Appendix B

Biological Resources Supporting Information

- Final Biological Opinion from US Fish and Wildlife Service
- Biological Assessment
- Map of CNDDB Occurrences of Federally Listed Species Within 5-Miles of the Project

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
81420-2009-F-0952-4

AUG 29 2012

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VISN21 CAM Headquarters
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Subject: Biological Opinion on the Proposed Naval Air Station Alameda Disposal and Reuse Project in the City of Alameda, Alameda County, California

Dear Ms. Duchnak and Ms. Cullen:

This is in response to the U.S. Department of the Navy's (Navy) and the U.S. Department of Veterans Affairs' (VA) May 21, 2012, request for formal section 7 consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Naval Air Station Alameda (NAS Alameda) Disposal and Reuse project in the City of Alameda, Alameda County, California. Your request for formal consultation was received by the Service on May 24, 2012. At issue are the potential effects of the proposed project to the endangered California least tern (*Sternula antillarum browni*) (least tern) and threatened Pacific coast population of the western snowy plover (*Charadrius alexandrinus nivosus*) (snowy plover). The Service concurs with your determination that the proposed project is likely to adversely affect the least tern. The Service also concurs with your determination that the proposed project may affect, but is not likely to adversely affect the snowy plover. This document is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*) (Act), and represents the Service's biological opinion on the effects of the proposed project to the least tern.

The Service concurs with your determination that the proposed action may affect, but is not likely to adversely affect the snowy plover for the following reason: the snowy plover is rarely sighted within the action area, a single individual once every few years, and has not been documented nesting at the site for more than 20 years. Based on current habitat use of the action area by the snowy plover, the effects of the proposed action to this species would be insignificant and discountable.

The Service issued a biological opinion for the Navy's disposal and reuse of NAS Alameda in 1999 (1999 BO) (Service File Number 1-1-98-F-2). The 1999 BO provided incidental take authorization of the least tern and endangered California brown pelican (*Pelecanus occidentalis californicus*) (brown pelican) for the adverse effects to these species as a result of transferring a portion of NAS Alameda to the City of Alameda (City) for redevelopment. The brown pelican has since been removed from the list of threatened and endangered species due to recovery. The primary means by which the adverse effects of the base transfer and redevelopment to the least tern were minimized in the 1999 BO was through the conservation of 525 acres of land and 375 acres of submerged lands, including the least tern colony site, and the subsequent establishment of a unit of the Service's National Wildlife Refuge System (Proposed Refuge). In addition to the Proposed Refuge, the type and amount of development to the north, south, and west of the Proposed Refuge was limited to minimize the likely increase in human-associated predators of least terns, minimize conditions that increase predator success, and to provide the least tern colony with: (1) unobstructed access to foraging habitats; (2) an adequate buffer between the least tern colony and human development and disturbance, which minimizes predation pressures and perceived predation; and (3) an adequate area to conduct effective predator management at the site. Although the Service requested the conveyance of the Proposed Refuge from the Navy, the property was not transferred to the Service due to outstanding issues over site remediation. As a result, the primary means by which the effects of redevelopment to the least tern were minimized in the 1999 BO was never realized. Due to the impasse between the Service and the Navy, the VA requested the conveyance of the Proposed Refuge for the purpose of constructing and operating a VA Outpatient Clinic and National Cemetery Complex (VA Project).

The proposed VA Project requires significant changes to the project description and effects analysis of the 1999 BO; thus, the VA Project and the City's redevelopment of NAS Alameda are interdependent actions. Although more than 13 years have passed since the issuance of the 1999 BO, most of the property at NAS Alameda has not been transferred by the Navy to the City and an insignificant amount of the development authorized in the 1999 BO has occurred. Therefore, this biological opinion supersedes the 1999 BO.

This biological opinion is based on: (1) an informal section 7 consultation process in which the Service, Navy, VA, City, and East Bay Regional Parks District (EBRPD) worked collaboratively to draft a project description to minimize the adverse affects of the proposed project to the least tern; (2) numerous meetings, emails, and telephone conversations between the Service, Navy, VA, City, and EBRPD; (3) the *Final Proposed Action for Former Naval Air Station Alameda (Alameda Point), Alameda, California*, dated May 8, 2012; (4) the *Final Alameda Point Proposed Avoidance and Minimization Measures*, dated May 8, 2012; and (5) other information available to the Service.

Consultation History

December 15, 2005: The Service met with the VA and Navy to discuss the VA's interest in acquiring the Proposed Refuge via a Federal-to-Federal transfer.

June 5, 2006: The Service met with the VA to discuss the VA's proposed site layouts, issues regarding future control or ownership of submerged lands, and the VA's submittal of a property transfer request to the Navy for the Proposed Refuge.

January 9, 2007: At a meeting with the Service, the VA reported they had formally submitted a request to transfer 579 acres at NAS Alameda, from the Navy to the VA, including the Proposed Refuge. Other topics discussed were the proposed downlisting of the least tern, funding mechanisms for least tern colony management, ownership of the submerged lands, and a development setback from the least tern colony.

May 31, 2007: The Service met with the VA to discuss the possibility of the City taking ownership of the submerged lands, a three-party Memorandum of Understanding or Memorandum of Agreement to ensure adequate patrolling/protection of the brown pelican roost on Breakwater Island, and conceptual site plan options for the VA Project.

August 1, 2007: The Service met with the VA to discuss the future ownership of the submerged lands, a meeting with Golden Gate Audubon Society, a species list for the site, the compensation approach for the adverse affects of the proposed VA Project, and conceptual site plans.

October 3, 2007: The Service met with the VA to discuss the proposed development envelope along the northern edge of the site, the ownership of submerged lands, the potential for EBRPD to become manager of the least tern colony, long term funding for least tern management, compensation for the adverse affects to the least tern, lessons learned from the 1999 BO.

December 20, 2007: The Service, VA, Navy, and City met to discuss a potential approach for conveyance of the submerged lands to the City, subject to a conservation easement or other property encumbrance. The Service recommended the preparation and submittal of a Biological Assessment (BA) that addressed both the proposed VA development and any foreseeable changes to the 1999 BO; with the assumption a new biological opinion would supersede the 1999 BO.

June 10, 2009: The Service received a BA and request for formal section 7 consultation from the Navy for the VA Project and a revised project description for the City's proposed redevelopment.

June 23, 2009: The Service met with the Navy and VA to review the BA submitted on June 10, 2009.

July 10, 2009: The Service sent the Navy a letter (Service File Number 81420-2009-TA-0952-1) informing them that formal section 7 consultation could not be initiated, because all of the information necessary to complete a biological opinion had not been provided to the Service in the BA. The letter also outlined the information required to initiate formal section 7 consultation.

September 21, 2009: The Service attended a conference call with the Navy to discuss the section 7 consultation process, the need for additional minimization and avoidance measures, due to the increased effects to the least tern and brown pelican as a result of additional development, the biological basis for the proposed buffer outlined in the BA, the effects of noise on the least tern as a result of the proposed construction during the least tern breeding season, and the schedule for the completion of a revised BA.

November 20, 2009: The Service attended a conference call with the Navy and VA. The Navy indicated the next BA would have a revised buffer and a revised VA Project configuration, each with an effects analysis. The Service stated that the VA Project and the City's redevelopment of the site were interdependent actions, requiring the reinitiation of section 7 consultation for the 1999 BO. The Service expressed concern that the City's revised redevelopment plan included significant changes to the 1999 BO, including residential development adjacent to the least tern colony. The Service also expressed the need to protect the least tern colony in perpetuity through an endowment and conservation easement. The VA indicated it did not intend to place an easement on the undeveloped areas because in the event the least tern was delisted, the VA wanted to reserve the ability to develop the site.

February 3, 2010: The Service attended a conference call with the Navy. The Service expressed concern that the recently revised VA Project configuration included additional development without an adequate effects analysis or the incorporation of any additional avoidance and minimization measures. The Service reiterated the need to protect the least tern colony and undeveloped areas in perpetuity through an endowment and conservation easement.

May 20, 2010: The Service sent the City a comment letter (Service File Number 81420-2009-TA-0952-2) on the *Notice of Preparation of an Environmental Impact Report and Public Scoping Meeting for the Alameda Point Project* dated April 20, 2010, in which the Service outlined concerns regarding changes to the project description of the 1999 BO, likely increased effects to the least tern, and the need for the City, Navy, VA, and Service to work

together to minimize effects to the least tern.

October 14, 2010: The Service attended a conference call with the Navy to discuss the timeline for receiving a revised BA, the potential for EBRPD to hold a conservation easement over the undeveloped areas at NAS Alameda, and reconfiguring the VA Project to reduce effects to the least tern.

August 30, 2011: The Service received a BA and letter from the Navy and VA requesting formal incremental step section 7 consultation for the VA Project.

September 29, 2011: The Service sent the Navy and VA a letter (Service File Number 81420-2009-TA-0952-3) informing them the Service was unable to initiate an incremental step section 7 consultation as per guidance provided in the *Endangered Species Consultation Handbook Proceedings for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act* (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998). The letter further stated that the VA Project and the City's redevelopment activities were interdependent, requiring the VA and Navy to reinitiate consultation for the 1999 BO.

October 7, 2011: The Service attended a meeting with the Navy, VA, City, and EBRPD to discuss: (1) the recent news that the City would receive their portion of NAS Alameda from the Navy at no cost; (2) legal issues the Navy faced with regards to changing any of the parcel boundaries to be transferred to the City or VA; (3) an EBRPD conceptual alternative to the VA Project, which included moving a portion of the VA Project north, into the Northwest Territories (NWT) and onto land to be conveyed to the City; (4) working through the informal section 7 consultation process to develop a Service-supported project description for the VA Project and the City's redevelopment plans; and (5) the long-term protection of the least tern colony and surrounding lands via a conservation easement.

October 19, 2011: The Service sent the VA and Navy a letter (Service File Number 81420-2009-TA-0952-4) to memorialize the outcome of the meeting that took place at the October 7, 2011 meeting.

February 2, 2012: The Service received a Draft Project Description, Draft Avoidance and Minimization Measures, Draft Project Site Plans, and other supporting draft project related materials, from the Navy via email, for the VA Project and the City's proposed redevelopment at NAS Alameda.

February 23, 2012: The Service emailed comments to the Navy on the Draft Project Description, Draft Avoidance and Minimization Measures, Draft Project Site Plans, and other supporting draft project related materials to the Navy for revision.

April 4, 2012: The Service received a Revised Draft Project Description, Revised Draft Avoidance and Minimization Measures, Revised Draft Project Site Plans, and revisions to the other supporting draft project related materials, from the Navy via email, for the VA Project and the City's proposed redevelopment at NAS Alameda.

April 16, 2012: The Service emailed comments to the Navy on the Revised Draft Project Description, Revised Draft Avoidance and Minimization Measures, Revised Draft Project Site Plans, and revisions to other supporting draft project related materials to the Navy.

April 17, 2012: The Service met with the Navy, VA, City, and EBRPD to discuss the ongoing revisions to the VA Project and City's redevelopment plans for NAS Alameda, including: (1) language for a Service-approved regional park management agency in the Northwest Territory; (2) language regarding future section 7 consultations for dredging; (3) the location and maintenance of the facilities supporting the least tern colony managers; (4) Service-approval of the agency that will enforce public access restrictions; (5) a proposed change to measures that minimize nighttime lighting; and (6) a potential term and condition to ensure the undeveloped area will remain undeveloped, in lieu of a conservation easement.

May 21, 2012: The Service received an email from the Navy with attachments that included a letter dated May 21, 2012, from the Navy and VA requesting formal section 7 consultation with the Service for the VA Project and the City's proposed redevelopment at NAS Alameda, the final versions of the Revised Draft Project Description, Revised Draft Avoidance and Minimization Measures, Revised Draft Project Site Plans, and revisions to the other supporting draft project related materials.

May 24, 2012: The Service received a letter from the Navy and VA requesting formal section 7 consultation with the Service for the VA Project and the City's proposed redevelopment at NAS Alameda.

BIOLOGICAL OPINION

Description of the Proposed Action

The purpose of the proposed action for the Navy is to dispose of property at NAS Alameda in accordance with the Defense Base Closure and Realignment Act of 1990. Disposal of the property at the former NAS Alameda would occur through a Federal-to-Federal transfer of approximately 624 acres to the VA and through an economic development conveyance of the remaining surplus property (approximately 1,704 acres) to the City. The purpose of the proposed action is for the VA to acquire the property and establish VA facilities to serve San Francisco Bay Area veterans and for the City to acquire property to develop consistent with the 1996 Reuse

Plan, as amended, with the exception of some limited changes to the proposed development of the NWT, as described in greater detail below.

The project action includes four components:

1. Property disposal by the Navy: The disposal action would consist of a Federal-to-Federal property transfer of approximately 624 acres of property at NAS Alameda from the Navy to the VA.

2. The VA's acquisition of the property from the Navy and development of the VA Project on approximately 112.4 acres of the 624-acre Federal transfer parcel and use of the property as follows:

    a. Construction and operation of a Veterans Health Administration (VHA) Outpatient Clinic (OPC), which will also include behavioral health services, a Veterans Benefits Administration Outreach office and National Cemetery Administration (NCA) Public Information Center and offices;

    b. Construction and operation of a NCA cemetery, including administrative and maintenance facilities located within the OPC;

    c. Construction of a Conservation Management Office (CMO) to support least tern management, education, and interpretive opportunities; and

    d. Use of existing bunkers for storage of emergency supplies, use of the undeveloped area within 624-acre transfer parcel for emergency training exercises during the least tern non-breeding season (August 16–March 31), and use of undeveloped area within 624-acre transfer parcel as a staging area during emergencies and natural disasters such as earthquakes.

3. Property Disposal by the Navy: The disposal action would consist of an Economic Development Conveyance for the remaining surplus property from the Navy to the City.

4. City acquisition of the property from the Navy and development of the remaining property by the City consistent with the 1996 Reuse Plan, as amended, with the exception of some limited changes to the proposed development of the NWT, as described in greater detail below.

<u>Project Action for the VA Federal Transfer Parcel</u>

The Navy will dispose of approximately 624 acres of property at Alameda Point to the VA as a result of a Federal-to-Federal property transfer. While the parcel proposed for transfer is 624 acres, the area that would be developed with VA facilities and access road is approximately 112.4 acres and is referred to as the VA Development Area (Figure 1).

The remaining 511.3 acres to be transferred from the Navy to the VA is referred to as the VA Undeveloped Area. To provide for the long-term conservation of the least tern, the VA's commitment to implement land use restrictions for long-term maintenance, management, and monitoring of the least terns in accordance with this biological opinion will be documented in the Federal-to-Federal property transfer documents: Department of Defense Form 1354 with an attached Memorandum of Understanding.

The VA Project Action also includes granting limited access to a trail planned to run along the western and southern edge of the VA Federal transfer parcel. The trail would be open during the least tern non-breeding season (August 16 – March 31), and would connect to planned trail segments and other recreational facilities north and east of the VA Federal transfer parcel. The trail would be funded, constructed, and maintained by a Service-approved entity. The VA will retain the right, in case of emergency or otherwise at the VA's discretion, to close or restrict access to the trail. East Bay Regional Park District law enforcement personnel (or another Service-approved law enforcement agency) would be located at Robert Crown Memorial State Beach or the CMO and would regularly patrol the VA Undeveloped Area. If the trail is not being appropriately maintained and trespassing during the least tern breeding season is determined to have adverse effects to the least tern, the VA will permanently close the trail and take corrective action to assure trespassing is no longer a management concern. Before a decision is made to close the trail, the Service would provide EBRPD (or another Service-approved law enforcement agency) and the VA an opportunity to alleviate problems with trespass before the trail is closed.

Beyond the 624-acre VA Federal transfer parcel is the 6.1-acre access road /utility corridor. This corridor includes approximately 1,425 feet of West Redline Avenue directly east of the VA transfer parcel to the entry road from the Alameda Point North Gate, and a 3,292-foot segment of Main Street that extends from the Alameda Point North Gate east to where utilities would tie into the main sewer and water utility.

VHA Outpatient Clinic

The VA OPC building would be approximately 158,000 square feet. The facility would include a pharmacy, lab area, radiology department, outpatient surgery, urgent care, specialty clinics, and support functions including a canteen, clinic management and education center, administrative space, housekeeping, storage and employee lockers, lounges and toilets. Behavioral health services would also be provided at the OPC. A portion of the Ambulatory Care space would accommodate an Ambulatory Surgery Clinic and other outpatient surgical functions staffed and operated by the U. S. Air Force. Furthermore, the U. S. Coast Guard has expressed interest in operating a jointly staffed Women's Health Clinic serving female veterans, active duty U.S. Coast Guard and the Tricare population of Alameda County. In addition to VHA uses, approximately 10,000 square feet of the first floor would be used by the NCA and Veterans Benefits Administration.

The OPC building would be primarily two stories, with at least 75 percent of the roof area at or below 40 feet in height. A penthouse for mechanical equipment would occupy approximately 15 percent of the roof area and would not exceed a height of 47 feet measured from the top-of-slab

to the highest point of the penthouse. In addition, the roof at the lobby entrance of the OPC, approximately 10 percent of the total roof area, would not exceed a height of 54 feet measured from the top-of-slab to the highest point of the lobby roof. A 6,400 square-foot mechanical room would be located adjacent to the service wing on the north side of the OPC building. A 45-foot-tall flagpole is proposed on the north side of the OPC. Probable exterior building materials could include concrete masonry units, glass fiber reinforced concrete, metal panels, metal panel systems, pre-cast concrete, and cement plaster.

A parking area with approximately 632 spaces would be located on the east side of the OPC, and would include a shuttle drop-off/pick-up area used by Veterans. The parking area would be lit during early morning and late afternoon hours, as needed for security. All lights in the parking area and along the access road would be directional and point downward using shielded valences/surrounds, and equipped with anti-perching devices.

Patient appointments are typically scheduled between the hours 8:00 a.m. and 5:00 p.m., Monday through Friday. In addition, some outpatient services, including behavioral health services, would also be offered on Saturday and Sunday from 8:00 a.m. 12:00 p.m. Some VA staff may remain in the OPC after operating hours. There would be no emergency care and no overnight stays at the OPC. The normal staffing levels at the OPC are anticipated to be approximately 250 (both full-time and part-time staff). Based on data from other OPCs in the region, it is estimated that approximately 543 Veterans would be seen at the clinic each week day. During the weekend, it is estimated that approximately 70 Veterans would be seen at the clinic.

NCA Cemetery

The NCA proposes the construction of a National Cemetery to provide cremation burial options (columbarium) to the San Francisco Bay Area veteran population. The National Cemetery at the site would be comprised of architecturally grouped columbaria courts. Each columbaria court would consist of inurnment columbarium niches housing cinerary urns containing cremated remains. The columbarium niches are typically aligned in rows, 5 rows high, in pre-cast-concrete columbaria wall units. The highest columbaria wall would be approximately 9 feet high, including the columbaria unit base and cap. Additional height may be needed to make the caps of the columbarium walls unperchable by avian predators, but in any case will not exceed 10 feet in height. In addition to columbarium walls, the cemetery would feature a Memorial Wall, which is very similar to a columbarium wall. The cemetery would cover a total area of approximately 80 acres located west of the OPC. All road work and site improvements (i.e. roads, grading, and utilities) for the development within the initial 27-acre cemetery sub-development area will be completed in Phase I.

The cemetery layout, structures, roadways and other features would be developed in accordance with VA design and construction standards and specifications for national cemeteries. The main features of the cemetery include the following:

Committal Service Shelters: Covered pavilion-like structures that provide shelter from the wind, rain and sun during inurnment services. These structures are typically about 900 square

feet (25 feet by 36 feet), which is large enough to provide seating for approximately 10 to 20 people, with an additional paved area to provide standing room for others attending the service. These structures are typically supported on one side by a wall with a storage closet, and two to six columns on the other sides that allow for a 10-foot minimum vertical clearance. Two committal shelters will be built in Phase I, and one additional committal shelter would be constructed during subsequent phases of the cemetery.

Building materials used for committal service shelters are to be durable and relatively maintenance-free, such as brick, stucco, building stone, or cut masonry block; and are selected for life-cycle performance characteristics at a given project location. The roof structure is recommended to be standing seam metal (gabled or hipped) with gutters, leaders, downspouts, splash blocks, or underground pipe connection to ensure positive drainage from the structure. Open trusses, open column tops, or perching areas are not permitted due to the maintenance and cleaning required. Architectural features that invite birds or insects to nest are to be avoided.

Committal Service Shelter Parking Areas: A small parking area is proposed adjacent to each committal service shelter to accommodate the funeral cortege (funeral procession). This area is typically wide enough for parking approximately 30 vehicles (two rows of approximately 15 vehicles), and an open center lane for moving traffic.

Assembly Area: The Assembly Area is where special holiday memorial services are held, such as those held on Memorial and Veterans Days. Based on memorial service events held at other VA cemeteries on these two days of the year, as many as 1,000 to 5,000 people may attend these memorial services; therefore, a public address system is sometimes used. These memorial events would be organized, staged and conducted in a manner that would direct noise away from the least tern colony. Other features of the assembly area include a memorial walkway, a flagpole with a maximum height of 80 feet, and a carillon (bell tower) with a maximum height of 35 feet that plays bells or tones. The carillon would be located and operated such that it would not increase the ambient noise level at the least tern colony by more than 10 percent.

NCA Public Information Center: The Public Information Center is a resource for visiting cemetery guests. As presented above in the OPC description, the Public Information Center would be located on the first level of the OPC building and would consist of offices, a reception area and dedicated restrooms.

NCA Service Area (Maintenance Garage): A small maintenance garage on the north side of the OPC building is proposed for NCA staff.

Cortege Assembly Area: The Cortege Assembly Area is a pre-staging area adjacent to the NCA wing of the OPC. This area would consist of three lanes for vehicles to line up before proceeding to the Committal Service Shelter.

Other Elements: Interior roadways, signage, landscaping, benches, trash receptacles and flower containers will also be part of the NCA Cemetery. Trash receptacles will be provided

primarily for refuse associated with floral remembrances brought to the committal shelters or niches. No picnicking is permitted within the cemetery area.

As part of military tradition, a military honors salute may be performed during internment ceremonies at the NCA Cemetery. The military honors salute is a ceremonial act performed at military funerals as part of the drill and ceremony of the Honor Guard. It consists of a rifle party firing blank cartridges in three volleys, and would take place at the committal service shelters. The military honors salute will occur at the proposed committal service shelters, all three of which are more than 1,766 feet from the least tern colony. During special memorial services held on Memorial Day and Veterans Day, the military honors salute may also occur at the Assembly Area. The rifle party will direct firing away from the least tern colony, and solid structures such as committal service shelters or columbarium walls will shield the firing locations from the least tern colony. In addition, landscape berms may be created within the cemetery as a way to provide an additional noise and visual barrier. Berms greater than a distance of 2,132.5 feet from the least tern colony may be up to 12 feet in height. To further reduce the possibility of tall perches for avian predators, berms within 2,132.5 feet of the least tern colony will not exceed 6 feet in height.

Operation of NCA Facilities

The cemetery would be open daily from sunrise to sunset, with possible expanded hours in the evening (until 8 p.m.) on Memorial and Veterans Days. No nighttime activities are proposed within the cemetery area; therefore, exterior lighting would be limited to the area adjacent to the VA building and parking area, and to illuminate the U.S. Flag near the assembly area. Only minimal lighting for monitoring the security of the site is proposed. It is anticipated that up to seven NCA staff would be working at the facility on a daily basis. An average of ten memorial or inurnment services per day would take place. The attendance at these services would typically be five to fifteen people, but may be greater for some services.

Conservation Management Office

In addition to the VA facilities, a CMO is proposed to support the management of the least tern colony, predator management efforts, and may include other uses, such as an interpretive center supporting volunteer and public education programs. This building would be a one-story structure with a maximum height of 25 feet and approximately 2,500 square feet of space. The CMO would be located east of the OPC building and would accommodate Service personnel (or other contracted staff/volunteers) involved with management of the least tern colony as well as the VA's biological monitoring staff. Educational programs for the public may also be conducted at this building. The exterior materials of the CMO are not specified at this time; however, it would be designed to be complimentary to the proposed VA building. A small parking area, consisting of eight to ten parking spaces, is proposed adjacent to the CMO. A wall or fence would separate this building and parking area from the adjacent OPC area. Use of a portion of the main VA parking area for volunteer training, special events and weekend activities may occur if arranged in advance with the VA. The existing buildings currently used by Service staff and volunteers will remain available in order to provide equipment storage, shelter, and restroom

facilities for least tern managers and volunteers during breeding season, when close proximity to the tern colony is essential. Minimal improvements to the existing structures (paint, flooring, and replacement of some fixtures) will be made to the extent possible.

Operation of CMO

The CMO would be in operation daily from sunrise to sunset, with possible expanded hours during the least tern nesting season if circumstances require monitoring or management activities beyond the normal hours of operation.

Management of the California Least Tern

The VA will continue the management of the least tern colony upon formal transfer of the property. Ongoing least tern management/predator management programs would be funded by the VA operating budget for property maintenance and management.

Other VA Uses

As part of their role to respond to regional emergency management, VHA intends to utilize the VA facility at Alameda Point as a staging area during emergencies and natural disasters such as earthquakes and for storage of emergency supplies. The facility may also be used as a location for emergency training exercises during least tern non-breeding season (August 16–March 31). The five bunkers located within Installation Restoration Site 2 (IR-2) and the cemetery area, north and east of IR-2, are proposed to be removed. Two of the existing bunkers previously used for the storage of ordnance by the Navy will be repurposed by the VHA for the storage of emergency supplies. These bunkers lie on the southern border of the VA Project Action Area, adjacent to the waters of San Francisco Bay, and outside of the VA Development Area. The bunkers have been present on site for decades and will not be significantly modified as part of the proposed VA action. The bunkers will be accessed using the existing paved runway surface, and provisioned and maintained outside of the least tern breeding season only.

Timing and Duration

It is currently estimated that construction of the OPC building and CMO would take approximately 18 months to complete, including the time for initial site preparation. The build-out of the NCA Cemetery will be phased based on actual demand. It is currently estimated that there will be a demand for approximately 2,500 niches per year. Phasing is typically based on 10-year increments. Therefore, it is envisioned that approximately five acres of the cemetery would be developed every ten years. The required acreage would vary according to layout and design. Demographic forecasts also suggest that demand will decrease in the years ahead as the veteran population declines. At NAS Alameda, it is expected that the first phase of construction would involve approximately 27 acres that would accommodate approximately 25,000 niches and support facilities, including two committal service shelters, internal roads, assembly area and landscaping. The remainder of the site would remain undeveloped until there is a need for additional columbarium niches. The first phase of cemetery construction is estimated to take 6 to

18 working months to complete.

Access, Staging, Construction Equipment and Techniques

Access to the VA development proposed within the action area will be from local streets to the east, including existing streets at NAS Alameda. All construction staging areas will be located within the VA Development Area. Contractor staging for construction and the offsite utility corridor will be in the cemetery area.

The area where buildings are proposed will be stripped of vegetation, organic soils, and any debris. In areas covered by runway concrete within the VA Development Area, the pavement and any base rock may be removed and reused as base materials. Construction equipment that will be used may include hydraulic breakers, scarifiers, dozers, dump trucks, front end loaders, graders, pile drivers, compactors, and rollers. It is anticipated that 6 months of mass grading will be necessary for initial project construction, including installation of infrastructure and roadways. A second construction season will be needed for completion of the buildings and the installation of landscaping. Grading will employ the use of scrapers, dump trucks, and bulldozers. Dewatering and a geotextile layer may be required for base stability where excavations extend to near the shallow water table.

Based on preliminary design recommendations, it is anticipated that the OPC building will have a concrete pile foundation. Structural concrete mats could be a viable alternative to driven piles. Conventional shallow spread footings could be considered for very lightly loaded structures founded on soils that are improved in situ. Construction of the columbarium is anticipated to have concrete pile foundations and will require the use of concrete mixer trucks, pavers, pick-up trucks, and mobile power generators.

Project Action for the City Property

The Navy will dispose of the remaining surplus Federal property at NAS Alameda, (i.e., the property west of Main Street), which is located within the boundaries of the City of Alameda, California. The Navy already transferred East Housing and the former Fleet Industrial Supply Center to the City, which were subject to the 1999 BO. No further consultation or Navy action is required for property east of Main Street. The surplus Federal property at NAS Alameda would be reused and redeveloped in accordance with the 1996 Reuse Plan prepared by the City. Five planning areas within the surplus Navy property that will be conveyed to the City are subject to this section 7 consultation: (1) Civic Core; (2) Main Street Neighborhoods; (3) Inner Harbor; (4) Marina; and (5) NWT. The NWT lies immediately north of the proposed VA Undeveloped Area and includes approximately 74 acres of the VA Development Area. The Civic Core and Marina areas lie immediately to the east. The current proposal for the NWT includes a 147-acre regional park and 25 acres of the proposed sports complex.

Regional Park

The Regional Park could include the following: (1) 20 acres of seasonal wetlands; (2) non-irrigated perennial and annual grasses over 45 percent of the park area; (3) irrigated "rough mowed" turf meadows covering 30 percent of the park area (no tree species capable of growing to greater than 20 feet in height shall be planted in the Regional Park, and the density of trees and shrubs in this area shall not exceed one tree or shrub per 10,000 square feet); (4) group and family picnic areas comprised of picnic tables, barbeques, and drinking fountains, located near meadow areas and pathways, covering approximately 50,000 square feet; (5) self-closing trash receptacles will be dispersed throughout the Regional Park and will be emptied regularly to prevent availability of garbage to nuisance/predatory wildlife species; (6) observation areas with interpretive signage, benches and restrooms; (7) a Veteran's memorial plaza with a footprint of approximately 25,000 square feet that will include structures no higher than 25 feet; (8) 3.0 miles of asphalt-paved Bay Trail, 12 feet wide; (9) 2.8 miles of asphalt-paved internal trails, 10 feet wide; (10) multiple asphalt-paved parking areas for approximately 800 cars, covering 5 acres; (11) 8,000 linear feet of raised and re-armored bayside levees; and (12) placement of approximately 400,000 cubic yards of fill material to create topography, that will not exceed 12 feet in height.

Sports Complex

The portion of the Sports Complex in the NWT would support eight soccer fields and associated facilities and parking areas. The Sports Complex fields shall not be lighted for nighttime play from April 1 through August 15, unless proposed lighting in these areas can be designed to ensure that lighting for the VA and City projects cumulatively will not exceed the light levels established in avoidance and minimization measure 7a. A maximum of 55 light poles, not to exceed 20 feet in height, would be installed and contain anti-perching devices within the soccer fields and parking areas. No artificial features greater than 20 feet in height shall be constructed. The cumulative square footage of buildings associated with the Sports Complex shall not exceed 7,500 square feet or be greater than 20 feet in height. Self-closing trash receptacles will be dispersed throughout the sports complex and will be emptied regularly to prevent availability of garbage to nuisance/predatory wildlife species.

Civic Core Area

The Civic Core Area would be developed as a mixed use development area with uses ranging from the reuse and redevelopment of existing facilities, replacement of existing buildings, and construction of new buildings for reuse and redevelopment. Development of the Civic Core Area would emphasize retention and reuse of the existing buildings and land use development patterns in this area. Building reuse would potentially include international business and commerce, institutional and educational facilities, research and development facilities, and supporting commercial uses. Civic uses would potentially include public recreation facilities, a museum, a library, a teen activity center, a civic auditorium, civic office space, a place of worship, and meeting places. A ferry terminal would be developed along the Oakland Inner Harbor on the northern boundary of the Civic Core area. The northern portion of the Civic Core Area may be

developed as a university campus. Building heights throughout the Civic Core area would not exceed current heights. The Civic Core Area would support softball fields, in addition to other indoor and outdoor facilities, and would have lighting for nighttime play. Light poles in the softball fields would not exceed 40 feet in height and would be equipped with anti-perching devices. No residential development will occur within any of the colored Building Development Zones, as defined in Figure 1.

Marina Area

The Marina Area would be developed as a commercial marina serving private and public boating, boating clubs, ferry service, deep-draft yacht facilities, boat repair, waterfront dry storage for boats, and sailing training facilities. Residential housing, retail, hotel/conference center, a civic plaza potentially with office space, a cultural arts center and theater, and recreation uses in the marina waterfront open space would be constructed in the Marina Area. No residential development will occur within any of the colored Building Development Zones, as defined in Figure 1.

Inner Harbor

The Inner Harbor would be redeveloped primarily for light industrial and research and development use with the potential for some residential uses. Supporting uses such as office space, restaurants, and service industries for local businesses would also be developed. A park would also be constructed in the Inner Harbor.

Main Street Neighborhood

The existing residential housing in the Main Street Neighborhood would be redeveloped primarily for residential housing use, including a combination of single-family and multi-family units. A substantial number of acres would be developed for a number of public facilities, including new schools, neighborhood parks or open space, and commercial/retail centers.

Proposed Avoidance and Minimization Measures

Prior to Transfer of Excess Property and Conveyance of Surplus Property

1. Until the excess property is transferred to the VA, the Navy shall continue managing the least tern colony and shall continue predator management in a manner consistent with current management practices.

2. Prior to conveyance of surplus property to the City, the Navy shall require the City to comply with the avoidance and minimization measures listed in this biological opinion during interim reuse through enforcement mechanisms provided by the Lease in Furtherance of Conveyance dated June 6, 2000, and subsequent Amendments 1 and 2 dated November 28, 2000, and March 30, 2009, respectively. Service-approved deed restrictions, with enforceable measures requiring the transferee to comply with the

applicable avoidance and minimization measures listed in this biological opinion, shall be developed for surplus Federal properties conveyed to the City or any other non-Federal entity. The deed restrictions shall be provided to the Service by the Navy for approval prior to property conveyance to the City. The deed restrictions shall be recorded prior to or upon property conveyance to the City.

3. Prior to transfer of excess property to the VA, the Navy shall continue to implement actions or measures to effectively notify property owners, lessees, and the general public of the necessity for controlling unauthorized public access. Until transfer of excess property to the VA, the Navy shall retain responsibility for enforcement and maintenance actions and shall ensure signs are maintained that identify the biological importance and values of the adjacent least tern colony and the prohibitions of access and use.

4. The Navy shall continue to prohibit feral cat feeding stations and colonies and the feeding of any native or non-native wildlife species that are potential predators of least terns, until the excess or surplus property has been transferred to the VA, or conveyed to the City, or any other non-Federal entity.

5. Prior to conveyance of submerged lands (as depicted on Figure 1) by the Navy to the City, a Service-approved conservation easement, for the benefit of an entity or organization qualified to hold a conservation easement under California Civil Code Section 815.3 or other enforceable property interest approved by the Service, will be granted or reserved by the Navy for the relevant portions of the submerged lands (as depicted on Figure 1). The conservation easement shall permit the City adequate ingress and egress for the purpose of access to and use of the City's property and shall not prohibit dredging. The conservation easement or other enforceable property interest shall specify the following prohibited uses: (1) no development (e.g., marinas or piers) will be allowed within the easement area, and (2) the City will not issue permits for any coordinated water-based activities, such as regattas or other activities that may concentrate boating activity within the easement area during the least tern breeding season (April 1 through August 15). The Service-approved conservation easement or other enforceable property interest shall be subject to review and approval by the Service prior to property conveyance and recorded within six months of acceptance of the relevant portions of the submerged lands (as depicted on Figure 1) at NAS Alameda from the Navy.

Lands Conveyed by the Navy to the City

6. The following shall apply to all surplus Federal lands conveyed by the Navy to the City:

   a. The City will assume responsibility for notification of deed restrictions to existing and future tenants and property owners.

   b. The City shall assume responsibility for developing and implementing a predator management plan for surplus Federal lands to be conveyed to the City or any other non-Federal entities by the Navy. The lands to be managed for predators shall be all lands west of Main Street, including the NWT, Civic Core Area, Marina Area,

Inner Harbor, and portions of the Main Street Neighborhood, as depicted on Figure 1. The plan shall integrate and coordinate predator management methods and activities within the property to be transferred to the VA by the Navy with those methods and activities employed in other portions of NAS Alameda. The plan shall ensure that an average of 20 hours per week of predator management is provided from March 25 through August 7 each year. The predator management activities provided in the plan shall include, but not be limited to: (1) management and removal of feral cats or other predators such as skunks, raccoons, and foxes, and (2) control of avian predators such as gulls, corvids, and raptors. The plan shall provide an adequate funding mechanism to ensure that an average of 20 hours per week of predator management activities are conducted from March 25 through August 7, of each year; such predator management will continue in perpetuity. The plan and funding mechanism shall be subject to review and approval by the Service prior to property transfer and implemented by the City upon acceptance of surplus Federal lands at NAS Alameda from the Navy.

c. In addition to the predator management activities described above, the following shall be conducted by the City upon acceptance of the surplus property from the Navy: (1) within 600 feet of the VA Federal transfer parcel, the tops of all buildings shall be inspected for avian predator nests once each week by U.S. Department of Agriculture, Wildlife Services (Wildlife Services) or other qualified Service-approved predator management personnel during the period from March 25 through August 7; and (2) the Regional Park of the NWT shall be monitored for corvids and other avian and mammalian predators by Wildlife Services or other qualified Service-approved predator management personnel during the period from March 25 through August 7. Any avian predator nests on the buildings or in the Regional Park shall be monitored to determine if nest removal is required to reduce predation pressure at the least tern colony site. If Wildlife Service personnel are not contracted for these activities, then the qualifications of other proposed personnel shall be reviewed and be subject to final approval by the Service. A funding mechanism for the specific activities described in this paragraph, in addition to the funding provided for the 20 hours of predator management plan activities required in the paragraph above, shall be established and maintained in perpetuity.

d. Upon Navy conveyance of property to the City, the City shall prohibit, in perpetuity, feral cat feeding stations and feral cat colonies on all lands conveyed from the Navy to the City. In addition, the City will notify property owners through educational signage and tenant notification that feral cat feeding stations and colonies and the feeding of any native and non-native wildlife species that are potential predators of least terns is prohibited and a violation of the deed restrictions. Management and removal of feral cats will be included as part of the City's predator management plan.

7. The following avoidance and minimization measures shall apply to all surplus Federal property conveyed to the City, or other non-Federal entity in the NWT and Civic Core and Marina areas, to limit the effects of additional lighting on least terns:

   a. Lighting associated with building security and other lighting needs or requirements throughout the NWT, Civic Core Area, and Marina Area shall be allowed as long as the cumulative increase in ambient nighttime light levels, from VA and City sources as defined in 7b, does not exceed 10 percent above the ambient nighttime light levels in these areas, prior to any VA or City development on transferred/conveyed lands, as defined in Silverman and Light (2011) or another Service-approved lighting study conducted prior to conveyance and between April 1 to August 15, with full development of the NWT, Civic Core Area, and Marina Area, including VA development.

   b. The VA conducted a study (Silverman and Light 2011) to determine the existing ambient nighttime light levels at several locations around the least tern colony site. In April of each year following the installation of any light sources that may increase the footcandle nighttime light level at the least tern colony, the City, in coordination with the VA, shall ensure the footcandle nighttime light levels are appropriately sampled and have not exceeded 10 percent of the pre-conveyance levels established by the VA in Silverman and Light (2011) or another Service-approved lighting study. In the event of an increase above 10 percent from the VA and City sources, corrective action will be taken within 2 months to reduce nighttime light levels to less than 10 percent of the pre-conveyance ambient nighttime light level. The results of the April nighttime light level sampling will be included as part of the annual least tern monitoring and management report.

   c. As a condition of approval for any project, the City shall perform design review to ensure the cumulative increase in ambient nighttime light levels within and near the least tern colony from VA and City sources does not exceed 10 percent of the pre-conveyance levels from April 1 to August 15, as described in avoidance and minimization measures 7a and 7b. The City shall develop lighting requirements and provide them to all project applicants.

8. The following avoidance and minimization measures apply specifically to the NWT:

   a. As detailed stormwater management and monitoring plans for the NWT are developed by the City, they shall be developed in coordination with the Service and implemented to protect open water foraging areas for least terns. The plans shall be reviewed and approved by the Service contemporaneously with the City environmental review process and prior to development of the project in this area.

   b. Prior to the construction of the Regional Park, a Service-approved park management agency will be chosen by the City.

c. No artificial features greater than 20 feet in height shall be constructed, with the exception of 25 feet in the Veteran's memorial plaza area. The cumulative square footage of buildings associated with the Regional Park in the NWT shall not exceed 4,500. No tree species capable of growing to greater than 20 feet in height shall be planted in the Regional Park. The density of trees and shrubs in this area shall not exceed one (1) tree or shrub per 10,000 square feet. The City shall prepare a palette of shrub and herbaceous vegetation species proposed for planting throughout the regional park area. The palette shall be reviewed and approved by the Service prior to the planting of any vegetation in this area. From April 1 through August 15, nighttime lighting in the Regional Park shall be limited to the minimum necessary for public safety. The final Regional Park design/configuration, herbicide/pesticide drift control plan, and landscaping and management plans shall be developed in coordination with the Service. The plans shall be reviewed and approved by the Service prior to any new development in this area.

d. The Sports Complex fields shall not be lighted for nighttime play from April 1 through August 15, unless proposed lighting in these areas can be designed to ensure that lighting for VA and City projects cumulatively will not exceed the light levels established in avoidance and minimization measure 7a.

e. No trees or landscape turf shall be planted within 100 feet from the southern boundary of the Sports Complex, other than the turf required for the Sports Complex field playing surfaces. Shrubs will be managed to remain 4 feet in height within 300 feet of the southern boundary of the Sports Complex. No tree species capable of growing to greater than 20 feet in height shall be planted within the Sports Complex area. Tree and shrub density shall not exceed one tree or shrub per 550 square feet. Trees species shall be light-limbed. No palm trees shall be allowed in this area. The City shall prepare a palette of shrub species proposed for planting in this area. The planting palette shall be reviewed and approved by the Service prior to the planting of any trees or shrubs in this area.

f. No artificial features greater than 20 feet in height shall be constructed. The cumulative square footage of buildings associated with the Sports Complex shall not exceed 7,500 square feet or be greater than 20 feet in height. All buildings associated with the Sports Complex area shall be located greater than 200 feet from the southern boundary of the east-west runway. The City shall ensure that all artificial structures and buildings associated with the Sports Complex are designed to prohibit avian perching or that all artificial structures are fitted with anti-perching devices that will be maintained in perpetuity.

9. The following avoidance and minimization measures reference Figure 1 and apply to the Civic Core Area:

a. *Zone 1 (Pink):* No new buildings, light posts, vegetation greater than 4 feet in height, landscape turf, or other structures greater than 4 feet in height shall be

constructed in this area without prior approval from the Service. The Service shall review all proposed plans to ensure compliance with this biological opinion.

b. *Zones 2 (Red) and 3 (Yellow):* Any new buildings constructed or extensions of existing buildings shall not exceed the height of the existing buildings. No palm trees shall be allowed in this zone. Within line-of-sight of the existing least tern colony, landscaping shall be restricted to vegetation less than 4 feet in height. In areas outside of the line-of-sight of the existing least tern colony, no tree species capable of growing to greater than 20 feet in height shall be planted and shrubs shall be managed as to not exceed 6 feet in height. The density of trees and shrubs in this area shall not exceed 1 tree or shrub per 550 square feet. The City shall prepare a palette of tree and shrub species proposed for planting in this area. The palette shall be reviewed and approved by the Service prior to the planting of any trees or shrubs in this area. Light posts in this area 20 feet or greater in height shall contain anti-perching devices, which will be maintained in perpetuity.

c. *Zone 4 (Purple):* If Building 19 or the fire house is replaced with a new building, the new building shall not exceed 20 feet in height, not extend further west and east than the western and eastern most point of the existing building, and not exceed the existing width of the building as measured from north to south. A new building, not to exceed 20 feet in height, may be constructed just east of Building 19 or may be added on to the fire house provided that the new building/extension is not in direct line-of-sight of any portion of the existing least tern colony. New buildings may have an additional 5 feet of height to accommodate heating/conditioning/ventilation units as long as these units are not within the line of sight of the least tern colony or the units are placed as far back and away from the side of the building facing the tern colony as possible and avian predator perch deterrents are installed and maintained on these units in perpetuity.

d. All sporting fields within the Civic Core Area shall not be lighted for nighttime play from April 1 through August 15, unless proposed lighting in these areas can be designed to ensure the cumulative increase in ambient nighttime light levels within and near the least tern colony, from VA and City sources, do not exceed 10 percent of the pre-conveyance levels from April 1 to August 15, as described in 7a. The City shall ensure that all anti-perching devices on light posts proposed for the sporting fields are maintained in perpetuity.

10. The following avoidance and minimization measures reference Figure 1 and apply to the Marina Area and submerged lands conveyed to the City:

a. *Zone 1 (Pink):* No new buildings, light posts, vegetation greater than 4 feet in height, landscape turf, or other structures greater than 4 feet in height shall be constructed. The Service shall review all proposed plans to ensure compliance with this biological opinion.

b. *Zone 5 (Green):* Building 25 may be reconstructed within the footprint of this zone. Any new building constructed in this zone cannot exceed the height of the existing building (55 feet). Landscaping shall be restricted to vegetation less than 4 feet in height (no palm trees) within the current line-of-sight portion of the northeast corner of this zone. Within line-of-sight of the existing least tern colony, landscaping shall be restricted to vegetation less than 4 feet in height. In areas outside of the line-of-sight of the existing least tern colony, no tree species capable of growing to greater than 20 feet in height shall be planted and shrubs shall be managed as to not exceed 6 feet in height. The density of trees and shrubs in this area shall not exceed 1 tree or shrub per 550 square feet. The City shall prepare a palette of tree and shrub species proposed for planting in this area. The palette shall be reviewed and approved by the Service prior to the planting of any trees or shrubs in this area. Newly constructed buildings and any artificial structures 20 feet or greater in height shall contain anti-perching devices which will be maintained in perpetuity.

c. *Zone 6 (Blue):* No new buildings greater than 20 feet in height shall be constructed in this zone. New buildings may have an additional 5 feet of height to accommodate heating/conditioning/ventilation units as long as these units are not within the line of sight of the least tern colony or the units are placed as far back and away from the side of the building facing the tern colony as possible and avian predator perch deterrents are installed and maintained on these units in perpetuity. No palm trees shall be allowed in this area. Within line-of-sight of the existing least tern colony landscaping shall be managed as to not exceed 4 feet in height. In areas outside of the line-of-sight of the existing least tern colony no tree species capable of growing to greater than 20 feet in height shall be planted and shrubs shall be managed as to not exceed 6 feet in height. The density of trees and shrubs in this area shall not exceed 1 tree or shrub per 550 square feet. The City shall prepare a palette of tree and shrub species proposed for planting in this area. The palette shall be reviewed and approved by the Service prior to the planting of any trees or shrubs in this area. Newly constructed buildings and any artificial structures 20 feet or greater in height shall contain anti-perching devices which will be maintained in perpetuity.

d. As detailed stormwater management and monitoring plans for the Marina Area are developed, they shall be developed in coordination with the Service and implemented in perpetuity to protect open water foraging areas for the least tern. The plans shall be reviewed and approved by the Service contemporaneously with the City environmental review process and prior to development of the project in this area.

e. "Watercraft Exclusion Zones" will be established and clearly demarcated on submerged lands south of the VA parcel and within 300 feet of the breakwater, as depicted in Figure 1. The only exception to this exclusion zone is the use of a gap in the breakwater by Water Emergency Transportation Authority ferries, which will restrict crossings through this gap to 6 per day (three ingress and three

egresses). The City will place floating signs/buoys along the established boundary with warnings prohibiting boaters from entering the area at anytime. The City will also require that signage and educational materials be provided in any marina that is developed within the Seaplane Lagoon to discourage boaters from entering the watercraft exclusion zone. Contracts or leases for boat owners using the Marina Area shall include notification of these restrictions. The contracts shall include conditions that provide for revocation of the contracts or leases if these restrictions are violated. The language within these contracts or leases shall be reviewed and approved by the Service prior to granting any leases or signing any contracts.

f. A "No-wake Zone" during the least tern breeding season (April 1 to August 15) will be established and clearly demarcated on all submerged lands that are conveyed to the City south of NAS Alameda and within the basin enclosed by the breakwater, as depicted on Figure 1. The City will place floating signs/buoys identifying the no wake zone to boaters traversing this area.

g. No dredging activities shall occur during the period from March 15 through August 15 each year to minimize open water turbidity just prior to and during the least tern breeding season. Potential adverse effects to least terns as a result of dredging during the least tern breeding season will not be analyzed in this biological opinion; therefore, dredging during the least tern breeding season will require separate section 7 consultation with the Service.

Lands Transferred by the Navy to the VA

The measures below pertain to the 624-acre Navy/VA Federal-to-Federal transfer and post-transfer VA development:

11. To provide for the long-term conservation of the least tern, the VA's commitment to implement land use restrictions for long-term maintenance, management and monitoring of the least terns in accordance with this biological opinion will be documented in the Federal-to-Federal property transfer documents: Department of Defense Form 1354 with an attached Memorandum of Understanding. To ensure the 511.3 acre VA Undeveloped Area, as defined in Figure 1, will remain undeveloped and will be managed for the long-term persistence and sustainability of the least tern colony, as defined in the project description of this biological opinion, the VA shall not convey any portion of the VA Undeveloped Area to any Federal agency or designate any portion of the VA Undeveloped Area as surplus Federal property; unless, informal section 7 consultation with the Service has been completed.

12. In the event the property is later determined to be surplus to the needs of any Federal agency, the VA will coordinate with the Service and U.S. General Service Administration (GSA) on the method of property disposition prior to GSA disposal action and seek to obtain GSA approval for disposal with terms and conditions that include requirements for

appropriate implementation of avoidance and minimization measures for conservation of the least tern by any subsequent owner.

13. Least tern management activities will continue at current levels or greater levels, as determined by the annual monitoring report, and will include: (1) maintenance of the fence surrounding the least tern colony; (2) maintenance of the fence surrounding the perimeter of the VA Undeveloped Area, to restrict public access; (3) placement of nesting substrate; (4) vegetation control; (5) predator control; (6) regular breeding season monitoring; and, (7) Service-approved adaptive management. Public access within the VA Undeveloped Area may include supervised least tern colony maintenance efforts by volunteer groups during the non-breeding season, as well as the continuation of volunteer least tern colony monitoring during the breeding season, both of which have occurred under the close supervision of Service staff for several years. Access to the site is also authorized to Federal, state, and local regulators, and VA environmental contractors in the performance of their official duties.

14. Activities associated with the VA's role in regional disaster preparedness and emergency response (training exercises, inventory and re-stocking of emergency supplies stored in existing bunkers, etc.) would occur during the non-breeding season (August 16 to March 31). In the event access to emergency supplies is required during the least tern breeding season (April 1 to August 15), the VA will access the emergency supplies via pre-positioned vehicles, by boat, or by helicopters that would maintain a 0.75 mile "no fly zone" from the least tern colony. Repair of underground utilities may also occur in the VA Undeveloped Area when conducted outside of the least tern breeding season.

15. Upon acceptance of Federal excess property, the VA shall be responsible for continuing to manage the least tern colony. The VA may consider coordinating with the Service to continue this work or hire another qualified Service-approved contractor. Least tern colony management activities shall include, but are not limited to the following:

    a. Vegetation control and weed removal within the VA Undeveloped Area.

    b. Maintenance of the fence surrounding the colony.

    c. Maintenance of the colony and preparation prior to the breeding season by placement of coarse sand, gravel, seashells, and other measures to enhance nesting habitat quality.

    d. Breeding season monitoring of the least tern colony.

    e. Management of feral cats and other terrestrial predators of least terns.

    f. Control of avian predators (e.g., gulls, corvids, and raptors)

16. The VA shall prepare a long-term monitoring and management plan for the least tern colony at NAS Alameda. The plan shall be provided to the Service for approval prior to

the transfer of property from the Navy to the VA. The plan shall include the following elements:

a. Outline the species-specific monitoring and management requirements.

b. A program that provides actions or measures to ensure continued controlled access and signage for the least tern colony;

c. Adaptive management to ensure least tern colony breeding success does not drop below the level defined in the incidental take statement of this biological opinion.

d. A requirement for an annual report summarizing the least tern colony monitoring and management activities conducted during the year. The reports shall be completed and submitted to the Service annually by January 31, of each year, or an alternative annual schedule if mutually agreed on by the Service and VA. The annual report shall include the following elements:

   i. Activities, frequency and duration, timing, location, survey methods, notifications, reporting (e.g., weekly summary reports during construction activities), data sheets, etc.

   ii. Disposition of sick, injured, or dead specimens (listed species).

   iii. Monitoring results and recommendations (such as the discontinuance of certain monitoring activities if no effects are being observed, continuance of monitoring activities if potential effects observed, modifications to existing measures or identification of new measures to prevent additional take).

e. The VA shall periodically update, in coordination with the Service, the long-term monitoring and management plan for the least tern in order to provide for the adaptive management of the colony. Updates to the long-term management plan shall be subject to Service-approval.

f. The VA will assume responsibility for notification of restrictions, enforcement, and maintenance of the management plan upon transfer of the property from the Navy to the VA. The VA shall notify adjoining property owners, lessees, and the public of the pertinent elements of the plan. The plan will be published and posted for public view at the CMO as well as other public areas.

g. The VA shall prepare a predator management plan to maintain protection from predator threats at current or lesser intensity. The predator management plan shall be provided to the Service for approval prior to the transfer of property from the Navy to the VA. The plan shall fully integrate and coordinate predator management methods and activities within the property to be transferred by the Navy to the VA with those methods and activities employed in other portions of NAS Alameda. The VA shall periodically update the predator management plan

in order to provide for the adaptive management of the colony. The VA shall coordinate with the Service regarding any updates to the predator management plan. Updates to the predator management plan shall be subject to Service-approval.

17. The VA may continue to use Wildlife Services for predator management, or may hire another qualified contractor. The qualifications of the predator management contractor will be subject to Service-approval. The VA shall contact the Service and Wildlife Services to determine current predator management activities and ensure that they are maintained. If predation pressure to least terns increases, the VA shall increase the level of predator management activities to compensate. Annual predator management reports shall be prepared by the implementing agent (e.g., Wildlife Services or other Service-approved entity) that describe the manner in which the predator management activities are being implemented. The VA has the option to consolidate annual least tern monitoring and management reports and predator management reports. The reports shall be completed and submitted to the Service annually by January 31 of each year, or an alternative annual schedule if mutually agreed on by the Service and VA.

18. From April 1 to August 15, the VA and Service-approved least tern management entity shall send weekly electronic status reports to the Service describing the current number of adult least tern pairs, nests, chicks, fledglings, least tern mortalities by life-stage, predation pressures, and predator management activities.

19. The VA shall conduct an education program for all newly-hired employees of the VA Alameda Point facility. The education program shall include, at a minimum, the life history of the least tern, reasons for its decline, and the measures in place to minimize effects to the species, including but not limited to prohibitions against feeding wildlife, establishing cat colonies, or releasing cats on site. The VA will post notices of the importance of predator control, in conspicuous places used by employees and the public, prohibitions against feeding wildlife, establishing feral cat colonies, or releasing feral cats on site, and post warnings of impending predator management activities.

20. The VA conducted studies to determine the existing ambient foot-lambert and footcandle nighttime light levels at several locations around the least tern colony site. In April of each year following the installation of any light sources that may increase the footcandle nighttime light level at the least tern colony, the VA, in coordination with the City, shall ensure the footcandle nighttime light levels are appropriately sampled and have not exceeded 10 percent of the pre-conveyance levels established by the VA. In the event of an increase above 10 percent from VA and City sources, corrective action will be taken within 2 months to reduce nighttime light levels to less than 10 percent of the pre-conveyance ambient nighttime light level. The results of the April nighttime light level sampling will be included as part of the annual least tern monitoring and management report.

21. Lighting, including that for roads, building security, and public safety shall be designed to minimize nuisance nighttime light levels. As part of the lighting plan for all facilities and

activities within the action area, the VA shall undertake appropriate measures (i.e., night lighting design) to ensure the cumulative increase in ambient nighttime light levels within and near the least tern colony do not exceed 10 percent of the pre-conveyance levels from April 1 to August 15, as described in avoidance and minimization measure 20, including City property. Measures to achieve this performance standard include, but are not limited to:

a. All exterior lights shall be directed away and/or shielded from the least tern colony.

b. Lights shall be directed toward their areas of intended illumination and shielded to prevent stray light from escaping either upward or outward.

c. Street light poles shall include anti-perching devices.

d. All windows facing the least tern colony with a direct line of sight shall be tinted to reduce the spillage of interior light. Windows shall also be non-reflective in order to minimize bird strikes.

22. The VA shall develop strategies to minimize erosion and the introduction of pollutants into stormwater runoff according to State and Regional Water Quality Control Board (RWQCB) guidelines.

a. The VA shall prepare a detailed Storm Water Pollution Prevention Plan for the construction of all facilities and activities within the VA Project area. An effective combination of erosion and pollutant control Best Management Practices shall be implemented during all phases of construction.

b. Vegetated swales (grassy ditch) and other landscaping techniques shall be used to treat stormwater runoff wherever possible.

c. Pollutant source controls (i.e., roofed trash enclosures) shall be implemented whenever possible.

d. Prior to start of construction activities, plans developed for VA facilities shall include a temporary 6-foot-high minimum barrier fence around the perimeter of the construction area to isolate the construction area from the VA Undeveloped Area. This fence shall be removed upon completion of all construction activities.

23. Ancillary structures (not including columbaria walls, committal shelters, NCA maintenance building, CMO, and OPC) with a height of 8 feet above finished grade or higher, such as light poles, aboveground storage tanks, flagpoles, carillon, and temporary construction fencing, shall be designed or fitted with anti-perching features or devices, such as bird spikes, post-and-wire systems, electrical bird deterrents, or other deterrence measures.

24. No utility poles or transmission towers, except the light poles mentioned in avoidance and minimization measure 23, shall be permitted within the VA Development Area, and electrical transmission lines shall be placed underground.

25. No fountains, bird baths, ponds, reflecting pools, or other permanent sources of open water shall be constructed which may attract or provide havens for potential predators of least terns. Stormwater detention basins that would temporarily store excess stormwater may be permitted on the northern portion of the VA Development Area.

26. Landscape planting within the VA Development Area should prioritize native shrub and herbaceous species over nonnative species, but in either case, species shall not be invasive. Landscaped areas shall predominantly consist of drought tolerant plant species and open hardscape areas. A limited amount of turf area may be provided in areas such as primary entrances and NCA assembly areas and other prominent areas.

27. In the portion of the VA Development Area within 2,132.5 feet of the existing 9.7-acre least tern colony, all landscaping shall be managed as to not exceed 4 feet in height. In areas more than 2,132.5 feet from and within the line of sight of the existing least tern colony, shrubs shall be maintained at a height not greater than 6 feet. In areas more than 2,132.5 feet from the existing least tern colony, tree species shall be maintained at a height not greater than 20 feet. Tree species shall be light-limbed. No palm trees shall be allowed in this area. The VA shall prepare a palette of trees that shall be reviewed and approved by the Service prior to the planting of any vegetation in this area. In all areas within the VA Development Area, tree density shall not exceed an average of 5 trees per 10,000 square feet of the actual VA developed/improved area. Future phases of development will be held to the same average density. To minimize potential effects of avian predators, all landscape trees shall be inspected regularly for nesting attempts by avian predators.

28. Landforms (landscape berms) within 2,132.5 feet of the least tern colony shall not exceed 6 feet in height. Beyond 2,132.5 feet of the least tern colony, landforms may be a maximum of 12 feet in height. On portions of berms within line of sight of the least tern colony, vegetation shall not exceed 6 inches in height and non-vegetative ground surfacing such as rounded river gravel may also be used. On portions of berms and out of the line of sight of the least tern colony, vegetation shall not exceed 30 inches in height nor rise above the berm.

29. A permanent barrier shall be constructed along the southern perimeter of the 112.4-acre VA Development Area in order to prevent trespassing into the adjacent VA Undeveloped Area. The barrier shall be a minimum of 8 feet and a maximum of 10 feet in height, and may be a combination of solid wall, vertical rail or chain link fencing as aesthetic and practical needs dictate. The barrier shall be designed to such a depth and type of material that will prevent all ground predators from burrowing under in order to gain access to the undeveloped areas. The barrier south of the cemetery entrance road shall be a minimum of 6 feet and a maximum of 10 feet in height, along the southern boundary between the CMO and the point where the boundary turns south. The construction of the barrier may

be phased in conjunction with VA Project, and shall incorporate anti-climbing measures to prevent trespassing and anti-perching measures to deter avian predators of least terns. The barrier may be architecturally treated.

30. The maximum heights of structures and buildings located within the 112.4-acre VA Development Area shall be limited to the following:

    a. The OPC building shall be primarily two stories, with at least 75 percent of the roof area at or below 40 feet in height (35-foot roof plus 5-foot parapet). Penthouses for mechanical equipment shall occupy no more than 15 percent of the roof area and shall not exceed a height of 47 feet measured from the top-of-slab to the highest point of the penthouse. The roof at the lobby entrance of the OPC shall not exceed 10 percent of the total roof area and shall not exceed a height of 54 feet measured from the top-of-slab to the highest point of the lobby roof.

    b. The CMO building shall not exceed a height of 25 feet.

    c. Committal service shelters within the cemetery shall not exceed a height of 25 feet.

    d. Niche walls within the cemetery shall not exceed a height of 10 feet.

31. Heating/air conditioning/ventilation units/solar panels may be placed on top of buildings as long as these units are not within the line-of-sight from the least tern colony and/or mechanical equipment screens/parapets are put in place around them.

