bridge or a dipped crossing. For conservative purposes, a bridge is assumed to be required. This alternative would alleviate flooding along the existing grassy swale and standing water that occurs in the low-lying area east of the 1st green.
- **Removal of Golf Cart Crossing 2.** Golf cart crossing 2, which travels between Ponds C and D, would be removed and replaced by either a free span bridge or a re-routed cart path that travels around the west side of the pond system. This crossing is an at grade golf cart crossing with several small pipes used to convey low flows under the crossing. It currently acts as a weir, forcing water surface elevations in Pond C to rise and break out to the south. Removal of this crossing and lowering the connection between Pond C and Pond D would reduce breakout onto the golf course and allow water to flow to the San Diego River via Pond D.

Clearing and grubbing, grading, and excavation would be needed to construct Alternative 3. Table 2-1 identifies the area of disturbance for the major drainage and conveyance features of Alternative 3. Additional ground disturbance would occur throughout the South Course for other project components, including replacement of the irrigation system, regrading fairways and holes, and relocating tee boxes. Similar to Alternative 2, it is assumed that the entire project area at the South Course, excluding non-turf areas, natural areas, and areas not disturbed during construction, would be disturbed as result of Alternative 3. Excess soil that is not used for the balance of fill for these features would be stored and used at the South Course for other improvements not included in the Proposed Action. A SWPPP would be developed and BMPs would be implemented to control erosion and sedimentation, and minimize runoff from construction sites. Following completion of construction, the trees removed would be replaced and new turf would be planted in disturbed areas.

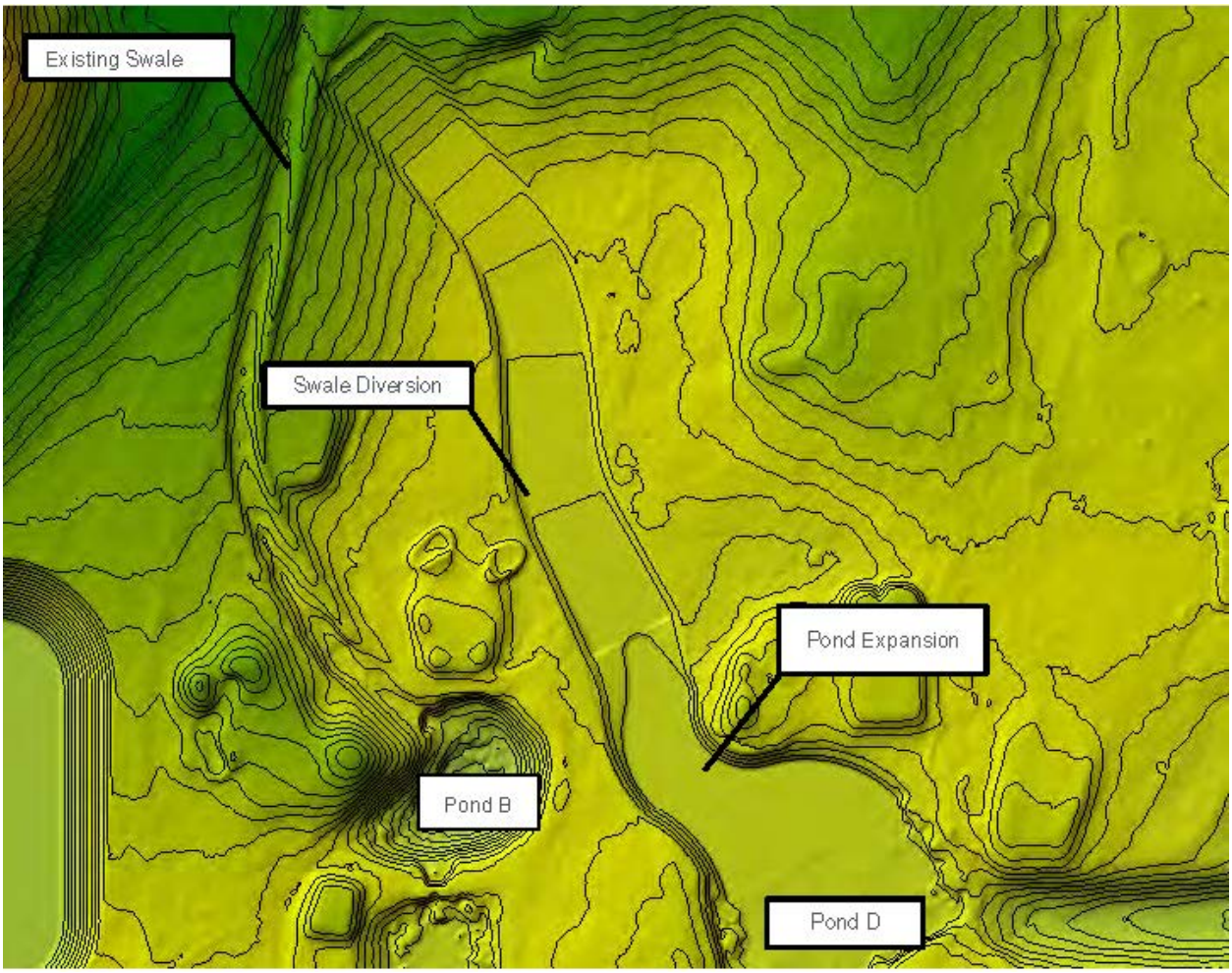

Figure 2-3 Swale Diversion and Pond Expansion with Terrain

2.4 Alternatives Considered but not Carried Forward for Detailed Analysis

The following alternative was considered, but not carried forward for detailed analysis in this EA as it did not meet the purpose of and need for the project and satisfy the reasonable alternative screening factors presented in Section 2.2.

2.4.1 Storm Drain Alternative

This alternative would be similar to Alternative 3, except instead of constructing a diversion to the grassy swale between the 2nd and 4th fairways, it would construct a storm drain system to divert a portion of the flood flows from the swale directly to San Diego River to reduce the peak flows within the swale and the resulting breakout onto the 2nd fairway. The storm drain would alleviate overtopping and flooding that occurs near and downstream of the existing pond system. The storm drain system would consist of double 66-inch reinforced concrete pipes connecting the grassy swale directly to the San Diego River. Water would enter the system through a drop inlet placed 1 foot above the bottom of the existing grassy swale. When the flow depth in the grassy swale reaches 1 foot high, it would start to spill into the drop inlet and enter the storm drain system that would outlet at the San Diego River. This alternative would require 34,614 square feet of clearing and grubbing, 1,067 cubic yards of excavation,

and removal and replacement of 18 trees. This alternative would result in a large amount of sedimentation due to increased scour potential (Navy 2019). This alternative was considered but is not being carried forward for detailed analysis in the EA because it would impact sensitive natural and cultural resources and wetlands and would require substantial capital costs to complete.

2.5 Best Management Practices Included in Proposed Action

This section presents an overview of the BMPs that are incorporated into the Proposed Action in this document. BMPs are existing policies, practices, and measures that the Navy would adopt to reduce the environmental impacts of designated activities, functions, or processes. Although BMPs mitigate potential impacts by avoiding, minimizing or reducing/eliminating impacts, BMPs are distinguished from potential mitigation measures because BMPs are (1) existing requirements for the Proposed Action, (2) ongoing, regularly occurring practices, or (3) not unique to this Proposed Action. In other words, the BMPs identified in this document are inherently part of the Proposed Action and are not potential mitigation measures proposed as a function of the NEPA environmental review process for the Proposed Action. Table 2-3 includes a list of BMPs.

Table 2-3 Best Management Practices

BMP	*Description*	*Impacts Reduced/Avoided*
Fugitive Dust Control Plan	The construction contractor and the Navy would implement a Fugitive Dust Control Plan to reduce emissions of particulate matter (PM_{10} and $PM_{2.5}$) from ground-disturbing construction activities and roadway maintenance.	Air Quality
Storm Water Pollution Prevention Plan (SWPPP)	The Proposed Action would conform with applicable National Pollution Discharge Elimination System requirements including implementation of one or more SWPPPs and associated BMPs. BMPs may include erosion control blankets, soil stabilizers, temporary seeding, silt fencing, hay bales, sand bags, and storm drain inlet protection devices. All materials must be weed free and seed materials must be pre-approved by the Naval Base San Diego Environmental Natural Resource Manager and the Admiral Baker Golf Course Director.	Geological Resources (soils; erosion and off-site sediment transport); Water Resources (water quality)
Erosion Control Plan	The construction contractor would implement an Erosion Control Plan (as part of the SWPPP) to address potential erosion effects during construction activities.	Geological Resources (soils; erosion and off-site sediment transport); Water Resources (water quality)
Cultural Resources Monitoring Program	Implement a cultural resources monitoring program during construction. The objective of an archaeological monitoring program would be to identify, document, and record observed cultural resources during ground disturbance and to protect and manage any discoveries made during monitoring. Monitoring should consist of the full-time presence of a qualified archaeologist. The archaeologist would halt ground-disturbing activities if archaeological artifact deposits or cultural features are discovered. Ground-disturbing activities would be directed away from these deposits for a short time to allow a determination of potential significance.	Cultural Resources
Avoid riparian areas along San Diego River	No project activities, including ground disturbance, grubbing, vegetation clearing, excavation/dredging, or tree removal, would occur within the riparian areas along the San Diego River.	Biological Resources
Hazardous Materials and Wastes Management Plan	The construction contractor would implement a Hazardous Materials and Wastes Management Plan to ensure appropriate procedures are in place to address handling, storage, and disposal of hazardous materials and wastes during construction.	Hazardous Materials and Wastes

Key: PM_{10} = particulate matter less than or equal to 10 microns in diameter, $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter

3 Affected Environment and Environmental Consequences

This chapter presents a description of the environmental resources and baseline conditions that could be affected from implementing any of the alternatives and an analysis of the potential direct and indirect effects of each alternative.

All potentially relevant environmental resource areas were initially considered for analysis in this Environmental Assessment (EA). In compliance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ), and Department of Navy guidelines; the discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

"Significantly," as used in NEPA, requires considerations of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole (e.g., human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of a proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant. Intensity refers to the severity or extent of the potential environmental impact, which can be thought of in terms of the potential amount of the likely change. In general, the more sensitive the context, the less intense a potential impact needs to be in order to be considered significant. Likewise, the less sensitive the context, the more intense a potential impact would be expected to be significant.

This section includes air quality, water resources, geological resources, cultural resources, biological resources, infrastructure, and hazardous materials and waste.

The potential impacts to the following resource areas are considered to be negligible or non-existent so they were not analyzed in detail in this EA:

Land Use: The Proposed Action would not affect land use. Admiral Baker Golf Course is owned and operated by the U.S. government and is under the jurisdiction of the Navy. The Naval Base San Diego Regional Shore Infrastructure Plan/Activity Overview Plan states that Mission Gorge Recreation Facility (MGRF) (i.e., location of Admiral Baker Golf Course) is a community support complex offering recreation opportunities to military personnel and their dependents (NAVFAC 2006). In addition to the golf course, other facilities and amenities located at MGRF include picnic areas, swimming pools, recreation vehicles camp grounds, playgrounds, playing fields and courts, and snack bars. Renovation of the South Course does not include any activities that would be incompatible with these existing land uses at the MGRF or land uses in the surrounding area. The Proposed Action consists of the renovation and enhancement of an existing land use (recreation; golf course) and, therefore, would not introduce new land uses or change to existing land uses. Therefore, no land use impacts would occur.

Coastal Resources: The Coastal Zone Management Act (CZMA) of 1972 encourages coastal states to be proactive in managing coastal zone uses and resources. CZMA established a voluntary coastal planning program where participating states submit a Coastal Zone Management Plan to the National Oceanic and Atmospheric administration for approval. California has an approved Coastal Management Plan. Each state defines its coastal zone in accordance with the CZMA. Admiral Baker Golf Course is outside of the coastal zone, approximately 6 miles away. Additionally, lands, the use of which by law is subject solely to the discretion of the federal government or which is held in trust by the federal government

(16 U.S.C. section 1453) are excluded from any coastal zone. Admiral Baker Golf Course is entirely contained within the boundaries of MGRF and is federal government property, thus specifically excluded from the coastal zone.

However under the CZMA, federal agency actions within or outside the coastal zone that may affect any land or water use or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved state management programs. As such, the Navy conducted an effects analysis as part of its determination of the action's effects to coastal uses or resources for purposes of federal consistency review under the CZMA. This was done to factually determine whether the action would affect any coastal use or resource in the coastal zone.

There are no environmentally sensitive habitats, as defined by the Coastal Act, occurring within the South Course as it is not within the coastal zone. There is no proposed or designated critical habitat for any federally listed species at the South Course. There are, however, habitats that are suitable to coastal California gnatcatcher (*Polioptila californica californica*) and least Bell's vireo (*Vireo belli pusillus*), which are federally listed as threatened and endangered, respectively. These species could occur within or near the South Course. The Naval Base San Diego Integrated Natural Resources Management Plan (INRMP) compiled general and species-specific conservation measures to ensure that potential adverse impacts are avoided (if possible) or minimized to acceptable levels. Due to potential direct and indirect effects to these species, the Navy is consulting with the U.S. Fish and Wildlife Service (USFWS) on a "may affect but not likely to adversely affect" basis for the coastal California gnatcatcher and least Bell's vireo. A biological assessment was submitted to the USFWS in October 2019 and the consultation is on-going. A list of the conservation measures to be implemented for this project can be found in the biological assessment and INRMP.

Indirect impacts on water quality from construction or implementation of the Proposed Action would not be expected because the Navy would implement best management practices (BMPs) to protect water quality during and after renovation of the South Course. Current conditions within the project area allow floodwaters to transport sediment and other pollutants directly into the San Diego River, which has potential to adversely affect downstream aquatic communities. However, implementation of the Proposed Action would retain more stormwater within the South Course's onsite pond system allowing for more sediment to settle out and for increased contact with the fringe wetlands that would provide physical filtering and biological treatment function. This has the potential to improve the water quality of runoff before returning waters to the San Diego River. Therefore, no adverse impacts to surface waters, including those in the coastal zones, are anticipated.

The Proposed Action would result in temporary and permanent discharge of fill to wetland and non-wetland Waters of the United States (U.S.) at the South Course. All temporary impacts would be restored upon completion of renovation activities. The Proposed Action would redirect a portion of onsite flood waters to a proposed new pond at the South Course (West Pond), an existing pond via a proposed new swale expansion, and/or to the San Diego River via a new proposed swale. These newly constructed features are expected to meet the definition of Waters of the U.S. and, therefore, no net loss of Waters of the U.S. is anticipated. However, should a net loss of wetlands at the South Course become unavoidable, compensatory mitigation would be provided at a minimum of 1:1 establishment so that the Proposed Action has no net loss of wetlands. The Navy would acquire the proper permits for these impacts. With restoration of impacted wetlands and implementation of mitigation, no significant

impacts to wetlands are anticipated. Marine waters and environments would not be affected by the Proposed Action.

The North Course at Admiral Baker would remain open during renovation of the South Course, and no other public recreation facilities or uses within or outside of the coastal zone would be affected and public access to coastal resources and uses would not be affected. None of the alternatives would increase human health risk or environmental exposure to hazardous materials or hazardous wastes. None of the alternatives appreciably alter the visual character or quality of Admiral Baker Golf Course, or generate regionally significant air emissions. During renovation activities, there would be minor, temporary visual and air quality impacts due to the presence and operation of construction equipment and land disturbance. However, these impacts would not affect the coastal resources or use in the coastal zone. Therefore, none of the alternatives would result in impacts to coastal uses and resources.

Visual Resources: The Proposed Action would not substantially change the visual character or quality of the existing landscape of the South Course. During renovation activities, there could be temporary visual impacts due to the presence of construction equipment; however these impacts would be negligible. With the exception of the replacement of the irrigation pump station, no new aboveground facilities or structures would be built. Based on the action alternative implemented, drainage features such as a pond; swale and swale diversion; altered topography (due to course-wide regrading); new landscaping; and relocated tees, greens, and golf cart paths may be visible. None of these features would have adverse impacts on visual resources, and may be considered creation of new scenic views. The majority of natural space and aesthetics at the South Course would remain unchanged. Overall, the visual landscape at the South Course would not appear to have changed significantly once renovation is complete. There would be no long-term impacts on visual resources.

Airspace: The Proposed Action does not consist of any proposals for new airspace or changes to existing airspace, including no changes to existing airspace configurations (i.e., size, shape, or location) or to the manner in which the existing airspace is used. No aircraft operations currently occur or are proposed to occur at Admiral Baker Golf Course. Renovation of the South Course would not include construction of any structures that could obstruct airspace used for commercial, military, or private aviation or structures meeting the notification requirements under 14 Code of Federal Regulations (CFR) section 77.9.

Noise: The Proposed Action would not include any noise-generating activities beyond short-term operation of construction equipment during renovation activities. The specific equipment that may be needed to renovate the South Course is not known; however, typical equipment may include tractors, backhoe/loaders, and trenchers. The South Course generally is surrounded by land uses such as other recreational uses (to the north and south), open space (to the west), and the San Diego River and Mission Gorge Road (to the east), most of which contain no noise-sensitive receptors. However, there are noise-sensitive receptors adjacent to the northeast of the 14th hole (residential) and across the San Diego River from the 13th fairway (childcare). These receptors are approximately 60 feet and 150 feet, respectively, to the closest portion of the South Course. The proposed 14th fairway swale is approximately 85 feet from the closest residential area and 475 feet from the childcare facility; the other major proposed features (West Pond, swale diversion, and connection pipes) would be at least 900 feet from these receptors.

The City of San Diego noise ordinance (Section 36.409) states that noise from operation of construction equipment is not permitted to exceed an average sound level of 75 decibels for an 8-hour period,

between 7 a.m. and 7 p.m. At 50 feet, the potential equipment would have nominal noise levels of 84 A-weighted decibels (dBA) (tractor), 80 dBA (backhoe/loader), and 82 dBA (tractor). Assuming a straight-line noise attenuation of 6 A-weighted decibels (dBA) with doubling of distance, and not accounting for noise reduction provided by intervening structures, at 100 feet, these noise levels would be 78 dBA, 74 dBA, and 76 dBA, respectively, and at 150 feet would be 72 dBA, 68 dBA, and 70 dBA, respectively. However, construction equipment would not be in constant use during the 8-hour work day, and would not stay in the same place for extended periods of time. As such, the proposed renovation activities would not exceed this 8-hour average sound level limit. Additionally, noise levels inside the nearby residences would be attenuated by the structure of the buildings themselves, by approximately 15 dBA depending on the construction (USEPA 1974). Renovation activities would only occur for eight hours per day from Monday to Friday (excluding holidays) during daytime hours (7 a.m. to 7 p.m.). Noise would last only for the duration of construction. Therefore, potential noise impacts would be short-term and negligible.

Transportation: Renovation of the South Course at Admiral Baker would not include or affect any surface, air, or sea transportation. The Proposed Action would not change any roadways, trails, or other transit infrastructure. The Proposed Action would not result in an increase in personnel at Admiral Baker Golf Course and, therefore, would not include long-term increases in traffic. While there may be increased truck traffic associated with construction activities, this would be short-term and negligible.

Public Health and Safety: Safety during proposed renovation activities would largely be a matter of adherence to regulatory requirements imposed for the benefit of workers and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The Occupational Safety and Health Administration and U.S. Environmental Protection Agency (USEPA) issue standards that specify the amount and type of training required for workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits with respect to workplace stressors. Workers are exposed to safety risks from the inherent dangers at any construction site. Contractors would be required to establish and maintain safety programs that would be implemented during the proposed renovation activities. The proposed activities would not expose members of the general public, including golfers at the North Course, to increased safety risks. The South Course would be closed during renovation and construction zones would be clearly marked.

Operation of the renovated course would not introduce new or unusual safety risks. The Proposed Action would result in beneficial impacts on safety due to regrading, new landscaping, and relocation of tees or greens and golf cart paths that would eliminate existing minor safety issues (e.g., inadequate separation between holes that exposes golfers to errant shots, and cart proximity to water hazards).

Socioeconomics: Renovation of the South Course at Admiral Baker Golf Course would have no demonstrable long-term socioeconomic effect on the surrounding community. It would not attract a long-term worker population to the project vicinity nor affect the need for housing in the area. It is expected that the crews required for proposed construction activities would be comprised of local contractors from surrounding communities. Proposed operation of the renovated course would not increase personnel because existing personnel would operate and maintain the course similar to current conditions. Implementation of the action alternatives would have short-term beneficial effects to the economy, as temporary construction jobs would be created. The overall effects on the local and regional economy and socioeconomic environment would be negligible.

Environmental Justice: Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law. The EO is also intended to promote nondiscrimination in federal programs that affect humans and the environment, as well as provide minority and low-income communities access to public information and public participation.

All of the action alternatives would take place within the Admiral Baker Golf Course property boundaries. The Navy has determined that no minority or low-income populations are in the study area. Therefore, there would be no disproportionately high and adverse health or environmental effects on minority or low income populations.

3.1 Air Quality

This discussion of air quality includes criteria pollutants, standards, sources, permitting, and greenhouse gases (GHGs). Air quality in a given location is defined by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

Most air pollutants originate from human-made sources, including mobile sources (e.g., cars, trucks, buses) and stationary sources (e.g., factories, refineries, power plants), as well as indoor sources (e.g., some building materials and cleaning solvents). Air pollutants are also released from natural sources such as volcanic eruptions and forest fires.

3.1.1 Regulatory Setting

3.1.1.1 Criteria Pollutants and National Ambient Air Quality Standards

The principal pollutants defining the air quality, called "criteria pollutants," include carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone, suspended particulate matter less than or equal to 10 microns in diameter (PM_{10}), fine particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). CO, SO_2, Pb, and some particulates are emitted directly into the atmosphere from emissions sources. Ozone, NO_2, and some particulates are formed through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Direct emissions of nitrogen oxides (NOx) and volatile organic compounds (VOCs) react to form ozone.

Under the Clean Air Act (CAA), USEPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR section 50) for these pollutants. NAAQS are classified as primary or secondary. Primary standards protect against adverse health effects; secondary standards protect against welfare effects, such as damage to farm crops and vegetation and damage to buildings. Some pollutants have long-term and short-term standards. Short-term standards are designed to protect against acute, or short-term, health effects, while long-term standards were established to protect against chronic health effects.

Areas that are and have historically been in compliance with the NAAQS are designated as attainment areas. Areas that violate a federal air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment.

The CAA requires states to develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan to attain the standards for each area designated nonattainment for an NAAQS. These plans, known as State Implementation Plans (SIPs), are developed by state and local air quality management agencies and submitted to USEPA for approval.

In addition to the NAAQS for criteria pollutants, national standards exist for hazardous air pollutants (HAPs), which are regulated under Section 112(b) of the 1990 CAA Amendments. The *National Emission Standards for Hazardous Air Pollutants* regulate HAP emissions from stationary sources (40 CFR sections 61 and 63).

3.1.1.2 General Conformity

The conformity requirement is based on CAA Section 176(c), which prohibits federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the SIP for attaining the NAAQS. Conformity requirements apply only in nonattainment and maintenance areas for the NAAQS, and only for the specific NAAQS that are or were violated. USEPA regulations at 40 CFR section 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

The USEPA General Conformity Rule (40 CFR section 93 Subpart B) applies to federal actions, other than those related to highway and transit planning and projects, that result in emissions of nonattainment or maintenance pollutants, or their precursors, in federally designated nonattainment or maintenance areas. The USEPA General Conformity Rule establishes a process to demonstrate that federal actions would be consistent with applicable SIPs and would not cause or contribute to new violations of the NAAQS, increase the frequency or severity of existing violations of the NAAQS, or delay the timely attainment of the NAAQS. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year [tpy]) vary by pollutant and also depend on the severity of the nonattainment status for the air quality management area in question.

A conformity applicability analysis is the first step of a conformity evaluation and assesses if a federal action must be supported by a conformity determination. This is typically done by quantifying applicable direct and indirect emissions that are projected to result due to implementation of the federal action. Indirect emissions are those emissions caused by the federal action and originating in the region of interest, but which can occur at a later time or in a different location from the action itself and are reasonably foreseeable. The federal agency can control and will maintain control over the indirect action due to a continuing program responsibility of the federal agency. Reasonably foreseeable emissions are projected future direct and indirect emissions that are identified at the time the conformity evaluation is performed. The location of such emissions is known and the emissions are quantifiable, as described and documented by the federal agency based on its own information and after reviewing any information presented to the federal agency. If the results of the applicability analysis indicate that the total emissions would not exceed the *de minimis* emissions thresholds, then the conformity evaluation process is completed. *De minimis* threshold emissions are presented in Table 3-1.

Table 3-1 General Conformity *de minimis* levels

Pollutant	*Area Type*	*tpy*
Ozone (VOC or NOx)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
Ozone (NOx)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon monoxide, SO_2 and NO_2	All nonattainment and maintenance	100
PM_{10}	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
$PM_{2.5}$ Direct emissions, SO_2, NOx (unless determined not to be a significant precursor), VOC or ammonia (if determined to be significant precursors)	All nonattainment (except serious) and maintenance	100
	Serious nonattainment	70
Lead (Pb)	All nonattainment and maintenance	25

3.1.1.3 Greenhouse Gases

GHGs are gaseous emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

Guidance from CEQ, dated August 1, 2016, recommends that federal agencies consider both the potential impacts of a proposed action on climate change, as indicated by its estimated GHG emissions, and the implications of climate change for the environmental impacts of a proposed action (CEQ 2016). The guidance also emphasizes that agency analyses should be commensurate with projected GHG emissions and climate impacts, and should employ appropriate quantitative or qualitative analytical methods to ensure useful information is available to inform the public and the decision-making process in distinguishing between alternatives and mitigations. Although not included in the final CEQ guidance, the draft CEQ guidance recommended that agencies consider 27,563 tons (25,000 metric tons) of carbon dioxide equivalent (CO_2e) emissions on an annual basis as a reference point below which a quantitative analysis of GHG is not recommended unless it is easily accomplished based on available tools and data

(CEQ 2014). The 25,000 metric tpy reference point was not considered a potential indicator of significance for the Proposed Action in this EA. A more appropriate level of 75,000 metric tpy increase in CO_2e emissions was used. This level is used under the USEPA Prevention of Significant Deterioration permitting program for assessing whether GHG best available control technology would be required to be implemented for modifications to stationary sources that also exceed the 250 tpy for criteria pollutants. Although the 75,000 metric tpy increase under the Prevention of Significant Deterioration regulatory program applies only to stationary sources, it is being applied to mobile source emissions as a potential indicator of significance in this EA.

EO 13783, Promoting Energy Independence and Economic Growth, issued in March 2017, required CEQ to rescind its guidance regarding GHG emissions and climate change. On April 5, 2017, CEQ rescinded this guidance; however, discussion of GHG emissions and climate change have been included in this EA due to ongoing and potential court cases and liability regarding the subject.

Similarly, USEPA will no longer apply or enforce federal regulatory provisions or provisions of the USEPA approved Title V programs that require a stationary source to obtain a Title V permit solely because the source emits or has the potential to emit GHGs above the major source thresholds (e.g., the regulatory provision relating to GHG subject to regulation in 40 CFR section 71.2). USEPA also does not intend to continue applying regulations that would require Title V programs submitted for approval by USEPA to require that such sources obtain Title V permits.

In an effort to reduce energy consumption, reduce GHGs, reduce dependence on petroleum, and increase the use of renewable energy resources the Navy has implemented a number of renewable energy projects. The Navy has established Fiscal Year 2020 GHG emissions reduction targets of 34 percent from a Fiscal Year 2008 baseline for direct GHG emissions and 13.5 percent for indirect emissions. Examples of Navy-wide GHG reduction projects include energy efficient construction, thermal and photovoltaic solar systems, geothermal power plants, and the generation of electricity with wind energy. The Navy continues to promote and install new renewable energy projects.

3.1.2 Affected Environment

The Proposed Action is in San Diego County, which is within the San Diego Intrastate Air Quality Control Region. The San Diego Air Pollution Control District is responsible for implementing and enforcing state and federal air quality regulations in San Diego County. San Diego County has been determined by USEPA to be a nonattainment area for 8-hour ozone, with a classification of Moderate under the 2015 and 2008 standards and Maintenance under the 1997 standard. San Diego County is also on maintenance for CO. The County is classified by USEPA as unclassified/attainment for all other criteria pollutants. Because San Diego County is in nonattainment for ozone and on maintenance for CO, a General Conformity evaluation is required.

The most recent emissions inventory for San Diego County is shown in Table 3-2. VOC and NOx emissions are used to represent ozone generation because they are precursors of ozone.

Table 3-2 San Diego County Air Emissions Inventory (2014)

Location	*NOx (tpy)*	*VOC (tpy)*	*CO (tpy)*	*SO_2 (tpy)*	*PM_{10} (tpy)*	*$PM_{2.5}$ (tpy)*
San Diego County	33,870	118,864	229,143	1,236	32,592	12,488

Source: USEPA 2018
Key: tpy = tons per year.

3.1.3 Environmental Consequences

Effects on air quality are based on estimated direct and indirect emissions associated with the action alternatives. The region of influence (ROI) for assessing air quality impacts is the air basin in which the project is located, the San Diego Air Basin.

Estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations.

Based on the discussion provided in Section 3.1.1, this analysis is aimed at demonstrating each alternative's potential to interfere with the State's ability to attain the NAAQS.

3.1.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline air quality. Therefore, no significant impacts to air quality or air resources would occur with implementation of the No Action Alternative.

3.1.3.2 Alternative 2: Project Validation Assessment Potential Impacts

Air pollutant emissions associated with construction of Alternative 2 would be released from the exhausts of construction equipment, soil hauling trucks, delivery trucks, and worker commute vehicles. Particulate matter emissions would result from soil movement and wind-blown dust from disturbed surfaces. Once construction is completed, the operational emissions associated with the South Course would be the same as those generated under the existing conditions.

Criteria Pollutants

Construction activities produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew. Exhaust emissions from construction activities envisioned on site would vary daily as construction activity levels change. The use of construction equipment on site would result in localized exhaust emissions.

The most recent version of the CalEEMod model (Version 2016.3.2) was used to calculate the construction emissions. The results of the modeling are shown in Tables 3-3 and 3-4 for the peak daily and annual conditions, respectively, for the project site. The analysis assumes that construction would take approximately 7 months to complete.

Table 3-3 Peak Day Construction Emissions – Alternative 2 (lb/day)

Year	*NO_x*	*VOC*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
2020	51.4	4.6	32.8	0.1	10.5	6.5
2021	47.5	4.3	31.7	0.1	5.2	3.4

Key: lb/day = pounds per day.

Table 3-4 Annual Construction Emissions – Alternative 2 (tpy)

Year	*NO_x*	*VOC*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
2020	5.8	0.5	3.2	0.0	1.2	0.8
2021	3.1	0.3	2.1	0.0	0.4	0.2
de minimis Criteria	100	100	100	NA	NA	NA

Key: tpy = tons per year, NA = not applicable.

In order to minimize dust emissions, all active grading areas would be watered at least twice per day, as required by San Diego Air Pollution Control District Rule 55, which requires that visible dust emissions do not extend beyond the property line for more than 3 minutes in any 60-minute period. Appendix A presents the CalEEMod output reports with more detail.

As discussed above, once construction is completed the operational emissions associated with the South Course would be the same as those generated under existing conditions. Therefore, no long-term air quality emissions were calculated for Alternative 2.

General Conformity

Table 3-4 shows the estimated construction and operational emissions generated under Alternative 2 that would be subject to General Conformity. Emissions of pollutants subject to General Conformity are below their respective *de minimis* values; therefore, a Record of Non-Applicability has been prepared and is included in Appendix A.

Hazardous Air Pollutants

Implementation of Alternative 2 would contribute directly to emissions of HAPs from the combustion of fossil fuels.

Construction activities would result in short-term, project-generated emissions of diesel particulate matter (DPM) from the exhaust of off-road, heavy-duty diesel equipment. DPM contains gaseous hazardous air pollutants including acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde and polycyclic aromatic hydrocarbons. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer time period. Health risk assessments, which determine the exposure of sensitive receptors to HAP emissions, are typically based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with Alternative 2.

The closest sensitive receptors to the portion of the project site where heavy construction equipment would be used are located at a distance of approximately 850 feet. Additionally, as presented in Table 3-3, maximum daily particulate emissions, which include DPM, would be relatively low. Furthermore, the construction period would be relatively short (approximately 7 months), especially when compared to 70 years. Combined with the highly dispersive properties of DPM, construction-related emissions of HAPs would not expose sensitive receptors to substantial emissions of HAPs.

Greenhouse Gases

Implementation of Alternative 2 would contribute directly to emissions of GHGs from the combustion of fossil fuels. The proposed renovation, including construction and clearing activities, would generate approximately 916 metric tons of CO_2e, as detailed in Appendix A. These estimated annual GHG emissions fall below the 75,000 metric ton per year increase discussed in Section 3.1.1.3. This limited amount of emissions would not likely contribute to global warming to any discernible extent.

Implementation of Alternative 2 would not result in significant impacts to air quality.

3.1.3.3 Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative) Potential Impacts

Alternative 3, the Preferred Alternative, would result in emissions of air pollutants during both construction and operations similar to those estimated for Alternative 2. Section 3.1.3.2 includes description of the methodologies and models used to calculate the emissions for the Preferred Alternative.

Criteria Pollutants

The most recent version of the CalEEMod model (Version 2016.3.2) was used to calculate the construction emissions. The results of the CalEEMod modeling for the Preferred Alternative (Alternative 3) are shown in Tables 3-5 and 3-6 for the peak daily and annual conditions, respectively, for the project site. The analysis assumes that construction would take approximately 7 months to complete.

Table 3-5 Peak Day Construction Emissions – Alternative 3 (lb/day)

Year	*NO_x*	*VOC*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
2020	51.4	4.6	32.8	0.1	11.0	6.6
2021	47.5	4.3	31.7	0.1	5.2	3.4

Key: lb/day = pounds per day.

Table 3-6 Annual Construction Emissions – Alternative 3 (tpy)

Year	*NO_x*	*VOC*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
2020	5.8	0.5	3.2	0.0	1.3	0.8
2021	3.1	0.3	2.1	0.0	0.4	0.2
de minimis Criteria	100	100	100	NA	NA	NA

Key: tpy = tons per year, NA = not applicable.

In order to minimize dust emissions, all active grading areas would be watered at least twice per day, as required by San Diego Air Pollution Control District Rule 55, which requires that visible dust emissions do not extend beyond the property line for more than 3 minutes in any 60-minute period. Appendix A presents the CalEEMod output reports with more detail.

As discussed above, once construction is completed the operational emissions associated with the South Course would be the same as those generated under existing conditions. Therefore, no long-term air quality emissions were calculated for the Preferred Alternative.

General Conformity

Table 3-6 shows the estimated construction and operational emissions generated under the Preferred Alternative that would be subject to General Conformity. Emissions of pollutants subject to General Conformity are below their respective *de minimis* values; therefore, a Record of Non-Applicability has been prepared and is included in Appendix A.

Hazardous Air Pollutants

Implementation of the Preferred Alternative would contribute directly to emissions of HAPs from the combustion of fossil fuels.

Construction activities would result in short-term, project-generated emissions of DPM from the exhaust of off-road, heavy-duty diesel equipment. DPM contains gaseous hazardous air pollutants including acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde and polycyclic aromatic hydrocarbons.

The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer time period. Health risk assessments, which determine the exposure of sensitive receptors to HAP emissions, are typically based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the Preferred Alternative.

The closest sensitive receptors to the portion of the project site where heavy construction equipment would be used are located at a distance of approximately 850 feet. Additionally, as presented earlier in Table 3-5, maximum daily particulate emissions, which include DPM, would be relatively low. Furthermore, the construction period would be relatively short (approximately 7 months), especially when compared to 70 years. Combined with the highly dispersive properties of DPM, construction-related emissions of HAPs would not expose sensitive receptors to substantial emissions of HAPs.

Greenhouse Gases

Implementation of the Preferred Alternative would contribute directly to emissions of GHGs from the combustion of fossil fuels. The proposed renovation, including construction and clearing activities, would generate approximately 917 metric tons of CO_2e, as detailed in Appendix A. These estimated annual GHG emissions fall below the 75,000 metric ton per year increase discussed in Section 3.1.1.3. This limited amount of emissions would not likely contribute to global warming to any discernible extent.

Implementation of the Preferred Alternative would not result in significant impacts to air quality.

3.2 Water Resources

This discussion of water resources includes groundwater, surface water, wetlands, floodplains, and shorelines. This section also discusses the physical characteristics of Waters of the United States (U.S.) and wetlands; wildlife and vegetation are addressed in Section 3.5, Biological Resources.

Groundwater is water that flows or seeps downward and saturates soil or rock, supplying springs, wells, and aquifers. Groundwater is used for water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition. Sole source aquifer designation provides limited protection of groundwater resources which serve as drinking water supplies.

Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. A Total Maximum Daily Load is the maximum amount of a substance that can be assimilated by a water body without causing impairment. A water body can be deemed impaired if water quality analyses conclude that exceedances of water quality standards occur.

Wetlands are jointly defined by USEPA and the U.S. Army Corps of Engineers (USACE) 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.”

Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplain boundaries are most often defined in terms of frequency of inundation, that is, the 100-year and 500-year flood. Floodplain delineation maps are produced by the Federal Emergency Management Agency and provide a basis for comparing the locale of the Proposed Action to the floodplains.

Shorelines can be located along marine (oceans), brackish (estuaries), or fresh (lakes) bodies of water. Physical dynamics of shorelines include tidal influences, channel movement and hydrological systems, flooding or storm surge areas, erosion and sedimentation, water quality and temperature, presence of nutrients and pathogens, and sites with potential for protection or restoration. Shoreline ecosystems are vital habitat for multiple life states of many fish, birds, reptiles, amphibians, and invertebrates. Different shore zones provide different kinds and levels of habitat, and when aggregated, can significantly influence life. Organic matter that is washed onto the shore, or "wrack," is an important component of shoreline ecosystems, providing habitat for invertebrates, soil and organic matter, and nutrients to both the upland terrestrial communities and aquatic ecosystems.

3.2.1 Regulatory Setting

The Safe Drinking Water Act is the federal law that protects public drinking water supplies throughout the nation. Under the Safe Drinking Water Act, the USEPA sets standards for drinking water quality. Groundwater quality and quantity are regulated under several statutes and regulations, including the Safe Drinking Water Act.

The Clean Water Act (CWA) establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES) program, on the amounts of specific pollutants that can be discharged into surface waters to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES program regulates the discharge of point (i.e., end of pipe) and nonpoint sources (i.e., stormwater) of water pollution.

The California NPDES stormwater program requires construction site operators engaged in clearing, grading, and excavating activities that disturb 1 acre or more to obtain coverage under an NPDES Construction General Permit for stormwater discharges. Construction or demolition that necessitates an individual permit also requires preparation of a Notice of Intent to discharge stormwater and a Stormwater Pollution Prevention Plan (SWPPP) that is implemented during construction. As part of the 2010 Final Rule for the CWA, titled *Effluent Limitations Guidelines and Standards for the Construction and Development Point Source Category*, activities covered by this permit must implement non-numeric erosion and sediment controls and pollution prevention measures.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into wetlands and other Waters of the U.S. Any discharge of dredge or fill into Waters of the U.S. requires a permit from USACE.

Wetlands and other Waters of the U.S., such as ephemeral streams, are currently regulated by USACE under Section 404 of the CWA as a subset of all "Waters of the U.S." Waters of the U.S. are defined as (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow

perennially or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries under Section 404 of the CWA, as amended, and are regulated by USEPA and the USACE. The CWA requires that California establish a Section 303(d) list to identify impaired waters and establish Total Maximum Daily Loads for the sources causing the impairment.

Section 401 of the CWA specifies that states must certify that any activity subject to a permit issued by a federal agency, such as USACE, meets all state water quality standards. In California, the State Water Resources Control Board and the applicable Regional Water Quality Control Board are responsible for taking certification actions for activities subject to any permit issued by USACE pursuant to Section 404.

Section 438 of the Energy Independence and Security Act establishes stormwater design requirements for development and redevelopment projects. Under these requirements, federal facility projects larger than 5,000 ft^2 must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow."

EO 11990, *Protection of Wetlands*, requires that federal agencies adopt a policy to avoid, to the extent possible, long- and short-term adverse impacts associated with destruction and modification of wetlands and to avoid the direct and indirect support of new construction in wetlands whenever there is a practicable alternative.

EO 11988, *Floodplain Management*, requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development unless it is the only practicable alternative. Flood potential of a site is usually determined by the 100-year floodplain, which is defined as the area that has a one percent chance of inundation by a flood event in a given year.

EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, amends EO 11988 and establishes the Federal Flood Risk Management Standard to improve the nation's resilience to current and future flood risks, which are anticipated to increase over time due to the effects of climate change and other threats.

3.2.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under water resources at the South Course at Admiral Baker Golf Course, which is the responsibility of Naval Base San Diego. The information discussed in this section is supported by a delineation survey that was conducted in September 2018 to determine the limits of potential jurisdiction regulated by (1) USACE pursuant to Section 404 of the CWA and (2) Regional Water Quality Control Board pursuant to Section 401 of the CWA (Navy 2018a), and a hydrology and hydraulic engineering study (Navy 2019). The study areas for these studies included all areas where the Proposed Action would occur (i.e., South Course).

The water resources project area for this EA is the South Course, which is located within an urbanized area of the City of San Diego. Prior to development, the area supported a large alluvial fan and much of the survey area was historically located within the San Diego River's floodplain. The San Diego River within the survey area was transformed by agricultural development, dwellings, and later tourism. Increases in residential and urban development within the survey area have resulted in removal of most of the natural vegetation within the survey area and channelization of all natural drainage features.

The survey area is within the San Diego River Watershed (Hydrological Unit Code [HUC] 18070304), which is the second largest watershed management area in San Diego County at 434 square miles. Approximately 44 percent of the watershed management area remains undeveloped, 56 percent is designated open space, 23 percent is park land, 19 percent residential area, 6 percent transportation and 2 percent comprised of commercial, agricultural, industrial, military, and miscellaneous land uses. The San Diego River headwaters form in portions of the Cleveland National Forest and Cuyamaca Rancho State Park where the upper reaches of the watershed consist of extensive areas of undisturbed riparian and woodland habitats. From the headwaters, the San Diego River then flows into the El Capitan Reservoir and outlets into a natural river channel that travels westward towards the cities of Lakeside and Santee where it becomes more confined because of the surrounding urbanization. Once west of Santee, the river takes a more natural course through Mission Trails Regional Park and enters into Mission Gorge and the project area. As it flows downstream past the project area and into Mission Valley it continues to be a natural bottom stream encroached and confined by surrounding development. The San Diego River then flows past the I-5 where it becomes more channelized with rock rip-rap along the banks before flowing in the Pacific Ocean.