32. The emergency generator required for the OPC shall not be visible from the least tern colony. Required testing of the emergency generator shall occur monthly for a minimum of 30 minutes.

33. The roof of the proposed VA OPC, committal service shelters, and columbarium walls shall be of a type and design that discourages perching by avian predators of least terns. Any flat areas on the surface of the OPC building, committal service shelters or columbarium walls that has a line-of-sight to the least tern colony shall be treated with anti-perching devices, such as bird spikes, post-and-wire systems, electrical bird deterrents, or other deterrence measures. Such anti-perching devices will be inspected in March of each year to ensure they are functioning appropriately and maintained in perpetuity.

34. Anti-perching devices may be architecturally treated and integrated into the design of the structure.

35. During the least tern breeding season (April 1 to August 15), a biological monitor under contract with the VA Architect Engineer and with experience observing and documenting disturbances to least terns or similar species shall be present during all construction activities associated with VA facilities to ensure that construction activities do not adversely affect least terns using the nesting site. The biological monitor shall:

a. Meet minimum qualifications, as already provided to the Service.

b. Provide a construction worker education program on the least tern at the start of construction activities, whenever new workers begin, and when new contracting firms are brought in. The program shall include, but not be limited to, topics on species identification, life history, habitat requirements, and the conservation measures being implemented to avoid and minimize effects to the least tern. Handouts, illustrations, photographs, and project mapping showing areas where minimization and avoidance measures are being implemented shall be included as part of this education program, as relevant. The program will increase the awareness of the contractors and construction workers about existing Federal laws regarding listed species.

c. Inspect the work area for proper disposal of all garbage in covered containers. If garbage is observed being left out, the monitor shall report to the contractor or VA Resident Engineer to have the situation corrected.

d. Before the initiation of work each day within areas with suitable habitat, the biological monitor shall thoroughly inspect the work area and adjacent habitat areas to determine if least terns are present.

e. Inspect integrity of temporary construction barrier fencing periodically as-needed throughout the work period. If repairs are needed, the monitor shall contact the VA Resident Engineer to fix the barrier fence to ensure its integrity. The biological monitor shall have the ability to make field adjustments to the location of the temporary construction barrier fencing, with approval from the Service, depending on site-specific habitat conditions. The contractor is to remove the barrier fencing upon completion of construction activities.

f. If a least tern is observed in the construction area, the biological monitor will have the authority to and will immediately stop work and notify the VA project manager. The VA shall contact the Service for guidance on how to proceed.

g. When necessary, telephone consultation shall occur between the VA, the Service, and the biological monitor(s) to determine the cause and to identify measures to prevent additional take. The biological monitor and VA Resident Engineer shall direct the contractor on how to proceed accordingly.

h. The biological monitor shall maintain a log that shall be included in the long-term monitoring and management plan's annual reports to the Service, as required in avoidance and minimization measure 16d above.

36. The VA's biological monitor shall designate an on-site environmental inspector during the non-breeding season for least terns (August 16 to March 31). The environmental inspector will be present on-site regularly throughout the non-breeding season. If

necessary, multiple environmental inspectors may be designated to ensure coverage throughout the non-breeding season. The environmental inspector(s) shall:

a. Participate in training provided by the biological monitor. Training shall cover identification of least terns, relevant predators, and issues related to the conservation of least terns, etc.

b. Inspect the work area daily for proper disposal of all garbage in covered containers. If garbage is observed being left out, the environmental inspector shall report to the VA Resident Engineer to have the situation corrected.

c. Inspect integrity of barrier fencing periodically throughout the work period. If repairs are needed, the inspector shall contact the VA Resident Engineer to fix the barrier fence to ensure its integrity.

d. Immediately contact the biological monitor if any listed species is observed in the construction area.

37. All construction vehicles and equipment for VA construction activities shall use designated site access points and remain on designated construction routes only. During the least tern breeding season (April 1 to August 15), access routes for VA construction vehicles and equipment shall be located outside the VA Undeveloped Area.

38. No pets shall be permitted on-site during construction.

39. Stockpiling of materials that may provide additional shelter for potential least tern predators at the construction site will be kept to a minimum and inspected on a regular basis by the biological monitor.

40. During the least tern breeding season (April 1 to August 15), no materials or equipment shall be brought on-site during evening or nighttime hours (dusk to dawn).

41. Pile driving and pavement demolition activities requiring the use of impact tools (i.e., hydraulic breakers, jack hammers, scarifiers, and compactors) for VA construction activities are prohibited during the least tern breeding season (April 1 to August 15) because these activities and equipment have the potential to increase the ambient noise level in and around the least tern colony on the site. The use of other types of construction equipment that would not increase the ambient noise level at the site, as measured at the north end of the fenced least tern colony, are permitted during the least tern breeding season. The existing daytime (7 a.m. to 7 p.m.) ambient noise level at the least tern colony ranges from 50 to 55 decibels, based on hourly noise measurements recorded at the site in March 2009.

42. The tops of buildings under construction, including on-site construction trailers, shall be inspected for avian predator nests once each week during the period from April 1 to August 15. If nests are found, they shall be monitored to determine if nest removal is required to reduce predation pressure on the least tern colony. All removal actions shall

be in accordance with the Migratory Bird Treaty Act. Inspections shall be conducted either by a biologist that meets the minimum qualifications as already provided to the Service, by Wildlife Services, or other qualified personnel contracted for predator management.

Measures that Apply to the Entire VA Development Area

43. The VA shall prohibit feeding stations or colonies for feral cats and any native and non-native wildlife species that are potential predators of least terns on its property.

44. Trained service animals shall be authorized, no pets shall be allowed.

45. All vents and ducts leading to the outside of buildings shall be screened and shall be maintained to prevent use by avian predators. Screened vents shall be inspected at least once a month from April 1 to August 15.

46. All landscape trees, the tops of all buildings, and all anti-perching devices in place throughout the VA Development Area shall be inspected for avian predator nests once each week during the period from April 1 to August 15. If nests are found, they shall be monitored to determine if nest removal is required to reduce predation pressure on the least tern colony. All removal actions shall be in accordance with the Migratory Bird Treaty Act. Inspections shall be conducted either by a biologist that meets the minimum qualifications already provided to the Service or by Wildlife Services or other qualified personnel contracted for predator management.

47. If avian predators defeat anti-perching devices that are maintained in good order, then these devices shall be reevaluated and either modified or replaced as necessary to prevent avian predators from perching within the VA Development Area.

48. The barrier along the southern perimeter of the VA Development Area and the fence on the eastern perimeter of the action area shall be inspected regularly and repairs made as soon as possible.

49. The VA shall conduct yearly vegetation control within the VA Undeveloped Area to discourage predators, provide least tern roosting habitat, and maintain unobstructed views needed for predator detection. Vegetation control options may include the application of herbicides, mechanical and hand removal, and/or the sealing of cracks in the deteriorating runway surface.

50. All green waste, recycling, and non-recyclable refuse shall be stored in secure, covered containers, and shall be emptied on a regular basis or as often as needed to avoid any overflow. Dumpsters and other large refuse bins shall have lids and be placed in roofed enclosures.

Additional Measure Applicable to NCA Cemetery

51. Military honors salutes shall be conducted at committal service shelters or the designated assembly area only, and shall be conducted in a manner that directs firing away from the least tern colony. The salutes shall be performed with rifles or other small arms only. No artillery or explosives salutes shall be permitted.

52. Based on ambient noise levels measured at the project site, the volume of the carillon output would be limited to ensure that the proposed project does not increase ambient noise levels at the least tern colony by more than 10 percent. Prior to the start of the least tern breeding season (April 1), the volume control of the carillon shall be checked and noise measurements shall be taken at the north end of the fenced least tern colony to ensure that sound output from the carillon does not increase the ambient noise level at the least tern colony by more than 10 percent. The existing daytime (7 a.m. to 7 p.m.) ambient noise level at the least tern colony ranges from 50 to 55 decibels, based on hourly noise measurements recorded at the site in March 2009. Ambient noise level monitoring results will be included as part of the annual least tern monitoring and management report.

53. During the least tern breeding season (April 1 to August 15), memorial events, such as those held on Memorial Day, shall be conducted at the designated assembly area or committal service shelters. Such events shall be organized, staged and conducted in a manner that directs noise away from the least tern colony. The use of amplifiers or public address systems shall be permitted only to the extent that they do not increase the ambient noise level at the site, as measured at the north end of the fenced least tern colony. Based on ambient noise levels measured at the project site, the volume of the public address output would be limited to ensure that the proposed project does not increase ambient noise levels at the least tern colony by more than 10 percent. A biological monitor with experience observing and documenting disturbance to least terns or similar species shall be present during special events held during the least tern breeding season (April 1 to August 15), to ensure that events do not adversely affect least terns using the nesting site. The biological monitor shall maintain a monitoring log during the special event that shall be included in annual reports to the Service, as required in avoidance and minimization measure 16d above.

Lands Transferred by the Navy to the VA and Lands Conveyed by the Navy to the City

54. The City or VA will not authorize or commission any aircraft to fly within 0.75 mile of the least tern colony, at any altitude, between April 1 and August 15.

55. Fireworks displays will not be authorized from April 1 to August 15 within any area conveyed by the Navy to the City or transferred to the VA.

56. The portion of the Bay Trail that surrounds the western, southern, and eastern sides of the VA parcel will be closed from April 1 to August 15. Public access will be restricted by a secure fence, at least 8 feet in height. Signage shall be placed at Bay Trail entrances

describing the purpose of the annual trail closure. Enforcement of the Bay Trail annual closure restrictions and access to the undeveloped area will be conducted by EBRPD or another Service-approved entity.

Analytical Framework for the Jeopardy Analysis

In accordance with policy and regulation, the jeopardy analysis in this biological opinion relies on three components: (1) the *Status of the Species*, which evaluates the species' range-wide condition, the factors responsible for that condition, and the survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the listed species; (3) the *Effects of the Action*, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on listed species; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on listed species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the least tern's current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of this listed species in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the listed species, and the role of the action area in the survival and recovery of the listed species as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the purposes of the effects assessment of this biological opinion, the action area includes all lands west of Main and Hancock streets in the City of Alameda and all waters within 0.5 mile of the aforementioned lands and Breakwater Island.

Status of the Species

California Least Tern

Refer to the *California least tern (Sternula antillarum browni) 5-Year Review: Summary and Evaluation* (Service 2006) for the current Status of the Species.

Environmental Baseline

The action area was historically a combination of submerged, tidal, and dry lands. The first documented filling of the tidal and submerged lands began sometime in the 1850s. By the 1940s, most of the submerged and tidal lands, what later became NAS Alameda, had been filled, primarily with dredge materials from harbors throughout the East Bay. The Navy began constructing NAS Alameda in 1938. Naval Air Station Alameda included an airport with seven aircraft maintenance hangars, one of the largest deepwater naval ports in California, one of the two largest complexes of aircraft maintenance buildings on the West Coast, a seaplane lagoon, warehouse space, administrative offices, military residences, community support facilities, and open space. Until NAS Alameda was closed in 1997, the Navy had managed the action area as an active airfield with support facilities, and the open waters as secure transit areas for the passage of ships and other watercraft. Prior to base closure, all land and open water areas were closed to the public for military security purposes.

Least terns have nested between two of the runways at NAS Alameda since at least 1976. In 1981, the Navy built an electric fence around the 6-acre least tern colony and enhanced the nesting substrate within the fenced area with gravel, soil, sand, and oyster shells. The fence around the colony was later replaced and enhanced to prevent least tern chicks from wandering onto the active runways. As part of managing the active runways, the Navy repaired the runways, which resulted in limited vegetation surrounding the least tern colony. Since 1979, the Navy has conducted management activities for the benefit of the least tern, including site preparation, nest monitoring, and vegetation management. In the 1980s, the Navy began a predator control program. In 1997, NAS Alameda was closed, a fence was installed along the eastern boundary of the Proposed Refuge to restrict public access to the area, and the Navy began the property conversion process. In 2004, the colony site was expanded to 9.7 acres, and a new non-electric fence was installed and substrate enhancements were implemented. At this time, the Navy and the Service manage the least tern colony through the provisions outlined in the 1999 BO.

The least tern colony at NAS Alameda is the largest and most stable breeding colony in the San Francisco Bay Area and is considered the source population for the region. Because this colony consistently produces large numbers of fledglings each year, it is considered to be one of the most important source populations in California, serving to balance out losses at many sink locations throughout the state (Caffrey 2005). From 1977 to 2010, the number of breeding pairs at NAS Alameda has steadily increased from 10 to 302, respectively, with an all-time high of 424 pairs in 2005. Since 2005, the number of breeding pairs at NAS Alameda has declined, but now appears stable or increasing. Although the number of breeding pairs has recently declined, the timing and size of the decline directly correlates with the establishment of colonies at Hayward Regional Shoreline (53 pairs in 2010), Napa-Sonoma Marshes Wildlife Area (47 pairs in 2010), and Montezuma Wetlands (23 pairs in 2010), the only other active breeding colonies in the San Francisco Bay Area in 2010 (Marschalek 2011). From 2001 to 2010, the fledgling to pair ratio at NAS Alameda averaged 0.80, lower than the 1.00 fledgling to pair ratio recommended for recovery (Service 1985). However, a 0.80 fledgling to pair ratio is greater than the 0.70 fledgling to pair ratio determined by Francher (1992) to be the ratio required to maintain a stable least tern

breeding colony. According to Caffrey (1995), the least tern breeding site at NAS Alameda has played a significant role in increasing the number of least terns throughout California. Since 1990, the size of the least tern colony at NAS Alameda has been among the 10 highest in California, and fledgling success has exceeded that of almost all other colonies. For instance, in 1999, NAS Alameda produced over 50 percent of the statewide fledglings; in 2002, the site produced approximately 24 percent; and in 2011, it was again the most successful least tern breeding colony, producing 17 percent of the fledglings. If not for the management of the NAS Alameda least tern colony by the Navy early on, least terns may not have survived the range and degree of disturbance and disruption of breeding sites that occurred in the San Francisco Bay Area over the last three decades.

The most significant threats to the least tern within the action area include: (1) predation by native, non-native, and human-associated predators; (2) perceived predation and human disturbance; (3) degradation of foraging areas through the development of a marina in Seaplane Lagoon and increased boat traffic that will reduce foraging success, (4) obstruction of access to foraging areas as a result of development between the least tern colony and documented foraging areas; and (5) sea level rise associated with global climate change. The habitat attributes at NAS Alameda that have allowed it to be one of the most successful least tern breeding colonies in the world over the last 20 years are primarily attributed the large buffer zone surrounding the 9.7-acre nesting area (Caffrey 2005). This buffer zone is comprised of runway tarmac, except for sparse, low-growing vegetation, and a few small anthropogenic structures to the north, south, and west. As a result of a lack of vegetation and human structures, the large buffer zone provides little habitat for potential least tern predators, allows least terns to detect and react naturally to potential predators, and allows for a more effective predator control program. Because of these attributes, predation pressure at NAS Alameda has been documented to be less intense than at other sites with season-long predator-control programs (Caffrey 2005). Since the Navy no longer maintains the runways for aircraft use, the tarmac is cracking, corroding, and collapsing in some areas, increasing the amount of weedy vegetation capable of establishing at the site. The establishment of weedy vegetation, if not adequately controlled, will provide habitat for potential predators.

The relative lack of human structures in three of the cardinal directions also provides least terns with unobstructed access to documented foraging areas in those directions. During the breeding season, least terns forage for fish in the open waters offshore of the western end of the island, which contains extensive and productive foraging areas (Caffrey 2005). Because of its northern location, NAS Alameda is relatively unaffected during El Niño years, when many southern California sites experience pronounced breeding failure resulting from limited food availability (Caffrey 1995). As global climate change increases ocean surface temperatures, the frequency of El Niño-like conditions in southern California may increase, increasing the importance of the colony at NAS Alameda to the species as a whole (Caffrey 2005).

Routine dredging of the Oakland Inner and Outer Harbors by the U.S. Army Corps of Engineers occurs during the least tern breeding season. Dredging these documented foraging areas during the least tern breeding season temporarily adversely affects the least tern by reducing the quality of approximately 452 acres of open water foraging habitat, reducing least tern foraging success,

and the quality of habitat for several species of fish least terns prey on. To compensate for these effects, each year the Army Corps of Engineers funds predator management at the least tern colony.

The removal of contaminated sediments from Seaplane Lagoon, a documented least tern foraging area, occurred in 2011 and 2012 and during the least tern breeding season, under the authority of the Navy and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). This action temporarily reduced the amount and quality of foraging habitat within Seaplane Lagoon. In addition to the temporarily loss of foraging habitat, these activities disturbed sediments known to be contaminated with numerous chemicals, including heavy metals, solvents, paints, detergents, acids, caustics, mercury, oil and grease, PCBs, DDT, and Radium 226, hazardous substances known to be chemical stressors to wildlife. Once these sediments are suspended in the water, they may have caused fish to leave the area and/or disrupt the reproductive success of fish species the least terns prey on, thereby reducing forage availability. In addition, the release of these hazardous substances may have affected least tern reproductive abilities, as many of these chemicals are known to bioaccumulate as they move up the food chain. The Navy did not provide the Service with a biological assessment and did not initiate section 7 consultation with the Service; therefore, the effects of this Federal action to the least tern have not been analyzed and are not fully known.

Recently, the U.S. Department of Transportation initiated section 7 consultation with the Service for the construction of a ferry berthing and maintenance facility on waters east of the U.S.S. Hornet and within the action area. This facility will result in the loss of 0.46 acres of documented least tern foraging habitat from the footprint of the facility, in addition to the loss of foraging habitat as a result of maintaining and berthing 11 large commuter ferries at the site. The establishment of this facility will also increase ferry traffic within many of the documented foraging areas surrounding NAS Alameda, further reducing the quality and quantity of foraging habitat and resulting in the perpetual harassment of least terns foraging within the areas subject to ferry traffic to and from the facility.

Significant differences between the description of the proposed action outlined in the 1999 BO and the description of the proposed action outlined in this biological opinion, and thus the environmental baseline, are: (1) the inclusion of the VA Project; (2) the removal of a golf course and associated 120-unit lodging facility and parking lot for 200 vehicles totaling six acres in the NWT; (3) the removal of the 58-acre light industrial area in the NWT; and (4) the Proposed Refuge will no longer be conveyed by the Navy to the Service.

Effects of the Proposed Action

The proposed VA Project and City's redevelopment at NAS Alameda would not directly eliminate any least tern nesting habitat at the site. However, the proposed action would result in about a 35 percent loss of the buffer zone habitat, including about 14 acres of the 525-acre Proposed Refuge and the majority of the 274.4-acre NWT, which will have the effect of increasing predation, perceived predation and human disturbance, and reduce the ability to conduct effective predator management at the site. In addition, the proposed action will decrease

access to and reduce the quality and quantity of the documented foraging areas surrounding NAS Alameda.

Increased Predation, Perceived Predation, and Human Related Disturbances

The vast majority of species identified as potential predators of least terns are native. However, many are species whose population levels and distributions have substantially expanded in response to anthropogenic changes in habitats and ecological communities. For example, important native human-associated predators of least tern adults, chicks, fledglings, and eggs at NAS Alameda include common raven, raccoon, Norway rat, and numerous species of gull; species that tend to thrive in urban environments. In addition to native human-associated predators, the non-native feral cat is a human-associated predator that often predates on least terns. Human-associated predators benefit from human activities that eliminate competition and predation, create new foraging opportunities such as garbage and dumps, or provide direct supplement through feeding. Increased food availability from waste materials and garbage associated with the VA Project, Sports Complex, Regional Park, Civic Core Area, and Marina Area will attract and support greater densities of mammalian predators, including rats, cats, and raccoons; and avian predators such as Corvids and gulls. As populations of these predators increase in areas surrounding the VA Undeveloped Area, individuals will be forced to disperse as a result of density-dependent factors. Dispersing individuals will likely attempt to infiltrate the VA Undeveloped Area and prey on least terns.

The effects of predators on their prey are not solely ascribed to direct killing. Perceived predation, as a result of increased predator activities or anthropogenic activities that elicit antipredator responses in least terns, can have significant negative effects on reproductive output and amplify effects from other stressors. Antipredator responses to potential predators and anthropogenic activities that elicit such responses include changes in habitat use, vigilance, and foraging behavior, or physiological changes, any or all of which may affect prey demography (Zanette et al. 2011). Although the effects of perceived predation has not been quantified for the least tern, Zanette et al. (2011), in the first study of its kind, documented a 40 percent reduction in the number of offspring produced per year by wild free-living song sparrows, in response to a field experiment in which direct predation was eliminated and perceived predation was manipulated by broadcasting predator playback calls. In addition, they found that perceived predation alone resulted in females laying fewer but heavier eggs, of which a greater proportion failed to hatch; broods weighed less and were more susceptible to thermoregulatory stress; and a greater proportion of nestlings expired. Behaviorally, song sparrows subject to predator playback calls, without any direct predation, were more skittish, spent shorter times on and longer times off the nest during incubation, and made fewer feeding visits per hour during brood rearing.

Direct predation and the perception of predation have substantial negative effects on least tern reproductive output. Even small increases in predation can have devastating effects on least terns, such as causing complete reproductive failure and colony abandonment (Burger 1984). For example, between May 25 and June 6, 2006, the year with the lowest fledgling to pair ratio at NAS Alameda since 1982, a pair of burrowing owls killed at least 26 adults and 15 chicks, and least tern anxiety and stress levels were noted as being clearly elevated by colony monitors

(Euing 2007). As a result of predation pressure by a single pair of burrowing owls, a portion of the least terns at NAS Alameda abandoned the site and began nesting at Hayward Regional Shoreline.

The ability to effectively manage predation and perceived predation at NAS Alameda has been attributed to the large buffer zone surrounding the nesting area. The proposed VA Project and City's redevelopment at NAS Alameda will decrease the homogeneity of the buffer zone and increase human presence and human activities within the action area, thereby increasing habitat for human-associated predators. According to D. Pomeroy, Group Leader, Base Conservation/Biology Section, Navy, 1986 to 1999 (Pers. Comm. 2010), development in the NWT will make it more difficult to effectively manage predators at the site. With a greater public presence and development along the northern edge of the VA Undeveloped Area, the amount of room available to safely conduct predator management will decrease. A decrease in the amount of room to conduct effective predator management and increased human presence will likely result in an inability to use rifles in some areas; restricting firearm control of predators to air rifles and shotguns. Also, buildings and landscaping provide nesting and perching habitat for avian predators and hiding places for mammalian predators, making it more difficult to detect and remove potential predators. Managing predators on the eastern side of the Proposed Refuge, where substantial human structures currently exist, is more difficult than on the western side of the site, where there are no buildings (D. Pomeroy, pers. comm. 2010).

Another advantage of a large buffer zone and limited development is the relatively low level of ambient nighttime light near the least tern colony. The VA lighting study conducted by Silverman and Light (2011) measured footcandle light levels at the least tern colony and the foot-lambert light levels within 750 feet of the least tern colony. A footcandle is a unit of illumination that measures the amount of light falling on a given surface (Silverman and Light 2011). A foot-lambert is a unit of luminance that measures the amount of light emitted in a particular direction (i.e., light emitted from a source toward the least tern colony, as perceived by the least terns) (Silverman and Light 2011). Ambient nighttime light influences the ability of nocturnal predators to detect and capture prey, and alters the risk environment for prey. Due to the inevitable increase in ambient nighttime light levels at NAS Alameda as a result of the VA Project and the City's redevelopment, the ability of nocturnal predators (i.e., raccoons, skunks, and owls) to successfully prey on least terns may be enhanced. Increased nighttime lighting may also affect the least tern by increasing the perception by the least tern that the risk of predation has increased as a result of increased light intensity within view of the colony, which would decrease breeding success. The VA and City propose to ensure the footcandle nighttime light level does not increase by more than 10 percent above current levels at the least tern colony, which would minimize the effect of increasing the ability of nocturnal predators to detect and capture least terns; however, the City and VA do not propose to limit an increase in the amount of nighttime light perceived by the least terns, which would reduce stress associated with the perception by the least tern that the risk of predation has increased.

Traffic from employee commuters (approximately 250), VA patients (approximately 543 per day), and recreationist traveling to the regional park will increase traffic noise. The effects of traffic noise on the least tern may result in behavioral changes, such as avoiding flying over

trafficked areas, impairing the ability of least terns to effectively hear and detect predators and conspecifics, and/or increasing stress and alter reproductive and other hormone levels. However, according to a literature review on the effects of highway noise on birds (Dooling and Popper 2007), there are no studies definitively identifying traffic noise as having adverse behavioral or physiological effects on birds and highway noise below a bird's masked auditory threshold has no effect on the bird. Thus, the most probable effect of noise from road traffic to least terns would be a reduction in their ability to hear conspecifics and potential predators. The potential effects of increased traffic noise, from several cars per minute (significantly less than highway traffic levels), on the ability of least terns to hear conspecifics or predators will be minimized by maintaining the large buffer zone. The large buffer zone will attenuate noise from road traffic more than 0.4 mile away, significantly minimizing the effects on least terns at the nesting colony.

The VA Project and the City's redevelopment activities will likely increase direct predation and perceived predation on the least tern by increasing the carrying capacity of potential predators, increasing their success rate, and reducing the ability to conduct effective predator management at the site; regardless of the implementation of the proposed avoidance and minimization measures. Nevertheless, the VA Project has been located as far away from the least tern colony as the property configuration allowed for, providing for an adequate buffer of the adverse effects of the development to the species, and the VA Project and City's redevelopment include building height specifications and configurations to reduce habitat for potential predators and to reduce obstruction to least tern foraging areas to the north. In addition to development configurations that were specifically designed to reduce the effects of the proposed project to the least tern and maintaining a large buffer zone, the proposed action includes: (1) maintaining predator control efforts at current or greater levels so that predator managers can increase and adapt as predation pressures increase or change; (2) monitoring the least tern colony to determine breeding success and predation pressure; (3) limiting the amount of and type of vegetation planted in areas adjacent to the VA Undeveloped Area to reduce habitat for avian and mammalian predators; (4) installing perch deterrents on artificial structures that may provide habitat for avian predators; (5) minimizing increases in footcandle nighttime lighting to reduce increases in directed predation at night; (6) prohibiting feral cat feeding stations and colonies to reduce direct predation; (7) educating the public as to the activities being conducted to manage the least tern colony to minimize human aid of predators; (8) restricting public access and maintaining a fence around the VA Undeveloped Area to minimize antipredator responses and harassment of the least tern from human presence and to minimize the potential for vandalism; (9) managing vegetation to reduce hiding places for potential predators; (10) providing annual funding for predator management and least tern colony management; and (11) reducing aircraft disturbance near the site to reduce perceived predation and harassment.

Loss of Foraging Habitat

As part of the City's redevelopment of NAS Alameda, Seaplane Lagoon (Marina Area) will be developed as a marina. The Marina Area has been consistently documented as being used by least terns for foraging. According to Susan Euing (National Wildlife Refuge Biologist at NAS Alameda, Pers. Comm. 2011), due to the presence of Breakwater Island, the waters of the Marina Area are calmer than the San Francisco Bay, and least terns tend to forage in the Marina Area on

windier days due to relative calmness of the water. The development of the Marina Area will result in the direct loss of a portion of this foraging habitat as a result of constructing the marina and berthing boats at the site and it will reduce the quality foraging habitat as a result of increased boat traffic. In addition, the development of the NWT will obstruct access to documented foraging areas in the Oakland Inner Harbor. It is not clear if least terns will choose to fly around the development in the NWT, rather than fly over it. Flying around the NWT increases the round-trip flight distance to the Oakland Inner Harbor by approximately 2 miles. Both the development of the Marina Area and NWT may force least terns to travel farther to forage and spend less time with chicks. Increased travel time to forage and spending less time with chicks would result in increased chick mortality due to malnutrition and temperature related stress. The development of the Marina Area would also decrease the quality of foraging habitat throughout the Marina Area and other waters within the action area due to increased boat traffic and potential oil and gas leaks from the boats. A conservation easement or other enforceable property interest and the implementation of a "No Wake Zone" and a "Water Craft Exclusion Zone" on other waters with documented least tern foraging to be transferred to the City have been proposed to minimize these effects.

Construction Related Effects

In addition to the effects of the completed project to the least tern, construction related activities would primarily consist of increased noise and vibration, construction traffic, and the operation of construction equipment, which could increase stress, harassment, and perceived predation that would result in decreased breeding success. In addition, increased human activities associated with the construction of the VA Project and the City's redevelopment may increase habitat for predators of least terns. However, the effects of construction related activities will be avoided and minimized by not conducting activities that will increase ambient noise levels and vibration at the least tern colony nesting site during the least tern breeding season, routinely checking stockpiled construction materials for potential predators, properly disposing of garbage, and the installation and maintenance of a construction barrier fence to ensure construction activities are limited to the construction area footprint.

Summary

While the VA and City have proposed numerous measures to minimize the short and long term effects of the redevelopment of NAS Alameda on the least tern, we expect the effects of implementation of the proposed project to permanently decrease, by a small but measureable extent, the future reproductive potential and long term average size of the least tern colony at NAS Alameda. We base this conclusion on the loss of buffer zone habitat and these associated additive effects: (1) an incremental decrease in the effectiveness of predator control; (2) an incremental increase in actual and perceived predation and increased human disturbance from increased human presence; (3) a reduction in the quality and quantity of foraging habitat; and (4) the potential increase in foraging time due to the development of the NWT.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

CERCLA Activities

At the southwestern corner of NAS Alameda is IR-2, an approximately 100-acre site that includes an approximately 60-acre former landfill, approximately 2,200 feet west of the least tern colony. Installation Restoration Site 2 was used by the Navy to dispose of waste, including chemical drums (contents unknown), solvents, oily waste and sludge, paint, plating waste, industrial strippers and cleaners, acids, mercury, PCB-containing liquids, batteries, low-level radioactive waste, inert ordinance, asbestos, pesticides, tear gas agent, biological waste from the Oak Knoll Naval Hospital, creosote, dredge spoils, and waste medicines and reagents. The Navy plans to conduct remediation activities at IR-2 over the next several years, beginning in the spring of 2012. Because the remediation activities at IR-2 are being performed under CERCLA, no permits are specifically required for the on-site elements of the project, including, based on the Navy's interpretation of CERCLA, section 7 consultation with the Service. Therefore, this activity is being included in the cumulative effects section of this biological opinion. The specific effects of this action to the least tern are unclear, because the Navy has not provided the Service with a BA describing the action in sufficient detail to discern the potential effects to the species. However, based on the information the Navy has provided the Service, remediation activities at IR-2 include establishing large staging areas within the Proposed Refuge, conducting activities during the least tern breading season, removing contaminated materials from the landfill, and covering the landfill. From this, it is clear that remediation activities at IR-2 will temporarily and significantly increase human disturbance to the west of the least tern colony. The long-term, but temporary, loss of buffer zone habitat to the west of the least tern colony as a result of the remediation of IR-2, combined with the loss of buffer zone habitat to the north from the construction and development of the VA Project and City's redevelopment activities, will temporarily reduce unobstructed access to foraging habitat by more than 60 percent and increase anthropogenic disturbance within the buffer zone, which will harm the least tern by stressing it to such an extent that breeding success will be reduced.

Climate Change and Sea Level Rise

Sea level rise associated with global climate change is a significant threat to the long-term persistence of the least tern colony within the action area. According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 2007), the global sea level rose by about 400 feet during the several millennia that followed the end of the last ice age (approximately 21,000 years ago), and stabilized between 3,000 and 2,000 years ago. Sea level indicators suggest that global sea level did not change significantly from then until the late 19th century. The instrumental record of modern sea level change provides evidence of the onset of sea level rise again during the 19th century. Estimates show that during the 20th century global

average sea level rose at a rate of about 0.07 inch per year.

Satellite observations available since the early 1990s provide more accurate sea level data with nearly global coverage. This satellite altimetry data set shows that since 1993, sea level has been rising at a rate of approximately 0.12 inch per year, significantly higher than the average during the previous half century (IPCC 2007). It has been suggested that the climate system, particularly sea levels, may be responding to climate changes more quickly than the models predict (Heberger *et al.* 2009). Additionally, most climate models fail to include ice-melt contributions from the Greenland and Antarctic ice sheets and may underestimate the change in volume of the world's oceans.

According to a 2009 study conducted by Pacific Institute, under medium to medium-high emissions scenarios, mean sea level along the California coast will rise from 3.3 to 4.6 feet by the year 2100 (Heberger et al. 2009). Other key findings of the study report that a 4.6 foot sea level rise would flood approximately 150 square miles of land and would result in accelerated erosion resulting in a loss of an additional 41 square miles of California's coast by 2100. The Service has chosen to adopt this medium to medium-high emissions scenario for planning purposes, as have most other government regulatory and land and resource management entities. Based on the model of sea level rise by Herberger et al. (2009), without constructing levees or implementing other preventative measures, the majority of the action area will be inundated by 2100 under the medium-high emissions scenario, except for a small island of land that includes a small portion of the least tern nesting area.

Conclusion

After reviewing the current status of the least tern, the environmental baseline for the species in the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the NAS Alameda Disposal and Reuse project, as proposed, is not likely to jeopardize the continued existence of the least tern. While we expect that the incremental effects of the proposed development will reduce the ability of the least tern colony to achieve the high numbers of breeding pairs and fledglings, we expect it to continue to remain a productive breeding colony. We base our determination on the following: (1) the VA will continue to fund predator management and least tern colony monitoring and other management activities at current or greater levels; (2) predator management activities will adapt to predation pressures; (3) the proposed project maintains a buffer zone size of 511.3 acres, which, due to the size, location, and configuration of the VA Development Area, does not result in a significant decrease in the buffer zone size of 525 acres, which the Service determined to be the minimum area necessary to conserve the least tern colony at NAS Alameda in the 1999 BO; and (4) the proposed project includes design features and standards that have been specifically included to minimize the effects of the proposed project to the species.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species without special exemption. Take is defined as harass,

harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as actions that create the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are nondiscretionary, and must be implemented by the Navy and VA so that they become binding conditions of the conveyance of surplus Federal properties to the City and the transfer of Federal properties to the VA, as appropriate, for the exemption under section 7(o)(2) to apply. The Navy and VA have a continuing duty to regulate the activity that is covered by this incidental take statement, therefore, if: (1) the Navy fails to require the City or any of its contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms; (2) the VA or its contractors fail to adhere to the terms and conditions of the incidental take statement; or (3) if the Navy and VA fail to retain oversight of the proposed action to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The proposed project will increase predation pressure, increase the perception of predation, and reduce the quantity and quality of foraging habitat, adversely affecting all life-stages of the least tern at NAS Alameda; thereby resulting in take of the least tern in the form of harm, through habitat modification and disruptions in breeding success, and harassment. It will be difficult to quantify incremental increases in take to the least tern due to natural population fluctuations. However, these effects will ultimately result in decreased breeding success and an overall decline in the number of breeding pairs at NAS Alameda. Despite these effects, we anticipate that the breeding success of the least tern colony at NAS Alameda will not drop below an average annual fledgling per pair ratio of 0.79, over any consecutive five year period; and the overall number of breeding pairs will not drop below 300 in any given year.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the least tern.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the effects of take on the least tern:

1. The Navy and VA shall minimize the effect of the take to the least tern.

2. The VA shall assure the long-term persistence and viability of the least tern colony at NAS Alameda.

Terms and Conditions

To be exempt from the prohibitions of section 9 of the Act, the Navy and VA shall comply with, and the Navy shall ensure that the City complies with, the following terms and conditions, which implement the *Reasonable and Prudent Measure*. These Terms and Conditions are non-discretionary.

1. The following terms and conditions implement reasonable and prudent measure one (1):

   a. The Navy, VA, and City shall minimize the potential for harm and harassment of the least tern resulting from the project related activities by implementing the project and the avoidance and minimization measures, as described in the *Description of the Proposed Action* section of this biological opinion.

   b. Prior to the conveyance of property from the Navy to the City and prior to the transfer of property from the Navy to the VA, the VA and City shall conduct a Service-approved nighttime lighting study to determine the ambient nighttime light levels, including lumens (perceived brightness of light) and footcandles, at the least tern colony and within 750 feet of the least tern colony. The results of this Service-approved nighttime lighting study will establish the baseline ambient nighttime light levels at the least tern colony and within 750 feet of the least tern colony. From April 1 through August 15 of each year, the City and VA shall ensure that the level of ambient nighttime light at the least tern colony and within 750 feet of the least tern colony, including lumens and footcanldles, as a result of City and VA lighting sources, does not increase by more than 10 percent above the baseline levels established in the Service-approved nighttime lighting study.

   c. As part of the deed restriction to be placed on properties conveyed by the Navy to the City (as defined in Proposed Avoidance and Minimization Measure 2), within the line of site of the VA Undeveloped Area and in the Building Development Zones or NWT: (1) the number of new lights shall be limited to the minimum number required for building security, (2) all lights shall be directed away and/or screened from the VA Undeveloped Area, and (3) tinting of windows, with non-reflective tinting material, within the line of site of the VA Undeveloped Area shall be required.

   d. The Navy shall ensure the City implements the relevant portions of the project description and avoidance and minimization measures, as described in the *Description of the Proposed Action* section of this biological opinion.

2. The following term and condition implements reasonable and prudent measure two (2):

   To ensure the 511.3 acre VA Undeveloped Area, as defined in Figure 1, will remain undeveloped, provide an adequate buffer from human related activities, and will be managed in perpetuity for the long-term persistence and sustainability of the least tern colony, the VA shall not convey any portion of the VA Undeveloped Area to any Federal agency or designate any portion of the VA Undeveloped Area as surplus Federal property; unless: (1) through informal section 7 consultation with the Service, it is determined that such an action is not likely to adversely affect the least tern; or (2) it is determined by the Service that such an action would be beneficial to the recovery of the least tern.

Reporting Requirements

The VA shall submit to the Service an annual report and a weekly status report during the least tern breeding season (April 1 to August 15), as described in the *Description of the Proposed Action* section of this biological opinion.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

1. The Navy should provide the Service with biological assessments for CERCLA activities that may affect the least tern and implement actions that compensate for the effects to the species.

2. The VA should work with the Service and other relevant agencies to implement least tern recovery efforts throughout the San Francisco Bay Area.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the proposed Naval Air Station Alameda Disposal and Reuse project in the City Alameda, California. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed

species or critical habitat that was not considered in this biological opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must immediately cease, pending reinitiation.

If you have any questions regarding this biological opinion on the proposed Naval Air Station Alameda/Fleet and Industrial Supply Center Alameda Disposal and Reuse project, please contact Ben Solvesky (Ben_Solvesky@fws.gov) or Ryan Olah, Coast Bay/Forest Foothills Division Chief, (Ryan_Olah@fws.gov) at (916) 414-6600.

Sincerely,

Susan K. Moore
Field Supervisor

Enclosure:

cc:
Joy Albertson and Susan Ewing, San Francisco Bay National Wildlife Refuge Complex, Newark, California
Robert Doyle, East Bay Regional Parks District, Oakland, California
Larry Janes, Department of Veterans Affairs, Mare Island, California
Anthony Megliola and Sarah Ann Moore, Department of the Navy, San Diego, California
Jennifer Ott, City of Alameda, Alameda, California

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Personnel Communications

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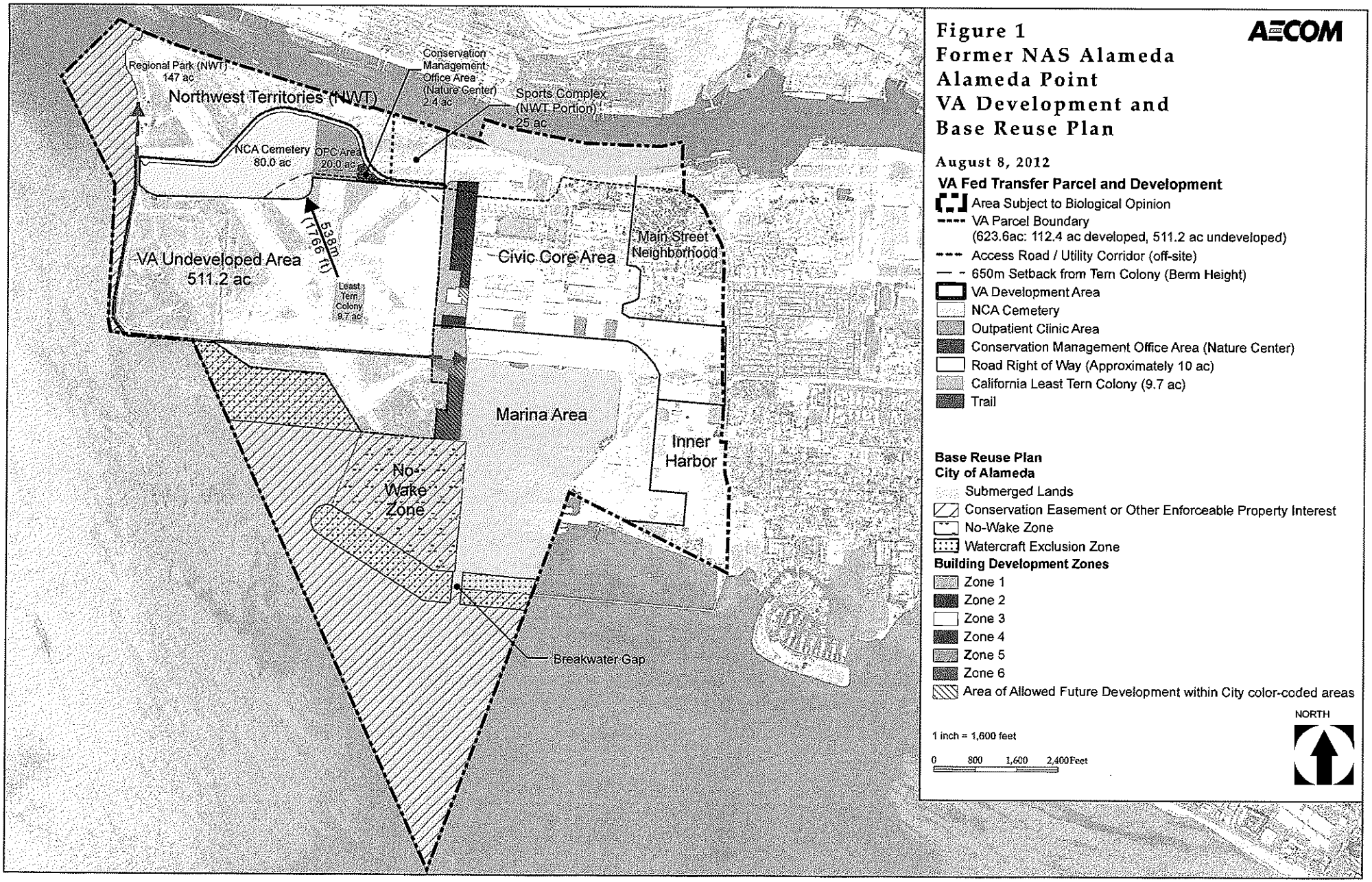
Doug Pomeroy. 2010. Group Leader, Base Conservation/Biology Section, U.S. Department of the Navy, 1986 to 1999.


Regional Park (NWT)
147 ac
Northwest Territories (NWT)
Conservation Management Office Area (Nature Center)
2.4 ac
Sports Complex (NWT Portion)
25 ac
NCA Cemetery
80.0 ac
OPC Area
20.0 ac
538m
(1766 ft)
VA Undeveloped Area
511.2 ac
Least Tern Colony
9.7 ac
Civic Core Area
Main Street Neighborhood
Marina Area
Inner Harbor
No-Wake Zone
Breakwater Gap
Figure 1
Former NAS Alameda
Alameda Point
VA Development and
Base Reuse Plan
AECOM
August 8, 2012
VA Fed Transfer Parcel and Development
Area Subject to Biological Opinion
VA Parcel Boundary
(623.6ac: 112.4 ac developed, 511.2 ac undeveloped)
Access Road / Utility Corridor (off-site)
650m Setback from Tern Colony (Berm Height)
VA Development Area
NCA Cemetery
Outpatient Clinic Area
Conservation Management Office Area (Nature Center)
Road Right of Way (Approximately 10 ac)
California Least Tern Colony (9.7 ac)
Trail
Base Reuse Plan
City of Alameda
Submerged Lands
Conservation Easement or Other Enforceable Property Interest
No-Wake Zone
Watercraft Exclusion Zone
Building Development Zones
Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6
Area of Allowed Future Development within City color-coded areas
NORTH
1 inch = 1,600 feet
0 800 1,600 2,400 Feet

FORMER NAVAL AIR STATION (NAS) ALAMEDA (ALAMEDA POINT) ALAMEDA, CALIFORNIA

PROPOSED ACTION – REVISED FEBRUARY 2, 2012

ACTION AGENCIES

U.S. NAVY (USN)

As part of the process to close and realign military bases, the Base Realignment and Closure (BRAC) Commission recommended that the Secretary of Defense "… close Naval Air Station (NAS) Alameda, California." The BRAC Commission recommendation was approved by President Clinton and accepted by the 103rd Congress in October 1993. NAS/FISC Alameda (Alameda Point) closed in 1997, and the USN is authorized to take appropriate steps to achieve final disposition of all Alameda Point property. The USN has initiated the disposal process for Alameda Point, as required by the Defense Base Closure and Realignment Act (DBCRA) of 1990, in compliance with subsequent amendments to the DBCRA and other laws and regulations, including Title 10 of the U.S. Code and USN regulations affecting the disposition of real property. DBCRA identifies a multi-phase, incremental process by which BRAC property is screened for Federal recipients, homeless housing providers, and other recipients before remaining property is declared surplus for transfer to the Local Reuse Authority (LRA).

DEPARTMENT OF VETERANS AFFAIRS (VA)

The VA was established as an independent agency under Executive Order 5398 on July 21, 1930, and elevated to Cabinet level on March 15, 1989 (Public Law No. 100-527). The VA comprises a Central Office, which is located in Washington, DC, and field facilities throughout the nation administered by its three major line organizations: Veterans Health Administration (VHA), Veterans Benefits Administration (VBA), and National Cemetery Administration (NCA).

The proposed construction of VA facilities at Alameda Point, including implementation of required conservation/mitigation actions, would be funded by the congressionally authorized and appropriated budget for major construction projects for the VA for fiscal year 2011/2012. Congressional funds authorized for a specific fiscal year are intended to be obligated during that year. The VA will include in its annual operating budgets for Northern California Health Care System and Memorial Service Network V funding for the proper management of the California Least Tern (CLT) colony and other property needs.

VETERANS HEALTH ADMINISTRATION (VHA)

The VHA is responsible for providing health related services to eligible Veterans and family members pursuant to the provisions of the Rehabilitation Act of 1973 and other statutory authority and regulations. Currently, the VHA operates two sites in the City of Oakland. The primary site is the Oakland Outpatient Clinic (OPC), and the secondary site is the Oakland Behavioral Health Clinic.

VHA services provided at the Oakland OPC consist of primary care, women's health, urgent care, various medical/surgical sub-specialties, laboratory, pharmacy, radiology, physical therapy, eye clinic, and comprehensive outpatient behavioral health programs. VHA services provided at the existing Behavioral Health Clinic include outpatient treatment for drug- and alcohol-related dependencies, medication management, methadone maintenance, and individual and group therapy. The Behavioral Health Clinic also manages a Homeless Outreach Program and a Compensated Work Therapy Program. VHA's standard is for an OPC (including behavioral health services) to be located within a 30-minute drive time service area.

The proposed action would replace, expand, and consolidate the Oakland facilities into a single, state-of-the-art OPC—including behavioral health facilities—at Alameda Point. VHA need for the proposed action is based on the following:

- The existing OPC is located in a leased building in downtown Oakland. In 2008, the lease was extended to 2018. Behavioral health services are currently located in a separate leased building approximately 0.5 mile from the existing OPC.

- Both the OPC and the existing Behavioral Health Clinic in Oakland are undersized to serve the current and projected Veteran population. Furthermore, VHA requires that behavioral health services be integrated into the primary care setting. The VHA has undertaken a large national initiative to integrate primary care and behavioral health services in order to promote the effective treatment of common behavioral health conditions in the primary care environment, to integrate care for Veterans' physical and behavioral health, and allow mental health specialists to focus on patients with more severe illnesses.

- Organizationally within the VA, the OPC and behavioral health facility fall under VA Northern California Health Care System (NCHCS), whose East Bay Division is based in Martinez, California; NCHCS operates nine (9) healthcare sites throughout northern California, including a major medical center in Sacramento and has over 378,000 enrolled Veterans, including the 51,000 Veterans in northern Alameda County. NCHCS falls under the VA Sierra Pacific Network (VISN 21), which serves over 1.08 million Veterans and oversees operation of 48 medical facilities, including six medical centers in northern California, northern Nevada and the Pacific.

NATIONAL CEMETERY ADMINISTRATION (NCA)

The mission of the NCA is to honor the nation's Veterans with a final resting place and commemorate their service to the nation. One of the strategic goals and primary responsibilities of NCA is to assure that the burial needs of Veterans are met. Experience and recent historical data show that over 80% of persons interred in national cemeteries resided within 75 miles of the cemetery at time of death. VA's strategic

goal is to serve 90% of Veterans with a burial option at a VA National Cemetery or State Veterans Cemetery within 75 miles of their residence. Based upon this goal, NCA considers eligible Veterans to have reasonable access if a burial option, whether for casketed or cremated remains, is available within 75 miles of the Veteran's place of residence. This goal does not consider travel time.

NCA Oakland Memorial Service Network V is responsible for providing burial benefits for over 300,000 Veterans that reside within the San Francisco Bay Area. Providing reasonable access to burial options for these Veterans presents a unique challenge for NCA, because it can take 2 to 3 hours during commute hours for bereaved families in the San Francisco Bay Area to travel one-way to a cemetery located 75 miles away.

NCA need for the proposed action is based on the following:

- Projected inurnments of eligible Veterans are estimated to be 50% of the deceased Veteran population in Northern California. Nationally, of the five NCA Memorial Service Networks, Memorial Service Network V—composed of nine western states—accounts for 37% of all cremation inurnments. Furthermore, the Sacramento Valley National Cemetery has maintained a 60% in-ground cremation inurnment ratio since it opened in October 2006.

- The Golden Gate and San Francisco National Cemeteries have been closed to new burials for over 30 years.[1] When possible, VA determines the feasibility of extending the service of such cemeteries by acquiring adjacent or contiguous land. In the case of the Golden Gate and San Francisco National Cemeteries, neither of these sites have sufficient land for additional gravesites or columbarium[2] niches.

- NCA projects that approximately 2,500 columbarium niches per year are needed to meet the burial needs of San Francisco Bay Area Veterans over the first 5 years after opening a cemetery at Alameda. Given the fact that the Bay Area is a densely developed urban environment, there is a strong desire to acquire land that meets the previously stated 75 mile radius goal and allows for future expansion to ensure that the long-term burial needs of Veterans are met.

VETERANS BENEFITS ADMINISTRATION (VBA)

VBA is responsible for administering programs that provide financial and other forms of assistance to Veterans, their dependents, and survivors. Major benefits include Veterans' compensation, Veterans' pension, survivors' benefits, rehabilitation and employment assistance, education assistance, home loan guaranties, and life insurance coverage. The VBA Oakland Regional Office is currently located in the Federal Building at 1301 Clay Street, Oakland, CA. The office is open for walk-in interviews with VBA Benefits Counselors from 8:00 a.m. until 4:00 p.m., Monday through Friday.

[1] Except for family members who wish to be buried in the same gravesite as a previously deceased family member.

[2] For the purpose of this assessment, the term columbarium is used to describe a structure containing niches for inurnment of cremated remains.

PROJECT PURPOSE AND ACTION

PROJECT PURPOSE

The purpose of the proposed action for the USN is to dispose of property at Alameda Point in accordance with the DBCRA of 1990. Disposal of the property would occur via a Federal-to-Federal agency (Fed-to-Fed) transfer to VA.

The VA is to acquire property to establish VA facilities to serve San Francisco Bay Area Veterans and to implement the VA's vision of "One VA" to better meet the needs of the Veteran population.[3]

It should be noted that, in 1996, in response to the Federal screening process, the United States Fish and Wildlife Service (USFWS) previously submitted a request for much of the same land area that is the subject of the VA's current request for property transfer. This property included the CLT colony and surrounding lands (including submerged lands), and was identified by USFWS as a proposed area for a national wildlife refuge. Thereafter, the USN, Alameda Reuse and Redevelopment Authority (ARRA), and USFWS entered into negotiations to determine the appropriate amount of acreage for the proposed national wildlife refuge. During the 2000–2001 timeframe, USFWS and USN attempted to negotiate a Memorandum of Understanding (MOU) for the property transfer. In 2003, USN and USFWS reached an impasse regarding transfer of this property. Subsequently, the USN engaged in discussions with other Federal entities that had a long-term need to acquire lands to support their mission. The VA ultimately expressed interest in the property and submitted a formal request for the property via a no-cost Fed-to-Fed property transfer in 2006. The submerged lands originally contemplated for transfer in the previous USFWS property request are not included in the proposed VA Federal transfer parcel. However, a conservation easement is proposed for a portion of the submerged lands as part of Navy transfer to the ARRA or City of Alameda, as depicted on **Figure 1**.

PROJECT ACTION

The project action includes four components:

1) Property Disposal by USN: The disposal action would consist of a Fed-to-Fed property transfer of approximately 623.2 acres of property at Alameda Point from USN to VA.

2) VA acquisition of the property from the USN and development of VA Facilities on approximately 112.4 acres of the 623.2-acre Federal transfer parcel and use of the property as follows:

3 The One VA vision stems from the recognition that Veterans think of the VA as a single entity, but often encounter a confusing array of programs such as those handling benefits, health care, and burials, that puts them through repetitive and frustrating administrative procedures and delays. For further information on the "One VA" vision, please go to: http://www.va.gov/JOBS/VA_In_Depth/oneva.asp

a. Construction and operation of a VHA OPC which will also include behavioral health services, a VBA Outreach office and NCA Public Information Center (PIC) and offices;

b. Construction and operation of a NCA cemetery, including administrative and maintenance facilities located within the OPC;

c. Construction of a Conservation Management Office (formerly referred to as "Nature Center") to support CLT management and educational/ interpretive opportunities; and

d. Use of existing bunkers for storage of emergency supplies, use of undeveloped area within 623.2-acre transfer parcel for emergency training exercises during CLT non-breeding season (August 16–March 31), and use of undeveloped area within 623.2-acre transfer parcel as a staging area during emergencies and natural disasters such as earthquakes.

3) Property Disposal by USN: The disposal action would consist of an Economic Development Conveyance for the remaining surplus property from USN to the ARRA or City.

4) ARRA or City acquisition of the property from USN and development of the remaining property by the ARRA or City consistent with the 1996 Reuse Plan, as amended, with the exception of some limited changes to the proposed development of the Northwest Territories, as described in greater detail below.

PROJECT ACTION FOR VA FEDERAL TRANSFER PARCEL

The USN will dispose of approximately 623.2 acres of property at Alameda Point to VA as a result of a Fed-to-Fed property transfer. While the parcel proposed for transfer is 623.2 acres4, the area that would be developed with VA facilities and access road is approximately 112.4 acres. This developed area within the VA Federal transfer parcel is referred to as the VA Development Area (**Figure 1**). Proposed uses and corresponding square footage, acreage, stories and height of buildings within the VA Development Area is provided on **Figure 2**.

The VA Project Action also includes granting limited access to a trail planned to run along the western and southern edge of the VA Federal transfer parcel (**Figure 1**). The trail would be open during CLT non-breeding season, and would connect to planned trail segments and other recreational facilities north and east of the VA Federal transfer parcel. The trail would be funded, constructed and maintained by the ARRA, City of Alameda, or a regional park entity. VA will retain the right, in case of emergency or otherwise at VA's discretion, to close or restrict access to the trail.

Beyond the 623.2-acre VA Federal transfer parcel but within the VA action area is the 6.1-acre access road /utility corridor, as shown on (**Figure 1**). This corridor includes approximately 1,425 feet of West Redline Avenue directly east of the VA transfer parcel, the entry road from the Alameda Point North

[4] According to Geographic Information System (GIS) data, the parcel proposed for transfer is approximately 623.2 acres.

Gate, and a 3,292-foot segment of Main Street that extends from the Alameda Point North Gate east to where utilities would tie into the main sewer and water utility.

PROPOSED VA FACILITIES

VHA Outpatient Clinic

The VA outpatient clinic would be located in a 158,000 square-foot building. The facility would include a pharmacy, lab area, radiology department, outpatient surgery, urgent care, specialty clinics and support functions including a canteen, clinic management and education center, administrative space, housekeeping, storage, and employee lockers, lounges and toilets. Behavioral health services would also be provided at the OPC. A portion of the Ambulatory Care space would accommodate an Ambulatory Surgery Clinic and other outpatient surgical functions staffed and operated by the United States Air Force. Furthermore, the US Coast Guard has expressed interest in operating a jointly staffed Women's Health Clinic serving female veterans, active duty Coast Guard and the Tricare population of Alameda County. In addition to VHA uses, approximately 10,000 square feet of the first floor would be used by the NCA and VBA, described further below.

The three-level OPC building includes a mechanical penthouse above a portion of the building. The maximum height of the OPC would be 68 feet, including the penthouse and parapet. A 45-foot-tall flagpole is proposed on the north side of the OPC. Probable exterior building materials could include concrete masonry units, glass fiber reinforced concrete, metal panels, metal panel systems, pre-cast concrete, and cement plaster.

A parking area with approximately 632 spaces would be located on the east side of the OPC, and would include a shuttle drop-off/pick-up area used by Veterans. The parking area would be lit during early morning and late afternoon hours, as needed for security. All lights in the parking area and along the access road would be directional and point downward using shielded valences/surrounds, and with anti-perching devices.

Operation of VHA OPC

Patient appointments are typically scheduled between the hours 8:00 a.m. and 4:30 p.m., Monday through Friday. Behavioral Health services are offered on Monday from 6:00 a.m. to 4:30 p.m., Tuesday through Friday from 6:00 a.m. to 4:30 p.m., and Saturday and Sunday from 9:00 a.m. to 12 noon. Some VA staff may remain in the OPC after operating hours. There would be no emergency care and no overnight stays at the OPC. The normal staffing levels at the OPC are anticipated to be approximately 250 (both full-time and part-time staff). Based on data from other OPCs in the region, it is estimated that approximately 543 Veterans would be seen at the clinic each week day. During the weekend, it is estimated that approximately 40 Veterans would be coming to the clinic between 9:00 a.m. and 12 noon.

NCA Cemetery

NCA proposes the construction of a National Cemetery to provide cremation burial options (columbarium) to the San Francisco Bay Area veteran population. The National Cemetery at Alameda Point would be comprised of architecturally grouped columbaria courts.

Each columbaria court would consist of inurnment columbarium niches housing cinerary urns containing cremated remains. The columbarium niches are typically aligned in rows, 5 rows high, in pre-cast-concrete columbaria wall units. The highest columbaria wall would be approximately 9 feet high including the columbaria unit base and cap. For the Alameda site, additional height may be needed in order to make the caps of the columbarium walls unperchable by avian predators, but in any case will not exceed 10 feet in height.

In addition to columbarium walls, the cemetery would feature a Memorial Wall, which is very similar to a columbarium wall, except that the ashes are either co-mingled in a common vault (ossuary) or the remains are not available (e.g., lost at sea).

The cemetery would cover a total area of approximately 80 acres located west of the OPC (**Figure 1**). All road work and site improvements (i.e. roads, grading, and utilities) for the development within the initial 27 acre cemetery sub-development area will be completed in Phase I.

The cemetery layout, structures, roadways and other features would be developed in accordance with VA design and construction standards and specifications for national cemeteries. The main features of the cemetery are described in more detail below and their proposed location is shown on **Figure 2**.

- *Committal Service Shelters*. Committal Service Shelters are for committal services. They are covered pavilion-like structures that provide shelter from the wind, rain and sun during inurnment services. These structures are typically about 900 square feet (25 feet by 36 feet), which is large enough to provide seating for approximately 10 to 20 people, with an additional paved area to provide standing room for others attending the service. Committal Service Shelters are typically supported on one side by a wall with a storage closet, and two to six columns on the other sides that allow for a 10-foot minimum vertical clearance. Two committal shelters will be built in Phase I, and one additional committal shelter would be constructed during subsequent phases of the cemetery. The approximate location of all committal shelters are shown in **Figure 2**.

  Building materials used for Committal Service Shelters are to be durable and relatively maintenance-free, such as brick, stucco, building stone, or cut masonry block; and are selected for life-cycle performance characteristics at a given project location. The roof structure is recommended to be standing seam metal (gabled or hipped) with gutters, leaders, downspouts, splash blocks, or underground pipe connection to ensure positive drainage from the structure. Open trusses, open column tops, or perching areas are not permitted due to the maintenance and cleaning required. Architectural features that invite birds or insects to nest are to be avoided.

- *Committal Service Shelter Parking Areas.* A small parking area is proposed adjacent to each committal service shelter to accommodate the funeral cortege (funeral procession). This area is

typically wide enough for parking approximately 30 vehicles (two rows of approximately 15 vehicles), and an open center lane for moving traffic.

- *Assembly Area.* The Assembly Area is where special holiday memorial services are held, such as those held on Memorial and Veterans Days. Based on memorial service events held at other VA cemeteries on these two days of the year, as many as 500 to 1,000 people may attend these memorial services; therefore, a public address system is sometimes used. These memorial events would be organized, staged and conducted in a manner that would direct noise away from the CLT colony. Other features of the assembly area include a memorial walkway, a flagpole with a maximum height of 80 feet, and a carillon (bell tower) with a maximum height of 35 feet that plays bells or tones. The carillon would be located and operated such that it would not increase the ambient noise level at the CLT colony by more than 10%.