Within the San Diego River Watershed, four distinct hydrological areas (HAs) occur—San Vicente (HUC 907.2), El Capitan (HUC 907.3), Boulder Creek (HUC 907.4) and the Lower San Diego (HUC 907.1), with Lower San Diego encompasses the project area. The Lower San Diego HA is the largest HA within the watershed, and it is the most urbanized because of its geographic extent. The resulting urbanization has affected hydrologic, chemical and biologic processes within this HA and shaped the San Diego River.

3.2.2.1 Groundwater

The South Coast Hydrologic Region covers most of the southern California watersheds that drain into the Pacific Ocean, and is separated into three subregions (Los Angeles, Santa Ana, and San Diego). The South Course is within the San Diego subregion, which has 22 primary groundwater basins covering approximately 277,000 acres. Groundwater within the subregion is primarily in unconfined alluvial aquifers; however, larger basins have groundwater in multiple aquifers separated by aquitards that create confined groundwater conditions (California DWR 2003).

The South Course is sited over a portion of the Mission Valley Aquifer, which follows the course of the San Diego River from Mission Gorge west to the Pacific Ocean and is bound by its valley walls and covers approximately 6.2 square miles. The California Department of Water Resources estimated the storage capacity of this basin to be 42,000 acre-feet, while the San Diego County Water Authority estimated a total storage capacity of approximately 40,000 acre-feet (California DWR 1975, SDCWA 1997). There are local impairments by magnesium, sulfate, chloride, and total dissolved solid concentrations (California DWR 2004).

The South Course contains several constructed irrigation/drainage ponds, some of which support southern willow scrub and freshwater marsh vegetation. These ponds are fed in part by surface flows originating off-site to the north of the project area, and are interconnected through pipes, earthen drainage swales, and concrete culverts that eventually drain to the San Diego River. Admiral Baker Golf Course, including the South Course, is irrigated with water held in the on-site ponds and supplemented by water diverted from the San Diego River under existing riparian use rights. Commander, Navy Region Southwest has a Statement of Water Diversion and Use on file with the State Water Resources Control Board for the continued diversion of San Diego River water to the golf course for irrigation purposes. The Navy has been diverting water from the river since 1955 and currently diverts approximately 530

acre-feet per year in order to irrigate 225 acres of the North and South courses at Admiral Baker Golf Course (Magnani 2019). The water is pumped from one diversion point on the river into holding ponds located on the golf course. From the holding ponds, the water is drawn into the installation's irrigation system (Navy 2014).

The jurisdictional delineation indicates that the survey area includes 14.9 acres of USACE regulated Waters of the U.S., of which 5.4 acres consist of wetlands. The project area includes 8.9 acres of regulatory Waters of the U.S., of which 1.6 acres consist of wetlands (Figures 3-1 through 3-3). Table 3-7 summarizes the total jurisdiction associated with each surface water feature identified in the study area and the project area. A description of all surface waters occurring within the project area is provided below.

Table 3-7 Summary of Waters of the U.S. Occurring within the Admiral Baker Golf Course's Jurisdictional Study Area and the Project Area

Surface Water Feature	*Total Non-Wetland WOUS (acres)*		*Total Wetland WOUS (acres)*		*Total WOUS (acres)*	
	Study Area	*Project Area*	*Study Area*	*Project Area*	*Study Area*	*Project Area*
Tributary A	3.9	3.9	1.6	1.6	5.5	5.5
Tributary B	0.2	<0.1 (0.02)	0.1	0.0	0.3	<0.1 (0.02)
San Diego River	5.4	3.4	3.7	<0.1 (0.03)	9.1	3.4
Total	**9.5**	**7.3**	**5.4**	**1.6**	**14.9**	**8.9**

Key: WOUS = Waters of the U.S.

Tributary A. San Diego River Tributary A originates offsite as an unimproved drainage within an urbanized watershed. Tributary A is an ephemeral drainage that enters at the northern end of the project area (South Course), where it travels under Admiral Baker Road via six 36-inch reinforced concrete pipes. Upon discharge from the culverts, surface flows enter a 29-foot-wide and 95-foot-long concrete lined trapezoidal transition structure lined with embedded rock after which it enters a 10-foot-wide, U-shaped concrete lined channel. Surface flows travel approximately 160 feet via the U-shaped channel before discharging into Pond A (Figure 3-1). The ordinary high water mark (OHWM) within this portion of Tributary A varies from 22 to 42 feet. The OHWM was based upon 1) the elevation of the rounded humps that bound either side of the tributary, 2) the absence of turf where flows appear to pass regularly beneath the pedestrian bridge just south of Admiral Baker Road, and 3) 10-year storm flow modeling that was consistent with the prior two indicators.

Pond A is seasonal and, based on aerial photography, the mouth of Pond A has become filled with sediment over the last 18 years. As a result of the years of sediment build up in combination with the degradation of the pond liner, wetland vegetation has become established and Pond A now supports a predominance of hydrophytic vegetation dominated by California bulrush (*Schoeneplectis californicus*), narrowleaf plantain (*Plantago lanceolata*), barnyard grass (*Echinachloa crus-galli*) and sprangletop (*Diplachne fusca*), inundation for long duration (based upon aerial photography), and the presence of hydric soil (based on the Redox Dark Surface field indicator). This feature exhibits vertical banks that contain surface flows based on modeling results and observations made by Admiral Baker Golf Course personnel.

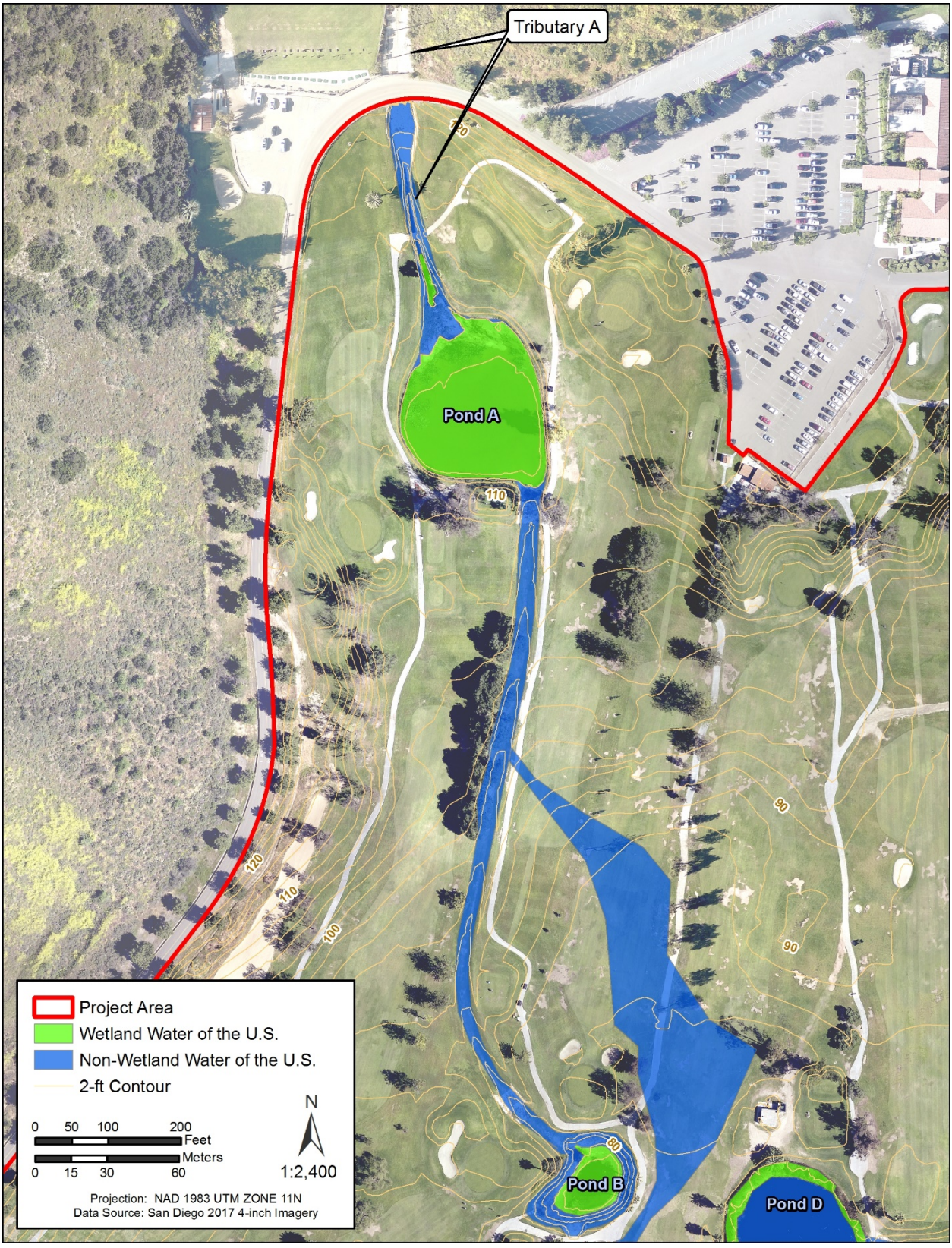

Figure 3-1 Waters of the U.S. – Project Area Northwest

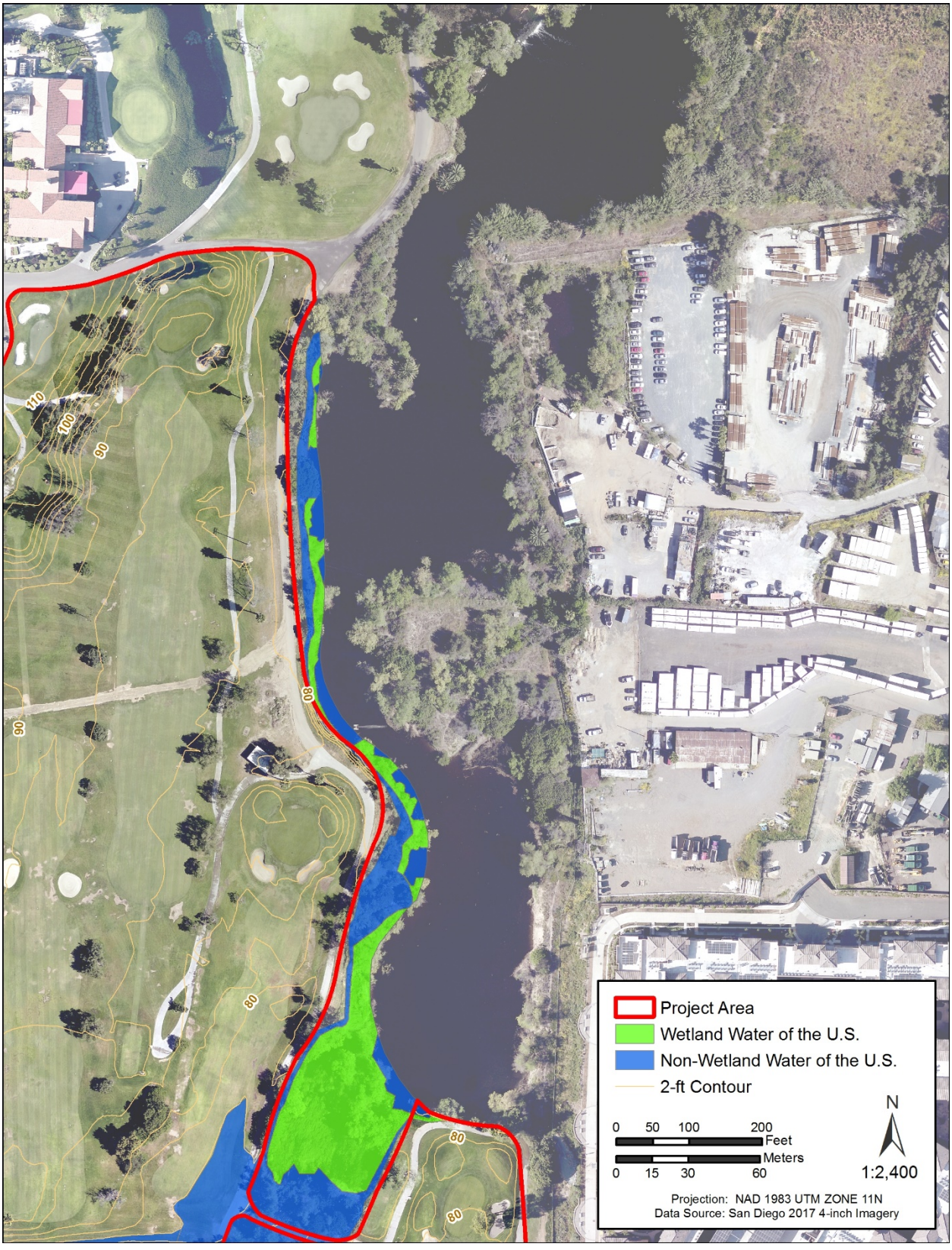

Figure 3-2 Waters of the U.S. – Project Area Northeast

Figure 3-3 Waters of the U.S. – Project Area South

Water discharges from Pond A through a turf-lined shallow channel where it travels approximately 980 feet (with an OHWM measuring approximately 16 to 29 feet in width) before terminating into Pond B (Figure 3-1). Although the channel supports some scattered hydrophytic species, including watercress (*Nasturtium officionale*) and narrowleaf plantain, soils exhibited no hydric indicators. Pond B is also seasonal, however, the deepest portion of the pond supports inundation for long durations (based on aerial photography), the predominance of cocklebur (*Xanthium strumarium*) and barnyard grass, and soils exhibiting the Redox Dark Surface indicator. The margins of the pond at a slightly higher elevation did not exhibit hydric soils, although they did support a predominance of hydrophytes (including arroyo willow (*Salix lasiolepis*), cocklebur and salt marsh aster (*Symphyotrichum subulatum*) and exhibit periodic inundation based on aerial photography. The wetland limits within Pond B were based on the elevation at which hydric soils and the unique hydrophytic vegetation community associated with those soils were present.

During storm events, surface flows from Pond B pass into Pond C beneath a golf cart path through three culverts (Figure 3-3). In addition to stormwater runoff, Pond C also receives water pumped in from the San Diego River. The supplemental water is used for golf course irrigation. Pond C is perennial and supports wetlands dominated by California bulrush on its margins while the adjacent areas of mulefat scrub are not considered wetland (no hydric soils). Based on these soil pit results wetland limits are based upon the visible limits of bulrush on aerial photography.

Pond D receives flows from Pond C via culverts under a golf cart pathway (Figure 3-3). It exhibits a perennial hydrology regime and supports a predominance of California bulrush on its margins. Pond D outlets to a turf-lined swale that extends approximately 290 feet before reaching nine plastic culvert pipes beneath a golf cart path and discharging into the San Diego River (Figure 3-3). Similar to Pond C, wetland limits are based upon the visible limits of bulrush on aerial photography.

It was not possible to define the limits of the OHWM within the project area based strictly on field indicators because the San Diego River and its two tributaries are surrounded and abutted by manicured turf. However, the Admiral Baker Golf Course manager has observed that surface flows regularly overtop the banks of Tributary A and the San Diego River. Therefore, the OHWM was extrapolated based on the manager's description of regular flooding on the South Course, hydrologic modeling, and topography.

When Tributary A's hydrologic capacity is exceeded, water sheet flows across the South Course as indicated in Figures 3-1 and 3-3. Signs of sheet flow disappear quickly, although some water remains ponded on the course. There were no indicators of channel-forming flows, such as bare ground or soil erosion, where the flows overtop the swale and sheet flow southward. Surface flows recede quickly, leaving smaller ponded areas that are manually pumped dry soon after storms pass. Soil test pits indicate that longer ponding micro-depressions within the overflow area do not exhibit hydric soils. However, it is uncertain whether hydric indicators would develop if left inundated. Wetland is not visible at these locations prior to golf course construction in historical aerial photography from 1955 viewed using U.S. Geological Survey Earth Explorer (www.earthexplorer.usgs.gov) and the longer ponding areas remain unvegetated. Based on Admiral Baker Golf Course personnel observations and consistent with the heavy salt crust visible in the depressions where more extensive ponding occurs, the soils are not suitable for vegetation recruitment (apparently due to salinity). Therefore, wetland vegetation is not expected to become established even if hydrology was left unaltered and this area is identified as non-wetland Waters of the U.S.

Tributary B. Tributary B originates from a storm drain outlet outside of the eastern portion of the project area (Figure 3-3). The storm channel runs along the eastern margin of the project area before merging with the San Diego River. It supports non-wetland and wetland Waters of the U.S.

San Diego River. The San Diego River originates within the headwaters of the Cleveland National Forest and Cuyamaca Rancho State Park. The river bisects the southeastern portion of the project area before exiting along the southern boundary (Figures 3-2 and 3-3). The San Diego River is an intermittent stream based on historical aerials and information gathered in the field. While the San Diego River generally is dominated by hydrophytic vegetation including black willow (*Salix goodingii*), marsh fleabane (*Pluchea odorata*), fan palm (*Washingtonia robusta*), Peruvian pepper (*Schinus terebenthifolia*), water primrose (*Ludwigia californica*), cocklebur, California bulrush, and Olney's bulrush (*Schoenoplectus americanus*), and exhibits indicators of wetland hydrology throughout the project area, within the project area only portions of the river contain the hydric soils necessary to qualify it as a three-parameter wetland.

Where present, hydric soil indicators observed included Redox Dark Surface and Sandy Mucky Mineral. Hydric soil indicators were highly correlated with the presence of bulrush and water primrose. Specifically, north of an existing culvert crossing (Figure 3-3), the river bed, dominated by bulrush and exhibiting a sandy loam bed with redoximorphic features transitions abruptly to silty clay exhibiting no hydric indicators and no longer supporting bulrush. Groundwater and surface water were absent even though the pits are located only 150 feet south of an in-stream perennial pond. Mucky peat was observed were where water primrose was dominant on the east side of the river. Where vegetation consisted of a mix of bulrush, willow, and Peruvian pepper to the west side of the river, no hydric soil indicators were observed.

Based on the observed correlation of hydric soils with bulrush, the transition between wetland and non-wetland in the river between the two transects at the confluence with Tributary A, was extrapolated based on the distribution of bulrush in the understory of the willow and pepper woodland.

The limits of regular flooding to the west at the culvert crossing (Figures 3-2 and 3-3), were based on modeling results and conversations with the Admiral Baker Golf Course manager. Similarly, the approximate limits of regular flood flows that break out of the river channel and cross the 14th and 15th fairways was also extrapolated based on the manager's description of regular flooding on the golf course, hydrologic modeling, and field indicators observed within San Diego River. Surface flows recede quickly leaving smaller ponded areas that are manually pumped dry after storms pass. Soil test pits identified the absence of current or historic hydric soil indicators within the longer ponding areas. However, it is uncertain whether hydric indicators would develop if left inundated. Wetland is not visible at these locations prior to golf course construction in historical aerial photography from 1955 viewed using U.S. Geological Survey Earth Explorer (www.earthexplorer.usgs.gov) and the San Diego River is depicted as a large wash rather than wetland on the 1947 U.S. Geological Survey La Mesa 7.5-minute topographic quadrangle. As stated for Tributary A, the lack of any vegetation recruitment (apparently due to salinity) within the micro-topographic depressions precludes the development of wetland in these areas, so wetland is not anticipated to develop even if hydrology was not altered by manually pumping them dry and hydric soils developed. Therefore, these areas have been depicted as non-wetland Waters of the U.S. (Figures 3-1 through 3-3).

3.2.2.2 Wetlands

As discussed in Section 3.2.2.1, the project area includes 1.6 acres of USACE-regulated wetland Waters of the U.S. Wetland Waters of the U.S. are depicted on Figures 3-1 through 3-3. A description of the wetlands is in Section 3.2.2.1, and a summary of wetland Waters of the U.S., by feature, is in Table 3-7.

3.2.2.3 Floodplains

Based on a review of the Flood Insurance Rate Maps for San Diego County, California and Incorporated Areas (map number 06073C1636H), the South Course is within an area mapped as Zone D, which is defined by Federal Emergency Management Agency as "areas where there are possible but undetermined flood hazards, as no analysis of flood hazards has been conducted" (FEMA 2012). Therefore, as described below, project-specific flood modeling was conducted to establish flooding baseline conditions and analyze the effectiveness of the Proposed Action alternatives.

The project area (South Course excluding along the San Diego River and the clubhouse/parking lot area) occurs within the San Diego River floodplain and is subject to flooding (Navy 2019). There are three primary sources of offsite runoff to the project area: 1) San Diego River, 2) northern developed areas (North Basin), and 3) runoff from the western bounding hills (West Hills). Each contributes to flooding and post event ponding uniquely in time and space of rainfall events. A hydrology and hydraulic engineering study (*Final Hydrology and Hydraulic Engineering Study and Report for Admiral Baker Golf Course Renovation Project*) was completed to compare baseline flooding conditions to flooding after implementation of the Proposed Action alternative designs (Navy 2019). In order to provide the most uniform results and comparison between all conditions, a single-model approach was utilized. The Hydrologic Engineering Center's River Analysis System 5.0.5 model was selected because of its ability to evaluate complex hydraulic systems in a two dimensional environment. While the three flooding sources were modeled separately because of the expected differences in peak flow timing, the single model approach allowed for relative comparison of anticipated flooding conditions relative to baseline flooding conditions. The purpose of the baseline and proposed condition hydraulic analysis was to inform the conceptual design process, assess potential hydraulic impacts and evaluate the potential for on-site water retention. Figures 3-4 and 3-5 depict the existing maximum flood inundation limits for a 100-year 24-hour storm event for the North Basin and San Diego River based upon the project specific modeling.

3.2.2.4 Shorelines

The project area supports shoreline associated with fresh bodies of water (e.g., South Course irrigation pond system). In general, the shoreline associated with Ponds C and D support transitional freshwater marsh that provides water quality, erosion protection and habitat function, while the remaining shoreline associated with Ponds A and B exhibit abrupt transitions from unvegetated bank to turf resulting in lower function and less stability.

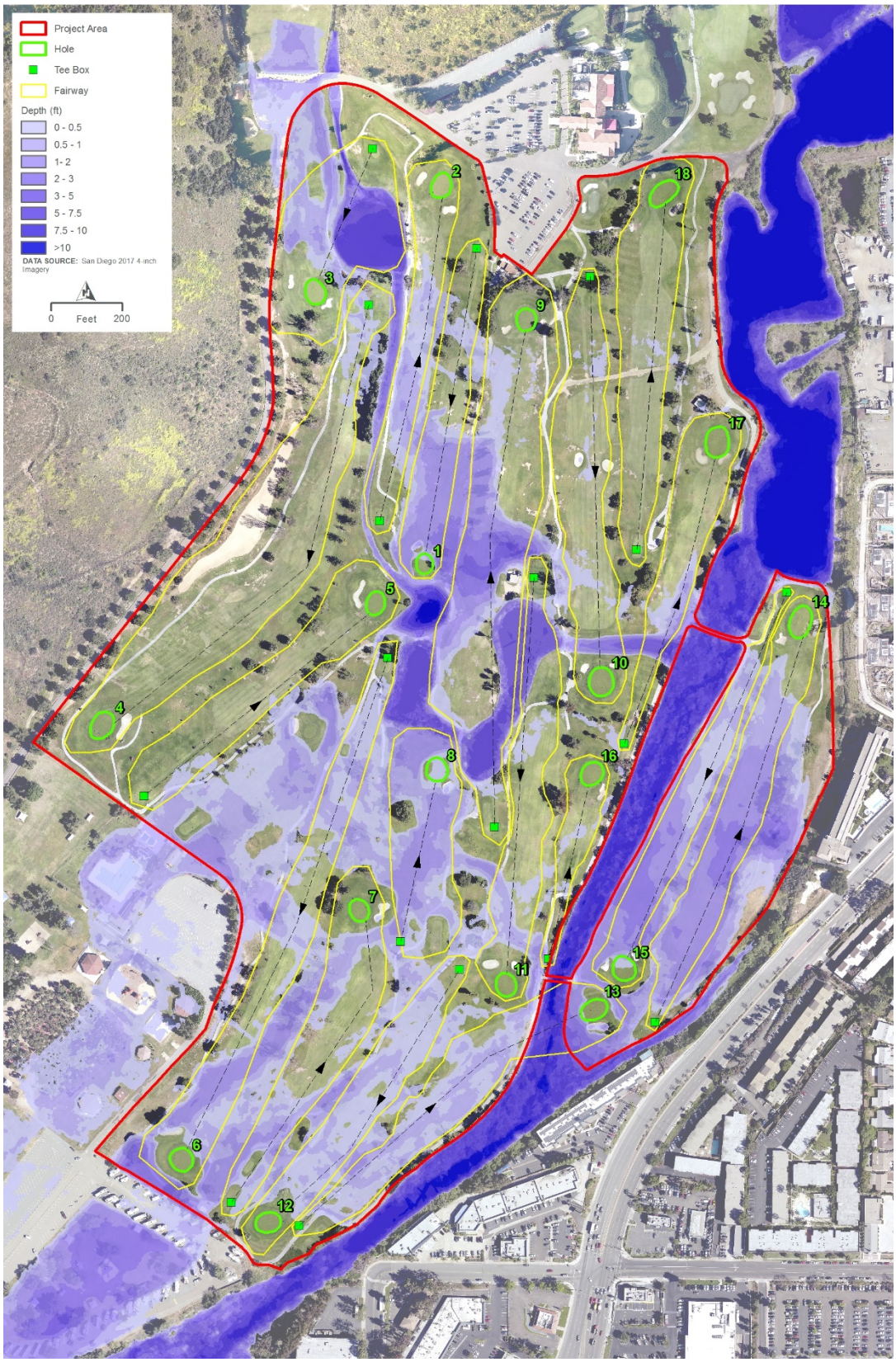

Figure 3-4 Existing Conditions, North Basin 100-year, Maximum Inundation

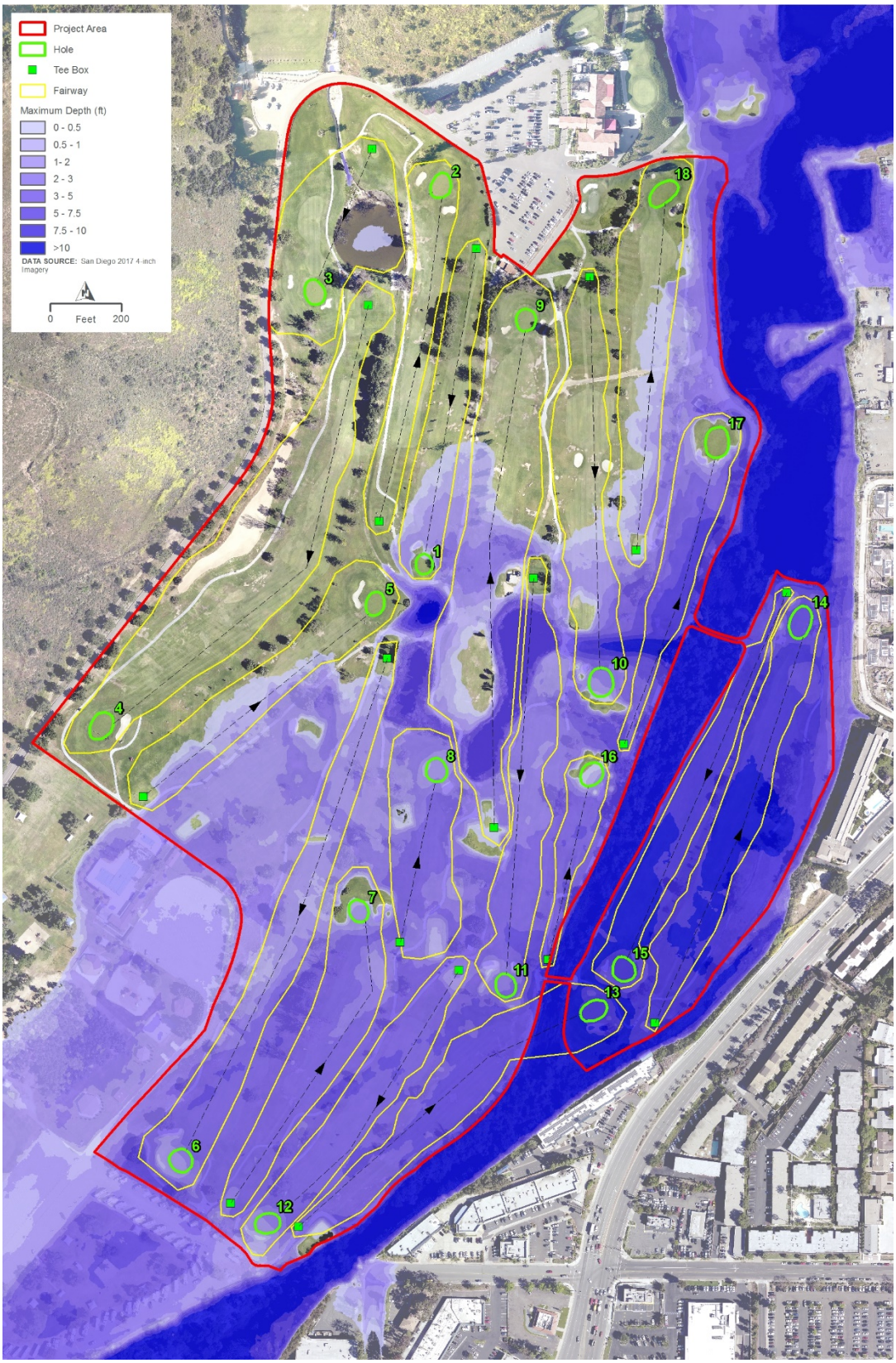

Figure 3-5 Existing Conditions, San Diego River 100-yr, Maximum Inundation

3.2.3 Environmental Consequences

In this EA the analysis of water resources looks at the potential impacts on groundwater, surface water, wetlands, floodplains, and shorelines. Groundwater analysis focuses on the potential for impacts to the quality, quantity, and accessibility of the water. The analysis of surface water quality considers the potential for impacts that may change the water quality, including both improvements and degradation of current water quality. The impact assessment of wetlands considers the potential for impacts that may change the local hydrology, soils, or vegetation that support a wetland. The analysis of floodplains considers if any new construction is proposed within a floodplain or may impede the functions of floodplains in conveying floodwaters. The analysis of shorelines considers if the Proposed Action will affect shoreline ecological functions such as channel movement and hydrological systems; flooding or storm surge areas, areas of erosion and sedimentation, water quality and temperature, presence of nutrients and pathogens, and sites with the potential for protection or restoration.

3.2.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline water resources. The South Course maintenance would continue to rely on water from the San Diego River for irrigation. Annual storm flows would continue to escape the Tributary A drainage system, flow over and inundate the golf course fairways, thereby impeding play on the course. They also would inhibit establishment of vegetation in persistent bare areas, cause minor erosion, and potentially reduce water quality as a result of contact with managed turf areas.

3.2.3.2 Alternative 2: Project Validation Assessment Potential Impacts

Grading would be required to construct the new West Pond and connection pipes as part of Alternative 2. The new West Pond would store stormwater runoff onsite at the South Course for use in irrigation. Increasing onsite stormwater storage capacity is expected to reduce the volume of water diverted from San Diego River. Temporary trenching would be required to install pipes between the new West Pond and Pond B and between Ponds B and D. Each pipe opening is assumed to require a concrete headwall. Additional grading, trenching, and excavation would be require for irrigation system replacement, existing irrigation pond maintenance, and the other course redesign features.

Conservatively, it is assumed that the entire project area at the South Course, excluding non-turf areas, natural areas, and areas not disturbed during construction, would be disturbed as result of construction of the specific drainage features, irrigation system replacement, existing irrigation pond maintenance, or course redesign under Alternative 2. Excess soil would be stored and used at the South Course for other improvements not included under Alternative 2. Following construction, trees that are removed would be replaced and new turf would be planted in disturbed areas.

Groundwater. Stormwater retention is improved by this alternative and there is no significant change in the amount of impervious surface that could impede groundwater infiltration. Therefore, Alternative 2 has no significant impacts on groundwater.

Surface Waters. As required by the CWA, the Navy and construction contractor would implement BMPs to protect water quality during and after construction. Therefore, indirect impacts to water quality from construction or implementation of Alternative 2 would not be expected. Current conditions within the project area allow floodwaters to transport sediment and other pollutants such as nitrates directly into the San Diego River, which has potential to adversely affect downstream aquatic communities. Implementation of Alternative 2 would retain more stormwater within the onsite ponds, which may

allow for more sediment to settle out and for increased contact with any replanted fringe wetlands, which provide physical filtering and biological treatment function, thereby having potential to improve the water quality before returning waters to the San Diego River. However, if there is a permanent loss of fringe wetlands, there could be an impact on water quality. Although a permanent loss of fringe wetlands would be mitigated at a minimum 1:1 establishment ratio. Therefore, no significant impacts to surface waters are anticipated.

Wetlands. Implementation of Alternative 2 would result in temporary and permanent discharge of fill to wetland and non-wetland Waters of the U.S. Regrading and regrassing of the entire South Course, which includes areas supporting jurisdictional features such as turf-lined shallow channels/swales and problem inundation areas, may result in temporary discharge of fill to non-wetland Waters of the U.S. Channels will be regraded (support and OHWM) and floodwater/flows redirected to the proposed West Pond and to other locations that would have a reduced impact on play. Construction of West Pond is expected to meet the definition of Waters of the U.S. and, therefore, no net loss of Waters of the U.S. is anticipated. Additional temporary impacts to non-wetland Waters of the U.S. may occur during the removal and replacement of existing industrial lining in Ponds A, B, C, and D; draining and sediment removal in Ponds A, B, C, and D; and installation of connection pipes between the new West Pond and Pond B and Ponds B and D. All temporary impacts would cease upon completion of renovation activities.

Permanent discharge of fill to wetland and non-wetland Waters of the U.S. may result from implementation of Alternative 2. Specifically, permanent discharge of fill would result from construction of the pipe headwalls in Ponds B and D and may affect wetlands and non-wetland Waters of the U.S. In addition, the recontouring of Pond A and dredging and relining of Ponds A, B, C, and D, would permanently remove existing wetlands. Wetland vegetation would be planted along the fringe of the ponds if feasible. Should a net loss of wetlands onsite become unavoidable, compensatory mitigation would be provided at a minimum of 1:1 establishment so that the project has no net loss of wetlands. The Navy would acquire the proper permits for these impacts. With restoration of impacted wetlands and implementation of mitigation, no significant impacts to wetlands are anticipated under Alternative 2.

Floodplains. Although constructed within a portion of the San Diego River's 100-year floodplain, Alternative 2 does not change land use within the floodplain. It does not add impervious surface that would interfere with floodplain groundwater recharge functions. It does not significantly modify existing vegetation communities or structure. However, as depicted in Figures 3-6 and 3-7, implementation of Alternative 2 would reduce flooding within the South Course and would redirect floodwaters into a new retention pond (West Pond) and back into the San Diego River. The current areas of inundation that would be eliminated post-project are located on developed turf areas, so the existing floodplain function associated with these areas are minimal. As a result, Alternative 2 would not result in significant impacts on the San Diego River floodplain function, including connectivity to the San Diego River.

Shorelines. Alternative 2 would create new shoreline with construction of the West Pond. There would be no impacts to the San Diego River shoreline; therefore, implementation of this alternative would not result in adverse effects to existing shoreline.

Figure 3-6 Alternative 2 vs. Existing Conditions, West Hills 100-year 24-hour, Post-Event Inundation

Figure 3-7 Alternative 2 vs. Existing Conditions, North Basin 100-year, Post-Event Inundation

3.2.3.3 Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative) Potential Impacts

Grading would be required to construct the new West Pond, swale diversion from the existing grassy swale to Pond D, expansion of Pond D, and new drainage swale on the 14th fairway as part of Alternative 3, the Preferred Alternative. The new pond would store stormwater runoff onsite at the South Course for use in irrigation and expanding Pond D further increases the capacity to store stormwater runoff onsite. Increasing onsite stormwater storage capacity is expected to reduce the volume of water diverted from San Diego River.

The two new vegetated swales would improve drainage of the fairways during and after storm events. Construction of the swale between the existing grassy swale and Pond D would require a dip crossing or bridge to maintain golf cart access.

Temporary trenching would be required to install pipes between the new West Pond and Pond B and between Ponds B and D. Each pipe opening is assumed to require a concrete headwall. The golf cart path and associated culvert between Ponds C and D would be removed, which would improve connectivity between Pond C and Pond D and further reduce breakout onto the South Course.

Additional grading, trenching, and excavation would be require for irrigation system replacement, existing irrigation pond maintenance, and the other course redesign features. Conservatively, it is assumed that the entire project area at the South Course, excluding non-turf areas, natural areas, and areas not disturbed during construction, would be disturbed as result of construction of the specific drainage features, irrigation system replacement, existing irrigation pond maintenance, or course redesign under the Preferred Alternative. Excess soil that is not used for the balance of fill for these features would be stored and used at the South Course for other improvements not included in the Preferred Alternative. Following construction, trees that are removed would be replaced and new turf would be planted in disturbed areas.

Groundwater. Stormwater retention is improved by this alternative and there is no significant change in the amount of impervious surface that could impede groundwater infiltration. Therefore, the Preferred Alternative has no significant impacts on groundwater.

Surface Waters. As required by the CWA, the Navy and construction contractor would implement BMPs to protect water quality during and after construction. Therefore, indirect impacts to water quality from construction or implementation of the Preferred Alternative would not be expected. Current conditions within the project area allow floodwaters to transport sediment and other pollutants such as nitrates directly into the San Diego River, which has potential to adversely affect downstream aquatic communities. Implementation of the Preferred Alternative would retain more stormwater within the onsite ponds, which may allow for more sediment to settle out and for increased contact with any replanted fringe wetlands, which provide physical filtering and biological treatment function, thereby having potential to improve the water quality before returning waters to the San Diego River. However, if there is a permanent loss of fringe wetlands, there could be an impact on water quality. Although a permanent loss of fringe wetlands would be mitigated at a minimum 1:1 establishment ratio. Therefore, no significant impacts to surface waters are anticipated.

Wetlands. Grading and construction of the Preferred Alternative would result in temporary and permanent discharge of fill to wetland and non-wetland Waters of the U.S. As previously discussed in **Section 3.2.3.2**, temporary discharge of fill to non-wetland Waters of the U.S. may result from regrading and regrassing of the entire south course, which includes areas supporting jurisdictional features such as

turf-lined shallow channels/swales and problem inundation areas. Existing channels would be relocated and recontoured to redirect floodwater/flows to the proposed West Pond and to other locations that would have a reduced impact on play. In addition, maintenance (dredging, recontouring, and relining) of Ponds A, B, C, and D would result in temporary discharge of fill to non-wetland Waters of the U.S. Construction of the new swale on the 14th fairway would have potential to result in temporary discharge of fill to the San Diego River (floodplain). All temporary impacts would cease upon completion of renovation activities.

Permanent discharge of fill to wetland and non-wetland Waters of the U.S. may result from implementation of Alternative 3. As previously discussed in **Section 3.2.3.2**, permanent discharge of fill would result from construction of the pipe headwalls in Ponds B and D and may affect wetlands and non-wetland Waters of the U.S. In addition, maintenance of Ponds A, B, C, and D would permanently remove existing wetlands. Planting of wetland vegetation along the fringe of Ponds A, B, C, and D may occur, if feasible, during the final design process. Permanent discharge of fill may also result from installation of rip-rap or cellular concrete block scour protection within Tributary A south of Pond D, or at the outlet of the new swale on the 14th fairway should it be deemed necessary as the project design is finalized. However, implementation of the Preferred Alternative would redirect a portion of onsite flood waters to the newly constructed West Pond, to Pond D via a newly constructed swale, or back to the San Diego River via a newly constructed swale. Each of these newly constructed features would be expected to meet the definition of Waters of the U.S. and, therefore, no net loss of Waters of the U.S. is anticipated. However, should a net loss of wetlands onsite become unavoidable, compensatory mitigation would be provided at a minimum of 1:1 establishment so that the project has no net loss of wetland Waters of the U.S.. The Navy would acquire the proper permits for these impacts. With restoration of impacted wetlands and implementation of mitigation, no significant impacts to wetlands are anticipated under the Preferred Alternative.

Construction of the swale diversion (i.e., swale that would drain the North Basin directly to Pond D) would also include expansion of the northern portion of Pond D to allow for more storage and adequate draining of the new swale diversion. This would increase the amount of non-wetland Waters of the U.S. onsite. The removal of golf cart crossing 2, which travels between Ponds C and D and consists of several small-diameter pipes, would be replaced with either a free span bridge or a re-routed cart path that travels around the west side of the pond system. Should the small-diameter pipes be replaced with a free-span bridge, there is potential to increase the amount of non-wetland Waters of the U.S. at this location.

Floodplains. Although constructed within a portion of the San Diego River's 100-year floodplain, the Preferred Alternative does not change land use within the floodplain. It does not add impervious surface that would interfere with floodplain groundwater recharge functions. It does significantly not modify existing vegetation communities or structure. However, as depicted in Figures 3-8 and 3-9, implementation of the Preferred Alternative would reduce flooding within the South Course and would redirect floodwaters into a new retention pond (West Pond) and back into the San Diego River. The current areas of inundation that would be eliminated post-project are located on developed turf areas, so the existing floodplain function associated with these areas are minimal. As a result, the Preferred Alternative would not result in significant impacts on the San Diego River floodplain function.

Figure 3-8 Preferred Alternative vs. Existing Conditions, West Hills 100-year 24-hour, Post Event Inundation

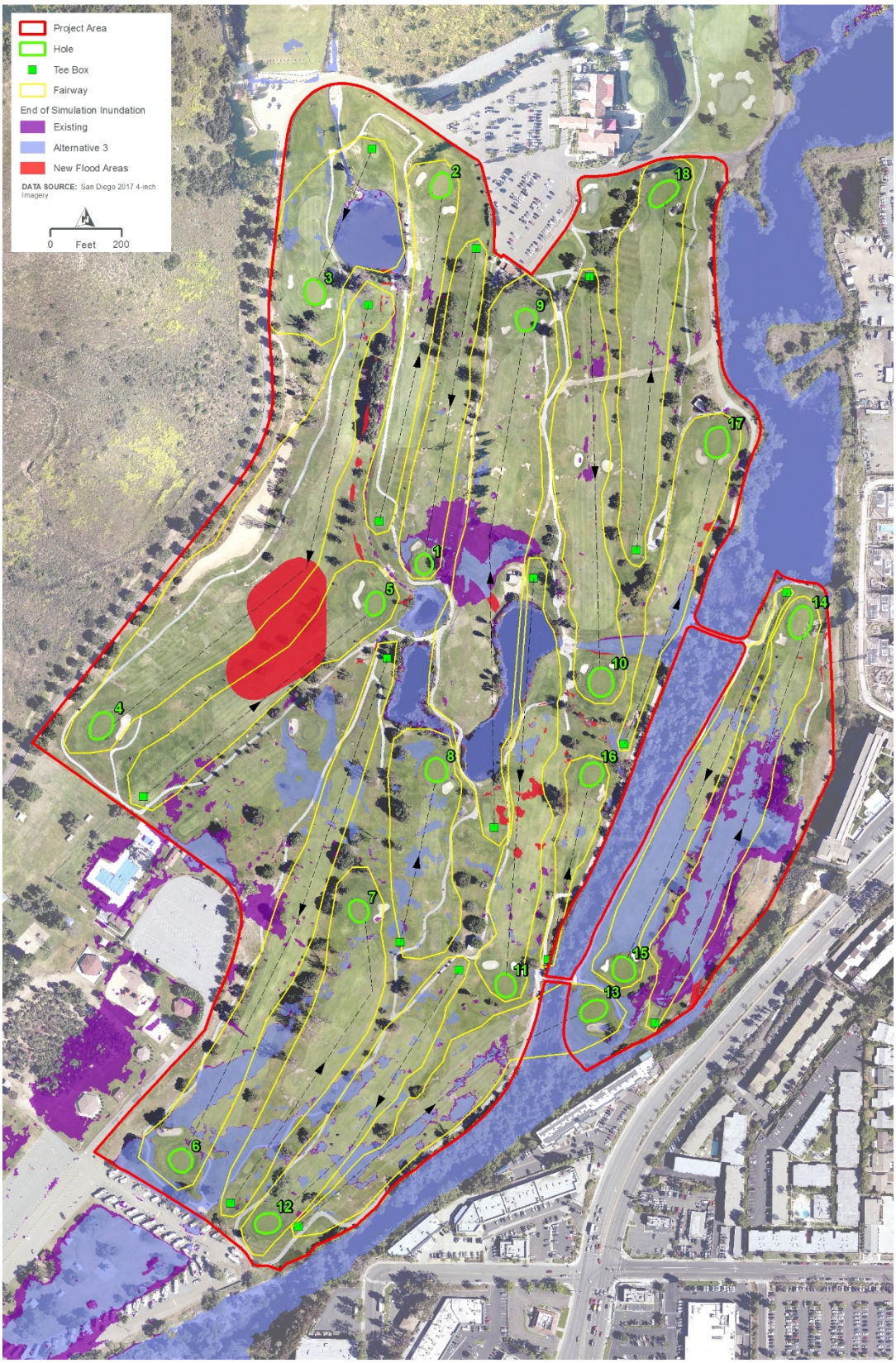

Figure 3-9 Preferred Alternative vs. Existing, North Basin 100-year, Post-Event Inundation

Shorelines. The Preferred Alternative would create new shoreline with construction of the West Pond and expand the existing shoreline associated with Pond D. There would be no impacts to the San Diego River shoreline; therefore, implementation of the Preferred Alternative would not result in significant impacts to existing shorelines.

3.3 Geological Resources

This discussion of geological resources includes topography, geology, and soils of a given area. Topography is typically described with respect to the elevation, slope, and surface features found within a given area. The geology of an area may include bedrock materials, mineral deposits, and fossil remains. The principal geological factors influencing the stability of structures are soil stability and seismic properties. Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility determine the ability for the ground to support structures and facilities. Soils are typically described in terms of their type, slope, physical characteristics, and relative compatibility or limitations with regard to particular construction activities and types of land use.

3.3.1 Regulatory Setting

Consideration of geologic resources extends to prime or unique farmlands. The Farmland Protection Policy Act (FPPA) was enacted in 1981 in order to minimize the loss of prime farmland and unique farmlands as a result of federal actions. The implementing procedures of the FPPA require federal agencies to evaluate the adverse effects of their activities on farmland, which includes prime and unique farmland and farmland of statewide and local importance, and to consider alternative actions that could avoid adverse effects.

3.3.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under geological resources at the project area within the South Course at Admiral Baker Golf Course.

3.3.2.1 Topography

The Admiral Baker Golf Course is located along the San Diego River and is surrounded by steep canyons and ridges, which slopes range from 9 to 50 percent grade. Slopes within the course are approximately between 0 and 5 percent (Navy 2014).

3.3.2.2 Geology

Four formations from the Cenozoic era, alluvium and slope wash, stream terrace deposits, stadium conglomerate, and Friars Formation, make up the geologic composition of the Admiral Baker Golf Course (Navy 2014).

The alluvium and slope wash deposits were deposited approximately 0.1 million years ago, during the Holocene epoch of the Quaternary period. Alluvium in the area consists primarily of poorly consolidated stream deposits of silt, sand, and cobble-sized particles derived from bedrock sources that lie within and to the east of the area. The slope wash deposits consist primarily of poorly consolidated surficial materials derived from nearby soil and decomposed bedrock sources (Navy 2014).

The stream surface deposits were deposited approximately 1.6 million years ago during the Pleistocene epoch of the Quaternary period. They have been preserved in only a few places in the area and consist of a coarse-grained sand deposit at the mouth of Mission Gorge near Mission Valley (Navy 2014).

The stadium conglomerate of the Poway Group was deposited approximately 55 million years ago during the Eocene epoch of the Tertiary period. The massive conglomerate contains dispersed lenses of fossiliferous cross-bedded sandstone. The fossils include calcareous nanoplankton, mollusks, and foraminifera (Navy 2014).

The Friars Formation was deposited approximately 55 million years ago during the Eocene epoch of the Tertiary period. This formation is a nonmarine and lagoonal sandstone that rests on the basement complex and is overlain by sedimentary deposits of Eocene, Pleistocene, and Holocene age (Navy 2014).

3.3.2.3 Soils

Soils at the project area include Huerhuero loam, 9 to 30 percent slopes, eroded; Olivenhain cobbly loam, 30 to 50 percent slopes; Olivenhain-Urban land complex, 2 to 9 percent slopes; Tujunga sand, 0 to 5 percent slopes; and gravel pits (USDA NRCS 2019).

The Huerhuero loam, 9 to 30 percent slopes, eroded (HrE2) consists of moderately well-drained loams that have a clay subsoil. The surface layer is strongly acid, and medium acid loam about 12 inches thick. The subsoil is moderately alkaline clay to mildly alkaline clay loam and sandy loam. This Huerhuero loam series does not have a farmland classification (USDA NRCS 2019).

Olivenhain cobbly loam, 30 to 50 percent slopes (OhF) consist of well-drained, moderately deep to deep cobbly loams that have very cobbly clay subsoil. They are on dissected marine terraces and have slopes of 2 to 50 percent. The surface layer is a medium acid cobbly loam about 10 inches thick. The subsoil is a strongly acid very cobbly clay and clay loam about 32 inches thick. The substratum is strongly acid cobbly loam. This Olivenhain cobbly loam series does not have a farmland classification (USDA NRCS 2019).

Olivenhain-Urban land complex, 2 to 9 percent slopes (OkC) occurs on marine terraces, at elevations of 100 to 600 feet (30 to 183 meters). The landscape has been altered through cut and fill operations and leveling for building sites. The material exposed in the cuts is cobbly loamy alluvium, while the material in the fills consists of cobbly loam and cobbly clay loam. This Olivenhain-Urban land complex does not have a farmland classification (USDA NRCS 2019).

Tujunga sand, 0 to 5 percent slopes (TuB) consists of very deep, excessively drained sands derived from granitic alluvium. These soils are on alluvial fans and floodplains and have slopes of 0 to 5 percent. The surface layer is brown, neutral sand about 14 inches thick. The next layers are pale brown, neutral sand, and coarse sand. This material extends to a depth of more than 60 inches. The Tujunga sand series is considered farmland of statewide importance (USDA NRCS 2019).

According to the California Department of Conservation, to be considered farmland of statewide importance, soils must meet the physical and chemical criteria for farmland of statewide importance as determined by the U.S. Department of Agriculture (California DOC 2019). Generally, this includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods (USDA NRCS 2019).

The soils within the project area are rated somewhat limited to very limited for shallow excavations (USDA NRCS 2019). Table 3-8 identifies the rating and limitations for shallow excavation for each soil within the project area.

Table 3-8 Soil Limitations for Shallow Excavations in the Project Area

Map Unit Name	*Rating for Shallow Excavations*	*Limitations for Shallow Excavations*
Huerhuero loam, 9 to 5 percent slopes, eroded (HrD2)	Somewhat limited	Slope, dusty, unstable excavation walls
Olivenhain cobbly loam, 30 to 50 percent slopes (OhF)	Very limited	Slope, Large stones, too clayey, dusty, unstable excavation walls
Olivenhain-Urban land complex, 2 to 9 percent slopes (OkC)	Somewhat limited	Large stones, too clayey, dusty, unstable excavation walls
Tujunga sand, 0 to 5 percent slopes (TuB)	Somewhat limited	Unstable excavation walls

Source: USDA NRCS 2019

A risk of significant erosion from vegetation removal or soil structure disturbance is inherent in the underlying soils of the Admiral Baker Golf Course, including the South Course (Navy 2014).

3.3.3 Environmental Consequences

Geological resources are analyzed in terms of drainage, erosion, prime farmland, land subsidence, and seismic activity. The analysis of topography and soils focuses on the area of soils that would be disturbed, the potential for erosion of soils from construction areas, and the potential for eroded soils to become pollutants in downstream surface water during storm events. BMPs are identified to minimize soil impacts and prevent or control pollutant releases into stormwater.

3.3.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline geology, topography, or soils. However, long-term drainage and flooding issues would continue to occur on the South Course, especially during heavy rainfall, and would continue to cause flooding and generate excess runoff, thereby increasing the potential for erosion and sedimentation.

3.3.3.2 Alternative 2: Project Validation Assessment Potential Impacts

The study area for geological resources encompasses the proposed construction and ground disturbance areas related to Alternative 2.

Topography. The topography of the project area was previously altered during development of the South Course. Alternative 2 would slightly change the topography on the South Course to improve flooding issues through addition of the West Pond and regrading of some fairways and holes. This would be a long-term, negligible, beneficial impact.

Geology. No effect on geology would be expected. No unique geological features or regional lithology, stratigraphy, or geological structure would be impacted by implementation of Alternative 2.

Soils. Short-term, minor, adverse effects on soils would be expected from construction activities associated with Alternative 2. Construction of drainage features would include clearing, grubbing, and grading of 95,500 square feet of land and excavation of 33,833 cubic yards of soils, removing soil from the project area and temporarily increasing erosion potential. Additional ground disturbance, including

clearing, grubbing, grading, excavation/dredging, and regrassing would occur throughout the project area to construct the other project components. Approximately 30,000 cubic yards of soil would be excavated from the existing irrigation ponds. Excess soil that is not used for the balance of fill for the proposed activities would be stored and used at the South Course for other improvements not included in Alternative 2. Short-term, minor, adverse effects would occur when heavy equipment is used to remove trees. Such activities would disturb soil resulting in a temporary increase in erosion potential. However, once trees are replanted and disturbance areas are revegetated, the potential for erosion would be greatly diminished.

Alternative 2 would occur on Huerhuero loam, 9 to 15 percent slopes, eroded and Tujunga sand, 0 to 5 percent slopes. These soils are considered somewhat limited for shallow excavations due to slope, dustiness, and unstable excavation walls of the Huerhuero loam and unstable excavation walls of the Tujunga sand (USDA NRCS 2019). Construction techniques would be implemented to lessen these constraints.

The Tujunga sand, 0 to 5 percent slopes soil series is considered farmland of statewide importance. The project area is within a golf course that has been previously disturbed and modified, and the soil is not available for agricultural use. The 2010 Census Urbanized Area Reference Map for San Diego, California identifies Admiral Baker Golf Course, including the South Course, as within an urbanized area (USCB 2010), which means the soils in this area are considered "already in urban development" and are not subject to the FPPA.

Decreased erosion and sedimentation resulting from additional and improved stormwater control measures would have long-term, minor, beneficial effects. The improved irrigation system would benefit the turf covering the South Course, reducing or eliminating the bare spots that could otherwise increase the potential for erosion.

All proposed activities would occur in previously disturbed areas. Implementation of an Erosion Control Plan, as part of a SWPPP, and the use of BMPs, such as erosion control blankets, soil stabilizers, temporary seeding, silt fencing, hay bales, sand bags, and storm drain inlet protection devices would assist in limiting erosion and sediment production during construction activities. Therefore, implementation of Alternative 2 would not result in significant impacts to geological resources.

3.3.3.3 Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative) Potential Impacts

The study area for geological resources encompasses the proposed construction and ground disturbance areas related to Alternative 3, the Preferred Alternative.

Topography. The topography of the project area was previously altered during development of the South Course. The Preferred Alternative would change the topography on the South Course to improve flooding issue through construction of the West Pond, 14th fairway swale, swale diversion and expansion of Pond D, and regrading of some fairways and holes. This would be a long-term, minor, beneficial impact.

Geology. No effect on geology would be expected. No unique geological features or regional lithology, stratigraphy, or geological structure would be impacted by implementation of the Preferred Alternative.

Soils. Short-term, minor, adverse effects on soils would be expected from construction activities associated with the Preferred Alternative. Construction of drainage and conveyance features would

include clearing, grubbing, and grading of 200,428 square feet of land and excavation of 39,299 cubic yards of soils, removing soil from the project area and temporarily increasing the erosion and sedimentation potential. Additional ground disturbance, including clearing, grubbing, grading, excavation/dredging, and regrassing would occur throughout the project area to construct the other project components. Approximately 30,000 cubic yards of soil would be excavated from the existing irrigation ponds. However, excess soil that is not used for the balance of fill for the proposed activities would be stored and used at the South Course for other improvements not included in the Preferred Alternative. Short-term, minor, adverse effects would occur when heavy equipment is used to remove trees. Such activities would disturb soil resulting in a temporary increase in erosion potential. However, once trees are replanted and disturbance areas are revegetated, the potential for erosion would be greatly diminished.

The Preferred Alternative would occur on Huerhuero loam, 9 to 15 percent slopes, eroded and Tujunga sand, 0 to 5 percent slopes. These soils are considered somewhat limited for shallow excavations due to slope, dustiness, and unstable excavation walls of the Huerhuero loam and unstable excavation walls of the Tujunga sand (USDA NRCS 2019). Construction techniques would be implemented to lessen these constraints.

The Tujunga sand, 0 to 5 percent slopes soil series is considered farmland of statewide importance. The project area is within a golf course that has been previously disturbed and modified, and the soil is not available for agricultural use. The 2010 Census Urbanized Area Reference Map for San Diego, California identifies Admiral Baker Golf Course, including the South Course, as within an urbanized area (USCB 2010), which means the soils in this area are considered “already in urban development” and are not subject to the FPPA.

Long-term, minor, beneficial effects would occur due to the decreased erosion and sedimentation potential resulting from the improved stormwater control measures. The improved irrigation system would benefit the turf covering the South Course, reducing or eliminating the bare spots that could otherwise increase the potential for erosion.

All proposed activities would occur in previously disturbed areas. Implementation of an Erosion Control Plan, as part of a SWPPP, and the use of BMPs, such as erosion control blankets, soil stabilizers, temporary seeding, silt fencing, hay bales, sand bags, and storm drain inlet protection devices would assist in limiting erosion and sediment production during construction activities. Therefore, implementation of the Preferred Alternative would not result in significant impacts to geological resources.

3.4 Cultural Resources

This discussion of cultural resources includes prehistoric and historic archaeological sites; historic buildings, structures, and districts; and physical entities and human-made or natural features important to a culture, a subculture, or a community for traditional, religious, or other reasons. Cultural resources can be divided into three major categories:

- Archaeological resources (prehistoric and historic) are locations where human activity measurably altered the earth or left deposits of physical remains.
- Architectural resources include standing buildings, structures, landscapes, and other built-environment resources of historic or aesthetic significance.

- Traditional cultural properties may include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that members of a living community consider essential for the preservation of traditional culture.

3.4.1 Regulatory Setting

Cultural resources are governed by other federal laws and regulations, including the National Historic Preservation Act (NHPA), Archeological and Historic Preservation Act, American Indian Religious Freedom Act, Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1990. Federal agencies' responsibility for protecting historic properties is defined primarily by sections 106 and 110 of the NHPA. Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties. Section 110 of the NHPA requires federal agencies to establish—in conjunction with the Secretary of the Interior—historic preservation programs for the identification, evaluation, and protection of historic properties. Cultural resources also may be covered by state, local, and territorial laws.

Cultural resources listed in the National Register of Historic Places (NRHP) or eligible for listing in the NRHP are "historic properties" as defined by the NHPA. The list was established under the NHPA and is administered by the National Park Service on behalf of the Secretary of the Interior. The NRHP includes properties on public and private land. Properties can be determined eligible for listing in the NRHP by the Secretary of the Interior or by a federal agency official with concurrence from the applicable State Historic Preservation Office (SHPO). A NRHP-eligible property has the same protections as a property listed in the NRHP. Historic properties include archaeological and architectural resources.

3.4.2 Affected Environment

The Navy has conducted inventories of cultural resources at Admiral Baker Golf Course to identify historical properties that are listed or potentially eligible for listing in the NRHP (Leard 2018).

The area of potential effect (APE) for cultural resources is the geographic area or areas within which an undertaking (project, activity, program or practice) may cause changes in the character or use of any historic properties present. The APE is influenced by the scale and nature of the undertaking and may be different for various kinds of effects caused by the undertaking. For the Proposed Action, the Navy determined that the APE includes the project area, which is the South Course excluding the San Diego River and the golf course parking lot. The project area is depicted in Figure 1-2.

3.4.2.1 Archaeological Resources

On August 13, 2018, the South Coastal Information Center (SCIC) was contacted to perform a records search of all archaeological and historical resources within 0.5 mile of the project APE. The records search completed by the SCIC indicates 34 previous survey reports overlap with the current study area and seven cultural resources have been recorded within 0.5 mile of the project area. Of the recorded resources, two known prehistoric resources (P-37-012088 and P-37-014063) intersect with the project APE; an additional three prehistoric resources and one historic resources fall within the 0.5-mile radius of the project area. These resources are summarized in Table 3-9.

Table 3-9 Previously Recorded Resources within 0.5 Mile of Project Area of Potential Effect

Primary Number	*Description*	*Eligibility for NRHP*
P-37-011613	Prehistoric lithic scatter with 3 quartzite flakes, metavolcanic debitage, and a quartzite tool observed eroding out of a cut bank on a disturbed knoll.	Not evaluated
P-37-011720	Historic trash scatter consisting of a high density of glass fragments with some whiteware ceramics, crockery, metal fragments, sawed bone, and concrete slabs.	Not evaluated
P-37-012088*	Prehistoric lithic and ceramic scatter consisting of 20+ sherds of Tizon brown, and a low density of lithic debitage and fire-affected rock. The site is largely under the golf course parking lot and clubhouse.	Not evaluated
P-37-012089	Prehistoric lithic scatter consisting of 5+ cores and a low density of quartzite flakes with one chipping station.	Not evaluated
P-37-014062	Possible prehistoric shell midden scatter comprised of a low density of marine shell within a disturbed context. A later site update described the shell as redeposited dredge spoils or other artificial fill and not an archaeological site.	Not evaluated
P-37-014063*	This is recorded as a prehistoric shell midden consisting of a dense shell concentration on a knoll within a freshly graded area. The site is described as possibly redeposited material.	Not evaluated
P-37-027911	Historic military facility at Van Deman Hall, United States Army Reserve Center. The building was constructed in 1969 but built in a 1950s style.	Recommended not eligible

Note: * Site is within project APE

3.4.2.2 Architectural Resources

The records search found one architectural resource within 0.5 miles of the APE. P-37-027911 is an historic military facility at Van Deman Hall, United States Army Reserve Center. The building was constructed in 1969 but was built in a 1950s style. The Proposed Action would have no impact on any historic architectural resources.

3.4.2.3 Traditional Cultural Properties

A traditional cultural property is a property that is eligible for inclusion on the NRHP based on its association with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community. Traditional cultural properties are rooted in a traditional community's historically rooted beliefs, customs, and practices, and are important in maintaining the continuing cultural identity of the community. Admiral Baker Golf Course was the subject of a traditional cultural properties study in 2018 (Admiral Baker Environmental Assessment Memo: Class I Cultural Resources Inventory), which identified no traditional cultural properties in or near Admiral Baker Golf Course.

The Navy consults with federally recognized Indian Tribes (or Native Hawaiian or Alaska Native Organizations) on actions with the potential to significantly affect protected tribal resources, tribal

treaty rights, or Indian lands. The project area is within the traditional aboriginal territory of the Kumeyaay tribes.

3.4.2.4 Cultural and Historic Context

Regional Prehistory

The earliest evidence for human occupations in southern California dates to the Terminal Pleistocene/Early Holocene period. This interval is characterized by a long period of adaptation to environmental changes brought about by the transition from the late Pleistocene to the early Holocene (12,000 to 7500 B.P.). Many of the earliest radiocarbon dates from the region come from several sites on the Channel Islands. Skeletal remains from Arlington Canyon on Santa Rosa Island, for example, have been dated to around 13,000 years ago (Arnold and Walsh 2010). Other significant occupational sites from the late Pleistocene to the early Holocene transitional period have been found at San Nicholas, Catalina Island, and San Clemente Island (Arnold and Walsh 2010). Such early sites are contemporaneous with the Paleoindian sites of mainland North America and have led some scholars to suggest people first reached southern California via a coastal route, arriving by boats and likely encountering islands before the mainland.

The earliest known occupation of the San Diego coastal region occurred around 9000 B.P. Early San Dieguito people exploited large coastal estuaries that supported a variety of plant and animal species, including shellfish and birds (Arnold and Walsh 2010). There is still much debate over whether these people arrived from the desert interior, where the drying and eventual disappearance of large Late Pleistocene lakes may have forced out-migrations to the better watered and resource rich coastal zones, or whether coastal populations may have expanded into the region from other parts of the coast, such as the Santa Barbara region. Gallegos (1991) is among a majority who argue that people migrated west towards the coast, taking with them toolkits similar to those of the Great Basin. During the Middle Holocene Period (7500 to 5000 B.P.), general settlement-subsistence patterns were exemplified by a greater emphasis on seed gathering (Beedle et al. 2008). Adaptation to various ecological niches, diversified resource exploitation, further population growth, and an increase in sedentism typify the subsequent periods of cultural history in southern California.

During the middle to late Holocene (5000 to 1500 B.P.), cultural patterns remained similar, however, artifacts at many coastal sites became more elaborate, reflecting an increase in sociopolitical complexity and efficiency in subsistence strategies (Beedle et al. 2008). The introduction of the bow and arrow for hunting and the use of bedrock mortars and milling slicks occurred during the Late Holocene (1500 B.P. - Present). Elaborate mortuary customs, the generous use of asphaltum, and the development of extensive trade networks are also characteristic of this period. The Late Horizon appears to represent increases in population size, economic and social complexity, and the appearance of social ranking (Beedle et al. 2008).

The project area falls within the ethnographic boundaries of the Kumeyaay Band of Native Americans. Kumeyaay is a native term referring to all Yuman-speaking peoples living in the region from the San Dieguito River south to the Sierra Juarez in Baja California and roughly west of the present-day Salton Sea. Prior to European contact, Kumeyaay territory may have extended as far north as the San Luis Rey River. To the north of the Kumeyaay live the Takic-speaking Luiseño and Cahuilla. To the east and south are other peoples who speak a variety of distinct dialects belonging to the Yuman language family (Shipek 1982).

The Kumeyaay have been referred to by an array of names. The standard practice during the Spanish colonial era in California was to name all native peoples within the sphere of influence of a particular mission district after that mission; hence, the native people living around mission San Diego de Alcalá came to be known as Diegueño (Moratto 1984). Because this nomenclature generally ignored traditional socio-political divisions, anthropologists later applied the terms Tipai and Ipai to distinguish between two culturally and linguistically distinct groups. More recent ethnographic data and historic records indicate that the native people refer to themselves as Kumeyaay, and this is now the most widely accepted name (Arnold and Walsh 2010).

The Kumeyaay were organized socio-politically into autonomous bands, each controlling an area of approximately 10 to 30 miles around water sources, typically perennial drainages or occasionally springs (Shipek 1982). Each band usually occupied a main village and several satellite living areas. These settlements were temporary, as the community would disperse seasonally into smaller groups, which would establish camps to gather, process, and cache seasonally available resources. Seasonal movements followed the ripening of major plants dispersed from canyon floors to the higher mountain slopes. During the winter months, bands typically aggregated in the main village.

The complexity of Kumeyaay residential structures varied according to locality and need. In summer camps, for instance, a windbreak or rock-shelter might be sufficient protection from the elements. In winter, however, more substantial structures were needed, in which case the Kumeyaay built a thatch-covered dome or gable house. Leadership of each band was invested in a clan chief and at least one assistant. Positions were generally inherited, although a chief could be selected by consensus. Chiefs typically derived their authority through strength of personality and social skills rather than by force, as they had no substantive powers. The duties of the chief included resolving disputes, advising about marriages, appointing leaders for important gathering expeditions, and directing clan and inter-clan ceremonies (Luomala 1978).

The Kumeyaay practiced a hunting and gathering subsistence regime based on a variety of locally abundant terrestrial and aquatic resources. The Kumeyaay diet was heavily dependent on harvesting wild plant foods, with a strong emphasis on acorns and piñon. An abundance of other plant food, including many seeds, bulbs, and other plants, completed the diet. Meat was procured through hunting of small game, including rabbits, squirrels, and various reptiles. Many of these animals were captured with nets or by hand. Larger game, such as deer, was taken with bow and arrow, but probably did not figure prominently in the diet. The inhabitants of the coastal zone had access to rich marine environments, which provided abundant shellfish, fish, sea birds, and marine mammals.

Interaction with neighboring tribes was maintained through extensive trade networks. The San Diego–area Kumeyaay appear to have maintained stronger trade relationships with their neighbors to the east than with groups to the north and south, as evidenced by a lively trade between the seacoast and inland areas as far east as the Colorado River (Luomala 1978). Acorns, dried seafood, ornamental marine shell, and other materials were traded eastward from the coast and uplands in exchange for salt, gourd seeds, and mesquite beans.

Contact between the Kumeyaay and Europeans began in 1542 when Juan Rodríguez Cabrillo landed the first Spanish expedition in San Diego; however, sustained cultural interaction did not develop until the founding of Mission San Diego Alcalá in 1769. Although the Kumeyaay culture was not as severely impacted by Spanish colonization as some California tribes, its sociopolitical structure was drastically disrupted during the Mission period and later. Kumeyaay living nearest the mission were affected

strongly by European civilization, whereas groups living in the mountains were less affected by cultural interaction with European settlers and maintained a traditional lifeway.

By the end of the nineteenth century, most Kumeyaay were removed from their lands and relegated to reservations. Occasionally, the Kumeyaay acculturated into Euro-American society in rural areas or at the edges of small towns on land that immigrants did not want. Employment opportunities were few. Most Kumeyaay were poorly paid and labored in mines, on ranches, or in towns, although some supplemented their income with traditional subsistence activities (Chartkoff and Chartkoff 1984). Throughout the twentieth century, the Kumeyaay have struggled and worked toward maintaining their autonomy and sovereignty. Today their culture is thriving and the Kumeyaay are represented by federally recognized bands with reservations throughout San Diego County and northern Baja California (Wilkens 2012). At present, approximately 20,000 Native American descendants, the majority Kumeyaay, live in San Diego County with a small percentage of the total population living on 14 established Kumeyaay reservations (USD 2016).

Regional History

The history of San Diego County and Southern California generally divided into three major periods: Spanish (1769-1822), Mexican (1822-1848), and American (1848-present). The earliest exploration of California by the Spanish came in 1542 when Juan Rodriquez Cabrillo sailed into San Diego and declared it the possession of the King of Spain (San Diego History Center n.d.). He landed at what is now Ballast Point in San Diego and named the hilltop west of the bay “Point Loma”. His crew stayed for six days and explored Point Loma and the San Diego River (Davis 1953). Cabrillo died during this California expedition and is reportedly buried on one of the Channel Islands about 90 miles northwest of San Diego.

The Spanish did not return to California until 1602, when Mexican explorer Sebastian Vizcaino was sent north to map the California coastline. Vizcaino surveyed the harbor and named the area for the Catholic saint San Diego de Alcala (San Diego History Center n.d.). Between 1697 and 1746 Jesuit missionaries established 14 missions on the Baja California peninsula. Though “Alta California” to the north had also been claimed for Spain, it had not yet been formally colonized. In 1768, two Spanish groups of soldiers and priests departed from Mexico by land and three ships departed by sea to meet in San Diego, where they planned to set up a base from which to colonize Alta California, with plans to establish a mission and continue north to Monterey. Though the mission was ultimately successful, many died during the trip. After enduring a number of difficulties and hardships, the surviving groups arrived in San Diego between April and June 1769, marking the true beginning of the Spanish period in California. A camp and hospital were set up near present day Old Town to care for the sick and injured. Franciscan missionaries led by Father Junipero Serra officially founded Mission San Diego de Alcala on Presidio Hill on July 16, 1769 (Davis 1953). The Spanish Franciscan missionaries went on to establish missions at San Juan Capistrano (1776), San Luis Rey (1798), San Gabriel (1771), and San Fernando (1797).

The Spanish colonization of California was achieved through a program that incorporated military conquest, civilian settlement, and religious conversion. Under this system, soldiers secured areas for settlement by suppressing Native and foreign resistance and established fortified structures (presidios) from which the colony would be governed. Civilians established towns (pueblos) and stock-grazing operations (ranchos) that supported the settlement and provided products for export. Ultimately, four presidios and 21 missions were established in Spanish California between 1769 and 1821. In August 1774, the Mission San Diego de Alcala was relocated 6 miles east to its present location in Mission Valley, north of the San Diego River. The first Spanish colonists arrived in San Diego on September 26,

1774. In response to the threat of English or French invasion, the Spanish completed Fort Guijarros on Point Loma in 1797 for defensive protection. In 1803 Franciscan Padres built a dam across the San Diego River and an aqueduct constructed of tile and cobblestones to carry water to the Mission (Davis 1953).

In 1821, after more than a decade of revolutionary struggle, Mexico achieved independence from Spain, and California became a distant outpost of the Mexican Republic. The missions were given 10 years to complete their indoctrination of the Native Americans before the enactment of the Secularization Act of 1833. This act privatized the Franciscans' landholdings, redistributing the lands and holdings into Ranchos through land grants to be sold to prominent military and politicians. The rancho lands were used mostly for cattle grazing, resulting in hide and tallow becoming the main industry in California by the 1820s (Rush 1965). Over the next 30 years thousands of pounds of tallow were shipped to Mexico and Peru and over five million cattle hides were shipped to Boston. Also during the 1820s, the whaling industry took off. By 1830, 16 whaling vessels operated out of San Diego harbor. The industry peaked in 1871–1872 with 55,000 gallons of whale oil and 200 tons of whalebone recorded as being shipped out of San Diego (Davis 1953).

In May 1846, the United States declared war on Mexico. In response, Fort Stockton was established on Presidio Hill in to protect the citizens below the hill in what is now Old Town. The Treaty of Guadalupe Hidalgo, singed in February 1848, concluded a decisive victory for the United States and ushered in the American period. The treaty set the boundary between the United State and Mexico, essentially splitting the local Native Kumeyaay groups into two countries (Davis 1953, San Diego History Center n.d.).

In January 1848, just a few days before the Treaty of Guadalupe Hidalgo was signed, James Marshall discovered gold on the American River. Marshall's discovery triggered the California gold rush, a massive influx of fortune-seekers into California that led to the creation of major cities and numerous smaller settlements. The influx of settlers also caused a large increase in the demand for beef. This demand for cattle to feed the gold rush miners resulted in a search for easier access to the lands north of LA and east into the Mojave Desert (Wlodarski 1999). The sudden and enormous growth of California's population brought about by the gold rush resulted in a movement for statehood that culminated in the state constitutional convention at Monterey in 1849 and the establishment of California as a state in 1850. In 1862, President Lincoln signed the Homestead Act encouraging western migration by offering 160 acres in exchange for a small fee, encouraging settlement in the area.

In 1850, the same year California gained statehood, the County of San Diego was established, and the City was incorporated (Davis 1953, San Diego History Center n.d.). Until the 1860s most of the San Diego population was centered at the foot of Presidio Hill in what is now Old Town. However, in 1867 an entrepreneur by the name of Alonzo Horton arrived and changed the landscape of San Diego forever. Upon his arrival in April 1867, he surveyed the broad flat land that rises from San Diego Bay. After seeing the town center (Old Town) 3 miles north on the sandy plain slowly being engulfed by silt from the San Diego River, he decided that the center was in an unsuitable location for development into a modern city and that it must be built to the south where the boats docked, along the natural harbor of the protected bay. Horton acquired 960 acres of land, established New San Diego and worked to create what would eventually become the city center of San Diego (Pourade 1964, San Diego History Center n.d.).

By the late 1860s onward San Diego went on a long series of booms and busts from many local industries and potential fortune-making enterprises. A local gold rush began in 1870 when placer gold was discovered by former slave Fred Coleman near present-day Julian. The area produced over $2

million in gold over the next five years, but by 1876 most of the mines were closed. Tourmaline was then discovered near Pala in northeast San Diego County in 1872. The tourmaline mining became very successful due to the high price of the gem in China (Pourade 1965, San Diego History Center n.d.). Discoveries of kunzite, beryl, topaz, and quartz were soon made all along the mountains ranging from North County in Pala, south through Ramona, Julian, and to Jacumba near the Mexican border (Pourade 1965). The possibility of a major railroad came once again in 1873 with the start of construction of the Texas & Pacific Railroad. It was to travel east from San Diego, but construction was soon halted because of financial issues. Then, a severe drought in 1877 wreaked havoc on the agricultural industry (San Diego History Center n.d.).

While many of the major transcontinental railroad lines chose Los Angeles as their termination points, after decades of trying San Diego finally got one transcontinental line, the California Southern, in November 1885. And due to a railroad rate war, the line brought a population boom to San Diego in 1887. The city-wide population rose from 2,637 in 1880 to 30,000 in 1887. San Diego is naturally an arid climate with very little rainfall. To support the growing city, population, and industry a series of dams and aqueducts were built in the 1880s. The Cuyamaca Dam and flume, and the Sweetwater dam were both completed in 1888. However, the population boom turned to bust in 1888 with the population dropping down to 16,000. Due to a Wall Street panic in 1893, the city slipped into a long depression (San Diego History Center n.d.).

By the turn of the century, agriculture was becoming one of the dominant industries in San Diego. In one year alone, over 17,000,000 pounds of fruit were shipped out of San Diego, mostly lemons, oranges, and raisins (Pourade 1965). To celebrate the completion of the Panama Canal, the San Diego Chamber of Commerce created the Panama-California Exposition in Balboa Park, opening on New Year's Day 1915 (San Diego History Center n.d.).

The military began increasing its presence in San Diego in 1917 during World War I. Due to the year-round good weather it was seen as an ideal naval and air training space. Over the next few years Camp Kearny was established; North Island was purchased; a Marine base, Marine Recruit Depot, Naval training center, and Naval Hospital were built; and the Navy officially made San Diego Bay home base for the Pacific Fleet (Pourade 1965, San Diego History Center n.d.). From this point on, San Diego had finished with the major booms and busts. While the sought-after major transcontinental railroads ended it up in Los Angeles, the large military presence finally gave San Diego the industry it needed for long-term stability. The city continued to grow and mature into the tourist, military, metropolitan, and suburban location that it is today.

Admiral Baker Golf Course lies within the former area of Camp Elliot. Established in 1934, Camp Elliot incorporated 19,298 acres in San Diego leased by the U.S. Marine Corps for artillery, anti-craft and machine gun training. Following the outbreak of World War II, Camp Elliot was further developed and established as a Marine Corps Training Center. By 1941, Camp Elliott was expanded to 32,000 acres and was the home of the Second Marine Division. In 1944, the Marines relocated to Camp Pendleton and control of Camp Elliott was turned over to the Navy. The camp was then used by the Navy and Marine Corps as a training and redistribution center until 1953. Various other military units used Camp Elliott from 1953 until 1960, when the camp was closed. Between 1960 and 1961, portions of the camp were transferred to Naval Air Station Miramar and to the Air Force for the creation of the Atlas Missile test facility (USACE Los Angeles District 2018). For a time, part of the former camp was under the direction of the National Aeronautics and Space Administration as a high security testing area used in the development of Atlas and Centaur missiles (Military Museum 2017).

Admiral Baker Field, location of Admiral Baker Golf Course, is named after U.S. Navy Admiral Wilder Baker. Admiral Wilder Baker (1890–1975) was among the senior officers in the eastern theatre at the time of Japan's surrender in 1945, and had led a task force that attacked the Japanese home islands (Harrison 2010). Before the U.S. entered World War II, he helped develop tactics for anti-submarine warfare while escorting American convoys to England and dodging German U-boats. After the war, Admiral Baker became commandant of the 11th Naval District, which includes San Diego. When the postwar decision was made to designate a portion of Camp Elliot as Miramar Marine Corps Air Station and to decommission other portions of the camp, Admiral Baker urged that a portion of the facility be set aside for the recreational needs of active duty military personnel and retired members of the Armed Services, thus paving the way for the Admiral Baker Recreation Area and the golf course complex that now occupies part of the former Camp Elliot. Admiral Baker retired in 1952 with the rank of vice admiral.

3.4.3 Environmental Consequences

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment that contribute to the importance of the resource, introducing visual, atmospheric, or audible elements that are out of character for the period the resource represents (thereby altering the setting), or neglecting the resource to the extent that it deteriorates or is destroyed. Such impacts can have an adverse effect on the NRHP eligibility of a historic property if they alter, damage, or destroy elements that contribute to the eligibility of the resource or alter the aspects of integrity as defined in National Register Bulletin 34 (i.e., Location, Design, Setting, Materials, Workmanship, Feeling, and Association).

3.4.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to cultural resources. Therefore, no significant impacts to cultural resources would occur with implementation of the No Action Alternative.

3.4.3.2 Alternative 2: Project Validation Assessment Potential Impacts

Under Alternative 2 drainage features including a new pond (West Pond), and connection pipes between West Pond and existing Pond B and between existing Ponds B and D, would be constructed. Additionally, Alternative 2 includes replacement of the South Course irrigation system, including the pumping station; maintenance of the existing irrigation ponds; course-wide regrading/reshaping and regrassing; improvements to tees, greens, bunkers; and additional improvements for player safety, course playability, and aesthetics. Clearing, grubbing, grading, and excavating/dredging would be necessary to construct Alternative 2.

Approximately 95,500 square feet of land would be disturbed by clearing, grubbing, and grading for the major drainage features and an estimated 33,833 cubic yards of soils would be excavated during construction of the proposed West Pond and pond connections. However, conservatively it is assumed that the entire South Course, excluding non-turf areas, natural areas, and areas not disturbed during construction, would be disturbed and potentially regrassed. Tree removal/replacement at nine locations may cause additional ground disturbance. Ground-disturbing construction activities have the potential to impact previously unidentified buried archaeological resources.

The proposed locations for the West Pond and the connections do not intersect with any known cultural resources. However, two recorded archaeological sites have been recorded within the APE, one of which

is within 500 feet of the proposed drainage features in Alternative 2. P-37-12088 is a prehistoric camp consisting of scatter ceramic and lithic artifacts scattered around the edges of the parking lot and club house. P-37-14063 is a prehistoric archaeological site consisting of a possible shell midden. The proposed location of the West Pond is approximately 400 feet from the recorded location of P-37-14063. The resources were last recorded in 1995 and have not been evaluated or updated since that time. Testing to establish the vertical and horizontal extent of any subsurface cultural material that may be present has not been conducted. Construction of Alternative 2, including any ground breaking activities, could potentially impact prehistoric archaeological sites by disturbing or destroying unknown buried cultural deposits. Implementation of a cultural resources monitoring program during construction would reduce the potential impacts to less than significant. The objective of an archaeological monitoring program would be to identify, document, and record observed cultural resources during ground disturbance and to protect and manage any discoveries made during monitoring. Monitoring should consist of the full-time presence of a qualified archaeologist. The archaeologist may halt ground-disturbing activities if archaeological artifact deposits or cultural features are discovered. In general, ground-disturbing activities shall be directed away from these deposits for a short time to allow a determination of potential significance. The monitoring program would also include an immediate, onsite archaeological response for buried human remains, if discovered. With the implementation of the proposed monitoring program, any potential impacts of Alternative 2 would be less than significant.

3.4.3.3 Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative) Potential Impacts

Alternative 3, the Preferred Alternative, would include all activities and project components identified as part of Alternative 2 plus additional conveyance features would be constructed to provide more flood protection. The additional conveyance features would consist of a graded swale on the 14th fairway, a new swale diversion, and the removal of golf cart crossing 2.

As with Alternative 2, clearing, grubbing, and grading would be necessary to construct the conveyance features. A calculated 200,428 square feet of land would be disturbed for clearing, grubbing, and grading and 39,299 cubic yards of soils would be excavated during construction of the drainage and conveyance features for the Preferred Alternative. However, conservatively it is assumed that the entire South Course, excluding proposed non-turf areas, natural areas, and areas not disturbed during construction, would be disturbed and potentially regrassed. Tree removal/replacement at 24 locations may cause additional ground disturbance. Ground-disturbing construction activities have the potential to impact previously unidentified buried archaeological resources.