- *NCA Public Information Center.* The Public Information Center (PIC) is a resource for visiting cemetery guests. As presented above in the OPC description, the Public Information Center would be located on the first level of the OPC building and would consist of offices, a reception area and dedicated restrooms

- NCA Service Area (Maintenance Garage). A small maintenance garage on the south side of the OPC building is proposed for NCA staff.

- Cortege Assembly Area. The Cortege Assembly Area is a pre-staging area adjacent to the NCA wing of the OPC. This area would consist of three lanes for vehicles to line up before proceeding to the Committal Service Shelter.

- Other elements including interior roadways, signage, landscaping, benches, trash receptacles and flower containers. Trash receptacles will be provided primarily for refuse associated with floral remembrances brought to the committal shelters or niches. No picnicking is permitted within the cemetery area.

As part of military tradition, a military honors salute may be performed during inurnment ceremonies at the cemetery. The military honors salute is a ceremonial act performed at military funerals as part of the drill and ceremony of the Honor Guard. It consists of a rifle party firing blank cartridges in three volleys, and would take place at the committal service shelters. The military honors salute will only occur at the proposed committal service shelters, all three of which are more than 1766 feet (538 meters) from the CLT colony. The rifle party will direct firing away from the CLT colony, and solid structures such as committal service shelters or columbarium walls will shield the firing locations from the CLT colony. In addition, landscape berms may be created within the cemetery as a way to provide an additional noise and visual barrier. Berms greater than a distance of 650 meters from the CLT colony may be up to 12 feet in height. To further reduce the possibility of tall perches for avian predators, berms within 650 meters of the CLT colony will not exceed 6 feet in height.

Operation of NCA Facilities

The cemetery would be open daily from sunrise to sunset, with possible expanded hours in the evening (until 8 p.m.) on Memorial and Veterans Days. No nighttime activities are proposed within the cemetery

area; therefore, exterior lighting would be limited to the area adjacent to the VA building and parking area, and to illuminate the U.S. Flag near the assembly area. Only minimal lighting for monitoring the security of the site is proposed. It is anticipated that up to 7 NCA staff would be working at the Alameda Point facility on a daily basis. On average, it is estimated that up to six memorial or inurnment services per day would take place. The attendance at these services would typically be five to 15 people, but may be greater for some services.

Conservation Management Office (Nature Center)

In addition to the VA facilities, a Conservation Management Office (Nature Center) is proposed to support the management of the CLT colony, predator management efforts, and may include other uses, such as an interpretive center supporting volunteer and public education programs. This building would be a one-story structure with a maximum height of 25 feet and approximately 2,500 square feet of space. The Conservation Management Office would be located east of the OPC building and would accommodate USFWS personnel (or other contracted staff/volunteers) involved with management of the CLT colony as well as the VA's biological monitoring staff. Educational Programs for the public may also be conducted at this building. The exterior materials of Conservation Management Office are not specified at this time; however, it would be designed to be complimentary to the proposed VA building. A small parking area, consisting of eight to ten parking spaces, is proposed adjacent to the Conservation Management Office. A wall or fence would separate this building and parking area from the adjacent OPC area. Use of a portion of the main VA parking area for special events and weekend activities may be possible if arranged in advance.

Operation of Conservation Management Office (Nature Center)

The Conservation Management Office (Nature Center) would be in operation daily from sunrise to sunset, with possible expanded hours during CLT nesting season if circumstances require monitoring or management activities beyond the normal hours of operation.

Management of the California Least Tern

The VA will continue the management of the CLT colony upon formal transfer of the property. Ongoing CLT management/predator management programs would be funded by the VA operating budget for property maintenance and management.

Other VA Uses

As part of their role to respond to regional emergency management, VHA intends to utilize the VA facility at Alameda Point as a staging area for emergencies and natural disasters such as earthquakes and for storage of emergency supplies. The facility may also be used as a location for emergency training exercises during CLT non-breeding season (August 16–March 31).

The five bunkers located within IR Site 2 and the cemetery area, north and east of IR Site 2, are proposed to be removed. Two of the existing bunkers previously used for the storage of ordnance by the USN will

be repurposed by the VHA for the storage of emergency supplies. These bunkers lie on the southern border of the VA Project Action Area, adjacent to the waters of San Francisco Bay, and outside of the VA Development Area. The bunkers have been present on site for decades and will not be significantly modified as part of the proposed VA action. The bunkers will be accessed using the existing paved runway surface, and provisioned and maintained outside of the CLT breeding season only.

TIMING AND DURATION

It is currently estimated that construction of the OPC building and Conservation Management Office (Nature Center) would take approximately 18 months to complete, including the time for initial site preparation.

The cemetery would cover a total area of approximately 80 acres. The buildout of the NCA cemetery will be phased based on actual demand. It is currently estimated that there will be a demand for approximately 2,500 niches per year. NCA phasing is typically based on 10-year increments. Therefore, it is envisioned that approximately five acres of the cemetery would be developed every ten years. The required acreage would vary according to layout and design. Demographic forecasts also suggest that demand will decrease in the years ahead as the veteran population declines. At Alameda Point, it is expected that the first phase of construction would involve approximately 27 acres that would accommodate approximately 25,000 niches and support facilities, including two committal service shelters, internal roads, assembly area and landscaping. The remainder of the site would remain undeveloped until there is a need for additional columbarium niches. The first phase of cemetery construction is estimated to take 6 to 18 working months to complete.

ACCESS, STAGING, CONSTRUCTION EQUIPMENT AND TECHNIQUES

- Access to the VA development proposed within the action area will be from local streets to the east, including existing streets within Alameda Point. All construction staging areas will be located within the VA Development Area. Contractor staging for construction and the offsite utility corridor will be in the cemetery area.

- The area where buildings are proposed will be stripped of vegetation, organic soils, and any debris. In areas covered by runway concrete within the VA Development Area, the pavement and any base rock may be removed and reused as base materials. Construction equipment that will be used may include hydraulic breakers, scarifiers, dozers, dump trucks, front end loaders, graders, pile drivers, compactors, and rollers. [***Discuss with USFWS– possible disposal and use of dredged materials from US Army Corps of Engineers dredging program]***

- It is anticipated that 6 months of mass grading will be necessary for initial project construction, including installation of infrastructure and roadways. A second construction season will be needed for completion of the buildings and the installation of landscaping. Grading will employ the use of scrapers, dump trucks, and bulldozers.

- Dewatering and a geotextile layer may be required for base stability where excavations extend to near the shallow water table.

Based on preliminary design recommendations, it is anticipated that the OPC building will have a concrete pile foundation. Structural concrete mats could be a viable alternative to driven piles. Conventional shallow spread footings could be considered for very lightly loaded structures founded on soils that are improved in situ. Construction of the columbarium is anticipated to have concrete pile foundations and will require the use of concrete mixer trucks, pavers, pick-up trucks, and mobile power generators.

PROJECT ACTION FOR THE ARRA OR CITY PROPERTY

The Navy will dispose of the remaining surplus Federal property at Alameda Point, (i.e., the property west of Main Street), which is located within the boundaries of the City of Alameda, California. The Navy already transferred East Housing and the former Fleet Industrial Supply Center (FISC) to the City, which were subject to the 1999 Biological Opinion. No further consultation is required for the East Housing, North Housing, and FISC properties. In this document, Alameda Point refers to the surplus property west of Main Street excluding the VA Federal transfer parcel. The surplus Federal property at Alameda Point would be reused and redeveloped in accordance with the 1996 Reuse Plan prepared by the ARRA.

Five planning areas within the surplus Navy property that will be conveyed to the ARRA or City are subject to this consultation: (1) Civic Core, (2) Main Street Neighborhoods, (3) Inner Harbor, (4) Marina, and (5) Northwest Territories (NWT). The NWT lies immediately north of the proposed VA Federal transfer parcel. The Civic Core and Marina areas lie immediately to the east (**Figure 1**).

The current proposal for the NWT includes a 147-acre regional park and 25 acres of the proposed sports complex.

The regional park could include the following:

- 20 acres of seasonal wetlands
- Non-irrigated perennial and annual grasses over 45% of the park area
- Irrigated “rough mowed” turf meadows covering 30% of the park area
- Landscaping with trees and shrubs to create outdoor rooms and screening that will not exceed 30 feet in height.
- Group and family picnic areas comprised of picnic tables, BBQs, and drinking fountains, located near meadow areas and pathways, covering approximately 50,000 sf.
- Observation areas with interpretive signage, benches and restrooms
- A Veteran’s memorial plaza with a footprint of approximately 25,000 sf that will include structures no higher than 25 feet.
- 3.0 miles of asphalt-paved Bay Trail, 12 feet wide.

- 2.8 miles of asphalt-paved internal trails, 10 feet wide.
- Asphalt-paved parking areas for approximately 800 cars, covering 5 acres
- 8,000 linear feet of raised and re-armored bayside levees
- Placement of approximately 400,000 cubic yards of fill material to create topography that will not exceed 25 feet in height.

The portion of the sports complex in the NWT would support eight (8) soccer fields and associated facilities and parking areas (**Figure 1**). The soccer fields would have lighting for nighttime play, but from April 1 through August 15 (the least tern breeding season), soccer field lighting would not be used, and any lighting would be restricted to the minimum necessary for public safety. A maximum of 55 light poles, not to exceed 20 feet in height, would be installed and contain anti-perching devices within the soccer fields and parking areas. Buildings no higher than 20 feet would be constructed in this area and may be developed immediately adjacent to the VA Federal transfer parcel.

The Civic Core area would be developed as a mixed use development area with uses ranging from the reuse and redevelopment of existing facilities, replacement of existing buildings, and construction of new buildings for reuse and redevelopment. Development of the Civic Core area would emphasize retention and reuse of the existing buildings and land use development patterns in this area. Building reuse would potentially include international business and commerce, institutional and educational facilities, research and development facilities, and supporting commercial uses. Civic uses would potentially include public recreation facilities, a museum, a library, a teen activity center, a civic auditorium, civic office space, a place of worship and meeting places. A ferry terminal would be developed along Oakland Inner Harbor on the northern boundary of the Civic Core area. The northern portion of the Civic Core area may be developed as a university campus. Building heights throughout the Civic Core area would not exceed current heights. The Civic Core would support softball fields, in addition to other indoor and outdoor facilities, and would have lighting for unrestricted nighttime play. Light poles in the softball fields would not exceed 40 feet in height and would be equipped with anti-perching devices.

The Marina area would be developed as a commercial marina serving private and public boating, boating clubs, ferry service, deep-draft yacht facilities, boat repair, waterfront dry storage for boats, and sailing training facilities. Residential housing, retail, hotel/conference center, a civic plaza potentially with office space, a cultural arts center and theater, and recreation uses in the marina waterfront open space would be constructed in the Marina area.

The Inner Harbor area would be redeveloped primarily for light industrial and research and development use with the potential for some residential uses. Supporting uses such as office space, restaurants, and service industries for local businesses would also be developed. A park would also be constructed in the Inner Harbor area.

The existing residential housing in the Main Street Neighborhoods area would be redeveloped primarily for residential housing use, including a combination of single-family and multi-family units. A substantial

number of acres would be developed for a number of public facilities, including new schools, neighborhood parks or open space, and commercial/retail centers.

PROPOSED TERMS AND CONDITIONS

To be exempt from prohibitions of Section 9 of the Act, the Navy and VA must comply with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

The Navy and VA shall ensure that the proposed project for transfer of excess property, conveyance of surplus property, and reuse of former NAS Alameda (also known as Alameda Point) will be implemented, as proposed by the Navy, VA, and ARRA or City, except for the following additions, modifications, or clarifications.

VA and ARRA or City may propose to the Service any modifications to the proposed project as addressed in this biological opinion after the cessation of caretaker status by the Navy. VA and ARRA or City may independently propose to the Service such modifications if they affect only the issues and areas under one party's responsibility.

Prior to Transfer of Excess Property and Conveyance of Surplus Property

1. Until the excess property is transferred to VA, the Navy shall continue managing the CLT colony and shall continue predator management in a manner consistent with current management practices.

2. Prior to conveyance of surplus property to the ARRA or City, the Navy shall require the ARRA or City to comply with the BO terms and conditions during interim reuse through enforcement mechanisms provided by the Lease in Furtherance of Conveyance dated June 6, 2000 and subsequent Amendments 1 and 2 dated November 28, 2000 and March 30, 2009, respectively. Deed restrictions, with enforceable measures requiring transferee to comply with the BO terms and conditions, shall be developed for deed transfer of surplus Federal property to the ARRA or City or any other non-Federal entities. These restrictions shall be provided to the Service by the Navy prior to conveyance for review and comment.

3. Prior to transfer of excess property to the VA, the Navy shall continue to implement actions or measures to effectively notify property owners, lessees, and the general public of the necessity for controlling unauthorized public access. Until transfer of excess property to VA, the Navy shall retain responsibility for enforcement and maintenance actions and shall ensure signs are maintained that identify the biological importance and values of the adjacent California least tern (CLT) colony and the prohibitions of access and use.

4. The Navy shall continue to prohibit feeding stations or colonies for feral cats, and any native and non-native wildlife species, that are potential predators of CLT, until target species has been delisted throughout excess and surplus Federal lands prior to their transfer to VA, the ARRA or City, or any other non-Federal entity.

5. Prior to conveyance of submerged lands (as depicted on Figure 1) by the Navy to the ARRA or City, a conservation easement for the benefit of an entity or organization qualified to hold a conservation easement under California Civil Code Section 815.3 or

other enforceable property interest will be granted or reserved by the Navy for the relevant portions of the submerged lands (as depicted on Figure 1). The conservation easement or other property interest shall permit the ARRA and City adequate ingress and egress for the purpose of access to and use of the ARRA and City's property, including permitting dredging and otherwise maintaining ingress and egress, but subject to restrictions on dredging as provided in 5g. The conservation easement or other property interest shall specify the following prohibited uses: (i) no development (e.g., marinas or piers) will be allowed within the easement area, and (ii) the City of Alameda will not issue permits for any coordinated water-based activities, such as regattas or other activities that may concentrate boating activity within the easement area during the CLT breeding season (April 1 through August 15).

Lands Conveyed by the Navy to the ARRA or City

1. The following terms and conditions shall apply to all surplus Federal lands conveyed by the Navy to the ARRA or City:

   a. The ARRA or City will assume responsibility for notification of restrictions to existing and future tenants and property owners.

   b. The ARRA or City shall assume responsibility for developing and implementing a predator management plan for surplus Federal lands to be conveyed to the ARRA or City or any other non-Federal entities by the Navy. The lands to be managed for predators shall be all lands west of Main Street, including the Northwest Territories (NWT), Civic Core, Marina, Inner Harbor and portions of the Main Street neighborhood area, as depicted on **Figure 1**. The plan shall integrate and coordinate predator management methods and activities within the property to be transferred to the VA by the Navy with those methods and activities employed in other portions of Alameda Point. The plan shall ensure that an average of 18 hours per week of predator management is provided from April 1 through August 15 each year until the CLT has not nested at Alameda Point for a period of 5 years (at which point these measures can be suspended unless and until nesting resumes), or until the species is delisted. The predator management activities provided in the plan shall include, but not be limited to: (1) management of feral cats or other animals, and (2) control of avian predators such as gulls, ravens, crows, and raptors. The plan shall be subject to review and approval by the Service and implemented by the ARRA or City upon acceptance of surplus Federal lands at NAS from the Navy.

   In addition to the predator management activities described above, the following shall be conducted by ARRA or City upon acceptance of the surplus property from the Navy: Within 600 feet of the VA Federal transfer parcel, the tops of all buildings shall be inspected for avian predator nests once each week by USDA Wildlife Services or other qualified personnel during the period from April 1 through August 15. The regional park areas of the NWT shall be monitored for ravens and crows and other avian predators by USDA Wildlife Services or other qualified personnel during the period from April 1 through August 15. Any avian predator nests on the buildings in the regional park areas shall be monitored to determine if nest removal is required to reduce predation pressure at the CLT colony site. If USDA Wildlife Services personnel are not contracted for these

activities, then the qualifications of other proposed personnel shall be reviewed and be subject to final approval by the Service. A funding mechanism for the specific activities described in this paragraph, in addition to the funding provided for the 18 hours of predator management plan activities required in the paragraph above, shall be established and maintained until the CLT has not nested at Alameda Point for a period of 5 years (at which point these measures can be suspended unless and until nesting resumes), or until the species is delisted.

Upon Navy conveyance of property to the ARRA or City, the ARRA or City shall discourage through educational signage and tenant notification feeding stations or colonies for feral cats, and any native and non-native wildlife species that are potential predators of CLT on its property. Management of feral cats will be addressed as part of the ARRA or City's predator management plan.

2. The following terms and conditions shall apply to all surplus Federal property conveyed to the ARRA or City, or other non-Federal entity in the NWT, Civic Core and Marina areas to limit the effects of additional lighting on CLT:

    a. Lighting associated with building security and other lighting needs or requirements throughout the NWT, Civic Core and Marina areas shall be allowed as long as the cumulative increase in ambient nighttime light levels within 750 feet of the 9.7 acre CLT colony does not exceed 10 percent above the existing ambient night time light level in this area during the CLT breeding season with full development of the NWT, Civic Core and Marina areas, including VA development ***[Discuss with USFWS]***. As a condition of approval for any project, the ARRA or City shall perform design review to minimize such a cumulative breeding-season increase in ambient nighttime light levels within the CLT colony. Guidelines shall be provided to the project applicant and include the following:

        1. The number of new lights shall be limited to the minimum number required for building security.

        2. All lights shall be directed away and/or screened from the CLT colony. Bollard-style lighting shall be specified whenever possible.

        3. Tinting of windows on new and existing buildings shall be encouraged, if such tinting is necessary to prevent a breeding-season increase in night lighting of the CLT nesting area by more than 10 percent above the existing ambient night time light level.

    b. The VA has conducted a study to determine the existing ambient nighttime light level on the land at several locations around the CLT colony site and to predict the effects of the VA project on lighting levels. From April 1 through August 15 each year, the ARRA or City, in coordination with the VA, shall ensure that the level of ambient nighttime light on the land within 750 feet of the 9.7 acre CLT colony with full development of the VA Development Area, NWT, Civic Core and Marina areas does not increase more than 10 percent above the existing ambient night time light level in this area as determined by this

study or future studies ***[Discuss with USFWS].*** ARRA or City will review any development plans for the NWT, Civic Core, and Marina areas, including VA development, to ensure that new lighting will not increase light levels within 750 feet of the colony site by more than 10 percent during the breeding season, and the Service may request to review any lighting plan within the NWT, Civic Core, and Marina areas prior to its implementation to confirm that the plan meets the standards described above.

3. The following terms and conditions apply specifically to the NWT area:

   a. As detailed stormwater management and monitoring plans for the NWT are developed by the ARRA or City, they shall be developed in coordination with the Service and implemented to protect open water foraging areas for CLT. The plans shall be reviewed and approved by the Service contemporaneously with the ARRA or City environmental review process and prior to development of the project in this area.

<u>Regional Park in Northwest Territories</u>

   b. No artificial features greater than 25 feet in height shall be constructed and no trees greater than 30 feet in height shall be planted in the regional park area. Trees species shall be light-limbed. No palm trees shall be allowed in this area. The ARRA or City shall prepare a palette of shrub and herbaceous vegetation (i.e., grasses) species proposed for planting throughout the regional park area. The palette shall be reviewed and approved by the Service prior to the planting of any vegetation in this area. During the CLT breeding season, nighttime lighting in the regional park area shall be limited to the minimum necessary for public safety. The final regional park design/configuration, herbicide/pesticide drift control plan, and landscaping and management plans shall be developed in coordination with the Service and implemented unless and until the CLT is delisted. The plans shall be reviewed and approved by th**e** Service prior to any new development in this area.

<u>Sports Complex in Northwest Territories</u>

   c. The soccer fields shall not be lighted for nighttime play from April 1 through August 15, unless proposed lighting in these areas can be designed to ensure that new lighting for the VA and ARRA or City projects cumulatively will not increase breeding-season light levels within 750 feet of the colony site by more than 10 percent as defined in Condition 2 above ***[Discuss with USFWS].***

   d. No trees or landscape turf shall be planted in the area within 100 feet from the southern boundary of the Sports Complex, other than the turf required for the soccer field playing surfaces. Shrubs that are 4 feet or less in height may be planted in this area. The ARRA or City shall prepare a palette of shrub species proposed for planting in this area. The palette shall be reviewed and approved by the Service prior to the planting of any shrubs in this area.

   e. No artificial features greater than 20 feet in height shall be constructed and no trees greater than 20 feet in height shall be planted in the remaining area of the soccer fields. Trees species shall be light-limbed. No palm trees shall be allowed in this area. The

ARRA or City shall prepare a palette of tree species proposed for planting in this area. The palette shall be reviewed and approved by the Service prior to the planting of any trees in this area.

f. The ARRA or City shall ensure that all anti-perching devices on light posts constructed for the soccer fields are maintained until the CLT has not nested at Alameda Point for a period of 5 years (at which point these measures can be suspended unless and until nesting resumes), or until the species is delisted.

4. The following terms and conditions reference Figure 1 and apply to specified areas within the Civic Core area:

a. Zone 1 (Pink) - No new buildings, light posts, vegetation greater than four (4) feet in height, landscape turf, or other structures greater than four (4) feet in height shall be constructed in this area without prior approval from the Service. The Service shall review all proposed plans to ensure compliance with terms and conditions.

b. Zones 2 (Red) and 3 (Yellow) - Any new buildings constructed or extensions of existing buildings shall not exceed the height of the existing buildings. No palm trees shall be allowed in this zone. Within line-of-sight of the existing CLT colony landscaping shall be restricted to vegetation less than four (4) feet in height. In areas outside of the line-of-sight of the existing tern colony no trees greater than 20 feet in height, shrubs greater than 6 feet in height, or landscape turf shall be planted. The density of trees and shrubs in this area shall not exceed one (1) tree or shrub per 550 square feet. The ARRA or City shall prepare a palette of tree and shrub species proposed for planting in this area. The palette shall be reviewed and approved by the Service prior to the planting of any trees or shrubs in this area. Light posts in this area 20 feet or greater in height shall contain anti-perching devices, which will be maintained until the CLT has not nested at Alameda Point for a period of 5 years (at which point these measures can be suspended unless and until nesting resumes), or until the species is delisted.

c. Zone 4 (Purple) - If Building 19 or the fire house is replaced with a new building, the new building shall not exceed 20 feet in height, not extend further west and east than the western and eastern most point of the existing building, and not exceed the existing width of the building as measured from north to south. A new building, not to exceed 20 feet in height, may be constructed just east of Building 19 or may be added on to the fire house provided that the new building/extension is not in direct line-of-sight of any portion of the existing CLT colony. New buildings may have an additional 5 feet of height to accommodate heating/conditioning/ventilation units as long as these units are placed as far back and away from the side of the building facing the CLT colony area as possible.

d. The softball fields shall not be lighted for nighttime play from April 1 through August 15, unless proposed lighting in these areas can be designed to ensure that new lighting for the VA and ARRA or City projects cumulatively will not increase breeding-season light levels within 750 feet of the CLT colony by more than 10 percent as defined in term and condition 2 above. ***[Discuss with USFWS]*** The ARRA or City shall ensure that all anti-perching devices on light posts proposed for the softball fields are maintained until the

CLT has not nested at Alameda Point for a period of 5 years (at which point these measures can be suspended unless and until nesting resumes), or until the species is delisted.

5. The following terms and conditions apply to specified zones within the Marina area:

   a. Zone 1 (Pink) - No new buildings, light posts, vegetation greater than 4 feet in height, landscape turf, or other structures greater than 4 feet in height shall be constructed. The Service shall review all proposed plans to ensure compliance with terms and conditions.

   b. Zone 5 (Green) - Building 25 may be reconstructed within the footprint of this zone with the following restrictions: any new building in this zone cannot exceed the existing height (55 ft.) and landscaping shall be restricted to vegetation less than 4 feet in height (no palm trees) within the current line-of-sight portion of the northeast comer of this zone. Within line-of-sight of the existing tern colony landscaping shall be restricted to vegetation less than 4 feet in height. No palm trees shall be allowed in this area. In areas outside of the line-of-sight of the existing tern colony no trees greater than 20 feet in height, shrubs greater than 6 feet in height, or landscape turf shall be planted. The density of trees and shrubs in this area shall not exceed 1 tree or shrub per 550 square feet. The ARRA or City shall prepare a palette of tree and shrub species proposed for planting in this area. The palette shall be reviewed and approved by the Service prior to the planting of any trees or shrubs in this area. Light posts in this area 20 feet or greater in height shall contain anti-perching devices which will be maintained until the CLT has not nested at Alameda Point for a period of 5 years (at which point these measures can be suspended unless and until nesting resumes), or until the species is delisted.

   c. Zone 6 (Blue) - No new buildings greater than 20 feet shall be constructed in this zone. New buildings may have an additional five (5) feet of height to accommodate heating/conditioning/ventilation units as long as these units are placed as far back and away from the CLT colony area as possible. No palm trees shall be allowed in this area. Within line-of-sight of the existing tern colony landscaping shall be restricted to vegetation less than 4 feet in height. In areas outside of the line-of-sight of the existing tern colony no trees greater than 20 feet in height, shrubs greater than 6 feet in height, or landscape turf shall be planted. The density of trees and shrubs in this area shall not exceed 1 tree or shrub per 550 square feet. The ARRA or City shall prepare a palette of tree and shrub species proposed for planting in this area. The palette shall be reviewed and approved by the Service prior to the planting of any trees or shrubs in this area. Light posts in this area 20 feet or greater in height shall contain anti-perching devices which will be maintained until the CLT has not nested at Alameda Point for a period of 5 years (at which point these measures can be suspended unless and until nesting resumes), or until the species is delisted.

   d. As detailed stormwater management and monitoring plans for the Marina are developed, they shall be developed in coordination with the Service and implemented in perpetuity to protect open water foraging areas for CLT. The plans shall be reviewed and approved by the Service contemporaneously with the ARRA or City environmental review process and prior to development of the project in this area.

e. The ARRA or City will place floating signs/buoys along the southern shoreline of the former runways with warnings prohibiting boaters from approaching the shoreline during the breeding season. ARRA or City will also require that signage and educational materials be provided in any marina that is developed within the Seaplane Lagoon to discourage boaters from approaching the shoreline around the CLT colony area or lingering in waters within 400 feet south of the shoreline. Contracts or leases for boat owners using the Marina area shall include notification of these restrictions. The contracts shall include conditions that provide for revocation of the contracts or leases if these restrictions are violated. The language within these contracts or leases shall be reviewed and approved by the Service prior to granting any leases or signing any contracts.

f. No dredging activities shall occur during the period from March 15 through August 15 each year to minimize open water turbidity just prior to and during the CLT breeding season. ***[Discuss with USFWS: Consider revising to eliminate absolute prohibition on dredging. Explore alternatives.]***

Lands Transferred by the Navy to the VA

The measures below pertain to the 623.2-acre Navy/VA Fed-to-Fed transfer and post-transfer VA development:

6. To allow for continued conservation of the CLT and the Western Snowy Plover (WSP), VA has designed the proposed site to provide for a Development Setback Area, in which vertical development and sustained human presence are restricted, and in which vegetation will be controlled for the operational life of the OPC and cemetery. This Development Setback Area is based upon a 436-meter (1,430 foot) "development setback" distance from the boundary of the CLT colony and includes additional acreage to allow for continued CLT access to foraging habitat in the waters to the south of the VA transfer parcel.

7. CLT management activities will continue in the Development Setback Area and will include maintenance of the colony fence, placement of nesting substrate, vegetation control, predator control, regular breeding season monitoring, and incorporation of changes as determined by future analyses of management and monitoring data. Public access within the Development Setback Area may include managed CLT colony maintenance efforts by volunteer groups during the non-breeding season, as well as the continuation of tours of the CLT colony during the breeding season, both of which have occurred under the close supervision of USFWS staff for several years. Activities associated with VA's role in regional disaster preparedness, emergency response (training exercises, inventory and re-stocking of emergency supplies stored in existing bunkers, etc.) would take place during the CLT non-breeding season. Repair of underground utilities may also occur in the Development Setback Area when conducted outside of the breeding season. Access to the site is also authorized to Federal, state, and local regulators, and VA environmental contractors in the performance of their official duties.

8. Upon acceptance of Federal excess property, VA shall be responsible for continuing to manage the CLT colony. VA may consider coordinating with USFWS to continue this work

or hire another qualified contractor. Colony management activities shall include, but are not limited to the following:

a. Vegetation control and weed removal;

b. Maintenance of the fence surrounding the colony;

c. Maintenance of the colony and preparation prior to the breeding season by placement of gravel, seashells, and other measures to enhance nesting habitat quality;

d. Breeding season monitoring of the CLT colony;

e. Management of feral cats or other animals; and

f. Control of avian predators (e.g., gulls, ravens, crows, and raptors)

9. VA shall prepare a long-term monitoring and management plan for CLT and WSP. The plan shall be provided to USFWS for their review and comment. For comments to be considered, USFWS should submit comments within 30 days of receipt of plan. The plan shall include the following elements:

a. Outline the species-specific monitoring and management requirements that have been established by the relevant permitting agencies and identified in this BA and subsequent BO.

b. A program that provides actions or measures to ensure continued controlled access and signage for the CLT colony and Development Setback Area, which includes enforcement and maintenance of proposed actions, including replacing signs identifying the biological importance and values of the adjacent CLT colony and the prohibitions of access and use.

c. A requirement for an annual report that summarizes the monitoring and management of the federally listed species identified above shall be submitted to USFWS. The reports shall be completed and submitted to USFWS annually by January 31 of each year, or an alternative annual schedule if mutually agreed on by USFWS and VA. The annual report shall include the following elements:

1. Activities, frequency and duration, timing, location, survey methods, notification, reporting (e.g., weekly summary reports during construction activities), data sheets, etc.

2. Disposition of sick, injured, or dead specimens (listed species).

3. Monitoring results and recommendations (such as the discontinuance of certain monitoring activities if no effects are being observed, continuance of monitoring activities if potential effects observed, modifications to existing measures or identification of new measures to prevent additional take).

d. VA shall periodically update the long-term monitoring and management plan for CLT and western snowy plover in order to provide for the adaptive management of the colony.

e. VA will assume responsibility for notification of restrictions, enforcement, and maintenance of the plan upon transfer of the property from the Navy to VA. VA shall notify adjoining property owners, lessees, and the public of the pertinent elements of the plan. The plan will be published and posted for public view at the Conservation Management Office (Nature Center) as well as other public areas.

10. VA shall prepare a predator management plan to maintain predator numbers and density at levels that will not jeopardize the continued existence of the CLT colony. The predator management plan shall be provided to USFWS for their review and comment. For comments to be considered, USFWS should submit comments within 30 days of receipt of plan. The plan shall fully integrate and coordinate predator management methods and activities within the property to be transferred by the Navy to the VA with those methods and activities employed in other portions of NAS. VA shall periodically update the predator management plan for CLT and western snowy plover in order to provide for the adaptive management of the colony.

11. VA may continue to use USDA Wildlife Services for predator management, or may hire another qualified contractor. VA shall contact USFWS and USDA Wildlife Services to determine current predator management activities and ensure that they are maintained. Annual predator management reports shall be prepared by the implementing agent (e.g., USDA Wildlife Services or other entity) that describe the manner in which the predator management activities are being implemented. VA has the option to consolidate annual CLT and Predator Management Reports. The reports shall be completed and submitted to USFWS annually by January 31 of each year, or an alternative annual schedule if mutually agreed on by USFWS and VA.

12. VA shall conduct an education program for all newly-hired employees of the VA Alameda Point facility, post notices of the importance of predator control in conspicuous places used by employees and the public, and post warnings of impending predator management activities.

13. Lighting, including that for roads, building security and public safety, shall be designed to minimize nuisance nighttime light levels. As part of the lighting plan for all facilities and activities within the action area, VA shall undertake appropriate measures (i.e., night lighting design) to ensure that ambient nighttime breeding-season light levels do not increase more than 10% within 750 feet of the CLT colony, including ARRA or City property. Measures to achieve this performance standard include, but are not limited to:

a. All exterior lights shall be directed away and/or shielded from the CLT colony.

b. Lights shall be directed toward their areas of intended illumination and shielded to prevent stray light from escaping either upward or outward.

c. Street light poles shall include anti-perching devices.

d. All windows facing the CLT colony with a direct line of sight shall be tinted to reduce the spillage of interior light. Windows shall also be non-reflective in order to minimize bird strikes.

14. VA shall develop strategies to minimize erosion and the introduction of pollutants into stormwater runoff according to State and Regional Water Quality Control Board (RWQCB) guidelines.

    a. VA shall prepare a detailed Storm Water Pollution Prevention Plan (SWPPP) for the construction of all facilities and activities within the VA project area. An effective combination of erosion and pollutant control Best Management Practices (BMPs) shall be implemented during all phases of construction.

    b. Vegetated swales (grassy ditch) and other landscaping techniques shall be used to treat stormwater runoff wherever possible.

    c. Pollutant source controls (i.e., roofed trash enclosures) shall be implemented whenever possible.

15. Prior to start of construction activities, plans developed for VA facilities shall include a temporary 6-foot-high minimum barrier fence around the perimeter of the construction area to isolate the construction area from the Development Setback Area and surrounding lands. This fence shall be removed upon completion of all construction activities.

16. Ancillary structures (not including columbaria walls, committal shelters, NCA maintenance building, Conservation Management Office and the OPC) with a height of 8 feet above finished grade or higher, such as light poles, aboveground storage tanks, flagpoles, carillon, and temporary construction fencing, shall be designed or fitted with anti-perching features or devices, such as bird spikes, post-and-wire systems, electrical bird deterrents, or other deterrence measures.

17. No utility poles or transmission towers, except the light poles mentioned in Condition 16 above, shall be permitted within the VA Development Area, and electrical transmission lines shall be placed underground.

18. No fountains, bird baths, ponds, reflecting pools, or other permanent sources of open freshwater shall be constructed which may attract or provide havens for potential predators of CLT. Stormwater detention basins that would temporarily store excess stormwater may be permitted on the northern portion of the VA Development Area.

19. Landscape planting within the VA Development Area should prioritize native shrub and herbaceous species over nonnative species, but in either case, species shall not be invasive. Landscaped areas shall predominantly consist of drought tolerant plant species and open hardscape areas. A limited amount of turf area may be provided in areas such as primary entrances and NCA assembly areas and other prominent areas.

20. Vegetation within the VA Development Area shall be maintained to a maximum height of 20 feet. To minimize potential effects of avian predators, all landscape trees shall be inspected

regularly for nesting attempts by avian predators. Appropriate species of vegetation include, but are not limited to, those identified in the "Proposed Vegetation List" in **Attachment 1**.

21. Landforms (landscape berms) within 650 meters of the CLT colony shall not exceed 6 feet in height. Beyond 650 meters of the CLT colony, landforms may be a maximum of 12 feet in height (**Figure 1**). On berms, vegetation shall be limited to native grasses and shrubs, with a maximum height of 3 feet.

22. A permanent barrier shall be constructed along the southern perimeter of the 112.4-acre VA Development Area in order to prevent trespassing into the adjacent undeveloped areas and Development Setback Area. The barrier shall be a minimum of six feet and a maximum of 10 feet in height, and may be a combination of solid wall, vertical rail or chain link fencing as aesthetic and practical needs dictate. The construction of the barrier may be phased in conjunction with VA development, and shall incorporate anti-climbing measures to prevent trespassing and anti-perching measures to deter avian predators of CLT. The barrier may be architecturally treated.

23. The maximum heights of structures and buildings located within the 112.4-acre VA Development Area shall be limited to the following:

    a. The OPC building shall not exceed a height of 68 feet, measured from the ground to the maximum roof or parapet elevation including penthouse.

    b. The Conservation Management Office (Nature Center) building shall not exceed a height of 25 feet.

    c. Committal service shelters within the cemetery shall not exceed a height of 25 feet,

    d. Niche walls within the cemetery shall not exceed a height of 10 feet.

24. Heating/air conditioning/ventilation units may be placed on top of buildings as long as these units are placed as far away from the side of the building facing the CLT colony as possible and a mechanical equipment screen put in place around them.

25. The emergency generator required for the OPC shall be located as far away from the CLT colony as possible. Required testing of the emergency generator shall occur monthly for a minimum of 30 minutes.

26. The roof of the proposed VA OPC, committal service shelters and columbarium walls shall be of a type and design that discourages perching by avian predators of CLT. Any flat areas on the surface of the OPC building, committal service shelters or columbarium walls that has a line-of-site to the CLT colony shall be treated with anti-perchi**n**g devices, **s**uch as bird spikes, post-and-wire systems, electrical bird deterrents, or other deterrence measures.

27. Anti-perching devices may be architecturally treated and integrated into the design of the structure.

28. During the CLT breeding season (April 1–August 15), a biological monitor under contract with the VA Architect Engineer and with experience observing and documenting disturbances to CLT or similar species shall be present during all construction activities associated with the VA facilities to ensure that construction activities do not adversely affect CLT using the nesting site. The biological monitor shall:

    a. Meet minimum qualifications identified in **Attachment 2**.

    b. Provide a construction worker education program for all affected listed species at the start of construction activities, whenever new workers begin, and when new contracting firms are brought in. The program shall include topics on species identification, life history, descriptions, and habitat requirements. Handouts, illustrations, photographs, and project mapping showing areas where minimization and avoidance measures are being implemented shall be included as part of this education program, as relevant. The program will increase the awareness of the contractors and construction workers about existing federal laws regarding listed species.

    c. Inspect the work area for proper disposal of all garbage in covered containers. If garbage is observed being left out, the monitor shall report to the contractor or VA Resident Engineer to have the situation corrected.

    d. Before the initiation of work each day within areas with suitable habitat, the biological monitor shall thoroughly inspect the work area and adjacent habitat areas to determine if CLT are present.

    e. Inspect integrity of temporary construction barrier fencing periodically as-needed throughout the work period. If repairs are needed, the monitor shall contact the VA Resident Engineer to fix the barrier fence to ensure its integrity. The biological monitor shall have the ability to make field adjustments to the location of the temporary construction barrier fencing depending on site-specific habitat conditions. The contractor is to remove the barrier fencing upon completion of construction activities.

    f. If a CLT is observed in the construction area, the biological monitor will inform the contractor and/or VA Resident Engineer on how to proceed to avoid or minimize take. Options include shifting construction activities to another location away from the CLT or stopping construction activities until the CLT leaves the work area.

    g. When necessary, telephone consultation shall occur between VA, USFWS, and the biological monitor(s) to determine the cause and to identify measures to prevent additional take. The biological monitor and VA Resident Engineer shall direct the contractor on how to proceed accordingly.

    h. The biological monitor shall maintain a log that shall be included in the long-term monitoring and management plan's annual reports to the USFWS, as required in Condition 9c above.

29. The VA's biological monitor shall designate an on-site environmental inspector during the non-breeding season for CLT (August 16 to March 31). The environmental inspector will be

present on-site regularly throughout the non-breeding season. If necessary, multiple environmental inspectors may be designated to ensure coverage throughout the non-breeding season. The environmental inspector(s) shall:

a. Participate in training provided by the biological monitor. Training shall cover identification of CLT, relevant predators, and issues related to the conservation of the CLT, etc.

b. Inspect the work area daily for proper disposal of all garbage in covered containers. If garbage is observed being left out, the environmental inspector shall report to the Resident Engineer to have the situation corrected.

c. Inspect integrity of barrier fencing periodically throughout the work period. If repairs are needed, the inspector shall contact the Resident Engineer to fix the barrier fence to ensure its integrity.

d. Immediately contact the biological monitor if any listed species is observed in the construction area.

30. All construction vehicles and equipment shall use designated site access points and remain on designated construction routes only. During the CLT breeding season (April 1–August 15), access routes for construction vehicles and equipment shall be located outside the Development Setback Area.

31. No pets shall be permitted on-site during construction.

32. Stockpiling of materials that may provide additional shelter for CLT predators at the construction site will be kept to a minimum and inspected on a regular basis by the biological monitor.

33. During the CLT breeding season (April 1–August 15), no materials or equipment shall be brought on-site during evening or nighttime hours (dusk to dawn).

34. Pile driving and pavement demolition activities requiring the use of impact tools (i.e., hydraulic breakers, jack hammers, scarafiers, and compactors) are prohibited during the CLT breeding season (April 1–August 15) because these activities and equipment have the potential to increase the ambient noise level in and around the CLT colony on the site. The use of other types of construction equipment that would not increase the ambient noise level at the site, as measured at the north end of the fenced CLT colony, is permitted during the CLT breeding season. The existing daytime (7 a.m.–7 p.m.) ambient noise level at the CLT colony ranges from 50–55 dBA, based on hourly noise measurements recorded at the site in March 2009.

35. The tops of buildings under construction, including on-site construction trailers, shall be inspected for avian predator nests once each week during the period from April 1–August 15. If nests are found, they shall be monitored to determine if nest removal is required to reduce predation pressure on the CLT colony. All removal actions shall be in accordance with the Migratory Bird Treaty Act. Inspections shall be conducted either by a biologist that meets the

minimum qualifications identified in **Attachment 2** or by USDA Wildlife Services or other qualified personnel contracted for predator management.

<u>Measures that Apply to Entire VA Development Area</u>

36. VA shall prohibit feeding stations or colonies for feral cats, and any native and non-native wildlife species, that are potential predators of CLT on its property.

37. Other than trained service animals, no pets shall be allowed.

38. All vents and ducts leading to the outside of buildings shall be screened and shall be maintained to prevent use by avian predators. Screened vents shall be inspected at least once a month from April 1—August 15.

39. All landscape trees, the tops of all buildings and all anti-perching devices in place throughout the VA Development Area shall be inspected for avian predator nests once each week during the period from April 1 through August 15. If nests are found, they shall be monitored to determine if nest removal is required to reduce predation pressure on the CLT colony. All removal actions shall be in accordance with the Migratory Bird Treaty Act. Inspections shall be conducted either by a biologist that meets the minimum qualifications identified in **Attachment 2** or by USDA Wildlife Services or other qualified personnel contracted for predator management.

40. If avian predators defeat anti-perching devices that are maintained in good order, then these devices shall be reevaluated and either modified or replaced as necessary to prevent avian predators from perching within the VA Development Area.

41. The barrier along the southern perimeter of the VA Development Area and the fence on the eastern perimeter of the action area shall be inspected regularly and repairs made as soon as possible.

42. VA shall conduct yearly vegetation control within the Development Setback Area to discourage predators, provide CLT roosting habitat, and maintain unobstructed views needed for predator detection. Vegetation control options may include the application of herbicides, mechanical and hand removal, and/or the sealing of cracks in the deteriorating runway surface.

43. All green waste, recycling, and non-recyclable refuse shall be stored in secure, covered containers, and shall be emptied on a regular basis or as often as needed to avoid any overflow. Dumpsters and other large refuse bins shall have lids and be placed in roofed enclosures.

<u>Additional Measures Applicable to NCA Cemetery:</u>

44. Military honors salutes shall be conducted at committal service shelters or the designated assembly area only, and shall be conducted in a manner that directs firing away from the

CLT colony. The salutes shall be performed with rifles or other small arms only. No artillery or explosives salutes shall be permitted.

45. Based on ambient noise levels measured at the project site, the volume of the carillon output would be limited to ensure that the proposed project does not increase ambient noise levels at the tern colony by more than 10%. Prior to the start of the CLT breeding season (April 1), the volume control of the carillon shall be checked and noise measurements shall be taken at the north end of the fenced CLT colony to ensure that sound output from the carillon does not increase the ambient noise level at the CLT colony by more than 10%. The existing daytime (7 a.m.–7 p.m.) ambient noise level at the CLT colony ranges from 50–55 dBA, based on hourly noise measurements recorded at the site in March 2009.

46. During the CLT breeding season (April 1–August 15), memorial events— such as those held on Memorial Day—shall be conducted at the designated assembly area or committal service shelters. Such events shall be organized, staged and conducted in a manner that directs noise away from the CLT colony. The use of amplifiers or public address systems shall be permitted only to the extent that they do not increase the ambient noise level at the site, as measured at the north end of the fenced CLT colony. Based on ambient noise levels measured at the project site, the volume of the public address output would be limited to ensure that the proposed project does not increase ambient noise levels at the CLT colony by more than 10%. The existing daytime (7 a.m.–7 p.m.) ambient noise level at the CLT colony ranges from 50–55 dBA, based on hourly noise measurements recorded at the site in March 2009. A biological monitor with experience observing and documenting disturbance to CLT or similar species shall be present during special events held during CLT breeding season (April 1–August 15), to ensure that events do not adversely affect CLT using the nesting site. The biological monitor shall maintain a monitoring log during the special event that shall be included in annual reports to the USFWS, as required in Condition 9c above.

Reporting Requirements

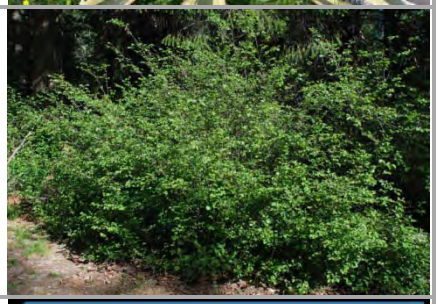
The Service shall be notified by the property owner within twenty-four (24) hours of the finding of any injured or dead CLT or their eggs, or any unanticipated damage to CLT habitat associated with the proposed conveyance and reuse. Notification must include the date, time, and precise location of the specimen/incident, and any other pertinent information. The Service contact person is Dan Buford in this office's Endangered Species Division (telephone 916/979-2752). Any dead or injured specimens shall be deposited with the Service's Division of Law Enforcement, 3310 El Camino Avenue, Suite 140, Sacramento, California 95821-6340 (telephone 916/979-2987).

ATTACHMENT 1

Proposed Vegetation List for the VA Cemetery, Alameda Pt.

Native	
Ceanothus cuneatus – buckbrush • Under 10 ft. • Majority are evergreen • Drought resistant • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1770	
Mimulus aurantiacus – Bush Monkey Flower • Grow in dry, sunny environments • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=5489	
Rhamnus californica – Coffeeberry • Evergreen shrub • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=7072	
Lupinus arboreus – yellow bush lupine • Good for lining a path • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=5106	
Juniperus californica – California Juniper • Maximum height is 25 ft., but can be trimmed easily • Thick shoots • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=4503	

Proposed Vegetation List for the VA Cemetery, Alameda Pt.

Agave Americana – American century plant • Symmetrical shapes • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=9006	
Corylus cornuta – beaked hazel • Maximum height around 20 ft. • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=9831	
Heteromeles arbutifolia –toyon • Drought-resistant • 15 ft. maximum height • Perennial shrub • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=4140	
Sambucus nigra – black elderberry • 20 ft. maximum height • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=10347	
Amelanchier alnifolia – western serviceberry • 24 ft. maximum height • Edible fruits • Deep roots • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=304	

Proposed Vegetation List for the VA Cemetery, Alameda Pt.

Cercis occidentalis – Western redbud • Showy flowers • 7-20 ft. tall • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1877	
Arctostaphylos glauca – big berry Manzanita • Ornamental plants • Evergreen, highly drought-tolerant • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=556	
Baccharis pilularis – dwarf chaparral broom • Dense, yet flexible stem structure o Good windbreak • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1031	
Koeleria macrantha – junegrass • One of the earliest maturing grasses • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=4539	
Bromus carinatus - California Brome • Aggressive root system that establishes itself quickly • Can adapt to soils that range from moist to dry • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1195	

Proposed Vegetation List for the VA Cemetery, Alameda Pt.

Danthonia californica – California oatgrass • Good for re-vegetation • Long lived perennial species • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=2610	
Deschampsia elongata – slender hairgrass • Recommended for restoration of disturbed sites • Commonly found in riparian habitats • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=2692	
Nassella pulchra - purple needlegrass • Extensive root system can reach 20 ft. deep • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=5767	
Hordeum brachyantherum - Meadow Barley • Quick cover for soil stabilization • Moderately drought tolerant	

Proposed Vegetation List for the VA Cemetery, Alameda Pt.

Crataegus douglasii – Douglas' hawthorn

- small tree
- matures to about 20 ft. in height
- densely branched
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=2412

Non-native

Lagerstroemia indica – crapemyrtle

- can reach 20 ft. when mature
- requires semi-moist climate
- flowering shrub
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=9354

Arbutus unedo – Strawberry tree

- Grows in Mediterranean climate
- Grows 8-12 ft. tall
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=9284

Attachment 2

Qualifications for Biologist(s) Implementing the Conservation Measures for the Former Naval Air Station Alameda, Alameda, California

For tasks to be conducted by a biologist, as specified in Conservation Measures/Terms and Conditions, the biologist shall meet the following qualifications:

- a bachelor's degree with an emphasis in ecology, biology, wildlife biology, zoology, natural resources management, or related science from an accredited college or university
- at least 2 years of experience monitoring flora and fauna within the San Francisco Bay Area;
- a minimum of 120 hours of experience (collected over at least five (5) years) in surveying shorebirds, specifically monitoring CLT and WSP; and
- a documented understanding of the Federal Endangered Species Act.

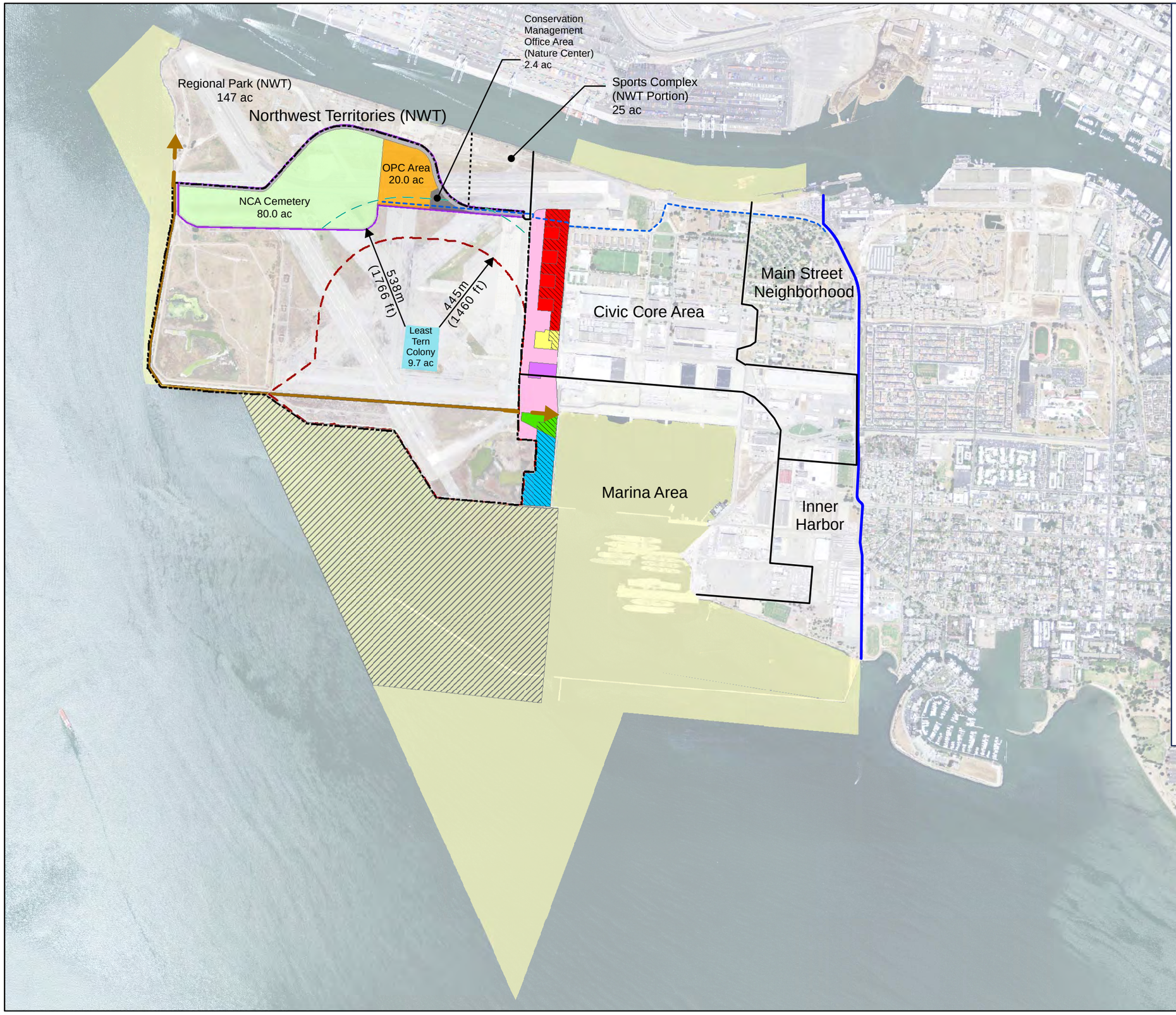


Figure 1
Former NAS Alameda
Alameda Point
VA Development and Base Reuse Plan

February 3, 2012

AECOM

VA Fed Transfer Parcel and Development

- VA Parcel Boundary (623.2 ac, 112.4 ac developed)
- Access Road / Utility Corridor (off-site)
- 650m Setback from Tern Colony (Berm Height)
- Development Setback Area
- VA Development Area
- NCA Cemetery
- Outpatient Clinic Area
- Conservation Management Office Area (Nature Center)
- Road Right of Way
- California Least Tern Colony (9.7 ac)
- Trail

Base Reuse Plan
Alameda Reuse and Redevelopment Authority (ARRA)

- Submerged Lands
- Conservation Easement or Other Enforceable Property Interest

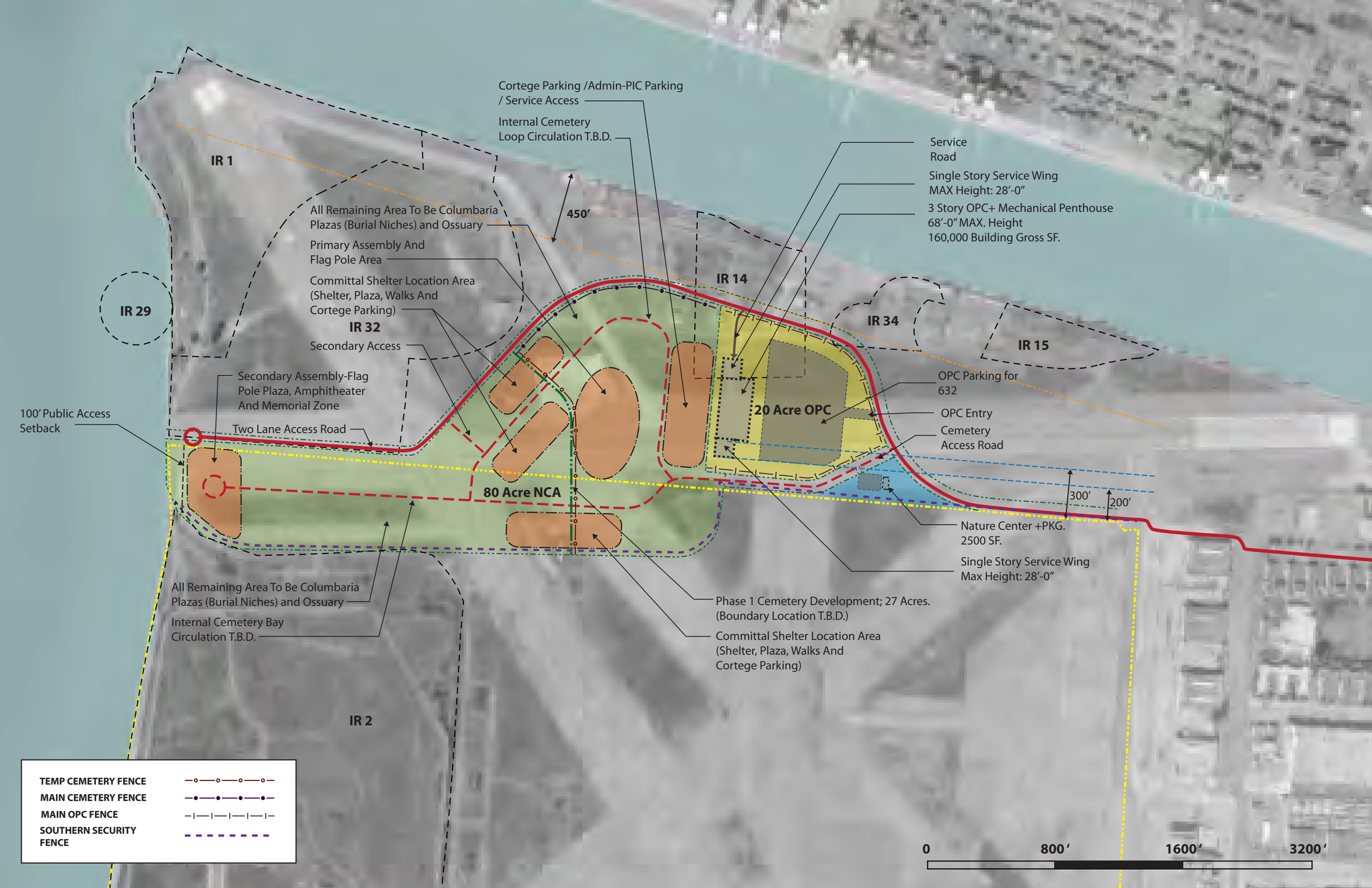
Building Development Zones

- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Zone 5
- Zone 6
- Area of Allowed Future Development within ARRA color-coded areas
- Areas west of this line are within Predator Management Zone

1 inch = 1,600 feet

0 1,600 3,200 4,800 Feet

NORTH


Cortege Parking /Admin-PIC Parking / Service Access
Internal Cemetery Loop Circulation T.B.D.
Service Road
Single Story Service Wing MAX Height: 28'-0"
3 Story OPC+ Mechanical Penthouse 68'-0" MAX. Height 160,000 Building Gross SF.
IR 1
450'
All Remaining Area To Be Columbaria Plazas (Burial Niches) and Ossuary
Primary Assembly And Flag Pole Area
Committal Shelter Location Area (Shelter, Plaza, Walks And Cortege Parking)
IR 32
Secondary Access
IR 14
IR 34
IR 15
IR 29
Secondary Assembly-Flag Pole Plaza, Amphitheater And Memorial Zone
100' Public Access Setback
Two Lane Access Road
20 Acre OPC
OPC Parking for 632
OPC Entry
Cemetery Access Road
80 Acre NCA
300'
200'
Nature Center +PKG. 2500 SF.
Single Story Service Wing Max Height: 28'-0"
All Remaining Area To Be Columbaria Plazas (Burial Niches) and Ossuary
Internal Cemetery Bay Circulation T.B.D.
Phase 1 Cemetery Development; 27 Acres. (Boundary Location T.B.D.)
Committal Shelter Location Area (Shelter, Plaza, Walks And Cortege Parking)
IR 2
TEMP CEMETERY FENCE
MAIN CEMETERY FENCE
MAIN OPC FENCE
SOUTHERN SECURITY FENCE
0
800'
1600'
3200'

Biological Assessment
for the
Department of the Navy's Disposal of 549 Acres and the Department of Veterans Affairs (VA) Construction and Operation of an Outpatient Clinic (OPC) and National Cemetery at the Former Naval Air Station (NAS) Alameda

Prepared for:
Department of Veterans Affairs
and
Department of the Navy

The information provided in this document is intended solely for the use and benefit of Department of Veterans Affairs, Department of the Navy, and U.S. Fish and Wildlife Service. No other person or entity shall be entitled to rely on the services, opinions, recommendations, plans, or specifications provided herein, without the express written consent of the USN and VA.

AECOM

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BIOLOGICAL ASSESSMENT FOR THE
Department of the Navy's Disposal of 549 Acres and the Department of Veterans Affairs (VA) Construction and Operation of an Outpatient Clinic and National Cemetery at the Former Naval Air Station (NAS) Alameda

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Abbreviations and Acronyms

ARRA	Alameda Reuse and Redevelopment Authority
BA	Biological Assessment
BO	Biological Opinion
BRAC	Base Realignment and Closure
CDFG	California Department of Fish and Game
CLT	California Least Tern
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
DBCRA	Defense Base Closure and Realignment Act
DPS	Distinct Population Segment
EIS	Environmental Impact Statement
FAWR	Friends of the Alameda Wildlife Refuge
Fed-to-Fed	Federal-to-Federal Agency
FEIS	Final Environmental Impact Statement
FESA	Federal Endangered Species Act
FISC	Fleet and Industrial Supply Center
IR	Installation Restoration
MH/SA	Mental Health / Substance Abuse Clinic
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NAS	Naval Air Station
NCA	National Cemetery Administration
NEPA	National Environmental Policy Act
NMFS	National Marine and Fisheries Service
NWR	National Wildlife Refuge
NWT	Northwest Territories
OMB	Office of Management and Budget
OPC	Outpatient Clinic
pANWR	Proposed Alameda National Wildlife Refuge
RWQCB	San Francisco Bay Regional Water Quality Control Board
SFWO	Sacramento U.S. Fish and Wildlife Service Office
SWPPP	Storm Water Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USN	U.S. Navy
VA	U.S. Department of Veterans Affairs
VANCHCS	VA Northern California Health Care System
VBA	Veterans Benefits Administration
VHA	Veterans Health Administration
VISN 21	VA Sierra Pacific Network
WSP	Western Snowy Plover

1 INTRODUCTION

The purpose of this initiation package is to review and support the U.S. Department of the Navy's (USN) proposed transfer of property to U.S. Department of Veterans Affairs (VA), and the subsequent construction and operation of the VA Outpatient Clinic (OPC) and National Cemetery (columbaria) project (VA Project) at the former Naval Air Station (NAS) Alameda. This initiation package is intended to review the project in sufficient detail, to determine to what extent the proposed action may affect any threatened or endangered species and designated or proposed critical habitats, as listed below. Formal consultation is required due to the presence or the potential presence of several federally listed plant and wildlife species and the potential for project actions to cause effects to these species.

In addition, the following information is provided to comply with statutory requirements to use the best scientific and commercial information available when assessing the risks posed to listed and/or proposed species and designated and/or proposed critical habitat by proposed federal actions. This initiation package is prepared in accordance with legal requirements set forth under regulations implementing Section 7 of the Endangered Species Act (FESA) [50 CFR 402; 16 U.S.C. 1536 (c)].

This biological assessment (BA) generally follows the USFWS *Template and Guidance on Preparing an Initiation Package for Endangered Species Consultation* (USFWS 2007a). However, this document differs from the template in the following ways:

Section VII – Other Relevant Information was eliminated. All known and/or available relevant information was provided in the chapters of this BA; thus, there is no other relevant information for the action area, the affected listed species, or designated or proposed critical habitat that needs to be addressed in a separate chapter.

Conservation measures are presented in **Chapter 7.0 - Effects of the Actions and Conservation Measures** rather than in **Section III - Description of the Proposed Action**.

1.1 SPECIES COVERED BY THIS ASSESSMENT

Based on a review of California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) (CDFG 2011), the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants* (CNPS 2001, 2010), USFWS species list (USFWS 2010), and knowledge of the region, it was determined that 16 federally listed plant species and 26 federally listed animal species (**Appendix A**) have been recorded as occurring in the general area of the proposed action. Based on a review of available documentation, including recent focused surveys of the action area, all 12 of the plant species and seven of the wildlife species are presumed absent, are not expected to occur, or have an extremely low likelihood to occur in the action area for the reasons explained in this section, and will not be evaluated in the BA.

The following federally listed species are presumed absent or are not expected to occur on the site:

Plant Species

- Beach layia (*Layia carnosa*) **E**
- California sea blite (*Suaeda californica*) **E**
- Contra Costa goldfields (*Lasthenia conjugens*) **E**
- Marin western flax (*Hesperolinon congestum*) **T**
- Marsh sandwort (*Arenaria paludicola*) **E**

- Pallid manzanita (*Arctostaphylos pallida*) **T**
- Presidio clarkia (*Clarkia franciscana*) **E**
- Presidio manzanita (*Arctostaphylos hookeri* spp. *ravenii*) **E**
- Robust spineflower (*Chorizanthe robusta* var. *robusta*) **E**
- San Francisco lessingia (*Lessingia germanorum*) **E**
- Santa Cruz tarplant (*Holocarpha macradenia*) **T**
- Showy rancheria clover (*Trifolium amoenum)* E
- Tiburon jewel-flower (*Streptanthus glandulosus ssp. niger)* E
- Tiburon mariposa-lily (*Calochortus tiburonensis)*T
- Tiburon paintbrush (*Castilleja affinis ssp. neglecta)* E
- White-rayed pentachaeta (*Pentachaeta bellidiflora*) **E**

Animal Species

- California tiger salamander (*Ambystoma californiense*) **T**
- California red-legged frog (*Rana draytonii*) **T**
- Alameda whipsnake (*Masticophis lateralis euryxanthus*) **T**
- Tidewater goby (*Eucyclogobius newberryi*) **E**
- Delta smelt (*Hypomesus transpacificus*) **T**
- California clapper rail (*Rallus longirostris obsoletus*) **E**
- Salt marsh harvest mouse (*Reithrodontomys raviventris*) E
- Vernal pool fairy shri*mp (Abludomelita obtusata) T*
- Marbled murrelet (*Brachyramphus)* E
- Short-tailed albatross (*Phoebastria albatrus)* T
- Southern sea otter (*Enhydra lutris nereis)* T
- Bay checkerspot butterfly (*Euphydryas editha bayensis)* T
- Callippe silverspot butterfly (*Speyeria callippe callippe)* E
- Mission blue butterfly (*Plebejus icarioides missionensis)* E
- Myrtle's silverspot butterfly (*Speyeria zerene)* E
- San Bruno elfin butterfly (*Callophrys mossii bayensis)* E

E = endangered **T** = threatened

Reasons for presuming that the above species are absent from the action area are listed below:

- Field surveys for threatened and endangered plants (U.S. Navy [USN] 1998), reconnaissance surveys (February 19 and 20, 2008), wetland delineation surveys (February 20, March 3, March 10, and April 10, 2008) and focused botanical surveys on May 16 and June 13, 2008 (EDAW 2008 a, b, c) during the target species blooming periods found no indication that any federally listed plant species occur on the site.

- The action area is within central San Francisco Bay and outside of the present range of tidewater goby, which otherwise occurs in coastal lagoons, estuaries, and marshes; and delta smelt, which rarely occurs south of San Pablo Bay.

  The action area is located on the island of Alameda and it is composed primarily of urban and industrial land uses that have been subject to military and industrial disturbances. In addition, the majority of the land area was formerly open water, with current land area composed of fill material. Existing terrestrial habitats only support a few species that have recently pioneered from nearby source populations, and are common in disturbed and urban settings. There are few, if

any, nearby source populations for any listed species. Dispersal capabilities for federally listed amphibians and reptiles are limited by unsuitable habitat types in the region surrounding the action area. Specifically, the site and adjacent lands lack suitable scrub habitat for Alameda whipsnake, and there is no connectivity to the project site from presently extant populations of California tiger salamander and California red-legged frog due to dense, surrounding urbanization. Although the federally listed species identified below are known to occur within salt and brackish marsh habitats along the shores of the east San Francisco Bay, in the vicinity of the site, they have an extremely low likelihood of occurrence within the action area for the reasons described below, and will not be evaluated in the BA.

- California clapper rail (*Rallus longirostris obsoletus*) **E**

  Although clapper rails have been observed in the *Spartina alterniflora* (and hybrid with *S. foliosa*)- and pickleweed-dominated marshes 3 to 4 miles away (to the north and south) as recently as 2008, they have never been documented within the action area despite twice-monthly Friends of Alameda Wildlife Refuge (FAWR) bird counts which began in the spring of 2004, and biological surveys conducted within the action area. The site lacks important habitat elements for the species, including taller saltmarsh vegetation such as *Scirpus* spp. and *Spartina* spp. and deep channels with full tidal connection; thus, suitable nesting habitat is absent and the quality of potential foraging habitat is diminished. Due to the surrounding unsuitable land uses isolating the site from known populations, lack of documented observations within habitats on site despite regular avian surveys the last eight years, and the low quality of salt marsh habitats for the species, the likelihood that clapper rails would occur within the action area is extremely low.

- Salt marsh harvest mouse (*Reithrodontomys raviventris*) **E**

  Although a habitat assessment conducted by Shellhammer (2000) notes that suitable habitat is present within the Runway Wetland, trapping surveys for salt marsh harvest mice have resulted in negative findings. An 8-night live trapping survey conducted in 1995 detected no salt marsh harvest mice present (USN 1995, 1997) within the Runway Wetland or Installation Restoration (IR) Site 2 marshes at that time. A second live-trapping survey was conducted in October 2009, which again found no salt marsh harvest mice within the wetlands on site. The results of these surveys suggest that salt marsh harvest mouse has never occurred within the wetlands on site due to its isolation from source populations elsewhere around San Francisco Bay (H.T. Harvey & Associates, 2009). Potential salt marsh habitat on site is isolated from other marshes with known salt marsh harvest mouse populations by a minimum of 3 miles of barriers such as water bodies and highly developed urbanized areas. As a result, the probability of dispersal onto the action area is extremely low given the small dispersal range of the species (Bias and Morrison 1999).

The following listed anadromous fish species fall within the purview of the National Marine Fisheries Service (NMFS), and have potential to occur within the waters of San Francisco Bay immediately adjacent to the action area:

- Green sturgeon Southern Distinct Population Segment (DPS) (*Acipenser medirostris*) **T**
- Coho salmon – central California coast (*Oncorhynchus kisutch*) **E**
- Central California coastal steelhead (*Oncorhynchus mykiss*) **T**
- California Central Valley steelhead (*Oncorhynchus mykiss*) **T**
- Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*) **T**
- Winter-run Chinook salmon, Sacramento River (*Oncorhynchus tshawytscha*) **E**

Because there is no open water within the action area, there is a significant setback distance of the project from the Oakland Inner Harbor, and no in-water work is proposed as part of the VA development, there will be no direct effects to fish species. The project will employ standard prevention measures—including a Storm Water Pollution Prevention Plan, silt fences, and construction Best Management Practices—that will ensure that there are no indirect effects to fish species by minimizing noise, dust, and runoff. The project will, therefore, have no effect on listed anadromous fish species, and they will not be discussed further in this report.

The following federally listed species are known to occur on or in the vicinity of the action area and may be affected by the project action:

- Western snowy plover (*Charadrius alexandrinus nivosus*) **T**
- California least tern [CLT] (*Sternula antillarum browni*) **E**

Potential effects to these species are analyzed in detail in this report.

The California brown pelican (*Pelicanus occidentalis californicus*) is also present near the action area, most notably using Breakwater Island as a winter roost. This species was formerly listed as endangered, but has since recovered and was officially delisted on November 17, 2009 (USFWS 2009). As such, the California brown pelican will not be discussed further in this document except in reference to previous documents and agency consultations, which occurred while the species was still listed.

1.2 CANDIDATE SPECIES

There are no candidate species within a 5-mile radius of the action area.

1.3 CRITICAL HABITAT

The action area is located within the Oakland West U.S. Geological Survey (USGS) 7.5-minute quadrangle. The action area does not contain any designated critical habitat, although the waters of San Francisco Bay immediately adjacent to the action area fall within designated critical habitat for Central California coast evolutionary significant unit (ESU) steelhead (NMFS 2005) and the southern DPS of green sturgeon (NMFS 2009). Because there is no open water within the action area and no in-water work is proposed as part of the VA development, there will be no direct effects to critical habitat for listed fish species. The project will employ standard prevention measures—such as a Storm Water Pollution Prevention Plan, silt fences, and construction Best Management Practices—that will ensure there are no indirect effects to critical habitat within San Francisco Bay by minimizing noise, dust, and runoff. The project will, therefore, have no effect on critical habitat.

2 CONSULTATION TO DATE

This chapter describes consultation on actions at or adjacent to NAS Alameda, as well as consultation related to the proposed action.

2.1 CONSULTATION ON ACTIONS AT OR ADJACENT TO NAS ALAMEDA

Four previous Section 7 consultations have been conducted for projects at or adjacent to NAS Alameda. (The terms NAS Alameda and Alameda Point are used interchangeably throughout this document.)

2.1.1 1988 SECTION 7 CONSULTATION ON A PROPOSED BREAKWATER GAP CLOSURE PROJECT

In 1988, a formal Section 7 consultation regarding the potential effects of a proposed breakwater gap closure on the CLT was conducted by the USN and USFWS. In May 1988, the USFWS issued a BO that concluded that the project, including a proposed monitoring and mitigation program, would not jeopardize the continued existence of the CLT or California brown pelican (USFWS 1988a as cited in USN 1997). To ensure that there would be no significant impacts on the terns, the USFWS required the following:

- Least tern foraging in the gap be monitored for 3 years after the project was constructed, in accordance with methodologies used during pre-gap construction studies from 1984 through 1986 (completed in 1990);
- Post-construction hydrologic monitoring of the gap be conducted to determine impacts on eddy slicks (completed in 1989); and
- Annual monitoring be conducted to determine the tern breeding population size and reproductive success at the nesting colony (continuing annual requirement).

2.1.2 1988 SECTION 7 CONSULTATION ON METHYLENE CHLORIDE EMISSIONS

A second Section 7 consultation was conducted by the USN and USFWS in 1988 on the effects of methylene chloride emissions from a corrosion control facility and paint hangar at NAS Alameda, as well as increased levels of feral cat predation, on the CLT. The USFWS wrote an informal consultation letter in September 1988 and determined that the emissions would be sufficiently low around the least tern nesting and foraging habitat such that adverse impacts were not expected. The USFWS required a feral cat control program and recommended changes to the USN's proposed feral cat control program. This measure would help offset increased predation on least terns from the increase in feral cats associated with the corrosion control facility and paint hangar (USFWS 1988b as cited in USN 1997). In response to the consultation, a feral cat control program was put in place at NAS Alameda from 1988 – 1997. Feral cats are now removed as necessary by the U.S. Department of Agriculture (USDA) Wildlife Service's pursuant to a Navy contract.

2.1.3 1999 SECTION 7 CONSULTATION ON DISPOSAL OF SURPLUS PROPERTY

A third Section 7 consultation was conducted on the effects of the USN transfer of surplus property of Naval Air Station Alameda/Fleet and Industrial Supply Center (NAS/FISC) Alameda for reuse and

redevelopment in accordance with the 1997 Reuse Plan developed by the Alameda Reuse and Redevelopment Authority (ARRA). (The ARRA is the local reuse authority responsible for planning and executing redevelopment plans for a portion of NAS/FISC property that is not subject to the VA's proposed acquisition and reuse.)

On March 22, 1999, the USFWS issued a BO, which concluded that the Navy's proposed transfer of surplus property for reuse in accordance with the ARRA's Reuse Plan would not jeopardize the continued existence of the CLT or the California brown pelican (USFWS 1999). The 1999 BO included terms and conditions regarding noise, lighting, vegetation, new construction and predator management. Implementation of the Reuse Plan remains subject to the 1999 BO and its incidental take statement. However, the 1999 BO may need to be amended or updated to reflect changes in the environmental baseline that are contemplated by the VA project because the VA project replaces the USFWS managed wildlife refuge previously proposed by USFWS for the same area (excluding submerged lands).

2.1.4 2010 Section 7 Consultation on Proposed Oakland Harbor Dredging Project

A formal Section 7 consultation was conducted by the U.S. Army Corps of Engineers (USACE) in 2010 regarding the potential effects of proposed dredging of the Oakland Harbor on the CLT. The USACE is the lead agency in charge of maintenance of the Oakland Outer, Middle, and Inner Harbors, which are a series of channels and harbors north of the action area. USFWS issued a BO on April 22, 2010 regarding periodic maintenance dredging within reaches 1 (entrance channel), 7, 8, 9, and 10 of the Oakland Outer Harbor from 2010 through 2012. USFWS concluded that the Oakland Outer Harbor maintenance dredging was not likely to jeopardize the continued existence of CLT. This was based on:

- The fact that no eelgrass beds (which provide habitat for fish preyed upon by CLT) would be disturbed
- The fact that dredging activities would be limited to 2 months or fewer when CLT are present in the area;
- The availability of additional foraging areas which would not be affected by the project, and;
- The guarantee that USACE would provide additional funding to USDA Wildlife Services for predator management in the years 2010, 2011, and 2012 as an indirect benefit to the CLT colony.

2.2 CONSULTATION ON PROPOSED ACTION

In advance of the preparation of this BA, the VA and USN met numerous times between 2005 – 2009 (by telephone and in person) with USFWS to discuss the proposed action. During this period, alternative approaches to consultation and various issues relating to the different consultation approaches were considered by VA, USN, and USFWS staff. A summary of those consultation approaches and relevant meetings/events that led to changes in consultation approach are provided below:

Project Specific Biological Assessment for Navy Transfer/VA Development (VA Project Only BA)

- **December 15, 2005** – The VA and USN met with USFWS Regulatory and Refuge staff to discuss VA's interest in acquiring the property at Alameda Point via a Federal-to-Federal (Fed-to-Fed) transfer. Discussion points included history of proposed refuge at Alameda, status of the USFWS transfer request, compliance with the 1999 BO, and the need to coordinate with both Regulatory and Refuge staff on the project.

- **June 5, 2006** – The VA met with USFWS Regulatory and Refuge staff. USFWS staff provided input in response to a presentation of potential site layouts for proposed VA uses. The meeting participants also discussed issues regarding future control or ownership of an area of submerged lands located within the space that had been proposed for a wildlife refuge and the timing and process for the VA's submittal of a property transfer request to the USN.

- **January 9, 2007** – The VA met with USFWS Regulatory and Refuge staff. VA reported that it had formally submitted a request to pursue transfer of 579 acres at the former NAS Alameda, from USN to the VA, and that the VA was proceeding with due diligence. Other topics discussed at this meeting were the proposed downlisting of CLT and how such action might affect the Section 7 consultation process; funding mechanisms for ongoing management of the CLT colony; the potential for establishing a Refuge Overlay at Alameda Point; ownership of water (submerged lands) adjacent to the proposed VA transfer parcel; and the installation of a setback from the CLT colony in order to keep effects of the VA reuse as far from the colony as possible. (Establishing a setback distance based upon the existing location of buildings east of the colony was determined to be a good measure.) Recommendations from USFWS included:

  - Consolidate land and water so they can be managed and protected in unison by the same entity;
  - Incorporate education and interpretation; and
  - Keep environmental groups involved; meet early with them.

- **May 31, 2007 –** The VA met with USFWS Regulatory and Refuge staff. Topics included transfer/ownership of the submerged lands, including the possibility of the City of Alameda taking ownership of the submerged lands, a three-party Memorandum of Understanding/ Memorandum of Agreement (MOU/MOA) to ensure adequate patrolling/protection of pelican roost on Breakwater Island, and the report on a March 2007 meeting with the Golden Gate Audubon Society. Conceptual site plan options for the VA development on Alameda Point were reviewed in order to assess which of the options would likely have the least impact on the terns.

- **August 1, 2007** – The VA met with USFWS Regulatory and Refuge staff. At this meeting the VA and USFWS engaged in further discussion of the approach for control over submerged (water) parcels, National Environmental Policy Act (NEPA) consideration of the proposed transfer of property from USN to VA; a report on a meeting with Golden Gate Audubon Society (July 26, 2007); a species list and mitigation approach for the BA; and Regulatory staff comments on conceptual site plans.

- **October 3, 2007** – The VA met with USFWS Regulatory and Refuge staff. An agreement was reached regarding the footprint of the proposed development envelope at the northern edge of the site; discussions regarding ownership of submerged lands continued; a recommendation from USFWS Refuge staff to consider East Bay Regional Park District as a possible manager of the open space/CLT areas was made; VA's long term funding sources for management of CLT and possible mitigation strategies were discussed, as were lessons learned since the last BO was issued regarding management of CLT and how buildings should be designed, landscaping, etc.

Project Specific Biological Assessment for USN's Transfer and VA Development and a Programmatic Biological Assessment for Alameda Reuse and Redevelopment Authority (ARRA) Transfer/Redevelopment (Base-wide BA)

- **December 20, 2007** – The VA, USN, and ARRA met with USFWS Regulatory and Refuge staff. A conceptual agreement was reached on a potential approach for conveyance of submerged lands (identified as FED-1B in previous documentation such as the USFWS "Request for Transfer") to the ARRA subject to a conservation easement or other property interest for protection of the California

brown pelican and CLT. USFWS recommended preparation and submittal of a BA that addressed both the proposed VA development (at a project level) and any foreseeable changes in anticipated reuse of Alameda Point (at a programmatic level) in a joint consultation (VA and USN), under an assumption that the resulting BO would supersede the 1999 BO. It was suggested that subsequent additional project specific consultation for Alameda Point development would tier off the programmatic analysis once a revised development plan was prepared for Alameda Point.

- **June 8, 2009** – As a result of the meetings summarized above, the VA and USN prepared and submitted a biological assessment with a request that USFWS initiate consultation on the proposed action. At that time, the proposed action included a component that addressed the disposal of other federal surplus lands at NAS Alameda at a programmatic level based on the then contemplated redevelopment plan (Alameda Point Specific Plan) submitted to the ARRA by SunCal Companies California LLC. The BA also considered to what extent the proposed VA fed to fed transfer and subsequent development of the transfer parcel would affect threatened and endangered species at a project level.

- **June 23, 2009** – The VA and USN met with USFWS staff to review proposed conservation measures contained in the BA submitted on June 8, 2009***.***

- **July 10, 2009** – The USFWS sent a letter to USN and VA advising that they did not receive the information necessary, or in some instances, in sufficient detail, to initiate formal consultation on the proposed project. The letter identified five items that would be required in order to complete the Section 7 initiation package:

  1. Potential for Salt Marsh Harvest Mouse (SMHM)
  2. Effects of the VA Development and Specific Plan on the CLT and Western Snowy Plover:
  3. Biological justification of the USN/VA's proposed buffer distance between the proposed development and the least tern colony
  4. Avoidance / compensation re: CA Brown Pelican
  5. Construction outside of breeding season

- **July 23, 2009**- The USN and VA met with the USFWS in a technical working group to discuss the July 10, 2009 letter and USN's proposed responses. USFWS indicated the need for the BA to address the fencing around the VA development and along the proposed recreational trail. USFWS also indicated that construction activities that would not raise ambient levels could be conducted during CLT season, but that pile driving or in-water activities should not occur during the breeding season.

- **November 20, 2009**- Via a teleconference, the USN and VA met with the USFWS to discuss the USN's proposed responses to the USFWS' July 2009 letter. USFWS expressed the opinion that the VA and ARRA redevelopment were a single action requiring analysis in a single BA. USFWS stated its position that the 1999 BO identified the minimum area necessary to ensure the long-term persistence of the CLT, and that the cumulative effects of the proposed projects had the potential to cause jeopardy. USFWS further stated their intent to place strict prohibitions on any developmental land use in perpetuity and interpreted the 1999 BO as the baseline from which additional terms and conditions would be developed.

- **February 3, 2010-** Via a teleconference, the USN and USFWS met for a technical working meeting to discuss approaches for the development of a buffer area. The USFWS indicated that the VA should explore additional conservation measures, such as a conservation easement with all "undeveloped areas" under management by a third party, and a Tern Management Plan and endowment to ensure that tern management would exist in perpetuity.

Project Specific Biological Assessment for USN Transfer/VA Development (VA Project-Only BA)

The ARRA worked with SunCal Companies / SCC Alameda Point LLC to develop the Alameda Point Specific Plan (2009), which defined the proposed reuse of NAS Alameda and which was analyzed in the Programmatic BA submitted in June 2009. In July 2010, the ARRA ended its contractual relationship with SunCal/SCC Alameda Point LLC and the ARRA currently has no plans to revise the Reuse Plan. Accordingly, the 1997 Reuse Plan remains subject to the 1999 BO and its incidental take statement.

The submittal of this BA responds to the letter from USFWS dated July 10, 2009 and addresses the five requests for information and provides details on modifications made to the VA project action since the June 2009 BA submittal.

Consultation with NMFS

In addition to the meetings and consultation with USFWS, VA contacted NMFS regarding species within their purview.

- **June 9 and June 17, 2008** – VA (via contractor AECOM) held two separate but related phone conversations with NMFS staff on June 9 and on June 17. After being provided with an overview of the proposed action and project history, NMFS concluded that no meeting was necessary to discuss effects on species within their purview. This was based on two assumptions: 1) there would be no in-water construction for the VA project and 2) the programmatic action would be based on the 1997 Reuse Plan and that at such time as a specific project proposed for the programmatic action area, consultation with USFWS and NMFS would be re-initiated.

3 DESCRIPTION OF THE PROPOSED ACTION

This chapter provides information on the action agencies, authorities, the actions (including location, timing and duration, how it will be carried out, and its purpose), and any interrelated or interdependent actions. Conservation measures are described in **Chapter 7.0, Effects of the Actions and Conservation Measures**.

3.1 ACTION AGENCY

3.1.1 U.S. NAVY

As part of the process to close and realign military bases, the Base Realignment and Closure (BRAC) Commission recommended that the Secretary of Defense "… close Naval Air Station (NAS) Alameda, California." The BRAC Commission recommendation was approved by President Clinton and accepted by the 103rd Congress in October 1993. NAS/FISC Alameda closed in 1997, and the USN is authorized to take appropriate steps to achieve final disposition of all NAS Alameda property. The USN has initiated the disposal process for NAS/FISC Alameda, as required by the Defense Base Closure and Realignment Act (DBCRA) of 1990, in compliance with subsequent amendments to the DBCRA and other laws and regulations, including Title 10 of the U.S. Code and USN regulations affecting the disposition of real property. DBCRA identifies a multi-phase, incremental process by which BRAC property is screened for Federal recipients, homeless housing providers, and other recipients before remaining property is declared surplus for transfer to the Local Reuse Authority (LRA).

3.1.2 DEPARTMENT OF VETERANS AFFAIRS (VA)

The VA was established as an independent agency under Executive Order 5398 on July 21, 1930, and elevated to Cabinet level on March 15, 1989 (Public Law No. 100-527). The VA comprises a Central Office, which is located in Washington, DC, and field facilities throughout the nation administered by its three major line organizations: Veterans Health Administration (VHA), Veterans Benefits Administration (VBA), and National Cemetery Administration (NCA).

The proposed construction of VA facilities at Alameda Point, including implementation of required conservation/mitigation actions, would be funded by the congressionally authorized and appropriated budget for major construction projects for the VA for fiscal year 2011/2012. Congressional funds authorized for a specific fiscal year are intended to be obligated during that year. The VA will include in its annual operating budgets for Northern California Health Care System and Memorial Service Network V funding for the proper management of the CLT colony and other property needs.

3.1.2.1 VETERANS HEALTH ADMINISTRATION (VHA)

The VHA is responsible for providing health related services to eligible Veterans and family members pursuant to the provisions of the Rehabilitation Act of 1973 and other statutory authority and regulations. Currently, the VHA operates two sites in the City of Oakland. The primary site is the Oakland Outpatient Clinic (OPC), and the secondary site is the Oakland Mental Health and Substance Abuse Clinic (MH/SA Clinic).

VHA services provided at the Oakland OPC consist of primary care, women's health, urgent care, various medical/surgical sub-specialties, laboratory, pharmacy, radiology, physical therapy, eye clinic, and comprehensive outpatient mental health and substance abuse programs. VHA services provided at the existing MH/SA Clinic include outpatient treatment for drug- and alcohol-related dependencies,

medication management, methadone maintenance, and individual and group therapy. The MH/SA Clinic also manages a Homeless Outreach Program and a Compensated Work Therapy Program. VHA's standard is for an OPC (including MH/SA facilities) to be located within a 30-minute service area.

The proposed action would replace, expand, and consolidate the Oakland facilities into a single, state-of-the-art OPC—including MH/SA facilities—at the former NAS Alameda. VHA need for the proposed action is based on the following:

- The existing OPC is located in a leased building in downtown Oakland. In 2008, the lease was extended to 2018. The MH/SA services are currently located in a separate leased building approximately 0.5 mile from the existing OPC.

- Both the OPC and MH/SA facilities are undersized to serve the current and projected Veteran population. Furthermore, VHA requires mental health services be integrated into the primary care setting. The VHA has undertaken a large national initiative to integrate primary care and mental health services in order to promote the effective treatment of common mental health conditions in the primary care environment, to integrate care for Veterans' physical and mental health, and allow mental health specialists to focus on patients with more severe illnesses.

- Organizationally within the VA, the OPC and MH/SA Clinic fall under VA Northern California Health Care System (NCHCS), whose East Bay Division is based in Martinez, California; NCHCS operates nine (9) healthcare sites throughout northern California, including a major medical center in Sacramento and has over 378,000 enrolled Veterans, including the 51,000 Veterans in northern Alameda County. NCHCS falls under the VA Sierra Pacific Network (VISN 21), which serves over 1.08 million Veterans and oversees operation of 48 medical facilities, including six medical centers in northern California, northern Nevada and the Pacific.

3.1.2.2 NATIONAL CEMETERY ADMINISTRATION (NCA)

The mission of the NCA is to honor the nation's Veterans with a final resting place and commemorate their service to the nation. One of the strategic goals and primary responsibilities of NCA is to assure that the burial needs of Veterans are met. Experience and recent historical data show that over 80% of persons interred in national cemeteries resided within 75 miles of the cemetery at time of death. VA's strategic goal is to serve 90% of Veterans with a burial option at a VA National Cemetery or State Veterans Cemetery within 75 miles of their residence. Based upon this goal, NCA considers eligible Veterans to have reasonable access if a burial option, whether for casketed or cremated remains, is available within 75 miles of the Veteran's place of residence. This goal does not consider travel time.

NCA Oakland Memorial Service Network V is responsible for providing burial benefits for over 300,000 Veterans that reside within the San Francisco Bay Area. Providing reasonable access to burial options for these Veterans presents a unique challenge for NCA, because it can take 2 to 3 hours during commute hours for bereaved families in the San Francisco Bay Area to travel one-way to a cemetery located 75 miles away.

NCA need for the proposed action is based on the following:

- Projected inurnments of eligible Veterans are estimated to be 50% of the deceased Veteran population in Northern California. Nationally, of the five NCA Memorial Service Networks, Memorial Service Network V—composed of nine western states—accounts for 37% of all cremation inurnments. Furthermore, the Sacramento Valley National Cemetery has maintained a 60% in-ground cremation inurnment ratio since it opened in October 2006.

- The Golden Gate and San Francisco National Cemeteries have been closed to new burials for over 30 years.[1] When possible, VA determines the feasibility of extending the service of such cemeteries by acquiring adjacent or contiguous land. In the case of the Golden Gate and San Francisco National Cemeteries, neither of these sites have sufficient land for additional gravesites or columbarium[2] niches.

- NCA projects that approximately 2,500 columbarium niches per year are needed to meet the burial needs of San Francisco Bay Area Veterans over the first 5 years after opening a cemetery at Alameda. Given the fact that the Bay Area is a densely developed urban environment, there is a strong desire to acquire land that meets the previously stated 75 mile radius goal and allows for future expansion to ensure that the long-term burial needs of Veterans are met**.**

3.1.2.3 VETERANS BENEFITS ADMINISTRATION (VBA)

VBA is responsible for administering programs that provide financial and other forms of assistance to Veterans, their dependents, and survivors. Major benefits include Veterans' compensation, Veterans' pension, survivors' benefits, rehabilitation and employment assistance, education assistance, home loan guaranties, and life insurance coverage. The VBA Oakland Regional Office is currently located in the Federal Building at 1301 Clay Street, Oakland, CA. The office is open for walk-in interviews with VBA Benefits Counselors from 8:00 a.m. until 4:00 p.m., Monday through Friday.

3.2 ACTION AREA

The action area is defined as all areas to be affected directly or indirectly by the federal action and is not merely the immediate area involved in the action (USFWS and NMFS 1998). The action area is located on the west side of the former NAS Alameda (**Figure 1**). The action area includes both the parcel proposed for transfer to the VA (approximately 549 acres) and the adjacent 6.1-acre access road and utility corridor to the east of the VA transfer parcel (**Figure 2**).

While the parcel proposed for transfer is 549 acres[3], development will only occur on 100 acres. This 100-acre developed area within the VA transfer parcel is referred to as the VA Development Area (**Figure 3**).

The VA project action would require upgrades to existing roadways and installation of new utilities that would extend to the east beyond the 549-acre transfer parcel (**Figure 3**). Because these off-site roadway and utility upgrades would be conducted by the VA and are interdependent actions to the VA development, they are considered part of the action area.

The action area is located at the southwestern end of Alameda Island along the eastern side of San Francisco Bay, adjacent to the City of Oakland (**Figure 1**). San Francisco Bay borders the action area to the west and south, while the former NAS Alameda airfield hangers and other properties are located on the eastern side. To the north lies the Northwest Territories (NWT), a portion of the former east-west runway, and relatively undeveloped grasslands.

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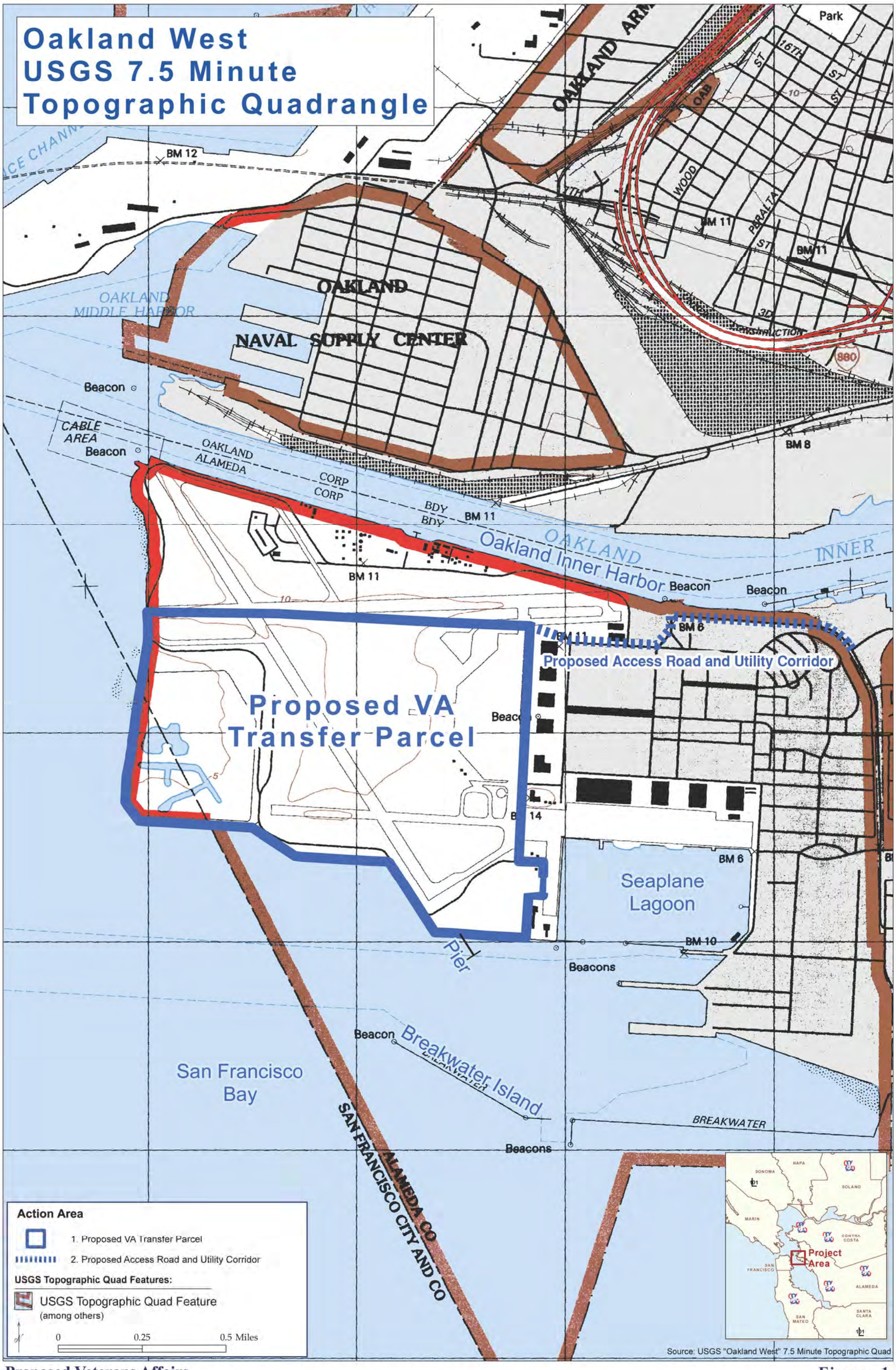
1 Except for family members who wish to be buried in the same gravesite as a previously deceased family member.

2 For the purpose of this assessment, the term columbarium is used to describe a structure containing niches for inurnment of cremated remains.

3. According to Geographic Information System (GIS) data, the parcel proposed for transfer is approximately 549 acres.



Proposed Veterans Affairs Facilities at Alameda Point

Figure 1
Action Area Plotted on USGS Quad Map

The topography is flat, reflecting its history as filled baylands and use as an airfield, and the elevation at or immediately above sea level. The greater Alameda Point area was created from filled baylands over several decades in the first half of the 20th century, with the action area created largely in the 1940s and 1950s. Most of the property lies within the former airfield area. Buildings and other structures that were constructed for airfield operations and other military purposes exist on the property. These include bunkers, concrete buildings, and a Quonset hut. Other structures or facilities include runway lighting, a helicopter wash pad, electrical vaults (concrete holes measuring 2 to 10 feet deep), storm sewers, blast fence ruins, fences, power poles, wheels-up landing aid, and a wind vane (tetrahedron shaped).

The action area is generally comprised of five areas. These areas are described in further detail in Chapter 4 (**Figure 2**):

- Runway Wetland
- Installation Restoration (IR) Site 2 (containing the West Wetland)
- Tarmac area
- CLT colony, and
- Proposed Access Road /Utility Corridor

3.2.1 RUNWAY WETLAND

The approximately 34-acre Runway Wetland lies in the southeast corner of the action area and encompasses two perennial ponds, surrounded by salt marsh and ruderal-disturbed lands (**Figure 2**). The two ponds are connected to the San Francisco Bay through three openings in the rock riprap at the southern boundary of the Runway Wetland, and are connected during higher water levels. The aerial coverage for each of these ponds varies with respect to their water levels. Although all of the three openings in the riprap had actively flowing water at the time of the site reconnaissance, the westernmost opening, approximately 250 feet from the base of the pier (**Figure 2**) and connected to the western pond, appeared to convey more water than the other two. A channel measuring approximately 40 feet long, extends into the wetland (**Figures B-1 and B-2** in **Appendix B**[4]). On the southeast corner of the Runway Wetland, a culvert that appears to have been installed decades ago, is present (**Figures B-3 and B-4**). This culvert allows water to freely exchange with the Bay into and out of the southeastern pond. A third smaller opening in the riprap is located about 300 feet west of the culvert. This smaller conveyance does not extend into the wetland more than 10 feet (**Figures B-5 and B-6**). This third conveyance connects the Bay to the higher marsh that may completely dewater at lower tides

Vegetative habitat within the Runway Wetland differs with elevation. The lowest parts are inundated and classified as open water, the depth of which is tidally influenced. Slightly higher in elevation are unvegetated mudflats that are submerged part of the time depending on tidal height and surface water runoff. With rising elevation, the mudflats intergrade with northern coastal salt marsh dominated by pickleweed (*Salicornia virginica*) and saltgrass (*Distichlis spicata*) (**Figures B-7 to B-8**) and at higher elevations, ruderal-disturbed habitat dominated by iceplant (*Carpobrotus edulis*) (**Figures B-4, B-6, B-9, and B-10**).

The rock riprap on the southern edge of the wetland separates Bay waters from the action area (**Figures B-2, B-11, and B-12**) and holds little or no vegetation. At the highest levels of elevation, intergrading with the iceplant dominated ruderal-disturbed habitat, is nonnative grassland on the northeast side (**Figure B-13**).

[4] From here on out, all references to Figures B-1, B-2, etc. can be found in Appendix B.

Proposed Veterans Affairs Facilities at Alameda Point

Figure 2
Project Action Area

The nonnative grassland in the Runway Wetland is typical of the nonnative grasslands across the action area, with some areas of the grassland well developed and other areas where the vegetation appears stunted. Also present are highly scattered coyote brush (*Baccharis pilularis*) and a cluster of cypresses (*Cupressus* sp.).

3.2.2 IR SITE 2 (INCLUDING WEST WETLAND)

The approximate 110-acre IR Site 2 lies in the western portion of the action area (**Figure 2**). It is fully bounded on the north and east by the tarmac area and includes the West Wetland. (**Figures 2 and B-14**). IR Site 2 abuts the San Francisco Bay on the west and southern edges. Historically, the northeastern portion of IR Site 2, which encompasses approximately 77 acres, was a landfill or disposal area. The canal-shaped pond and the northern pond are both perennial. Within the West Wetland, the northernmost pond is connected to the Bay by a culvert; both ponds are connected when inundated during higher tides. This canal-shaped pond was created by removing dredged materials to cover the landfill or disposal area. A strip of land that varies in width from 100 to 150 feet separates the ponds from the Bay and abuts the rock riprap (Battelle and BBL, Inc. 2008 and Tetra Tech 2004).

The vegetation of IR Site 2 is mostly disturbed-ruderal (weedy) lands and nonnative grasslands, with scattered seasonal and permanent wetland features. The dominant upland plants include seaside trefoil (*Lotus formosissimus*), fennel (*Foeniculum vulgare*), yellow star-thistle (*Centaurea solstitialis*), ryegrass (*Lolium perenne*), mustard (*Brassica rapa*), ice plant, and coyote brush (Battelle and BBL, Inc. 2008 and Tetra Tech 2004). Within the West Wetland, the dominant vegetation includes dock willow (*Rumex salicifolius*), pickleweed, bird's foot trefoil (*Lotus corniculatus*), and saltgrass (Tetra Tech 2004). Common nonnative plant species on upland areas of the IR Site 2 include Bermuda grass (C*ynodon dactylon*), broad-leaf peppergrass (*Lepidium latifolium*), hare barley (*Hordeum murinum* ssp. *leporinum*), rip-gut brome (*Bromus diandrus*), milk thistle (*Silybum marianum*), bull thistle (*Cirsium vulgare*), annual fescue (*Vulpia* spp.) red-stemmed filaree (*Erodium cicutarium*), and white sweet-clover (*Melilotus alba*), among others (Tetra Tech 2004).

3.2.3 TARMAC AREA

The tarmac (**Figure 2**) comprises the majority and remainder of the action area (approximately 400 acres). It consists of ruderal-disturbed habitat and nonnative grasslands interspersed with seasonal wetlands and salt marsh in the unpaved areas between the runways and roadways (**Figures B-15 – B-19**). Most of the existing infrastructure in the action area occurs in the tarmac area.

3.2.4 CALIFORNIA LEAST TERN COLONY

The CLT nests and roosts on portions of the paved former airfield area (**Figure 2**), and forages in the adjacent open water, including the NAS Alameda submerged lands. Their primary nesting area is an approximately 9.7-acre fenced section (the ‘tern colony’) on the southern portion of the former airfield area (**Figures B-20 – B-21**). CLT was first documented nesting at NAS Alameda in 1976 while the base was still active.

3.2.5 PROPOSED ACCESS ROAD AND UTILITY CORRIDOR

The proposed access road and utility corridor is a 6.1-acre section of existing paved roadways east of the 549-acre VA transfer parcel (**Figure 2**). This corridor approximately 1,425.6 feet of West Redline Avenue directly east of the VA transfer parcel, the entry road from the Alameda Point North Gate, and a

3,292.53-foot segment of Main Street that extends from the Alameda Point North Gate east to where utilities would tie into the main sewer and water utility.

3.3 PROJECT PURPOSE AND ACTION

3.3.1 PROJECT PURPOSE

The purpose of the proposed action for the USN is to dispose of property at NAS Alameda in accordance with the DBCRA of 1990. Disposal of the property would occur via a Federal-to-Federal agency (Fed-to-Fed) transfer to VA.

The VA is to acquire property to establish VA facilities to serve San Francisco Bay Area Veterans and to implement the VA's vision of "One VA" to better meet the needs of the Veteran population.[5]

It should be noted that, in 1996, in response to the federal screening process, the USFWS previously submitted a request for much of the same land area that is the subject of the VA's current request for property transfer. This property included the CLT colony and surrounding lands (including submerged lands), and was identified by USFWS as a proposed area for a national wildlife refuge. Thereafter, the USN, ARRA, and USFWS entered into negotiations to determine the appropriate amount of acreage for the proposed national wildlife refuge. During the 2000–2001 timeframe, USFWS and USN attempted to negotiate an MOU for the property transfer. In 2003, USN and USFWS reached an impasse regarding transfer of this property. Subsequently, the USN engaged in discussions with other federal entities that had a long-term need to acquire lands to support their mission. The VA ultimately expressed interest in the property and submitted a formal request for the property via a no-cost Fed-to-Fed property transfer of 549 acres in 2006. The submerged lands originally contemplated for transfer in the previous USFWS property request are not included in the proposed VA transfer, and are thus not in the action area for this project. However, a conservation easement for the submerged lands is proposed as a conservation measure in Chapter 7 of this BA.

3.3.2 PROJECT ACTION

The proposed action includes two components:

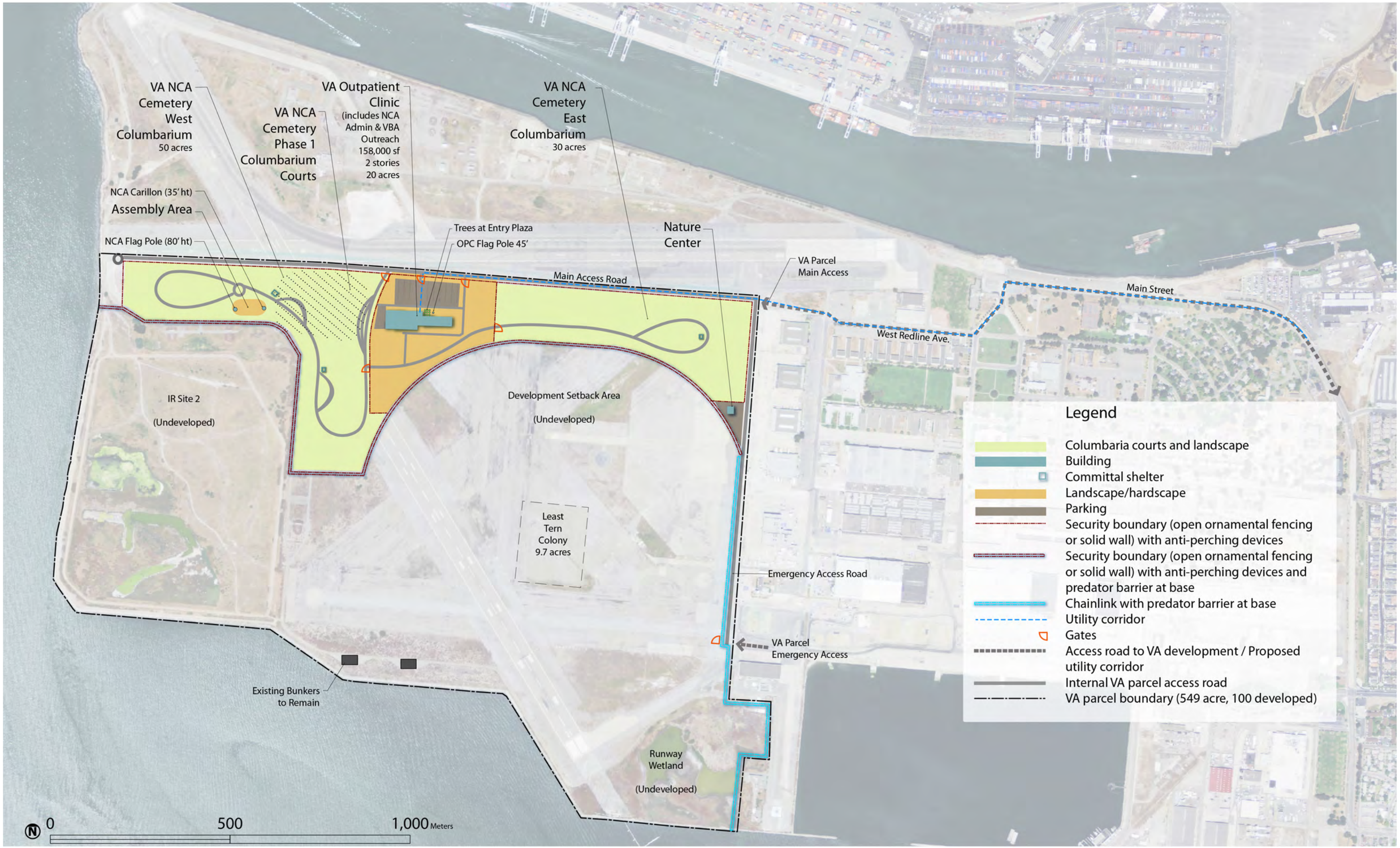
1) Property Disposal by USN: The disposal action would consist of a Fed-to-Fed property transfer of approximately 549 acres of property at NAS Alameda from USN to VA.

Acquisition of the property from the USN and development of VA Facilities on approximately 100 acres of the 549-acre transfer property and use of the property as follows:

a. Construction and operation of a VHA OPC which will also house mental health and substance abuse facilities (MH/SA), a VBA Outreach office and NCA Public Information Center and offices;

b. Construction and operation of a NCA cemetery, including administrative and maintenance facilities located within the OPC;

[5] The One VA vision stems from the recognition that Veterans think of the VA as a single entity, but often encounter a confusing array of programs such as those handling benefits, health care, and burials, that puts them through repetitive and frustrating administrative procedures and delays. For further information on the "One VA" vision, please go to: http://www.va.gov/JOBS/VA_In_Depth/oneva.asp



Proposed Veterans Affairs Facilities at Alameda Point

Figure 3
Site Plan

c. Construction and operation of a Nature Center to support CLT management and educational/ interpretive opportunities; and

d. Use of existing bunkers (**Figure 3**) for storage of emergency supplies and use of undeveloped area within 549-acre transfer parcel for emergency training exercises during CLT non-breeding season (August 16–March 31).

All of the proposed new development (with the exception of the use of existing bunkers (**Figure 3**) for storage of emergency supplies) would occur on the north end of the property, and provides a minimum development setback of 436 meters (approximately 1,430 feet) from the fenced CLT nesting site**.** Please see Chapter 7 for a description of the Development Setback Area and the analysis of this setback as a conservation measure. Additionally, the VA will construct a northern security fence on the south side of the main access road along the northern boundary of the 100-acre VA Development Area.

Table 1 includes proposed uses and corresponding square feet, acreage, and stories and height of buildings. **Figure 3** shows the location of each of the uses.

Table 1:
Development Proposed Within Action Area

Use	Building Area (Sq. Ft.)	Acres[1]	Stories	Bldg Height[2] (ft)
VHA Outpatient Clinic / NCA Office/VBA Outreach Office	158,000	20	2	40
NCA Cemetery (including committal service shelters)				
West Cemetery (Committal Service Shelters (non-habitable)	1,800	50	1	22
East Cemetery (Committal Service Shelters (non-habitable)	900	30	1	22
Nature Center	2,500	–	1	25
Total VA Development Area		100		
Access Road, including utility corridor (off-site portion)	N/A	6.1	N/A	N/A
TOTAL	**162,300**	**106.1**	N/A	N/A

Notes:
[1] Nature Center is included in acreage for East Cemetery area.
[2] Height to top of roof, including parapet if applicable.
[3] The first phase of the cemetery will be approximately 20 acres within the West Cemetery area and will include approximately 25,000 columbarium niches, assembly area, internal roadways and at least one committal shelter.
Sources: AECOM and SmithGroup

VHA Outpatient Clinic

The VA outpatient clinic would be located in a two-story, 158,000 square-foot building. The first floor would contain space for a pharmacy, lab area, radiology department, outpatient surgery, and would support functions including a canteen, clinic management and education center, administrative space, housekeeping, storage, and employee lockers, lounges and toilets. Mental health and substance abuse facilities are also proposed as part of the OPC. In addition to VHA uses, approximately 10,000 square feet of the first floor would be used by the NCA and VBA. The second level of the building would be used for specialty clinics and outpatient (ambulatory) care. A portion of the Ambulatory Care Space would

accommodate a jointly staffed and operated Ambulatory Surgery Clinic and other outpatient surgical functions with the United States Air Force. Furthermore, the US Coast Guard has expressed interested in operating a jointly staffed Women's Health Clinic serving female veterans, active duty Coast Guard and the Tricare population of Alameda County. **Figure 4: OPC Block Plan,** illustrates the interior layout of the proposed VA outpatient clinic.

The building height of the OPC would be a maximum of 40 feet, measured to top of roof, including parapet/mechanical screen. The typical height of a two-story OPC is approximately 32 feet; however, an additional 8 feet may be needed in order to accommodate a steeply sloped roof in order to make the building less usable by avian predators. A 45-foot-tall flagpole is proposed on the north side of the OPC. Possible exterior building materials could include concrete masonry units, glass fiber reinforced concrete, metal panels, metal panel systems, pre-cast concrete, and cement plaster.

A parking area with approximately 632 spaces would be located on the north side of the OPC, and would include a shuttle drop-off/pick-up area used by Veterans. The parking area would be lit during early morning and late afternoon hours, as needed for security. All lights in the parking area and along the access road would be directional and point downward using shielded valences/surrounds, and with anti-perching devices.

OPC Operations

Patient appointments are typically scheduled between the hours 8:00 a.m. and 4:30 p.m., Monday through Friday. Some VA staff may remain in the OPC after operating hours. There would be no emergency care and no overnight stays at the OPC. The normal staffing levels at the OPC are anticipated to be approximately 250 (both full-time and part-time staff). Based on data from other OPCs in the region, it is estimated that approximately 543 Veterans would be seen at the clinic each day.

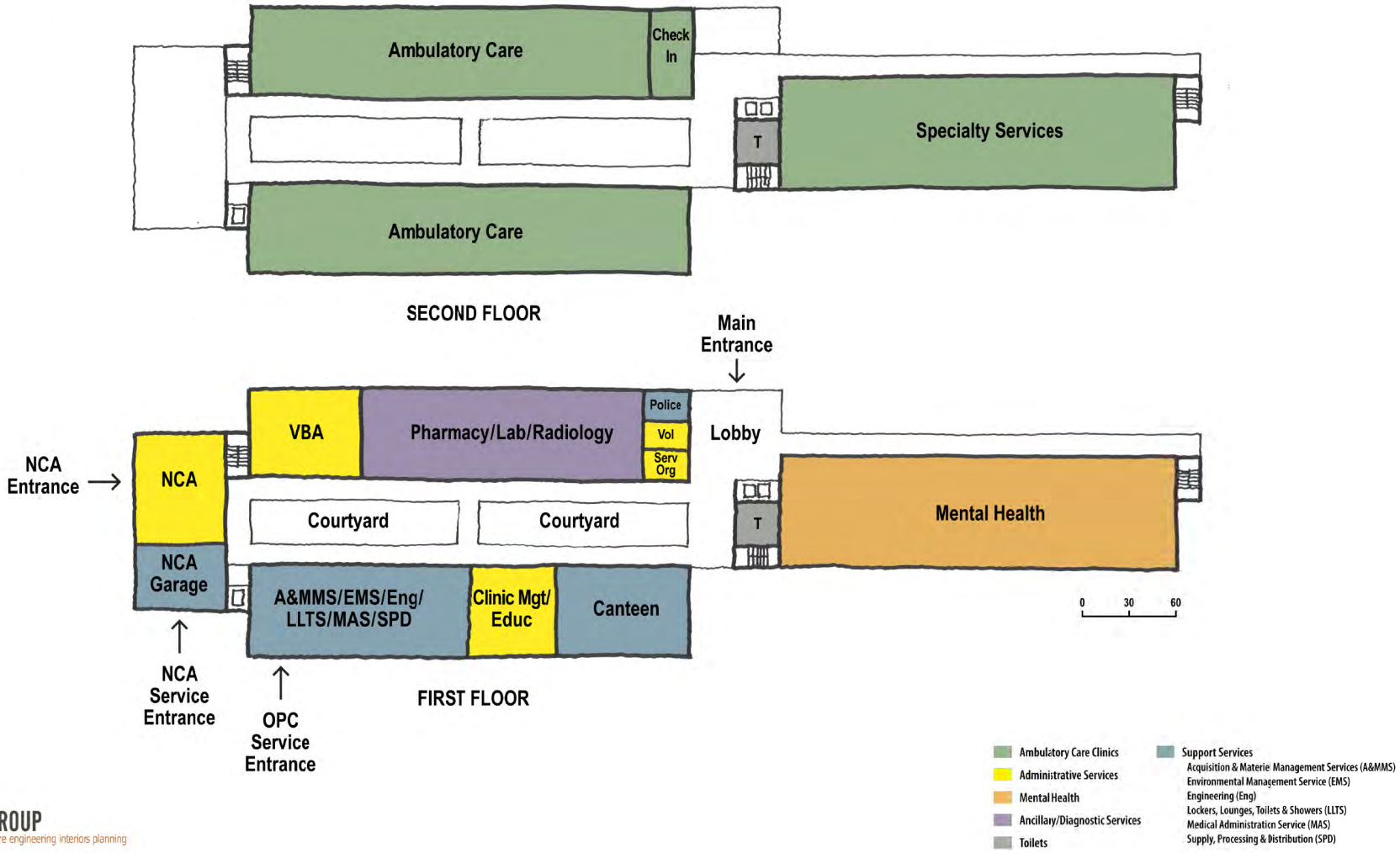
NCA Cemetery

NCA proposes the construction of a cemetery to provide cremation burial options to the San Francisco Bay Area veteran population. The cemetery at Alameda Point would be made up of several wall-like structures (columbarium walls) that contain niches for cinerary urns containing cremated remains (also called cremains). Five rows of niches typically make up a wall structure. Columbarium walls are organized into architectural groupings known as columbarium courts. While there is no uniform length for a columbarium wall, the maximum height of the wall typically does not exceed 7.5 feet so that guests may touch the inscription on the upper row of the niches. For the Alameda site, additional height may be needed in order to make the caps of the columbarium walls unusable by avian predators, but in any case will not exceed 10 feet in height.

In addition to columbarium walls, the cemetery would feature a Memorial Wall, which is very similar to a columbarium wall, except that the ashes are either co-mingled in a common vault (ossuary) or the remains are not available (e.g., lost at sea). Photos of columbarium walls at existing NCA cemeteries are included in **Appendix E**.

The cemetery would cover a total area of approximately 80 acres, split between a 50-acre site located on the northwest portion of the action area (West Cemetery) and a 30-acre site on the northeast portion (East Cemetery) (**Figure 3**). All road work and site improvements (i.e. roads, grading, and utilities) for the entire West Cemetery will be completed in Phase I. Site utilities, potable water, storm drains, etc., for the entire cemetery will be completed in Phase I. (See Section 3.3. for a discussion of phasing.)

VA Alameda Point
Preliminary Block Plan



SMITHGROUP
architecture engineering interiors planning

The cemetery layout, structures, roadways and other features would be developed in accordance with VA design and construction standards and specifications for national cemeteries. The main features of the cemetery are described in more detail below and their proposed location is shown on **Figure 3**. **Figure 5.1** depicts the Development Setback Area in relation to the CLT colony and **Figure 5.2** depicts the typical vertical elements that could be found in the NCA cemetery proposed in the VA Development Area.

Committal Service Shelters. Committal Service Shelters are for committal services. They are covered pavilion-like structures that provide shelter from the wind, rain and sun during

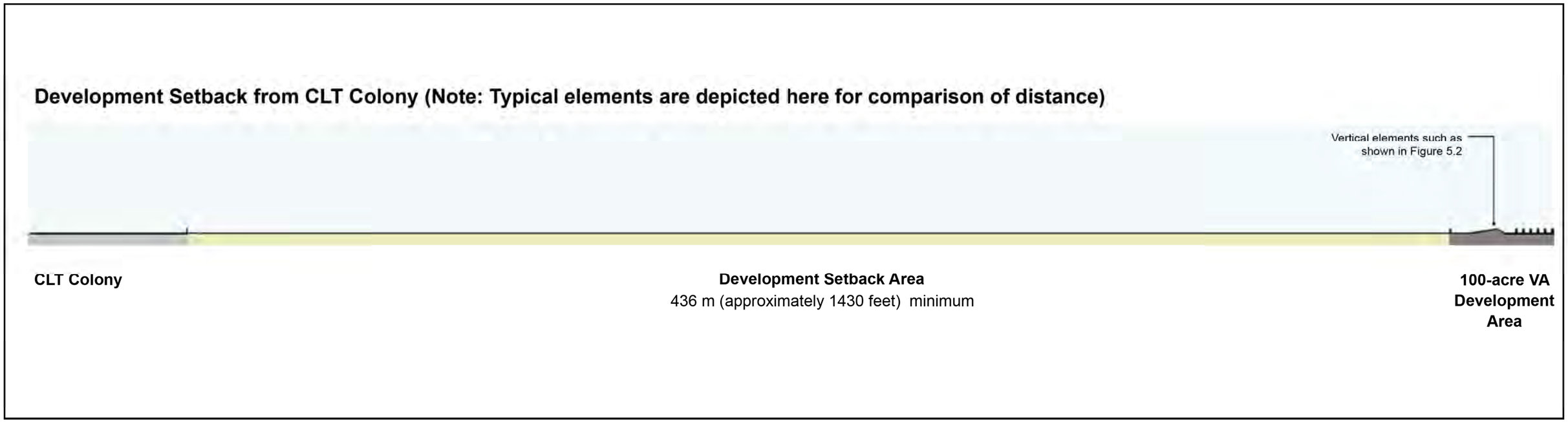
- inurnment services. These structures are typically about 900 square feet (25 feet by 36 feet), which is large enough to provide seating for approximately 10 to 20 people, with an additional paved area to provide standing room for others attending the service. Committal Service Shelters are typically supported on one side by a wall with a storage closet, and two to six columns on the other sides that allow for a 10-foot minimum vertical clearance. Three committal shelters are proposed; two in the West Cemetery area and one in the East Cemetery area, as shown in **Figure 3**.

  Building materials used for Committal Service Shelters are to be durable and relatively maintenance-free, such as brick, stucco, building stone, or cut masonry block; and are selected for life-cycle performance characteristics at a given project location. The roof structure is recommended to be standing seam metal (gabled or hipped) with gutters, leaders, downspouts, splash blocks, or underground pipe connection to ensure positive drainage from the structure. Open trusses, open column tops, or perching areas are not permitted due to the maintenance and cleaning required. Architectural features that invite birds or insects to nest are to be avoided. Photos of Committal Service Shelters at other NCA cemeteries are included in **Appendix E**. A conceptual profile showing the height of the Committal Service Shelters relative to other vertical features within the cemetery area is provided in **Figure 5.2**.