The proposed locations for the West Pond and the additional conveyance features in Alternative 3 do not intersect with any known cultural resources. However, two recorded archaeological sites have been recorded within the APE and are within 500 feet of the proposed drainage features in the Preferred Alternative. P-37-12088 is a prehistoric camp consisting of scatter ceramic and lithic artifacts scattered around the edges of the parking lot and club house. P-37-14063 is a prehistoric archaeological site consisting of a possible shell midden. The proposed location of the West Pond is approximately 400 feet from the recorded location of P-37-14063 and the proposed location of the swale diversion is approximately 200 feet from P-37-14063 and 400 feet from P-37-12088. The resources were last recorded in 1995 and have not been evaluated or updated since that time. Testing to establish the vertical and horizontal extent of any subsurface cultural material that may be present has not been conducted. As with Alternative 2, the proposed renovation activities in the Preferred Alternative,

including any ground-disturbing activities, could potentially impact prehistoric archaeological sites by disturbing or destroying unknown buried cultural deposits. Implementation of a cultural resources monitoring program during construction would reduce the potential impacts to less than significant. The objective of an archaeological monitoring program would be to identify, document, and record observed cultural resources during ground disturbance and to protect and manage any discoveries made during monitoring. The archaeologist may halt ground-disturbing activities if archaeological artifact deposits or cultural features are discovered. In general, ground-disturbing activities shall be directed away from these deposits for a short time to allow a determination of potential significance. The monitoring program would also include an immediate, onsite archaeological response for buried human remains, if discovered. With the implementation of the proposed monitoring program, any potential impacts of the Preferred Alternative would be less than significant.

3.5 Biological Resources

Biological resources include living, native, or naturalized plant and animal species and the habitats within which they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal.

Within this EA, biological resources are divided into two categories: (1) terrestrial vegetation and (2) terrestrial wildlife. Threatened, endangered, and other special status species are discussed in their respective categories. There are no marine resources in the project area so marine regulations and resources are not discussed.

3.5.1 Regulatory Setting

Special-status species, for the purposes of this assessment, are those species listed as threatened or endangered under the Endangered Species Act (ESA) and species afforded federal protection under the Migratory Bird Treaty Act (MBTA).

The purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend and to conserve and recover listed species. Section 7 of the ESA requires action proponents to consult with the USFWS or National Oceanic and Atmospheric Administration Fisheries to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. Critical habitat cannot be designated on any areas owned, controlled, or designated for use by the United States Department of Defense (DoD) where an INRMP has been developed that, as determined by the Department of Interior or Department of Commerce Secretary, provides a benefit to the species subject to critical habitat designation. The ESA prohibits any person from "taking" threatened or endangered in the United States without authorization. The ESA defines "take" to mean "to harass, hunt, capture, or kill or attempt to harass, hunt, capture, or kill any listed species."

Birds, both migratory and most native-resident bird species, are protected under the MBTA, and their conservation by federal agencies is mandated by EO 13186 (Migratory Bird Conservation). Under the MBTA it is unlawful by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess migratory birds or their nests or eggs at any time, unless permitted by regulation. The 2003 National Defense Authorization Act gave the Secretary of the Interior authority to prescribe regulations to exempt the Armed Forces from the incidental taking of migratory birds during authorized military readiness activities. The final rule authorizing DoD to take migratory birds in such

cases includes a requirement that the Armed Forces must confer with USFWS to develop and implement appropriate conservation measures to minimize or mitigate adverse effects of the proposed action if the action will have a significant negative effect on the sustainability of a population of a migratory bird species.

Bald and golden eagles are protected by the Bald and Golden Eagle Protection Act. This act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

3.5.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under biological resources within the project area at the South Course. Threatened and endangered species are discussed in each respective section below with a composite list applicable to the Proposed Action provided in Table 3-11.

3.5.2.1 Terrestrial Vegetation

Vegetation communities within a study area consisting of the South Course and an area to the west and northwest of the South Course were mapped and characterized during field surveys conducted on October 9 and 10, 2018 (HDR 2019) (Figure 3-10). Vegetation classification surveys were conducted primarily on foot; areas that were inaccessible due to golf course activities were observed using binoculars. Dominant vegetation in the area was noted, and a species list of non-landscape vegetation was compiled. Where possible, the Vegetation Classification Manual for Western San Diego County, First Edition (Sproul et al. 2011) was used to classify vegetation to Alliance and Association level. A total of six land-cover types were recorded in the project area during vegetation mapping and classification: developed (golf course), *Populus fremontii – Salix gooddingii/Baccharis salcifolia* Association, Naturalized Warm – Temperate Riparian and Wetland Semi-Natural Stand, *Typha latifolia* Association, *Schoenoplectus californicus* Association, and open water (Table 3-10).

Table 3-10 Land-Cover Types within the Project Area

Alliance (or Stand)	*Association*	*Acres*
Vegetation Classification		
Typha (*angustifolia*, *domingensis*, *latifolia*) Alliance	*Typha latifolia* Alliance	0.88
Schoenoplectus californicus Alliance	*Schoenoplectus californicus* Association	0.48
Populus fremontii Alliance	*Populus fremontii – Salix gooddingii/Baccharis salcifolia* Association	0.61
Naturalized Warm – Temperate Riparian and Wetland Semi-Natural Stand	–	1.26
	Vegetation Total	**3.23**
Developed (golf course)	–	98.33
Water	–	1.26
	Non-Vegetation Total	**99.59**
	Total Land Cover	**102.82**

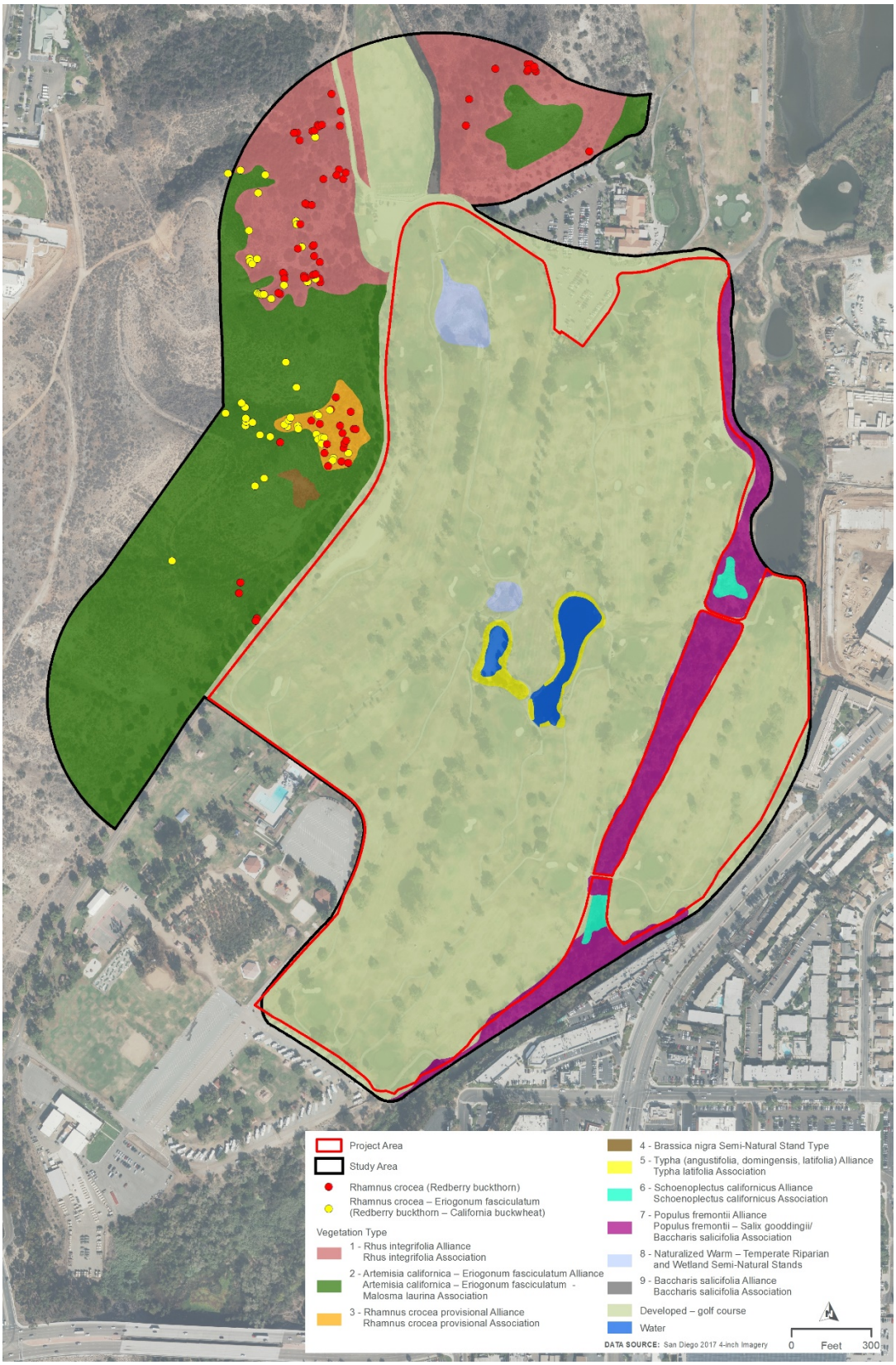

Figure 3-10 Vegetation Classification in the Project Area

The project area includes 1.26 acres of Naturalized Warm – Temperate Riparian and Wetland – Semi-Natural Stand that presently occur in existing seasonally inundated water features; 0.88 acres of *Typha* (*angustifolia*, *domingensis*, *latifolia*) Alliance vegetation occurring around the edges of existing golf course ponds; 0.61 acres of *Populus fremontii* Alliance; and 0.48 acres of *Schoenoplectus californicus* Alliance vegetation occurring along the San Diego River (Figure 3-10). The Naturalized Warm – Temperate Riparian and Wetland – Semi-Natural Stand classification is used when a distinction cannot be made to the alliance or association level, and where nonnative grasses and forbs are dominant over native species and *Arundo donax*, *Lepidium latifolium*, and *Lolium perenne* (*L. multiflorum*) are not clearly dominant or codominant. Generally, this vegetation type is found throughout drainage channels and other areas of low topographic relief where native species diversity is low and ruderal floras have colonized areas of repeated disturbance (Sproul et al. 2011).

The vegetation along the San Diego River is heavily invaded by non-native species including Ngaio tree (*Myoporum laetum*), Peruvian and Brazilian pepper trees (*Schinus molle*, *S. terebinthifolius*), Sydney golden wattle (*Acacia longifloia*), Mexican fan palm (*Washingtonia robusta*), and Canary island date palm (*Phoenix canariensis*).

Endangered, Threatened, and Proposed Vegetation Species

Endangered, threatened, and proposed vegetation species that could occur within or near the project area, were identified during discussions with Navy staff and by querying the USFWS's Information for Planning and Conservation database (USFWS 2018), reviewing the Naval Base San Diego INRMP (Navy 2014), and evaluating published information about the listed species. Based on that information, the Navy has concluded that nine federally listed threatened or endangered vegetation species could occur near the project area. In addition, the Navy concluded that these nine federally listed threatened or endangered vegetation species that could occur within or near the project area would not be affected because there is no habitat for the species or the species otherwise do not occur within the project area, and are unlikely to be present (Navy 2014, USFWS 2018). Therefore, the Navy has concluded that none of the alternatives would affect the following nine vegetation species, and they are not further addressed.

- California orcutt grass (*Orcuttia californica*, endangered) — occurs in deep ephemeral vernal pools underlain by clay soils (USFWS 2011).
- Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*, endangered) — endemic to San Diego County, California where it occurs on sandstone terraces and bluffs in southern maritime chaparral (USFWS 2010a).
- San Diego ambrosia (*Ambrosia pumila*, endangered) — found primarily on upper terraces of rivers and drainages on sandy loam or clay soils (USFWS 2010b).
- San Diego button-celery (endangered) — vernal pool obligate found on clay soils.
- San Diego mesa-mint (endangered) — restricted to vernal pools in southern California.
- San Diego thornmint (*Acanthomintha ilicifolia*, threatened) — occurs naturally in openings within coastal sage scrub, chaparral, and native grassland; the species is also restricted to certain gabbro and calcareous clay soils on gentle southeast to west facing slopes (USFWS 2009a).

- Spreading navarretia (threatened) — occurs in vernal pools and alkali playa habitat and is reliant on the inundation and drying cycles of its habitat for survival (USFWS 2009b).
- Thread-leaved brodiaea (*Brodiaea filifolia*, threatened) — occurs in herbaceous plant communities on gentle hillsides, valleys, and floodplains with open areas and clay, loamy sand, or alkaline silty-clay soils (USFWS 2009c).
- Willowy monardella (*Monardella viminea*, endangered) — occurs primarily in sandy washes and floodplains in coastal sage scrub or riparian scrub vegetation (USFWS 2012).

3.5.2.2 Terrestrial Wildlife

Wildlife includes all animal species (i.e. insects and other invertebrates, freshwater fish, amphibians, reptiles, birds, and mammals) focusing on the species and habitat features of greatest importance or interest.

Because wildlife habitat surrounding Admiral Baker Golf Course is fragmented and surrounded by urban and suburban environments and habitat within the project area is highly modified, the diversity of some categories of wildlife is relatively low (Navy 2014). However, good quality avian forage and nesting habitat occurs within and near the San Diego River (Navy 2014). Avian wildlife species likely to occur within and near this habitat includes waterfowl, raptors, and passerine species that forage or nest in riparian habitat. Other avian species occurring at Admiral Baker Golf Course include those species most often associated with urban areas, such as house finches (*Haemorhous mexicanus*), European starlings (*Sturnus vulgaris*), and pigeons (*Columba livia*). Admiral Baker Golf Course contains fragmented habitat that supports small mammal species. These may include the California ground squirrel (*Spermophilus beecheyi*) and other small species of rodents. The Naval Base San Diego INRMP provides a complete list of wildlife species observed at Admiral Baker Golf Course (Navy 2014).

Only one fish species (mosquito fish [*Gambusia affinis*]) was detected during 2010 surveys in support of the Naval Base San Diego INRMP (Navy 2014). Data concerning fish-specific surveys of the San Diego River are rare and outdated. Numerous other fresh water fish species are known to occur in the lakes and streams of San Diego County. Catfish (Order: Siluriformes), bass (*Micropterus* sp.), bluegill (*Lepomis macrochirus*) and carp (*Cyprinus carpio*) are all known in the vicinity of San Diego River (San Diego Fish 2019).

Endangered, Threatened, and Proposed Wildlife Species

Endangered, threatened, and proposed wildlife species that could occur within or near the Action Area (project area) were identified during discussions with Navy staff and by querying USFWS's Information for Planning and Conservation database (USFWS 2018), reviewing the Naval Base San Diego INRMP (Navy 2014), and evaluating published information about the listed species. Based on that information, the Navy has concluded that two federally listed threatened and endangered wildlife species (coastal California gnatcatcher [*Polioptila californica californica*] and least Bell's vireo [*Vireo belli pusillus*]) and one candidate wildlife species (Hermes copper butterfly [*Lycaena hermes*]) occur or could occur within or near the project area (Table 3-11). Table 3-12 lists the acreage of potential habitat occurring within and near the Action Area for these species.

Table 3-11 Threatened and Endangered Species Known to Occur or Potentially Occurring at the Action Area

Common Name	*Scientific Name*	*Federal Listing Status*	*State Listing Status*	*Critical Habitat Present?*
Coastal California gnatcatcher	*Polioptila californica californica*	FT	SSC	No
Least Bell's vireo	*Vireo bellii pusillus*	FE	SE	No
Hermes copper butterfly	*Lycaena hermes*	C	NL	No

Key: FT = federal threatened, FE = federal endangered, C = candidate species (for federal ESA listing), SSC = Species of Special Concern (State designation), SE = State endangered, NL = not listed

Table 3-12 Estimated Potential Habitat of Federally Listed Avian Taxa within and near the Action Area

Federally Listed Wildlife	*Estimated Potential Habitat*		
	Within MGRF (acres) [1]	*Within Area Adjacent to the South Course (acres)* [4]	*To be Disturbed within the Action Area (acres)*
Coastal California gnatcatcher	69 [2]	10.6	0 [5]
Least Bell's vireo	28 [3]	10.6	0 [5]

Notes:
[1] Data derived from spring/summer survey observations 2017.
[2] Suitable habitat for coastal California gnatcatchers on MGRF is Diegan coastal sage scrub (Navy, personal communication, May 21, 2019).
[3] Suitable habitat for least Bell's vireos on MGRF are southern willow scrub and mulefat habitats (Navy, personal communication, May 21, 2019).
[4] Area adjacent to the South Course consists of the area west and northwest of the South Course (i.e., area surveyed on October 9 and 10, 2018, and depicted in Figure 3-10).
[5] No native habitat is anticipated to be disturbed by Proposed Action activities.

The following sections provide additional information on coastal California gnatcatcher, least Bell's vireo, and Hermes copper butterfly.

Coastal California Gnatcatcher. Coastal California gnatcatchers are small, blue-gray songbirds with dark blue-gray backs, brownish wings, grayish-white feathers on their undersides, and a white ring around their eyes. The gnatcatcher's long tail is primarily black with white outer tail feathers. Male gnatcatchers have a black cap during the summer. The species is known to occur along the Pacific coastal regions in or near coastal scrub vegetation communities in southern California and northern Baja California, Mexico (USFWS 2010c). Vegetation in preferred habitat is typified by low-growing, summer deciduous, shrub and sub-shrub species such as California sagebrush, California buckwheat, and other sages (USFWS 2010c).

The coastal California gnatcatcher was listed by the USFWS as a federally threatened species under the ESA on March 30, 1993. Critical habitat for this species was designated in 2000 and revised in 2007. No critical habitat occurs on Naval Base San Diego; however, critical habitat occurs within 2 miles of MGRF. Surveys for coastal California gnatcatchers on MGRF have been conducted since 1995 and indicate the population has remained stable (Navy 2014). During surveys on MGRF in 1995, gnatcatchers were detected at five locations, including observations of at least three that were considered paired. In 2007, five pairs were observed, and fledglings were observed with three of the five pairs. During 2011 focused surveys conducted by Navy biologists, approximately 11 use areas were detected (Navy 2014). The most

recent surveys conducted by Navy biologists on MGRF from March 16, 2017 through July 14, 2017 identified five pairs of coastal California gnatcatchers within coastal sage scrub (Navy, personal communication, May 21, 2019). Figure 3-11 depicts locations of coastal California gnatcatchers at MGRF. None of the sightings are in the project area at the South Course.

Least Bell's Vireo. Least Bell's vireos are small, greenish-gray songbirds with white underbellies, two white wingbars, and white spectacles across the lores. Preferred habitats are riparian areas dominated by willows of mixed age composition. These areas frequently include other trees such as Fremont cottonwood and western sycamore (*Platanus racemosa*), with a dense understory of young willows, mule fat, California wild rose (*Rosa californica*), and a variety of other shrubby species (USFWS 1998).

The least Bell's vireo was listed as an endangered species by the state of California in June 1980, and was subsequently listed by USFWS as federally endangered in May 1986. Critical habitat for this species was designated in 1994. No critical habitat occurs on Naval Base San Diego.

Protocol surveys for least Bell's vireo were conducted at MGRF in 1995 and again in 2007; four breeding territories were detected during both survey events (Navy 2014). Use of MGRF by least Bell's vireos has declined in recent years, presumably as giant reed (*Arundo donax*) continues to push out native species utilized by breeding vireos (Navy 2014). More recent surveys conducted in 2017 by Navy biologists documented pair interactions by two of the five territories observed; however, no signs of nesting were reported (Navy, personal communication, May 21, 2019). Figure 3-12 depicts observations of least Bell's vireo on MGRF in 2017.

Hermes Copper Butterfly. The Hermes copper butterfly is a federal candidate species. It is a small butterfly with copper colored wings that resides only in San Diego County and in extreme northern Mexico (Shiraiwa 2009). Spiny redberry is a host plant for the Hermes copper butterfly. This plant occurs at Admiral Baker Golf Course, but outside of the project area. Figure 3-10 presents occurrences of spiny redberry (*Rhamnus crocea*) at Admiral Baker Golf Course.

Hermes copper butterfly habitat assessment and mapping was conducted in 2018 in the entire project area and extended 600 feet beyond the project boundary to account for potential Hermes copper butterfly movement (HDR 2019). The majority of Hermes copper butterfly movements are under 328 feet for males (Marschalek and Klein 2010). No Hermes copper butterfly host plant (Redberry buckthorn) was observed within the project area and suitable nectar sources were largely absent in the developed golf course. Potential habitat was observed to the north and northwest of the project area on the 600-foot buffer and was surveyed for Hermes copper butterfly suitable habitat (Figure 3-10). Other areas of the buffer to the south and east consisted of urban development, riparian habitat, and golf course developed areas that did not contain potential habitat and, therefore, were not surveyed.

Redberry buckthorn was found north and northwest of the project area on slopes consisting of *Rhus integrifolia* Association, *Artemisia californica – Eriogonum fasciculatum – Malosma laurina* Association, *Rhamnus crocea* provisional Association, and *Brassica nigra* Semi-Natural Stand Type within the 600 foot survey buffer (Figure 3-10). A total of 123 locations were identified with 1 to 6 redberry buckthorn plants from young individuals to mature bushes. Of those locations 53 were located in association with California buckwheat. While Hermes copper butterfly will use other nectar plants, this survey was conducted in October and most seasonal nectar sources were not observed. Therefore, this survey conservatively considers only mature redberry buckthorn in association with California buckwheat as potential suitable habitat. The majority of suitable Hermes copper butterfly habitat was found higher on the slopes and away from the project area (Figure 3-10).

Figure 3-11 Coastal California Gnatcatcher 2017 Observations on MGRF

Figure 3-12 Least Bell's Vireo 2017 Observations on MGRF

In addition, the Navy concluded that six other federally listed threatened or endangered wildlife species that could occur within or near Naval Base San Diego would not be affected because there is no habitat for the species or the species otherwise do not occur within the project area and are unlikely to be present in the Action Area (Navy 2014, USFWS 2018). Therefore, the Navy concluded that the Proposed Action would not affect the following six wildlife species, and they are not further addressed.

- California least tern (*Sterna antillarum browni*, endangered) — found on beaches, sand bars, shorelines, and other barren or sparsely vegetated areas near water.
- Light-footed Ridgway's (clapper) rail (*Rallus longirostris levipes*, endangered) — a marsh bird found in California coastal salt marshes, lagoons, and other maritime environments.
- Southwestern willow flycatcher (*Empidonax traillii extimus*, endangered) — nests in early successional riparian habitats with a dense understory and standing water.
- Quino checkerspot butterfly (*Euphydryas editha quino*, endangered) — distribution is largely defined by the butterfly's principal host plant, the dot-seed plantain (*Plantago erecta*).
- Riverside fairy shrimp (*Streptocephalus woottoni*, endangered) — generally restricted to vernal pool and other non-vegetated ephemeral pool complexes greater than 12 inches in depth.
- San Diego fairy shrimp (*Branchinecta sandiegonensis*, endangered) — generally restricted to vernal pool and other non-vegetated ephemeral pool complexes from 2 to 12 inches in depth.

There is no proposed or designated critical habitat for any federally listed species in the Action Area.

3.5.3 Environmental Consequences

This analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem or are protected under federal or state law or statute.

3.5.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to biological resources. Therefore, no significant impacts to biological resources would occur with implementation of the No Action Alternative.

3.5.3.2 Alternative 2: Project Validation Assessment Potential Impacts

Clearing, grubbing, grading, and excavation would be needed to construct Alternative 2. Table 2-1 identifies the construction activities for Alternative 2. Excess soil that is not used for the balance of fill for these features would be stored and used at the South Course for other improvements not included in the Alternative 2. A SWPPP would be developed and BMPs would be implemented to control erosion and sedimentation, and minimize runoff from construction sites. Following completion of construction, the trees that are removed would be replaced and new turf would be planted in disturbed areas.

Terrestrial Vegetation

Impacts would occur to vegetation during the renovation and construction activities proposed under Alternative 2 such as regrading of the South Course; relocating tees, greens, and bunkers; and excavation to remove turf, trees, and dirt to make way for the drainage features. Alternative 2 would not impact the 0.61 acre of *Populus fremontii* Alliance and 0.48 acre of *Schoenoplectus californicus* Alliance vegetation occurring along the San Diego River (Table 3-10). No grubbing, clearing, or tree

removal would occur in the riparian areas along the San Diego River. No native vegetation is anticipated to be disturbed; therefore, impacts to native vegetation due to crushing from vehicles or equipment are unlikely especially with implementation of BMPs, such as adhering to clearly marked project boundaries.

Vegetation could be negatively impacted if fugitive dust becomes heavy enough to blanket native vegetation. This could temporarily degrade native trees and shrubs adjacent to the project area. However, BMPs, such as a fugitive dust plan that would require watering, would be implemented during construction to ensure impacts from fugitive dust would not impact vegetation.

Indirect beneficial effects under Alternative 2 could include replacement of nonnative vegetation with native species along the existing irrigation ponds. Additionally, by developing and maintaining improved drainage and irrigation infrastructure at Admiral Baker Golf Course, reliance on water diverted from the San Diego River would be reduced.

Terrestrial Wildlife

Impacts from construction have the potential to affect terrestrial wildlife in the vicinity of the project area. These impacts are grouped into general categories and discussed in the following sections.

Nesting

To comply with the MBTA, and avoid and minimize effects to nesting birds protected under the MBTA, the Navy and project proponent would provide a qualified biologist to conduct surveys of the project area for nests prior to and periodically during construction. Any nest found during surveys would be marked and avoided.

Habitat Loss

Direct effects could occur in the form of vegetation removal during the proposed golf course modifications and landscaping. Although vegetation removal could result in loss of potential forage habitat for birds and small mammals, it is unlikely that the ornamental trees on the South Course that may be removed are used frequently by most wildlife species. Raptors, ravens (*Corvus corax*), and other avian species that may utilize those trees for perching, roosting, or forage may lose that habitat. Additionally, trees and other landscaped vegetation removed during Alternative 2 would be replaced with native species, when practicable.

Noise

The South Course is an urban recreational golf course with existing levels of moderate to high human activity. Terrestrial wildlife species utilizing habitat on and near Admiral Baker Golf Course are, therefore, acclimated to ongoing anthropogenic disturbance from the presence of golfers and golf carts and maintenance activities, including weekly mowing of the golf courses. However, renovations and associated construction activities in the project area are likely to produce a higher than average level of noise and vibration due to the use of heavy equipment and increased human activity. Noise levels from construction activities may be higher than 60 A-weighted decibels (dBA) at times. The Navy would provide a qualified biologist to survey the project area for nests prior to and during construction. Any nest found during surveys would be marked and avoided. This measure would also aid in preventing disturbance to other nesting birds in the vicinity of the project area.

Displacement

Alternative 2 renovations and construction could cause direct, short-term impacts to local wildlife by causing them to modify their behavior and avoid areas where those activities are occurring. These activities would be temporary, and wildlife likely would return after crews have left the work areas. Any loss of foraging opportunities or other uses of habitat for wildlife would be temporary and insignificant.

Because Alternative 2 would be restricted to areas of previously developed, existing golf course, wildlife using the area likely have become acclimated to the presence of humans in the area. Habitat loss and displacement of wildlife are unlikely to occur as a result of implementing Alternative 2.

Threatened and Endangered Species

Two threatened and endangered and one candidate species are likely to occur near the project area. No suitable habitat exists within the project area for the coastal California gnatcatcher, least Bell's vireo, and the Hermes copper butterfly. Other special status species with potential to occur at Admiral Baker Golf Course do not have the requisite habitat present to support those species and, therefore, those species are unlikely to occur in the project area.

Temporary impacts on threatened and endangered species could occur from noise and habitat disturbances associated with construction activities. However, threatened and endangered species on Admiral Baker Golf Course are already habituated to high levels of noise associated with recreation and human presence. Increases in noise levels from construction activities to the ambient noise environment would be negligible and temporary. Construction would occur on previously disturbed and cleared or developed areas. No loss of habitat would occur under Alternative 2. Construction activities may result in short-term impacts from disturbance to coastal California gnatcatcher, least Bell's vireo, and Hermes copper butterfly, but would not further threaten the existence of any protected species or critical/sensitive habitats. Additionally, Navy personnel would continue to manage habitats according to the INRMP, which is designed to protect and benefit threatened and endangered species.

Coastal California Gnatcatcher

Based on data collected during Navy surveys from 1995–2017, consistent observations of coastal California gnatcatchers have been documented on MGRF, including near the South Course. Breeding pairs, individuals, and family groups have all been observed in coastal scrub habitat near the Action Area, including the larger MGRF complex and the North Course.

Nesting. To comply with the ESA and avoid and minimize effects to nesting coastal California gnatcatchers, the project proponent would provide a qualified biologist to conduct surveys prior to and during construction activities within 500 feet of potential habitat during breeding season for this species (February 14 through August 31) (Figure 3-13). If active coastal California gnatcatcher nests are found within 500 feet of noise-generating construction activities and noise exceeds 60 dBA, a 500-foot buffer would be established, if feasible, between the construction activities and the approximate edge of the gnatcatcher territory to avoid effects to nesting gnatcatchers. If this is not possible, the contractor would install noise attenuation structures at the noise source to reduce the noise levels to 60 dBA at the nest location. These structures would remain in place until all nestlings have fledged or the noise-generating construction activities have moved at least 500 feet beyond that area. This measure would also aid in preventing disturbance to other nesting birds in the vicinity of the project area.

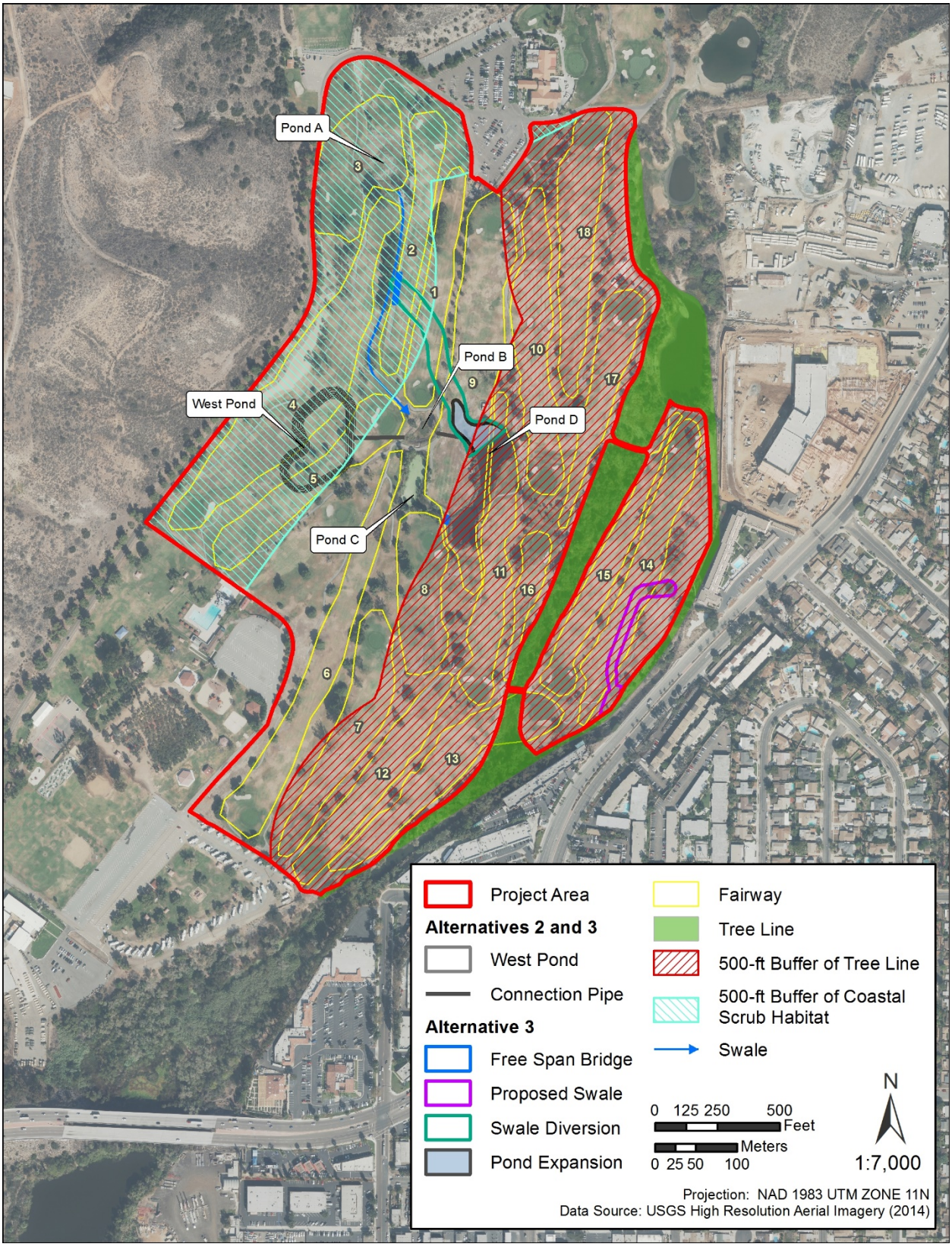

Figure 3-13 Approximate 500-foot Buffer from Riparian Tree Line and Coastal Scrub Habitat

Habitat Loss. The USFWS coastal California gnatcatcher 5-year review lists ongoing losses of coastal scrub habitats as the main reason for the decline of the population. The USFWS listed urban and agricultural development as the primary reasons for habitat loss in the initial recovery plan in 1993. The USFWS also noted wildland fires, both natural and accidental, as a temporary impact to habitat that could also lead to permanent habitat degradation (USFWS 1993).

Effects to coastal California gnatcatcher have been assessed based on the area of suitable habitat within the project area. Known observations of coastal California gnatcatchers near the project area are shown in Figure 3-11. None of the locations in which coastal California gnatcatchers have been historically observed at MGRF would be directly impacted by Alternative 2, and no coastal scrub habitat would be impacted or removed. Project limits would be clearly delineated by the contractor, and no work would be permitted to occur outside of designated areas. Most occupied coastal California gnatcatcher habitat near the Action Area is located within the canyons adjacent to the South Course. These canyons are inaccessible to vehicles and machinery and would not be disturbed by construction crews or vehicles.

Although removal of landscaped ornamental and other vegetation from the South Course could result in temporary loss of potential forage habitat for gnatcatchers, the trees that may be removed are not typical habitat for this species and are not known to be used frequently by gnatcatchers. Coastal California gnatcatchers are not known to use ornamental trees on golf courses as nesting habitat and activities associated with removal of these trees is unlikely to impact nesting or foraging habitat. Additionally, trees and other landscaped vegetation removed during Alternative 2 would be replaced with native species, when practicable.

Indirect impacts to gnatcatchers could occur if the renovations and construction activities were to cause an increase in fugitive dust sufficient to temporarily degrade native vegetation and thus modify foraging habitat. Direct effects could occur if invasive vegetation introduced by construction activities resulted in competition with native vegetation and changed the composition of vegetation communities. These impacts would be avoided or minimized through implementation of avoidance and minimization measures such as fugitive dust watering, erosion control, and measures to prevent the spread of invasive plants (Tables 2-2 and 3-15). With the implementation of avoidance and minimization measures, effects of fugitive dust and potential introduction of invasive vegetation as a result of construction are anticipated to be insignificant on gnatcatchers.

Noise. The South Course is an urban recreational golf course with existing levels of moderate to high human activity. Ambient noise levels in the Action Area include ongoing anthropogenic contributions from the presence of golfers and golf carts, and maintenance activities including weekly mowing of the golf course. Coastal California gnatcatchers utilizing coastal scrub habitat on MGRF, including adjacent to the South Course, are regularly exposed to anthropogenic activity and, therefore, are acclimated to ongoing anthropogenic disturbances such as enhanced ambient noise levels and human activity. Renovations and associated construction activities in the project area at the South Course are likely to produce higher than average levels of noise and vibration due to the use of heavy equipment and increased human activity and could disturb gnatcatchers, including nesting gnatcatchers, within 500 feet of construction activities. Noise and vibrations associated with the use of heavy equipment have the potential to disrupt gnatcatcher physiology and behavior in adjacent habitat by masking intraspecific communication and startling birds (Bottalico et al. 2015). Because birds' primary mode of communication is sound, increased noise levels have been found to reduce pairing success by up to 15 percent (Habib et al. 2006).

Because noise levels from construction activities may be higher than 60 dBA within 500 feet of known coastal California gnatcatcher habitat, the Navy would be required to have a permitted wildlife biologist conduct surveys for gnatcatchers in all areas of suitable habitat prior to the start of construction to verify occupancy and nests and minimize noise impacts. If it is determined that breeding coastal California gnatcatchers are present, renovation and construction activities producing noise levels higher than 60 dBA within 500 feet of occupied habitat and active nests would be conducted outside of the breeding season for this species (February 14 through August 31), if feasible. If not feasible, noise attenuation structures would be installed at the noise source to reduce levels to 60 dBA or lower at the nest location. These structures would remain in place until all nestlings have fledged or construction activities have moved at least 500 feet beyond that area. Therefore, with the implementation of the proposed avoidance and minimization measures, Alternative 2 is not expected to cause additional effects to the species.

Predation. Direct or indirect effects from renovations and construction activities would not cause any measurable increase in native or non-native predator populations or cause gnatcatcher nests to become more vulnerable to predation. Although habitat fragmentation and nest parasitism have also been identified as threats affecting gnatcatcher populations and individuals, renovations and construction activities in the project area at the South Course would not result in increased habitat fragmentation since no coastal California gnatcatcher habitat would be removed. In addition, renovations and construction activities occurring in the project area would not have any effect on additional brood parasitism. Thus, renovations and construction activities would have no effect on the predation of gnatcatcher nests.

Displacement. Golf course renovations and construction under Alternative 2 could cause direct, short-term effects to non-nesting coastal California gnatcatchers by causing them to modify their behavior and avoid areas where those activities are occurring. These activities would be temporary, and gnatcatchers likely would return after crews have left the work areas. In addition, because project activities would be restricted to existing developed land at the South Course, surrounding suitable habitat would remain available to birds that are temporarily displaced. Any loss of foraging opportunities or other uses of that habitat would be temporary and insignificant.

Conclusion. The Navy has determined that Alternative 2 may affect, but is not likely to adversely affect the coastal California gnatcatcher for the following reasons. Consultation with the USFWS is required and specific mitigation measures to protect this species is listed in Table 3-14.

- Construction and renovation activities would not occur within 500 feet of suitable coastal California gnatcatcher habitat during the breeding season until a qualified biologist has determined that no nesting gnatcatchers are present or, if the species is found, the appropriate avoidance and minimization measures have been implemented. Therefore, there would be no direct effects on nesting coastal California gnatcatchers.
- No locations in which coastal California gnatcatchers have been historically observed at MGRF would be directly impacted by Alternative 2, and no coastal scrub habitat would be disturbed or removed. Therefore, potential nesting habitat for this species would not be altered.
- Alternative 2 would not cause fragmentation of habitat or cause any long-term changes to areas surrounding potential habitat that could result in an increase in predation or brood parasitism.

- Activities that generate noise greater than 60 dBA within 500 feet of nesting coastal California gnatcatchers would be postponed until the fledglings have left the nest and the area, or noise attenuation structures would be installed at the noise source to reduce levels to 60 dBA or lower. Therefore, impacts to coastal California gnatcatchers from noise during construction would be insignificant.
- Any coastal California gnatcatchers foraging in or near the South Course during renovation and construction would be temporarily displaced; however, any loss of foraging opportunities or other use of that marginal habitat would be insignificant.

Least Bell's Vireo

Nesting. To comply with the ESA and avoid and minimize effects to nesting least Bell's vireos, the Navy would provide a qualified biologist to conduct surveys prior to and during construction activities within 500 feet of potential habitat during the breeding season for this species (March 15 through August 31) (Figure 3-13). If active vireo nests are found within 500 feet of noise-generating construction activities and noise exceeds 60 dBA, a 500-foot buffer would be established, if feasible, between the construction activities and the approximate edge of the vireo territory to avoid effects to nesting vireos. If this is not possible, the contractor would install noise attenuation structures at the noise source to reduce the noise levels to 60 dBA at the nest location. These structures would remain in place until all nestlings have fledged or the noise-generating construction activities have moved at least 500 feet beyond that area.

Habitat Loss. The USFWS least Bell's vireo recovery plan lists extensive loss of riparian breeding habitat and brood parasitism by brown-headed cowbirds (*Molothrus ater*) as the main reasons for the decline of the population (USFWS 1998). The USFWS least Bell's vireo 5-year review lists ongoing brood parasitism as the primary reason for negative impacts to average annual reproduction rate (USFWS 2006). Effects to least Bell's vireo have been assessed based on the area of suitable habitat within the project area. Known observations of least Bell's vireos near the Action Area are shown in Figure 3-12. None of the locations in which least Bell's vireos have been historically observed at MGRF would be directly impacted and no riparian habitat would be impacted or removed by Alternative 2. Project limits would be clearly delineated by the contractor, and no work would be permitted to occur outside of designated areas.

Least Bell's vireo are not known to use ornamental trees on golf courses as nesting habitat and activities associated with removal of these trees would not impact nesting or foraging habitat. If tree removal occurs during the nesting season, the Navy would provide a qualified wildlife biologist to conduct surveys for nesting vireos prior to and during the removal. No trees with nests would be removed, and 500-foot buffers would be established around any nests found. Results from the surveys would be provided to the Navy biologist for review. Additionally, trees and other landscaped vegetation removed during Alternative 2 would be replaced with native species, when practicable.

Indirect impacts to vireos could occur if the renovations and construction activities were to cause an increase in fugitive dust sufficient to temporarily degrade riparian vegetation and thus modify foraging habitat. Direct effects could occur if invasive vegetation introduced by construction activities resulted in competition with native vegetation and changed the composition of vegetation communities. These impacts would be avoided or minimized through implementation of the avoidance and minimization measures such as fugitive dust watering, erosion control, and measures to prevent the spread of invasive plants (Tables 2-2 and 3-15). With the implementation of avoidance and minimization

measures, effects of fugitive dust and potential introduction of invasive vegetation as a result of construction are anticipated to be insignificant on vireos.