- *Committal Service Shelter Parking Areas.* A small parking area is proposed adjacent to each committal service shelter to accommodate the funeral cortege (funeral procession). This area is typically wide enough for parking approximately 30 vehicles (two rows of approximately 15 vehicles), and an open center lane for moving traffic.

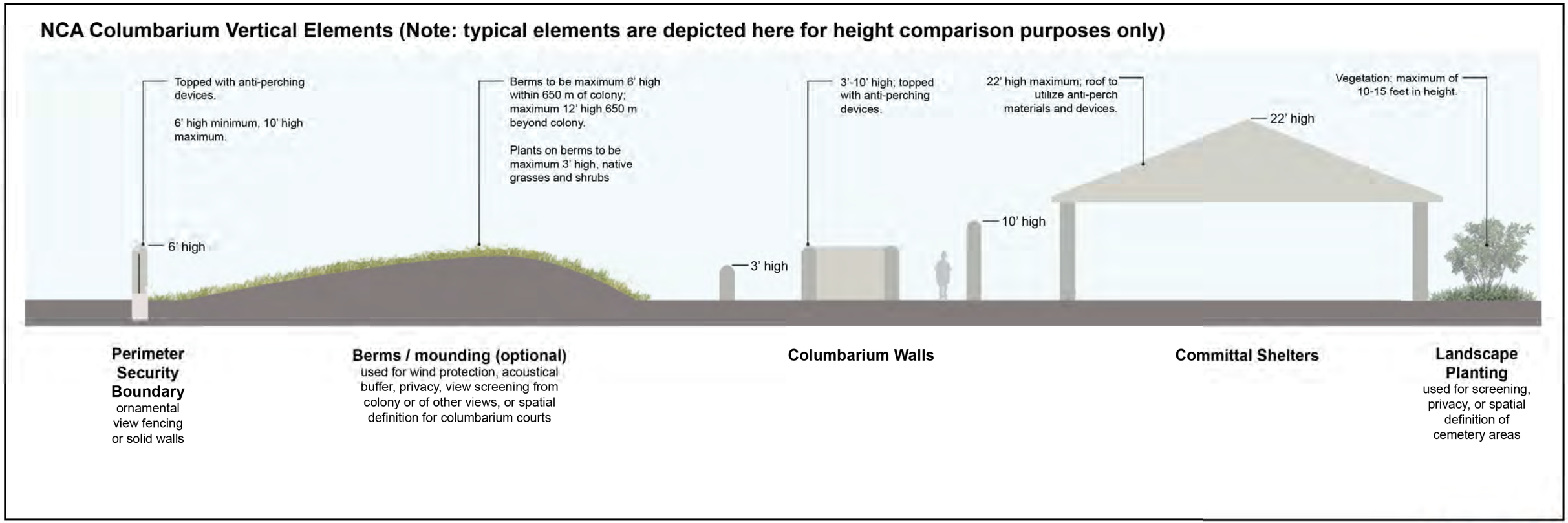
- *Assembly Area.* The Assembly Area is where special memorial services are held, such as those held on Memorial and Veterans Days. Based on memorial service events held at other VA cemeteries on these two days of the year, as many as 500 to 1,000 people may attend these memorial services; therefore, a public address system is sometimes used. These memorial events would be organized, staged and conducted in a manner that would direct noise away from the CLT colony. Other features of the assembly area include a memorial walkway, a flagpole with a maximum height 80 feet, and a carillon (bell tower) with a maximum height of 35 feet that plays bells or tones. The carillon would be located and operated such that it would not increase the ambient noise level at the CLT colony. Information regarding the proposed carillon is included in Appendix E and is analyzed in Chapter 7.

- *NCA Public Information Center.* The Public Information Center is a resource for visiting cemetery guests. As presented above in the OPC description, the Public Information Center would be located on the first level of the OPC building and would consist of offices, a reception area and dedicated restrooms.



Proposed Veterans Affairs Facilities at Alameda Point

Figure 5.1
Setback Element Comparison



Proposed Veterans Affairs Facilities at Alameda Point

Figure 5.2
Columbarium Element Comparison

- *NCA Maintenance Garage*. A small maintenance garage on the east side of the OPC building is proposed for NCA staff.

- *Cortege Assembly Area.* The Cortege Assembly Area is a pre-staging area adjacent to the area of the OPC occupied by the NCA. This area would consist of one or more lanes for vehicles to line up before proceeding to the Committal Service Shelter.

- Other elements including interior roadways, signage, landscaping, benches, trash receptacles and flower containers. Trash receptacles will be provided primarily for any garbage or refuge associated with floral remembrances brought to the committal shelters or niches. No picnicking is permitted within the cemetery area.

As part of military tradition, a military honors salute may be performed during inurnment ceremonies at the cemetery. The military honors salute is a ceremonial act performed at military funerals as part of the drill and ceremony of the Honor Guard. It consists of a rifle party firing blank cartridges into the air three times, and would take place at the committal service shelters. Noise monitoring of an actual honors salute was conducted within the action area (EDAW 2009, **Appendix D**). Based on the results of this noise monitoring, additional conservation measures were incorporated into this BA, which will ensure that noise levels generated by the honors salute will not affect listed species. The military honors salute will only occur at the proposed committal service shelters, all three of which are more than 1,650 feet (500 meters) from the CLT colony. The rifle party will direct firing away from the CLT colony, and solid structures such as committal service shelters or columbarium walls will shield the firing locations from the CLT colony. In addition, landscape berms may be created within the cemetery as a way to provide an additional noise and visual barrier. Berms greater than a distance of 650 meters from the CLT colony may be up to 12 feet in height. To further reduce the possibility of tall perches for avian predators, berms within 650 meters of the CLT colony will not exceed 6 feet in height.

NCA Operations

The cemetery would be open daily from sunrise to sunset, with possible expanded hours in the evening (until 8 p.m.) on Memorial and Veterans Days. No nighttime activities are proposed within the cemetery area; therefore, exterior lighting would be limited to the area adjacent to the VA building and parking area, and to illuminate the U.S. Flag near the assembly area. Only minimal lighting for monitoring the security of the site is proposed. It is anticipated that up to 7 NCA staff would be working at the Alameda Point facility on a daily basis. On average, it is estimated that up to four memorial or inurnment services per day would take place with attendance at these services ranging from five to 15 people.

Nature Center

In addition to the VA facilities, a nature center (**Figure 3**) is proposed to support the management of the CLT colony, predator management efforts, and may include other uses, such as an interpretive center supporting volunteer and public education programs. The nature center building is proposed to be a one-story structure with approximately 2,500 square feet of space and a maximum height of 25 feet. This center could replace the collection of buildings located near the CLT colony currently used by USFWS staff. It is intended that the Nature Center will be occupied by USFWS personnel (or other contracted staff/volunteers) involved with management of the CLT colony as well as the VA's Biological monitoring staff. Educational Programs for the public may be conducted by USFWS staff from this Center. The exterior materials of the nature center are not specified at this time; however, it would be designed to be complimentary to the proposed VA building. A small parking area, consisting of eight to ten parking spaces, is proposed adjacent to the nature center. A wall or fence would separate the Nature Center

building and parking area from the adjacent columbarium cemetery area. Use of a portion of the main VA parking area for special events and weekend activities may be possible if arranged in advance.

Nature Center Operations

The Nature Center would be in operation daily from sunrise to sunset, with possible expanded hours during CLT nesting season if circumstances require monitoring or management activities beyond the normal hours of operation.

Management of the California Least Tern

The VA will continue the management of the CLT colony upon formal transfer of the property. Ongoing CLT management/predator management programs would be funded by the VA operating budget for property maintenance and management. The details of the management program are discussed in Chapter 7.

Other VA Uses

As part of their role to respond to regional emergency management, VHA intends to utilize the VA facility at Alameda Point as a staging area for emergencies and natural disasters such as earthquakes and for storage of emergency supplies. The facility may also be used as a location for emergency training exercises during CLT non-breeding season (August 16–March 31).

The five bunkers located within IR Site 2 and the West Cemetery area, north and east of IR Site 2, are proposed to be removed. Two of the existing bunkers previously used for the storage of ordnance by the USN will be repurposed by the VHA for the storage of emergency supplies. These bunkers lie on the southern border of the action area adjacent to the waters of San Francisco Bay, outside of the area to be developed (**Figure 3**). The bunkers have been present on site for decades and will not be significantly modified as part of the project. The bunkers will be accessed using the existing paved runway surface, and provisioned and maintained outside of the CLT breeding season only.

3.3.3 TIMING AND DURATION

An estimated construction schedule for the VA Development Project is provided in Table 2 below. It is currently estimated that construction of the OPC building and nature center would take approximately 18 months to complete, including the time for initial site preparation.

The cemetery would cover a total area of approximately 80 acres, split between a 50-acre site located on the northwest portion of the action area (West Cemetery) and a 30-acre site on the northeast portion (East Cemetery) (**Figure 3**). All road work and site improvements (i.e. roads, grading, and utilities) for the entire West Cemetery will be completed in Phase I. Site utilities, potable water, storm drains, etc., for the entire cemetery will be completed in Phase I.

The build out of the NCA cemetery will be phased based on actual demand. It is currently estimated that there will be a demand for approximately 2,500 niches per year. NCA phasing is typically based on 10-year increments. Therefore, it is envisioned that approximately five acres of the cemetery would be developed every ten years. The required acreage would vary according to layout and design. Demographic forecasts also suggest that demand will decrease in the years ahead as the veteran population declines. At Alameda Point, it is expected that the western portion of the cemetery would be developed first, and the first phase of construction would involve approximately 15 to 20 acres that would accommodate approximately 25,000 niches and support facilities, including two committal service shelters, internal roads, assembly area and landscaping. The remainder of the site would remain

undeveloped until there is a need for additional columbarium niches. The first phase of cemetery construction is estimated to take 6 to 18 working months to complete.

Conceptual site renderings that depict the proposed OPC, nature center, internal and access roads, and the first phase of the cemetery development are included in **Appendix G**.

Table 2: VA Development Project Estimated Construction Schedule by Phase
<u>Phase I: Utility and Soils Import/Site work (On and Off Site)</u> • Contract Award: Sep 2013 • Completion: Dec 2014 (Restricted work Apr-Aug due to endangered species nesting in area*) • Mid Point of Construction: Apr 2014 <u>Phase II: OPC and Columbarium</u> • Contract Award: Aug 2014 • Completion: Dec 2016 (Restricted work Apr-Aug each year due to endangered species nesting in area*) • Mid Point of Construction: Oct 2015
Notes: * Restricted Activities during April 1 thru August 15 (or when CLTs are present at the Alameda Point Colony): - Pile driving - Pavement demolition - Use of impact tools (i.e. hydraulic breakers, jack hammers, scarafiers, compactors) - Materials or equipment being brought onsite during evening or nighttime hours (dusk to dawn)

3.3.4 ACCESS, STAGING, CONSTRUCTION EQUIPMENT AND TECHNIQUES

- Access to the VA development proposed within the action area will be from local streets to the east, including existing streets within the former NAS Alameda (**Figure 3**). All construction staging areas will be located within the 100-acre VA Development Area. Contractor staging for construction and the offsite utility corridor will be in the East Cemetery area.

- The area where buildings are proposed will be stripped of vegetation, organic soils, and any debris. In areas covered by runway concrete within the VA Development Area, the pavement and any base rock may be removed and reused as base materials. Construction equipment that will be used may include hydraulic breakers, scarifiers, dozers, dump trucks, front end loaders, graders, pile drivers, compactors, and rollers.

- It is anticipated that 6 months of mass grading will be necessary for initial project construction, including installation of infrastructure and roadways. A second construction season will be needed for completion of the buildings and the installation of landscaping. Grading will employ the use of scrapers, dump trucks, and bulldozers.

- Dewatering and a geotextile layer may be required for base stability where excavations extend to near the shallow water table.

- Based on preliminary design recommendations, it is anticipated that the OPC building will have a concrete pile foundation. Structural concrete mats could be a viable alternative to driven piles. Conventional shallow spread footings could be considered for very lightly loaded structures founded on soils that are improved in situ. Construction of the columbarium will require the use of concrete mixer trucks, pavers, pick-up trucks, and mobile power generators.

3.4 INTERDEPENDENT AND INTERRELATED ACTIONS

Interdependent and interrelated actions are part of a larger action that have no independent utility apart from the proposed action under consultation, and depend on the larger action for their justification. In other words, the interdependent and interrelated actions would not occur *but for* the action under consultation. Interdependent and interrelated actions for the proposed project include the installation of various utilities (e.g., sewer, water, gas, and electric lines) and road improvements that extend beyond the boundaries of the transfer parcel and are considered off-site improvements. The off-site alignments are proposed to follow the route shown in **Figure 3**, which fall within existing road alignments and paved surfaces, which have been utilized and in operation for decades. Additionally, these areas contain no habitat for listed species and are well removed from sensitive species habitat by approximately 790 meters. Given these conditions, respective utilities and road improvements would not affect the results of the analyses presented in this BA because there would be no additional take of listed species.

4 VEGETATION COMMUNITIES AND WILDLIFE HABITATS WITHIN THE ACTION AREA[6]

This chapter describes the methods used and the results of reconnaissance surveys to determine the vegetation communities and wildlife habitats present within the action area. For each vegetation community, a general description is provided followed by a site-specific description of the community in the action area.

4.1 ACTION AREA

For the purposes of this BA, the action area is the same land area (not including submerged lands) of the proposed USFWS wildlife refuge (549 acres) and the proposed off-site utility corridor (**Figure 1**). According to historical maps of the island, the majority of the action area was open water until at least 1932. The area was filled by at least 1945, creating a land area similar to what is present today.

4.1.1 LITERATURE SEARCH, SURVEY DATES AND SURVEYING PERSONNEL

Sources used in the preparation of this assessment include information gained from previous field surveys (e.g., Tetra Tech, Inc. 2004; Euing 2007, 2008, and 2009; Battelle and BBL, Inc. 2008; Harvey 2009) and records from the biological literature (e.g., Holland 1986; Hickman 1993; CDFG 2010; CNPS 2009). A complete list of references is included in **Chapter 9.0, References**. The areas potentially affected by this project are in the USGS Oakland West 7.5-minute quadrangle. A USFWS species list for eight quadrangles was generated on August 24, 2010 (USFWS 2010). Records in the CNDDB were reviewed for Alameda County and the following eight quadrangles:

- San Quentin
- Richmond
- San Francisco North
- Oakland West
- Oakland East
- San Francisco South
- Hunters Point
- San Leandro

A reconnaissance-level site assessment was conducted on February 19, 2008. The action area, with the exception of IR Site 2,[7] was surveyed by vehicle or on foot. Cursory observations of IR Site 2 were made with binoculars from the top of the bunkers just east of the IR Site 2 boundary. In addition, Tetra Tech's wetland delineation report with vegetation descriptions and maps for IR Site 2 (Tetra Tech 2004) was reviewed. All distinct habitat types were identified, and all plant and wildlife species observed or detected by sign were recorded.

This survey was intended as an initial evaluation of on-site habitat types and an assessment of the potential for occurrence of federally listed plant and wildlife species based on habitat availability, habitat quality, and proximity to known populations. Focused wildlife surveys or botanical surveys were not conducted as part of this reconnaissance-level site evaluation.

[6] Habitat descriptions excerpted from the Biological Resources Report for the Veterans Affairs, Facilities at Alameda Point Former NAS Alameda, California, prepared by EDAW (2008a).

[7] IR Site 2 was not surveyed because of access restriction due to hazardous material waste conditions.

A preliminary mapping of wetland vegetation was conducted on February 20, March 3, March 10, and April 10, 2008 (EDAW 2008b). Vegetation communities and potential wetland areas were mapped using aerial photographs. Observations of vegetation, soils, and hydrology were recorded in the field on maps and in field notes (EDAW 2008b). The wetland delineation has not been verified by the U.S. Army Corps of Engineers (USACE).

4.1.2 RUDERAL – DISTURBED VEGETATION

Ruderal-disturbed habitat (ruderal-disturbed vegetation and ruderal-disturbed paved) is typical of disturbed lands on which the native vegetation has been completely removed by human activities such as grading, disking, cultivation, or other surface disturbances. Disturbed areas, if left undeveloped, may become recolonized by exotic species as well as species that are native to the region. The majority of the action area sits on fill; however, the availability of proper soil conditions for the establishment of many native plants is questionable.

Approximately 27 acres of ruderal-disturbed vegetation (**Figure 6**) is found in the action area and is characterized by large expanses of nearly solid iceplant (**Figure B-5**) to large patches of iceplant interspersed with bare ground. Other species present are rosy iceplant (*Drosanthemum floribundum*) and wooly sunflower (*Eriophyllum* sp.). In the upland areas, ruderal-disturbed habitat intergrades with nonnative grassland habitat. In these areas, patches of iceplant are interspersed with grasses and forbs typical of the nonnative grassland habitat described below (**Figures B-13 and B-17**). On site, ruderal-disturbed vegetation most closely conforms to the iceplant series as described by Sawyer and Keeler-Wolf (1995). Ruderal-disturbed vegetation on site would be classified as upland following Cowardin et al. (1979).

Wildlife species generally associated with ruderal-disturbed lands include raccoon (*Procyon lotor*), opossum (*Didelphus virginianus*), European starling (*Sturnus vulgaris*), and mourning dove (*Zenaida macroura*). Killdeer (*Charadrius vociferus*) are also often associated with open disturbed substrates. Burrowing owls (*Athene cunicularia hypugaea*) may nest in disturbed habitats, fallow fields, and on the margins of cultivated areas if they are characterized by short vegetation and ground squirrel activity. Long-billed curlew (*Numenius americanus*) can be associated with open areas with clumps of vegetation. Wildlife species that feed on seeds or other parts of the vegetation, including finches, goldfinches, sparrows, and a variety of rodents, occur in this habitat type. Insects present in disturbed habitats provide food for species such as western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), red-winged blackbird (*Agelaius phoeiceus*), loggerhead shrike (*Lanius ludovicianus*), horned lark (*Eremophila alpestris*), and western fence lizard (*Sceloporus occidentalis*). This community can support a variety of predators, including snakes, various raptors, and red fox (*Vulpes vulpes*).

The action area's close proximity to the waters of San Francisco Bay makes areas of ruderal-disturbed paved habitat on site suitable for shorebirds, such as California least tern and Caspian tern (*Sterna caspia*), which typically nest on gravel or sandy substrates.

Proposed Veterans Affairs Facilities at Alameda Point

Figure 6
Biotic and Abiotic Features

4.1.3 NONNATIVE GRASSLAND

Nonnative grassland is generally found in open areas in valleys and foothills throughout coastal and interior California (Holland 1986). Nonnative grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, dominate this vegetation type, probably because of human disturbance. Scattered native grass and wildflower species, representing remnants of the original vegetation, may also be common.

Within the action area, nearly 149 acres of nonnative grassland are in the upland areas across the site (**Figure 6**). The nonnative grassland is a patchwork of perennial and annual grasses that intergrades or forms ecotones with ruderal-disturbed habitat, seasonal wetlands, and salt marsh (**Figures B-13 and B-18**). Highly scattered coyote brush is also present. Characteristic perennial and annual grasses commonly found include tall fescue (*Festuca arundinacea*), velvet grass (*Holcus lanatus*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), Bermuda grass, saltgrass, Italian ryegrass (*Lolium multiflorum*), soft chess (*Bromus hordeaceus*), pampas grass (*Cortaderia selloana*), and annual bluegrass (*Poa annua*). Common forbs found include cranesbill (*Geranium dissectum*), red-stemmed filaree, vetch (*Vicia* sp.), English plantain (*Plantago lanceolata*), iceplant, curly dock (*Rumex crispus*), and field bindweed (*Convolvulus arvensis*). On-site, nonnative grassland does not conform to any specific series as classified by Sawyer and Keeler-Wolf (1995) and would be classified as an upland following Cowardin et al. (1979).

Grassland habitats, both native and nonnative, attract reptiles and amphibians such as alligator lizard (*Gerrhonotus* spp.), western fence lizard, and Pacific slender salamander (*Batrachoseps attenuatus*), which feed on invertebrates found within and beneath fallen logs in the vegetation community. This habitat also attracts seed-eating and insect-eating species of birds and mammals. California quail (*Callipepla californica*), mourning dove, and western meadowlarks are a few granivores that nest and forage in grasslands. Insectivores such as the western scrub-jay (*Aphelocoma californica*), barn swallow (*Hirundo rustica*), and northern mockingbird (*Mimus polyglottos*) use the habitat for foraging only. Grasslands are important foraging grounds for insectivorous bats such as myotis (*Myotis* spp.) and pallid bats (*Antrozous pallidus*).

A large number of other mammal species, such as the California vole (*Microtus californicus*), deer mouse (*Peromyscus maniculatus*), Botta's pocket gopher (*Thomomys bottae*), Beechey (California) ground squirrel (*Spermophilus beecheyi*), red fox, striped skunk (*Mephitis mephitis*), and black-tailed jackrabbit (*Lepus californicus*), also forage and nest or den within grasslands. Small rodents attract raptors such as owls, which hunt at night, as well as day-hunting raptors such as the red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), and white-tailed kite (*Elanus leucurus*) among others. Burrowing owls nest in grassland habitats characterized by short vegetation and ground squirrel activity. Some amphibian species that breed in adjacent ponds or wetlands may also aestivate (or spend the summer) in small mammal burrows within portions of these habitats.

4.1.4 SEASONAL WETLAND

Although not specifically described in Holland (1986), seasonal wetlands support annual and perennial native and nonnative wetland indicator plant species. This plant association typically resembles a wetland community only following the wet season; it dries up rapidly with the onset of summer and the wetland indicator species go dormant. During the dry season, such sites may not be readily recognizable as wetland species go to seed and typical upland grasses and forbs become established.

Nearly 33 acres of seasonal wetlands occur on-site where water ponds and soils remain saturated during the growing season (**Figure 6**) (EDAW 2008b). Seasonal wetlands are found mainly in the tarmac area

between the runways of the former airfield (**Figure B-19**). Plant species found in seasonal wetlands on-site include nonnative species such as tall fescue, velvet grass, Bermuda grass, Mediterranean barley, curly dock, annual bluegrass, Italian ryegrass, and loosestrife (*Lythrum hyssopifolia*). Native species present include common nut-sedge (*Cyperus eragrostis*), Baltic rush (*Juncus balticus*), and toad rush (*Juncus bufonius*). The on-site seasonal wetland does not conform to any specific series as classified by Sawyer and Keeler-Wolf (1995) and would be classified as estuarine seasonally flooded wetland following Cowardin et al. (1979).

Freshwater marsh and seasonal wetland habitat are very productive for wildlife in that they offer water, food, and cover for a variety of species. Reptiles and amphibians that commonly occur in this habitat include western aquatic garter snake (*Thamnophis couchii*), pacific treefrog (*Psuedacris regilla*), and American bullfrog (*Rana catesbeiana*). Red-winged blackbird, common yellowthroat (*Geothlypis trichas*), and killdeer often use these areas for foraging and nesting. Snowy egret (*Egretta thula*), green heron (*Butorides virescens*), black-crowned night-heron (*Nycticorax nycticorax*), and mallard (*Anas platyrhynchos*), as well as numerous migrating shorebirds also forage in this habitat, feeding on small fish, amphibians, and reptiles. Mammals commonly present in this habitat include California meadow vole, raccoon, striped skunk, and gray fox (*Urocyon cinereoargenteus*). This habitat provides important foraging and drinking areas for aerial and ground feeding insectivorous bats, such as *Myotis* species.

4.1.5 NORTHERN COASTAL SALT MARSH

Northern coastal salt marsh consists of highly productive, herbaceous, and suffrutescent perennials up to 4 feet tall. Usually found along sheltered margins of bays, lagoons, and estuaries, this plant community develops a dense to moderate cover. Subject to continuously fluctuating salinity and water levels, northern coastal salt marsh is typically dominated by a low diversity of salt tolerant hydrophytes. Northern coastal salt marsh occurs extensively in San Francisco Bay, Morro Bay, Elkhorn Slough, Humboldt Bay, and Tomales Bay, and extends from near Point Conception to the Oregon state line (Holland 1986).

Within the action area, northern coastal salt marsh is located within the Runway Wetland, IR Site 2, and the tarmac area (**Figures 6, B-1, B-2, B-5 – B-10 and B-14**). A little over 24 acres are found in these three areas. On-site, the salt marsh is dominated by pickleweed and saltgrass. Characteristic nonnative species include cranesbill, red-stemmed filaree, Mediterranean barley, bird's-foot trefoil, red sandspurry (*Spergularia rubra*), and bull thistle, among others. Northern coastal salt marsh conforms to the pickleweed series and saltgrass series as described in Sawyer and Keeler-Wolf (1995) and would be classified as estuarine intertidal emergent persistent wetland following Cowardin et al. (1979).

Both migratory and resident bird species utilize this habitat. Resident species like the American avocet (*Recurvirostra americana*) and black necked stilt (*Himantopus mexicanus*) use northern coastal salt marsh for nesting and breeding, while western sandpipers (*Calidris mauri*), marbled godwits (*Limosa fedoa*), and long-billed dowitcher (*Limnodromus scolopaceus*) are migratory shorebirds that use salt marsh habitat for resting and feeding. The savannah sparrow (*Passerculus sandwichensis*) nests in pickleweed and peripheral halophytes in upper marsh and upland transitional zones and the salt marsh common yellowthroat (*Geothylpis trichas sinuosa)* nests in tidal and nontidal brackish and freshwater marshes primarily in the South Bay, south of the project site. Non-breeding birds, including larger shorebirds, swallows, blackbirds, and other species roost in large numbers in salt marsh, while several species of ducks, and in a few locations, herons and egrets, also nest in salt marshes. Rails nest in cordgrass, denser stands of pickleweed, and marsh gumplant, particularly in the lower marsh zone where numerous small tidal channels are present, in both salt and brackish tidal marshes. The California vole (*Microtus californicus*) occurs here as well, and is often the most common small mammal. Salt marshes may also be utilized by fishes for breeding, rearing, and foraging for numerous insects and aquatic invertebrates.

4.1.6 RIPRAP

Almost five acres of riprap dominates the boundary between the terrestrial habitat on-site and the aquatic habitats that lie off-site (**Figures 6, B-1 – B-5, B-11, B-12, B-16 and B-22**). In general, this habitat consists of large rocks. There is very little or no vegetation on this habitat, although it is a location at which bay algae, other organic debris, flotsam, and jetsam will collect. This habitat may be used by invertebrates and smaller mammals and birds for cover and foraging. Larger birds—such as California brown pelican and double-crested cormorant (*Phalacrocorax auritus*)—may utilize the rock riprap for roosting. On the aquatic side, subtidal portions of the riprap may be used as a refuge and grazing substrate for fishes and other aquatic animals.

5 STATUS OF THE SPECIES IN THE ACTION AREA

This chapter summarizes relevant local information on the biological requirements and population viability of the threatened and endangered species known to occur or that could potentially occur in the action area. To this end, AECOM assessed potential occurrences of federally listed species through a review of existing documentation. Examples include reviewing the CNDDB database for specific information on documented observations of federally listed species in the Oakland West USGS 7.5-minute quadrangle, the USFWS species list for the quadrangle, and various publication, studies and reports previously prepared for the proposed wildlife refuge, and the adopted Reuse Plan. Furthermore, AECOM biologists examined species occurrences in eight adjacent quadrangles (**Appendix A**). This larger area was reduced further by applying a 5-mile radius from the action area and determining the federally listed plant and animal species within this area (**Appendix A**).

This BA evaluates the proposed project action's effects on California least tern and western snowy plover, both of which are known to occur or have some potential to occur at Alameda Point.

5.1 WESTERN SNOWY PLOVER

The western snowy plover (WSP) is a small, pale shorebird that measures 6 inches in length. The species forages above the mean high-water line of coastal beaches gathering invertebrates from kelp, marine mammal carcasses, the beach sand surface, or low foredune vegetation.

The Pacific Coast population nests on barren to sparsely vegetated sandy beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, salt-evaporation ponds, and infrequently on bluff-backed beaches. In Baja California, barrier beaches, salt flats, and salt-evaporation ponds are primary breeding sites. Winter habitat is primarily coastal, consisting of beaches, tidal flats, lagoon margins, and salt-evaporation ponds (USFWS 2007b).

Only about 21,000 individual snowy plovers inhabit the U.S., with an estimated 2,480 birds on the Pacific Coast in 2006. Of this total, 2,231 adults are estimated in coastal California and San Francisco Bay (USFWS 2007b). Along the Pacific and Gulf coasts, the population is shrinking due to habitat degradation and expanding recreational use of beaches. Mechanical raking to remove garbage and kelp on California beaches makes them unsuitable for nesting and removes food resources. In addition, humans and dogs disturb roosting and nesting birds and red foxes, and other mammals predate plover eggs and chicks.

Western snowy plovers have been observed in past years on Bay Farm Island near the Oakland Airport (CDFG 2010); the last recorded observation was in 1979. Since then, western snowy plovers have been observed within the action area during the bird count surveys by Friends of the Alameda Wildlife Refuge (FAWR) biologists. Since the inception of the twice-monthly FAWR bird counts in the spring of 2004, one western snowy plover was observed in July of 2004 (Hurt 2006) and one in September of 2006 (Euing 2007). Western snowy plovers were observed nesting within the Alameda Point CLT colony during at least 2 years in the early 1980s (Feeney 1994, Feeney and Collins 1993, USN 1999, USFWS 2000). Given the past and recent occurrences within the action area and presence of suitable habitat, the western snowy plover is likely to continue to use the action area as a stopover site during migration, and potentially, as a nesting location. Suitable nesting habitat is located within the CLT colony and other tarmac areas, and suitable foraging habitat occurs in the intertidal mudflats of the Runway Wetland and the West Wetland within IR Site 2.

5.2 CALIFORNIA LEAST TERN

The CLT is the smallest tern in North America with a length of 9 inches and a wingspan of 20 inches (Sibley 2003). It forages over open water or protected bays, skimming low over the water or diving for small fish (Farrand 1983). The CLT breeds on sandy beaches along the coast of California south to Mexico, and winters in Mexico, Central America, and south to South America. The majority of current nesting colonies and the population are found in southern California, with smaller populations in the San Francisco Bay Area and in Baja California. Within the San Francisco Bay region, as of 2009, the largest colony exists at Alameda Point (314-318 nests) with much smaller least tern colonies found at four additional sites (**Figure 7**): Hayward Regional Shoreline (48–72 nests), Montezuma Wetlands (11-27 nests), Eden Landing (1 nest), and the Napa Sonoma Marsh Wildlife Area (42-52 nests). A fifth site, the Pittsburg Power Plant, had no nesting attempts by CLT in 2009 (Marschalek 2010).

Much of the CLT's habitat has been lost due to human development and disturbance, and there are likely to be few opportunities to create or restore habitat to increase the number of nesting sites (USFWS 2006, Thompson et al. 1997). The species was listed as endangered by the USFWS in 1985, when the total California population had declined to approximately 600 breeding pairs in the 1970s due primarily to habitat loss (i.e., development and recreation; USWFS 1985). Subsequent management of nesting sites, including fencing and predator control, contributed to an increase in the population to approximately 7,103 pairs in 2005 (USFWS 2006). Because the regional population size has increased, but all populations still require intensive management for persistence, the USFWS recommended downlisting the species to threatened (USFWS 2006).

CLTs migrate to, court, breed, roost, raise young, and nest within the action area and have been documented in the action area since at least 1976, when the Alameda Naval Air Station was still operational. From 1976 to 2001, the CLT colony has been monitored and managed by a number of entities partnering with the USN including Laura Collins (1979–1999) with help from the Golden Gate Audubon Society and FAWR, M.L. Elliot and W.J. Sydeman of Point Reyes Bird Observatory (2000–2001), and USFWS (2002–present). Current CLT management operations include the protection, monitoring, and demographic study of the population. CLTs have mainly used an area between two runways in the action area, now known as the 'tern colony' (**Figure 2**) for nesting. In 1981, an electric fence was installed to deter predators and a small metal mesh barrier fence to prevent chicks from straying outside the colony and being exposed to wheeled vehicular traffic (Euing 2009). At the same time, this degraded asphalt area was enhanced with pea gravel, soil, sand, and oyster shell to improve the breeding site (**Figure B-20 in Appendix B**). This fenced area was generally triangular and occupied nearly 6 acres (Euing 2009).

In 2004, the triangular fenced area was enlarged to 9.7 acres, developed into a rectangular shape with rounded corners (**Figure 2**), and moved north slightly to avoid a storm drain and tall vegetation. Established vegetation within the fenced area consisted mainly of white sweetclover (*Melilotus alba*) and cut leaf plantain (*Plantago coronopus*). The new fence that was installed at this time was not electric, but a 4-foot-tall chain link fence with fine mesh netting at the base to prevent chicks from escaping (**Figure B-21 in Appendix B**). In addition, substrate—consisting of lighter-colored sand, small rocks, shells, and more oyster shell—was laid in the new areas (Euing 2009).

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Figure 7: San Francisco Bay Area 2009 California Least Tern Breeding Colonies

CLTs have nested entirely within the fenced tern colony with the exception of two instances of terns attempting to nest outside of the fenced area. The latest nesting activity outside the fenced area was in 2007 on the tarmac, approximately 200 feet south of the southwest corner of the fenced colony (Euing 2008). No nesting attempts were made outside of the fenced colony in 2008 (Euing 2009). Terns also fledge to and roost outside of the fenced colony in the areas up to 650 feet (198 meters) away to the west, up to 1,700 feet (518 meters) away to the south, and up to 200 feet (61 meters) to the north of the colony (Euing 2008).

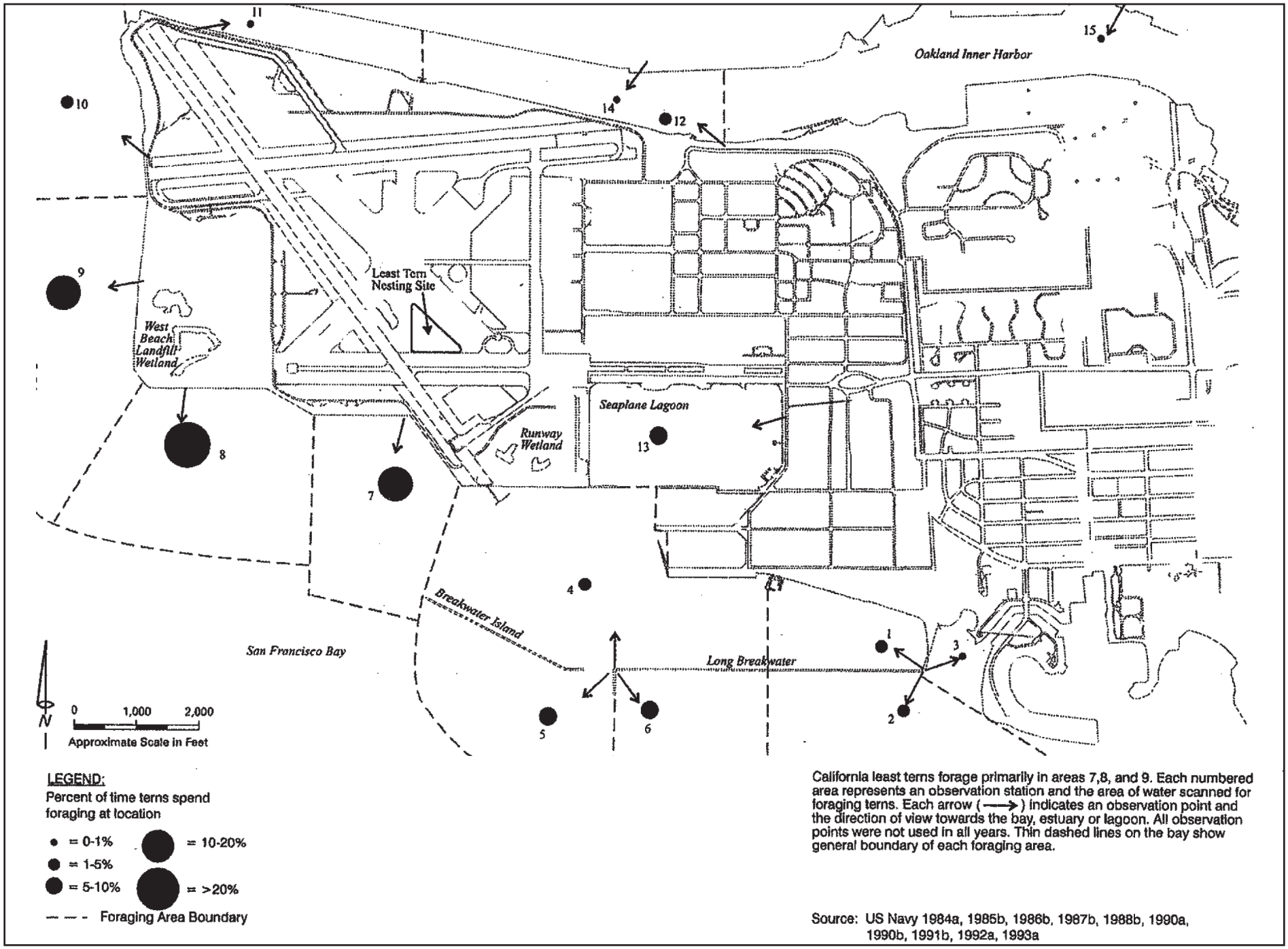
CLTs use the adjacent open waters of San Francisco Bay, the nearby Seaplane Lagoon, and the Oakland Inner Harbor (**Figure 1**) to forage. CLT foraging primarily occurs south and west of the colony, and the CLT may fly several miles over the Bay in search of fish. **Figure 8** provides a visual summary of foraging locations based upon data collected between 1984 and 1993. This figure identifies areas to the south and west as the primary CLT foraging areas (USN 1999). The Oakland Inner Harbor, although quite close to the colony, constitutes a relatively minor foraging area for CLT (Collins and Feeney 1995, USFWS 2000, Tetra Tech 2006). Fledgling CLT have been observed foraging in the waters immediately offshore directly south of the colony, as well as within Seaplane Lagoon. Fledglings have also been observed foraging off site approximately 2.25 miles southeast of the colony in Crab Cove, and further southeast along the Alameda shoreline (Elliott, pers. comm. 2009).

The Alameda Point colony is not the largest colony in California, but it is the largest north of San Luis Obispo and is hypothesized to be a source population contributing to the overall state and national population (Euing 2010, Thompson et al. 1997, Caffrey 2005). According to the 2009 annual CLT statewide breeding survey conducted by CDFG, there were 39 monitored CLT colonies in California, and one in Arizona (Marschalek 2010). Of these 40 monitored CLT colonies, the Alameda Point colony was the seventh largest in terms of breeding pairs, but it produced the second highest number of fledglings (Marschalek 2010). In 2009, the Alameda Point colony had 346 nesting attempts, 318 breeding pairs, and 537 nestlings known to have hatched from 669 eggs (Euing 2010). The Alameda Point colony represented approximately 4.3% of the statewide breeding pairs in 2009 but produced between 11.8% and 26.5% of statewide fledglings (as a percentage of all fledglings reported statewide). This large range of potential percentages is because the overall number of statewide CLT fledglings in 2009 was listed as between 1,734 and 2,132, and the Alameda Point colony generated between 252 and 461 fledglings (Marschalek 2010). Euing (2010) gives an estimate of 357 fledglings at Alameda in 2009, which is the average of the minimum and maximum numbers. Since CLT were first documented on site in 1976, excepting the years 1979, 1983, and 2006 to 2009, the numbers of nesting pairs of least terns steadily increased at Alameda Point (**Figure 9**; excerpted from Euing 2010). Data on the Alameda CLT colony during the 2010 breeding season are not yet available.

The USFWS uses a fledglings-per-breeding-pair ratio criteria of 0.70 set by Fancher (1992) as the minimum amount needed for an increasing tern population. **Figure 10** shows the breeding success of the tern colony from 1976 to 2008 (excerpted from Euing 2009[8]). A ratio of 1.12 (minimum of 0.79 to maximum of 1.45) fledglings-to-breeding pair ratio was estimated for the 2009 breeding season (Euing 2010). The ratio of fledglings-to-breeding pairs has been at or above the 0.70 minimum ratio for an increasing population in 20 of the 31 years since 1976 for which data are available[9]. The fledgling-to-breeding pair ratio has also remained high when compared to other California breeding populations (Euing 2010, Marschalek 2010).

[8] The data lines do not connect because there is no data for years in between.

[9] The fledgling-to-breeding pair ratio for the Alameda CLT colony was not recorded in 1976, 1979, or 1982. Data on the 2010 breeding season are not yet available.



California least terns forage primarily in areas 7,8, and 9. Each numbered area represents an observation station and the area of water scanned for foraging terns. Each arrow (⟶) indicates an observation point and the direction of view towards the bay, estuary or lagoon. All observation points were not used in all years. Thin dashed lines on the bay show general boundary of each foraging area.

Source: US Navy 1984a, 1985b, 1986b, 1987b, 1988b, 1990a, 1990b, 1991b, 1992a, 1993a

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Figure 8
California Least Tern Foraging Areas (1984-1993)

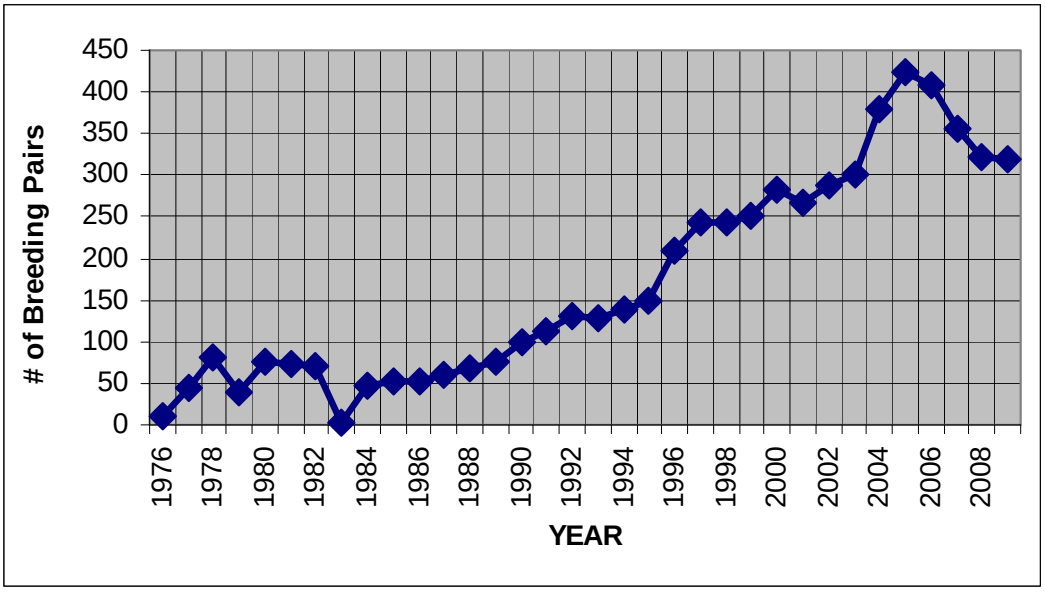


Figure 9: Estimated Breeding Pairs of California Least Terns from 1976 to 2009 at Alameda Point (excerpted from Euing 2010)

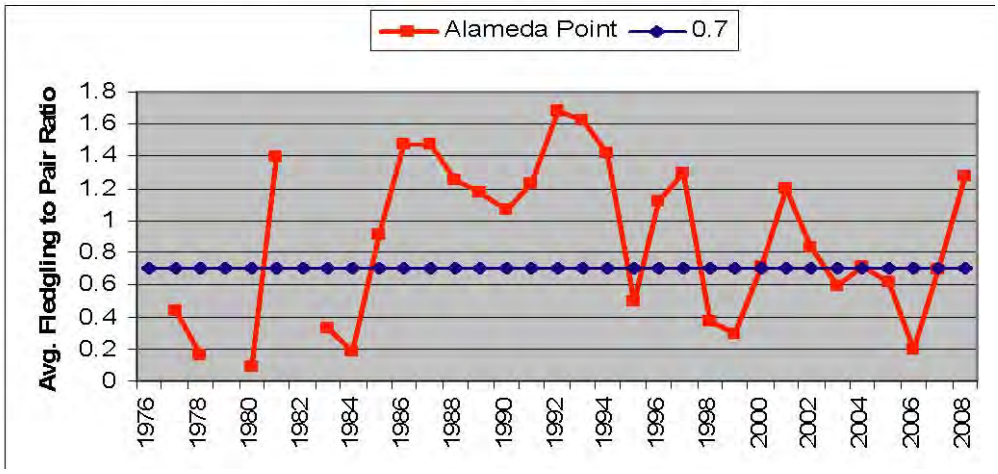


Figure 10: Breeding Success of the Alameda Least Tern Colony from 1976 to 2008 (excerpted from Euing 2009)

Although the number of breeding pairs of CLTs at Alameda Point decreased between 2005 and 2009, the number of fledging chicks (and the corresponding ratio of fledglings to breeding pairs) does not follow the same trend (Euing 2010). In 2004, the number of fledglings was estimated at 268 (the second highest recorded number since monitoring began), in 2005 fledglings numbered 260, and in 2006; a sharp decline to 79 fledglings was estimated. The decline in 2006 was due mainly to the low hatching success rate of 46.7% (Euing 2007). In 2007, the number of fledglings again rose to 247, even though the number of breeding pairs had decreased. The 2007 hatching success rate was higher (72%) than the 2006 rate (46.7%) and nearer to the average hatching success rate of 76% from 2001–2005 (Euing 2007). The number of fledglings rose again in 2008, despite a smaller number of breeding pairs (Euing 2009). The number of fledglings decreased in 2009, but was still the second highest number ever recorded at the Alameda CLT colony (Euing 2010). Recent declines in CLT productivity at Alameda Point are possibly the result of one or more of a number of limiting factors including predation, human disturbance, habitat areal constraints (i.e., carrying capacity limitations), environmental changes affecting prey abundance, and increased temperatures causing possible mortal stress in eggs and young birds (Elliot et al. 2007). Aircraft overflights may also cause disturbance to CLT. Although the CLT colony was originally established when NAS Alameda was still in service and the runways were actively used by aircraft, this type of disturbance has been absent from the site at least since the base closure in 1997. CLT are no longer accustomed to close disturbance from aircraft, and have been documented flushing from their nests at Alameda Point in response to overflights variously from helicopters, blimps, small airplanes, and commercial jets every year from 1998 to present. The majority of aircraft involved in CLT disturbance events have been helicopters (Collins 1999, 2000, Elliot and Sydeman 2001, 2002, Hurt 2003, 2004, 2005, 2006, Euing 2007, 2008, 2009, 2010).

Predation has been a major contributing factor to the decline and abandonment of CLT colonies throughout California. Single individuals of species such as peregrine falcon (*Falco peregrinus*), American kestrel (*Falco sparverius*), burrowing owl (*Athene cunicularia*), and feral and domestic cat (*Felis silvestris catus*) have been documented making daily forays into CLT colonies and taking large numbers of adults, chicks, and eggs. Even a single individual predator can cause considerable damage to a CLT colony in any given nesting season (Caffrey 1995, 2005). Predators are actively controlled by various agencies at many CLT colonies in California. At Alameda Point, USN and USFWS have entered into a cooperative agreement in which Wildlife Services, a division of the U.S. Department of Agriculture (USDA), is contracted to manage predator populations at the site and surrounding runway complex. Wildlife Services uses a combination of harassment, trapping, relocation, and when necessary lethal removal of predators posing a threat to the CLT colony (Euing 2010).

Predation on the CLT at Alameda Point has been documented from various avian, mammal, and invertebrate predators. **Appendix F** provides details on all documented depredation of CLT from 1998 (which was the first full year that NAS Alameda was free of naval aircraft activity following base closure in 1997) until 2009 (the most recent year for which data are available). Out of 402 documented CLT depredations from 1998 to 2009, 293 were either observed or enough evidence was present to attribute them to a specific predator species or species group. Of the remaining 109 CLT depredations, 92 were attributed generally to avian predation without enough evidence to point to a specific group of avian predators, and the remaining 17 did not present enough evidence to attribute them to any single group of predators (**Appendix F**, Collins 1999, 2000, Elliot and Sydeman 2001, 2002, Hurt 2003, 2004, 2005, 2006, Euing 2007, 2008, 2009, 2010).

Mammals observed during yearly monitoring at Alameda Point that could prey upon least terns include striped skunks (*Mephitis mephitis*), Norway rats (*Rattus norvegicus*), Virginia opossums (*Didelphis virginiana*), gray foxes (*Urocyon cinereoargenteus*), red foxes (*Vulpes vulpes*), raccoons (*Procyon lotor*), feral dogs (*Canis lupus familiaris*), and feral cats. Although mammals are observed every year foraging and hunting around the colony, tern predation from mammals has not been documented since 2002 due to

fencing and trapping control efforts by Wildlife Services. Mammalian predation can cause severe losses when it does occur, such as the suspected loss of 44 eggs to predation by raccoons and skunks in 2002 (**Appendix F**, Collins 1999, 2000, Elliot and Sydeman 2001, 2002, Hurt 2003, 2004, 2005, 2006, Euing 2007, 2008, 2009, 2010).

Ants have been documented as causing mortality to CLTs at Alameda Point by attacking eggs and chicks, although they represent a very minor fraction of overall predation, taking a total of six CLT (three chicks and three eggs) since 1998. Black widow spiders (*Latrodectus* sp.) caused minor mortality of CLT at Alameda Point in 1999, taking two to three chicks within ceramic tiles and cinder blocks used as sun shelters. Since then, efforts by management staff to remove black widows from the colony site prior to the terns' arrival and during the nesting season have successfully prevented any further mortality by this species (**Appendix F**, Collins 1999, 2000, Elliot and Sydeman 2001, 2002, Hurt 2003, 2004, 2005, 2006, Euing 2007, 2008, 2009, 2010).

The vast majority of eggs, chicks, fledglings, and adult CLT lost to predation at Alameda Point can be attributed to avian predators. Avian predators which have been documented depredating CLT at Alameda Point include peregrine falcon, red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), burrowing owl, American kestrel, loggerhead shrike (*Lanius ludovicianus*), common raven (*Corvus corax*), and great horned owl (*Bubo virginianus*). Other avian predators suspected of having depredated CLT at Alameda Point include barn owl (*Tyto alba*), western gull (*Larus occidentalis*), and American crow (*Corvus brachyrhynchos*). Horned larks (*Eremophila alpestris*), which are not typically considered a predator of CLT and routinely nest among the CLT at Alameda Point, were observed pecking at and presumably depredating CLT eggs on one occasion in 2000. No other incidences of depredation by horned larks have been recorded. A significant number of depredated CLT which are believed to have been taken by avian predators (92 out of 331 total avian depredations from 1998 to 2009) could not be attributed to any specific avian species. In recent years, the most frequent and recurrent avian predators of CLT at Alameda Point have been peregrine falcons, northern harriers, red-tailed hawks, and corvids (common ravens and American crows). These species all have been verified or suspected of taking CLT for at least 3 of the last 5 years. Many of these avian predators utilize the hangars and other buildings to the east as well as the cypress trees in the Runway Wetland for perches and nesting sites. Burrowing owls, while not a frequent predator at the Alameda CLT colony, have caused significant losses when present. In 2006, a single pair of burrowing owl depredated a suspected 41 adults and chicks over an approximately 3-week period, and it was suggested that they may have taken an even greater number than those observed losses. This represented over half of the total depredation in 2006 (76 CLT total), which was also the highest absolute number of CLT taken in any single year since 1998 (**Appendix F**, Collins 1999, 2000, Elliot and Sydeman 2001, 2002, Hurt 2003, 2004, 2005, 2006, Euing 2007, 2008, 2009, 2010). At other CLT colonies in California, avian predators have been documented using many types of human-made structures such as power lines, utility poles, and buildings within several hundred meters as observation and launching points to attack nesting CLT. Perching and nesting sites within 400 meters can increase avian predation on CLT colonies (Caffrey 1995).

According to Caffrey (1995) the two largest threats to CLT are predation and human disturbance, and the prevalence of these two factors varies among nesting colonies throughout California. Factors contributing to increased predation and human disturbance were identified in Caffrey 1995 as:

- Large areas of heterogeneous, prey- and predator-supporting habitat
- Nearby buildings and other human-associated structures
- Relatively close residential areas
- Adjacent recreation areas frequented by people

Currently, habitat within the action area is of high quality for breeding of CLT. The open, sparsely vegetated nature of the tarmac surrounding the fenced colony greatly aids the terns' ability to detect and

respond to approaching predators. This large area also allows Wildlife Services to conduct predator control activities well away from the CLT colony and abate predators before they can get near. In addition, the various wetland and grassy areas support prey (i.e., rodents and songbirds), which draw predators away from the colony by providing easier hunting. The restricted and isolated nature of the site also greatly reduces human disturbance (i.e., from recreation and vandalism), though aircraft overflights are a continual issue. There are no residential areas adjacent to the site, greatly reducing the presence of domestic pets and their associated predation pressure. The nearest residential areas are approximately one mile to the east. Active management activities, including vegetation control, the placement of nesting substrate, and maintenance of the colony fence with fine mesh netting at base all greatly enhance the quality of the habitat on site for nesting CLT. Finally, frequent and regular monitoring of the site during the breeding season allows USFWS and Wildlife Services to respond to potential problems and threats relatively quickly, before they cause excessive harm to the colony.

CLT have been commonly observed and monitored at this site for decades. Thus, the California least tern is considered present as a breeder in the action area.

6 ENVIRONMENTAL BASELINE AND CUMULATIVE EFFECTS

This chapter provides a summary of the relevant local information on the impacts that other factors (human and natural) in the action area have had on the viability of species. These other factors may have occurred in the past, may continue to affect species today, or will affect the species in the future.

6.1 ENVIRONMENTAL BASELINE

The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. This section provides a discussion of the Environmental Baseline, and the positive or negative impacts those activities have had on the species in terms of abundance, reproduction, distribution, diversity, and habitat quality or function.

6.1.1 SUMMARY OF PAST AND PRESENT USN ACTIVITIES

The area encompassed by NAS Alameda was historically[10] a combination of submerged lands, tideland, and dry land. The first documented filling of tidal and submerged land began sometime during the 1890s. By 1927, the northern pan of what later became NAS Alameda had been filled, chiefly with dredge materials from USACE projects associated with the Oakland Harbor and other harbors throughout the East Bay. The filled land was partially occupied by the Alameda Airport (a City-owned facility) and Benton Field, a minor U.S. Army Air Corps facility (City of Alameda 1999).

The USN acquired initial acreage from the City of Alameda and the U.S. Army in 1936 and 1937 and began constructing the NAS Alameda in 1938. Additional acreage was acquired between 1941 and 1956. Between 1963 and 1968, the USN purchased additional property to develop housing, and acquired more U.S. Army property for this purpose. Construction activities at NAS Alameda initially focused on erecting permanent buildings on the eastern half of the installation and filling the southern and western parts of the facility. After World War II, filling of San Francisco Bay submerged land and tidelands increased the dry land acreage to the current level. Construction activities continued intermittently until the decision was made to close NAS Alameda (City of Alameda 1999).

NAS Alameda included an airport with seven aircraft maintenance hangars, one of the largest deepwater naval ports in California, and one of the two largest complexes of aircraft maintenance buildings on the West Coast. NAS Alameda also contained a seaplane lagoon, warehouse space, administrative offices, military residences, an exchange retail store and commissary store, community support facilities, and open space (City of Alameda 1999). Until NAS Alameda was closed in 1997, the USN previously managed the action area as an active airfield, and the open water area as a secure transit area for the passage of ships and other watercraft to and from the Oakland Inner Harbor. All land and open water areas were closed to the public for military security purposes. The USN also conducted an active CLT management program (USFWS 2000). Upon base closure, USN began efforts to work on property conversion. As part of the property conversion process, USN manages the CLT colony within the action area and enforces requirements of the 1999 BO through a lease to the City of Alameda for the lands subject to the 1999 BO.

[10] Except where otherwise noted, this section is excerpted from the Final Environmental Impact Statement for the Disposal and Reuse of Naval Air Station Alameda and the Fleet and Industrial Supply Center, Alameda Annex and Facility, Alameda, California (USN 1999).

CLTs have been recognized to breed in the San Francisco Bay Area as early as 1967 (USFWS 2006) and were confirmed as nesting at NAS Alameda in 1976 (Hurt 2006). California Department of Fish and Game (CDFG) officially recognized the breeding site in 1976. The USN has monitored the terns since 1976, with regular monitoring occurring since 1980. In 1981, the USN built an electric fence around the (at that time) 6-acre tern colony and enhanced the area with pea gravel, soil, sand, and oyster shell to improve the breeding site (Elliot et al. 2007 and Euing 2007). The electric fence was later replaced in 1990. That fence was also electric, but had wire mesh at the bottom to prevent fledglings from wandering onto the airfield and being run over by aircraft or vehicles (USFWS 2000). In addition, the USN installed a fence along the eastern boundary of the proposed USFWS wildlife refuge in April 1997 to prevent disturbances to the nesting site (USN 1997). The USN also conducted annual site preparation and vegetation management. Once NAS Alameda was closed, the area of vegetation management was reduced to the area around and within the CLT colony. The USN has funded CLT management practices since 1979 under various contracts with the Golden Gate Audubon Society, Point Reyes Bird Observatory and USFWS (Elliot et al. 2007). In 2004, the CLT colony was enlarged to 9.7 acres; a new, non-electric 4-foot-tall chain link fence (with fine mesh netting at the bottom) was installed, and developed into its current rectangular shape and location. In addition, substrate, consisting of lighter colored sand, small rocks, shells, and more oyster shell, was laid in the new areas (EDAW 2008a).

Predator (mammalian and avian) control programs were also implemented in the 1980s and continue to the present. As part of the cooperative agreement with the USN, the Wildlife Services, a division of the U.S. Department of Agriculture, Animal and Plant Health Inspection Service is contracted by the USFWS to manage predator populations (Hurt 2006).

The western snowy plover has nested in the CLT colony in the 1980s. Sporadic observations of individual plovers have occurred since that time up to 2006 (EDAW 2008a). During the USN tenure at NAS Alameda, their efforts to keep boats at a distance from Breakwater Island contributed to the use of this area as a roost for California brown pelican.

Consultation to Date (Chapter 2.0) describes three Section 7 consultations with USFWS regarding potential impacts to CLT and California brown pelican. In all three cases, the USFWS determined the activities would not jeopardize the CLT or California brown pelican as long as reasonable and prudent measures were followed.

6.1.2 Summary of Past and Present VA Activities

Within the action area, there have been no past or presently occurring VA activities.

6.1.3 Summary of Past and Present USACE Activities

The USACE is the lead agency in charge of maintenance of the Oakland Outer, Middle, and Inner Harbors, which are a series of channels and harbors north of the action area. Because CLT from the Alameda colony are known to forage for fish in Oakland Outer Harbor, the USACE initiated a formal Section 7 consultation for impacts to CLT, and USFWS issued a BO on April 22, 2010 regarding periodic maintenance dredging of Oakland Outer Harbor from 2010 through 2012. USFWS concluded that the Oakland Outer Harbor maintenance dredging was not likely to jeopardize the continued existence of CLT. This was based on 1) no eelgrass beds (which provide habitat for fish preyed upon by CLT) would be disturbed; 2) dredging activities would be limited to two months or fewer when CLT are present in the area; 3) the availability of additional foraging areas which would not be affected by the project, and; 4) the USACE commitment to provide additional funding to USDA Wildlife Services for predator management in the years 2010, 2011, and 2012.

6.2 CUMULATIVE EFFECTS

This section provides information on the effects of future state or private activities, not involving federal activities (e.g., authorized, funded, or carried out, in whole or in part, by federal agencies), that are reasonably certain to occur within the action area of the federal action subject to consultation (50 CFR Part 402.02).

Continued urban development beyond the action area has the potential to adversely affect habitats, water quality, estuarine productivity, and increase recreational pressures on open space. The City of Alameda (2011) has two projects in proximity to the action area that are at different stages of review and approval. The location of these projects is shown on **Figure 11**, and the projects are described below:

- Alameda Landing Mixed Use Development: This project is planned on a 77-acre site that was once part of the U.S. Navy's Alameda Fleet Industrial Supply Center, located between the Webster Street Tube and Main Street, near the newly completed Willie Stargell Avenue. The project received initial approvals in 2007 and 2008 to build up to 400,000 square feet of office space, 300,000 square feet of retail use, and 300 residential units on the 77-acre site. In early 2011, the developer initiated discussions with the City of Alameda regarding possible adjustments to the approved entitlements in order to facilitate redevelopment of the property. The developer has indicated that they are currently pursuing an agreement with Target stores to locate a Target store on the site.

- Boatworks Project: This project is planned on a 9.48-acre site located at 2229-2245 Clement Street, east of the Park Street Bridge in the City of Alameda. The site is bounded by Clement Street on the south, Oak Street on the east, Elm Street on the west, and the Alameda/Oakland Estuary on the north. Vacant warehouse buildings currently exist on the property. On July 11, 2011, the City of Alameda Planning Board recommended that the Alameda City Council approve a tentative map that would subdivide the 9.48-acre site into157 parcels for a proposed development of 182 residential units and associated public open space, parking, landscaping, and other improvements. An EIR was certified in 2010 that evaluated a 242-unit residential proposal.

Based upon a review of available information, these proposed projects are located at a sufficient distance from the action area that effects are not expected to occur within the action area. Therefore, no cumulative effects are expected from these projects.