Noise. The South Course is an urban recreational golf course with existing levels of moderate to high human activity. Ambient noise levels in the Action Area include ongoing anthropogenic contributions from the presence of golfers and golf carts, and maintenance activities including weekly mowing of the golf course. Least Bell's vireos utilizing riparian habitat on MGRF, including adjacent to and along the San Diego River along the South Course, are regularly exposed to anthropogenic activity and, therefore, are acclimated to ongoing anthropogenic disturbances such as enhanced ambient noise levels and human activity. Renovations and associated construction activities in the project area at the South Course are likely to produce a higher than average levels of noise and vibration due to the use of heavy equipment and increased human activity and could disturb vireos, including nesting vireos, within 500 feet of construction activities. Noise and vibrations associated with the use of heavy equipment have the potential to disrupt vireo physiology and behavior in adjacent habitat by masking intraspecific communication and startling birds (Bottalico et al. 2015). Because birds' primary mode of communication is sound, increased noise levels have been found to reduce pairing success by up to 15 percent (Habib et al. 2006).

Because noise levels from construction activities may be higher than 60 dBA at 500 feet from known least Bell's vireo habitat, a qualified wildlife biologist would conduct surveys for nesting vireos prior to the start of construction to minimize noise impacts. If it is determined that nesting vireos are present, renovation and construction activities producing noise levels higher than 60 dBA within 500 feet of an active nest would be conducted outside of the breeding season for this species (March 15 through August 31), if feasible. If not feasible, noise attenuation structures would be installed at the noise source to reduce levels to 60 dBA or lower at the nest location. These structures would remain in place until all nestlings have fledged or construction activities have moved at least 500 feet beyond that area. This measure would also aid in preventing disturbance to other nesting birds in the vicinity of the project area. With the implementation of the proposed avoidance and minimization measures, Alternative 2 is not expected to cause additional effects to the species.

Predation. Direct or indirect effects from renovations and construction activities would not cause any measurable increase in native or non-native predator populations or cause vireo nests to become more vulnerable to predation. Although habitat fragmentation and nest parasitism have also been identified as threats affecting vireo populations and individuals, renovations and construction activities in the project area at the South Course would not result in increased habitat fragmentation since no least Bell's vireo habitat would be removed. In addition, renovations and construction activities occurring in the project area would not have any effect on additional brood parasitism. Thus, renovations and construction activities would have no effect on the predation of vireo nests.

Displacement. Under Alternative 2, golf course renovations and construction could cause direct, short-term effects to non-nesting least Bell's vireo by causing them to modify their behavior and avoid areas where those activities are occurring. These activities would be temporary, and vireos likely would return after crews have left the work areas. In addition, because renovation activities would be restricted to existing developed land in and around the South Course, surrounding suitable habitat would remain available to birds that are temporarily displaced. Any loss of foraging opportunities or other uses of that habitat would be temporary and insignificant.

Conclusion. The Navy has determined that Alternative 2 may affect, but is not likely to adversely affect the least Bell's vireo for the following reasons. Consultation with the USFWS is required and specific mitigation measures to protect this species is listed in Table 3-14.

- Construction and renovation would not occur within 500 feet of occupied least Bell's vireo habitat during the breeding season until a qualified biologist has determined that no nesting vireos are present or, if the species is found, the appropriate avoidance and minimization measures have been implemented. Therefore, there would be no direct effects on nesting least Bell's vireos.
- No locations in which least Bell's vireos have been historically observed at MGRF would be directly impacted by Alternative 2, and no riparian vegetation would be disturbed or removed. Therefore, potential nesting habitat for this species would not be adversely impacted.
- Alternative 2 would not cause fragmentation of habitat or cause any long-term changes to areas surrounding potential habitat that could result in an increase in predation or brood parasitism.
- Activities that generate noise greater than 60 dBA within 500 feet of nesting least Bell's vireos would be postponed until the fledglings have left the nest and the area, or noise attenuation structures would be installed at the noise source to reduce levels to 60 dBA or lower.
- Any least Bell's vireos foraging in or near the South Course during renovation and construction activities would be temporarily displaced; however, any loss of foraging opportunities or other use of that marginal habitat would be insignificant.

Hermes Copper Butterfly

Habitat Loss. Habitat for Hermes copper butterfly, which consists of native vegetation known to support the species, occurs on the MGRF to areas west of the South Course (Figure 3-10). However, these areas are outside the project area and no host plants occur within the project area. Indirect impacts to Hermes copper butterfly could occur if the renovations and construction activities were to cause fugitive dust sufficient to kill native vegetation, including host plants, adjacent to the project area and thus modify habitat. Direct effects could also occur if invasive vegetation introduced by construction activities resulted in competition with native vegetation and changed the composition of vegetation communities.

These impacts would be avoided or minimized through avoidance and minimization measures provided in Tables 2-2 and 3-15, such as fugitive dust watering and erosion control.

Displacement. Golf course renovations and construction under Alternative 2 could cause direct, short-term effects to Hermes copper butterfly by causing them to modify their behavior and avoid areas where those activities are occurring. However, this is highly unlikely as butterflies do not generally avoid areas with human activity. The Navy has determined that the Proposed Action will have no impacts on the Hermes copper butterfly.

There would be no significant impact on threatened and endangered species or candidate species because of the implementation of pre-construction surveys and avoidance measures. The Navy has determined that Alternative 2, may affect, but is not likely to adversely affect the coastal California Gnatcatcher and least Bell's vireo; therefore, consultation with the USFWS is required (Section 3.5.3.3). No habitat would be impacted and impacts from noise on any nesting pairs would be avoided.

Implementation of Alternative 2 would not result in significant impacts to biological resources.

3.5.3.3 Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative) Potential Impacts

Many of the impacts for Alternative 3, the Preferred Alternative, would be similar to those described for Alternative 2 in Section 3.5.3.2. However, Alternative 3 includes additional conveyance features that would add two swales and increase the size of Pond D; therefore, it would disturb more soil and turf, and impact more vegetation around Pond D than Alternative 2.

Clearing, grubbing, grading, and excavation would be needed to construct the Preferred Alternative. Table 2-1 identifies the construction activities for the Preferred Alternative. Excess soil that is not used for the balance of fill for these features would be stored and used at the South Course for other improvements not included in the Preferred Alternative. A SWPPP would be developed and BMPs would be implemented to control erosion and sedimentation, and minimize runoff from construction sites. Following completion of construction, the trees that are removed would be replaced and new turf would be planted in disturbed areas.

Terrestrial Vegetation

As with Alternative 2, impacts under the Preferred Alternative would occur to vegetation during the renovation and construction proposed under the Preferred Alternative such as regrading of the South Course; relocating tees, greens, and bunkers; and excavation to remove turf, trees, and dirt to make way for the drainage and conveyance features.

Terrestrial Wildlife

Impacts from the Preferred Alternative would be similar to those that would occur if Alternative 2 were completed. More fairway vegetation would be removed resulting in increased impacts to vegetation and potential forage for wildlife. However, these areas are highly modified and manicured and do not provide native habitat. The slightly increased impact area would likely have negligible impacts to wildlife in the area.

Threatened and Endangered Species

Impacts from the Preferred Alternative would be similar to those that would occur if Alternative 2 were completed. More fairway vegetation would be removed resulting in increased impacts to vegetation and potential forage for special status species. However, these areas are highly modified and manicured and do not provide native habitat normally utilized by coastal California gnatcatcher and least Bell's vireo. No host plants for Hermes copper butterfly were identified within the project area so there would be no change in impacts for that species.

There would be no significant impact on threatened and endangered species or candidate species because of the implementation of pre-construction surveys and avoidance measures. The Navy determined that Alternative 3, the Preferred Alternative, may affect, but is not likely to adversely affect the coastal California gnatcatcher and least Bell's vireo; therefore, formal consultation with the USFWS was initiated in October 2019 (Appendix B).

Implementation of the Preferred Alternative would not result in significant impacts to biological resources.

3.6 Infrastructure

This section discusses infrastructure such as utilities (including drinking water production, storage, and distribution; and stormwater management. No new wastewater, solid waste management, energy, or communications infrastructure would be constructed as part of the Proposed Action, and the proposed renovation would not increase demand on these utilities. Additionally, no new or existing facilities, including airfields, buildings, ranges, training and testing areas, wharves, piers, or housing, would be part of the Proposed Action. Therefore, wastewater, solid waste management, energy, communications, and facilities are not discussed further in this section.

3.6.1 Regulatory Setting

Stormwater discharge is regulated by the NPDES Stormwater Program in compliance with the CWA. The primary objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the nation's waters. To achieve this goal, the CWA prohibits the discharge of pollutants from point sources (any single identifiable source of pollution, such as a pipe, ditch, ship, etc.) to Waters of the U.S. without a NPDES permit (NAVFAC 2006).

Standards for potable water quality are set by the Safe Drinking Water Act, which was passed by Congress in 1974, with subsequent amendments in 1986 and 1996. Regulations for drinking water distribution systems are set by the Safe Drinking Water Act and the states, localities, and water suppliers who implement these standards are overseen by USEPA (CDC 2019).

3.6.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under infrastructure at the project area within the South Course.

3.6.2.1 Utilities

Potable Water

The Navy purchases potable water from the City of San Diego (NAVFAC 2006). Potable water supply lines tie in to the city's existing meters and run under the South Course south from the southern parking lot to the north near Ponds B, C, and D. Two offshoots from this main 4-inch polyvinyl chloride (PVC) pipe run to drinking fountains in the eastern portion of the South Course near the southern parking lot and the pathway along the San Diego River (Navy Public Works 1990a). A potable water line has also been integrated into the South Course's existing irrigation system as supplemental supply during extreme drought conditions or when the saline content of the water from the San Diego River is too high. See Stormwater below for more information on the irrigation system.

Stormwater

The South Course contains four created irrigation/drainage ponds, Ponds A, B, C, and D, which are interconnected through pipes, earthen drainage swales, and concrete culverts (Figure 1-2) (Navy 2014). Stormwater runoff from off-site drainage areas north of the South Course, localized runoff, and groundwater flow through the pond system from the North Basin outlet into Pond A in the northwestern corner of the South Course south to Pond B and Pond C, east to Pond D, and then east to the San Diego River through the Pond D outlet. Heavy rainfall causes flooding from excess runoff. During these conditions, storage capacity is an issue for the existing South Course pond system (Ponds A, B, C, and D) due to failed liners, excessive plant growth, and sedimentation (Navy 2017).

An irrigation system runs throughout the fairways of the South Course including a water source, pumping system, underground irrigation mains and laterals, irrigation heads, and the control system (Navy Public Works 1990b). Irrigation water is drawn from the existing pond system (Ponds A, B, C, and D). Water from Pond D is pumped for irrigation from a pumping station that is currently not in operation due to mechanical and electric problems. This stormwater-fed irrigation water is high in salts due to its source from runoff from unmanaged development watersheds. If necessary, stormwater in the ponds is supplemented with water from the San Diego River during periods of drought (Navy 2017). As such, the MGRF, which contains Admiral Baker Golf Course and the South Course, has riparian rights to the use of San Diego River water during drought. The Navy currently diverts approximately 530 acre-feet per year in order to irrigate 225 acres of the golf courses (i.e., North and South Courses) (Magnani 2019). A separate pumping station at the northern end of Pond D pumps water directly from a diversion point on the river to Pond D at which point the water is part of the installation's irrigation system. (Navy 2014, Navy Public Works 1990a, Navy 2017). However, the San Diego River water is also highly saline, which is not tolerated by all types of turf grass.

3.6.3 Environmental Consequences

This section analyzes the magnitude of anticipated increases or decreases in public works infrastructure demands considering historic levels, existing management practices, and storage capacity, and evaluates potential impacts to public works infrastructure associated with implementation of the alternatives. Impacts are evaluated by whether they would result in the use of a substantial proportion of the remaining system capacity, reach or exceed the current capacity of the system, or require development of facilities and sources beyond those existing or currently planned.

3.6.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the existing infrastructure of the South Course. The existing stormwater system would continue to be insufficient for irrigation water supply and stormwater management, including runoff storage. Stormwater system features would continue to deteriorate, and adversely affect the infrastructure of the South Course.

3.6.3.2 Alternative 2: Project Validation Assessment Potential Impacts

The study area for infrastructure includes the proposed construction and surrounding areas that are affected by or contribute to runoff in the project area related to Alternative 2.

Long-term, minor, beneficial impacts would be expected from the construction of the West Pond and addition of connection pipes between West Pond and the existing Ponds B and D. West Pond would provide additional storage for stormwater runoff to prevent flooding during excess rainfall events and supply the irrigation system during periods of drought. The addition of connecting pipes between the irrigation ponds would allow for better flow and management of runoff between the ponds and the pump station. With additional runoff storage capacity, flooding and standing water would be reduced throughout the South Course. Replacement of the irrigation system would better utilize stormwater for irrigation, reducing the need to use potable water and the San Diego River as an irrigation water supply source.

During excavation and construction related activities, runoff and turbidity in the receiving water bodies may be increased, but implementation of BMPs would greatly reduce potential impacts. Therefore, implementation of Alternative 2 would not result in significant impacts to stormwater infrastructure.

3.6.3.3 Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative) Potential Impacts

The study area for infrastructure includes the proposed construction and surrounding areas that are affected by or contribute to runoff in the project area related to the Preferred Alternative.

Long-term, moderate, beneficial impacts would be expected from the construction of the West Pond, 14th fairway swale, swale diversion, addition of connection pipes between West Pond and the existing Ponds B and D, and removal of golf cart crossing 2. Creation of the West Pond and the expansion of the northern portion of Pond D would provide additional storage for stormwater runoff to prevent flooding during excess rainfall events and supply the irrigation system during periods of drought. The addition of connecting pipes between the irrigation ponds would allow for better flow and management of runoff between the ponds and the pump station. Flooding and standing water on the South Course would be reduced through the increase in storage capacity for stormwater runoff. Construction of a graded swale on the 14th fairway would reduce standing water on the 14th and 15th fairways and redirect excess runoff into the San Diego River. The addition of a swale diversion between the North Basin and Pond D would further prevent flooding by accommodating a 100-year event of 1,264 cfs. Removal of golf cart crossing 2 and rerouting the path on a free span bridge or cart path that travels around the west side of the pond system would alleviate the current bottleneck situation and breakout problems associated with Ponds C and D.

Replacement of the irrigation system and replacing the nonfunctioning pump station would have long-term, minor, beneficial impacts on the stormwater and potable water systems. Replacing the irrigation system would better utilize stormwater for irrigation, reducing the need to utilize the potable water system or the San Diego River as an irrigation water supply source.

During excavation and construction related activities, stormwater runoff may be increased, but the implementation of BMPs would greatly reduce any potential impacts. Therefore, implementation of the Preferred Alternative would not result in significant impacts to stormwater infrastructure.

3.7 Hazardous Materials and Wastes

This section discusses hazardous materials, hazardous waste, toxic substances, and contaminated sites.

3.7.1 Regulatory Setting

Hazardous materials are defined by 49 CFR section 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR part 173.” Transportation of hazardous materials is regulated by the U.S. Department of Transportation.

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments, as: “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR section 273. Four types of

waste are currently covered under the universal wastes regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps, such as fluorescent light bulbs.

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing material (ACM), polychlorinated biphenyls (PCBs), and lead-based paint (LBP). USEPA is given authority to regulate special hazard substances by the Toxic Substances Control Act. Asbestos is also regulated by USEPA under the Clean Air Act, and the Comprehensive Environmental Response, Compensation, and Liability Act.

DoD established the Defense Environmental Restoration Program (DERP) to facilitate thorough investigation and cleanup of contaminated sites on military installations (active installations, installations subject to Base Realignment and Closure, and formerly used defense sites). The Installation Restoration Program (IRP) and the Military Munitions Response Program are components of the DERP. The IRP requires each DoD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The Military Munitions Response Program addresses nonoperational rangelands that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituent contamination. The Environmental Restoration Program (ERP) is the Navy's initiative to address DERP.

3.7.2 Affected Environment

The Navy has implemented a strict Hazardous Material Control and Management Program and a Hazardous Waste Minimization Program for all activities. These programs are governed Navy-wide by applicable Office of the Chief of Naval Operations instructions and at the installation by specific instructions issued by the Base Commander. The Navy continuously monitors its operations to find ways to minimize the use of hazardous materials and to reduce the generation of hazardous wastes.

3.7.2.1 Hazardous Materials

Various hazardous materials (e.g., gasoline, diesel fuel, engine oil, various lubricants, painting materials, ethylene glycol, and herbicides) are used to support building, grounds, and vehicle operations and maintenance at Admiral Baker Golf Course. The South Course is maintained in accordance with an approved INRMP, which establishes an efficient management plan to optimize the use and application of fertilizers and herbicides to the specific needs and uptake of the course's turf grass (Navy 2017). A Facility Response Plan and over 40 business plans have been developed for Naval Base San Diego facilities, including MGRF, which encompasses Admiral Baker Golf Course. Components of these plans include notification information for both military and nonmilitary responders, spill response strategy, evacuation plan, and the oil and hazardous substance discharge telephone report sheet (Navy 2014).

3.7.2.2 Hazardous Waste

The hazardous wastes generated at the South Course consist primarily of waste oil, spent absorbent, oily wastewater, empty containers, photo processing wastes, batteries, miscellaneous laboratory chemicals, paints, solvents, and aerosols. The hazardous wastes generated are containerized, labeled, stored, and transported in accordance with USEPA, U.S. Department of Transportation, State of California, and Navy regulations and requirements for hazardous waste storage, transport, treatment, and disposal.

Universal wastes, a subset of hazardous wastes that includes household types of items such as dry cell batteries, all lamps except incandescent lamps, mercury-containing items such as thermostats, cathode ray tubes, consumer electronic devices, and aerosol containers, are also present and are currently being segregated, stored, managed, and properly disposed of in accordance with the current Commander Navy Region Southwest Waste Management Plan (CNRSW 2013).

3.7.2.3 Special Hazards (Asbestos Containing Materials, Lead Based Paint, Polychlorinated Biphenyls

ACMs and LBP can be present in any age building, but ACMs are most likely to be found in buildings constructed prior to 1989, while LBP is most likely to be present in buildings constructed prior to the 1978 ban. Asbestos can be found in asbestos-cement potable water pipes. PCBs can be present in products and equipment produced before the 1979 ban. It is assumed that some building materials and equipment within the South Course, such as the transite pipes used for irrigation lines, could contain ACMs. Additionally, electrical transformers and switches in the pumphouse could contain PCBs and some of the buildings and infrastructure could be coated with LBP.

3.7.2.4 Defense Environmental Restoration Program

The DERP is responsible for identifying contaminant releases, evaluating risk to human health and the environment, and developing and selecting response actions, as needed. The Emergency Management Program at Naval Base San Diego provides the necessary policy guidance, organizational structure, mitigation strategies, and responsibilities to establish an all hazards approach to emergency management at Admiral Baker Golf Course. Emergency Management provides the framework for Navy interaction with federal, state, local, and other service organizations. There is also an Emergency Response Plan available for all Naval Base San Diego areas, including Admiral Baker Golf Course (Navy 2014).

As of 2011, 24 active ERP sites were identified for Naval Base San Diego. Of these 24 ERP sites, 8 sites have been closed or require no further action (of which 7 sites have been cleaned up, closed under the IRP via a No Further Action Record of Decision), and 4 sites were never officially established because these sites were termed Solid Waste Management Units under the Resource Conservation and Recovery Act before being implemented in the ERP. The remaining ERP sites continue under various stages of investigation and remedial action (Navy 2014) and will remain open until the nature and extent of contamination is fully characterized, or the necessary clean up actions completed.

Site 5 is the only ERP site at the Admiral Baker Golf Course and is approximately 0.7 mile from the project area. ERP Site 5 is a landscaping-debris landfill on the north end of Admiral Baker Golf Course within the North Course. The landfill is irregularly shaped with 400- to 500-foot segments and a total surface area of approximately 80,000 square feet. ERP Site 5 was formerly designated as an on-site disposal of green organic debris and debris generated from golf course grounds maintenance activities. The landscaping debris landfill became inactive in 1974, and approximately 4 feet of earthen cover was placed on top of the fill area. A Solid Waste Assessment Test was conducted between 1992 and 1993. In addition to landscaping debris, it was found that concrete, scrap metal, and refuse had also been deposited at the site. No release of hazardous substances was found; therefore, the landfill required no cleanup action and was closed in 1997. The site was closed by ROD in December 2004 (NBSD 2009).

3.7.3 Environmental Consequences

The hazardous materials and wastes analysis contained in the respective sections addresses issues related to the use and management of hazardous materials and wastes as well as the presence and management of specific cleanup sites at Admiral Baker Golf Course.

3.7.3.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change associated with hazardous materials and wastes. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.7.3.2 Alternative 2: Project Validation Assessment Potential Impacts

The study area for hazardous materials and wastes is the project area within the South Course.

Under Alternative 2, construction activities associated with the proposed golf course renovation would require the use of certain hazardous materials (e.g., gasoline, diesel, oils, etc.). It is anticipated that the quantity of products containing hazardous materials used for construction activities would be minimal and their use would be temporary; however, the potential for spills would exist. Any spills or releases of hazardous substances would be cleaned up by the contractor in accordance with established procedures and in compliance with existing requirements and EOs, including the installation's Emergency Response Plan.

The construction contractor would implement a Hazardous Materials and Wastes Management Plan to ensure appropriate procedures are in place to address handling, storage, and disposal of hazardous materials and wastes during construction. The quantity of hazardous wastes generated from construction would be minor and would not be expected to exceed the capacities of existing hazardous waste management facilities. Only required hazardous substances would be used or stored in appropriate containers with adequate spill containment and protection. Because hazardous substances would be managed in accordance with applicable regulations, no significant impacts on hazardous materials/waste management associated with construction are anticipated. Once construction is complete, no additional demand in hazardous materials and wastes would be expected because maintenance activities would return to preconstruction levels. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits. All pesticides and herbicides used at the South Course would continue to be managed, stored, and applied as specified in existing Admiral Baker Golf Course operating procedures and would ,therefore, would not result in additional impacts.

There could be impacts from ACMs, LBP and PCBs associated with the replacement of the irrigation system and pumping station, depending on the age of the equipment. Characterization and surveys of ACMs, LBP and PCBs would be done prior to work being completed on materials suspected of containing these materials. All ACMs, LBP, and PCBs identified during characterization would be removed and disposed of according to local and state regulations.

No impacts on DERP would be expected because the proposed improvements are not within any ERP site.

Therefore, implementation of the Preferred Alternative would not result in significant impacts with hazardous materials and wastes.

3.7.3.3 Alternative 3: Project Validation Assessment with Additional Features (Preferred Alternative) Potential Impacts

The study area for hazardous materials and wastes is the project area within the South Course.

Impacts on hazardous materials and wastes would be similar to, but greater than those mentioned under Alternative 2 because there would be more construction activities over a longer period. Construction associated with the proposed golf course improvements would require the use of hazardous materials. It is anticipated that the quantity of products containing hazardous materials used for construction would be minimal and their use would be temporary. Any spills or releases of hazardous substances would be cleaned up by the contractor in accordance with established procedures and in compliance with existing requirements.

The construction contractor would implement a Hazardous Materials and Wastes Management Plan to ensure appropriate procedures are in place to address handling, storage, and disposal of hazardous materials and wastes during construction. The quantity of hazardous wastes generated from construction would be minor and would not be expected to exceed the capacities of existing hazardous waste management facilities. All pesticides and herbicides used at the South Course would continue to be managed, stored, and applied as specified in existing Admiral Baker Golf Course operating procedures and would ,therefore, would not result in additional impacts.

There could be impacts from ACMs, LBP and PCBs associated with the replacement of the irrigation system and pumping station, depending on the age of the equipment. Characterization and surveys of ACMs, LBP and PCBs would be done prior to work being completed on materials suspected of containing these materials. All ACMs, LBP and PCBs identified during characterization would be removed and disposed of according to local and state regulations.

No impacts on DERP would be expected because the proposed improvements are not within any ERP site. Therefore, no significant impact on hazardous materials/waste management associated with operations would be anticipated.

3.8 Summary of Potential Impacts to Resources and Impact Avoidance and Minimization

A summary of the potential impacts associated with each of the action alternatives and the No Action Alternative and impact avoidance and minimization measures are presented in Tables 3-13 and 3-14, respectively. Table 3-14 provides a comprehensive list of all mitigation requirements associated with the Proposed Action.

Table 3-13 Summary of Potential Impacts to Resource Areas

Resource Area	*Alternative 1: No Action Alternative*	*Alternative 2: Project Validation Assessment*	*Alternative 3: Project Validation Assessment with Additional Features*
Air Quality	Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline air quality. No significant impacts related to air quality would occur.	Alternative 2 would result in emissions of air pollutants that would be below *de minimis* values, and greenhouse gases that would fall below a 75,000-metric ton per year increase used as an indicator. Therefore, Alternative 2 would not result in significant impacts related to air quality.	Alternative 3 would result in emissions of air pollutants similar to those for Alternative 2 and, therefore, would have similar impacts. Alternative 3 would not result in significant impacts related to air quality.
Water Resources	Under the No Action Alternative, the Proposed Action would not occur and there would be no change in baseline water resources. The South Course would continue to experience flooding and drainage issues during heavy precipitation events, which have the potential to reduce water quality, and would continue to rely on water from the San Diego River for irrigation.	Alternative 2 would not result in significant impacts related to groundwater, surface waters, wetlands, floodplains, and shorelines. Stormwater retention would improve and groundwater infiltration would not be impeded. Sediment in runoff would be allowed to settle out in onsite ponds, thereby potentially improving water quality. Permanent loss of fringe wetlands could have an impact on water quality; therefore, permanent loss would be mitigated at a minimum 1:1 establishment ratio. Permanent discharge of fill would result from construction of Alternative 2; however, newly constructed features would be expected to meet the definition of Waters of the U.S. and, therefore, no net loss of Waters of the U.S. is anticipated. Although Alternative 2 would be constructed within the 100-year floodplain, it would reduce flooding.	Alternative 3 is similar to Alternative 2, except it would increase onsite stormwater capacity. Alternative 3 would result in similar less than significant impacts related to groundwater, surface waters, wetlands, floodplains, and shorelines as Alternative 2.

Table 3-13 Summary of Potential Impacts to Resource Areas

Resource Area	*Alternative 1: No Action Alternative*	*Alternative 2: Project Validation Assessment*	*Alternative 3: Project Validation Assessment with Additional Features*
Geological Resources	Under the No Action Alternative, the Proposed Action would not occur and there would be no change to existing topography, geology, or soils. Flooding and drainage issues would continue, thereby increasing the potential for erosion. No significant impacts to geological resources would occur.	Alternative 2 would not result in significant impacts related to topography or soils and erosion. Negligible impacts on topography would occur due to new features and grading. Construction of drainage features would include clearing of 95,500 square feet and excavation of 33,833 cubic yards, and additional ground disturbance would be needed to complete the other project components. However, overall improved stormwater control would have long-term, beneficial impacts and implementation of BMPs would minimize potential for erosion. No impacts on geology would occur.	Alternative 3 would have similar less than significant impacts related to topography or soils and erosion; however, it would include clearing of 200,428 square feet and excavation of 39,299 cubic yards for construction of drainage and conveyance features. No impacts on geology would occur.
Cultural Resources	Under the No Action Alternative, the Proposed Action would not occur and there would be no change to cultural resources. No significant impacts to cultural resources.	Two recorded archaeological sites intersect with the area of potential effect (APE); however, none of the proposed features intersect with any known cultural resources. Alternative 2 could potentially impact prehistoric archaeological sites by disturbing or destroying unknown buried cultural deposits; however, implementation of a cultural resources monitoring program during construction would reduce the impacts to less than significant. It is anticipated there would be no impacts on architectural resources or traditional cultural properties.	Alternative 3 would have similar less than significant impacts on cultural resources with the implementation of a cultural resources monitoring program during construction. It is anticipated there would be no impacts on architectural resources or traditional cultural properties.

Table 3-13 Summary of Potential Impacts to Resource Areas

Resource Area	*Alternative 1: No Action Alternative*	*Alternative 2: Project Validation Assessment*	*Alternative 3: Project Validation Assessment with Additional Features*
Biological Resources	Under the No Action Alternative, the Proposed Action would not occur and there would be no change to biological resources. No significant impacts to biological resources would occur.	There would be no significant impacts on federal- or state-listed threatened and endangered species or candidate species with the implementation of avoidance and minimization measures such as surveys for protected birds before and during construction, establishment of a 500-foot buffer or installation of noise attenuation structures around active nests, and habitat avoidance measures. Temporary impacts on threatened and endangered species could occur from noise and habitat disturbances during construction; however, species are likely habituated to noise. Short-term impacts on terrestrial vegetation and terrestrial wildlife would occur during construction due vegetation removal and habitat loss, and temporary displacement of wildlife.	The impacts of Alternative 3 would be similar to Alternative 2, except it includes additional conveyance features. Therefore, Alternative 3 would disturb more soil and turf, and impact additional vegetation. The Navy has determined that Alternative 3, the Preferred Alternative, may affect, but is not likely to adversely affect coastal California gnatcatcher, least Bell's vireo, and Hermes copper butterfly; therefore, consultation with the U.S. Fish and Wildlife Service was initiated.

Table 3-13 Summary of Potential Impacts to Resource Areas

Resource Area	*Alternative 1: No Action Alternative*	*Alternative 2: Project Validation Assessment*	*Alternative 3: Project Validation Assessment with Additional Features*
Infrastructure	Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the existing infrastructure. The existing stormwater system would continue to be insufficient for irrigation water supply and stormwater management, including runoff storage. Stormwater features would continue to deteriorate, and adversely affect the South Course.	Alternative 2 would result in long-term, beneficial impacts on potable water and stormwater infrastructure due to the addition of drainage features and regrading of the South Course that would provide additional storage for stormwater runoff to prevent flooding, and supply the irrigation system during periods of drought. Replacement of the irrigation system would allow for more efficient use stormwater and minimization of potable water. No impacts on wastewater, solid waste management, energy, and communications and facilities.	Alternative 3 would result in similar long-term, beneficial impacts on potable water and stormwater infrastructure as Alternative 2; however, it would include additional features to accommodate onsite stormwater storage and prevent flooding. No impacts on wastewater, solid waste management, energy, and communications and facilities.
Hazardous Materials and Wastes	Under the No Action Alternative, the Proposed Action would not occur and there would be no change associated with hazardous materials and wastes. No significant impacts would occur.	Alternative 2 would not result in significant impacts related to hazardous materials and waste sites. Construction would involve an increase in the quantities of hazardous materials used and hazardous wastes generated, although it is anticipated that the quantities would be minimal and their use/generation would be temporary. Alternative 2 would comply with all appropriate regulations and policies for the management, storage, handling, and disposal of hazardous materials and wastes.	Alternative 3 would have similar less than significant impacts related to hazardous materials and wastes as Alternative 2.

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
Should a net loss of wetlands onsite become unavoidable, impacts wetlands would be mitigated at a minimum of 1:1 establishment in consultation USACE to ensure no net loss of wetlands.	Compensatory mitigation would offset wetland impacts of the Proposed Action and achieve no net loss of wetlands.	Details regarding the specific impacts expected on wetlands, the wetland types that would be impacted, and the required mitigation measure ratio for impacts on wetlands would be determined during the Section 404 and 401 CWA permitting process in consultation with USACE.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented prior to the start of construction.
Wetland vegetation would be planted along the fringe of the existing irrigation ponds (Ponds A, B, C, and D) if feasible.	Compensatory mitigation would offset wetland impacts of the Proposed Action and achieve no net loss of wetlands.	Details regarding the specific impacts expected on wetlands, the wetland types that would be impacted, and the required mitigation measure ratio for impacts on wetlands would be determined during the Section 404 and 401 CWA permitting process in consultation with USACE.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.
The construction contractor would create an Environmental Protection Plan for Naval Base San Diego biologist approval prior to start of construction. Staging and access shall be described in the Environmental Protection Plan for approval (and flagged, etc.) prior to the start of work. Before project initiation, the Project Proponent or the construction contractor will delineate the limits of construction including temporary features such as staging areas and lay-down areas with flagging, fencing, or signposts.	Avoidance of impacts related to biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented prior to the start of construction.

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
All project-related activities would occur within the marked project footprint. Project staging and lay-down areas would be designated within the project footprint or on existing roads and parking lots.	Avoidance of impacts related to biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented prior to the start of and during construction.
No vegetation would be removed in the riparian areas along the San Diego River.	Avoidance of impacts related to water resources and biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.
The Project Proponent or contractor's biologist would conduct pre-construction surveys for federally listed birds and nests 500 feet from the project outer impacts areas near the San Diego River and along the hillside to the west of the project area (see Figure 3-13). Please see specific measures for coastal California gnatcatcher and least Bell's vireo below. It is highly recommended that major construction occur outside of their respective breeding seasons.	Disturbance of breeding birds, active bird nests, eggs, or nestlings from noise generated by construction activities would be avoided pursuant to the ESA.	Surveys would be conducted by a qualified biologist provided by either the Navy or the contractor in coordination with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented prior to the start of construction.
All native or sensitive habitats outside of and adjacent to the construction limits would be designated as Environmentally Sensitive Areas on project maps. Environmentally Sensitive Areas would temporarily be fenced during construction with orange or yellow rope, orange silt fencing, or in areas of flowing water, with stakes and flagging. No personnel, equipment, or debris would be allowed within	Avoidance of impacts related to biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
the Environmentally Sensitive Areas. Temporary Environmentally Sensitive Areas fencing and flagging would be installed in a manner that does not impact habitats to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment.				
The Navy would develop and implement an employee environmental awareness program to ensure that the contractor(s) and all maintenance personnel are fully informed of the biological resources associated with the project. The program would focus on: (a) the purpose for resource protection and a description of the federally listed species and their habitats; (b) contractor identification of sensitive resource areas in the field (i.e., avoidance areas delineated on maps and by flags or fencing); (c) project avoidance and minimization measures, including speed limits; measures to prevent the introduction and spread of invasive weeds; erosion, dust, and trash control measures; (d) protocol to resolve issues that may arise at any time during the construction process; and (e) ramifications of noncompliance.	Avoidance of impacts related to biological resources.	Naval Base San Diego Environmental Natural Resource Manager would coordinate with the construction contractor.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented prior to the start of construction.

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
An erosion control plan would be prepared and implemented prior to project initiation to minimize potential effects of project-related pollution and erosion and/or sedimentation on special status species habitat. The plan would include BMPs to control erosion and prevent the release of contaminants into the soil that could be harmful to federally listed taxa. Erosion and sediment control devices used for the project would be made from biodegradable materials free from plastic mesh to avoid creating a wildlife entanglement hazard.	Avoidance of impacts to biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented prior to the start of and during construction.
Impacts from fugitive dust would be avoided and minimized through watering and other appropriate measures.	Avoidance of impacts to air quality and biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.
Vegetation clearing and grading activities in or adjacent to federally listed bird breeding habitat would occur between September 1 and February 14 to avoid the breeding nesting season. Trees that are removed from the golf course will be surveyed for nesting birds before removal.	Avoidance of impacts to biological resources, including migratory and federally listed birds.	Vegetation clearing and grading would be conducted by the construction contractor in coordination with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.
To protect wildlife and possible nesting habitat, existing mature trees would not be removed without prior consultation with and approval from a Naval Base San Diego wildlife biologist.	Avoidance of impacts to biological resources, including federally listed birds.	Tree removal would be conducted by the construction contractor in coordination with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
To control the spread of non-native plants and impacts to adjacent native habitat, all equipment and/or vehicles would be cleaned and power-washed before entering the project site, and when feasible, would be cleaned at a vehicle and boot washing station in the project area. Pressure washing would focus on removal of plant materials and seeds or mud containing seeds from the undercarriage of the vehicle or construction equipment. BMPs would be established to capture wash runoff.	Avoidance of impacts to biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.
All equipment maintenance; staging; and dispensing of fuel, oil, or coolant; or any other such activities would be restricted to designated staging areas that are a minimum of 100 feet from sensitive habitats and drainages.	Avoidance of impacts to biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.
The Project Area would be kept as clear of debris as possible. All food-related trash items will be kept in sealed containers and regularly removed from the site. All spoils and material disposal would be disposed of properly in covered waste receptacles.	Avoidance of impacts to biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.
Project personnel would be prohibited from bringing domestic pets to construction sites to avoid disturbance and depredation of wildlife in adjacent habitats.	Avoidance of impacts to biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
Equipment staging, warm-up, and storage areas would be located as far as possible from the surrounding areas of native habitat to reduce noise levels.	Avoidance of impacts to biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.
Construction activities with flexibility to work in any area (e.g., cement mixing, general truck idling, equipment delivery/removal) would be conducted as far as possible from native habitat to the maximum extent possible.	Avoidance of impacts to biological resources.	Construction contractor would coordinate with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented during construction.
Coastal California Gnatcatcher A Carlsbad Fish and Wildlife Office (CFWO)-approved biologist (Biological Monitor) would be on site: (1) during clearing and grubbing; and (2) weekly during project construction within 500 feet of gnatcatcher habitat to ensure compliance with all conservation measures. The Project Proponent or construction contractor would submit the biologist's name, address, telephone number, and work schedule on the project to the CFWO at least 5 working days prior to initiating project impacts. The contract of the Biological Monitor would allow direct communication with the CFWO at any time regarding the proposed project. The Biological Monitor would be provided with a copy of this consultation. The Biological Monitor would be available during pre-construction and construction phases to review grading plans, address protection of sensitive biological	Avoidance of impacts to coastal California gnatcatcher.	A CFWO-approved biologist would conduct surveys in coordination with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented prior to the start of and during construction.

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
resources, monitor ongoing work, and maintain communications with the Resident Engineer to ensure that issues relating to biological resources are appropriately and lawfully managed. The Biological Monitor would perform the following duties: A. Perform a minimum of three focused surveys, on separate days, to determine the presence of coastal California gnatcatcher nest building activities, egg incubation activities, or brood rearing activities within 500 feet of project construction proposed during the species' breeding season. The surveys would begin a maximum of 7 days prior to project construction and one survey would be conducted the day immediately prior to the initiation of work. Additional surveys would be done once a week during project construction in the breeding season. These additional surveys may be suspended as approved by the CFWO. The Navy would notify the CFWO at least 7 days prior to the initiation of surveys and within 24 hours of locating any gnatcatchers. B. If an active coastal California gnatcatcher nest is found within 500 feet of project construction, the Biological Monitor would postpone work within 500 feet of the nest(s) and contact the CFWO to discuss: (1) the best approach to avoid/minimize impacts to nesting birds (e.g., sound walls, noise monitoring); and (2) a nest monitoring program acceptable to the CFWO. Subsequent				

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
to these discussions, work may be initiated subject to implementation of the agreed upon avoidance/minimization approach and nest monitoring program. Nest monitoring would occur according to a schedule approved by the CFWO. The Biological Monitor would determine whether bird activity is being disrupted. If the Biological Monitor determines that bird activity is being disrupted, Navy would stop work and coordinate with the CFWO to review the avoidance/minimization approach. Upon agreement as to the necessary revisions to the avoidance/minimization approach, work may resume subject to the revisions and continued nest monitoring. Nest monitoring would continue until fledglings have dispersed, as approved by the CFWO.				
Least Bell's Vireo A CFWO-approved biologist (Biological Monitor) would be on site: (1) during clearing and grubbing; and (2) weekly during project construction within 500 feet of least Bell's vireo habitat to ensure compliance with all conservation measures. The Project Proponent or construction contractor would submit the biologist's name, address, telephone number, and work schedule on the project to the CFWO at least 5 working days prior to initiating project impacts. The contract of the Biological Monitor would allow direct communication with the CFWO at any time regarding the proposed project. The	Avoidance of impacts to least Bell's vireo.	A CFWO-approved biologist would conduct surveys in coordination with the Naval Base San Diego Environmental Natural Resource Manager.	Naval Base San Diego Environmental Natural Resource Manager	Proposed mitigation would be implemented prior to the start of and during construction.

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
Biological Monitor would be provided with a copy of this consultation. The Biological Monitor would be available during pre-construction and construction phases to review grading plans, address protection of sensitive biological resources, monitor ongoing work, and maintain communications with the Resident Engineer to ensure that issues relating to biological resources are appropriately and lawfully managed. The Biological Monitor would perform the following duties: A. Perform a minimum of three focused surveys, on separate days, to determine the presence of least Bell's vireo nest building activities, egg incubation activities, or brood rearing activities within 500 feet of project construction proposed during the species' breeding season. The surveys would begin a maximum of 7 days prior to project construction and one survey would be conducted the day immediately prior to the initiation of work. Additional surveys would be done once a week during project construction in the breeding season. These additional surveys may be suspended as approved by the CFWO. The Navy would notify the CFWO at least 7 days prior to the initiation of surveys and within 24 hours of locating any vireo. B. If an active least Bell's vireo nest is found within 500 feet of project construction, the Biological Monitor would postpone work within 500 feet of the nest(s) and contact the				

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
CFWO to discuss: (1) the best approach to avoid/minimize impacts to nesting birds (e.g., sound walls, noise monitoring); and (2) a nest monitoring program acceptable to the CFWO. Subsequent to these discussions, work may be initiated subject to implementation of the agreed upon avoidance/minimization approach and nest monitoring program. Nest monitoring would occur according to a schedule approved by the CFWO. The Biological Monitor would determine whether bird activity is being disrupted. If the Biological Monitor determines that bird activity is being disrupted, Navy would stop work and coordinate with the CFWO to review the avoidance/minimization approach. Upon agreement as to the necessary revisions to the avoidance/minimization approach, work may resume subject to the revisions and continued nest monitoring. Nest monitoring would continue until fledglings have dispersed, as approved by the CFWO.				
Implement a cultural resources monitoring program during construction. The objective of an archaeological monitoring program would be to identify, document, and record observed cultural resources during ground disturbance and to protect and manage any discoveries made during monitoring. Monitoring should consist of the full-time presence of a qualified archaeologist. The archaeologist would halt ground-disturbing activities if archaeological artifact deposits or cultural features are	The archaeological monitoring program would identify, document, and record observed cultural resources during ground disturbance to protect and manage any discoveries made during monitoring, and avoid potential impacts on cultural resources.	Surveys would be conducted by a qualified archaeologist provided by the Navy.	Naval Base San Diego Environmental Cultural Resources Manager	Proposed mitigation would be implemented during construction.

Table 3-14 Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
discovered. Ground-disturbing activities would be directed away from these deposits for a short time to allow a determination of potential significance. The monitoring program would also include an immediate, onsite archaeological response for buried human remains, if discovered				

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4 Cumulative Impacts

This section (1) defines cumulative impacts, (2) describes past, present, and reasonably foreseeable future actions relevant to cumulative impacts, (3) analyzes the incremental interaction the proposed action may have with other actions, and (4) evaluates cumulative impacts potentially resulting from these interactions.