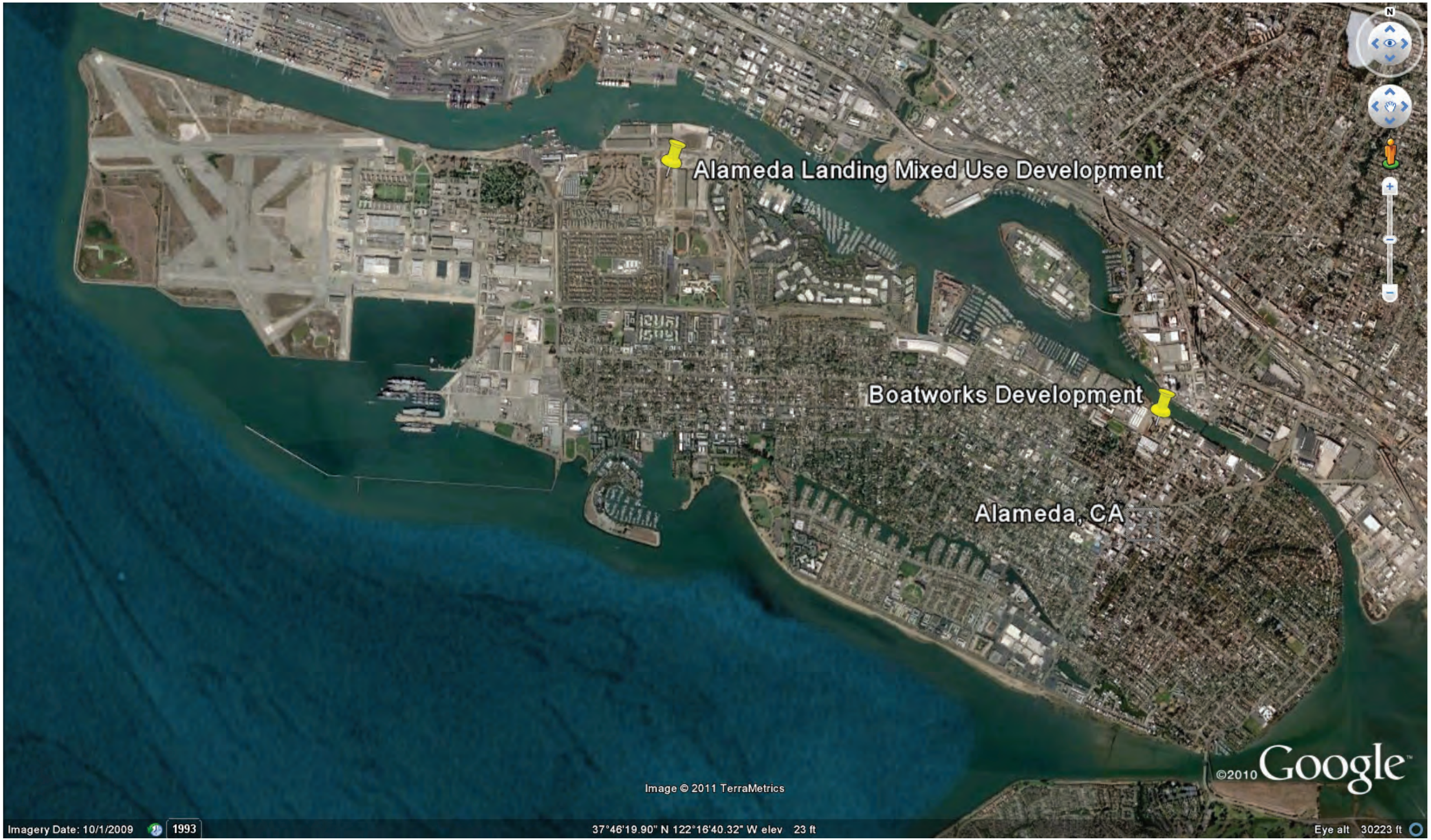


Figure 11
Location of Projects Considered in Cumulative Effects

7 EFFECTS OF THE ACTIONS AND CONSERVATION MEASURES

Chapters 4.0 through 6.0 described the habitat, species, environmental baseline and cumulative effects for the action area. This information was presented to provide an overall context for assessing potential effects from the project action. This chapter identifies the effects of the actions and conservation measures so that project implementation does not jeopardize the existence of a listed species. This assessment includes:

- Direct and indirect effects (including stressors and subsidies) of the action(s) under consultation, including conservation and minimization measures.
- Direct and indirect effects (including stressors and benefits) of interrelated or interdependent actions.
- The effects of the action on the species when added to the environmental baseline and cumulative effects in the action area.

The definitions of "direct," "indirect," and "cumulative" are as follows:

- *Direct Effects* – Those effects that are caused by the action and occur at the time of the action.
- *Indirect Effects* – An effect caused by a proposed action that takes place later in time than the action or farther removed in distance, but is still reasonably certain to occur. Indirect effects include changes in land use attributable to an activity (i.e., induced growth), impacts on environmental resources that occur because of the activity's influence on land use, habitat fragmentation on species viability over time, or changes in water quality or wetland functions due to stormwater runoff, for example.
- *Cumulative Effects* – The effects of future state, local or private activities not involving federal activities that are reasonably certain to occur within the action area of an action subject to consultation.

Conservation measures are listed that would avoid or reduce adverse effects to and incidental take of federally listed species. Finally, preliminary effects conclusions are presented for each species. There are three possible conclusions: 'No Effect,' 'May Affect, Not Likely to Adversely Affect' or 'May Affect, Likely to Adversely Affect.' With respect to the three preliminary conclusions of effect for each species, the definitions are as follows:

- *No Effect* – the appropriate finding if there are absolutely no effects from the proposed action.
- *May Affect, Not Likely to Adversely Affect* – the appropriate conclusion when effects on a listed species or critical habitat are expected to be discountable, insignificant, or completely beneficial.
  - Beneficial effects – contemporaneous positive effects without any adverse effects.
  - Insignificant effects – relate to the size of the impact and should never reach the scale where take would occur;
  - Discountable effects – those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

- *May Affect, Likely to Adversely Affect* – the appropriate finding if any adverse effect may occur to listed species or critical habitat as a direct or indirect result of the proposed actions or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial.

7.1 CONSERVATION MEASURES

The conservation measures identified for the action area are based upon an analysis of the VA project action and the Site Development Plan (**Figure 3**) described in this BA. The following conservation measures are intended to avoid and minimize adverse effects on federally listed species occurring in the action area. The Site Development Plan along with additional information related to setback distances from CLT colony referenced in the conservation measures below, are provided in **Figure 12**.

7.1.1 PRECONSTRUCTION/DESIGN PHASE CONSERVATION MEASURES

1. To allow for continued conservation of the CLT and the Western Snowy Plover (WSP), the VA has designed the proposed site to provide for a Development Setback Area, in which vertical development and sustained human presence are restricted, and in which vegetation will be controlled for the operational life of the OPC and cemetery. As described in Section 7. 2. 1. 1., this Development Setback Area is based upon a 436-meter (1,430 foot) "development setback" distance from the boundary of the CLT colony and includes additional acreage to allow for continued CLT access to foraging habitat in the waters to the south of the transfer parcel. As depicted by the Development Setback Area in **Figure 12**, the VA is thus restricting the use of approximately 289 acres for the conservation of the CLT.[11]

   CLT management activities will continue in the Development Setback Area as they have in the past, to include maintenance of the colony fence, placement of nesting substrate, vegetation control, predator control, regular breeding season monitoring as described in subsequent conservation measures, and incorporation of changes as determined by future analyses of management and monitoring data. Public access within the Development Setback Area may include managed CLT colony maintenance efforts by volunteer groups during the non-breeding season, as well as the continuation of tours of the CLT colony during the breeding season, both of which have occurred under the close supervision of USFWS staff for several years. Activities associated with the VA's role in regional disaster preparedness, emergency response (training exercises, inventory and re-stocking of emergency supplies stored in existing bunkers, etc.) would take place during the CLT non-breeding season. Repair of underground utilities may also occur in the Development Setback Area when conducted outside of the breeding season. Access to the site is also authorized to Federal, state, and local regulators, and VA environmental contractors in the performance of their official duties.

2. Until the lands are conveyed to the VA, the USN shall continue managing the CLT colony in a manner consistent with current management practices. Upon conveyance, the VA shall be responsible for continuing to manage the CLT colony. The VA may consider coordinating with USFWS (the current contractor managing the CLT colony) to continue this work or hire another qualified contractor. Colony management activities shall include, but are not limited to the following:

   - Vegetation control and weed removal;
   - Maintenance of the fence surrounding the colony;

[11] This estimate of acreage for the Development Setback Area includes the 9.7 acres of the CLT colony.

- Maintenance of the colony and preparation prior to the breeding season by placement of gravel, seashells, and other measures to enhance nesting habitat quality;
- Breeding season monitoring of the CLT colony;
- Removal of feral cats or other animals; and
- Control of avian predators (e.g., gulls, ravens, crows, and raptors)

3. The VA shall prepare a long-term monitoring and management plan for CLT and WSP. The plan shall be prepared by a qualified biologist. This biologist is not required to hold a federal recovery permit for these species, but shall meet the minimum qualifications identified in **Appendix C**. The plan shall be provided to USFWS for their review and comment at least 60 days prior to conveyance of the 549-acre property from USN to VA. For comments to be considered, USFWS should submit comments within 30 days of receipt of plan. The plan shall include the following elements:

   a) Outline the species-specific monitoring and management requirements that have been established by the relevant permitting agencies and identified in this BA and subsequent BO.

   b) A program that provides actions or measures to ensure continued controlled access and signage for the CLT colony and Development Setback Area (**Figure 12**), which includes enforcement and maintenance of proposed actions, including replacing signs identifying the biological importance and values of the adjacent CLT colony and the prohibitions of access and use.

   c) A requirement for an annual report that summarizes the monitoring and management of the federally listed species identified above shall be submitted to USFWS. The reports shall be completed and submitted to USFWS annually by January 31 of each year, or an alternative annual schedule if mutually agreed on by USFWS and the VA. The annual report shall include the following elements:

      - Activities, frequency and duration, timing, location, survey methods, notification, reporting (e.g., daily construction logs, and weekly summary reports during construction activities), data sheets, etc.
      - Disposition of sick, injured, or dead specimens.
      - Monitoring results and recommendations (such as the discontinuance of certain monitoring activities if no effects are being observed, continuance of monitoring activities if potential effects observed, modifications to existing measures or identification of new measures to prevent additional take).

   The VA shall periodically update the long-term monitoring and management plan for CLT and western snowy plover in order to provide for the adaptive management of the colony.

   The VA will assume responsibility for notification of restrictions, enforcement, and maintenance of the plan upon conveyance of the property from the USN to the VA. The VA shall notify adjoining property owners, lessees, and the public of the pertinent elements of the plan.

4. The VA shall prepare a predator management plan to maintain predator numbers and density at levels that will not jeopardize the continued existence of the CLT colony. The predator management plan shall be provided to USFWS for their review and comment at least 60 days prior to conveyance of the 549-acre property from USN to VA. For comments to be considered, USFWS should submit

comments within 30 days of receipt of plan. The plan shall fully integrate and coordinate predator management methods and activities within the action area. The VA shall periodically update the predator management plan for CLT and western snowy plover in order to provide for the adaptive management of the colony.

5. The VA may continue to use USDA Wildlife Services for predator management, or may hire another qualified contractor. The VA shall contact USFWS and USDA Wildlife Services to determine current predator management activities and ensure that they are maintained. Annual predator management reports shall be prepared by the implementing agent (e.g., USDA Wildlife Services or other entity) that describe the manner in which the predator management activities are being implemented. The reports shall be completed and submitted to USFWS annually by January 31 of each year, or an alternative annual schedule if mutually agreed on by USFWS and the VA.

6. The VA shall conduct an education program for all newly-hired employees of all VA facilities, post notices of the importance of predator control in conspicuous places used by employees and the public, and post warnings of impending predator management activities.

7. A conservation easement or other enforceable property interest applicable to the open water and submerged land south of the runway area (the parcel formerly designated as Parcel FED-1B) will be granted or reserved by the USN if that parcel is later conveyed by the USN. The details of this conservation easement or other property interest shall be finalized, and any third-party enforcing entity or entities shall be identified prior to transfer of this parcel.

8. Lighting, including that for roads, building security and public safety, shall be designed to minimize nuisance nighttime light levels. As part of the lighting plan for all facilities and activities within the action area, the VA shall undertake appropriate measures (i.e., night lighting design) to ensure that ambient nighttime light levels do not increase more than 10% within 750 feet of the CLT colony. Measures to achieve this performance standard include, but are not limited to:

    a) All exterior lights shall be directed away and/or shielded from the CLT colony.

    b) Lights shall be directed toward their areas of intended illumination and shielded to prevent stray light from escaping either upward or outward.

    c) Street light poles shall include anti-perching devices.

    d) All windows facing the CLT colony with a direct line of sight shall be tinted to reduce the spillage of interior light. Windows shall also be non-reflective in order to minimize bird strikes.

9. The VA shall develop strategies to minimize erosion and the introduction of pollutants into stormwater runoff according to State and Regional Water Quality Control Board (RWQCB) guidelines.

    a) The VA shall prepare a detailed Storm Water Pollution Prevention Plan (SWPPP) for the construction of all facilities and activities within the VA project area. An effective combination of erosion and pollutant control Best Management Practices (BMPs) shall be implemented during all phases of construction.

    b) Vegetated swales and other landscaping techniques shall be used to treat stormwater runoff wherever possible.

c) Pollutant source controls (i.e., roofed trash enclosures) shall be implemented whenever possible.

10. Plans for the VA facilities shall include a temporary 6-foot-high minimum barrier fence around the perimeter of the construction area to isolate the construction area from the Development Setback Area and surrounding lands before construction activities. This fence shall be removed upon completion of all construction activities.

11. All ancillary structures at or greater than 6 feet in height, including light poles, flagpoles, carillon, and temporary construction fencing, shall be designed or fitted with anti-perching features or devices, such as bird spikes, post-and-wire systems, electrical bird deterrents, or other deterrence measures.

12. No utility poles or transmission towers except the light poles, mentioned in Conservation Measure 11 shall be permitted within the 100-acre VA Development Area, and electrical transmission lines shall be placed underground. Aboveground storage tanks shall be treated with anti-perching devices if they are designed in such a way that they provide perches or nesting areas for avian predators.

13. No fountains, bird baths, ponds, reflecting pools, or other sources of open freshwater shall be constructed which may attract or provide havens for potential predators of CLT.

14. Landscape planting should prioritize native shrub and herbaceous species over nonnative species, but in either case, species shall not be invasive. Landscaped areas shall predominantly consist of drought tolerant plant species and open hardscape areas. A limited amount of turf area may be provided adjacent to the main entrance to the OPC (north side of OPC building) and immediately around NCA assembly areas.

15. Vegetation within the VA Development Area shall be maintained to a maximum height of 10-15 feet. To minimize potential effects of avian predators, all landscape trees shall be inspected regularly for nesting attempts by avian predators. Appropriate species of vegetation include, but are not limited to, those identified in the "Proposed Vegetation List" in **Appendix I**.

16. Landforms (landscape berms) within 650 meters of the CLT colony shall not exceed 6 feet in height. Beyond 650 meters of the CLT colony, landforms may be a maximum of 12 feet in height (See **Figure 12**). On berms, vegetation shall be limited to native grasses and shrubs, with a maximum height of 3 feet.

17. A permanent barrier shall be constructed along the southern perimeter of the 100-acre development area and along the eastern boundary of the 549-acre VA transfer parcel (**Figure 3**) in order to prevent trespassing into the adjacent undeveloped areas and Development Setback Area. The barrier shall be a minimum of six feet and a maximum of 10 feet in height, and may be a combination of solid wall, vertical rail or chain link fencing as aesthetic and practical needs dictate. The construction of the barrier may be phased in conjunction with the VA development, and shall incorporate anti-climbing measures to prevent trespassing and anti-perching measures to deter avian predators of CLT. The barrier may be architecturally treated.

18. The maximum heights of structures and buildings located within the 100-acre development area, depicted on **Figure 12**, shall be limited to the following:

    a) The OPC building shall not exceed a height of 40 feet, measured from the ground to the maximum roof or parapet elevation.

    b) The Nature Center building shall not exceed a height of 25 feet.

c) Committal service shelters within the cemetery shall not exceed a height of 22 feet,

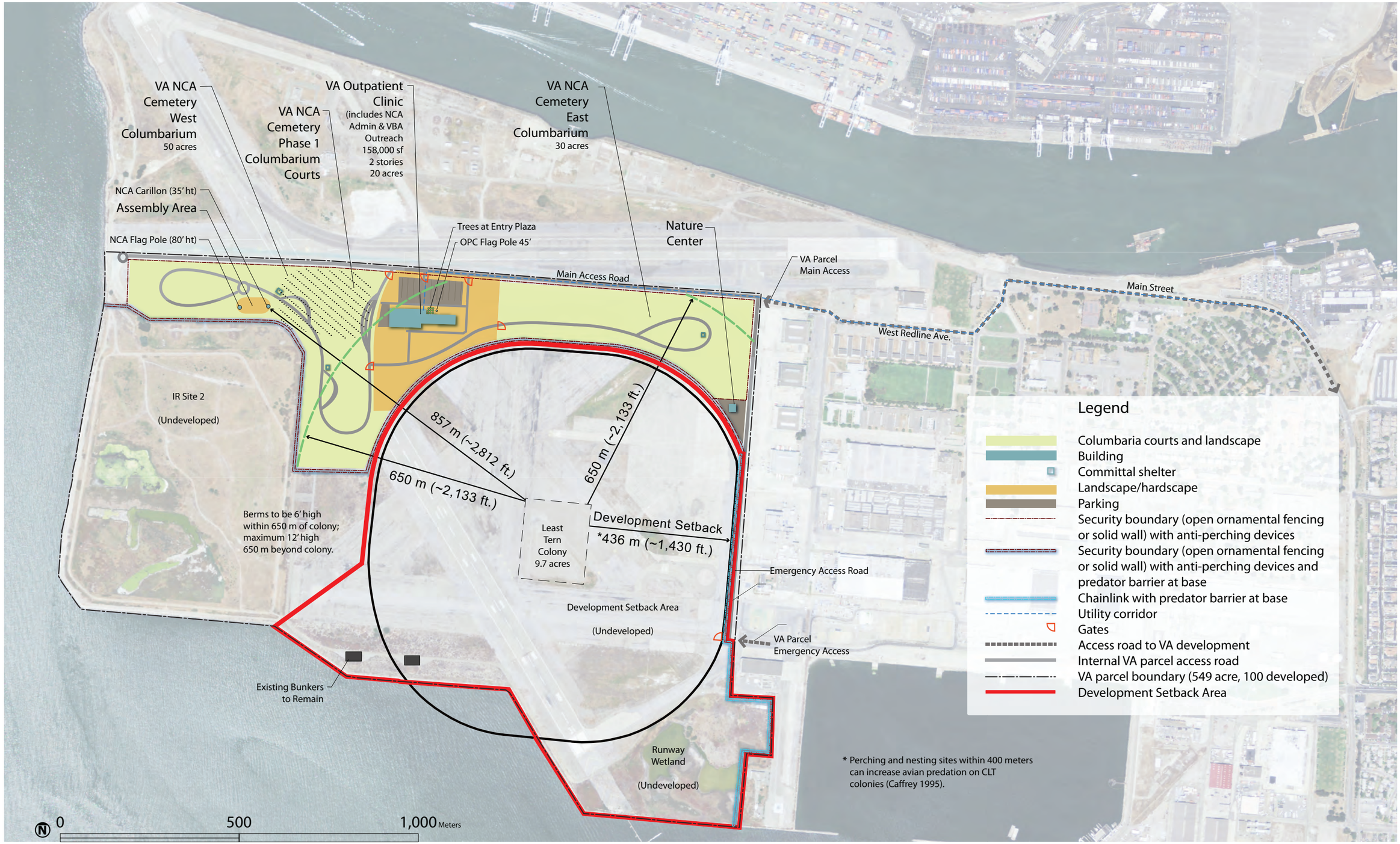
d) Niche walls within the cemetery shall not exceed a height of 10 feet.

19. Heating/air conditioning/ventilation units may be placed on top of buildings as long as these units are placed as far away from the side of the building facing the CLT colony as possible and a mechanical equipment screen put in place around them.

20. The roof of the proposed VA OPC shall be of a type and design that discourages perching by avian predators of CLT. Any flat areas on the surface of the OPC building shall be treated with anti-perching devices, such as bird spikes, post-and-wire systems, electrical bird deterrents, or other deterrence measures.

21. Committal service shelters shall be designed so as not to create perching or nesting surfaces for predatory bird species. The roof shall be sloped at no less than 35 degrees, with no lips, ledges, overhangs, or underhanging areas. The surface of the roof shall be smooth to reduce footholds for avian predators. The apex of the roof and any flat areas on the surface of the committal service shelters shall be treated with anti-perching devices, such as bird spikes, post-and-wire systems, electrical bird deterrents, or other deterrence measures. Anti-perching devices may be architecturally treated and integrated into the design of the committal service shelters.

22. Columbarium walls within the NCA Cemetery shall be constructed with steeply sloping angles and/or anti-perching devices so as not to create perching or nesting surfaces. Anti-perching devices may be architecturally treated and integrated into the design of the columbarium walls.



Proposed Veterans Affairs Facilities at Alameda Point

Figure 12
Setback Distances from CLT Colony

7.1.2 CONSTRUCTION PHASE CONSERVATION MEASURES

1. During the CLT nesting season (April 1–August 15), a biological monitor under contract with the VA Architect Engineer and with experience observing and documenting disturbances to CLT or similar species shall be present during all construction activities associated with the VA facilities to ensure that construction activities do not adversely affect CLT using the nesting site. The biological monitor shall:

    a) Meet minimum qualifications identified in **Appendix C**.

    b) Provide a construction worker education program for all affected listed species at the start of construction activities, whenever new workers begin, and when new contracting firms are brought in. The program shall include topics on species identification, life history, descriptions, and habitat requirements. Handouts, illustrations, photographs, and project mapping showing areas where minimization and avoidance measures are being implemented shall be included as part of this education program, as relevant. The program will increase the awareness of the contractors and construction workers about existing federal laws regarding listed species.

    c) Inspect the work area for proper disposal of all garbage in covered containers. If garbage is observed being left out, the monitor shall report to the contractor or VA Resident Engineer (RE) to have the situation corrected.

    d) Before the initiation of work each day within areas with suitable habitat, the biological monitor shall thoroughly inspect the work area and adjacent habitat areas to determine if CLT (or any other listed species) are present.

    e) Inspect integrity of temporary construction barrier fencing periodically as-needed throughout the work period. If repairs are needed, the monitor shall contact the VA RE to fix the barrier fence to ensure its integrity. The biological monitor shall have the ability to make field adjustments to the location of the temporary construction barrier fencing depending on site-specific habitat conditions. The contractor is to remove the barrier fencing upon completion of construction activities.

    f) If a CLT (or any other listed species) is observed in the construction area, the biological monitor will inform the contractor and/or VA RE on how to proceed to avoid or minimize take. Options include shifting construction activities to another location away from the CLT (or any other listed species) or stopping construction activities until the CLT (or any other listed species) leaves the work area.

    g) When necessary, telephone consultation shall occur between the VA, USFWS, and the biological monitor(s) to determine the cause and to identify measures to prevent additional take. The biological monitor and VA RE shall direct the contractor on how to proceed accordingly.

    h) The biological monitor shall maintain a daily monitoring log that shall be included in the long-term monitoring and management plan's annual reports to the USFWS, as required in Section 7.1.1 above.

2. The VA's biological monitor shall designate an on-site environmental inspector during the non-breeding season for CLT (August 16 to March 31). The environmental inspector will be present on-site regularly throughout the non-breeding season. If necessary, multiple environmental inspectors

may be designated to ensure coverage throughout the non-breeding season. The environmental inspector(s) shall:

a) Participate in training provided by the biological monitor. Training shall cover identification of CLT, relevant predators, and issues related to the conservation of the CLT, etc.

b) Inspect the work area daily for proper disposal of all garbage in covered containers. If garbage is observed being left out, the environmental inspector shall report to the RE to have the situation corrected.

c) Inspect integrity of barrier fencing periodically throughout the work period. If repairs are needed, the inspector shall contact the RE to fix the barrier fence to ensure its integrity.

d) Immediately contact the biological monitor if any listed species is observed in the construction area.

3. All construction vehicles and equipment shall use designated site access points and remain on designated construction routes only. During the CLT nesting season (April 1–August 15), access routes for construction vehicles and equipment shall be located outside the Development Setback Area.

4. No pets shall be permitted on-site during construction.

5. Stockpiling of materials that may provide additional shelter for CLT predators at the construction site will be kept to a minimum and inspected on a regular basis by the biological monitor.

6. All materials and equipment to be used for construction, including fill material, if necessary, shall be brought on site by land. To protect CLT foraging in the open water adjacent to the action area, no materials or equipment shall be brought in by barge.

7. During the CLT nesting season (April 1–August 15), no materials or equipment shall be brought on-site during evening or nighttime hours (dusk to dawn).

8. Pile driving and pavement demolition activities requiring the use of impact tools (i.e., hydraulic breakers, jack hammers, scarafiers, and compactors) is prohibited during the CLT nesting season (April 1–August 15) because these activities and equipment have the potential to increase the ambient noise level in and around the CLT colony on the site. The use of other types of construction equipment that would not increase the ambient noise level at the site, as measured at the north end of the fenced CLT colony, is permitted during the CLT nesting season. The existing daytime (7 a.m.–7 p.m.) ambient noise level at the CLT colony ranges from 50–55 dBA, based on hourly noise measurements recorded at the site in March 2009.

9. The tops of buildings under construction, including on-site construction trailers, shall be inspected for avian predator nests once each week during the period from April 1–August 15. If nests are found, they shall be monitored to determine if nest removal is required to reduce predation pressure on the CLT colony. All removal actions shall be in accordance with the Migratory Bird Treaty Act. Inspections shall be conducted either by a biologist that meets the minimum qualifications identified in **Appendix C** or by USDA Wildlife Services or other qualified personnel contracted for predator management.

7.1.3 POST CONSTRUCTION/OPERATIONAL PHASE CONSERVATION MEASURES

Site-wide Measures:

1. Feeding stations or colonies for feral cats and any other native or nonnative predator species shall be prohibited within the transfer parcel.

2. Other than trained service animals, no pets shall be allowed.

3. All vents and ducts leading to the outside of buildings shall be screened and shall be maintained to prevent use by avian predators. Screened vents shall be inspected at least once a month from April 1—August 15.

4. All landscape trees, the tops of all buildings and all anti-perching devices in place throughout the VA Development Area shall be inspected for avian predator nests once each week during the period from April 1 through August 15. If nests are found, they shall be monitored to determine if nest removal is required to reduce predation pressure on the CLT colony. All removal actions shall be in accordance with the Migratory Bird Treaty Act. Inspections shall be conducted either by a biologist that meets the minimum qualifications identified in **Appendix C** or by USDA Wildlife Services or other qualified personnel contracted for predator management.

5. If avian predators defeat anti-perching devices that are maintained in good order, then these devices shall be reevaluated and either modified or replaced as necessary to prevent avian predators from perching within the VA Development Area.

6. The barrier along the southern perimeter of the VA Development Area and the fence on the eastern perimeter of the action area shall be inspected regularly and repairs made as soon as possible.

7. The VA shall conduct yearly vegetation control on all areas within the Development Setback Area to discourage predators, provide CLT roosting habitat, and maintain unobstructed views needed for predator detection. Vegetation control options may include the application of herbicides, mechanical and hand removal, and/or the sealing of cracks in the deteriorating runway surface.

8. All green waste, recycling, and non-recyclable refuse shall be stored in secure, covered containers, and shall be emptied on a regular basis or as often as needed to avoid any overflow. Dumpsters and other large refuse bins shall have lids and be placed in roofed enclosures.

Additional Measures Applicable to NCA Cemetery:

9. Military honors salutes shall be conducted at committal service shelters or the designated assembly area only, and shall be conducted in a manner that directs firing away from the CLT colony. The salutes shall be performed with rifles or other small arms only. No artillery or explosives salutes shall be permitted.

10. Based on ambient noise levels measured at the project site, the volume of the carillon output would be limited to a maximum of 85 dBA measured at a distance of 50 feet (15.2 meters) from the carillon to ensure that the proposed project does not increase ambient noise levels at the tern colony. Prior to the start of the CLT nesting season (April 1), the volume control of the carillon shall be checked and noise measurements as measured at the north end of the fenced CLT colony shall be taken to ensure that sound output from the carillon does not increase the ambient noise level at the CLT colony. The

existing daytime (7 a.m.–7 p.m.) ambient noise level at the CLT colony ranges from 50–55 dBA, based on hourly noise measurements recorded at the site in March 2009.

11. During the CLT nesting season (April 1–August 15), memorial events— such as those held on Memorial Day—shall be conducted at the designated assembly area or committal service shelters. Such events shall be organized, staged and conducted in a manner that directs noise away from the CLT colony. The use of amplifiers or public address systems shall be permitted only to the extent that they do not increase the ambient noise level at the site, as measured at the north end of the fenced CLT colony. Based on ambient noise levels measured at the project site, the volume of the public address output would be limited to a maximum of 85 dBA measured at a distance of 50 feet (15.2 meters) from the PA system to ensure that the proposed project does not increase ambient noise levels at the CLT colony. The existing daytime (7 a.m.–7 p.m.) ambient noise level at the CLT colony ranges from 50–55 dBA, based on hourly noise measurements recorded at the site in March 2009. A biological monitor with experience observing and documenting disturbance to CLT or similar species shall be present during special events held during CLT nesting season (April 1–August 15), to ensure that events do not adversely affect CLT using the nesting site. The biological monitor shall maintain a monitoring log during the special event that shall be included in annual reports to the USFWS, as required in Section 7.1.1 above.

12. Solid structures such as columbarium walls or other features such as landscape berms shall be strategically located between assembly area/committal service shelters and the CLT colony to maximize noise attenuation.

7.2 EFFECTS ASSESSMENT AND METHODOLOGY

Plant communities and corresponding wildlife habitat, present and past occurrence locations of federally listed species within close proximity of the action area, and habitat for federally listed plant and animal species were examined and compared to the action area description to determine potential effects. The following is a discussion of the criteria used to determine the proposed project action's effects to threatened or endangered species under FESA.

The proposed development footprint will result in permanent effects to nonnative annual grassland, seasonal wetlands, salt marsh, and ruderal habitats, as summarized in **Table 3** and shown on **Figure 13**. The project avoids direct impacts to the tern colony and preserves 21.3 acres of salt marsh and 15 acres of seasonal wetlands on site.

Table 3:
Effects to Biotic and Abiotic Features in the Action Area

Vegetation Community	Within Action Area	Permanent Impacts	Area Preserved/ Avoided
	acres		
Non-Native Annual Grassland	148.8	21.8	127.0
Ruderal-Disturbed Paved	285.7	56.7	229.0
Ruderal-Disturbed Vegetated	27.4	0.8	26.6
Seasonal Wetland	32.9	17.9	15.0
Northern Coastal Salt Marsh	24.1	2.8	21.3
TOTAL	**518.9**	**100.0**	**418.9**

Impacts of the proposed project action are described below for each species.

7.2.1 CALIFORNIA LEAST TERN

Concerns have been raised about a number of potential negative effects to the CLT colony at Alameda Point which could result from development within the action area. Two major concerns for the Alameda Point CLT colony are direct human disturbance and predation by human-commensal avian and mammal species. The severity of both of these factors is increased by human presence and development in proximity to CLT colonies, and they have caused significant losses at CLT nesting sites throughout California (Caffrey 1995, 2005). Concerns about development in the action area also focus on the need to maintain CLT access to foraging habitat.

In consideration of these three major concerns, a number of conservation measures will be implemented throughout the life of the VA project to reduce effects to a level that does not jeopardize the continued existence of the CLT colony (see Section 7.1). The most significant measures which will be implemented to achieve this are: (1) the preservation of a 436-meter (approximately 1,430-foot) development setback around the CLT colony restricting vertical development and sustained human presence, and limiting vegetation near the colony, (2) the implementation of a predator management plan with the specific, adaptive management goal of maintaining predation at levels which do not jeopardize the CLT colony, and 3) a conservation easement or other enforceable property interest to allow for continued CLT access to foraging areas to the south of the VA transfer parcel. These three conservation measures and the ways in which they avoid and minimize adverse effects are discussed in further detail below.

Additional potential effects are subsequently analyzed in Sections 7.2.1.4, 7.2.1.5, and 7.2.1.6.

7.2.1.4 DEVELOPMENT SETBACK AREA

The need for a "buffer zone" or open space around the Alameda CLT colony has been a topic of discussion as various reuse alternatives have been explored for the former NAS Alameda. Such a zone restricting vertical development and limiting human disturbance, vegetation, and associated predation is clearly beneficial for a CLT colony, but the appropriate size and shape of such a zone at Alameda is more difficult to determine and agree upon based upon available information. There is no "one-size-fits-all" setback, buffer, or conservation area formula to ensure the success of a CLT colony. In fact, each colony location and the circumstances that surround it (predation factors, human disturbance, etc.) are unique and make extrapolation of existing comparative data difficult to overlay on a particular colony. The VA has thus reviewed several methodologies for determining a protective buffer distance, but the single most important factor to consider for developing a "buffer zone" at Alameda is the long history of the Alameda CLT colony's success in close proximity to human activities.[12] Therefore, the VA proposes a development setback[13] distance of 436 meters based upon existing conditions because it appears to appropriately balance conservation of the species with the VA's mission requirements and societal benefits of the VA project. The following provides a review of the best-available scientific data and literature, the application of different methodologies, and, ultimately, the VA's biological justification for the proposed Development Setback Area.

[12] As measured by numbers of breeding pairs and reproductive output, the Alameda colony has grown to arguably the most successful colony in Northern California over the last few decades.

[13] Although the term "Development Setback Area" is intended to be synonymous with the term" buffer zone" as used in Caffrey 1995 and Caffrey 2005, the VA has intentionally used "Development Setback" to differentiate this area from the buffer and buffer zones described in the 1999 Biological Opinion regarding the City of Alameda's Reuse Plan.

Proposed Veterans Affairs Facilities at Alameda Point

Figure 13: Effects to Vegetation Communities in the Project Action Area

In a general attempt to identify compatible land uses and characteristics of CLT nesting sites that were associated with breeding success, the USN commissioned a 1995 comparative study of CLT nesting sites in California. Importantly, the study acknowledged that "any kind of statistical analysis of the direct relationship between particular surrounding land uses and site success or failure was not possible." Ultimately, however, the study identified that a major factor in the Alameda colony's breeding success was a "large buffer zone of homogenous, essentially empty, non-prey or predator-supporting habitat (runway tarmac), currently a secure, restricted area with controlled human access, [which] greatly reduces the threat of predation and the existence of direct and indirect human-related problems." (Caffrey, 1995).

In 2005, the Golden Gate Audubon Society funded an independent study of the CLT "source population at the proposed Alameda National Wildlife Refuge (pANWR)," which further emphasized the importance of a "buffer zone" at the Alameda colony. The study concluded that "the single most important site characteristic associated with tern breeding success is the lack of predators and people near nesting areas" and that "the site at pANWR is unique in the nature of the 'buffer zone' protecting terns" (Caffrey, 2005).

Although they each supported the concept of a protective buffer zone for conservation, neither the USN study (Caffrey 1995) or the GGAS study (Caffrey 2005), quantify an ideal buffer zone for the CLT or a method of determining the minimum zone required. Therefore, the VA has needed to evaluate and apply additional approaches for establishing such a zone, or development setback.

One approach to determining a buffer zone / setback distance is to examine the existing distance between the tern colony and ongoing human activity. In 2004, an internal USN memo sought to identify the minimum amount of land that would be required to maintain a productive CLT colony at Alameda Point (USN 2004**)**. This approach assumed that if the Alameda colony continued to thrive with the existing buildings and associated human disturbance there, new construction and human use at a further distance would not create additional potential for adverse effects such as new perching opportunities for predators or harm from human disturbance. The evaluation identified a minimum distance of approximately 445 meters (1,460 feet) north and west of the CLT colony, based on the distance between the eastern boundary of the CLT colony and the closest existing large building (Hangar 24) on the eastern side of the colony[14] In addition to an arc to the north and west with a radius of 445 meters, this USN memo also identified the need to include additional acreage to the south in order to provide for unobstructed access to foraging habitat in the San Francisco Bay and in Seaplane Lagoon. This memo therefore also included the Runway Wetland in the southeast corner and additional area in the southwest corner near the existing bunkers, as area needed for the maintenance of a productive colony.

Since the 2004 USN memo, an existing setback distance of 436m (as measured from the enlarged tern colony to the fenceline) has proven to be sufficiently protective for the CLT at Alameda. Subsequent to the USN memo, the USN expanded the CLT colony from a triangular shape to the existing 9.7 acre rectangle. Therefore, terns have been nesting successfully for the past 7 years in an area closer to the existing buildings and ongoing human activity. Additionally, human activity has actually gotten closer to the terns than was described in the 2004 memo. In their day-to-day operations, tenants in the hanger row (Buildings 20-24, and near Building 19) have been utilizing the space between their buildings and the

[14] Similar to the USN memo, Caffrey 1995 considered this distance when describing the existing buffer and its importance to the success of the Alameda Colony. Caffrey referenced a distance of 600m and 640m to Buildings 19 and 24, respectively. The numerical difference in calculating the distance to Building 24 (Caffrey (640m) vs. USN (445m)) appears to be related to where the setback distance was measured from: Caffrey from the center of the colony to Hangar 24, and USN from the eastern edge of the colony to Hangar 24. Additionally, these distances were calculated before the colony was expanded in 2004.

existing fenceline on the eastern boundary of the VA transfer parcel. [15] In this way, the fenceline is and has been a more realistic delineation of the current buffer between the terns and human activity. Since 2004 and the establishment of this 436m buffer, the CLT colony has continued to thrive and remains arguably the most vital colony in Northern California (Hurt 2004, 2005, 2006, Euing 2007, 2008, 2009, 2010). Therefore, this 436m distance provides a strong basis for designing a setback area at Alameda.

Another approach to determining an adequate buffer distance is to study the upper range of CLT predator sighting and perching distances of human-commensal species that are associated with human disturbance. Caffrey (1995) provided a statewide comparison of data from a variety of tern colonies. This comparative work cites "approximately 300–400 m" (984–1,312 feet) from a CLT colony, as the upper range from which crows, ravens, and gulls can observe and determine the location of tern eggs and chicks. These species have all been documented depredating CLT at the Alameda colony in recent years. This range was obtained from a District Supervisor for USDA Animal Damage Control (Caffrey 1995). In addition, Caffrey (1995) notes that trees within 400 meters (1,312 feet) of CLT nesting areas are considered to increase predation pressure by providing nesting and perching sites for a number of avian predators such as crows, kestrels, owls, red-tailed hawks. In this way, Caffrey 1995 suggests that 400m would be an adequate buffer distance from the colony, accounting for both predator sighting and perching behavior.

Yet another method to assist in determining an adequate buffer distance is to rely upon other empirical data from other least tern colonies. In Florida, the Bureau of Wildlife Research for the Florida Game and Fresh Water Fish Commission specifically set out to determine minimum buffer zone requirements to protect nesting colonial birds, including the Least Tern (*Sterna antillarum*) (Rodgers 1992). The study's objective was to "identify the effective buffer zones necessary to protect nesting colonial waterbirds from human disturbances." Rodgers designed studies to directly test different species' responses to different types of human disturbances such as the approach of groups of humans on foot, powered boats, and unpowered boats. Rodgers statistically analyzed the direct observations of individual tern responses and the group "dread or upflight" response to these stimuli. Based upon that analysis of the field data, Rodgers concluded that "for colonies of mixed shorebird species such as [least] terns and skimmers, the minimum setback distance should be 175m." In a similar study, Rodgers, et al. 1995 "estimated recommended setback distances for individual species of breeding colonial waterbirds [including the least tern] calculated from the mean and standard deviation of sampled populations." The 1995 study concluded that a setback of 180 meters (591 feet) is adequate to protect least tern nesting colonies from direct human disturbance associated with walking, canoe, and a 80-85db motorboat. This study was focused on the same species of Least Tern (*Sterna antillarum*) at Alameda, although it is a different subspecies. This study suggests a 180 m protective setback for direct human disturbance, which is well less than half the existing buffer zone at Alameda (Rodgers, 1995).

Taken together, the existing literature provides a range of factors to consider when determining a protective distance for a buffer zone, or setback, and the VA has designed their project around the most conservative distance of 436-meters in order to account for these factors, the current success of the existing buffer distance, and to be the most protective of the CLT. As depicted by the Development Setback Area in **Figure 12**, the VA proposes a setback area derived from projecting the existing 436-meter distance from the boundary of the CLT colony to create the northern, western, and eastern boundaries of the Development Setback Area. Additionally, the proposed Development Setback Area includes the Runway Wetland in the southeast corner and additional area in the southwest corner near the existing bunkers as area needed for unobstructed access to foraging. The proposed Development Setback Area thus accounts for the distance to existing human activity, sighting and perching behavior of

[15] Current tenants utilize this space for parking, storage, staging areas, etc. Prior to operational closure in 1997, the Navy utilized this space for similar human activity and maintenance and repair of aircraft, despite the USN memo's approximation of human activity being measured from the buildings.

predators of the CLT, empirical data drawn from studies of related species, and the need for land adjacent to foraging habitat. The VA is thus restricting the use of approximately 289 acres for the conservation of the tern. The proposed Development Setback Area provides a "buffer zone," as detailed in Caffrey 1995 and 2005, in which vertical development and sustained human presence are restricted, and vegetation is controlled. These restrictions will remain in force in the Development Setback Area during the operational life of the VA OPC and NCA cemetery.

In addition to providing the 436-meter development setback, the VA project proposes new buildings at an even greater distance from the CLT colony. The closest proposed building in the action area, the proposed Nature Center, is approximately 472 meters (1,550 feet) from the closest edge of the CLT colony. The OPC and associated VHA flagpole would be placed at an additional setback from the edge of the development area, making it a full 565 meters (1,854 feet) from the CLT colony. The 80-foot-tall NCA cemetery flagpole and the 35-foot-tall carillon would be located more than 857 meters (2,812 feet) from the CLT colony. The remainder of the VA development will consist of columbarium walls, committal service shelters, and landscape/hardscape areas, the tallest of which would be a maximum of 22 feet in height (committal service shelters). Furthermore, all proposed structures within the VA Development Area, including buildings and ancillary structures such as lighting poles, flagpoles, carillon and the physical barrier (wall/fence) delineating the Development Setback Area, would be designed and/or treated with anti-perching devices to deter use by avian predators. All structures and landscaping will be inspected regularly for nesting attempts by avian predators, which when detected, would be deterred by qualified wildlife control personnel.

The combination of the 436-meter distance between the VA Development Area and the CLT colony, the low profile of the proposed structures, and the implementation of anti-perching and nest-prevention measures within the 100-acre development area, would ensure that the newly constructed facilities cannot be used as either an observation point or a nesting area for avian predators of CLT, thereby eliminating one of the primary negative effects of human proximity identified by Caffrey (1995).

Public access within the Development Setback Area may include managed CLT colony maintenance efforts by volunteer groups during the non-breeding season, as well as the continuation of tours of the CLT colony during the breeding season, both of which have occurred under the close supervision of USFWS staff for several years. Public access within the setback area will be otherwise restricted, and the entire area blocked off by a physical barrier solid wall/fence to prevent trespassing. Activities associated with the VA's role in regional disaster preparedness, emergency response (training exercises, inventory and re-stocking of emergency supplies stored in existing bunkers, etc.) would take place during the CLT non-breeding season. Repair of underground utilities may also occur in the Development Setback Area when conducted outside of the breeding season. Therefore routine human activities anticipated to occur during the operation of the VA facilities (including public visitation of the cemetery, memorial events, public and employee use of the OPC, and the maintenance of landscaping within the VA Development Area) are not expected to cause disturbance to the CLT colony.

Additionally, the Development Setback Area constitutes a fixed area where human activities are restricted for the benefit of the CLT for the operational life of the VA OPC and NCA Cemetery. Any future nesting activity outside of the current CLT colony, or any future modification to the existing CLT colony shall not modify or expand the Development Setback Area.

7.2.1.5 PREDATOR MANAGEMENT PROGRAM

Predator management is an integral part of CLT colony management throughout California (Caffrey 1995, 2005). Although it is anticipated that the Development Setback Area will create a protective distance for human disturbance and many avian predators, additional predation threats will be avoided

and minimized through a robust predator management program. Caffrey notes that avian predators nesting and roosting at great distances (in excess of 1km) have been documented attacking CLT colonies and that domestic cats may travel up to 2 kilometers to prey on CLT, causing major losses. Caffrey indicates that, if left unchecked, a "single individual" predator could cause damage to a CLT colony in any given nesting season (Caffrey 1995, 2005). To decrease the chances of such a catastrophic event, comprehensive predator management is another focus of the conservation measures proposed for this project. One aspect of predator management is the design of the facilities and barriers to prevent predators' perching opportunities as described in Section 7.1.1 above. Additionally, the predator management plan will have the specific goal of maintaining predator numbers and density at levels, which do not jeopardize the continued existence of the CLT colony. Currently, USDA Wildlife Services uses a combination of harassment, trapping, relocation, and when necessary lethal removal of predators posing a threat to the CLT colony. The VA may continue to contract with USDA Wildlife Services, or may hire another qualified wildlife control entity to continue these practices uninterrupted. To make the public aware of predator control measures, the VA will conduct an education program for all newly-hired employees of the various VA facilities, post notices of the importance of predator control in conspicuous places used by employees and the public, and post warnings of impending predator management activities.

7.2.1.6 CONSERVATION EASEMENT FOR FORAGING HABITAT

A conservation easement or other enforceable property interest applicable to the open water and submerged land south of the runway area (the parcel formerly designated as Parcel FED-1B) will be granted or reserved by the USN if that parcel is later conveyed by the USN. The details of this conservation easement or other property interest shall be finalized, and any third-party enforcing entity or entities shall be identified, prior to transfer of this parcel.

7.2.1.7 EFFECTS ARISING DURING CONSTRUCTION PHASE

Direct Effects

There are not expected to be direct effects to CLT arising from the construction phase. Project construction will have no direct effects on CLT nesting or foraging habitat. Primary grading and site preparation activities will occur outside the breeding season.

Additional avoidance measures include the expansive setback distance from the CLT colony, temporary construction fencing, and the biological monitoring during the breeding season (April 1-August 15), and monitoring by the environmental site inspector outside of the breeding season. Taken together, these measures will assist the VA in avoiding direct effects on the CLT during construction activities.

Indirect Effects

Potential construction-related sources of noise include construction traffic and the operation of construction equipment. However, during the CLT breeding/nesting season, construction activities would be restricted to those activities that would not result in an increase in the ambient noise level and vibration in and around the CLT colony on the site. Pile driving and pavement demolition activities requiring the use of impact tools (i.e., hydraulic breakers, jack hammers, scarifiers, and compactors) would not occur during the CLT nesting season because these activities and equipment have the potential to increase the ambient noise level and vibration in and around the CLT colony on the site; therefore, no effects from construction noise are expected.

To reduce the potential adverse effects of increased human presence during construction, prior to the commencement of construction, a chain-link fence will be erected delineating the Development Setback

Area and preventing construction personnel and equipment from approaching the colony. Because stockpiled construction materials may provide additional cover and garbage produced by construction waste and workers could attract predators, a biological monitor will oversee that these conditions are minimized. The off-site utility alignments, which are an interdependent action of the proposed VA development, are proposed to follow the existing roadways, which have been used and in operation for decades, shown in **Figure 3**, in areas that contain no habitat for listed species and are well removed from sensitive species habitat by 791 meters. Conservation measures and best management practices to control noise and other potential effects will be included as part of the construction/ upgrade of the utilities. Given these conditions, respective utilities and road improvements would not affect the results of the analyses presented in this BA because there would be no additional take of listed species. Therefore, this work would not cause any additional effects to CLT.

7.2.1.8 EFFECTS ARISING DURING OPERATIONS PHASE

Direct Effects

There are not expected to be direct effects to CLT arising from the operations phase. Operations will have no direct effects on CLT nesting or foraging habitat. Operational activities will occur year-round, but are removed from foraging and nesting habitats at a sufficient distance to avoid direct effects to the CLT.

Indirect Effects

Potential effects on the CLT from the operations phase may include effects to habitat and foraging, increased predation, increased human activity, noise, and lighting.

Habitat and Foraging

Vegetation control and weed removal will continue to be a key component of the CLT colony management. All proposed VA structures will be at least 436 meters away from the CLT nesting colony and more than 280 acres of land surrounding the CLT colony (51% of the action area) will remain flat, undeveloped and sparsely vegetated, identical to existing site conditions.[16] The maintenance of this wide-open, sparsely vegetated setback area will preserve two key aspects of the site, which have historically contributed to the success of the CLT colony. Unobstructed lines of sight in all directions will allow CLT to detect approaching predators at a great distance, and the lack of heterogeneous vegetation near the colony will deter prey (i.e., rodents) from establishing, which in turn will deter predators from foraging closer to the colony. The majority of the landscaped areas in the 100-acre development area will mimic existing grassland features in their ability to harbor prey species, and in turn draw predators away from the CLT colony. The continued maintenance of these landscaped areas will make them less suitable for use as nesting areas by predators of CLT.

Once completed, the VA facilities will continue to allow the CLT to reach foraging areas in San Francisco Bay to the south and west. Access to foraging areas in San Francisco Bay will not be affected because no new structures or activities will be constructed or take place between the CLT colony and these areas. The NCA cemetery, which composes 80 acres of the 100-acre development area, will consist of low-profile structures (10-foot columbarium walls and committal service shelters with a maximum height of 22 feet). Because the cemetery will be relatively open and consist almost entirely of low-profile structures and landscaping, it will not introduce a significant obstruction north of the CLT colony to prevent access to foraging areas in the Oakland Inner Harbor. The 35-foot-tall carillon and the 40-foot-tall OPC building will be constructed northwest of the CLT colony. Both the OPC building and the carillon may introduce

[16] This acreage calculation does not include CERCLA Installation Restoration (IR) Site 2.

minor obstructions to CLT in flight over the VA Development Area. However, the remainder of the VA Development Area will consist of open areas and low-profile structures, and CLT will have ample space to navigate around the carillon and OPC. The OPC will be approximately 600 feet wide, and will occupy approximately 5% of the horizon when viewed from the CLT colony. Under existing conditions, relatively few CLT forage in Oakland Inner Harbor as compared to Seaplane Lagoon and the greater San Francisco Bay to the south and west (Collins and Feeney 1995, USFWS 2000, Tetra Tech 2006). Because the VA development will only introduce a minor obstruction, which the terns will be able to circumvent, and because Oakland Inner Harbor is a relatively minor foraging area, effects to CLT foraging routes are expected to be minor.

Additionally, the proposed conservation easement, or other enforceable property interest, across open water and submerged land south of the runway area (the area formerly designated Parcel FED-1B) will also provide continued access to foraging areas in San Francisco Bay to the south and west.

Predation

Increased human activity associated with the outpatient clinic and cemetery may increase and bring predator populations in closer proximity to the tern colony. This could result in loss of adult birds, chicks, and reduced population recruitment. VA facilities and ancillary structures (e.g., light standards, carillon and flagpoles) may affect CLT by creating additional perches for avian predators, shelter for mammalian predators, and reducing the available area for CLT colony expansion. However, all proposed structures over six feet in height (including ancillary structures) will be designed and/or treated with anti-perching devices to prevent their use by avian predators. Vegetation will be limited to 10-15 feet in height. In addition, regular maintenance activities and inspections will prevent any avian predators from establishing nests on the proposed buildings or landscaping. These anti-perching and nest-prevention measures will ensure that the VA facilities cannot be used as an observation or launching point for avian predators to attack the CLT colony, thereby eliminating one of the primary negative effects of human proximity identified in Caffrey 1995. A predator management plan will be implemented to offset potential predator population increases. If predation pressure on the CLT colony increases, management activities will be adapted to further minimize and better control predation.

Human Activity

Public access would be restricted to the 100-acre development area where VA facilities are located. With the exception of escorted educational tours or tern volunteer efforts, the public will not be allowed within the 436-meter Development Setback Area, which will be clearly delineated by a physical barrier treated with anti-climbing and anti-perching measures. The operation of the cemetery is not expected to add substantial human disturbance, as visitors will be of low concentration, relatively quiet, and will visit the grounds passively and be required to conduct themselves in a respectful manner. A visitor information sign is installed at all national cemeteries, near the cemetery entrance, requesting that visitors observe cemetery restrictions, which prohibit the following: 1) Any form of sports or recreation, to include but not limited to, jogging, bicycling, skating, picnicking; 2) Public gatherings of a partisan nature; 3) Littering of grounds; 4) Cutting, breaking or injuring trees, shrubs, grass or other plantings; 5) Allowing pets to run loose[17]; and 6) Boisterous actions. For the cemetery at Alameda Point, additional information will be posted to make visitors aware of the CLT colony and federal laws regarding listed species. Trash and litter in the cemetery will be minimal, and floral offerings will be regularly removed from the site. The operation of the OPC will take place during normal business hours (8:00 a.m.–4:30 p.m., Monday–Friday). No acute care beds or overnight stays are proposed, and outdoor activities will generally be

[17] Per section 7.1.3, Measure 2, other than trained service animals, pets shall not be allowed within the VA development area.

limited to delivery of supplies, regular maintenance of landscaping and outdoor areas, visitors and staff walking to and from a VA shuttle or private vehicle to the outpatient clinic, and taking breaks in outdoor seating areas near the OPC.

Noise

The operation of the proposed VA facilities would result in increased human activity on the site, compared to the existing conditions. However, both the VA outpatient clinic and cemetery would be located more than 436 meters (approximately 1,430 feet) from the fenced CLT colony. Based on noise measurements conducted at the proposed VA cemetery area in 2009, existing ambient noise levels at the CLT colony typically ranged between 50-55 dBA L_{eq} between 7 a.m. and 7 p.m., and the maximum noise level generated by a military honors salute is 124 dB measured 45 feet from the firing location. Given that noise levels typically attenuate (reduce) at a rate of 6 dBA for every doubling of distance, the minimum 436-meter (1,430-foot) setback distance between the CLT colony and the proposed development area alone would be sufficient to mitigate noise impacts from military honors salutes to a less than significant level (EDAW 2009, **Appendix D**). Additional noise minimization recommendations included in the 2009 noise measurement report will also be incorporated into the operation of the VA facilities. As part of these recommendations, the military honors salutes would be conducted only at the committal service shelters or the designated assembly area, the closest of which would be located more than 520 meters (1,700 feet) from the CLT colony, with walls, low profile landscape berms, and/or other solid structures such as the committal shelters themselves or columbarium walls being constructed between the salute location and the CLT colony, and with salute rifles directed away from the colony.

Memorial events held within the NCA cemetery, such as those held on Memorial and Veterans Days, would be conducted primarily at the designated assembly area and would be organized, staged and conducted in a manner that directs noise away from the CLT colony.

The designated assembly area would be located no closer than approximately 857 meters (2812 feet) from the limits of the CLT colony. Special event public address systems that may be used during memorial events within the assembly area typically generate about 80-85 dBA at a distance of 15.2 meters (50 feet). Public address system noise levels during the special events are not anticipated to exceed these levels due to potential human annoyance and pain threshold limits that could occur at higher levels. Assuming that the public address system would generate up to 85 dBA, noise levels associated with the operation of the public address system would attenuate to no more than 49.6 dBA at the CLT colony, which is less than the lowest measured ambient noise level at the CLT colony (50-55dBA), and would not be considered perceivable above existing ambient noise levels.

As with other existing VA cemeteries, a carillon may be placed within the NCA columbarium cemetery, and would play bells or tones. The carillon would be located and operated such that it would not increase the ambient noise level at the CLT colony. As noted above, based on ambient noise levels measured at the project site, the volume of the carillon output would be limited to a maximum of 85 dBA measured at a distance of 15.2 meters (50 feet) from the carillon to ensure that the proposed project does not increase ambient noise levels at the CLT colony. In addition, prior to the start of the CLT nesting season (April 1), the volume control of the carillon will be checked and noise measurements as measured at the north end of the fenced CLT colony shall be taken to ensure that no ambient noise increase would occur.

No other significant single-noise events are expected to occur because of the project action. Typical sources of ambient noise generated by the VA outpatient clinic would include vehicle traffic on paved roads, regular maintenance of landscaping and outdoor areas, visitors and staff walking to and from a VA shuttle or private vehicle to the OPC, and staff taking breaks in outdoor seating areas near the OPC building. None of these activities are expected to generate high noise levels, and given that typical activity

will be located a minimum of 436 meters from the CLT colony, no increase in existing ambient noise levels within the CLT colony are expected to occur.

Lighting

Increased nighttime light levels produced by building lighting from the VA facilities may affect CLT by enhancing the ability of nocturnal predators to prey on CLT, and allowing avian predators, which are normally diurnal to prey on CLT outside of diurnal hours. Lights may also reduce the ability of CLT to detect approaching predators at night by causing excess glare.

As described in **Appendix H**, the VA conducted a lighting study to analyze the existing ambient light levels in the vicinity of the CLT colony (Silverman and Light 2011). Light measurements were taken on the evening of September 30, 2010, from approximately 6:30 p.m. to 9:00 p.m. The timing of the measurements were planned to coincide with the half moon phase in order to take into account an average amount of moonlight, or ambient light. A full discussion of the ambient light levels measured at the site is included in **Appendix H** of this report.

Both footcandle and foot-lambert readings were taken at various locations in and around the CLT colony and at the location of the proposed OPC. The footcandle (FC) is a unit of illumination that measures the amount of light falling on a given surface. In this case, it is the amount of light, or the light level, on the ground. The footcandle readings measure the relative amount of light present (existing conditions), at grade level, in the nesting area of the colony. The footcandle level measured at grade ranged from .01 to .03 FC. As a point of reference, the FC level at grade on a clear night with a full moon is approximately .01 FC and a brightly illuminated parking lot is an average of about 2 FC.

The foot-lambert (FL) is a unit of luminance that measures the amount of light emitted in a particular direction. The foot-lambert readings measure the vertical light level, or in this case, the brightness in the field of vision at the tern colony (existing conditions). The foot-lambert readings were taken at 6 to 8 inches above grade to approximate the viewpoint of a nesting tern (nesting level), and at 5 to 6 feet above grade to approximate the viewpoint of a tern taking flight or landing (flight level). Looking north to northwest, toward the proposed location of the OPC, the foot-lambert readings measured .04 FL from nesting level and .44 FL from flight level. Looking north toward the Oakland Estuary and the Port of Oakland, foot-lambert readings measured 28.97 FL from nesting level and 42.28 FL from flight level. To the east, in the direction of the existing hangars, the brightest foot-lambert readings measured 33.48 FL from nesting level and 66.49 FL from flight level. Looking directly at the brightest point of light mounted on the hangar, the measurement was 236 FL at flight level.

With these ambient nighttime lighting conditions as a baseline, the VA will ensure that that any increases in the nighttime ambient levels from the VA development will not exceed 10% at a distance of 228.6 meters (750 feet) from the tern colony. This percentage increase and distance were considered to be adequately protective in the 1999 BO regarding disposal of surplus property at the former NAS Alameda.[18] To achieve this performance standard, the VA will ensure that the lighting for the proposed VA facilities will be strategically placed, screened, and tinted in accordance with the recommendations contained in the lighting study (Silverman and Light 2011). All lights in the parking area and along the access road would be directional and point downward using shielded valences/surrounds, and with anti-perching devices. Conservation measures in Section 7.1 provide detail on the measures that will be taken before, during and after construction of VA facilities to minimize lighting effects. Additionally, at the design stage, the VA will confirm that the lighting design for the proposed project will conform to the

[18] The 1999 BO applied this lighting restriction to properties adjacent to the property proposed for transfer to the VA. Specifically, this restriction applied to the Northwest Territories, Civic Core, and Marina Areas within the City of Alameda's 1997 Reuse Plan.

performance standard. In these ways, the VA will avoid and minimize potential adverse effects of lighting on the CLT.

7.2.1.9 EFFECTS OF PROPOSED ACTIONS ADDED TO BASELINE AND CUMULATIVE EFFECTS

Factors presenting risks to naturally-reproducing populations of CLT include road construction (e.g., Pacific Coast highway, which opened up previously undisturbed beach areas to development and recreation), development and filling of feeding areas, and predation (USFWS 1985). The past filling of San Francisco Bay for the creation of the action area created wide expanses of tarmac that were free of vegetation and consequently suitable for CLT nesting. Other than the proposed action, there are no other proposed or future State or private activities expected to have effects on the action area; thus, baseline and cumulative effects are unlikely to add to the factors affecting populations of CLT.

7.2.1.10 CONCLUSION

In consideration of the potential negative effects of development in the action area, a number of conservation measures will be implemented throughout the preconstruction/design, construction, and operation phases of the project to avoid and minimize effects to the CLT colony. Two of the primary sources of harm to CLT colonies throughout California are predation by human-commensal avian and mammal species and direct human disturbance. The project action will not increase predation pressure on the CLT colony because of the establishment of a 436-meter (approximately 1,430-foot) development setback and approximately 289-acre Development Setback Area, both of which are based upon an existing buffer area that has proven to be protective of the Alameda CLT colony. The VA will also create and implement CLT colony management and predator management programs to adaptively manage the colony and maintain predators at levels that do not jeopardize the continued existence of the CLT colony. CLT management activities will continue as they have in the past, including maintenance of the colony fence, placement of nesting substrate, vegetation control, and regular breeding season monitoring and reporting. Additionally, the Navy is committed to granting or reserving a conservation easement or other enforceable property interest to allow for continued CLT access to foraging areas to the south of the VA transfer parcel.

Carrying out the project action may affect, and is likely to adversely affect, the CLT colony throughout the life of the project. However, for the reasons explained above and throughout this BA, the identified conservation measures will ultimately avoid and minimize effects on the CLT arising from human disturbance, predation, noise, lighting, landscaping, and other potential effects of the project.

7.2.2 WESTERN SNOWY PLOVER

7.2.2.11 EFFECTS ARISING FROM CONSTRUCTION AND OPERATIONS PHASE

Current evidence suggests that Western Snowy Plover (WSP) visits the action area sporadically as a foraging migrant. As long as the species retains this status, direct effects on the species are likely to be minimal. The increased presence of humans and equipment during construction would increase the likelihood of anthropogenic disturbances (e.g., noise, light, etc.) to foraging and resting birds. These impacts would be intermittent, and are unlikely to affect the use of the site by snowy plover.

Potential indirect effects of the project action on western snowy plover are generally shared and similar to those identified for CLT, albeit on a smaller scale as this species is currently only sporadically present as a migrant. The scale and likelihood of these effects would increase if western snowy plover were to reestablish itself as a nester in the action area. Potential indirect effects would arise from increased human

activity near foraging and potential nesting areas (CLT colony) and the daily use of new structures in the vicinity of the of these areas. Should the western snowy plover reestablish itself as a nesting species in the action area, effects on the species are likely to be identical to those identified in **Section 7.2.1** for CLT and thus the proposed conservation measures for CLT are also adequately protective of the WSP.

7.2.2.12 EFFECTS OF ACTION ADDED TO BASELINE AND CUMULATIVE EFFECTS

Factors presenting risks to naturally-reproducing populations of western snowy plover include shoreline stabilization and development, sand removal and beach nourishment, dredging and disposal of dredged materials, removal of driftwood, beach fires and camping, watercourse diversion, impoundment, or stabilization, operation of salt ponds, encroachment of introduced beachgrass and other nonnative vegetation, habitat conversion for other special status species, and disease or predation (USFWS 2007b). The past filling of San Francisco Bay for the creation of the action area created wide expanses of tarmac that were free of vegetation that can be attractive to western snowy plovers for nesting. Other than the proposed action, there are no other proposed or future State or private activities expected to have effects on the action area; thus, baseline and cumulative effects are unlikely to add to the factors affecting populations of WSP.

7.2.2.13 CONCLUSION

Carrying out the project action may affect, but is not likely to adversely affect western snowy plover throughout the life of the project. However, no direct loss of historical and potential western snowy plover nesting habitat and migratory stopover habitat is anticipated to result from the action. Take of western snowy plover, at the species' current known level of occurrence at Alameda Point, is not expected to occur, but could occur on a small scale at any time in the form of harm or harassment to migratory individuals or reestablished nesters.

8 CONCLUSION OF BIOLOGICAL ASSESSMENT

Two federally listed species, the California least tern (CLT) and western snowy plover (WSP), have potential to occur within the action area and/or be affected by project activity. CLT return each year to the fenced colony within the action area on the closed runway of the former NAS Alameda, and are considered to be present and breeding on site. The WSP occurs occasionally within the action area, with the most recent sighting in September 2006. Although the action area contains suitable nesting habitat for WSP, they have not been documented nesting on site since the 1980s. Regardless, WSP is considered to have the potential to use the action area for both nesting and as a temporary stopover during migration. Because of their sporadic presence on-site, carrying out the project action may affect, but is not likely to adversely affect WSP throughout the life of the project.

Due to their presence on-site, carrying out the project action may affect, and is likely to adversely affect CLT throughout the life of the project. However, no direct loss of CLT nesting habitat will occur from the project action. In consideration of the potential negative effects of development in the area, a number of conservation measures detailed in **Section 7.1** will be implemented throughout the pre-construction/design, construction, and operation phases of the project to avoid and minimize effects to the CLT colony. Two of the primary sources of harm to CLT colonies throughout California are predation by human-commensal avian and mammal species and direct human disturbance. The project action will not increase predation pressure on the CLT colony because of the establishment of a 436-meter (approximately 1,430-foot) development setback and approximately 289-acre Development Setback Area, both of which are based upon an existing buffer area that has proven to be protective of the Alameda CLT colony. The VA will also create and implement CLT colony management and predator management programs to adaptively manage the colony and maintain predators at levels that do not jeopardize the continued existence of the CLT colony. Additionally, the Navy is committed to granting or reserving a conservation easement or other enforceable property interest to allow for continued CLT access to foraging areas to the south of the VA transfer parcel.

Carrying out the project action may affect, and is likely to adversely affect, the CLT colony throughout the life of the project. However, for the reasons explained above and throughout this BA, the identified conservation measures will ultimately avoid and minimize effects on the CLT arising from human disturbance, predation, noise, lighting, landscaping, and other potential effects of the project.

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9.2 PERSONAL COMMUNICATIONS

December 20, 2007 meeting notes. Meeting attendees included Jayni Allsep (Senior Environmental Planner, AECOM), Gerald Busch (Disposal Project Leader, USN), Don Campbell (by telephone) Environmental Engineer NCA/VA), Richard Crowe (VISN 21, VA), Ellen Garber (Legal Consultant, ARRA), Cay Goude (Assistant Field Supervisor Endangered Species Division, USFWS), Melisa Helton (Fish and Wildlife Biologist, Endangered Species Program San Francisco Bay National Wildlife Refuge [NWR] Complex, USFWS), Claude Hutchison (Director Office of Asset and Enterprise Management, VA), Larry Janes (Capital Asset Manager VISN 21, VA), Laura Kelly (Assistant Capital Asset Manager, VA), Alan Lee (Base Closure Manager, USN), Thomas Macchiarella (by telephone) (BRAC Environmental Coordinator, USN), Patrick McCay (Environmental Planner, USN), Jim Monroe (Solicitor, USFWS), Michele Musante (by telephone) Real Estate Counsel, USN), David Nawi (Legal Consultant, ARRA), Ryan Olah (Chief Coast Bay Delta Branch, USFWS), Debbie Potter (Base Reuse and Community Development. Manager, ARRA), and Christy Smith (Refuge Manager San Pablo Bay NWR, USFWS).

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APPENDIX A

Federally Listed Plant and Animal Species Occurring in the Region and their Potential for Occurrence in the Action Area

Federally Listed Plant Species Occurring in the Region and their Potential for Occurrence within the Action Area

Common Name	Scientific Name	Status*	Blooming Period	Potential for Occurrence
Beach layia	*Layia carnosa*	E	May-Jul	Not expected: marginally suitable habitat present; would have been detectable
California sea blite[1]	*Suaeda californica*	E	Jul-Oct	Not expected: marginally suitable habitat present; would have been detectable
Contra Costa goldfields	*Lasthenia conjugens*	E	Mar-Jun	Not expected: marginally suitable habitat present; would have been detectable
Marin western flax	*Hesperolinon congestum*	T	May-Jul	None; no suitable habitat present
Marsh sandwort	*Arenaria paludicola*	E	May-Aug	None; no suitable habitat present
Pallid manzanita	*Arctostaphylos pallida*	T	Dec-Mar	None; no suitable habitat present
Presidio clarkia	*Clarkia franciscana*	E	May-Jul	None; no suitable habitat present
Presidio manzanita	*Arctostaphylos hookeri*	E	Feb-Mar	None; no suitable habitat present
Robust spineflower	*Chorizanthe robusta* var. *robusta*	E	May-Sep	Not expected: marginally suitable habitat present; would have been detectable
San Francisco lessingia	*Lessingia germanorum*	E	Aug-Nov	None; no suitable habitat present
Santa Cruz tarplant	*Holocarpha macradenia*	T	Jun-Oct	None; no suitable habitat present
Showy rancheria clover	*Trifolium amoenum*	E	April-Jun	None; no suitable habitat present
Tiburon jewel-flower	*Streptanthus glandulosus ssp. niger*	E	May-Jun	None; no suitable habitat present
Tiburon mariposa-lily	*Calochortus tiburonensis*	T	May-Jun	None; no suitable habitat present
Tiburon paintbrush	*Castilleja affinis ssp. neglecta*	E	April-Jun	None; no suitable habitat present
White-rayed pentachaeta	*Pentachaeta bellidiflora*	E	Mar-May	None; no suitable habitat present

***Status Codes**
E = Endangered
T = Threatened

Federally Listed Animal Species Occurring in the Region and their Potential for Occurrence within the Action Area

Common Name	Scientific Name	Status*	Potential for Occurrence
Federally Endangered or Threatened Species			
Amphibians and Reptiles			
California tiger salamander	*Ambystoma californiense*	T	Not Expected
California Red-legged frog	*Rana draytonii*	T	Not Expected
Alameda whipsnake	*Masticophis lateralis euryxanthus*	T	Not Expected
San Francisco garter snake	*Thamnophis sirtalis tetrataenia*	E	Not Expected
Fishes			
Tidewater goby	*Eucyclogobius newberryi*	E	Very Low
Chinook salmon - Sacramento River winter-run	*Oncorhynchus tshawytscha*	E	High
Chinook salmon – Central Valley spring-run	*Oncorhynchus tshawytscha*	T	High
Coho salmon – Central California coast	*Oncorhynchus kisutch*	E	Moderate
Steelhead - Central Valley	*Oncorhynchus mykiss*	T	High
Steelhead - Central California Coastal	*Oncorhynchus mykiss*	T	Very High
Green Sturgeon	*Acipenser medirostris*	T	High
Delta smelt	*Hypomesus transpacificus*	T	Very Low
Crustaceans			
Vernal pool fairy shrimp	*Abludomelita obtusata*	T	Not Expected
Birds			
California least tern	*Sternula antillarum brownii*	E	Present
Marbled murrelet	*Brachyramphus*	E	Not Expected
California clapper rail	*Rallus longirostris obsoletus*	E	Extremely Low
California brown pelican	*Pelecanus occidentalis californicus*	E	Present
Short-tailed albatross	*Phoebastria albatrus*	T	Not Expected
Western snowy plover	*Charadrius alexandrinus nivosus*	T	Present
Mammals			
Salt marsh harvest mouse	*Reithrodontomys raviventris*	E	Extremely Low
Southern sea otter	*Enhydra lutris nereis*	T	Not Expected
Insects			
Bay checkerspot butterfly	*Euphydryas editha bayensis*	T	Not Expected
Callippe silverspot butterfly	*Speyeria callippe callippe*	E	Not Expected
Mission blue butterfly	*Plebejus icarioides missionensis*	E	Not Expected
Myrtle's silverspot butterfly	*Speyeria zerene*	E	Not Expected
San Bruno elfin butterfly	*Callophrys mossii bayensis*	E	Not Expected

***Status Codes**

E = Listed as endangered by the USFWS or NMFS

T = Listed as threatened by the USFWS or NMFS

APPENDIX B

Project Action Area Site Photographs

Figure B-1. Looking south from within the Runway Wetland at the western conveyance, riprap, and pier. Inundated northern coastal salt marsh in the foreground.

Figure B-2. Looking southwest from within the Runway Wetland at the western conveyance, riprap, and pier. Shallow channel in the foreground.

Figure B-3. The exterior portion of the eastern culvert conveyance in the riprap.

Figure B-4. The interior portion of the eastern culvert conveyance in the riprap surrounded by iceplant. The Runway Wetland in the background.

Figure B-5. Runway Wetland middle conveyance (mid picture) with iceplant in the foreground and the riprap in the background. Looking southeast.

Figure B-6. Looking northwest across the Runway Wetland at middle conveyance channel. Mixed iceplant and northern coastal salt marsh in the foreground and open water ponds in the background.

Figure B-7. Looking south across the Runway Wetland with cypress trees and open water ponds in the background and habitat change from grassland at higher elevation to ruderal iceplant in median elevations to northern coastal salt marsh in lower elevations.

Figure B-8. Looking southeast across the Runway Wetland with iceplant benches on the left and ponded northern coastal salt marsh in remaining portions.

Figure B-9. Looking east across the Runway Wetland with expansive iceplant ruderal habitat and inundated ponds.

Figure B-10. Looking southeast across the Runway Wetland with inundated northern coastal salt marsh in the foreground and iceplant (red coloration) in the background.

Figure B-11. Riprap.

Figure B-12. Looking east along the riprap at the southern edge of the project action area.

Figure B-13. Looking northwest across the non-native grassland habitat just north of the Runway Wetland.

Figure B-14. Looking west over the IR2 Site boundary with the West Wetland in the background and grasslands of IR2 Site in the foreground.

Figure B-15. Looking west across the southern-most runway portion with ruderal habitat.

Figure B-16. Looking west across the ruderal habitat on top of the tarmac with riprap in background.

Figure B-17. Looking north across the ruderal habitat at a small stand of willows on the southern portion of the project action area in the tarmac area.

Figure B-18. Looking east across the western tarmac area with ponded non-native grasslands in mid-photo.

Figure B-19. Looking southeast at the willow stands and wetlands in the northern tarmac area. Standing water is not persistent on top of the tarmac itself.

Figure B-20. The interior of the California least tern colony habitat within the tarmac area.

Figure B-21. The exterior fence of the California least tern colony habitat.

Figure B-22. Looking west over the ruderal habitat and riprap of the southern portion of the project action area from the top of a bunker.

APPENDIX C

Biologist Qualifications

Qualifications for Biologist(s) Implementing the Conservation Measures for the VA Proposed Action at the Former Naval Air Station Alameda, Alameda, California

For tasks to be conducted by a biologist, as specified in Conservation Measures identified in Chapter 7 of this Biological Assessment, the biologist shall meet the following qualifications:

- a bachelor's degree with an emphasis in ecology, biology, wildlife biology, zoology, natural resources management, or related science from an accredited college or university
- at least 2 years of experience monitoring flora and fauna within the San Francisco Bay Area;
- a minimum of 120 hours of experience (collected over at least five (5) years) in surveying shorebirds, preferably monitoring CLT and WSP; and
- a documented understanding of the Federal Endangered Species Act.

APPENDIX D

Impacts of noise produced by three volley salutes on the California least tern breeding colony at Alameda Point

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Memorandum

Date:	April 2, 2009
To:	Jayni Allsep
From:	Matthew Pettersson
Subject:	Impacts of noise produced by three volley salutes on the California least tern breeding colony at Alameda Point

Distribution: Vick Germany

Introduction

A simulated three volley salute was undertaken on Thursday March 12, 2009 at the proposed site of the Department Of Veterans Affairs (VA) VHA Medical Facilities and National Cemetery Complex Project on the site of the former Naval Air Station Alameda, Alameda CA, to assess the potential for adverse impacts of noise from the firing detail on California least terns (CLT).

The firing detail consisted of seven M-16 rifles aimed approximately 45 degrees above horizontal. The intention in three volley salutes is that all the rifles are fired simultaneously on all three volleys; however it was observed that firings were separated by fractions of a second due to different reaction times to the command to fire.

A three volley salute was simulated in two locations representative of the range of areas where a committal shelter could be located while the noise levels produced where measured at the CLT colony and at a site part way between the CLT colony and firing location. The reaction of birds in the area to the gun shots was also observed. The test was deliberately undertaken when CLT were not present to avoid potential effects. Therefore, it was necessary to use the reactions of other species as a proxy.

Acoustic Fundamentals

Acoustics is the scientific study that evaluates perception, propagation, absorption, and reflection of sound waves. Sound is a mechanical form of radiant energy, transmitted by a pressure wave through a solid, liquid, or gaseous medium.

Directly measuring sound pressure fluctuations would require the use of a very large and cumbersome range of numbers. To avoid this and have a more usable numbering system, the decibel (dB) scale was introduced. A sound level expressed in decibels is the logarithmic ratio of two

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similar pressure quantities, with one pressure quantity being a reference sound pressure of 20 micropascals.

As acoustic energy spreads through the atmosphere from the source to the receiver, noise levels attenuate (decrease) depending on ground absorption characteristics, atmospheric conditions, and the presence of physical barriers (e.g., walls, building facades, berms). Noise generated from stationary sources such as a three volley salute attenuates at a rate of 6 dB to 7.5 dB per doubling of distance.

Site Conditions

The weather conditions during the measurements were clear skies with an air temperature of 64 degrees Fahrenheit, wind at average speed of 2.3 miles per hour and relative humidity of 88%. These meteorological conditions are favorable for noise measurement. It was not necessary to adjust the noise levels for effects of meteorological conditions.

Noise sources in the area include over flights from commercial aircraft operating from Oakland Airport, stevedoring operations at the Port of Oakland docks to the north and occasional vehicle movements on the roads near the site (e.g., practice police vehicle maneuvering).

Species Observed

The following species were observed:

- Red-tailed hawk
- European starling
- Great blue heron
- Grebe
- Red-winged blackbirds
- Northern shoveler
- American coot
- Ground squirrel
- Killdeer
- Turkey vulture
- Meadowlark
- Swallowtail butterfly
- Canada geese
- Gulls
- Black Phoebe
- Jack Rabbit
- Black Scoter
- Common Golden Eye
- Northern Harrier
- Western Grebe

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Measurement Procedure

The locations of the simulated three volley salutes, noise measurements and wildlife observers are shown in Figure 1.

Figure 1 - Locations of simulated three volley salutes, noise measurements and wildlife observers

The measured noise levels were averaged to reduce the influence of random factors, for example weapons firing at slightly different times, from the data. The measured levels were converted to the equivalent noise level at a common reference distance of 45 feet from the firing detail to remove the effect of different distances between the measurement location and firing detail from the data.

Analysis of the measured noise levels shows that the average peak noise level at 45ft was 121 dB when the rifles were pointed away from the measurement location and 124dB when the rifles were pointed toward the measurement location.

Reactions Observed

No reactions from any of the species present were observed when a three volley salute was simulated at ‘Simulated Three Volley Salute Location 1’.

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A group of Canada Geese were in closer proximity to 'Simulated Three Volley Salute Location 2'. When a volley was fired toward location of the CLT colony, some of the geese 'flinched' but did not fly off and some moved a few feet away from people/noise. One goose flew up a few feet and away by approximately 4 to 5 feet, but then settled down and showed no reaction to further volleys. The geese continued normal behaviors that included feeding, lying down and chasing each other through the series of volleys.

Potential Impacts of Three Volley Salute Noise on the CLT Population

Literature on the effects of impulsive noises on birds is rare (Harris and Davis 1998). The limited amount of available research into the effectiveness of bird scarers that use impulsive noises was used as a basis to establish a significance threshold for impulsive noise from the three volley salutes.

Bishop et al (2003) cite two studies that investigated the effectiveness of bird scarers that work by igniting a propane gas charge inside an open tube, or 'gas cannon' type scarers. The studies found that the impulsive noise from the gas cannons caused birds to move from and avoid areas within 165 feet of the cannon and that outside this distance, birds tend to habituate to the noise.

Measurements of the noise level produced by gas cannon bird scarers previously undertaken by EDAW AECOM and affiliated companies indicates that they produced a peak noise level of approximately 120 dB at 45 ft, which is similar to the peak noise level produced by three volley salutes when the rifles are aimed away from the CLT colony. The three volley salutes would occur much less frequently than the typical firing pattern of a gas cannon bird scarer, which means that habituation to three volley salutes could be slower than typical avian habituation to a bird scarer. The impacts associated with the startle reflex would still occur during any habituation period.

Mitigation

While buffer distance alone would appear to mitigate potential noise impacts from three-volley salutes, the following recommendations are offered to enhance noise attenuation features for the proposed VA uses and facilities:

1. Conduct the three-volley salutes in a manner that allows the firing detail to aim directly away from the CLT colony. The noise measurements undertaken indicated that this would reduce the noise level at the CLT colony by approximately 3 dB in comparison to aiming the rifles toward the CLT colony.

2. Provide a distance buffer between the location of the three-volley salutes and the CLT colony. The literature reviewed and noise testing undertaken indicates that noise from the three-volley salutes could cause a startle reflex if the salutes were separated from the CLT colony by around 165 feet or less. The scarcity of literature available on the impacts of impulsive noise on avian species means that it is not feasible to recommend an exact buffer distance. However, implementation the comparatively greater 1460 foot buffer currently identified for the CLT colony would be sufficient to mitigate the noise impacts of three volley salutes on the colony.

3. Locate solid structures between the locations where three-volley salutes will occur and the CLT colony that will attenuate noise. The structures could be buildings, landscaping or purposefully built noise barriers. The noise attenuating structures would be most effective when located close to the location where the three-volley salute is conducted. A 12-foot-high solid structure located close to a salute location could provide an additional 10 dB of noise attenuation, which is equivalent to increasing the buffer distance to 5000 feet.

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Conclusion

The noise levels produced by simulated three volley salutes at Alameda Point are similar to those produced by propane gas cannon bird scarers. Research undertaken by Bishop et al(2003) into the effectiveness of gas cannon bird scarers indicates that the impact of impulsive noise produced by the three volley salutes could cause a startle reflex if the distance between the firing location and the CLT colony was less than around 165 feet. It was concluded that implementation the comparatively greater 1460 foot buffer currently identified for the CLT colony would be sufficient to mitigate the noise impacts of three volley salutes on the colony.

While buffer distance alone would appear to mitigate potential noise impacts from three-volley salutes, the following recommendations are offered to enhance noise attenuation features for the proposed VA uses and facilities: aiming rifles directly away from the CLT colony during three volley salutes; having a distance separation of at least 1650 feet between the firing location and the CLT colony; and constructing solid noise attenuating structures between the firing location and the CLT colony. Implementation of these mitigation measures would reduce the noise level at the tern colony to a level of less than significant. Given the potential consequences of an impact on the CLT colony, implementation of all three mitigation measures is recommended.

References

1. ‘Evaluation of the Efficacy of Products and Techniques for Airport Bird Control’, 1998, Ross E. Harris and Rolph A. Davis, LGL Limited, environmental research associates, 22 Fisher Street, P.O. Box 280 King City, Ontario L7B 1A6..

2. Bishop J., H. McKay, D. Parrott and J. Allan, 2003 'Review of international research literature regarding the effectiveness of auditory bird scaring techniques and potential alternatives' Prepared by Central Science Laboratories on behalf of the Department for Environment Food and Rural Affairs (DEFRA), Environmental Protection, UK.

Attachments:

1. Biologist Field Notes re Observations During Simulated Salutes

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Memorandum

Date: March 16, 2009

To: Jayni Allsep

From: Vick Germany

Subject: Observations during mock firing salute at Alameda Point, March 12, 2009

Distribution:

Time: first set of volleys fired approximately 11:28 am. Last set noted was at 12:25 pm, but other volleys fired after this time.
Weather: clear. Temp: about 60 degrees. Wind: SSW 5 mph or less

Species observed:
Red-tailed hawk (flying over tarmac area and IR Site 2; one adult perched on IR Site 2 fence and then flew over to tetrahedron structure—this bird left before volleys began; mature and immature)
European starling (around grasslands behind bunker and IR Site 2)
Great blue heron (flying over tarmac area and standing in IR Site 2)
Grebe (possibly pied-billed, but too far away to tell for sure; in pond to the north and slightly east of the northern most bunker adjacent to IR Site 2)
Red-winged blackbirds (primarily in IR Site 2, but a few were around the bunker)
Northern shoveler (in pond to the north and slightly east of the northern most bunker adjacent to IR Site 2)
American coot (in pond to the north and slightly east of the northern most bunker adjacent to IR Site 2)
Ground squirrel (around bunker)
Killdeer (in front of bunker amongst geese)
Turkey vulture (over IR Site 2)
Meadowlark (in front of bunker amongst geese)
Swallowtail butterfly (flying around top of bunker)
Canada geese (around bunker, on runway, in IR Site 2)
Gulls (IR Site 2)

First series of volleys at end of runway north of IR Site 2:
No discernable reaction from birds when volleys were fired toward bay (west) or east. When volleys were fired toward the east, they were noticeably louder than those fired westward. When a vehicle

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carrying noise specialist moved from tern colony location to a location to the east of the pond, the northern shovelers took flight from the pond and did not return to area.

Second series of volleys at location on runway opposite first northern bunker:

When the vehicles moved from first location to second location, the Canada geese that were in the grasslands around the bunker moved about 10 – 20 feet away from their original location when the vehicles pulled up, but they did not take flight. Meadowlark flew off. Killdeer remained. Firing volleys toward southwest (approximately toward second bunker), some of the geese 'flinched' but did not fly off. Some moved a few feet away from people/noise. At either the second or the third set of volleys, one goose did fly up a few feet and away by about 4 – 5 feet, but then settled down and showed no reaction at further volleys. Geese continued to feed, lay down, chase each other through the series of volleys. Killdeer showed no discernable reaction.

When firing toward the northeast, the birds at the pond did not react.

When volleys were fired toward the southwest, they were noticeably louder than those fired northeastward, and much louder than those fired at the end of the runway for the first series of volleys (including east facing).

3/12/09 Alameda NAS

Observed: killdeer
Canada geese
black phoebe
jackrabbit
black scoter
common goldeneye
Northern harrier
Red tail hawk
Western grebe

Volleys from 1st location (away from tern colony)

No discernable reaction from wildlife
not even jackrabbits

Volleys from 2nd location (closer to colony)

One of 4 Canada geese appeared to turn its head then immediately returned to foraging.
others not affected

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Memorandum

To	Jayni Allsep	Page	1
CC	Vick Germany		
Subject	Addition of third committal shelter to the VHA Medical Facilities and National Cemetery Complex Noise impact on California Lesser Tern Colony		
From	Matthew Pettersson		
Date	April 8, 2010		

Introduction

The Department Of Veterans Affairs (VA) proposes to develop the VHA Medical Facilities and National Cemetery Complex project on the site of the former Naval Air Station Alameda. The operational activities associated with the project include occasional three-volley small arms salutes, which would be part of funeral ceremonies performed at committal shelters on the site.

An analysis of the impact of noise generated by the three volley salutes on the nearby California Least Tern (CLT) colony is presented in *Impacts of noise produced by three volley salutes on the California least tern breeding colony at Alameda Point* (AECOM, April 2009). The analysis was based on the assumption that two committal shelters would be located beyond the proposed 1460 foot buffer distance between the CLT colony and the project. This memorandum analyses the impact of noise generated due to the addition of a third committal shelter on the CLT colony.

A 1,460 foot buffer between the CLT colony and the project that would be implemented as part of project build out. The original analysis found that the proposed buffer would be sufficient mitigation for the impact of noise generated by three volley salutes. The additional committal shelter would be located approximately 1,800 feet from the CLT colony and thus beyond the 1,460 foot buffer distance. Also, ceremonies at the site that involve three volley salutes are anticipated to be infrequent. Thus, it is anticipated that three volley salutes would not be simultaneously conducted at multiple committal shelters and thus the noise generated would not be cumulative. As a result, the impact of noise generated by three volley salutes on the CLT colony would be sufficiently mitigated by the distance between the additional committal shelter and the CLT colony.

Mitigation

While buffer distance alone would appear to mitigate potential noise impacts from three-volley salutes, the following recommendations are offered to enhance noise attenuation features for the proposed VA uses and facilities:

1. Conduct the three-volley salutes in a manner that allows the firing detail to aim directly away from the CLT colony. The noise measurements undertaken indicated that this would reduce

the noise level at the CLT colony by approximately 3 dB in comparison to aiming the rifles toward the CLT colony.

2. Provide a distance buffer between the location of the three-volley salutes and the CLT colony. The literature reviewed and noise testing undertaken indicates that noise from the three-volley salutes could cause a startle reflex if the salutes were separated from the CLT colony by around 165 feet or less. The scarcity of literature available on the impacts of impulsive noise on avian species means that it is not feasible to recommend an exact buffer distance. However, implementation the comparatively greater 1460 foot buffer currently identified for the CLT colony would be sufficient to mitigate the noise impacts of three volley salutes on the colony.

3. Locate solid structures between the locations where three-volley salutes will occur and the CLT colony that will attenuate noise. The structures could be buildings, landscaping or purpose built noise barriers. The noise attenuating structures would be most effective when located close to the location where the three-volley salute is conducted. A 12-foot-high solid structure located close to a salute location could provide an additional 10 dB of noise attenuation, which is equivalent to increasing the buffer distance to 5000 feet.

Conclusion

The third committal shelter proposed to be added to the VHA Medical Facilities and National Cemetery Complex project would be located approximately 1,800 feet from the nearby CLT colony. Previous noise analysis (AECOM, 2009) found that a 1460 foot buffer distance between the CLT colony and a committal shelter would be sufficient to mitigate the impact of noise generated by three volley salutes on the CLT colony. As a result, the previously offered noise mitigation measures would also be sufficient mitigation for noise generated by three volley salutes performed at the third committal shelter.

While buffer distance alone would appear to mitigate potential noise impacts from three-volley salutes, the following recommendations are offered to enhance noise attenuation features for the proposed VA uses and facilities: aiming rifles directly away from the CLT colony during three volley salutes; having a distance separation of at least 1460 feet between the firing location and the CLT colony; and constructing solid noise attenuating structures between the firing location and the CLT colony. Implementation of these mitigation measures would reduce the noise level at the tern colony to a level of less than significant. Given the potential consequences of an impact on the CLT colony, implementation of all three mitigation measures is recommended.

References

1. *Impacts of noise produced by three volley salutes on the California least tern breeding colony at Alameda Point*, AECOM April 2009

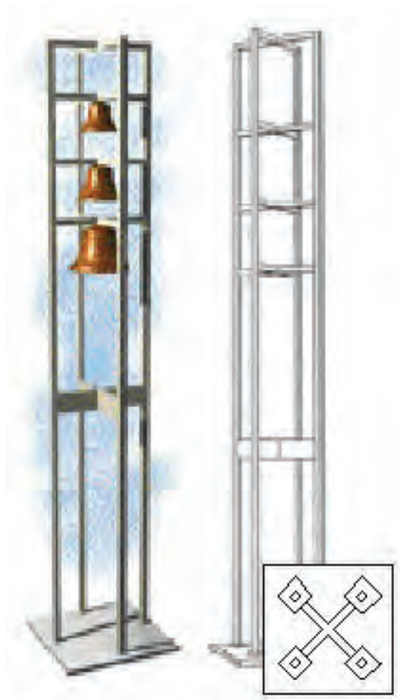
APPENDIX E

NCA Columbarium Facilities / Site Features

COLUMBARIUM WALLS

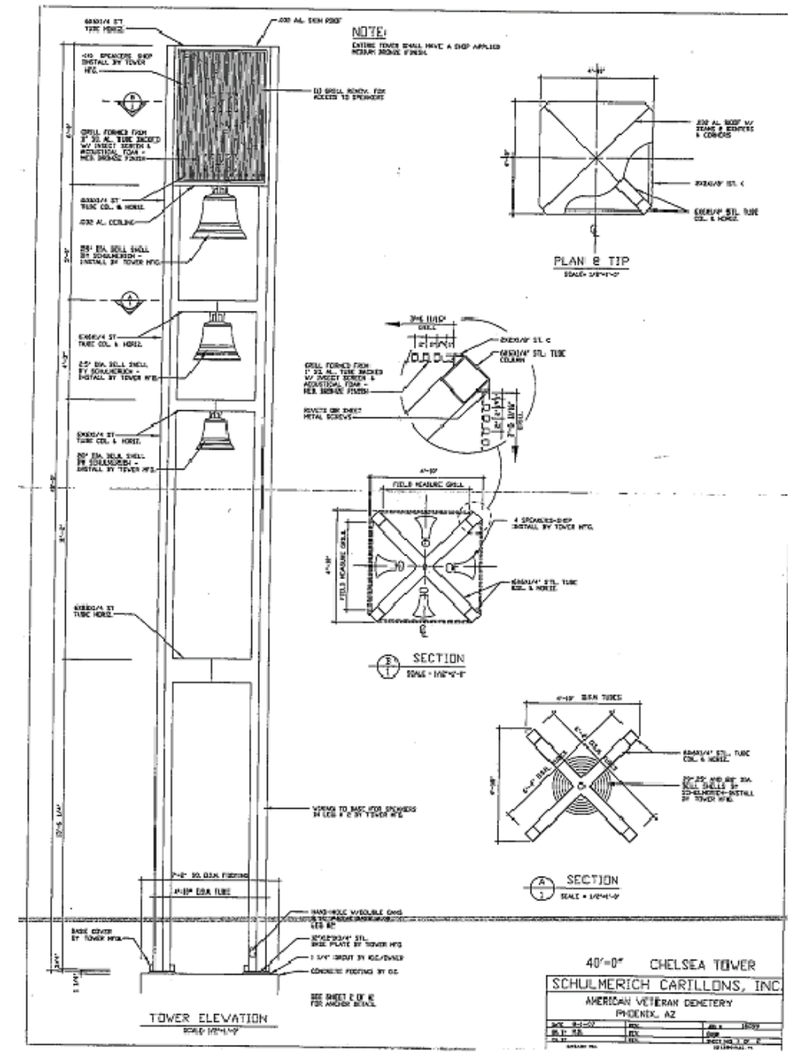
COMMITTAL SHELTERS

FENCING, BENCHES & OTHER SITE FEATURES



Chelsea: Dimensions

Height	Width	Footing	Weight
35'-0"	4'-3"	6'-8"	3,220



Carillon (bell tower)

Carillons

APPENDIX F

California Least Tern Predation Summary for 1998-2009

Appendix F - California Least Tern Predation Summary for 1998-2009

Sources:

Breeding Status of the California Least Tern at Alameda Point, Alameda, California. Unpublished annual reports for the breeding years 1998-2009. Prepared by Laura Collins (1998-1999), the Point Reyes Bird Observatory (2000-2001) and the U.S. Fish and Wildlife Service (2002–2009) for the U.S. Navy. (Collins 1999, 2000, Elliot and Sydeman 2001, 2002, Hurt 2003, 2004, 2005, 2006, Euing 2007, 2008, 2009, 2010).

Final Report, California Least Tern Project for Alameda Point. Unpublished annual reports for the breeding years 2003-2009. Prepared by California Wildlife Services, U.S. Department of Agriculture, for the U.S. Navy and the U.S. Fish and Wildlife Service. (Popper 2003, 2004, 2005, 2008, 2009, Miller 2006, 2007).

Table F-1. California Least Tern Verified and Suspected Predation by Species

Numbers NOT IN parentheses represent verified CLT depredations by this species. Numbers WITHIN parentheses represent suspected CLT depredations by this species. For example, "3 (5)" indicates that 8 total depredated CLT were observed, 3 of which were verified to have been taken by this species, with an additional 5 suspected to have been taken by this species.

Information in Table F-1 was obtained from narrative descriptions of predation under the heading "Predation" in the Results sections of the yearly *Breeding Status of the California Least Tern at Alameda Point* reports. In some years, the numbers and life stages of depredated CLT documented in the narrative descriptions do not match up with those given in the summary tables provided in the same yearly report. Footnotes at the bottom of Table F-1 provide detail on these discrepancies.

Predator Species	CLT Life Stage Taken	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Birds														
Peregrine falcon (*Falco peregrinus*)	Adult			(1)			2		2			(1)	10	14 (2)
	Fledgling								3		1		1	5
	Chick						1							1
	Egg													
	Unknown					1 (5)			1					2 (5)
	Total			**(1)**		**1 (5)**	**3**		**6**		**1**	**(1)**	**11**	**22 (7)**
Red-tailed hawk (*Buteo jamaicensis*)	Adult													
	Fledgling										2		10 (11)	12 (11)
	Chick											1		1
	Egg													
	Unknown													
	Total										**2**	**1**	**10 (11)**	**13 (11)**
Northern	Adult													

Predator Species	CLT Life Stage Taken	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
harrier (*Circus cyaneus*)	Fledgling					1		1	2	(1)		1		5 (1)
	Chick	4 (2)	10		1						1	1		17 (2)
	Egg			6										6
	Unknown													
	Total	**4 (2)**	**10**	**6**	**1**	**1**		**1**	**2**	**(1)**	**1**	**2**		**28 (3)**
Common raven (*Corvus corax*)	Adult													
	Fledgling													
	Chick													
	Egg	(1)						1	2 (18)	(9)				3 (28)
	Unknown													
	Total	**(1)**						**1**	**2 (18)**	**(9)**				**3 (28)**
Corvid (Common raven or American crow)	Adult													
	Fledgling													
	Chick													
	Egg											(5)	(2)	(7)
	Unknown													
	Total											**(5)**	**(2)**	**(7)**
Western gull (*Larus occidentalis*)	Adult													
	Fledgling													
	Chick													
	Egg									(2)				(2)
	Unknown													
	Total									**(2)**				**(2)**
Burrowing owl (*Athene cunicularia*)	Adult									18 (8)				18 (8)
	Fledgling													
	Chick									3 (12)				3 (12)
	Egg													
	Unknown													
	Total									**21 (20)**				**21 (20)**
Great horned	Adult									1				1

Predator Species	CLT Life Stage Taken	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
owl (*Bubo virginianus*)	Fledgling													
	Chick													
	Egg													
	Unknown													
	Total									**1**				**1**
Barn owl (*Tyto alba*)	Adult													
	Fledgling			(7)								(1)		(8)
	Chick	(5)												(5)
	Egg													
	Unknown													
	Total	**(5)**		**(7)**								**(1)**		**(13)**
American kestrel (*Falco sparverius*)	Adult													
	Fledgling					1	1	1		(1)				3 (1)
	Chick	1				2	1	2						6
	Egg													
	Unknown													
	Total	**1**				**3**	**2**	**3**		**(1)**				**9 (1)**
Loggerhead shrike (*Lanius ludovicianus*)	Adult											1		1
	Fledgling													
	Chick						1							1
	Egg													
	Unknown													
	Total						**1**					**1**		**2**
Horned lark (*Eremophila alpestris*)	Adult													
	Fledgling													
	Chick													
	Egg			(11)										(11)
	Unknown													
	Total			**(11)**										**(11)**
Owl	Adult													

Predator Species	CLT Life Stage Taken	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
(unidentified)	Fledgling		1 (1)											1 (1)
	Chick		21 (9)				1	1	2					25 (9)
	Egg													
	Unknown								1					1
	Total		**22 (10)**				**1**	**1**	**3**					**27 (10)**
Unknown avian predator	Adult						1	1	1	(7)		7		10 (7)
	Fledgling							2		(2)	20	10		32 (2)
	Chick							9			2	1		12
	Egg							8		(10)	3	6		17 (10)
	Unknown						1		1					2
	Total						**2**	**20**	**2**	**(19)**	**25**	**24**		**73 (19)**
Mammals														
Raccoon (*Procyon lotor*)	Adult													
	Fledgling													
	Chick													
	Egg					(35)								(35)
	Unknown													
	Total					**(35)**								**(35)**
Striped skunk (*Mephitis mephitis*)	Adult													
	Fledgling													
	Chick													
	Egg					(9)								(9)
	Unknown													
	Total					**(9)**								**(9)**
Gray fox (*Urocyon cinereoargenteus*)	Adult													
	Fledgling				(1)									(1)
	Chick													
	Egg													
	Unknown													
	Total				**(1)**									**(1)**

Predator Species	CLT Life Stage Taken	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Invertebrates														
Ants (unidentified species)	Adult													
	Fledgling													
	Chick									2		1		3
	Egg				1							2		3
	Unknown													
	Total				**1**					**2**		**3**		**6**
Black widow spider (*Latrodectus* sp.)	Adult													
	Fledgling													
	Chick		2 (1)											2 (1)
	Egg													
	Unknown													
	Total		**2 (1)**											**2 (1)**
Unknown Species														
Unknown predator	Adult	1					1		5					7
	Fledgling	1					2							3
	Chick				1				4					5
	Egg							1	1					2
	Unknown													
Total														
Total predation (combining verified and suspected)	Adult	1		1			4	1	8	34		9	10	68
	Fledgling	1	2	7	1	2	3	4	5	4	23	12	22	86
	Chick	12	43		2	2	4	12	6	17	3	4		105
	Egg	1		17	1	44		10	21	21	3	13	2	133
	Unknown					6	1		3					10
Total Avian Predation		**5 (8)**	**32 (10)**	**6 (19)**	**1**	**5 (5)**	**9**	**26**	**15 (18)**	**22 (52)**	**29**	**28 (7)**	**21 (13)**	**199 (132)**

Predator Species	CLT Life Stage Taken	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Total Mammalian Predation					**(1)**	**(44)**								**(45)**
Total Invertebrate Predation			**2 (1)**		**1**					**2**		**3**		**8 (1)**
Total Unknown Predation		**2**			**1**		**3**	**1**	**10**					**17**
Total Predation		**15**	**45**	**25**	**4**[1]	**54**[2]	**12**	**27**[3]	**43**[4]	**76**[5]	**29**	**38**	**34**	**402**

[1] In the 2001 breeding season report (Elliot and Sydeman 2002), the narrative description of predation (pages 34-35) documents the depredation of 2 chicks, but the summary table (page 24) cites only the depredation of 1 chick. The total depredation documented in the narrative description is 4 CLT, but the total number cited in the summary table is 3 CLT.

[2] In the 2002 breeding season report (Hurt 2003), the narrative description of predation (pages 20-21) documents the depredation of 2 chicks, 2 fledglings, and 6 CLT whose life stages are not identified (taken by peregrine falcons). The summary table (page 13) cites the depredation of 13 chicks, 4 fledglings, and 4 adults. The total depredation documented in the narrative description is 54 CLT, but the total number cited in the summary table is 65 CLT.

[3] In the 2004 breeding season report (Hurt 2005), the narrative description of predation (pages 24-26) documents the depredation of 10 eggs. The summary table (page 15) cites the depredation of only 9 eggs. The total depredation documented in the narrative description is 27 CLT, but the total number cited in the summary table is 26 CLT.

[4] In the 2005 breeding season report (Hurt 2006), the narrative description of predation (pages 25-27) documents the depredation of 21 eggs. The summary table (page 19) cites the depredation of only 20 eggs. The total depredation documented in the narrative description is 43 CLT, but the total number cited in the summary table is 42 CLT.

[5] In the 2006 breeding season report (Euing 2007), the narrative description of predation (pages 26-30) documents the depredation of 21 eggs, 17 chicks, 4 fledglings, and 34 adults. The summary table (page 19) cites the depredation of 15 eggs, 25 chicks, 3 fledglings, and 26 adults. The total depredation documented in the narrative description is 76 CLT, but the total number cited in the summary table is 69 CLT.

Table F-2. Predator Disturbance at Alameda Point CLT Colony by Year

Disturbance – This box is marked if a predator species was documented in the annual reports as having hunted within the CLT colony, caused disturbance to the CLT, or was trapped, harassed, or lethally removed by USDA Wildlife Services during that year. Non-predator species which caused disturbance to the CLT colony (such as turkey vulture and Canada goose) are not included. Also not included are predator species which were observed during yearly CLT monitoring at Alameda Point, but which were not documented causing any disturbance or requiring attention from USDA Wildlife Services.

Predation – This box is marked if the species was either confirmed or suspected of depredating at least one CLT of any life stage during that year.

Predator Species		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Birds													
Peregrine falcon (*Falco peregrinus*)	Disturbance	x	x	x	x	x	x	x	x	x	x	x	x
	Predation			x		x	x		x		x		x
Red-tailed hawk (*Buteo jamaicensis*)	Disturbance	x	x	x	x	x	x	x	x	x	x	x	x
	Predation										x	x	x
Northern harrier (*Circus cyaneus*)	Disturbance	x	x	x	x	x	x	x	x	x	x	x	x
	Predation	x	x		x	x		x	x	x	x	x	
Cooper's hawk (*Accipiter cooperii*)	Disturbance			x					x				x
	Predation												
Sharp-shinned hawk (*Accipiter striatus*)	Disturbance						x						
	Predation												
White-tailed kite (*Elanus leucurus*)	Disturbance			x								x	
	Predation												
Common raven (*Corvus corax*)	Disturbance	x	x	x	x	x	x	x	x	x	x	x	x
	Predation	x						x	x	x		x	x
American crow (*Corvus brachyrhynchos*)	Disturbance		x	x								x	x
	Predation											x	x
Various gull species	Disturbance	x	x	x	x	x	x	x	x	x	x	x	x

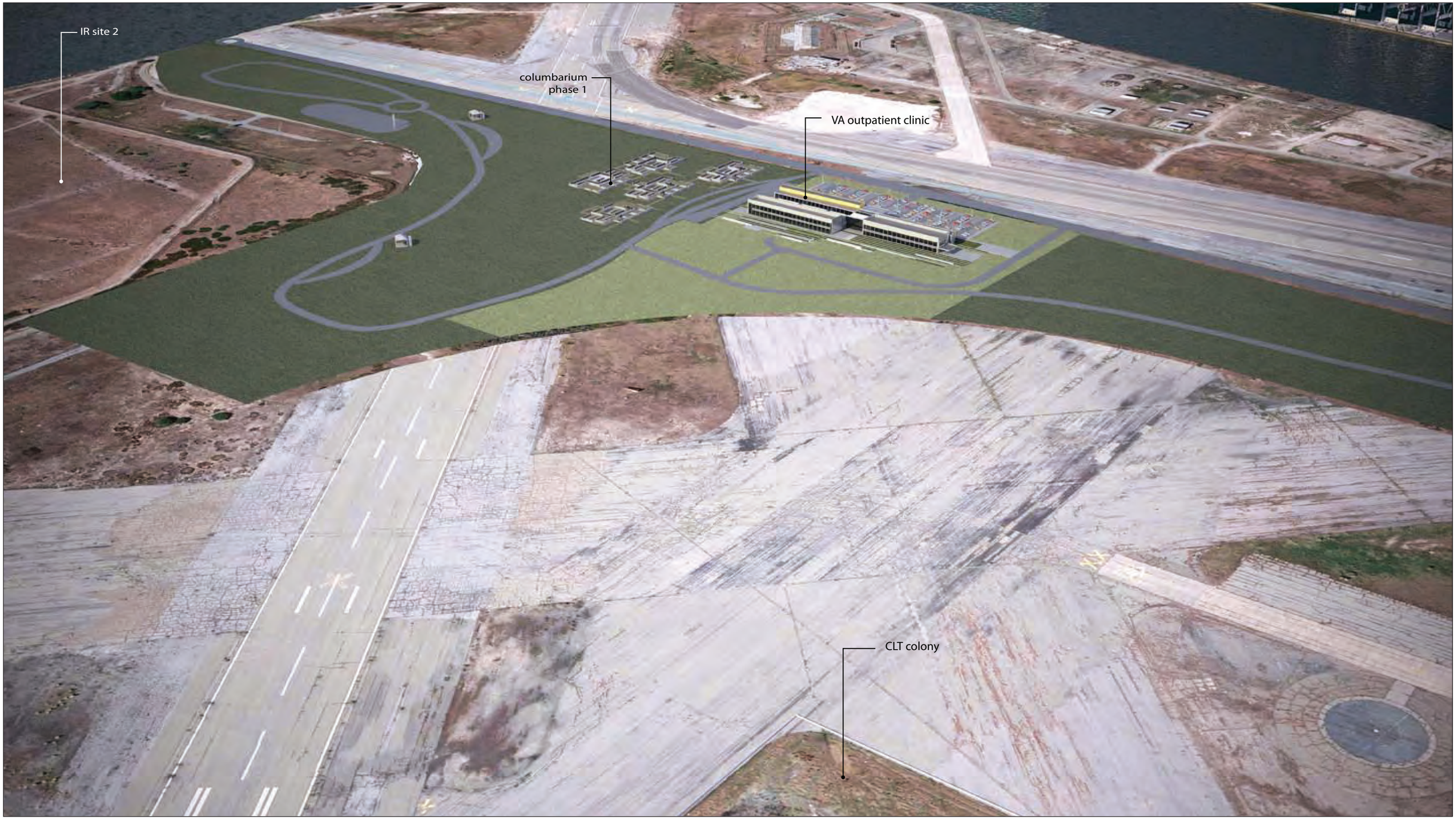
Predator Species		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
(*Larus* spp.)	Predation									x			
American kestrel	Disturbance	x	x	x	x	x	x	x	x	x	x	x	x
(*Falco sparverius*)	Predation	x				x	x	x		x			
Prairie falcon	Disturbance		x										
(*Falco mexicanus*)	Predation												
Loggerhead shrike	Disturbance			x		x	x	x	x	x	x	x	
(*Lanius ludovicianus*)	Predation						x					x	
Burrowing owl	Disturbance									x		x	
(*Athene cunicularia*)	Predation									x			
Great horned owl	Disturbance			x						x	x	x	
(*Bubo virginianus*)	Predation									x			
Barn owl	Disturbance	x	x	x	x	x				x	x	x	x
(*Tyto alba*)	Predation			x									
Short-eared owl	Disturbance		x										
(*Asio flammeus*)	Predation												
Horned lark	Disturbance			x									
(*Eremophila alpestris*)	Predation			x									
Owl	Disturbance		x	x	x		x	x	x	x	x		
(unidentified species)	Predation		x				x	x	x	x			
Unidentified avian predator	Disturbance						x	x		x	x	x	
	Predation						x	x			x	x	
Mammals													
Feral cat	Disturbance	x	x	x	x	x	x	x	x	x		x	x
(*Felis silvestris catus*)	Predation												
Raccoon	Disturbance	x		x		x	x	x	x	x		x	x
(*Procyon lotor*)	Predation					x							
Virginia opossum	Disturbance	x		x	x	x	x	x	x	x	x	x	x
(*Didelphis virginiana*)	Predation												
Striped skunk	Disturbance			x	x	x	x	x	x		x	x	x
(*Mephitis mephitis*)	Predation					x							
Red fox	Disturbance												x

Predator Species		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
(*Vulpes vulpes*)	Predation												
Gray fox	Disturbance	x			x								
(*Urocyon cinereoargenteus*)	Predation				x								
Domestic dog	Disturbance			x				x					
(*Canis lupus familiaris*)	Predation												
Norway rat	Disturbance					x				x	x		
(*Rattus norvegicus*)	Predation												
Invertebrates													
Ants	Disturbance				x					x	x	x	
(unidentified species)	Predation				x					x		x	
Black widow spider	Disturbance	x	x										
(*Latrodectus* sp.)	Predation		x										

APPENDIX G

Renderings of Proposed VA Site Development at Alameda

RENDERING 1 FROM ESTUARY



RENDERING 2 FROM CLT COLONY

APPENDIX H

Lighting Study prepared by Silverman & Light

LIGHTING STUDY OF EXISTING AND PROPOSED LIGHTING LEVELS AT THE NAS ALAMEDA CALIFORNIA LEAST TERN COLONY

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Director of Lighting Design

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President

January 2011

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EXECUTIVE SUMMARY

The purpose of this study is to measure the existing ambient nighttime light levels in the vicinity of the California Least Tern (CLT) colony at the former NAS Alameda and to analyze the anticipated potential light increase from the VA clinic and sports complex developments.

We took nighttime light level readings at various locations around the CLT colony. Readings were also taken at several existing buildings, similar in nature to the proposed building, including the VA clinic at Mare Island, and at some existing East Bay soccer fields.

We observed that the footcandle level in the vicinity of the colony is quite low but found that there was a high level of vertical brightness surrounding the colony.

Since plans for the clinic have not been developed, and plans for the Sports Complex were not available, we took the data we collected off site and applied it to the NAS Alameda site. We also evaluated the data of the VA proposed light fixtures.

Based on our research, observations, and calculations, we estimate that, if both projects are built, there could be a combined increase of about 394% in the ambient FC level at the colony. The existing ambient FC level is very low, relatively speaking. With the projected increase, the new anticipated proposed light level will be about 14% that of a typical residential sidewalk. The vertical light level (FL) will add brightness to the colony's visual environment, but it will be at a level lower than the existing brightness from the Port and the NAS hangars.

Fixture selection, performance and placement will play a part in the outcome. It is suggested that both projects follow the criteria set forth in order to minimize the effect of the additional lighting. It is recommended that a more thorough lighting study be conducted once specific plans for these projects have been developed.

LIGHTING SURVEY & ANALYSIS

Introduction and Purpose of Study

The purpose of this lighting study is to measure the existing ambient nighttime light level in the vicinity of the California Least Tern (CLT) colony at the former Naval Air Station Alameda (NAS), and to analyze the anticipated potential light increase from the VA clinic and sports complex developments. Refer to the site plan on p. 8 to see the lighting study area. The analysis will determine whether, and to what degree, existing ambient nighttime lighting levels are expected to increase in the vicinity of the CLT colony as a result of the proposed VA clinic and neighboring sports complex at the NAS. This analysis will be incorporated into a Biological Assessment to be used in consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act.

Methodology

Measurements were taken at and adjacent to the California Least Tern (CLT) colony at the NAS on the evening of September 30th, 2010 from approximately 6:30-9:00 pm. The moon was at half phase but it was a very overcast evening, as can be seen in the accompanying photos. As expected, we did not observe any CLTs at the colony.

We took both footcandle and foot-lambert readings at the locations identified on the site plans. (Refer to site plans on p. 8-10). The footcandle is a unit of illumination that measures the amount of light falling on a given surface. In this case, we are measuring the amount of light, or the light level, on the ground. The footcandle readings will measure the relative amount of light present, at grade level, in the nesting area of the colony. The foot-lambert is a unit of luminance that measures the amount of light emitted in a particular direction. In this case we are measuring the light emitted from the existing site lighting, toward the colony, as perceived by the terns. The foot-lambert readings will measure the vertical light level or in this case the brightness in the field of vision at the tern colony. The visit was planned to coincide with the half moon phase in order to take into account an average amount of moonlight, or ambient light. The overcast sky masked the contribution of the moonlight, resulting in a very low level of ambient light at the site. This is noted for reference, so that if future readings at the site are needed for comparison, it would be most accurate if they are taken under similar conditions.

We took two footcandle (FC) readings, at grade, to measure the horizontal light level, at each of the following locations. Locations A, B, C, and D were established by the Navy. Readings were also taken at locations B1, C1 and C2 in order to add breadth to the study. (The letters in parentheses correspond to locations shown on the site plan, on p.8):

- The center of the colony (A)
- The northeast corner of the colony (B)
- The northwest corner of the colony (B1)
- At several points between the colony and the proposed clinic site (C, C1, C2)
- The southwest corner of the proposed clinic site (D)

We also took foot lambert (FL) readings, from the center of the colony (A), in the 90 degree field of view looking towards the following locations, (Numbers in parentheses correspond to views shown on the site plan on p.9. Arrows indicate direction of view):

- The proposed VA clinic site (looking north to northwest) (1)
- The Port of Oakland (looking north) (2)
- The NAS hangars (looking east) (3)

The foot- lambert readings were taken at 6”-8 ” above grade, to approximate the viewpoint of a nesting tern (nesting level) and at 5’-6’ above grade to approximate the viewpoint of a tern taking flight or landing (flight level).

Photos were taken just outside the colony at the location marked with an ‘x’ on the site plan on p. 10. Arrows indicate direction of view. Note that a photograph was taken of view (e) for comparison only, to help illustrate how bright the light from the Port is. Lower case letters correspond to photos as follows:

(a) Looking east at the NAS hangars (p. 12-14)
(b) Looking north at the east side of the Port of Oakland (p. 15, 16, & 18)
(c) Looking north at the west side of the Port of Oakland (p. 17& 19)
(d) Looking northwest towards the Bay Bridge (p. 20)
(e) Looking southwest over the water (p. 21)

Specific plans for the proposed VA clinic have not yet been developed. To represent future on-site conditions, lighting measurements were taken at several buildings that are representative of the lighting conditions of the proposed project. These buildings included an office building and a medical office building, both in Walnut Creek, and the existing VA clinic at Mare Island. The readings will be used to assess the potential impacts resulting from the implementation of the proposed development. Foot-lambert readings were taken in Walnut Creek on the overcast evening of October 1st. Photographs were not taken of these buildings. Both footcandle and foot-lambert readings, as well as photos, were taken at the Mare Island clinic, on the overcast evening of November 18th. (See p. 26-27 for photos). Lastly, we reviewed fixture data, or cut sheets, of proposed interior and exterior fixtures, forwarded to us by the VA. We will comment in the Recommendations section on the appropriateness of their use in the proposed developments.

Existing Conditions

Footcandle Readings at NAS Alameda

The footcandle level at grade was a range of .01-.03 FC. As a point of reference, the FC level at grade on a clear night with a full moon is approximately .01 and a brightly illuminated parking lot is an average of about 2 FC.

Foot Lambert Readings at NAS Alameda

Looking north to northwest, toward the proposed VA clinic site, we measured .04 FL from nesting level and .44 FL from flight level. Looking north toward the Port of Oakland, we measured 28.97 FL from nesting level and 42.28 FL from flight level. To the east, there were a cluster of NAS hangars. At the brightest of these hangars, we measured

33.48 FL from nesting level and 66.49 FL from flight level. Looking directly at the brightest point of light mounted on the hangar, the measurement was 236 FL at flight level.

Foot- Lambert Readings at two existing East Bay buildings

Measurements were taken 500 ft. and 1,200 ft away from the buildings. All distances are approximate and were dictated by existing site constraints. We measured a range of .09-.17 FL at nesting level and .14-.21 FL at flight level.

Footcandle and Foot-Lambert Readings at Mare Island VA Clinic

We took footcandle and foot- lambert readings at three exterior locations at the VA Mare Island clinic: in front of the building at approximately 1,000 ft. away, on one side of the building at approximately 800 ft. away, and at about 1,200 ft. behind the building. All distances are approximate and were dictated by site constraints such as buildings, bends in the road, trees, etc. The footcandle readings ranged from 0.0-0.04 FC. The foot lambert readings at nesting level ranged from .04-.42 FL, and at flight level, the range was .01-.36 FL.

Analysis of Potential Increased Light Levels

While the FC level in the vicinity of the colony was very low, we observed a high level of vertical brightness surrounding the colony. The brightest level was observed looking north towards the Port. The next brightest level was looking east toward the NAS hangars, while the third brightest level was looking west toward the Bay Bridge. The least bright level was looking southwest toward the water. Although the meter readings were higher at the NAS hangars, the perception of brightness was higher when looking toward the Port because it is so large. In comparison, looking from the colony north to northwest towards the proposed VA site, the level was between that of the Port and the Bridge.

At the Mare Island VA clinic, the foot candle readings taken were also quite low, while the foot lambert readings were similar to the lower range of readings taken at NAS Alameda.

Generally speaking the existing electric light does not contribute much to the FC level at the colony. The measured level of .02 at the center of the colony, although twice as bright as a moonlit night, is still only 1/10th that of a typical residential sidewalk. In the absence of a specific lighting design for the proposed clinic, we have taken the FC data collected at the Mare Island VA clinic and applied it to the NAS Alameda site. The FC reading at the front of the Mare Island clinic was .02FC at a distance of 1,000 ft from the building. We were not able to take readings any further away from the building due to site restrictions. The inverse square law has been used to calculate the anticipated FC level at a distance of 1,800 ft. from the building, (See Appendix for calculation), we anticipate a cumulative FC level of .026 at the center of the colony. This is an increase of 30% above the existing level of .02FC, measured at the colony.

The maximum FL reading at Mare Island was .42FL at 1,000 ft. from the building. Since the added brightness will be at a different location than the existing brightness at the site, i.e. more to the west and closer than the Port lighting, the effect will be additive rather than cumulative. In this case, what was measured at Mare Island is not as bright as what was measured at the site looking towards the proposed clinic site. It is 4.5% less bright than the existing measured level. Depending on the size and shape of the proposed building, it may actually block some of the existing brightness from the Port, thus effectively reducing some of the brightness in the colony view. As a

point of reference, the level of brightness at Mare Island is .9 % as bright as the Port and .6% as bright as the hangars. So, the proposed clinic will add brightness to the tern's visual environment, but it will be a low level of brightness in comparison to what is already there.

Recommendations for Minimizing/Mitigating Effects

Proposed VA Clinic

Since specific plans for the proposed clinic have yet to be developed, we suggest the following guidelines, in order to keep the vertical brightness to a minimum:

Exterior lighting

- Keep exterior lighting to a minimum. Put the light where it is needed for comfort and safety and nowhere else.
- Use fixtures with full cutoff optics to minimize glare.
- Choose mounting heights that help minimize glare.
- Minimize or eliminate uplight.
- Control all exterior lighting with a timeclock to avoid prolonged illumination when it isn't needed. Turn off all non-essential lights at night.
- Consider using building or plant materials to obscure the lights from colony view.
- Provide shielding on all pole mount fixtures to direct the light away from the colony.
- Emphasize light sources that have minimal blue light spectrum. If utilizing Metal Halide sources, specify filters or lamps with color temperatures that effectively filter out most of the blue light spectrum. High pressure sodium may be a better source, as the relatively monochromatic wavelength can be more easily filtered.

Interior lighting

- Follow IES minimum guidelines for interior space light levels.
- Use recessed indirect fixtures in exam rooms, provider offices, corridors etc.
- Use occupancy sensors and/or a timeclock to control lights to ensure that they are not left on unnecessarily.
- Consider installing window shades to help obscure the interior light from colony view.

Review of VA proposed fixture types

We reviewed and evaluated data (cutsheets) for several fixtures proposed by the VA for the clinic. Refer to the Appendix for the cutsheets. The proposed typical interior fixture is a 2'x4' recessed indirect light fixture, the Daybright Arioso series. This type of fixture is a good choice. The indirect distribution will help limit the amount of glare exiting through the clinic windows.