4.1 Definition of Cumulative Impacts

The approach taken in the analysis of cumulative impacts follows the objectives of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and CEQ guidance. Cumulative impacts are defined in 40 Code of Federal Regulations section 1508.7 as "the impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

To determine the scope of environmental impact analyses, agencies shall consider cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact analysis document.

In addition, CEQ and the U.S. Environmental Protection Agency have published guidance addressing implementation of cumulative impact analyses—Guidance on the Consideration of Past Actions in Cumulative Effects Analysis (CEQ 2005) and Consideration of Cumulative Impacts in EPA Review of NEPA Documents (USEPA 1999). CEQ guidance entitled *Considering Cumulative Impacts Under NEPA* (1997) states that cumulative impact analyses should

"…determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative impacts of other past, present, and future actions...identify significant cumulative impacts…[and]…focus on truly meaningful impacts."

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions:

- Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

4.2 Scope of Cumulative Impacts Analysis

The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur. For this EA, the study area delimits the geographic extent of the cumulative impacts analysis. In general, the study area will include those areas previously identified in Chapter 3 for the respective resource areas. The time frame for cumulative impacts centers on the timing of the proposed action.

Another factor influencing the scope of cumulative impacts analysis involves identifying other actions to consider. Beyond determining that the geographic scope and time frame for the actions interrelate to the proposed action, the analysis employs the measure of "reasonably foreseeable" to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions include notices of intent for Environmental Impact Statements and EAs, management plans, land use plans, and other planning related studies.

4.3 Past, Present, and Reasonably Foreseeable Actions

This section will focus on past, present, and reasonably foreseeable future projects at and near the Proposed Action locale. In determining which projects to include in the cumulative impacts analysis, a preliminary determination was made regarding the past, present, or reasonably foreseeable action. Specifically, using the first fundamental question included in Section 4.1, it was determined if a relationship exists such that the affected resource areas of the Proposed Action (included in this EA) might interact with the affected resource area of a past, present, or reasonably foreseeable action. If no such potential relationship exists, the project was not carried forward into the cumulative impacts analysis. In accordance with CEQ guidance (CEQ 2005), these actions considered but excluded from further cumulative effects analysis are not catalogued here as the intent is to focus the analysis on the meaningful actions relevant to informed decision-making. Projects included in this cumulative impacts analysis are listed in Table 4-1 and briefly described in the following subsections.

Table 4-1 Cumulative Action Evaluation

Action	***Level of NEPA Analysis Completed***
Past Actions	
Course-wide Renovation of the North Course at Admiral Baker Golf Course	none
North Course Irrigation Lake Improvement	none
Tierrasanta Community Plan	none
Present and Reasonably Foreseeable Future Actions	
San Diego River Park Master Plan	none
City of San Diego Capital Improvement Projects	none
Mission Trails Regional Park Master Plan Update	None; CEQA PEIR

Key: CEQA PEIR = California Environmental Quality Act Programmatic Environmental Impact Report

4.3.1 Past Actions

Course-wide Renovation of the North Course at Admiral Baker Golf Course. The North Course renovated in 2011 consisting of reconstructing tees, greens, and bunkers, regrading to provide more

contours to an otherwise flat and fairly nondescript course, and regrassing certain areas of the course with bent grass (Navy 2017).

North Course Irrigation Lake Improvement. An improvement project was conducted at the irrigation lake at the North Course several years prior to the course-wide renovation project (Navy 2017).

Tierrasanta Community Plan. The Tierrasanta Community Plan was originally adopted in 1982, and was last amended in 2013. The community plan serves as a guide for future public and private development within the Tierrasanta community. The community plan identifies specific residential, commercial, industrial, and community facility site proposals, most of which have been developed. The majority of developed land in Tierrasanta, which is at build-out, is devoted to residential uses, with several small commercial centers scattered throughout the community and light industrial near the intersection of I-15 and state Route 52.

4.3.2 Present and Reasonably Foreseeable Actions

San Diego River Park Master Plan. The San Diego River Park Master Plan provides a framework to establish a park along a 17.5-mile segment of the San Diego River within the City of San Diego from the Pacific Ocean to the City of Santee. The river park is planned to consist of a series of parks linked by open space, pathways, and green corridors. The master plan recommends the creation of a continuous, east-west, multi-use pathway (San Diego River Pathway or San Diego River Trail) along the San Diego River to serve as a transportation route and a recreational facility. The master plan divides the area into six reaches; Admiral Baker Golf Course is a key site within the Upper Valley Reach. The master plan states there are opportunities to integrate Admiral Baker Golf Course with the river corridor, including creation of space for the San Diego River Pathway and pedestrian trail connections to the pathway and Elanus Canyon and the Tierrasanta community north of the course (City of San Diego 2013).

City of San Diego Capital Improvement Projects. There several City of San Diego capital improvement projects in various stages of completion near Admiral Baker Golf Course. These projects include the following:

- Water & Sewer Group 1056 (W) (project identification: B18181). The project consists of construction of approximately 20,223 linear feet (3.83 miles) of PVC water mains to replace existing 6-, 8-, 12-, and 16-inch diameter asbestos cement water mains via open trench within the same trench alignment at the same or shallower depth, including associated water services, fire hydrants, valves, water meters, and other appurtenances. The project will occur in the Tierrasanta community located north of the North Course, along Tierrasanta Boulevard and Colina Dorada Drive. The project is in the design phase and construction is scheduled to begin in May 2021.
- Water Main Replacement Master Program Priority 1 & 2 (project identification: 999200). The project consist of replacement of old water main pipes made from concrete or cast iron with PVC pipes. The project will occur in various location throughout the City of San Diego, including several near the Admiral Baker Golf Course such as along Rueda Drive (north of the North Course, in the Tierrasanta community) and along Princess View Drive and Conestoga Way (east/southeast of the North Course, across the San Diego River). This project is in the planning phase (City of San Diego 2019a).

Mission Trails Regional Park Master Plan Update. The Mission Trails Regional Park Master Plan Update was initiated by the City of San Diego to reflect the current status of the park's development, including

addition of approximately 9,780 acres, and the evolving requirements of environmental protection. The eastern edge of the Mission Gorge Area of Mission Trails Regional Park is approximately 0.6 miles from the North Course. The Master Plan Update recommends construction of a new hike/bike trail as part of the San Diego River Pathway and consistent with the San Diego River Park Master Plan (City of San Diego 2019b). The San Diego City Council approved the Master Plan Update and the associated Final Program Environmental Impact Report in May 2019. A public hearing on the Master Plan Update before the San Diego County Board of Supervisors is pending.

4.4 Cumulative Impact Analysis

Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources included for analysis, quantifiable data is not available and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA where possible. The analytical methodology presented in Chapter 3, which was used to determine potential impacts to the various resources analyzed in this document, was also used to determine cumulative impacts.

4.4.1 Air Quality

4.4.1.1 Description of Geographic Study Area

The region of influence (ROI) for cumulative effects on air quality is defined as the San Diego Air Basin. For purposes of air quality, the cumulative impact analysis looks beyond cumulative projects per se and instead focuses on the average cumulative air quality conditions within the San Diego Air Basin from day to day. The potential effects of proposed greenhouse gas (GHG) emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are typically not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact to global climate change would only occur when proposed GHG emissions combine with other human-generated GHG emissions in such a way to appreciably and discernibly affect climate change on a global scale.

4.4.1.2 Relevant Past, Present, and Future Actions

Emissions from the Proposed Action and the cumulative projects identified above in Section 4.3 and Table 4-1 would comply with San Diego County Air Pollution Control District rules and regulations, which would minimize the impact of project cumulative air quality impacts.

4.4.1.3 Cumulative Impact Analysis

The Proposed Action would not result in significant cumulative air quality impacts in conjunction with the identified cumulative projects. As described in Section 3.1, construction and operational activities associated with the Proposed Action would produce emissions that would be subject to General Conformity, but those emissions would be below their respective *de minimis* values with respect to criteria pollutants.

The Proposed Action would not contribute to any appreciable extent to the degradation of regional air quality or otherwise contribute to a significant cumulative impact on air quality. Consequently, proposed renovation activities would not have the potential to meaningfully contribute to any potentially significant cumulative impacts with regards to criteria pollutant levels. Emissions would be generated during construction of cumulative projects, but would likely be minimized by controlling fugitive dust

similar to the Proposed Action. Short-term emission during proposed renovation activities and construction activities for the cumulative projects would only have temporary effects and would not result in significant impacts. Neither the Proposed Action nor cumulative projects would be expected to have any long-term impacts on air quality beyond the existing conditions at each facility. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant cumulative impacts on air quality within the ROI.

The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are typically not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact on global climate change would only occur when proposed GHG emissions combine with GHG emissions from other man-made activities on a global scale. The Proposed Action would contribute directly to emissions of GHGs from the combustion of fossil fuels during renovation activities; however, the amount generated would be limited and not likely to contribute to global warming to any discernible extent. It is likely that all cumulative projects identified in Table 4-1 would result in GHG emissions primarily due to combustion of fossil fuels from equipment and vehicle use. However, the anticipated GHG emissions from the Proposed Action and the cumulative projects would represent a negligible contribution towards California's GHG inventory and an extremely negligible contribution toward the national GHG inventory. Additionally, the cumulative projects would vary in timing, so impacts would be distributed over time. Therefore, when cumulatively considering GHG emissions from the Proposed Action combined with the past, present, and reasonably foreseeable future projects, the Proposed Action would not result in significant cumulative effects on air quality.

4.4.2 Water Resources

4.4.2.1 Description of Geographic Study Area

The ROI for cumulative effects on water resources encompasses the areas with the potential to be affected by the Proposed Action in the San Diego River watershed, which includes the surface waters that receive surface water flows from the Admiral Baker Golf Course (e.g., South Course irrigation pond system and San Diego River).

4.4.2.2 Relevant Past, Present, and Future Actions

Past actions have resulted in development of Admiral Baker Golf Course and the surrounding area, including the community of Tierrasanta. Present and future actions are anticipated to involve construction activities to develop recreational trails and update aging infrastructure within the San Diego River watershed. Implementation of the cumulative projects identified in Table 4-1 has the potential to impact water resources within the ROI; however, the Proposed Action and the cumulative projects would comply with applicable federal, state, and local regulations and requirements to avoid or minimize cumulative impacts to water resources.

4.4.2.3 Cumulative Impact Analysis

The Proposed Action would not result in significant impacts related to groundwater, surface waters, wetlands, floodplains, and shorelines. Stormwater retention would be improve, although there would only be limited increases in impervious surfaces so groundwater infiltration would not be impeded. Best management practices (BMPs) would be implemented to protect water quality during and after construction, and long term there is a potential for improved water quality due to allowing sediment to settle out of runoff in onsite ponds and increased physical filtering and biological treatment in the fringe

wetlands. Permanent discharge of fill would result from construction; however, newly constructed features would be expected to meet the definition of Waters of the U.S. and, therefore, no net loss of Waters of the U.S. is anticipated. Although Alternative 2 would be constructed within the 100-year floodplain, it would reduce overall flooding at the South Course. Cumulatively, implementation of projects identified in Table 4-1, especially those with heavy ground-disturbing activities, could result in increased erosion and sedimentation of receiving water bodies, including the San Diego. Although, these projects would also be required to comply with applicable federal and state regulations and requirements, and would have to implement similar types of BMPs and protection measures. This would minimize long-term impacts from the Proposed Action and cumulative projects in the San Diego River watershed. The San Diego River Park Master Plan may include projects that affect Waters of the U.S.; however, because expansion of wetlands and creation of new wetlands is a general recommendation, it is likely that related project would result in no net loss of Waters of the U.S. Similar to the Proposed Action, should a net loss of wetlands become unavoidable, compensatory mitigation would be required. None of the cumulative projects would add a substantial amount of new impervious surfaces in the San Diego River floodplain. Therefore, the cumulative impacts identified for water resources from the Proposed Action, in conjunction with cumulative projects, would be less than significant.

4.4.3 Geological Resources

4.4.3.1 Description of Geographic Study Area

The ROI for cumulative effects on geological resources includes the boundaries of the South Course at Admiral Baker Golf Course, but is generally limited to the those areas where ground-disturbing activities would occur.

4.4.3.2 Relevant Past, Present, and Future Actions

Past actions have resulted in ground-disturbing activities due to development of Admiral Baker Golf Course and the surrounding area, including the community of Tierrasanta. Present and future actions are anticipated to involve similar ground-disturbing activities to develop recreational trails and update aging infrastructure in areas surrounding the golf course. These cumulative projects could affect geological resources within the ROI.

4.4.3.3 Cumulative Impact Analysis

The Proposed Action would not affect geology, but would result in temporary impacts on soils from disturbance and compaction of soils from heavy equipment used for trenching, grading, and other ground-disturbing activities. Erosion and sedimentation would be minimized by implementation of appropriate BMPs and would be revegetated after completion of construction. The Proposed Action would also have long-term, negligible impacts on topography due to regrading of the South Course. All cumulative projects have the potential to impact geological resources, but the impacts would likely be negligible to minor as the Capital Improvements Program projects would be within previously developed areas and trails development could require grading and vegetation clearing. Similar to the Proposed Action, these projects would include ground-disturbing activities that could result in erosion and sedimentation. Generally, adverse effects can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development. Considered cumulatively with the Proposed Action, other cumulative projects occurring in the same vicinity as the proposed renovation activities at the South Course could result in increased potential for sedimentation and erosion during ground-disturbing work, but implementation of erosion-

and sediment-control BMPs would be expected to limit potentially adverse cumulative effects. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant cumulative impacts on geological resources.

4.4.4 Cultural Resources

4.4.4.1 Description of Geographic Study Area

The geographic scope for the assessment of cumulative impacts on cultural resources includes areas where ground-disturbing activities and vehicular travel could occur, which corresponds with the project area of potential effect (APE) (i.e., project area).

4.4.4.2 Relevant Past, Present, and Future Actions

Past actions have resulted in ground-disturbing activities due to development of Admiral Baker Golf Course and the surrounding area, including the community of Tierrasanta. Present and future actions are anticipated to involve similar ground-disturbing activities to develop recreational trails and update aging infrastructure in areas surrounding the golf course. Past, present, and reasonably foreseeable projects that involve ground-disturbing activities within areas not surveyed could result in impacts on cultural resources.

4.4.4.3 Cumulative Impact Analysis

Cultural resource concerns associated with the Proposed Action include those associated with historic and prehistoric archaeological resources. Two recorded archaeological sites have been recorded within the APE; however, none of the proposed drainage features intersect with any known cultural resources. It is anticipated the Proposed Action would have no impact on architectural resources or traditional cultural properties. The proposed renovation activities could potentially impact prehistoric archaeological sites by disturbing or destroying unknown buried cultural deposits. However, implementation of a cultural resources monitoring program during construction would reduce the impacts to less than significant. The archaeological monitoring program would identify, document, and record observed cultural resources during ground disturbance and protect and manage any discoveries made during monitoring. The archaeologist may halt ground-disturbing activities if archaeological artifact deposits or cultural features are discovered. In general, ground-disturbing activities would be directed away from these deposits for a short time to allow a determination of potential significance. The monitoring program would also include an immediate, onsite archaeological response for buried human remains, if discovered. With the implementation of the proposed monitoring program, any possible potential impacts would be less than significant. It is likely that none of the cumulative projects identified in Table 4-1 would be within the project APE; however, the San Diego River Park Master Plan identifies several potential opportunities to integrate Admiral Baker Golf Course with the river corridor and San Diego River Pathway. Although no specific projects or details have been identified at this time, if any future projects occur within the APE, they have the potential to result in impacts on cultural resources, and compliance with Section 106 compliance must be ensured. Therefore, these projects would implement a similar monitoring program and would comply with all other regulations and requirements. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts on cultural resources within the APE with implementation of the proposed monitoring program.

4.4.5 Biological Resources

4.4.5.1 Description of Geographic Study Area

The ROI for cumulative effects on biological resources encompasses the areas with the potential to be affected by the Proposed Action, which includes the project area.

4.4.5.2 Relevant Past, Present, and Future Actions

Past, present, and reasonably foreseeable cumulative projects in the region that require ground-disturbance, vegetation clearing, grading, and trenching could result in temporary and localized effects to biological resources that may be individually comparable to those associated with the Proposed Action.

4.4.5.3 Cumulative Impact Analysis

The Proposed Action would occur within the project area at the South Course, as such vegetation communities in the project area consist primarily of urban/developed areas (golf course) and are highly disturbed, modified, or landscaped. The Proposed Action could result in adverse effects on vegetation, and wildlife and habitat due to temporary disturbances to vegetation (e.g., crushing, trampling, and removal), permanent vegetation/habitat removal and clearing, conversion or degradation of habitat, and temporary relocation of wildlife due dust and noise. Ground-disturbing activities would adhere to various BMPs and avoidance and minimization measures designed to minimize potential effects on species and their habitats. The South Course supports three wildlife species listed as federally threatened or endangered, including coastal California Gnatcatcher, least Bell's vireo, and Hermes copper butterfly. These species occur or could occur in the project area. Temporary impacts on these species could occur from noise and habitat disturbances associated with construction activities; however, species on Admiral Baker Golf Course are already habituated to high levels of noise associated with recreation and human presence. With implementation of measures (e.g., avoidance of the breeding season of the bird species, avoidance of habitat for all species, construction surveys, and establishment of a 500-foot buffer for protected bird species or installation of noise attenuation structures), the Proposed Action may affect but is not likely to adversely affect the federal-listed wildlife species.

All projects identified in Table 4-1 have the potential for direct and indirect impacts on biological resources. However, the San Diego River Park Master Plan and Mission Trails Regional Park Master Plan Update are more likely to result in adverse impacts similar to those from the Proposed Action because the other projects are in developed areas.

As discussed in Section 3.5.3, the Proposed Action would not result in significant impacts on biological resources. Implementation of BMPs and avoidance and minimization measures would ensure maintenance and repair contribute minimally to adverse effects on biological resources. Similarly, the spatial and temporal extents of impacts on biological resources from cumulative projects are expected to be limited due to implementation of conservation measures and any permit conditions. As a result, the Proposed Action, combined with other cumulative projects, would not result in significant cumulative impacts on biological resources.

4.4.6 Infrastructure

4.4.6.1 Description of Geographic Study Area

The ROI for cumulative effects on infrastructure is defined as the areas where proposed renovation activities would occur and the surrounding areas that share the same utilities, including potable water and stormwater infrastructure. Cumulative impacts to these utilities are not anticipated beyond this area.

4.4.6.2 Relevant Past, Present, and Future Actions

Past actions have resulted in development of Admiral Baker Golf Course and the surrounding area, including the community of Tierrasanta. The development of these past action have contributed to the existing stormwater runoff conditions at the South Course. Present and future actions are anticipated to involve to develop recreational trails and update aging infrastructure, including potable water pipes, in areas surrounding the golf course that have negligible to no associated impacts on infrastructure.

These projects have been and would be evaluated for utility requirements to determine the need for upgrades to accommodate the project construction and operation.

Therefore, in conjunction with the Proposed Action, there would be no significant cumulative impacts on infrastructure and cumulative impacts would remain less than significant.

4.4.6.3 Cumulative Impact Analysis

The Proposed Action would result in long-term, beneficial impacts on potable water and stormwater infrastructure due to the addition of drainage features and regrading of the South Course that would provide additional storage for stormwater runoff to prevent flooding, and supply the irrigation system during periods of drought. Additionally, the Proposed Action would replace the course's irrigation system to more efficient use stormwater and minimize use of potable water for irrigation. Although there are no known cumulative projects at the South Course, the San Diego River Park Master Plan identifies several potential opportunities to integrate Admiral Baker Golf Course with the river corridor and San Diego River Pathway. If a project related to the river park were to occur at the South Course, it is not anticipated to impact the potable water or stormwater infrastructure. The City of San Diego Capital Improvements Program projects, particularly the replacement of water mains would result in a beneficial impact on potable water infrastructure, although not within the South Course. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant impacts on potable water and stormwater infrastructure within the ROI.

4.4.7 Hazardous Materials and Wastes

4.4.7.1 Description of Geographic Study Area

The ROI for cumulative impacts on hazardous material and wastes encompasses the South Course at Admiral Baker Golf Course.

4.4.7.2 Relevant Past, Present, and Future Actions

Past actions have resulted in development of Admiral Baker Golf Course and the surrounding area, including the community of Tierrasanta. Present and future actions are anticipated to involve construction activities to develop recreational trails and update aging infrastructure in areas

surrounding the golf course. These projects are required to comply with applicable federal, state, and local regulations and requirements for handling and disposal of hazardous materials and wastes.

4.4.7.3 Cumulative Impact Analysis

Proposed renovation activities would involve an increase in the quantities of hazardous materials used and hazardous wastes generated at the South Course, although it is anticipated that the quantities would be minimal and their use/generation would be temporary. Additionally, there could be impacts from asbestos-containing material (ACM), polychlorinated biphenyls, and lead-based paint with the replacement of the irrigation system and pumping station, depending on the age of the equipment. All appropriate procedures for the management of hazardous materials and wastes would be implemented in accordance with the Hazardous Materials and Wastes Management and other applicable regulations. Standard hazardous materials handling and safety practices would likely also be implemented for cumulative projects, particularly for removal and replacement of pipes with ACM. Although there are no known cumulative projects at the South Course, the San Diego River Park Master Plan identifies several potential opportunities to integrate Admiral Baker Golf Course with the river corridor and San Diego River Pathway. Potential impacts from the use of hazardous materials and the generation of hazardous waste from cumulative projects would be localized. Although hazardous materials could be used and hazardous waste could be generated temporarily during construction, standard procedures would be used in their handling, storage, and disposal and no significant impacts would be anticipated. If any cumulative projects were to occur on Admiral Baker Golf Course, all applicable Navy and federal hazardous materials and wastes regulations and requirements. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would not result in significant cumulative impacts on hazardous materials and wastes.

5 Other Considerations Required by NEPA

5.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with 40 Code of Federal Regulations (CFR) section 1502.16(c), analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state and local land use plans, policies, and controls. Table 5-1 identifies the principal federal and state laws and regulations that are applicable to the Proposed Action, and describes briefly how compliance with these laws and regulations would be accomplished.

Table 5-1 Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	***Status of Compliance***
National Environmental Policy Act (NEPA); Council on Environmental Quality NEPA implementing regulations; Navy procedures for Implementing NEPA	This Environmental Assessment has been prepared in accordance with Council on Environmental Quality Regulations implementing NEPA and United States (Navy NEPA Procedures).
Clean Air Act	The Navy has determined that the potential emissions of the Proposed Action would not cause or contribute to a violation of any National Ambient Air Quality Standards or State Ambient Air Quality standards. Emissions would be below the applicable General Conformity *de minimus* thresholds. The General Conformity Record of Non-Applicability is provided in Appendix A of this Environmental Assessment.
Clean Water Act (CWA)	The Proposed Action would not involve dredging or the release of chemicals requiring a discharge permit and would be in compliance with the CWA. The Proposed Action would comply with applicable National Pollution Discharge Elimination System requirements including implementation of one or more SWPPPs and associated best management practices (BMPs). BMPs may include erosion control blankets, soil stabilizers, temporary seeding, silt fencing, hay bales, sand bags, and storm drain inlet protection devices. The Proposed Action would impact Waters of the United States and would require CWA Section 404 permit from the U.S. Army Corps of Engineers and CWA Section 401 Water Quality Certification from the Regional Water Quality Control Board.
Rivers and Harbors Act	The Proposed Action would not involve in-water demolition and construction activities, thus a Rivers and Harbors Act Section 10 permit from the U.S. Army Corps of Engineers would not be required.
Coastal Zone Management Act	The Navy has determined that the Proposed Action would not affect coastal resources or uses.
National Historic Preservation Act	No significant adverse effects to prehistoric archaeological sites would occur with implementation of a cultural resources monitoring program. Consultation with the State Historic Preservation

Table 5-1 Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	*Status of Compliance*
	Officer pursuant to Section 106 of the National Historic Preservation Act is required.
Endangered Species Act	Impacts to the federally listed as threatened coastal California gnatcatcher and federally listed as endangered least Bell's vireo would not be significant with implementation of avoidance, minimization, and mitigation measures. Formal consultation between the Navy and U.S. Fish and Wildlife Service (USFWS) is required for the coastal California gnatcatcher and least Bell's vireo.
Migratory Bird Treaty Act	The Navy has determined that the Proposed Action would not result in significant impacts to migratory birds.
Bald and Golden Eagle Protection Act	The Proposed Action would not be likely to have a measurable negative effect on bald and golden eagles and would be in compliance with the Bald and Golden Eagle Protection Act.
Comprehensive Environmental Response and Liability Act	The Proposed Action would not impact any Superfund or National Priority List sites.
Resource Conservation and Recovery Act	The Proposed Action would not result in significant impacts related to hazardous materials or wastes.
Executive Order (EO) 11988, Floodplain Management	The Proposed Action is located within the 100-year floodplain of the San Diego River; however, it does not develop or add impervious surfaces in the floodplain. Overall, the Proposed Action would reduce flooding within the project area. Therefore, the Proposed Action would be in compliance with the regulations of EO 11198.
EO 12088, Federal Compliance with Pollution Control Standards	The Proposed Action would not exceed National Ambient Air Quality Standards established by the U.S. Environmental Protection Agency under the Clean Air Act. Therefore, the Proposed Action would in compliance with EO 12088.
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations	The Navy has determined that the Proposed Action would not cause disproportionately high and adverse health or environmental effects on any minority or low-income populations.
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks	The Navy has determined that the Proposed Action would not disproportionately expose children to environmental health risks or safety risks and would be in compliance with EO 13045.
EO 13175, Consultation and Coordination with Indian Tribal Governments	The Proposed Action would not impact any known traditional cultural properties and thus, no tribal consultation is anticipated. If traditional cultural properties are discovered, the Navy would coordinate and consult with federally recognized tribes in compliance with EO 13175.

5.2 Relationship between Short-Term Use of the Environment and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development site reduces future flexibility in pursuing other options, or that using a parcel of land or other resources often eliminates the possibility of other uses at that site.

In the short-term, effects to the human environment with implementation of the Proposed Action would primarily relate to the construction (renovation) activity itself. Air quality would be impacted in the short term. In the long-term, the renovation of the South Course would not significantly impact the long-term natural resource productivity of the area. The renovation and operation of the South Course at Admiral Baker Golf Course would not significantly impact the long-term natural resource productivity of the area. The Proposed Action would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment.

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Appendix A
Air Quality Methodology and Calculations

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Admiral Baker South Course - Alt 2

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Golf Course	100.00	Acre	100.00	4,356,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2021
Utility Company	Salt River Project				
CO2 Intensity (lb/MWhr)	1469.9	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Project costruction will require approimately 1.5 years to complete.

Grading - grading will be conducted throughout the entire construction period.

Vehicle Trips - The project will not modify the operations of the existing golf course.

Consumer Products - The project will not modify the operation of the existing golf course.

Landscape Equipment - The project will not modify the operation of the existing golf course.

Water And Wastewater - The project will not modify the operation of the existing golf course.

Solid Waste - The project will not modify the operation of the existing golf course.

Construction Off-road Equipment Mitigation -

Trips and VMT - Trips added to grading phase for construction of the golf course

Table Name	Column Name	Default Value	New Value
tblGrading	AcresOfGrading	387.50	100.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00
tblSolidWaste	SolidWasteGenerationRate	93.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblVehicleTrips	ST_TR	5.82	0.00
tblVehicleTrips	SU_TR	5.88	0.00
tblVehicleTrips	WD_TR	5.04	0.00
tblWater	OutdoorWaterUseRate	119,148,134.97	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.5499	5.7853	3.1941	5.9700e-003	2.0422	0.2841	2.3264	1.0871	0.2614	1.3485	0.0000	526.1828	526.1828	0.1630	0.0000	530.2574
2021	0.2811	3.1103	2.0734	4.3400e-003	0.4761	0.1303	0.6063	0.2281	0.1198	0.3479	0.0000	383.4042	383.4042	0.1170	0.0000	386.3290
Maximum	**0.5499**	**5.7853**	**3.1941**	**5.9700e-003**	**2.0422**	**0.2841**	**2.3264**	**1.0871**	**0.2614**	**1.3485**	**0.0000**	**526.1828**	**526.1828**	**0.1630**	**0.0000**	**530.2574**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.5499	5.7853	3.1941	5.9700e-003	0.9308	0.2841	1.2149	0.4923	0.2614	0.7538	0.0000	526.1822	526.1822	0.1630	0.0000	530.2568
2021	0.2811	3.1103	2.0734	4.3400e-003	0.2224	0.1303	0.3527	0.1049	0.1198	0.2247	0.0000	383.4038	383.4038	0.1170	0.0000	386.3286
Maximum	**0.5499**	**5.7853**	**3.1941**	**5.9700e-003**	**0.9308**	**0.2841**	**1.2149**	**0.4923**	**0.2614**	**0.7538**	**0.0000**	**526.1822**	**526.1822**	**0.1630**	**0.0000**	**530.2568**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**54.21**	**0.00**	**46.55**	**54.59**	**0.00**	**42.32**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-6-2020	4-5-2020	1.5151	1.5151
2	4-6-2020	7-5-2020	1.5146	1.5146
3	7-6-2020	10-5-2020	1.5013	1.5013
4	10-6-2020	1-5-2021	1.8313	1.8313
5	1-6-2021	4-5-2021	1.6642	1.6642
6	4-6-2021	7-5-2021	1.6268	1.6268
		Highest	1.8313	1.8313

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0410	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0410**	**1.0000e-005**	**9.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9100e-003**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0410	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0410**	**1.0000e-005**	**9.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9100e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/6/2020	10/2/2020	5	60	
2	Grading	Grading	10/5/2020	7/2/2021	5	155	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 100

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	10.00	5.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7615	0.0000	1.7615	0.9682	0.0000	0.9682	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3975	4.1357	2.0976	3.7100e-003		0.2143	0.2143		0.1971	0.1971	0.0000	325.9491	325.9491	0.1054	0.0000	328.5846
Total	**0.3975**	**4.1357**	**2.0976**	**3.7100e-003**	**1.7615**	**0.2143**	**1.9757**	**0.9682**	**0.1971**	**1.1654**	**0.0000**	**325.9491**	**325.9491**	**0.1054**	**0.0000**	**328.5846**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4700e-003	4.7900e-003	0.0470	1.4000e-004	0.0141	1.0000e-004	0.0142	3.7400e-003	9.0000e-005	3.8300e-003	0.0000	12.7216	12.7216	3.8000e-004	0.0000	12.7311
Total	**6.4700e-003**	**4.7900e-003**	**0.0470**	**1.4000e-004**	**0.0141**	**1.0000e-004**	**0.0142**	**3.7400e-003**	**9.0000e-005**	**3.8300e-003**	**0.0000**	**12.7216**	**12.7216**	**3.8000e-004**	**0.0000**	**12.7311**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7927	0.0000	0.7927	0.4357	0.0000	0.4357	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3975	4.1357	2.0976	3.7100e-003		0.2143	0.2143		0.1971	0.1971	0.0000	325.9487	325.9487	0.1054	0.0000	328.5842
Total	**0.3975**	**4.1357**	**2.0976**	**3.7100e-003**	**0.7927**	**0.2143**	**1.0069**	**0.4357**	**0.1971**	**0.6328**	**0.0000**	**325.9487**	**325.9487**	**0.1054**	**0.0000**	**328.5842**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4700e-003	4.7900e-003	0.0470	1.4000e-004	0.0141	1.0000e-004	0.0142	3.7400e-003	9.0000e-005	3.8300e-003	0.0000	12.7216	12.7216	3.8000e-004	0.0000	12.7311
Total	**6.4700e-003**	**4.7900e-003**	**0.0470**	**1.4000e-004**	**0.0141**	**1.0000e-004**	**0.0142**	**3.7400e-003**	**9.0000e-005**	**3.8300e-003**	**0.0000**	**12.7216**	**12.7216**	**3.8000e-004**	**0.0000**	**12.7311**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2594	0.0000	0.2594	0.1131	0.0000	0.1131	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1424	1.6063	1.0227	1.9800e-003		0.0696	0.0696		0.0640	0.0640	0.0000	174.3497	174.3497	0.0564	0.0000	175.7594
Total	**0.1424**	**1.6063**	**1.0227**	**1.9800e-003**	**0.2594**	**0.0696**	**0.3290**	**0.1131**	**0.0640**	**0.1771**	**0.0000**	**174.3497**	**174.3497**	**0.0564**	**0.0000**	**175.7594**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	2.9000e-004	7.0000e-005	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0796	0.0796	1.0000e-005	0.0000	0.0798
Vendor	1.2200e-003	0.0365	9.6900e-003	9.0000e-005	2.1200e-003	1.8000e-004	2.3000e-003	6.1000e-004	1.7000e-004	7.8000e-004	0.0000	8.4436	8.4436	6.5000e-004	0.0000	8.4598
Worker	2.3600e-003	1.7500e-003	0.0171	5.0000e-005	5.1300e-003	4.0000e-005	5.1700e-003	1.3600e-003	3.0000e-005	1.4000e-003	0.0000	4.6392	4.6392	1.4000e-004	0.0000	4.6427
Total	**3.5900e-003**	**0.0385**	**0.0269**	**1.4000e-004**	**7.2900e-003**	**2.2000e-004**	**7.5100e-003**	**1.9800e-003**	**2.0000e-004**	**2.1900e-003**	**0.0000**	**13.1624**	**13.1624**	**8.0000e-004**	**0.0000**	**13.1822**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1167	0.0000	0.1167	0.0509	0.0000	0.0509	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1424	1.6063	1.0227	1.9800e-003		0.0696	0.0696		0.0640	0.0640	0.0000	174.3495	174.3495	0.0564	0.0000	175.7592
Total	**0.1424**	**1.6063**	**1.0227**	**1.9800e-003**	**0.1167**	**0.0696**	**0.1863**	**0.0509**	**0.0640**	**0.1149**	**0.0000**	**174.3495**	**174.3495**	**0.0564**	**0.0000**	**175.7592**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	2.9000e-004	7.0000e-005	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0796	0.0796	1.0000e-005	0.0000	0.0798
Vendor	1.2200e-003	0.0365	9.6900e-003	9.0000e-005	2.1200e-003	1.8000e-004	2.3000e-003	6.1000e-004	1.7000e-004	7.8000e-004	0.0000	8.4436	8.4436	6.5000e-004	0.0000	8.4598
Worker	2.3600e-003	1.7500e-003	0.0171	5.0000e-005	5.1300e-003	4.0000e-005	5.1700e-003	1.3600e-003	3.0000e-005	1.4000e-003	0.0000	4.6392	4.6392	1.4000e-004	0.0000	4.6427
Total	**3.5900e-003**	**0.0385**	**0.0269**	**1.4000e-004**	**7.2900e-003**	**2.2000e-004**	**7.5100e-003**	**1.9800e-003**	**2.0000e-004**	**2.1900e-003**	**0.0000**	**13.1624**	**13.1624**	**8.0000e-004**	**0.0000**	**13.1822**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4612	0.0000	0.4612	0.2240	0.0000	0.2240	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2745	3.0392	2.0225	4.0600e-003		0.1300	0.1300		0.1196	0.1196	0.0000	356.9421	356.9421	0.1154	0.0000	359.8282
Total	**0.2745**	**3.0392**	**2.0225**	**4.0600e-003**	**0.4612**	**0.1300**	**0.5912**	**0.2240**	**0.1196**	**0.3437**	**0.0000**	**356.9421**	**356.9421**	**0.1154**	**0.0000**	**359.8282**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.5000e-004	1.4000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1609	0.1609	1.0000e-005	0.0000	0.1613
Vendor	2.0300e-003	0.0673	0.0180	1.8000e-004	4.3500e-003	1.4000e-004	4.4900e-003	1.2600e-003	1.4000e-004	1.3900e-003	0.0000	17.1243	17.1243	1.2700e-003	0.0000	17.1561
Worker	4.5500e-003	3.2500e-003	0.0327	1.0000e-004	0.0105	7.0000e-005	0.0106	2.7900e-003	7.0000e-005	2.8600e-003	0.0000	9.1769	9.1769	2.6000e-004	0.0000	9.1834
Total	**6.6000e-003**	**0.0711**	**0.0508**	**2.8000e-004**	**0.0149**	**2.1000e-004**	**0.0151**	**4.0600e-003**	**2.1000e-004**	**4.2600e-003**	**0.0000**	**26.4621**	**26.4621**	**1.5400e-003**	**0.0000**	**26.5008**

3.3 Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2075	0.0000	0.2075	0.1008	0.0000	0.1008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2745	3.0392	2.0225	4.0600e-003		0.1300	0.1300		0.1196	0.1196	0.0000	356.9417	356.9417	0.1154	0.0000	359.8278
Total	**0.2745**	**3.0392**	**2.0225**	**4.0600e-003**	**0.2075**	**0.1300**	**0.3376**	**0.1008**	**0.1196**	**0.2205**	**0.0000**	**356.9417**	**356.9417**	**0.1154**	**0.0000**	**359.8278**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	5.5000e-004	1.4000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1609	0.1609	1.0000e-005	0.0000	0.1613
Vendor	2.0300e-003	0.0673	0.0180	1.8000e-004	4.3500e-003	1.4000e-004	4.4900e-003	1.2600e-003	1.4000e-004	1.3900e-003	0.0000	17.1243	17.1243	1.2700e-003	0.0000	17.1561
Worker	4.5500e-003	3.2500e-003	0.0327	1.0000e-004	0.0105	7.0000e-005	0.0106	2.7900e-003	7.0000e-005	2.8600e-003	0.0000	9.1769	9.1769	2.6000e-004	0.0000	9.1834
Total	**6.6000e-003**	**0.0711**	**0.0508**	**2.8000e-004**	**0.0149**	**2.1000e-004**	**0.0151**	**4.0600e-003**	**2.1000e-004**	**4.2600e-003**	**0.0000**	**26.4621**	**26.4621**	**1.5400e-003**	**0.0000**	**26.5008**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Golf Course	9.50	7.30	7.30	33.00	48.00	19.00	52	39	9

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Golf Course	0.593936	0.041843	0.182569	0.108325	0.016436	0.005513	0.015940	0.023523	0.001912	0.001972	0.006090	0.000748	0.001193

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0410	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Unmitigated	0.0410	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0410					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Total	**0.0411**	**1.0000e-005**	**9.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9100e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0410					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Total	**0.0411**	**1.0000e-005**	**9.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Golf Course	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Golf Course	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Admiral Baker South Course - Alt 3

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Golf Course	100.00	Acre	100.00	4,356,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2021
Utility Company	Salt River Project				
CO2 Intensity (lb/MWhr)	1469.9	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Project costruction will require approimately 1.5 years to complete.

Grading - grading will be conducted throughout the entire construction period.

Vehicle Trips - The project will not modify the operations of the existing golf course.

Consumer Products - The project will not modify the operation of the existing golf course.

Landscape Equipment - The project will not modify the operation of the existing golf course.

Water And Wastewater - The project will not modify the operation of the existing golf course.

Solid Waste - The project will not modify the operation of the existing golf course.

Construction Off-road Equipment Mitigation -

Trips and VMT - Trips added to grading phase for construction of the golf course

Area Coating -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblGrading	AcresOfGrading	387.50	70.00
tblGrading	AcresOfGrading	0.00	70.00
tblSolidWaste	SolidWasteGenerationRate	93.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	15.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblVehicleTrips	ST_TR	5.82	0.00
tblVehicleTrips	SU_TR	5.88	0.00
tblVehicleTrips	WD_TR	5.04	0.00
tblWater	OutdoorWaterUseRate	119,148,134.97	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.5499	5.7859	3.1942	5.9700e-003	2.1429	0.2841	2.4271	1.0980	0.2614	1.3594	0.0000	526.3420	526.3420	0.1630	0.0000	530.4170
2021	0.2812	3.1114	2.0736	4.3400e-003	0.4561	0.1303	0.5864	0.2259	0.1199	0.3458	0.0000	383.7261	383.7261	0.1170	0.0000	386.6516
Maximum	**0.5499**	**5.7859**	**3.1942**	**5.9700e-003**	**2.1429**	**0.2841**	**2.4271**	**1.0980**	**0.2614**	**1.3594**	**0.0000**	**526.3420**	**526.3420**	**0.1630**	**0.0000**	**530.4170**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.5499	5.7859	3.1942	5.9700e-003	0.9761	0.2841	1.2602	0.4973	0.2614	0.7587	0.0000	526.3414	526.3414	0.1630	0.0000	530.4164
2021	0.2812	3.1114	2.0736	4.3400e-003	0.2135	0.1303	0.3438	0.1039	0.1199	0.2238	0.0000	383.7256	383.7256	0.1170	0.0000	386.6511
Maximum	**0.5499**	**5.7859**	**3.1942**	**5.9700e-003**	**0.9761**	**0.2841**	**1.2602**	**0.4973**	**0.2614**	**0.7587**	**0.0000**	**526.3414**	**526.3414**	**0.1630**	**0.0000**	**530.4164**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**54.23**	**0.00**	**46.77**	**54.59**	**0.00**	**42.39**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Admiral Baker South Course - Alt 3 - San Diego Air Basin, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-6-2020	4-5-2020	1.5151	1.5151
2	4-6-2020	7-5-2020	1.5146	1.5146
3	7-6-2020	10-5-2020	1.5014	1.5014
4	10-6-2020	1-5-2021	1.8319	1.8319
5	1-6-2021	4-5-2021	1.6648	1.6648
6	4-6-2021	7-5-2021	1.6273	1.6273
		Highest	1.8319	1.8319

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0410	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0410**	**1.0000e-005**	**9.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9100e-003**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0410	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0410**	**1.0000e-005**	**9.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9100e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/6/2020	10/2/2020	5	60	
2	Grading	Grading	10/5/2020	7/2/2021	5	155	

Acres of Grading (Site Preparation Phase): 70

Acres of Grading (Grading Phase): 70

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	10.00	15.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.8821	0.0000	1.8821	0.9813	0.0000	0.9813	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3975	4.1357	2.0976	3.7100e-003		0.2143	0.2143		0.1971	0.1971	0.0000	325.9491	325.9491	0.1054	0.0000	328.5846
Total	**0.3975**	**4.1357**	**2.0976**	**3.7100e-003**	**1.8821**	**0.2143**	**2.0963**	**0.9813**	**0.1971**	**1.1784**	**0.0000**	**325.9491**	**325.9491**	**0.1054**	**0.0000**	**328.5846**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4700e-003	4.7900e-003	0.0470	1.4000e-004	0.0141	1.0000e-004	0.0142	3.7400e-003	9.0000e-005	3.8300e-003	0.0000	12.7216	12.7216	3.8000e-004	0.0000	12.7311
Total	**6.4700e-003**	**4.7900e-003**	**0.0470**	**1.4000e-004**	**0.0141**	**1.0000e-004**	**0.0142**	**3.7400e-003**	**9.0000e-005**	**3.8300e-003**	**0.0000**	**12.7216**	**12.7216**	**3.8000e-004**	**0.0000**	**12.7311**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.8469	0.0000	0.8469	0.4416	0.0000	0.4416	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3975	4.1357	2.0976	3.7100e-003		0.2143	0.2143		0.1971	0.1971	0.0000	325.9487	325.9487	0.1054	0.0000	328.5842
Total	**0.3975**	**4.1357**	**2.0976**	**3.7100e-003**	**0.8469**	**0.2143**	**1.0612**	**0.4416**	**0.1971**	**0.6387**	**0.0000**	**325.9487**	**325.9487**	**0.1054**	**0.0000**	**328.5842**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4700e-003	4.7900e-003	0.0470	1.4000e-004	0.0141	1.0000e-004	0.0142	3.7400e-003	9.0000e-005	3.8300e-003	0.0000	12.7216	12.7216	3.8000e-004	0.0000	12.7311
Total	**6.4700e-003**	**4.7900e-003**	**0.0470**	**1.4000e-004**	**0.0141**	**1.0000e-004**	**0.0142**	**3.7400e-003**	**9.0000e-005**	**3.8300e-003**	**0.0000**	**12.7216**	**12.7216**	**3.8000e-004**	**0.0000**	**12.7311**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2394	0.0000	0.2394	0.1110	0.0000	0.1110	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1424	1.6063	1.0227	1.9800e-003		0.0696	0.0696		0.0640	0.0640	0.0000	174.3497	174.3497	0.0564	0.0000	175.7594
Total	**0.1424**	**1.6063**	**1.0227**	**1.9800e-003**	**0.2394**	**0.0696**	**0.3090**	**0.1110**	**0.0640**	**0.1750**	**0.0000**	**174.3497**	**174.3497**	**0.0564**	**0.0000**	**175.7594**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	8.8000e-004	2.0000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2388	0.2388	2.0000e-005	0.0000	0.2394
Vendor	1.2200e-003	0.0365	9.6900e-003	9.0000e-005	2.1200e-003	1.8000e-004	2.3000e-003	6.1000e-004	1.7000e-004	7.8000e-004	0.0000	8.4436	8.4436	6.5000e-004	0.0000	8.4598
Worker	2.3600e-003	1.7500e-003	0.0171	5.0000e-005	5.1300e-003	4.0000e-005	5.1700e-003	1.3600e-003	3.0000e-005	1.4000e-003	0.0000	4.6392	4.6392	1.4000e-004	0.0000	4.6427
Total	**3.6000e-003**	**0.0391**	**0.0270**	**1.4000e-004**	**7.3600e-003**	**2.2000e-004**	**7.5800e-003**	**2.0000e-003**	**2.0000e-004**	**2.2100e-003**	**0.0000**	**13.3216**	**13.3216**	**8.1000e-004**	**0.0000**	**13.3418**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1077	0.0000	0.1077	0.0499	0.0000	0.0499	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1424	1.6063	1.0227	1.9800e-003		0.0696	0.0696		0.0640	0.0640	0.0000	174.3495	174.3495	0.0564	0.0000	175.7592
Total	**0.1424**	**1.6063**	**1.0227**	**1.9800e-003**	**0.1077**	**0.0696**	**0.1773**	**0.0499**	**0.0640**	**0.1139**	**0.0000**	**174.3495**	**174.3495**	**0.0564**	**0.0000**	**175.7592**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	8.8000e-004	2.0000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2388	0.2388	2.0000e-005	0.0000	0.2394
Vendor	1.2200e-003	0.0365	9.6900e-003	9.0000e-005	2.1200e-003	1.8000e-004	2.3000e-003	6.1000e-004	1.7000e-004	7.8000e-004	0.0000	8.4436	8.4436	6.5000e-004	0.0000	8.4598
Worker	2.3600e-003	1.7500e-003	0.0171	5.0000e-005	5.1300e-003	4.0000e-005	5.1700e-003	1.3600e-003	3.0000e-005	1.4000e-003	0.0000	4.6392	4.6392	1.4000e-004	0.0000	4.6427
Total	**3.6000e-003**	**0.0391**	**0.0270**	**1.4000e-004**	**7.3600e-003**	**2.2000e-004**	**7.5800e-003**	**2.0000e-003**	**2.0000e-004**	**2.2100e-003**	**0.0000**	**13.3216**	**13.3216**	**8.1000e-004**	**0.0000**	**13.3418**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4411	0.0000	0.4411	0.2219	0.0000	0.2219	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2745	3.0392	2.0225	4.0600e-003		0.1300	0.1300		0.1196	0.1196	0.0000	356.9421	356.9421	0.1154	0.0000	359.8282
Total	**0.2745**	**3.0392**	**2.0225**	**4.0600e-003**	**0.4411**	**0.1300**	**0.5712**	**0.2219**	**0.1196**	**0.3415**	**0.0000**	**356.9421**	**356.9421**	**0.1154**	**0.0000**	**359.8282**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	1.6600e-003	4.1000e-004	0.0000	1.2000e-004	1.0000e-005	1.3000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4828	0.4828	4.0000e-005	0.0000	0.4839
Vendor	2.0300e-003	0.0673	0.0180	1.8000e-004	4.3500e-003	1.4000e-004	4.4900e-003	1.2600e-003	1.4000e-004	1.3900e-003	0.0000	17.1243	17.1243	1.2700e-003	0.0000	17.1561
Worker	4.5500e-003	3.2500e-003	0.0327	1.0000e-004	0.0105	7.0000e-005	0.0106	2.7900e-003	7.0000e-005	2.8600e-003	0.0000	9.1769	9.1769	2.6000e-004	0.0000	9.1834
Total	**6.6300e-003**	**0.0722**	**0.0511**	**2.8000e-004**	**0.0150**	**2.2000e-004**	**0.0152**	**4.0800e-003**	**2.1000e-004**	**4.2900e-003**	**0.0000**	**26.7839**	**26.7839**	**1.5700e-003**	**0.0000**	**26.8234**

3.3 Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1985	0.0000	0.1985	0.0998	0.0000	0.0998	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2745	3.0392	2.0225	4.0600e-003		0.1300	0.1300		0.1196	0.1196	0.0000	356.9417	356.9417	0.1154	0.0000	359.8278
Total	**0.2745**	**3.0392**	**2.0225**	**4.0600e-003**	**0.1985**	**0.1300**	**0.3286**	**0.0998**	**0.1196**	**0.2195**	**0.0000**	**356.9417**	**356.9417**	**0.1154**	**0.0000**	**359.8278**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	1.6600e-003	4.1000e-004	0.0000	1.2000e-004	1.0000e-005	1.3000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4828	0.4828	4.0000e-005	0.0000	0.4839
Vendor	2.0300e-003	0.0673	0.0180	1.8000e-004	4.3500e-003	1.4000e-004	4.4900e-003	1.2600e-003	1.4000e-004	1.3900e-003	0.0000	17.1243	17.1243	1.2700e-003	0.0000	17.1561
Worker	4.5500e-003	3.2500e-003	0.0327	1.0000e-004	0.0105	7.0000e-005	0.0106	2.7900e-003	7.0000e-005	2.8600e-003	0.0000	9.1769	9.1769	2.6000e-004	0.0000	9.1834
Total	**6.6300e-003**	**0.0722**	**0.0511**	**2.8000e-004**	**0.0150**	**2.2000e-004**	**0.0152**	**4.0800e-003**	**2.1000e-004**	**4.2900e-003**	**0.0000**	**26.7839**	**26.7839**	**1.5700e-003**	**0.0000**	**26.8234**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Golf Course	9.50	7.30	7.30	33.00	48.00	19.00	52	39	9

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Golf Course	0.593936	0.041843	0.182569	0.108325	0.016436	0.005513	0.015940	0.023523	0.001912	0.001972	0.006090	0.000748	0.001193

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0410	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Unmitigated	0.0410	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0410					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Total	**0.0411**	**1.0000e-005**	**9.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9100e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0410					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Total	**0.0411**	**1.0000e-005**	**9.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Golf Course	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Golf Course	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Record of Non-Applicability (RONA) for Clean Air Act Conformity

San Diego County, California

This Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

The U.S. Environmental Protection Agency published Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule, in the 30 November 1993, Federal Register (40 Code of Federal Regulations [CFR] sections 6, 51, and 93). The United States Navy (Navy) published Clean Air Act Conformity Guidance in Appendix F, OPNAVINST 5090.1d, dated July 30, 2013. These publications provide implementing guidance to document Clean Air Act Conformity Determination requirements.

Federal regulations state that no department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license to permit, or approve any activity that does not conform to an applicable implementation plan. It is the responsibility of the Federal agency to determine whether a Federal action conforms to the applicable implementation plan, before the action is taken (40 CFR section 51.850[a]). Federal actions may be exempt from conformity determinations if they do not exceed designated *de minimis* levels for criteria pollutants (40 CFR section 51.853[b]). *De minimis* levels (in tons/year) for the air basin potentially affected by the Proposed Action are listed in Table 1.

Table 1 General Conformity *de minimis* levels for San Diego County

Pollutant	***Area Type***	***De minimis Level (tons/year)***
Oxides of Nitrogen (NO_X)	Moderate Nonattainment	100
Volatile Organic Compounds (VOC)	Moderate Nonattainment	100
Carbon Monoxide (CO)	Maintenance	100

Proposed Action

Action Proponent: Naval Facilities Engineering Command Southwest, Naval Base San Diego

Title of Proposed Action: Proposed Renovation of South Course

Project Location: Admiral Baker Golf Course, San Diego, California

Lead Agency for the EA: Department of the Navy

Proposed Action and Emission Summary: Air pollutant emissions associated with construction of the proposed project would be released from the exhausts of construction equipment, soil hauling trucks, delivery trucks, and worker commute vehicles. Particulate matter emissions would result from soil movement and wind-blown dust from disturbed surfaces. Once construction is completed, the operational emissions associated with the golf course would be the same as those generated under the existing conditions.

Air Emission Summary: Construction and operational emissions were calculated by using California Emissions Estimator Model (CalEEMod) version 2016.3.2. CalEEMod is a computer model developed by the South Coast Air Quality Management District (SCAQMD) with the input of several air quality

management and pollution control districts to estimate anticipated emissions associated with land development projects in California. CalEEMod has separate databases for specific counties and air districts. The San Diego County database was used for the Proposed Action.

The results of the modeling are shown in Tables 2 and 3 for the annual conditions for the project site for Alternatives 2 and 3, respectively. Alternative 1 is the No Action Alternative for which no change in emissions are expected. The analysis assumes that construction would take approximately 7 months to complete.

Once construction is completed the operational emissions associated with the golf course would be the same as those generated under the existing conditions. Therefore, no long-term air quality emissions were calculated for the Proposed Action.

Table 2 Annual Construction Emissions – Alternative 2 (tons/year)

Year	*NO_x*	*VOC*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
2020	5.8	0.5	3.2	0.0	1.2	0.8
2021	3.1	0.3	2.1	0.0	0.4	0.2
de minimis Criteria	100	100	100	NA	NA	NA

Key: NA = not applicable.

Table 3 Annual Construction Emissions – Alternative 3 (tons/year)

Year	*NO_x*	*VOC*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
2020	5.8	0.5	3.2	0.0	1.3	0.8
2021	3.1	0.3	2.1	0.0	0.4	0.2
de minimis Criteria	100	100	100	NA	NA	NA

Key: NA = not applicable.

Tables 2 and 3 show that annual construction emissions generated by the Proposed Action are well below the San Diego Air Basin general conformity *de minimis* levels. As a result, the Proposed Action would not produce significant adverse air quality impacts.

Date RONA Prepared: June 14, 2019

Emissions Evaluation and Conclusion

The Proposed Action would involve minor construction emissions and would not alter the operational emissions of the project site; all emissions are *de minimis*.

The Navy concludes that *de minimis* thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the Proposed Action. Therefore, the Navy concludes that further formal Conformity Determination procedures are not required, resulting in this Record of Non-Applicability.

RONA Approval

To the best of my knowledge, the information presented in this RONA is correct and accurate and I concur in the finding that the proposed action is not subject to the General Conformity Rule.

Date:

Signature:

Appendix B
Endangered Species Act Documentation

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Biological Assessment

Renovation of the South Course at Admiral Baker Golf Course

Naval Base San Diego, California

October 2019

Abbreviations and Acronyms

ABGC	Admiral Baker Golf Course
BA	Biological Assessment
BMPs	best management practices
CFR	Code of Federal Regulations
DoD	Department of Defense
EA	Environmental Assessment
ESA	Endangered Species Act
iPaC	Information for Planning and Conservation
ft	foot/feet
INRMP	Integrated Natural Resources Management Plan
km	kilometer(s)
m	meter(s)
MGRF	Mission Gorge Recreation Facility
Navy	U.S. Navy
NBSD	Naval Base San Diego
SWPPP	Stormwater Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service

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Figures

Tables

1. Introduction

The U.S. Navy (Navy) is proposing renovations to the South Course at the Admiral Baker Golf Course (ABGC) Complex, which is within the Mission Gorge Recreation Facility (MGRF) at Naval Base San Diego (NBSD) in San Diego, California.

The ABGC complex consists of two 18-hole golf courses (North Course and South Course), a driving range, and a pro shop. The South Course was built in the 1950s and now experiences seasonal flooding of low-lying areas, high volumes of off-site stormwater flow through the golf course pond system, and silting and vegetative overgrowth of water features. In addition, the course design is out-of-date and showing wear from prolonged use. The primary goals of this project are to reduce the South Course's dependency on water from the San Diego River, improve on-site water retention capacity, address player safety issues, and raise the condition and quality of play. The purpose of this Biological Assessment (BA) is to evaluate the effects on species protected under the federal Endangered Species Act (ESA) from the Proposed Action. This BA was prepared for the Project by the Navy to meet the requirements of Section 7(a)(2) of the ESA, and the implementing regulations of that Act at 50 Code of Federal Regulations (CFR) § 402. Under these requirements, the Navy must evaluate the effects of their federal action (i.e., the renovations to the South Course) on federally listed threatened and endangered species, and designated critical habitat. The Project Area is defined as all areas that would be affected directly or indirectly by the federal action, and not merely the immediate area involved in the Action.

For the purpose of the BA, the action taking place is contained on the South Course (Project Area). Some studies that are cited in this document contain information that encompass the larger complex at ABGC (including the North Course and South Course) and other areas of MGRF (including Murphy Canyon Housing to the northwest) because surveys were conducted on the entire complex or information was taken from the Integrated Natural Resources Management Plan (INRMP), which encompasses all of NBSD and its auxiliary locations (e.g., Navy Housing, Recreational Areas).

Endangered and threatened species that occur or could occur within or near the Project Area were identified during discussions with Navy staff and by querying the United States Fish and Wildlife Service's (USFWS's) Information for Planning and Conservation (iPaC) database (USFWS 2018), reviewing the INRMP for NBSD (Navy 2014), and evaluating published information about the listed species. Based on that information, the Navy has concluded that two species occur or could occur within or near the Project Area: coastal California gnatcatcher (*Polioptila californica californica*) and least Bell's vireo (*Vireo belli pusillus*) (**Table 1-1**). This BA evaluates impacts on those two species. In addition, the Navy has concluded that other federally listed threatened or endangered species that occur or could occur within or near NBSD would not be affected because there is no habitat for those species or they otherwise do not occur within the Project Area (Navy 2014, USFWS 2018). There is no designated critical habitat for any federally listed species in the Project Area.

The coastal California gnatcatcher and least Bell's vireo are federally listed by USFWS as threatened and endangered, respectively (**Table 1-1**).

The following 15 other endangered or threatened species, plus one candidate species, were identified in the information listed above as present in the region but are unlikely to be present in the Project Area. Therefore, the Navy has concluded that the Proposed Action will not affect these species, and they are not further addressed in this BA:

- California least tern (*Sterna antillarum browni*, endangered) — found on beaches, sand bars, shorelines, and other barren or sparsely vegetated areas near water. There is no suitable habitat for this species within or near the Project Area.

- Light-footed Ridgway's (clapper) rail (*Rallus longirostris levipes*, endangered) — a marsh bird found in California coastal salt marshes, lagoons, and other maritime environments. There is no suitable habitat for this species in the Project Area and no light-footed Ridgway's rails have been observed in the Project Area (Navy 2014).

- Southwestern willow flycatcher (*Empidonax traillii extimus*, endangered) — nests in early successional riparian habitats with a dense understory and standing water. Strongly associated plant species include: seepwillow (aka mule fat; *Baccharis* spp.), boxelder (*Acer negundo*), stinging nettle (*Urtica* spp.), blackberry (*Rubus* spp.), cottonwood (*Populus* spp.), arrowweed (*Tessaria sericea*), Tamarisk (*Tamarix* spp.), and Russian olive (*Eleagnus angustifolia*). Although there is potential habitat north of the Project Area, no southwestern willow flycatchers are known to occur in the Project Area (Navy 2014).

- Quino checkerspot butterfly (*Euphydryas editha quino*, endangered) — distribution is largely defined by the butterfly's principal host plant: dot-seed plantain (*Plantago erecta*). There is no dot-seed plantain present in the Project Area, and Quino checkerspot butterflies are not known to occur in the Project Area (Navy 2014).

- Riverside fairy shrimp (*Streptocephalus woottoni*, endangered) — generally restricted to vernal and other non-vegetated ephemeral pool complexes greater than 12 inches in depth. There is no suitable habitat for this species in or near the Project Area.

- San Diego fairy shrimp (*Branchinecta sandiegonensis*, endangered) — generally restricted to vernal and other non-vegetated ephemeral pool complexes from 2 to 12 inches in depth. There is no suitable habitat for this species in the Project Area; however, they are known to occur at MGRF, in the Chollas Heights and Murphy Canyon Heights housing areas, and designated critical habitat is located within 2 miles.

- California Orcutt grass (*Orcuttia californica*, endangered) — occurs in deep ephemeral vernal pools underlain by clay soils. Associated with other federally listed vernal pool taxa including San Diego button-celery (*Eryngium aristulatum* var. *parishii*), San Diego mesa-mint (*Pogogyne abramsii*), Otay mesa mint (*Pogogyne nudiuscula*), spreading navarretia (*Navarretia fossalis*), San Diego fairy shrimp, and Riverside fairy shrimp (USFWS 2011). There is no suitable habitat for this species in or near the Project Area.

- Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*, endangered) — endemic to San Diego County, California where it occurs on sandstone terraces and bluffs in southern maritime chaparral (USFWS 2010a). There is no suitable habitat for this

species in or near the Project Area.

- San Diego ambrosia (*Ambrosia pumila*, endangered) — found primarily on upper terraces of rivers and drainages on sandy loam or clay soils. Associated native plants include saltgrass (*Distichlis spicata*), mule fat (*Baccharis salicifolia*), broom baccharis (*Baccharis sarathroides*), California buckwheat (*Eriogonum fasciculatum*), and turkey-mullein (*Eremocarpus setigerus*) (USFWS 2010b). There is no suitable habitat for this species in the Project Area.

- San Diego button-celery (endangered) — vernal pool obligate found on clay soils. There is no suitable habitat for this species in the Project Area.

- San Diego mesa-mint (endangered) — restricted to vernal pools in southern California. There is no suitable habitat for this species in the Project Area; however, it is known to occur at NBSD in the Murphy Canyon Heights housing area.

- San Diego thornmint (*Acanthomintha ilicifolia*, threatened) — occurs naturally in openings within coastal sage scrub, chaparral, and native grassland; the species is also restricted to certain gabbro and calcareous clay soils on gentle southeast to west facing slopes (USFWS 2009c). There is no habitat for this species in the Project Area, and this species is not known to occur at MGRF.

- Spreading navarretia (threatened) — occurs in vernal pools and alkali playa habitat and is reliant on the inundation and drying cycles of its habitat for survival (USFWS 2009a). There is no suitable habitat for this species in the Project Area and spreading navarretia has not been observed at MGRF.

- Thread-leaved brodiaea (*Brodiaea filifolia*, threatened) — occurs in herbaceous plant communities on gentle hillsides, valleys, and floodplains with open areas and clay, loamy sand, or alkaline silty-clay soils (USFWS 2009b). There is no suitable habitat for this species in the Project Area and it is not known to occur at MGRF.

- Willowy monardella (*Monardella viminea*, endangered) — occurs primarily in sandy washes and floodplains in coastal sage scrub or riparian scrub vegetation (USFWS 2012). There is no suitable habitat for this species in the Project Area and it is not known to occur at MGRF.

- The Hermes copper butterfly (*Lycaena hermes*) is a candidate species, and its host plant, *Rhamnus crocea*, only occurs outside of the Project Area (**Figure 3-1**).

Table 1-1. Federally Listed Taxa that could occur within the Project Area

Taxa	Listing Status	Year Listed or Designated
Coastal California gnatcatcher (*Polioptila californica californica*)	Threatened	1993
Least Bell's vireo (*Vireo belli pusillus*)	Endangered	1986

1.1 Status of Critical Habitat in the Project Area

In 2004, Congress enacted an amendment to the ESA that exempts the Department of Defense (DoD) from Critical Habitat designations. For that exemption to apply, an INRMP must have been prepared under Section 101 of the Sikes Act (16 U.S.C. § 670a), be deemed acceptable by the Secretary of the Interior, and be in place. There is a current and signed INRMP for NBSD that covers the ABGC; therefore, no critical habitat has been designated in the Project Area.

2. Project Description

2.1 Project Location

MGRF is located in the Mission Valley area of San Diego, California. MGRF is a recreation facility for military personnel and their families that includes an RV park, picnic areas, camping, and other recreational opportunities, in addition to the ABGC complex. The ABGC complex is a 390-acre facility that includes a driving range, two 18-hole golf courses (North Course and South Course), full-service pro shop, and food and beverage program. The South Course is approximately 110 acres and encompasses the southeastern portion of the property. The South Course is bounded to the west by Admiral Baker Road, to the north by the North Course, and to the east by the San Diego River and Mission Gorge Road (**Figure 2-1**).

The Proposed Area is located within Township 2 West, Range 16 South, of the United States Geological Survey 7.5-minute La Mesa, California quadrangle (**Figure 2-2**). The Proposed Project Area includes the South Course and associated features including all 18 fairways, putting greens, and sand traps and water hazards. ABGC is adjacent to the San Diego River and contains riparian habitat as well as several man-made ponds used for irrigation during periods of drought.

Figure 2-1. Regional View of Project Area

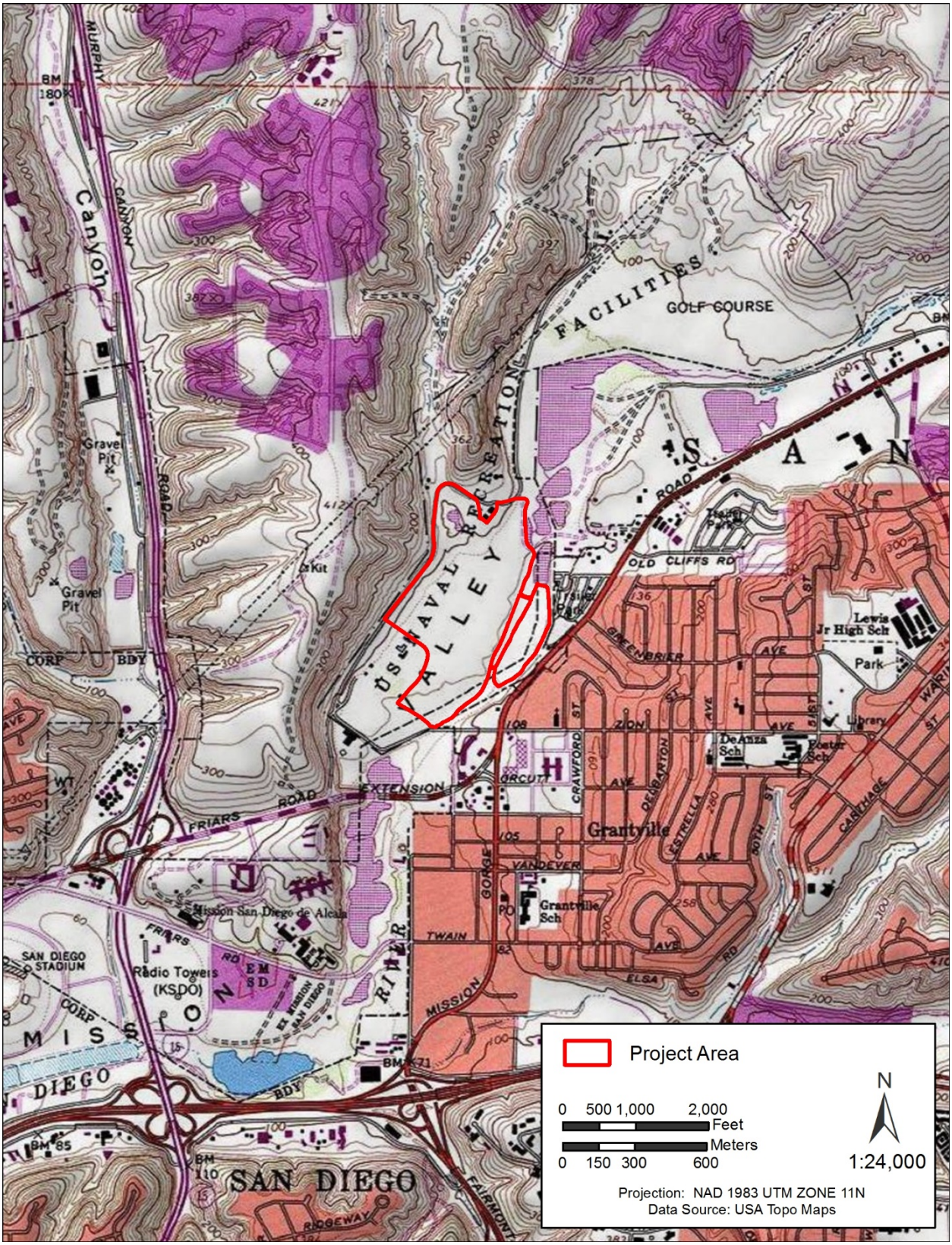

Figure 2-2. United States Geographical Survey Topographical 7.5-Minute Quadrangle Map of Project Area

2.2 Project Description

The South Course was built in the 1950s, and is in need of renovations to reduce dependency on water from the San Diego River for irrigation, improve on-site water retention capacity and storage through upgrade of course drainage features, remedy flooding and ponding issues, address player safety issues, and raise the condition and quality of play. Construction of the Proposed Action is anticipated to require up to 1 year; therefore, it is anticipated that the South Course would be closed during that time. **Figure 2-3** depicts existing conditions at the South Course (Action Area/Project Area). The Proposed Action would consist of construction or maintenance of specific drainage features and irrigation system upgrades at the South Course; the following items are major construction aspects of the project:

- **Existing Ponds A, B, C, and D.** All the existing ponds were originally lined to retain water and are currently in various states of disrepair. They will be excavated or dredged to clean them of debris and silt and then re-lined to retain water and reduce the need for water from the San Diego River. **Table 2-1** describes the existing pond sizes and proposed activities. Construction equipment may include excavators, backhoes, bulldozers, graders, trenchers, and dump trucks.

Table 2-1. Existing Pond Acres and Proposed Work

Pond	Area (Acres)	Proposed Activity
A	0.85	Excavation of sediment and debris. Relining of pond with an industrial liner. Contouring and potentially planting native wetland plants along the perimeter. Potential installation of a sediment trap that can be accessed regularly.
B	0.27	Pond may be drained. It will be excavated to remove sediment and relined.
C	0.66	Pond may be drained. It will be excavated to remove sediment and relined.
D	1.15	Pond may be drained. It will be excavated to remove sediment and relined. It may also be expanded to the north to meet the new swale diversion coming from Pond A.

- **West Pond.** West Pond is a proposed new pond that would be constructed in the center of the fourth fairway with an approximate volume of 11.5 acre-feet and would be approximately 2.12 acres in size (**Figure 2-4**). The pond would have a connection to Pond B (see below for detailed description of this connection). The pond's primary purpose is retention of storm water runoff for future use. Runoff would be collected directly from the hillside to the west and from the proposed pipe connected to Pond B. The West Pond would not be lined and would allow water to infiltrate the soil. Construction equipment may include excavators, backhoes, bulldozers, graders, trenchers, and dump trucks.

Figure 2-3. Existing Conditions for the South Course

- **West Pond/Pond B Connection Pipe.** The proposed West Pond and existing Pond B would be connected by two proposed pipes (**Figure 2-4**). One pipe connection would be an 18-inch diameter sloped pipe, which would serve to fill the West Pond during the peak of larger storm events. The inlet would be set at an elevation of 83.0 feet above sea level and the outlet at 76.0 feet above sea level to prevent filling the West Pond prematurely causing overflow during flood events. The second pipe connection would be a 12-inch diameter pipe set at zero grade, which would serve as a means to equalize the water levels between the West Pond and Pond B. This pipe would need to include a valve to control flow. If this pipe was open during flood events, there is potential to overfill the West Pond. Construction equipment may include backhoes, graders, trenchers, and dump trucks.

- **Pond B/Pond D Connection Pipe.** This connection would be a 12-inch diameter pipe set at zero grade, which would serve as a means to equalize the water levels between Pond B and Pond D (**Figure 2-4**). This pipe would allow for better management of retained storm water for irrigation purposes amongst the South Course's pond system. This pipe would allow water from the West Pond to get to Pond D where pumping facilities are currently located. Construction equipment may include backhoes, graders, trenchers, and dump trucks.

- **Swale Diversion.** A new swale would be constructed that would divert a portion of the flood flows from the grassy swale located between the second and fourth fairways directly to Pond D. The diversion channel would intersect the swale approximately halfway between Pond A and Pond B (**Figure 2-4**). The diversion channel would be sized to accommodate the 100-year event of 1,264 cubic feet per second.

  Construction of the swale diversion would also include expansion of the northern portion of Pond D to allow for more storage and adequate draining of the new swale diversion, and replacement of the existing golf cart path located adjacent to the existing grassy swale with either a free span bridge or a dipped crossing (**Figure 2-4**). Construction equipment may include excavators, backhoes, bulldozers, graders, trenchers, and dump trucks.

- **Removal of Golf Cart Crossing 2.** Golf cart crossing 2, which travels between Ponds C and D, would be removed (**Figure 2-4**) and replaced by either a free span bridge or a re-routed cart path that travels around the west side of the pond system. This crossing is an at grade golf cart crossing with several small pipes used to convey low flows under the crossing. It currently acts as a weir, forcing water surface elevations in Pond C to rise and break out to the south. Removal of this crossing and lowering the connection between Pond C and Pond D would reduce breakout onto the golf course and allow water to flow freely to the San Diego River. Construction equipment may include backhoes and dump trucks.

- **14th Fairway Swale.** A graded swale on the fourteenth fairway would be constructed to alleviate ponding on the fourteenth and fifteenth fairways and allow the water to enter a side channel of the San Diego River (**Figure 2-4**). There is a current dry crossing of the

San Diego River that would be utilized to access the area for the swale creation and irrigation improvements on the fourteenth and fifteenth fairways. This crossing is approximately 12 feet wide and will accommodate a dump truck and excavator. This area will be accessed during the dry season. Construction equipment may include excavators, backhoes, bulldozers, graders, and dump trucks.

- Clearing, grubbing, and grading would be needed to construct all of the major features. Approximately 200,428 square feet of land would be disturbed for clearing, grubbing, and grading and 39,299 cubic yards of soils would be excavated during construction of the proposed West Pond and pond connections (**Table 2-2**) (Navy 2019).

- Approximately 24 trees will be removed for the construction of the West Pond, piping, swale diversion, and Pond D expansion. Some of the trees will be replaced as they function as barriers between fairways and are needed for player safety.

- **There will be no grubbing, clearing, or tree removal in the riparian areas along the San Diego River. Figure 2-5** details all work that may be completed within 500 feet of the San Diego River riparian habitat and coastal scrub habitat, as well as noise buffers, and survey areas for protected species.

Excess soil that is not used for the balance of fill for these features would be stored and used at the South Course for other improvements not included in the Proposed Action. A Storm Water Pollution Prevention Plan (SWPPP) would be developed, and best management practices (BMPs) would be implemented to control erosion and sedimentation, and minimize runoff from construction sites. Following the completion of construction, new turf would be planted in disturbed areas, and any trees that were removed will be replaced in coordination with the course designer.

Table 2-2. Proposed Action Major Construction Activities

Construction Activity		Disturbance
Clearing and Grubbing (square feet)		200,428
Excavation (cubic yards)		39,299
Tree Removal/Replacement Quantity		24

In addition to construction of the major features above, the following actions will occur on the entire course and the specific disturbance areas for these actions is not known:

- The South Course irrigation system, including the pumping station, would be replaced. The new system would include an increased number of irrigation sprinkler heads to approximately 1,200 with 60 to 65 feet between heads, a master control that allows for more individual sprinkler head control, and a new pumping station capable of delivering adequate water volume and consistent operating pressure. Construction equipment may include backhoes, graders, trenchers, and dump trucks.

- Tee boxes, fairways, and greens would be redesigned to maximize playability and enhance player safety. The South Course would then be re-seeded and turf replaced.

Figure 2-4. Overview of Proposed Action Features

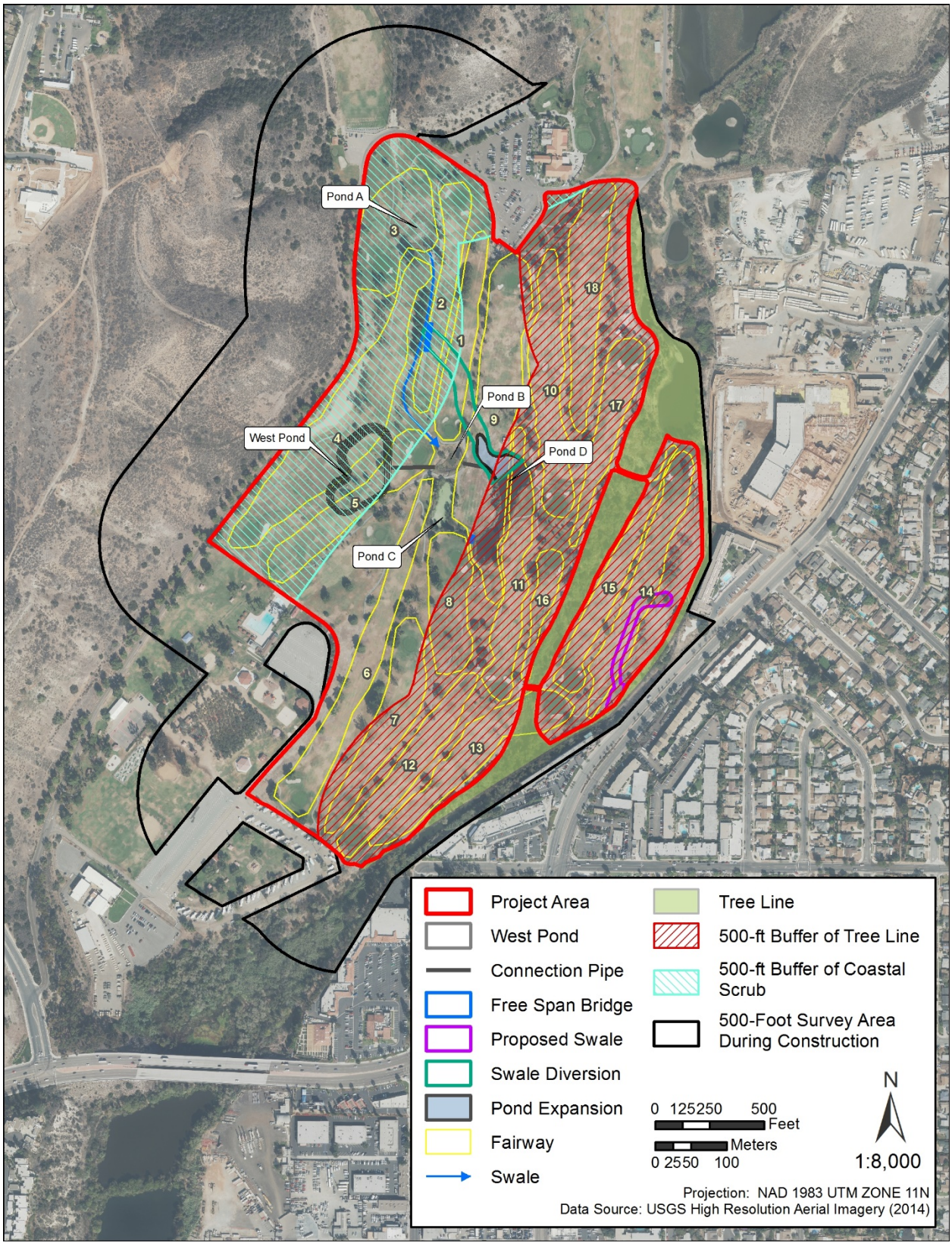

Figure 2-5. Approximate 500-foot Buffer from Riparian Habitat Tree Line and Coastal Scrub Habitat and Construction Survey Area

2.3 Avoidance and Minimization Measures

In 2014, the U.S. Navy completed an INRMP for NBSD (Navy 2014). The INRMP provides NBSD with an implementable framework for managing natural resources on the land and water it owns or controls. Required by the Sikes Act (as amended), an INRMP is the primary means by which natural resources compliance and stewardship priorities are set and funding requirements are determined for DoD installations. The INRMP provides goals and objectives for the use and conservation of natural resources on NBSD that integrate regional ecosystem, military, social (i.e., community), and economic concerns. In addition, the INRMP establishes planning and management strategies; identifies natural resources constraints and opportunities; supports the resolution of land use conflicts; provides baseline descriptions of natural resources necessary for the development of conservation strategies and environmental assessment; serves as the principal information source for the preparation of future environmental documents for proposed NBSD actions; and provides guidance for annual natural resources management reviews, internal compliance audits, and annual budget submittals (Navy 2014).

The U.S. Navy is committed to avoiding or minimizing project-related environmental effects to the greatest extent possible. As part of this commitment, avoidance and minimization measures listed below will be implemented to ensure that potential adverse impacts are avoided (if possible) or minimized to acceptable levels.

In addition to the avoidance and minimization measures listed below, NBSD staff will obtain the necessary Clean Water Act Section 404 permit(s) from the U.S. Army Corp of Engineers and a Section 401 Water Quality Certification from the Regional Water Quality Control Board prior to commencement of any project that may discharge dredged or fill material into a jurisdictional wetland or other waters of the United States. Avoidance and minimization measures include the following:

GENERAL AVOIDANCE AND MINIMIZATION MEASURES (GAM-M)

- **GAM-M-1**. The construction contractor will create an Environmental Protection Plan (EPP) for NBSD biologist approval prior to start of construction. Staging and access shall be described in the EPP for approval (and flagged, etc.) prior to the start of work. Before project initiation, the Project Proponent or the construction contractor will delineate the limits of construction including temporary features such as staging areas and lay-down areas with flagging, fencing, or signposts.
- **GAM-M-2.** All project-related activities will occur within the marked project footprint. Project staging and lay-down areas will be designated within the project footprint or on existing roads and parking lots.
- **GAM-M-3**. No vegetation will be removed in the riparian areas along the San Diego River.
- **GAM-M-4.** The Project Proponent or contractor's biologist will conduct pre-construction surveys for federally listed birds and nests 500 feet from the project outer impacts areas near the San Diego River and along the hillside to the west (**See Figure 2-5**). Please see specific mitigation measures for Coastal California Gnatcatcher and Least Bell's Vireo below. It is highly

recommended that major construction occur outside of their respective breeding seasons.

- **GAM-M-5.** All native or sensitive habitats outside of and adjacent to the construction limits will be designated as Environmentally Sensitive Areas (ESAs) on project maps. ESAs will temporarily be fenced during construction with orange or yellow rope, orange silt fencing, or in areas of flowing water, with stakes and flagging. No personnel, equipment, or debris will be allowed within the ESAs. Temporary ESA fencing and flagging will be installed in a manner that does not impact habitats to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment.
- **GAM-M-6.** The Navy will develop and implement an employee environmental awareness program to ensure that the contractor(s) and all maintenance personnel are fully informed of the biological resources associated with the project. The program will focus on: (a) the purpose for resource protection and a description of the federally listed species and their habitats; (b) contractor identification of sensitive resource areas in the field (i.e., avoidance areas delineated on maps and by flags or fencing); (c) project avoidance and minimization measures, including speed limits; measures to prevent the introduction and spread of invasive weeds; erosion, dust, and trash control measures; (d) protocol to resolve issues that may arise at any time during the construction process; and (e) ramifications of noncompliance.
- **GAM-M-7.** An erosion control plan will be prepared and implemented prior to project initiation to minimize potential effects of project-related pollution and erosion and/or sedimentation on special status species habitat. The plan will include BMPs to control erosion and prevent the release of contaminants into the soil that could be harmful to federally listed taxa. Erosion and sediment control devices used for the project will be made from biodegradable materials free from plastic mesh to avoid creating a wildlife entanglement hazard.
- **GAM-M-8.** Impacts from fugitive dust will be avoided and minimized through watering and other appropriate measures.
- **GAM-M-9.** Vegetation clearing and grading activities in or adjacent to federally listed bird breeding habitat will occur between September 1 and February 14 to avoid the breeding nesting season.
- **GAM-M-10.** To protect wildlife and possible nesting habitat, existing mature trees shall not be removed without prior consultation with and approval from a NBSD wildlife biologist.
- **GAM-M-11.** To control the spread of non-native plants and impacts to adjacent native habitat, all equipment and/or vehicles will be cleaned and power-washed before entering the project site, and when feasible, will be cleaned at a vehicle and boot washing station in the project area. Pressure washing will focus on removal of plant materials and seeds or mud containing seeds from the undercarriage of the vehicle or construction equipment. BMPs will be established to capture wash runoff.
- **GAM-M-12.** All equipment maintenance; staging; and dispensing of fuel, oil, or coolant; or any other such activities will be restricted to designated staging areas that are a minimum of 100 ft from sensitive habitats and drainages.

- **GAM-M-13.** The Project Area will be kept as clear of debris as possible. All food-related trash items will be kept in sealed containers and regularly removed from the site. All spoils and material disposal will be disposed of properly in covered waste receptacles.
- **GAM-M-14.** Project personnel will be prohibited from bringing domestic pets to construction sites to avoid disturbance and depredation of wildlife in adjacent habitats.
- **GAM-M-15.** Equipment staging, warm-up, and storage areas will be located as far as possible from the surrounding areas of native habitat to reduce noise levels.
- **GAM-M-16.** Construction activities with flexibility to work in any area (e.g., cement mixing, general truck idling, equipment delivery/removal) will be conducted as far as possible from native habitat to the maximum extent possible.

COASTAL CALIFORNIA GNATCATCHER AVOIDANCE AND MINIMIZATION MEASURES (CCGN-M)

- **CCGN-M-1.** A Carlsbad Fish and Wildlife Office (CFWO) -approved biologist (Biological Monitor) will be on site: (1) during clearing and grubbing; and (2) weekly during project construction within 500 feet of gnatcatcher habitat to ensure compliance with all conservation measures. The Project Proponent or construction contractor will submit the biologist's name, address, telephone number, and work schedule on the project to the CFWO at least 5 working days prior to initiating project impacts. The contract of the Biological Monitor will allow direct communication with the CFWO at any time regarding the proposed project. The Biological Monitor will be provided with a copy of this consultation. The Biological Monitor will be available during pre-construction and construction phases to review grading plans, address protection of sensitive biological resources, monitor ongoing work, and maintain communications with the Resident Engineer to ensure that issues relating to biological resources are appropriately and lawfully managed. The Biological Monitor will perform the following duties:

  A. Perform a minimum of three focused surveys, on separate days, to determine the presence of gnatcatcher nest building activities, egg incubation activities, or brood rearing activities within 500 feet of project construction proposed during the species' breeding season. The surveys will begin a maximum of 7 days prior to project construction and one survey will be conducted the day immediately prior to the initiation of work. Additional surveys will be done once a week during project construction in the breeding season. These additional surveys may be suspended as approved by the CFWO. The Navy will notify the CFWO at least 7 days prior to the initiation of surveys and within 24 hours of locating any gnatcatchers.

  B. If an active gnatcatcher nest is found within 500 feet of project construction, the Biological Monitor will postpone work within 500 feet of the nest(s) and contact the CFWO to discuss: (1) the best approach to avoid/minimize impacts to nesting birds (e.g., sound walls, noise monitoring); and (2) a nest monitoring program acceptable to the CFWO. Subsequent to these discussions, work may be initiated subject to implementation of the agreed upon avoidance/minimization approach and nest monitoring program. Nest monitoring will occur according to a schedule approved by the CFWO. The Biological Monitor will determine whether

bird activity is being disrupted. If the Biological Monitor determines that bird activity is being disrupted, Navy will stop work and coordinate with the CFWO to review the avoidance/minimization approach. Upon agreement as to the necessary revisions to the avoidance/minimization approach, work may resume subject to the revisions and continued nest monitoring. Nest monitoring will continue until fledglings have dispersed, as approved by the CFWO.

LEAST BELL'S VIREO AVOIDANCE AND MINIMIZATION MEASURES (LBVI-M)

- **LBVI M-1.** A Carlsbad Fish and Wildlife Office (CFWO) -approved biologist (Biological Monitor) will be on site: (1) during clearing and grubbing; and (2) weekly during project construction within 500 feet of vireo habitat to ensure compliance with all conservation measures. The Project Proponent or construction contractor will submit the biologist's name, address, telephone number, and work schedule on the project to the CFWO at least 5 working days prior to initiating project impacts. The contract of the Biological Monitor will allow direct communication with the CFWO at any time regarding the proposed project. The Biological Monitor will be provided with a copy of this consultation. The Biological Monitor will be available during pre-construction and construction phases to review grading plans, address protection of sensitive biological resources, monitor ongoing work, and maintain communications with the Resident Engineer to ensure that issues relating to biological resources are appropriately and lawfully managed. The Biological Monitor will perform the following duties:

  A. Perform a minimum of three focused surveys, on separate days, to determine the presence of vireo nest building activities, egg incubation activities, or brood rearing activities within 500 feet of project construction proposed during the species' breeding season. The surveys will begin a maximum of 7 days prior to project construction and one survey will be conducted the day immediately prior to the initiation of work. Additional surveys will be done once a week during project construction in the breeding season. These additional surveys may be suspended as approved by the CFWO. The Navy will notify the CFWO at least 7 days prior to the initiation of surveys and within 24 hours of locating any vireo.

  B. If an active vireo nest is found within 500 feet of project construction, the Biological Monitor will postpone work within 500 feet of the nest(s) and contact the CFWO to discuss: (1) the best approach to avoid/minimize impacts to nesting birds (e.g., sound walls, noise monitoring); and (2) a nest monitoring program acceptable to the CFWO. Subsequent to these discussions, work may be initiated subject to implementation of the agreed upon avoidance/minimization approach and nest monitoring program. Nest monitoring will occur according to a schedule approved by the CFWO. The Biological Monitor will determine whether bird activity is being disrupted. If the Biological Monitor determines that bird activity is being disrupted, Navy will stop work and coordinate with the CFWO to review the avoidance/minimization approach. Upon agreement as to the necessary revisions to the avoidance/minimization approach, work may resume subject to the revisions and continued nest monitoring. Nest monitoring will continue until fledglings have dispersed, as approved by the CFWO.

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3. Environmental Baseline

The first part of this section describes the current environment in the Project Area as influenced by past and present impacts of human activities. The current environment, impacts of human activities at the South Course at ABGC, and current status of the federally listed taxa within the Project Area have been described in detail in the NBSD INRMP (Navy 2014).

The remainder of this section describes in detail the environment at the South Course, and the results of surveys conducted to determine the presence of ESA-listed biological resources in the Project Area.

3.1 Physiography

The South Course (Project Area) lies within the San Diego River basin in the northeast corner of the junction of Interstate-8 and Interstate-15 (Navy 2014). The surface landscape has been highly modified for use as a golf course, including man- made slopes, hills, open areas, ponds, and water retention areas. Geography in the Project Area generally consists of formations from the Cenozoic era including alluvium and slope wash, stream terrace deposits, stadium conglomerate, and Friars Formation (Navy 2014).

3.2 Biological Resources

3.2.1 Vegetation

Vegetation was mapped and classified based on the National Vegetation Classification System (Navy 2014). The National Vegetation Classification System is a hierarchical system which includes various categories ranging from the very broad Group Level (e.g., Coastal Baja California Norte Maritime Succulent Scrub) to the more specific Alliance and Association Levels (e.g., California Boxthorn Alliance; California Boxthorn-Coast Prickly Pear Association). **Table 3-1** presents acreages of vegetation community groups identified on the larger MGRF area as of 2008 and is based on the INRMP data (Navy 2014). The South Course (Project Area) vegetation is discussed in more detail below.

Table 3-1. Acreages of Vegetation Communities within MGRF

Vegetation Community Groups	Acres
Uplands	
California Encelia Series	2.8
California Encelia – San Diego County Viguiera Series	4.4
California Sagebrush Series	51.1
California Sagebrush Black Sage Series	1.0
Coast Goldenbush – Coyote Bush Series	18.1
Eucalyptus Series	7.8
Eucalyptus Series – Removed	0.2
Wild Oat Series	2.1

Riparian/Wetland	
Cottonwood – Willow Series	28.6
Bulrush Series	1.7
Mule Fat Series	0.8
Open Water Series	14.5
Urban/Disturbed	
Giant Reed Series	5.1
Ruderal Habitat	20.9
Russian Thistle Series	9.3
Urban/Developed Land	279.5
TOTAL	**447.9**

[1] Data from NBSD INRMP

California Encelia Series. This series is present on two hills within MGRF that are sparsely vegetated but are dominated by California encelia (*Encelia californica*). The hills are surrounded by the golf course and contain areas of open grassland and weeds. Other species occurring in the area include mule fat (*Baccharis salicifolia*), and California sagebrush (*Artemisia californica*) (Navy 2014). This vegetation community is analogous to Holland (1986) Code: Diegan coastal sage scrub (revegetated).

California Encelia – San Diego County Viguiera Series. This vegetation community is present on one hill near the eastern border of the golf course. The hill is dominated by low growing San Diego County viguiera (*Viguiera laciniata*), and California encelia (Navy 2014). This vegetation community is analogous to Holland (1986) Code: Diegan coastal sage scrub (revegetated).

California Sagebrush Series. The upland habitat surrounding the golf course contains a form of coastal sage scrub that includes California sagebrush and other native species such as California buckwheat (*Eriogonum fasciculatum*), California encelia, black sage (*Salvia mellifera*), lemonadeberry (*Rhus integrifolia*), toyon (*Heteromeles arbutifolia*), and laurel sumac (*Malosma laurina*) (Navy 2014).

California Sagebrush – Black Sage Series. This vegetation group exists within the larger California sagebrush series on the east slopes of the MGRF. The Black Sage Series contains especially dense patches of black sage (Navy 2014).

Coast Goldenbush – Coyote Bush Series. This vegetation community is present on the MGRF in the northeast corner. Dominated by coast goldenbush (*Isocoma menziesii*) and coyote bush (*Baccharis sarothroides*), this series occurs within California sagebrush vegetation series and is characterized by short shrubby plants under 4 feet tall. Vegetation indicative of disturbed coastal sage scrub habitat is also included in this vegetation community. This may include both native and non-native species as well as a non-native grass understory (Navy 2014).

Eucalyptus Series. Because leaf litter from eucalyptus trees exudes a chemical that prevents other vegetation from establishing, it often creates monocultures once established. Eucalyptus trees are present near the San Diego River near the eastern and northern edges of MGRF (Navy 2014).

Wild Oat Series. Wild oats (*Avena* spp.) form large, monoculture patches that exclude other species and often pose a fire hazard if left unmanaged. Several patches of wild oats exist at MGRF and are periodically mowed for fire prevention (Navy 2014).

Cottonwood-Willow Series. Black willow (*Salix gooddingii*) and Fremont cottonwood (*Populus fremontii*) dominate the upper canopy in this series, which occurs within the San Diego River riparian area. At MGRF, this vegetation community also includes understory species such as bulrush (*Scirpus* spp.), cattail (*Typha* spp.), salt marsh fleabane (*Pluchea odorata*), and western ragweed (*Ambrosia psilostachya*) (Navy 2014).

Bulrush Series. Bulrush grows in some of the man-made ponds as well as the retention basin on the eastern side of the golf course. These areas are often mowed as part of regular golf course maintenance activities (Navy 2014).

Mule Fat Series. Mule fat grows in several areas at MGRF including small areas within the ruderal disturbed vegetation on the eastern side of the property and within a concrete culvert (Navy 2014).

Open Water Series. Areas of open water within MGRF include ponds associated with the golf course and retention pools adjacent to the San Diego River (Navy 2014).

Giant Reed Series. Giant reeds are an aggressive invasive species that grows in the San Diego River basin on the eastern side of MGRF. The reeds continue to spread and push out native species in the area (Navy 2014).

Ruderal Habitat. Ruderal habitat at MGRF includes patches of bare ground as well as non-native grasses and other plants such as filaree (*Erodium* sp.), wild oats, and Bermuda grass (*Cynodon dactylon*). Other species include common ornamentals such as Mexican fan palms (*Washingtonia robusta*) and olive trees (*Olea europea*). Ruderal habitat occurs on the eastern-most portion of the golf course (Navy 2014).

Russian Thistle Series. Russian thistle (*Salsola tragus*) has taken over one hill on MGRF that burned in recent years. Other species occurring on site include California sagebrush and California buckwheat (Navy 2014).

Urban/Developed Land. Urban/developed areas make up the majority of land area at MGRF. Included in this group are the golf course, clubhouse, paved roads and parking lots (Navy 2014).

Vegetation communities within the Project Area were mapped and characterized during field surveys conducted on October 9 and 10, 2018 (HDR 2019). Vegetation classification surveys were conducted primarily on foot; areas that were inaccessible due to golf course activities were observed using binoculars. Dominant vegetation in the area was noted, and a species list of non-landscape vegetation was compiled. Where possible, *The Vegetation Classification Manual for Western San Diego County*, First Edition (Sproul et al. 2011) was used to classify vegetation to Alliance and Association level. A total of six land-cover types were recorded during vegetation mapping and classification of the Project Area: developed (golf course), *Populus fremontii – Salix gooddingii*/*Baccharis salcifolia* Association, Naturalized Warm – Temperate Riparian and

Wetland Semi-Natural Stand[1], *Typha latifolia* Association, *Schoenoplectus californicus* Association, and open water (**Table 3-2**). **Figure 3-1** depicts vegetation classifications in the Project Area and adjacent areas to the west of the Project Area. The areas west of the Project Area were surveyed for redberrry buckthorn (*Rhamnus crocea*) and California buckwheat (*Eriogonum fasciculatum*) in an effort to give the Navy comprehensive data on those species. The area west and north of the project area also contains *Rhus integrifolia* Alliance and *Artemisia californica – Eriogonum fasciculatum* Alliance, which is known California gnatcatcher habitat. In **Figure 3-1** you will notice it is outside of the project area outlined in red.

The proposed renovation of the South Course may include the removal or modification of 1.26 acres of Naturalized Warm – Temperate Riparian and Wetland – Semi-Natural Stands which presently occur in existing seasonally inundated water features; and 0.88 acre of *Typha* (*angustifolia*, *domingensis*, *latifolia*) Alliance vegetation occurring around the edges of existing golf course ponds.

The vegetation occurring along the San Diego River is heavily invaded by non-native species including Ngaio tree (*Myoporum laetum*), Peruvian and Brazilian pepper trees (*Schinus molle*, *S. terebinthifolius*), Sydney golden wattle (*Acacia longifloia*), Mexican fan palm (*Washingtonia robusta*), and Canary island date palm (*Phoenix canariensis*). Not being impacted by the Proposed Action is 0.61 acres of *Populus fremontii* Alliance and 0.48 acre of *Schoenoplectus californicus* Alliance vegetation occurring along the San Diego River.

Table 3-2. Acreages of Land-Cover Types within the Project Area

Vegetation Classification		Acreage
Alliance (or Stand)	**Association**	**Inside Project**
Rhus integrifolia Alliance	*Rhus integrifolia* Association	0.0
Artemisia californica – Eriogonum fasciculatum Alliance	*Artemisia californica – Eriogonum fasciculatum – Malosma laurina* Alliance	0.0
Typha (*angustifolia, domingensis, latifolia*) Alliance	*Typha latifolia* Alliance	0.88
Schoenoplectus californicus Alliance	*Schoenoplectus californicus* Association	0.48
Populus fremontii Alliance	*Populus fremontii – Salix gooddingii*/*Baccharis salcifolia* Association	0.61
Naturalized Warm – Temperate Riparian and Wetland Semi-Natural Stand	–	1.26
Vegetation Total		**3.23**
Other Cover Types		
Developed (golf course)		98.33
Water		1.26
Total Land Cover		**102.82**

[1] This classification is used when a distinction cannot be made to the alliance or association level, and where nonnative grasses and forbs are dominant over native species and *Arundo donax*, *Lepidium latifolium*, and *Lolium perenne* (*L. multiflorum*) are not clearly dominant or codominant. Generally, this vegetation type is found throughout drainage channels and other areas of low topographic relief where native species diversity is low and ruderal floras have colonized areas of repeated disturbance (Sproul et al. 2011).

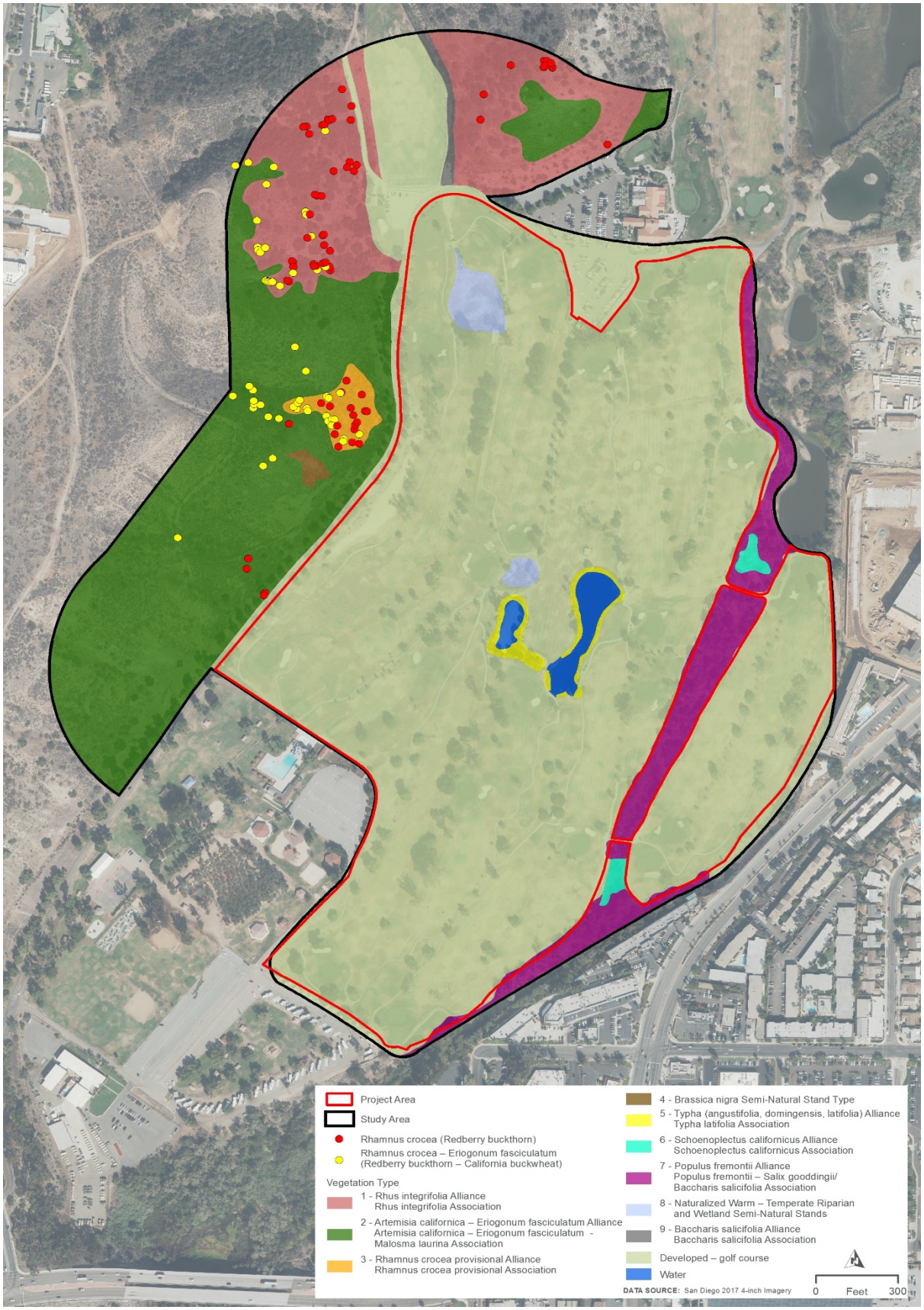

Figure 3-1 Vegetation Classifications in the Project Area

3.2.2 Avian Background Research and Survey Methodology

COASTAL CALIFORNIA GNATCATCHER PROTOCOL SURVEYS

Protocol surveys for coastal California gnatcatchers were conducted in 2017 by a permitted Navy biologist in accordance with the survey guidelines issued by USFWS in 1997. Surveys were conducted six times for each area of suitable habitat (Diegan Coastal Sage Scrub), between 0700 and 1200 on each survey day. Prior to the start of each survey, time, air temperature, average wind speed, and cloud cover percentage were documented. During each survey, the time and location of all coastal California gnatcatcher detections, and the age and sex of the individuals, were recorded. Taped vocalizations were used only when necessary. Surveys were not conducted during inclement weather (Navy, personal communication, May 21, 2019).

LEAST BELL'S VIREO PROTOCOL SURVEYS

Protocol surveys for least Bell's vireo were conducted in 2017 by permitted Navy biologists per the current protocol for the species. Surveys for least Bell's vireo were conducted between 0700 and 1200 on seven days from April through July in southern willow scrub and mule fat habitats on MGRF (Navy, personal communication, May 21, 2019).

3.3 Status of Listed Taxa in the Project Area

The following is a description of the status of the federally listed taxa potentially affected by the Proposed Action.

3.3.1 Federally Listed Plants

No federally listed plants are known to occur within the Project Area.

3.3.2 Federally Listed Wildlife

Two federally listed avian taxa are known to occur or to have suitable habitat within or near the Project Area: least Bell's vireo and the coastal California gnatcatcher. Historical data for these birds are described in detail in the INRMP (Navy 2014). Protocol surveys for coastal California gnatcatchers and least Bell's vireos conducted at MGRF in spring/summer 2017 by Navy biologists identified 69 acres of Diegan Coastal Sage Scrub and 28 acres of southern willow scrub and mule fat habitats within MGRF. Diegan Coastal Sage Scrub, and southern willow scrub and mule fat habitats, are the preferred habitat types for coastal California gnatcatchers and least Bell's vireos, respectively. The estimated acreages of suitable habitat for federally listed avian taxa at MGRF are provided in **Table 3-3**.

Table 3-3. Acreage of Potential Habitat of Federally Listed Avian Taxa at MGRF and Adjacent to the South Course

Federally Listed Wildlife	Estimated Amount of Potential Habitat on MGRF acres (hectares)	Estimated Amount of Potential Habitat adjacent to the South Course acres (hectares)	Estimated Amount of Potential Habitat to be Disturbed by the Proposed Action acres (hectares)
Coastal California gnatcatcher *(Polioptila californica californica)*	69 (27.92) [1,2]	10.6 (4.2)	0 (0.0) [4]
Least Bell's vireo *(Vireo bellii pusillus)*	28 (11.33) [1,3]	10.6 (4.2)	0 (0.0) [4]

[1] Data derived from spring/summer survey observations 2017.

[2] Suitable habitat for coastal California gnatcatchers on MGRF is Diegan Coastal Sage Scrub (Navy, personal communication, May 21, 2019).

[3] Suitable habitat for least Bell's vireos on MGRF are southern willow scrub and mule fat habitats (Navy, personal communication, 2019).

[4] No native habitat is anticipated to be disturbed by the Proposed Action.

COASTAL CALIFORNIA GNATCATCHER

Coastal California gnatcatchers are small, blue-gray songbirds with dark blue-gray backs, brownish wings, grayish-white feathers on their undersides, and a white ring around their eyes. The gnatcatcher's long tail is primarily black with white outer tail feathers. Male gnatcatchers have a black cap during the summer. The species is known to occur along the Pacific coastal regions in or near coastal scrub vegetation communities in southern California and northern Baja California, Mexico (USFWS 2010c). Vegetation in preferred habitat is typified by low-growing, summer deciduous, shrub and sub-shrub species such as California sagebrush, California buckwheat, and other sages (USFWS 2010c). There are about 69 acres of that vegetation at MGRF that could be used by this species; of which about 10.6 acres are adjacent to the South Course (**Table 3-3**).

The coastal California gnatcatcher was listed by USFWS as a federally threatened species under the ESA on 30 March 1993. Critical habitat for this species was designated in 2000 and revised in 2007. No critical habitat is present at NBSD; however, critical habitat occurs within 2 miles of MGRF. Surveys for coastal California gnatcatchers at MGRF have been conducted since 1995 and indicate the population has remained stable (Navy 2014). During surveys at MGRF in 1995, gnatcatchers were detected at five locations, including observations of at least three that were considered paired. In 2007, five pairs were observed, and fledglings were observed with three of the five pairs. During 2011 focused surveys conducted by Navy biologists, approximately eleven use areas were detected (Navy 2014). The most recent surveys conducted by Navy biologists at MGRF, from March 16, 2017 through July 14, 2017, identified five pairs of coastal California gnatcatchers within coastal sage scrub (Navy, personal communication, May 21, 2019).

LEAST BELL'S VIREO

Least Bell's vireos are small, greenish-gray songbirds with white underbellies, two white wingbars, and white spectacles across the lores. Preferred habitats include riparian areas dominated by willows of mixed age composition. These areas frequently include other trees such as Fremont cottonwood and western sycamore (*Platanus racemosa*), with a dense understory of young willows, mule fat, California wild rose (*Rosa californica*), and a variety of other shrubby species (USFWS 1998). There are about 28 acres of that vegetation at MGRF that could be used by Least Bell's vireos; of which about 10.6 acres are adjacent to the South Course (**Table 3-3**).

The least Bell's vireo was listed as an endangered species by the state of California in June 1980, and was subsequently listed by USFWS as federally endangered in May 1986. Critical habitat for this species was designated in 1994. No critical habitat occurs at NBSD.

Protocol surveys for least Bell's vireo were conducted at MGRF in 1995 and again in 2007; four breeding territories were detected during both survey events (Navy 2014). Use of MGRF by least Bell's vireos has declined in recent years, presumably as giant reed (*Arundo donax*) continues to push out native species utilized by breeding vireos (Navy 2014). More recent surveys conducted in 2017 by Navy biologists documented pair interactions by two of the five territories observed; however, no signs of nesting were reported (Navy, personal communication, May 21, 2019).

4. Effects Analysis

4.1 Effects of the Action

Section 7 of the ESA defines "effects of an action" as the direct and indirect effects of an action on a species or critical habitat, together with the effects of other activities that are interrelated with or interdependent on that action, that will be added to the environmental baseline. This section describes the direct and indirect effects of the Proposed Action on federally listed threatened and endangered species.

4.1.1 Direct and Indirect Effects

Direct effects are the direct or immediate effects of the project on the species, its habitat, or critical habitat (USFWS 1998). Indirect effects are those that are caused by the Proposed Action and are later in time, but still are reasonably certain to occur.

This section analyzes both direct and indirect effects of the Proposed Action on federally listed taxa. **Sections 4.2** and **4.3** discuss the direct and indirect effects of the actions on federally listed plants and wildlife respectively.

INTERRELATED AND INTERDEPENDENT ACTIONS

Interrelated actions are those that are part of a larger action and thus dependent on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration (50 CFR § 402.02). There are no specific interrelated or interdependent actions related to the Proposed Action.

4.1.2 Beneficial Effects

Effects of the action analyses should consider beneficial effects, which are those effects of an action that are wholly positive, without any adverse effects, on listed species and designated critical habitat (USFWS 1998). Indirect beneficial effects under the Proposed Action could include replacement of nonnative vegetation with native species along riparian areas. This would help improve the overall quality of riparian habitat available for foraging and nesting least Bell's vireos. Additionally, by developing and maintaining improved drainage and irrigation infrastructure at ABGC, reliance on water diverted from the San Diego River would be reduced.

4.1.3 Cumulative Effects

Cumulative effects include future state, tribal, local, and private actions that are reasonably foreseeable to occur, and that would contribute to cumulative anthropogenic effects on threatened and endangered species. Reasonably foreseeable activities that could occur at MGRF include ongoing use of the facility as a recreational area for service members and their families, in addition to the use of ABGC by members of the general public. Because MGRF is already used for recreational activities and the South Course at ABGC has been in use since the 1950s, no new cumulative anthropogenic effects are anticipated. The remainder of MGRF is managed by the Navy for military uses; therefore, no state, tribal, local, or private actions will occur that could result in cumulative effects within the Project Area. Accordingly, no cumulative effects are expected from the Proposed Action.

4.2 Federally Listed Wildlife

4.2.1 Coastal California Gnatcatcher

Based on data collected during Navy surveys from 1995 to 2017, consistent observations of coastal California gnatcatchers have been documented at the larger MGRF complex and near the South Course. Breeding pairs, individuals, and family groups all have been observed in coastal scrub habitat near the Project Area and have been observed in the greater MGRF and North Course Area.

NESTING

To comply with the ESA and avoid and minimize effects on nesting coastal California gnatcatchers, the Project Proponent will be required to provide a qualified biologist to conduct surveys prior to and during construction activities within 500 ft of potential habitat during the breeding season for this species (February 15 through August 31) (**See Figure 2-5**). If active gnatcatcher nests are identified within 500 ft of noise generating construction activities and noise is in excess of 60 dBA, if feasible, a 500 ft buffer will be established between construction activities and the approximate edge of the gnatcatcher territory, to avoid effects to nesting gnatcatchers. If this is not possible, the contractor will install noise attenuation structures at the source of noise to reduce levels to 60 dBA at the nest location. These structures will remain in place until all nestlings have fledged or the noise-generating construction activities have moved at least 500 ft beyond that area.

HABITAT LOSS

The USFWS coastal California gnatcatcher 5-year review lists ongoing losses of coastal scrub habitats as the main reason for the decline of the population. The USFWS listed urban and agricultural development as the primary reasons for habitat loss in the Final Rule determination of threatened status in 1993 (USFWS 1993). The USFWS also noted wildland fires, both natural and accidental, as a temporary impact to habitat that could also lead to permanent habitat degradation (USFWS 1993).

Effects on coastal California gnatcatchers have been assessed based on the area of suitable habitat within the Project Area. Known observations of coastal California gnatcatchers near the Project Area are shown in **Figure 4-1**. None of the locations in which coastal California gnatcatchers have historically been observed at MGRF would be directly impacted by the Proposed Action, and no coastal scrub habitat would be impacted or removed. Project limits would be clearly delineated by the contractor, and no work would be permitted to occur outside of designated areas. Most occupied coastal California gnatcatcher habitat at MGRF is located within the adjacent canyons. These canyons are inaccessible to vehicles and machinery and would not be disturbed by crews or vehicles.

Although removal of landscaped ornamental and other vegetation from the South Course could result in the temporary loss of potential forage habitat for gnatcatchers, the trees that may be removed are not typical habitat for this species and are not known to be used frequently by gnatcatchers. In addition, trees and other landscaped vegetation removed during the proposed renovations would be replaced with native species, when practicable.

Impacts on gnatcatchers could occur if the renovations and construction activities were to

cause an increase in fugitive dust sufficient to temporarily degrade native vegetation and thus modify foraging habitat. Direct effects could also occur if invasive vegetation introduced by construction activities resulted in competition with native vegetation and changed the composition of vegetation communities. These impacts would be avoided or minimized through implementation of the avoidance and minimization measures stated in **Section 2.3,** such as fugitive dust watering, erosion control, and measures to prevent the spread of invasive plants. With the implementation of avoidance and minimization measures, effects of fugitive dust and potential introduction of invasive vegetation as a result of construction are anticipated to be insignificant on gnatcatchers.

NOISE

The South Course is an urban recreational golf course with existing levels of moderate to high human activity. Ambient noise levels in the Project Area include ongoing anthropogenic contributions from the presence of golfers and golf carts, and maintenance activities including weekly mowing of the golf course. Coastal California gnatcatchers utilizing coastal scrub habitat at MGRF are therefore acclimated to ongoing anthropogenic disturbance and enhanced ambient noise levels. Renovations and associated construction activities at the South Course will produce a higher than normal level of noise and vibration due to the use of heavy equipment and increased human activity. Noise and vibrations associated with the use of heavy equipment during the Proposed Action have the potential to disrupt gnatcatcher physiology and behavior in adjacent habitat by masking intraspecific communication and startling birds (Bottalico et al. 2015). Because birds' primary mode of communication is sound, increased noise levels have been found to reduce pairing success by up to 15 percent (Habib et al. 2006). Because noise levels from construction activities may be higher than 60 dBA within 500 ft of known coastal California gnatcatcher habitat, the Project proponent will be required to have a permitted wildlife biologist conduct surveys for gnatcatchers in all areas of suitable habitat prior to the start of construction activities to verify occupancy. Should it be determined that breeding coastal California gnatcatchers are present, renovations and construction activities producing noise levels higher than 60 dBA within 500 ft of occupied habitat will be conducted outside of the breeding season for this species (February 15 through August 31), if practicable.

Because gnatcatchers using coastal scrub habitat adjacent to the South Course are regularly exposed to anthropogenic activity, it is likely these individuals are accustomed to increased levels of human activity and noise. However, renovations and construction activities on the course likely will be higher than average and could disturb nesting gnatcatchers within 500 ft of construction activities. To minimize impacts from noise, surveys for nesting gnatcatchers will be conducted by a qualified biologist and work producing noise levels greater than 60 dBA within 500 ft of an active nest will be postponed, if feasible, or will have noise attenuation structures installed at the source of noise to reduce levels to 60 dBA or lower at the nest location. These structures will remain in place until all nestlings have fledged or construction activities have moved at least 500 ft beyond that area. Therefore, with the implementation of the proposed avoidance and minimization measures, the Proposed Action is not expected to cause additional effects on the species.

Figure 4-1. Coastal California Gnatcatcher 2017 Observations on MGRF – Area 1

PREDATION AND NEST PARASITISM

Direct or indirect effects from renovations and construction activities would not cause any measurable increase in native or non-native predator populations or cause gnatcatcher nests to become more vulnerable to predation. Although habitat fragmentation and nest parasitism have also been identified as threats affecting gnatcatcher populations and/or individuals, renovations and construction activities at the South Course would not alter or fragment any potential nesting habitat, and will not cause any new or different obstacles to use of or movements among habitat patches because no coastal California gnatcatcher habitat would be removed. In addition, renovations and construction activities occurring at the South Course would not have any effect on additional brood parasitism.

DISPLACEMENT

Golf course renovations and construction during the Project could cause direct, short-term effects on non-nesting coastal California gnatcatchers by causing them to modify their behavior and avoid areas where those activities are occurring. These activities would be temporary, and gnatcatchers likely would return after crews have left the work areas. In addition, because Project activities would be restricted to existing developed land in and around the South Course, few or no gnatcatchers are likely to be temporarily displaced and surrounding suitable habitat would remain available those birds. Any loss of foraging opportunities or other uses of that habitat would be temporary and insignificant.

CONCLUSION OF EFFECTS

The Navy concludes that the Proposed Action may affect and is unlikely to adversely affect the coastal California gnatcatcher for the following reasons:

- Construction and renovation activities within 500 ft of suitable habitat during the breeding season for this species would not occur until a qualified biologist has determined that no nesting gnatcatchers are present, or if the species is found, the appropriate avoidance and minimization measures have been implemented. Thus, there will be no direct effects on nesting coastal California gnatcatchers.

- No locations in which coastal California gnatcatchers have been historically observed on MGRF will be directly impacted by the Proposed Action, and no coastal scrub habitat will be disturbed or removed; thus, potential nesting habitat for this species will not be altered.

- The Project will not cause fragmentation of habitat or cause any long-term changes to areas surrounding potential habitat that could result in an increase in predation or brood parasitism.

- Activities that generate noise above 60 dBA within 500 ft of nesting coastal California gnatcatchers will be postponed until the fledglings have left the nest and the area, or noise attenuation structures will be installed at the source of noise to reduce levels to 60 dBA or lower, and impacts to coastal California gnatcatchers from noise during construction will therefore be insignificant.

- Any coastal California gnatcatchers foraging in or near the golf course during renovation and construction activities would be temporarily displaced, and any loss of foraging opportunities or other use of that marginal habitat would be insignificant.

4.2.2 Least Bell's Vireo

NESTING

To comply with the ESA and avoid and minimize effects on nesting least Bell's vireos, the Project proponent will be required to provide a qualified biologist to conduct surveys prior to and during construction activities within 500 ft of potential habitat during the breeding season for this species (March 15 through August 31) (**See Figure 2-5**). If active vireo nests are identified within 500 ft of noise generating construction activities and noise is in excess of 60 dBA, if feasible, a 500 ft buffer will be established between construction activities and the approximate edge of the vireo territory, to avoid effects to nesting vireos. If this is not possible, the contractor will install noise attenuation structures at the source of noise to reduce levels to 60 dBA at the nest location. These structures will remain in place until all nestlings have fledged or construction activities have moved at least 500 ft beyond that area.

HABITAT LOSS

The USFWS least Bell's vireo recovery plan lists extensive loss of riparian breeding habitat and brood parasitism by brown-headed cowbirds (*Molothrus ater*) as the main reasons for the decline of the population (USFWS 1998). The USFWS least Bell's vireo 5-year review lists ongoing brood parasitism as the primary reason for negative impacts to average annual reproduction rate (USFWS 2006). Effects on least Bell's vireos have been assessed based on the area of suitable habitat within the Project Area. Known observations of least Bell's vireos near the Project Area at MGRF are shown in **Figure 4-2**. None of the locations in which least Bell's vireos historically have been observed at MGRF will be directly impacted by the Proposed Action, and no riparian vegetation will be disturbed or removed. In addition, Project limits would be clearly delineated by the contractor, and no work would be permitted to occur outside of designated areas.

Least Bell's vireos are not known to use ornamental trees on golf courses as nesting habitat, and activities associated with removal of these trees will not impact nesting habitat. If tree removal is to occur during the nesting season, the Project proponent will provide a qualified wildlife biologist to conduct surveys for nesting vireos prior to, and during, removal. No trees with nests will be removed and 500-ft buffers will be created around any nests found. Results from the surveys will be provided to the NBSD biologist for review. In addition, trees and other landscaped vegetation removed during the proposed renovations would be replaced with native species, when practicable.

Impacts on vireos could occur if the renovations and construction activities were to cause an increase in fugitive dust sufficient to temporarily degrade riparian vegetation and thus modify foraging habitat. Direct effects also could occur if invasive vegetation introduced by construction activities resulted in competition with native vegetation and changed the composition of vegetation communities. These impacts would be avoided or minimized through implementation of the avoidance and minimization measures stated in **Section 2.3**, such as fugitive dust watering, erosion control, and measures to prevent the spread of invasive plants. With the implementation of avoidance and minimization measures, effects of fugitive dust and potential introduction of invasive vegetation as a result of construction are anticipated to be insignificant on vireos.

Figure 4-2. Least Bell's Vireo 2017 Observations on MGRF.

NOISE

The South Course is an urban recreational golf course with existing levels of moderate to high human activity. Ambient noise levels in the Project Area include ongoing anthropogenic contributions from the presence of golfers and golf carts, and maintenance activities including weekly mowing of the golf course. Least Bell's vireos utilizing riparian habitat at MGRF are therefore acclimated to ongoing anthropogenic disturbance and enhanced ambient noise levels. Renovations and associated construction activities at the South Course will produce a higher than normal level of noise and vibration due to the use of heavy equipment and increased human activity. Noise and vibrations associated with the use of heavy equipment during the Proposed Action have the potential to disrupt vireo physiology and behavior in adjacent habitat by masking intraspecific communication and startling birds (Bottalico et al. 2015). Because birds' primary mode of communication is sound, increased noise levels have been found to reduce pairing success by up to 15 percent (Habib et al. 2006).

Because vireos using riparian habitat adjacent to and along the San Diego River along the South Course are regularly exposed to anthropogenic activity, it is likely these individuals are accustomed to increased levels of human activity and noise. However, renovations and construction activities on the course are likely to be higher than average and could disturb nesting vireos within 500 ft of construction activities. To minimize impacts from noise, surveys for nesting vireos will be conducted by a qualified biologist and work producing noise levels greater than 60 dBA within 500 ft of an active nest will be postponed, if feasible, or will have noise attenuation structures installed at the source of noise to reduce levels to 60 dBA or lower at the nest location. These structures will remain in place until all nestlings have fledged or construction activities have moved at least 500 ft beyond that area. Therefore, with implementation of the proposed avoidance and minimization measures, the Proposed Action is not expected to cause additional effects on the species.

PREDATION AND NEST PARASITISM

Direct or indirect effects from renovations and construction activities would not cause any measurable increase in native or non-native predator populations or cause vireo nests to become more vulnerable to predation. Although habitat fragmentation and nest parasitism have also been identified as threats affecting vireo populations and/or individuals, renovations and construction activities at the South Course would not alter or fragment any potential nesting habitat, and will not cause any new or different obstacles to use of or movements among habitat patches. In addition, renovations and construction activities occurring at the South Course would not have any effect on additional brood parasitism.

DISPLACEMENT

Golf course renovations and construction during the Project could cause direct, short-term effects on non-nesting least Bell's vireos by causing them to modify their behavior and avoid areas where those activities are occurring. Project activities would be temporary, and vireos likely would return after crews have left the work areas. In addition, because Project activities would be restricted to existing developed land in and around the South Course at ABGC, surrounding suitable habitat would remain available to birds that are temporarily displaced. Any loss of foraging opportunities or other uses of that habitat would be temporary and insignificant.

CONCLUSION OF EFFECTS

The Navy, therefore, concludes that the Proposed Action may affect and is unlikely to adversely affect the least Bell's vireo for the following reasons:

- Construction and renovation activities within 500 ft of occupied habitat during the breeding season for this species would not occur until a qualified biologist has determined that no nesting vireos are present, or if the species is found, the appropriate avoidance and minimization measures have been implemented. Thus, there will be no direct effects on nesting least Bell's vireos.
- No locations in which least Bell's vireo have been historically observed at MGRF will be directly impacted by the Proposed Action. No riparian vegetation will be disturbed or removed; thus, potential nesting habitat for this species will not be adversely impacted.
- The Project will not cause fragmentation of habitat or cause any long-term changes to areas surrounding potential habitat that could result in an increase in predation or brood parasitism.
- Activities that generate noise above 60 dBA within 500 ft of nesting least Bell's vireos will be postponed until the fledglings have left the nest and the area, or noise attenuation structures will be installed at the source of noise to reduce levels to 60 dBA or lower.
- Any least Bell's vireos foraging in or near the golf course during renovation and construction activities would be temporarily displaced, and any loss of foraging opportunities or other use of that marginal habitat would be insignificant.

5. Conclusion

Based on the description of the Proposed Action in **Section 2**, the status of the species as described in **Section 3**, and the analysis of the effects in **Section 4**, the Navy concludes that the Proposed Action "may affect but is not likely to adversely affect" the coastal California gnatcatcher and least Bell's vireo.

The U.S. Navy requests concurrence that the Proposed Action may affect, but is not likely to adversely affect the coastal California gnatcatcher and least Bell's vireo.

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