The proposed renderings (See Appendix) indicates that most of the clinic's exterior lighting, such as the flagpole lighting and the parking lot lighting will be on the north side of the building, i.e. furthest from the colony. This

makes good sense. The proposed LED flagpole fixture, Energy Focus, is acceptable, if specified with the 12 degree beam spread and the 3500k color temperature (CT). Be sure to position these lights to minimize brightness in the colony field of view. The proposed LED wall pack, Lumecon, is a full cutoff fixture, which is appropriate, but it has a very cool color temperature. This is not recommended. A fixture with a warmer CT would be less likely to simulate daylight. Position the fixture carefully on the building to avoid additional glare in the colony field of view. The proposed pole mount fixture is the BetaLED Edge fixture. It is available in two color temperatures, 6000k and 4300k but both are too cool. It would be better to use a fixture with a warm CT, to avoid simulating daylight, particularly if the poles will be tall. If warmer colored LEDs are not available, consider using an alternate source such as the Philips CosmoPolis metal halide lamp which has a very warm or 2800k CT. The light level on the roadway approaching the clinic should be kept to the minimum safe level. The pole lights should be situated on the south side of the road. Backside shields should be utilized to limit the light distribution out the back of the fixture, towards the colony. Use of some form of multi- level control, such as a duel level fixture or occupancy sensors, is recommended to reduce the light level when it isn't needed. The lawn on the south side of the building should not be illuminated. If these recommendations, along with the guidelines outlined above, are implemented, the effect of the FC level and the FL level from the proposed clinic will be greatly minimized.

Proposed Sports Complex

The Proposed Sports Complex is a different matter because of the high level of exterior lighting needed for the functionality of such a complex. The types of sports proposed, are multidirectional aerial sports in which the players, and the spectators, view the ball at many angles, heights, and locations. These sports require a high level of vertical illuminance that extends the height of the entire playing area. The new complex will be situated about 2,500 ft. away from the center of the colony, which will greatly help mitigate the potential glare.

Since plans are not available, we took foot lambert readings at several existing soccer fields in the East Bay, in order to create a point of reference (See p. 20-23 for photos). We measured a range of .75-1.09 FL. from flight level at a distance of approximately 1500 ft. from the light source. As with the clinic building, the sports lighting will add brightness to the site but at a much lower level than the existing brightness. It will be 2.5% as bright as the Port lighting and 1.6% as bright as the existing hangar lighting.

We also performed a FC calculation for the sports lighting using the inverse square law. (See Appendix for calculation.) Based on our professional experience we have assumed that about 25% of the lumens from a typical sports lighting fixture, on a 30 ft. pole, would be aimed at the colony, i.e. about 12.5 FC, the added contribution of footcandles, at approximately 2,500 ft. away, would be .0018 FC. The cumulative total at the center of the colony would be .0218 FC which represents an increase of 9% over the current FC level at the colony.

Conclusions

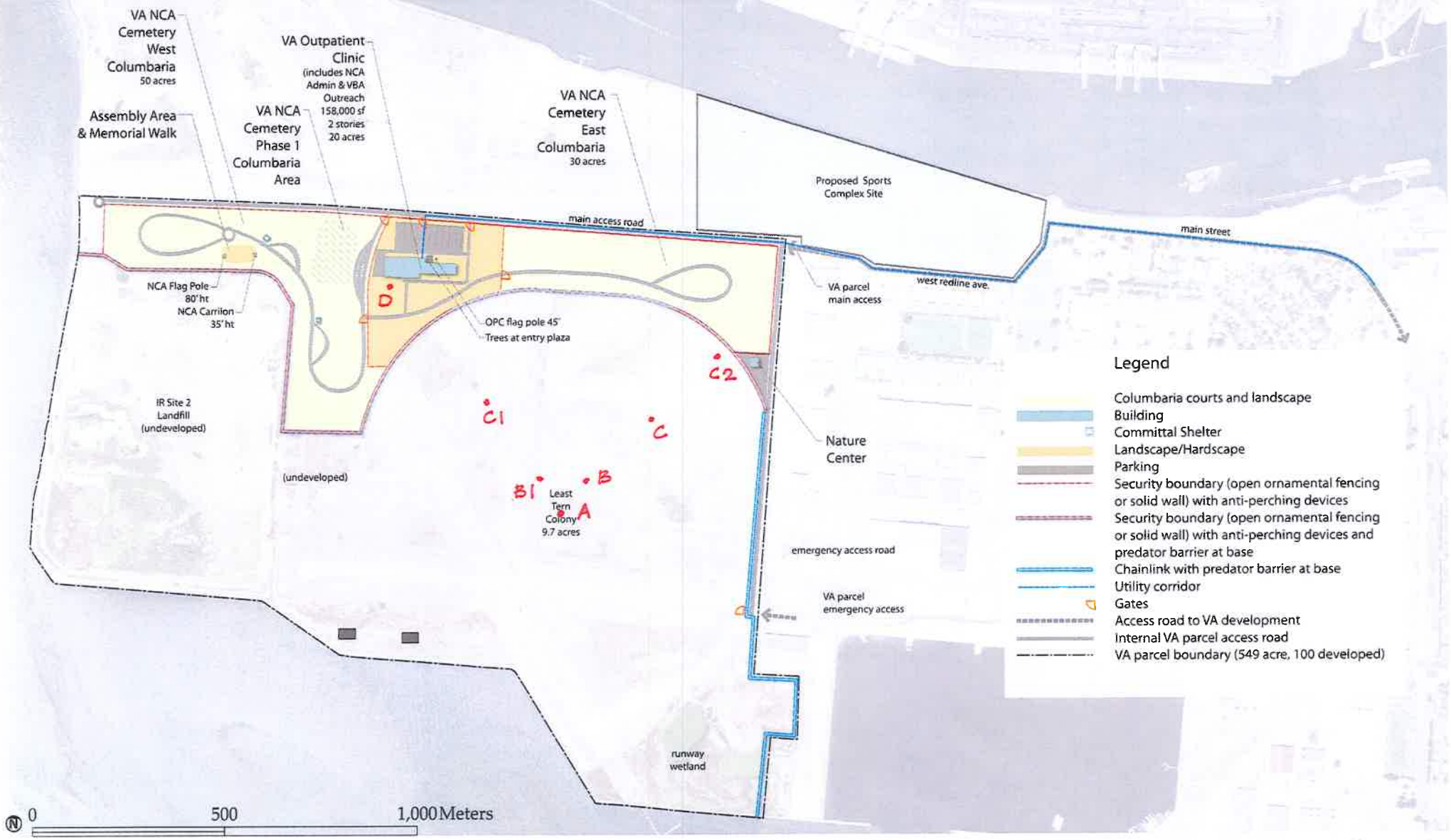
We took light level measurements at the CLT colony at NAS Alameda. We also took measurements at some existing soccer fields in the area, and at several existing buildings, including the Mare Island VA clinic for comparison. Based on our research, observations, and calculations, we estimate that there will be an increase in the ambient FC level of about 30% for the proposed clinic and about 9% for the proposed Sports Complex, for a cumulative total of .0278FC or a total increase of approximately 39%. Since the existing ambient light level is so

low, these increases are relatively insignificant from a lighting standpoint. A light level of .0248 FC is 13.9% of the light level of a typical residential sidewalk.

The vertical light level or brightness is more difficult to quantify. There are no published documents that cite typical FL levels for reference. We anticipate that these projects will create additional vertical brightness, within the colony view, but it will be at a level that is much lower than the existing vertical brightness. The anticipated level at the proposed clinic site will be about .9% as bright as the existing Port level.

It is difficult to make a definitive conclusion, based on a conceptual report, field measurements and a few calculations. Fixture selection, fixture performance and distribution, and fixture placement will all play a part in the outcome. It is suggested that the guidelines outlined above be followed for both projects, in order to minimize the effects of the additional lighting. It is recommended that a more specific lighting study be conducted once specific plans have been developed.

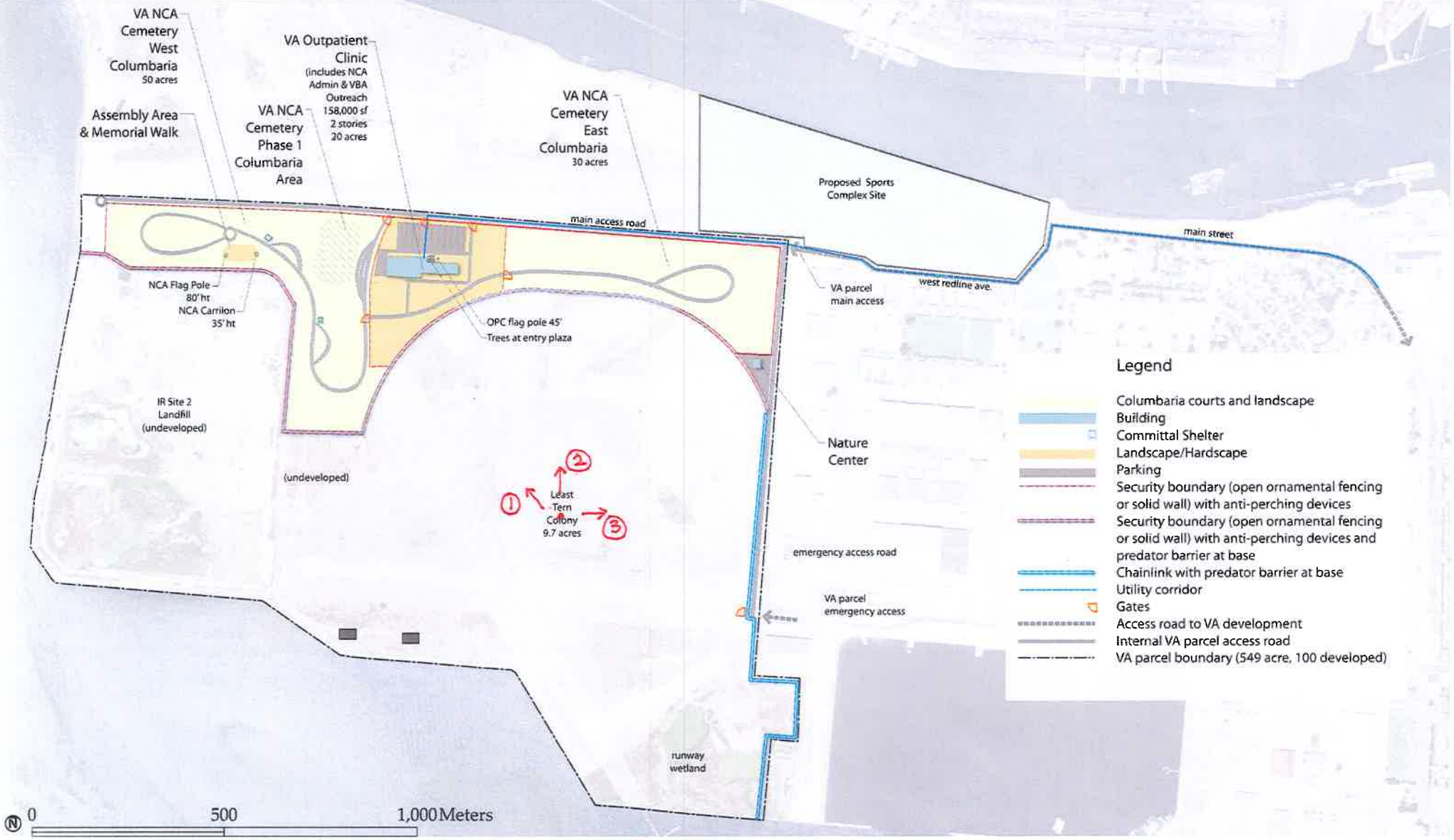
Diagrammatic Site Plan



November 2010 AECOM

FC MEASUREMENT LOCATIONS

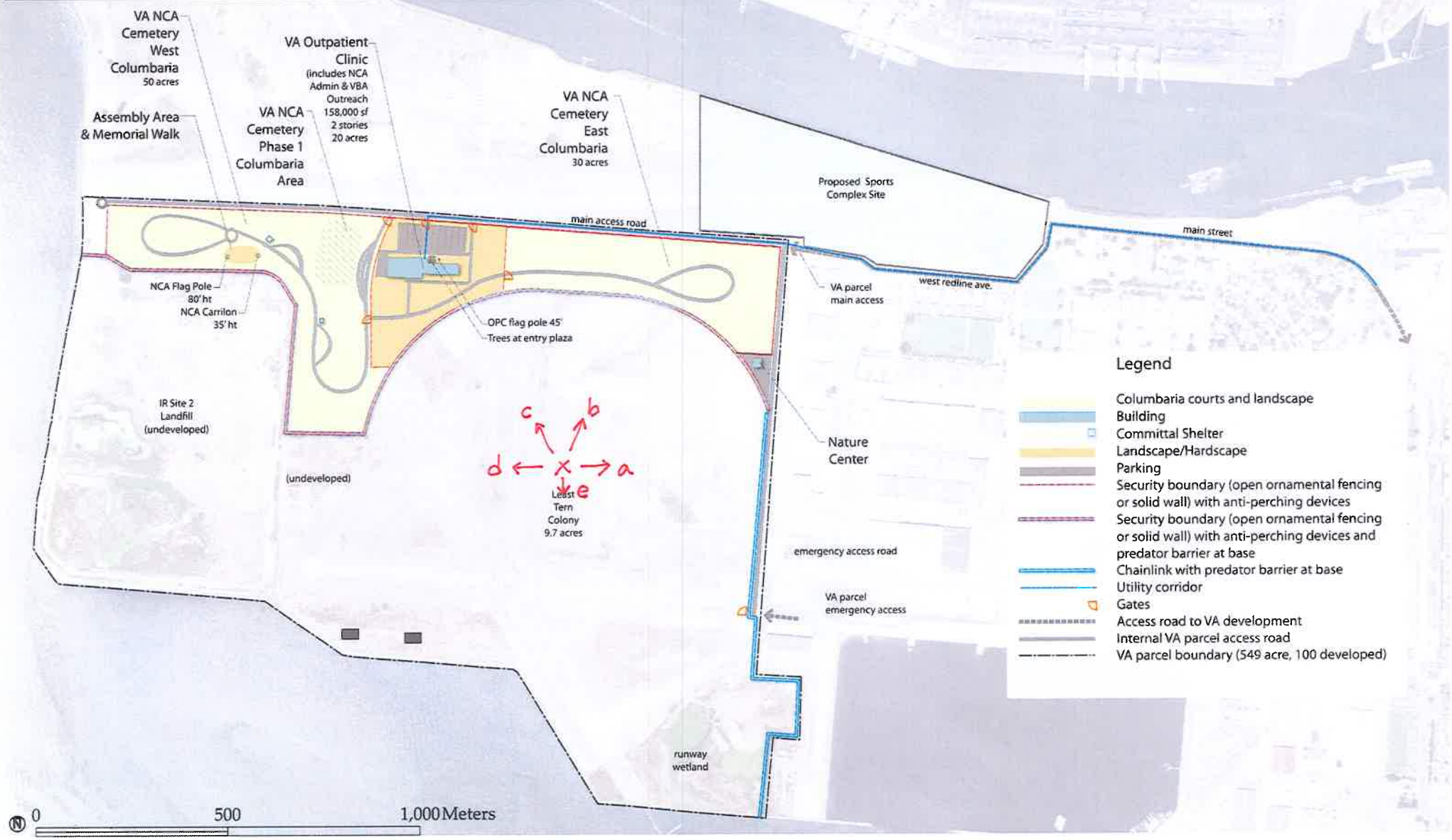
Diagrammatic Site Plan



November 2010 AECOM

FL MEASUREMENT LOCATIONS

Diagrammatic Site Plan



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PHOTOS

Lighting Data Spreadsheet

EXISTING AMBIENT LIGHT

	Location	Footcandles Reading 1	Footcandles Reading 2	Footlamberts Clinic Location Nesting Level	Footlamberts Clinic Location Flight Level	Footlamberts Port Nesting Level	Footlamberts Port Flight Level	Footlamberts Hanger Nesting Level	Footlamberts Hangar Flight Level	Footlamberts Hangar Max.	Footlamberts Other Loc. Nesting Level	Footlamberts Other Loc. Flight Level
CLT Colony												
	A	0.01	0.02	0.09	0.44	28.97	42.28	33.48	66.49	236		
	B	0.02	0.02									
	B1	0.01	0.02									
	C	0.01	0.02									
	C1	0.02	0.02									
	C2	0.03	0.03									
	D	0.02	0.01									
Sample Clinic Bldgs.											0.14	0.21
Berk./Alb. Soccer Fields											0.75	1.09
Mare Island Clinic Bldg.												
	Front of Bldg.	0.02									0.11	0.01
	Front Pkg.	0.01									0.42	0.36
	Side of Bldg.	0.04									0.04	0.17
	Rear of Bldg.	0.00									0.09	0.33
ANTICIPATED AMBIENT LIGHT												
Proposed Clinic		**0.006**									**0.42**	
Proposed Sports Complex		**0.0018**									**1.09**	
Cumulative Total		**0.0278**										

NAS hangars at dusk
looking east from colony

NAS hangars at night
looking east from colony

NAS building at night
looking east from colony

Port of Oakland at dusk
looking north from colony

East side of
Port of Oakland
at dusk
(closer look)

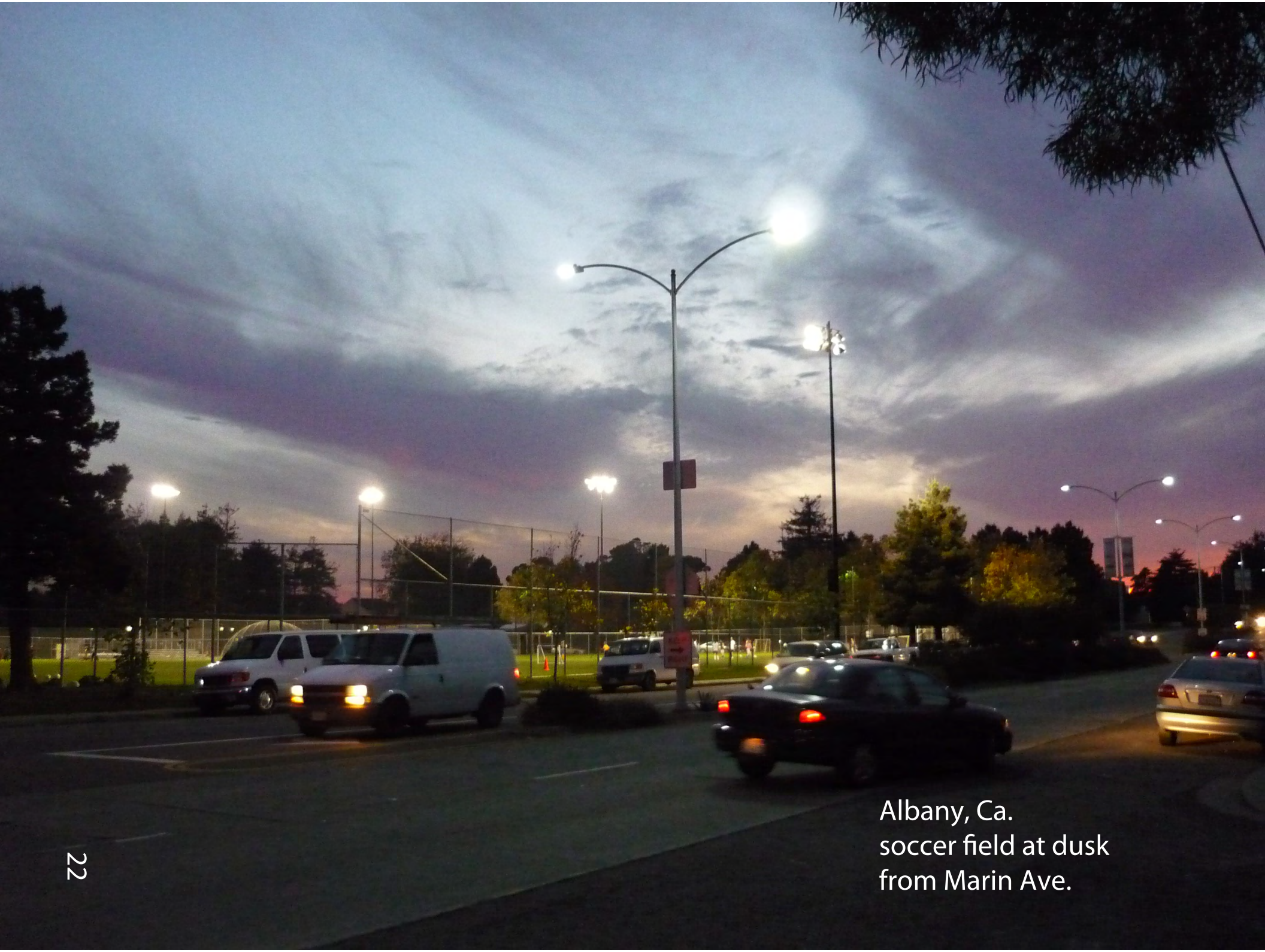
Port of Oakland (west side) at dusk
looking north from colony

Port of Oakland (east side) at night
looking north from colony

Port of Oakland (west side) at night
looking north from colony

Bay Bridge at night
looking northwest
from colony

View from colony
looking southwest



Albany, Ca.
soccer field at dusk
from Marin Ave.

Albany, Ca.
soccer field at night
looking west from
San Pablo Ave. and Marin Ave.

Berkeley, Ca.
soccer field at night
looking west from
Eastshore Highway

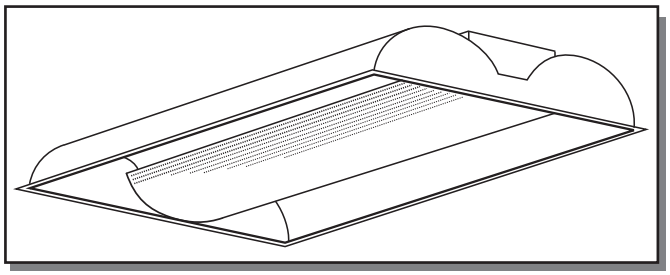
Berkeley, Ca.
soccer field at night
looking east from Berkeley Marina

Mare Island
VA clinic
building front

Mare Island
VA clinic
building rear

Day-Brite® Lighting

Arioso® 2' x 4'



2, 3 or 4 Lamp T5, T5HO, T8, or CF TT5 Recessed Direct/Indirect

APPLICATION

- Architectural recessed direct/indirect lighting for glare free illumination.
- Suitable for grid inverted T (Nema "G") ceilings. Flange type ceilings (Nema "F") require independently mounted flange kits (FMA).
- Fully recessed mounting, suitable for row mounting.

CONSTRUCTION/FINISH

- Top reflector and end panels are formed together with no gaps.
- No visible welding, screws, latches, springs, hooks, rivets or plastic supports.
- Soft white baked enamel finish.
- Easy ballast access through lamp compartment.
- Optional hold down clips available (order separately: cat # **AVHD**).

ELECTRICAL

- Class P, HPF ballasts comply with ⒺFederal Ballast Law (Public Law 100-357,1988).
- UL listed for damp locations. C.S.A. certified optional.
- Self-contained fluorescent emergency power pack can be incorporated.

ENCLOSURES

- Micro-perforated mesh lamp shield provides soft awareness of light source.
- Soft white overlay on inside of micro-perforated mesh conceals lamp image and balances between reflected and direct light.
- Swing down lamp shield for easy relamping.
- Lamp shield end trim is included for field installation if desired (not required).

CATALOG NUMBER

2 AV G [ ] [ ] – PMW – [ ] – [ ]

WIDTH
2 – 2'

CEILING TYPE
G–Grid

LAMP TYPE/WATTAGE
28 – 28wT5 (46'')
32 – 32wT8 (48'')
54HO – 54wT5HO (46'')
CF40 – 40wTT5 (24'')
CF50 – 50wTT5 (24'')
CF55 – 55wTT5 (24'')

VOLTAGE
120
277
347
UNV – Universal voltage, 120-277 volt

FIXTURE FAMILY
AV– Arioso

NO. OF LAMPS
(not included)
2 (T5 and T8 only)
3 (T5 and T8 only)
4 (CF only)

SHIELDING
PMW– Perforated Metal with White Overlay

OPTIONS
CM – Canadian Market

See Section 1600-OA for Option Info.

NOTES:

- With generic Electronic Ballasts (Brand selected by Day-Brite)
  Suffix Catalog # with– **Ballast Quantity** **–** / **-EB** **Lamps Per Ballast.**

  Example: –1/2-EB = One 2 Lamp Electronic Ballast.

JOB INFORMATION

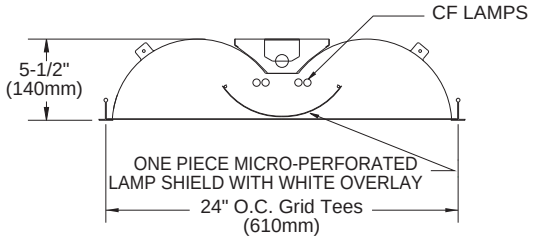
0211.1-AR

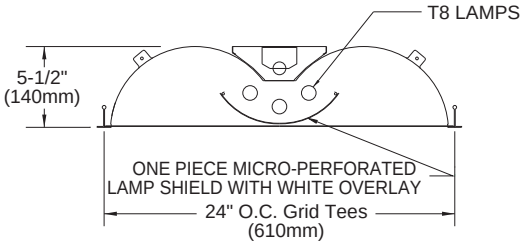
Job Name:
Type:

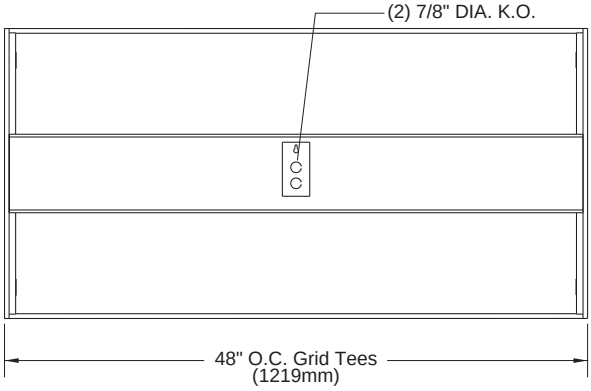
2' x 4' Arioso®

Day-Brite® Lighting

DIMENSIONS







PHOTOMETRIC DATA

CATALOG # 2AVG232-PMW-1/2-EB **LAMPS =** F32T8 **INPUT WATTS =** 60
TEST #25911 **S/MH=** 1.3 **BALLAST =** ELECTRONIC **BALLAST FACTOR =** .88

LER = 57

COMPARATIVE YEARLY LIGHTING ENERGY COST PER 1000 LUMENS = **$4.21** BASED ON 3000 HRS. AND $.08 PER KWH.

FIXTURE EFFICIENCY= 68.6%

CANDLEPOWER

Angle	End	45	Cross
0	1290	1290	1290
5	1295	1286	1278
10	1277	1270	1266
15	1245	1244	1246
20	1201	1210	1220
25	1144	1165	1183
30	1082	1114	1149
35	1007	1053	1106
40	918	991	1055
45	823	922	996
50	718	846	925
55	614	763	841
60	508	671	734
65	406	564	590
70	309	438	407
75	216	276	268
80	130	140	152
85	57	51	53

MAINTAINED ILLUMINATION TABLE- Square Feet/Fixture*

- 80-50-20 Reflectances (Ceiling-Wall-Floor)
- LLF = 0.75 2850 Lumens/Lamp very clean
- Room width divided by room height = 5 or more, 2 or 1

Fixture Size & # of Lamps	Room Width / Room Height =	Approx. Area (sq. ft.) per Fixture 10 ft-c	30 ft-c	50 ft-c	70 ft-c	100 ft-c
2' X 4' 2 Lamp T8	5	-	102	61	44	31
	2	-	68	41	-	-
	1	148	49	-	-	-

*Observe Fixture S/MH Requirements for Specific Applications

AVERAGE LUMINANCE CD/SQ.M WITH 2850 LUMEN LAMPS

ANGLE	END	45°	CROSS
45	1617	1811	1956
55	1487	1848	2036
65	1334	1854	1939
75	1159	1481	1438
85	908	813	845

TYPICAL V.C.P.'s

Room Size	Mounting Height Lengthwise 8.5	Lengthwise 10	Crosswise 8.5	Crosswise 10
30x30	61	65	58	62
40x40	61	62	59	60
60x30	65	67	63	65
60x60	61	61	60	59
100x100	63	62	63	62

LLF = .75 LLF = LIGHT LOSS FACTOR LLF = LDD X LLD X BF LDD = VERY CLEAN 0.94 CLEAN 0.90
LLD = 0.91 @ 40% RATED LAMP LIFE BF = .88 ELECTRONIC BALLAST & T8 LAMP (RELAMP AT 70% LAMP LIFE)

COEFFICIENT OF UTILIZATION

pfc	20							
pcc	80			70			50	
pw	70	50	30	70	50	30	50	30
RCR								
0	81	81	81	80	80	80	76	76
1	75	70	68	72	69	67	67	64
2	68	61	56	66	59	56	57	54
3	60	54	47	59	53	47	51	46
4	56	47	41	55	46	40	45	40
5	51	41	35	50	41	35	40	34
6	46	38	32	46	36	32	35	30
7	44	34	28	42	34	28	33	28
8	40	30	26	40	30	25	29	25
9	38	28	23	36	28	23	28	23
10	35	27	20	34	26	20	26	20

LIGHT DISTRIBUTION

DEGREES	LUMENS	% LAMP	% FIXTURE
0-30	1011	17.7	25.9
0-40	1671	29.3	42.7
0-60	3042	53.4	77.8
0-90	3912	68.6	100.0

PHOTOMETRIC DATA

CATALOG # 2AVG332-PMW-1/3-EB **LAMPS =** F32T8 **INPUT WATTS =** 87
TEST #25512 **S/MH=** 1.3 **BALLAST =** ELECTRONIC **BALLAST FACTOR =** .88

LER = 56

COMPARATIVE YEARLY LIGHTING ENERGY COST PER 1000 LUMENS = **$4.29** BASED ON 3000 HRS. AND $.08 PER KWH.

FIXTURE EFFICIENCY= 64.9%

CANDLEPOWER

Angle	End	45	Cross
0	1836	1836	1836
5	1843	1831	1813
10	1816	1808	1795
15	1778	1776	1771
20	1713	1722	1725
25	1640	1660	1675
30	1551	1586	1619
35	1440	1496	1542
40	1321	1400	1462
45	1190	1299	1371
50	1044	1182	1272
55	891	1060	1154
60	736	927	1012
65	582	782	834
70	441	614	599
75	306	406	404
80	182	219	246
85	80	90	92

MAINTAINED ILLUMINATION TABLE- Square Feet/Fixture*

- 80-50-20 Reflectances (Ceiling-Wall-Floor)
- LLF = 0.75 2850 Lumens/Lamp very clean
- Room width divided by room height = 5 or more, 2 or 1

Fixture Size & # of Lamps	Room Width / Room Height =	Approx. Area (sq. ft.) per Fixture 10 ft-c	30 ft-c	50 ft-c	70 ft-c	100 ft-c
2' X 4' 3 Lamp T8	5	-	144	87	62	43
	2	-	97	58	41	-
	1	-	70	42	30	-

*Observe Fixture S/MH Requirements for Specific Applications

AVERAGE LUMINANCE CD/SQ.M WITH 2850 LUMEN LAMPS

ANGLE	END	45°	CROSS
45	2337	2551	2692
55	2157	2566	2794
65	1912	2569	2740
75	1642	2178	2167
85	1275	1434	1466

TYPICAL V.C.P.'s

Room Size	Mounting Height Lengthwise 8.5	Lengthwise 10	Crosswise 8.5	Crosswise 10
30x30	53	57	50	54
40x40	52	54	49	51
60x30	56	59	54	57
60x60	52	52	49	49
100x100	53	53	51	51

LLF = .75 LLF = LIGHT LOSS FACTOR LLF = LDD X LLD X BF LDD = VERY CLEAN 0.94 CLEAN 0.90
LLD = 0.91 @ 40% RATED LAMP LIFE BF = .88 ELECTRONIC BALLAST & T8 LAMP (RELAMP AT 70% LAMP LIFE)

COEFFICIENT OF UTILIZATION

pfc	20							
pcc	80			70			50	
pw	70	50	30	70	50	30	50	30
RCR								
0	77	77	77	75	75	75	71	71
1	69	67	64	68	66	63	63	60
2	64	57	54	61	56	53	55	51
3	57	51	46	56	50	45	47	44
4	53	45	39	51	44	39	42	38
5	48	40	34	46	39	34	38	33
6	45	35	29	44	34	29	34	28
7	41	33	27	40	32	27	30	26
8	39	29	23	38	28	23	28	23
9	35	27	22	34	27	22	26	20
10	34	25	20	33	25	20	23	20

LIGHT DISTRIBUTION

DEGREES	LUMENS	% LAMP	% FIXTURE
0-30	1438	16.8	25.9
0-40	2373	27.8	42.8
0-60	4297	50.3	77.5
0-90	5547	64.9	100.0

DAY-BRITE LIGHTING • www.daybritelighting.com
776 South Green Street • Tupelo, Mississippi 38804 • PH: (662) 842-7212 • FAX: (662) 841-5501
CANADIAN DIVISION
189 Bullock Drive • Markham, Ontario L3P 1W4 • PH: (905) 294-9570 • FAX: (905) 294-9811
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LED LandScape

PROVIDING ENERGY EFFICIENT LIGHTING SOLUTIONS

FEATURES

- High output LED with minimal power consumption
- Rugged exterior to hold up to nature's forces
- 50,000 rated life reducing maintenance significantly
- Non obtrusive in architectural bronze or black
- Bright white light illuminating your building for increased visibility and safety
- Smooth tilt adjustability to highlight or evenly illuminate your façade
- Easy retrofit with slip fitter mount and hard wire ready
- Available in 15 or 26 watt with spot (12 and 16), wide (30) or very wide flood (120) beam angles

50,000 hour lamp life and low energy consumption make this fixture a perfect low maintenance 'green' alternative to traditional outdoor lighting technologies. These compact luminaires come in rugged housing that will withstand harsh weather conditions.

Don't be fooled by imitators. Energy Focus' products are made in the USA and feature permanent contact information in the die-cast lens ring.

Energy Focus, Inc. 32000 Aurora Road Solon, OH 44139 T (800) 327-7877 (440) 715-1300 F (440)715-1314 W energyfocusinc.com

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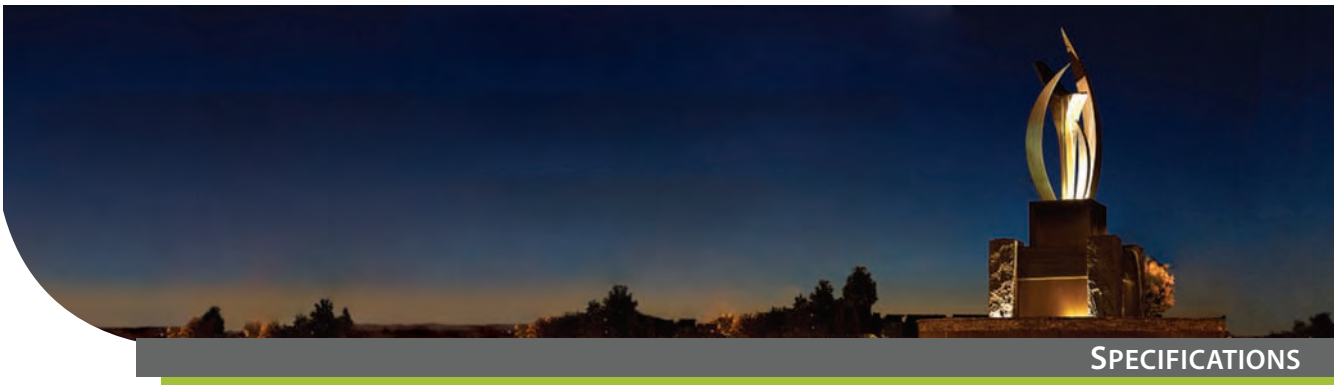
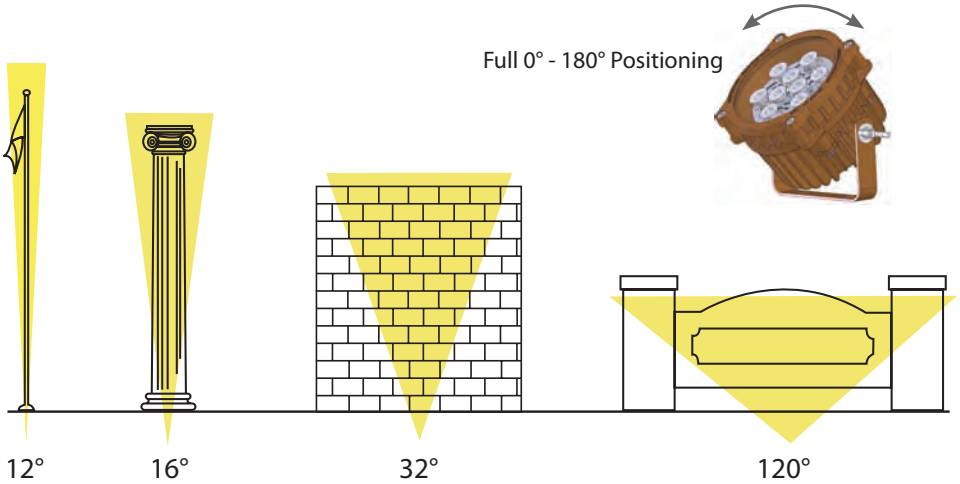
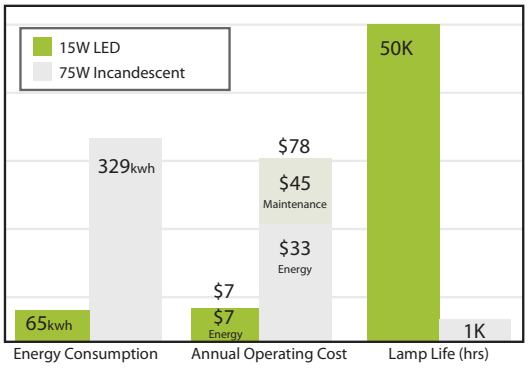
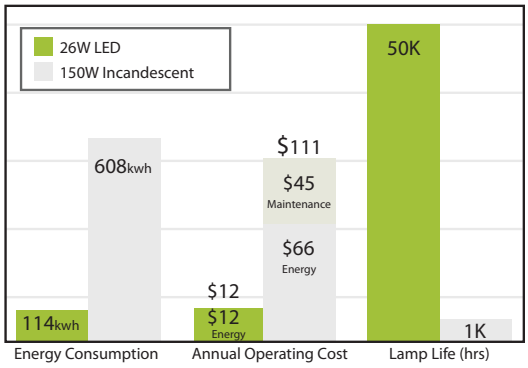


SPECIFICATIONS



Available Beam Spreads





Assumptions: Annual Hours = 4,368 (12/7x365) Energy Cost = 10¢/kwh Cost to change lightbulb = $5.00 each

LED LandScape — Ordering Guide

| _____ - | _____ - | _____ - | _____ - | _____ - | _____ |

Model	Color Temp	Beam Spread	Size	Electrical Connection	Color
LEDLS	**765** 75 CRI, 6500K **835** 80 CRI, 3500K	**NSP** 12° Beam **SPT** 16° Beam **NFL** 32° Beam **VFL** 120° Beam	**15** Small Fixture 15Watt **26** Large Fixture 26Watt	**HWC** 6' Cord, hardwire leads **HWD** Direct hardwire	**AB** Architectural Bronze **BK** Gloss Black

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LED Wall Pack Fixture

- 110,000 L70 Luminaire Lifetime
- 7 Year Unmatched Warranty
- Cree XLamp® LED Technology
- Relume® Silver Circuitry for Superior Thermal Management

lighting factsCM
A Program of the U.S. DOE
Lumecon

Light Output (Lumens)	1639
Watts	37.69
Lumens per Watt (Efficacy)	43
Color Accuracy Color Rendering Index (CRI)	70
Light Color Correlated Color Temperature (CCT)	6183 (Daylight)

Warm White | Bright White | Daylight
2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.* The U.S. Department of Energy (DOE) verifies product test data and results. Products qualified under the DOE ENERGY STAR® program have the ENERGY STAR mark on this label.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: PR8P-ZJB6T4
Model Number: LWP-1
Type: Outdoor wall-mounted area fixtures ("wall packs")

LED LIGHT COLOR / QUALITY: The High Output LEDs range from 5,500K to 7,000K on the Kelvin temperature scale and are rated for a minimum of 110,000 hours of continuous operation at ambient temperatures from -40°F (-40°C) to 95°F (+35°C).

HOUSING: Die-cast aluminum housing and hinged full cutoff front frame, 1/2" coin plugs with O-rings for conduit and photocell, textured architectural bronze powder coat finish over a chromate conversion coating.

LENS: Flat tempered clear glass lens.

MOUNTING: Cast-in template for mounting directly over a 4" recessed outlet box, or use 1/2" surface. Optional Adjustable yoke, allows 40° vertical swivel, incl. hardware

ELECTRICAL: Each power supply (driver) is UL class 2 compliant, IP66 rated, operating from a 60 HZ +/- 3 HZ AC line over a voltage ranging from 95 volts to 280 volts. Each driver is an efficient switcher with a power factor of greater than 0.91 with an input current of less than 20% Total Harmonic Distortion (THD). Fluctuations of the line voltage have no visible effect on the luminous output. Each driver includes voltage surge protection to withstand high repetition noise transients while meeting emission limits as set forth by the FCC Title 47, Subpart B, Section 15. 347-480 volt 50/60 HZ driver available at an additional cost.

ETL Listed per UL and CSA for Wet Locations.
Meets Dark Sky requirements

PATENT NUMBERS 6,582,100 B1: 6,428,189,
B1: 6,045,240: 5,857,767: 5,785,418: 5,783,909: 5,782,555

INTERTEK ETL LISTED C US

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LED Wall Pack Fixture

Model #	WIDTH	HEIGHT	DEPTH	EPA	WEIGHT
LWP1	14 1/4”	9 1/8”	11 3/8”	0.72 Sq ft.	22 lbs.

Example LWP1- DB - W - 1 - C - X - X

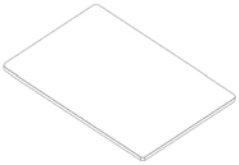
Model	Color	Mounting Method	Voltage	Lens	Options 1	Options 2
LWP1	**DB** - Dark Bronze	**W** - Wall Mount **Y*** - Yoke Mount	**1** - 120v - 277v	**C** - Clear Glass **P*** - Prismatic Glass	**X** - No Options **W*** - Wire Guard **P*** - Polycarbonate	**X** - No Options **P*** - Photocell

Accessories:

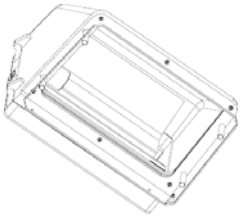
Adjustable Yoke - Stamped steel yoke textured bronze finish converts the LWP1 to an adjustable wall pack. Angle indicators for aiming adjustments.

LWP1 Shown with yoke mount

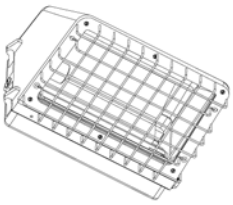
Prismatic Glass Lens



Clear Glass Lens



Polycarbonate Guard



Wire Guard

NOTES: * Additional Cost. Please contact your sales rep for additional cost and lead times.

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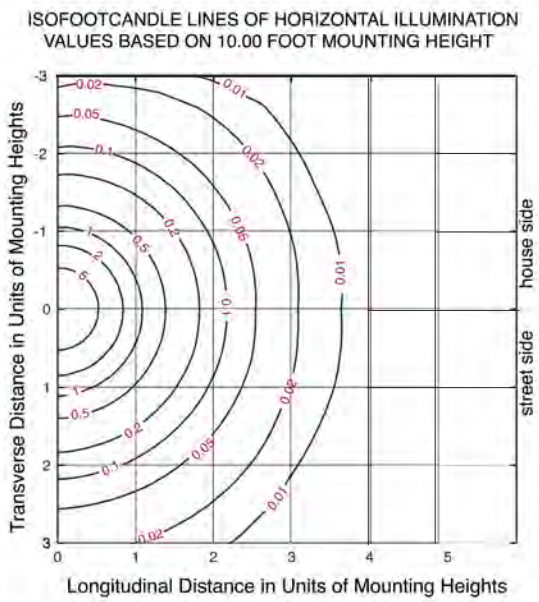
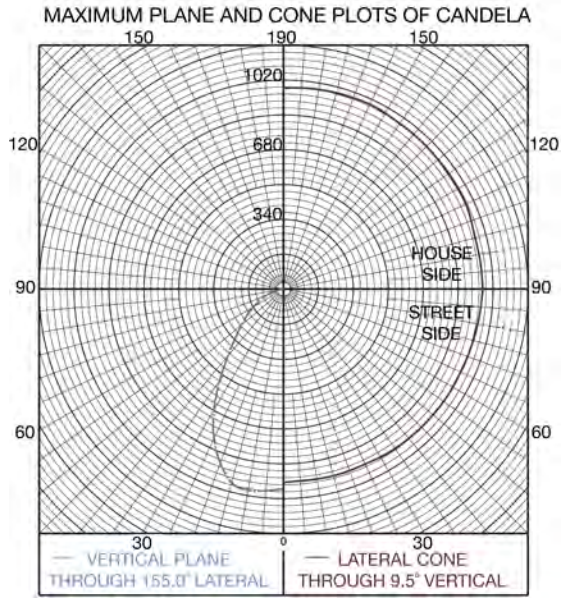
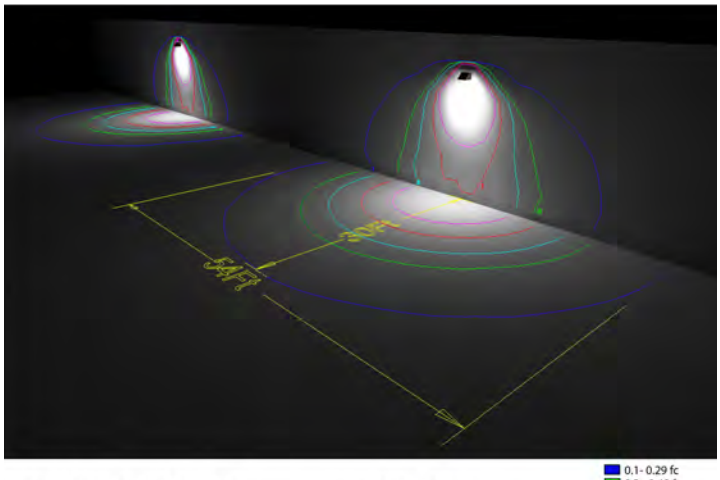
LWP1

LTL Luminaire Testing Laboratory, INC.certified test.
Report # 15334
Initial Delivered Lumens: 1731
System Watts: 38.25
Lumens Per Watt: 45.25
Isofootcandle lines of horizontal illumination values based on 10.00 foot mounting height.

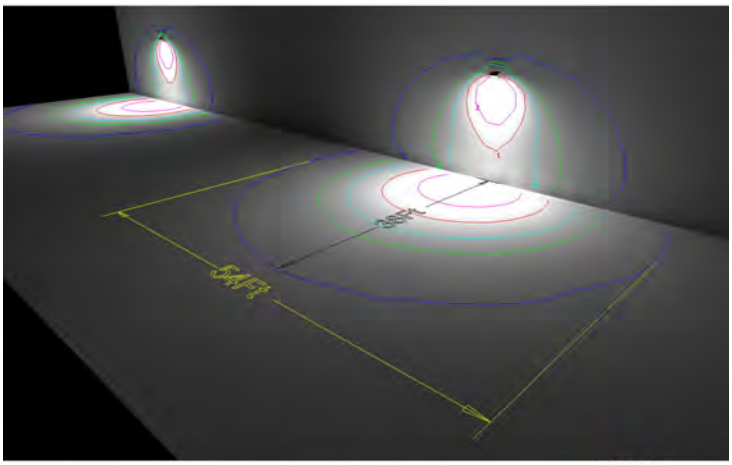






15 ft Mounting Height — Wall Pack

0.1 - 0.29 fc
0.3 - 0.49 fc
0.5 - 0.99 fc
1.0 - 1.99 fc
2.0 - 5.0 fc



15 ft Mounting Height — Wall Pack with Yoke Mount
Angled at 25 degrees

0.1 - 0.29 fc
0.3 - 0.49 fc
0.5 - 0.99 fc
1.0 - 1.99 fc
2.0 - 5.0 fc

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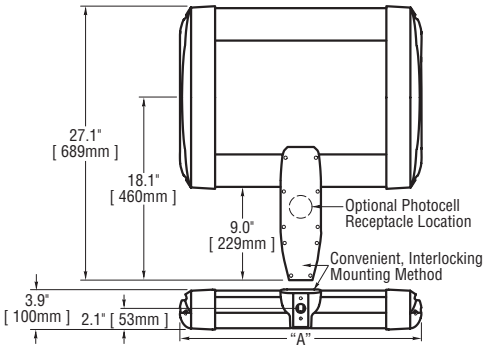
BetaLED Catalog #: ARE - EDG - - DA - - C - - - -

Reset



# of LEDs	Dim. "A"
20	12.06"
40	12.06"
60	14.06"
80	16.06"
100	18.06"
120	20.06"
140	22.06"
160	24.06"
180	26.06"
200	28.06"
220	30.06"
240	32.06"

Notes:

Product	Family	Optic	Mounting	# of LEDs (x 10)	LED Series	Voltage	Color Options
ARE	EDG	2S[1]	DA[3]	02	C	UL	SV
		2SB[2]		04		Universal	Silver
				06		120–277V	BK
				08		UH	Black
				10		Universal	BZ
				12		347–480V	Bronze
				14		12	PB
				16		120V	Platinum
				18		24	Bronze
				20		240V	WH
				22		27	White
				24		277V	
						34	
						347V	

Factory-Installed Options

Please type additional options in manually on the lines provided above.

43K	4300K Color Temperature[4]
525	525mA Drive Current[5,6]
DIM5	0–10V Dimming (525mA maximum)[7,8]
F	Fuse[9,10]
HL	Hi/Low (175/350/525, dual circuit input)[11]
P	Photocell[12,13]
R	NEMA Photocell Receptacle[13]
TL	Two-Level (175/525 w/ integrated sensor control)[11]
TL2	Two-Level (0/350 w/ integrated sensor control)[11]
TL3	Two-Level (0/525 w/ integrated sensor control)[11]

Footnotes

1. IESNA Type II Short distribution
2. IESNA Type II Short distribution with backlight control
3. Direct mounting arm for use with 3–6" square or round pole
4. Color temperature per fixture; minimum 70 CRI
5. Driver operates at 525mA instead of the standard 350mA providing a higher lumen output and a shorter life
6. Available on fixtures with 20–120 LEDs
7. Control by others
8. Refer to dimming spec sheet for availability and additional information
9. When code dictates fusing use time delay fuse
10. Not available when UH voltage is selected
11. Refer to multi-level spec sheet for availability and additional information
12. Must specify voltage other than UL or UH
13. This option not available with all multi-level options. Refer to multi-level spec sheet for more information

LED PERFORMANCE SPECS

# of LEDs	Initial Delivered Lumens – Type II Short @ 6000K	B	U	G	Initial Delivered Lumens – Type II Short w/ Backlight Control @ 6000K	B	U	G	Initial Delivered Lumens – Type II Short @ 4300K	B	U	G	Initial Delivered Lumens – Type II Short w/ Backlight Control @ 4300K	B	U	G	System Watts 120–277V	Total Current @ 120V	Total Current @ 230V	Total Current @ 277V	System Watts 347–480V*	Total Current @ 347V	Total Current @ 480V	L_{70} Hours** @ 25° C (77° F)
		Rating***				Rating***				Rating***				Rating***										
350mA (Standard) Fixture Operating at 25° C (77° F)																								
20	1,752 (02)	1	1	1	1,360 (02)	0	1	0	1,537 (02)	1	1	1	1,193 (02)	0	1	0	29	0.25	0.14	0.13	30	0.09	0.08	104,935
40	3,504 (04)	1	1	1	2,720 (04)	1	1	1	3,073 (04)	1	1	1	2,386 (04)	1	1	1	50	0.43	0.24	0.21	51	0.15	0.12	104,935
60	5,255 (06)	2	1	2	4,081 (06)	1	1	1	4,610 (06)	1	1	1	3,579 (06)	1	1	1	78	0.65	0.37	0.35	74	0.22	0.17	104,935
80	7,007 (08)	2	1	2	5,441 (08)	1	1	1	6,146 (08)	2	1	2	4,772 (08)	1	1	1	100	0.84	0.47	0.41	96	0.28	0.21	104,935
100	8,759 (10)	2	1	2	6,801 (10)	1	1	1	7,683 (10)	2	1	2	5,965 (10)	1	1	1	115	0.98	0.52	0.44	119	0.35	0.26	104,935
120	10,511 (12)	3	1	3	8,161 (12)	1	1	1	9,219 (12)	2	1	2	7,158 (12)	1	1	1	138	1.18	0.62	0.52	141	0.41	0.30	104,935
140	12,263 (14)	3	1	3	9,522 (14)	2	1	2	10,756 (14)	3	1	3	8,352 (14)	1	1	1	164	1.64	0.74	0.63	170	0.49	0.35	104,935
160	14,014 (16)	3	1	3	10,882 (16)	2	1	2	12,292 (16)	3	1	3	9,545 (16)	2	1	2	187	1.57	0.84	0.71	192	0.55	0.40	104,935
180	15,766 (18)	3	1	3	12,242 (18)	2	1	2	13,829 (18)	3	1	3	10,738 (18)	2	1	2	208	2.10	0.94	0.80	215	0.62	0.45	104,935
200	17,518 (20)	3	1	3	13,602 (20)	2	1	2	15,365 (20)	3	1	3	11,931 (20)	2	1	2	230	1.95	1.03	0.88	237	0.68	0.49	104,935
220	19,270 (22)	3	1	3	14,962 (22)	2	1	2	16,902 (22)	3	1	3	13,124 (22)	2	1	2	254	2.13	1.13	0.96	259	0.75	0.54	104,935
240	21,022 (24)	3	1	3	16,323 (24)	2	1	2	18,438 (24)	3	1	3	14,317 (24)	2	1	2	277	2.34	1.23	1.03	282	0.81	0.59	104,935
525mA Fixture Operating at 25° C (77° F)																								
20	2,277 (02)	1	1	1	1,768 (02)	0	1	0	1,997 (02)	1	1	1	1,551 (02)	0	1	0	38	0.32	0.18	0.16	44	0.12	0.11	60,685
40	4,555 (04)	1	1	1	3,537 (04)	1	1	1	3,995 (04)	1	1	1	3,102 (04)	1	1	1	70	0.59	0.32	0.27	77	0.23	0.18	60,685
60	6,832 (06)	2	1	2	5,305 (06)	1	1	1	5,992 (06)	2	1	2	4,653 (06)	1	1	1	106	0.89	0.49	0.44	115	0.33	0.25	60,685
80	9,109 (08)	2	1	2	7,073 (08)	1	1	1	7,990 (08)	2	1	2	6,204 (08)	1	1	1	139	1.16	0.63	0.55	148	0.43	0.32	60,685
100	11,387 (10)	3	1	3	8,841 (10)	2	1	2	9,987 (10)	3	1	3	7,755 (10)	1	1	1	180	1.54	0.82	0.72	192	0.56	0.41	60,685
120	13,664 (12)	3	1	3	10,610 (12)	2	1	2	11,985 (12)	3	1	3	9,306 (12)	2	1	2	217	1.82	0.99	0.84	226	0.66	0.49	60,685

* Utilizes magnetic step-down transformer when 525mA drive current or multi-level options are selected

** For recommended lumen depreciation data see TD-13

*** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit www.iesna.org/PDF/Erratas/TM-15-07BugRatingsAddendum.pdf

NOTE: All data subject to change without notice.

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Made in the U.S.A. of U.S. and imported parts.
Meets Buy American requirements within the ARRA.

General Description

Slim, low profile design minimizes wind load requirements. Fixture sides are rugged cast aluminum with integral, weather-tight LED driver compartments and high performance aluminum heatsinks. Convenient, interlocking mounting method. Mounting housing is rugged die cast aluminum and mounts to 3 – 6" square or round pole. Fixture is secured by two (2) 5/16-18 UNC bolts spaced on 2" centers. Includes leaf/debris guard. Five year limited warranty on fixture.

Electrical

Modular design accommodates varied lighting output from high power, white, 6000K (+/- 500K per full fixture), minimum 70 CRI, long life LED sources. 120–277V 50/60 Hz, Class 1 LED drivers are standard. 347–480V 50/60 Hz driver is optional. LED drivers have power factor >90% and THD <20% of full load. Units provided with integral 10kV surge suppression protection standard. Integral weather-tight electrical box with terminal strip for easy power hook-up. Surge protection tested in accordance with IEEE C62.41.2 and ANSI standard 62.41.2.

Testing & Compliance

UL listed in the U.S. and Canada for wet locations and enclosure classified IP66 per IEC 529 when ordered without P or R options. Consult factory for CE Certified products. RoHS compliant. International Dark-Sky Association approved.

Finish

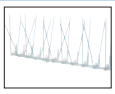
Exclusive Colorfast DeltaGuard® finish features an E-Coat epoxy primer with an ultra-durable silver powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Bronze, black, white and platinum bronze powder topcoats are also available. The finish is covered by our 10 year limited warranty.

Fixture and finish are endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117.

Patents

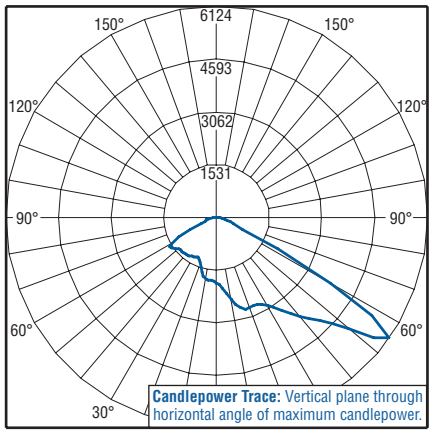
U.S. and international patents granted and pending. BetaLED is a division of Ruud Lighting, Inc. For a listing of Ruud Lighting, Inc. patents, visit www.uspto.gov.

Field-Installed Accessories

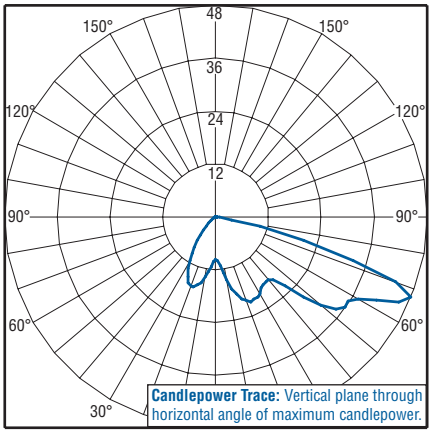


Bird Spikes
☐ XA-BRDSPK

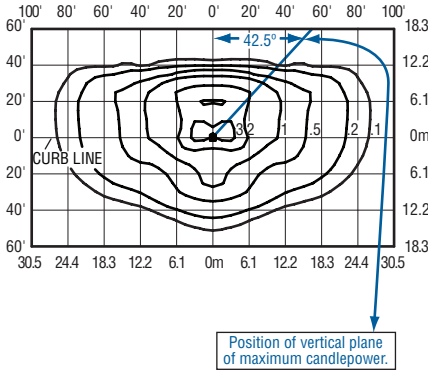
Photometrics



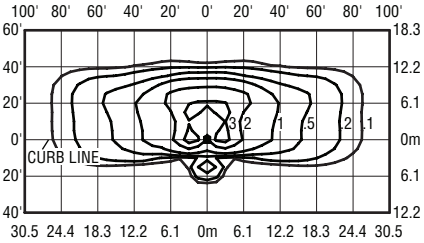
Independent Testing Laboratories certified test. Report No. ITL64116. Candlepower trace of 6000K, 120 LED Type II Short streetlight luminaire with 11,183 initial delivered lumens operating at 350mA. **All published luminaire photometric testing performed to IESNA LM-79-08 standards.**



PRELIMINARY
Candlepower trace of Type II Short LED luminaire with backlight control.



Isofootcandle plot of 6000K, 120 LED Type II Short area luminaire at 25' A.F.G. Luminaire with 10,511 initial delivered lumens operating at 350mA. Initial FC at grade.



Isofootcandle plot of 6000K, 120 LED Type II Short area luminaire with backlight control at 25' A.F.G. Luminaire with 8,161 initial delivered lumens operating at 350mA. Initial FC at grade.

THE EDGE® EPA & Weight Calculations

# of LEDs	Approximate Weight 120-277V[1]	Single	2@ 180°	2@ 90°	3@ 90	4@ 90°
Fixed Arm Mount						
20	21.0 lbs.	0.60	1.20	0.87	1.47	1.75
40	23.7 lbs.	0.60	1.20	0.87	1.47	1.75
60	27.0 lbs.	0.60	1.20	0.92	1.51	1.83
80	28.1 lbs.	0.60	1.20	0.96	1.55	1.91
100	32.3 lbs.	0.60	1.20	1.00	1.60	2.00
120	33.5 lbs.	0.60	1.20	1.04	1.64	2.08
140	36.9 lbs.	0.60	1.20	1.08	1.68	2.16
160	41.4 lbs.	0.60	1.20	1.12	1.72	2.24
180	42.1 lbs.	0.60	1.20	n/a[2]	n/a[2]	n/a[2]
200	43.3 lbs.	0.61	1.21	n/a[2]	n/a[2]	n/a[2]
220	46.6 lbs.	0.65	1.29	n/a[2]	n/a[2]	n/a[2]
240	47.8 lbs.	0.69	1.38	n/a[2]	n/a[2]	n/a[2]

1. Add 5 lbs. for transformer in 347-480V fixtures when 525mA drive current or multi-level options are selected
2. For applications requiring 180 or more LEDs at 90 degrees refer to the DL mount version of our spec sheet.

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APPENDIX B

Inverse Square Low Calculations

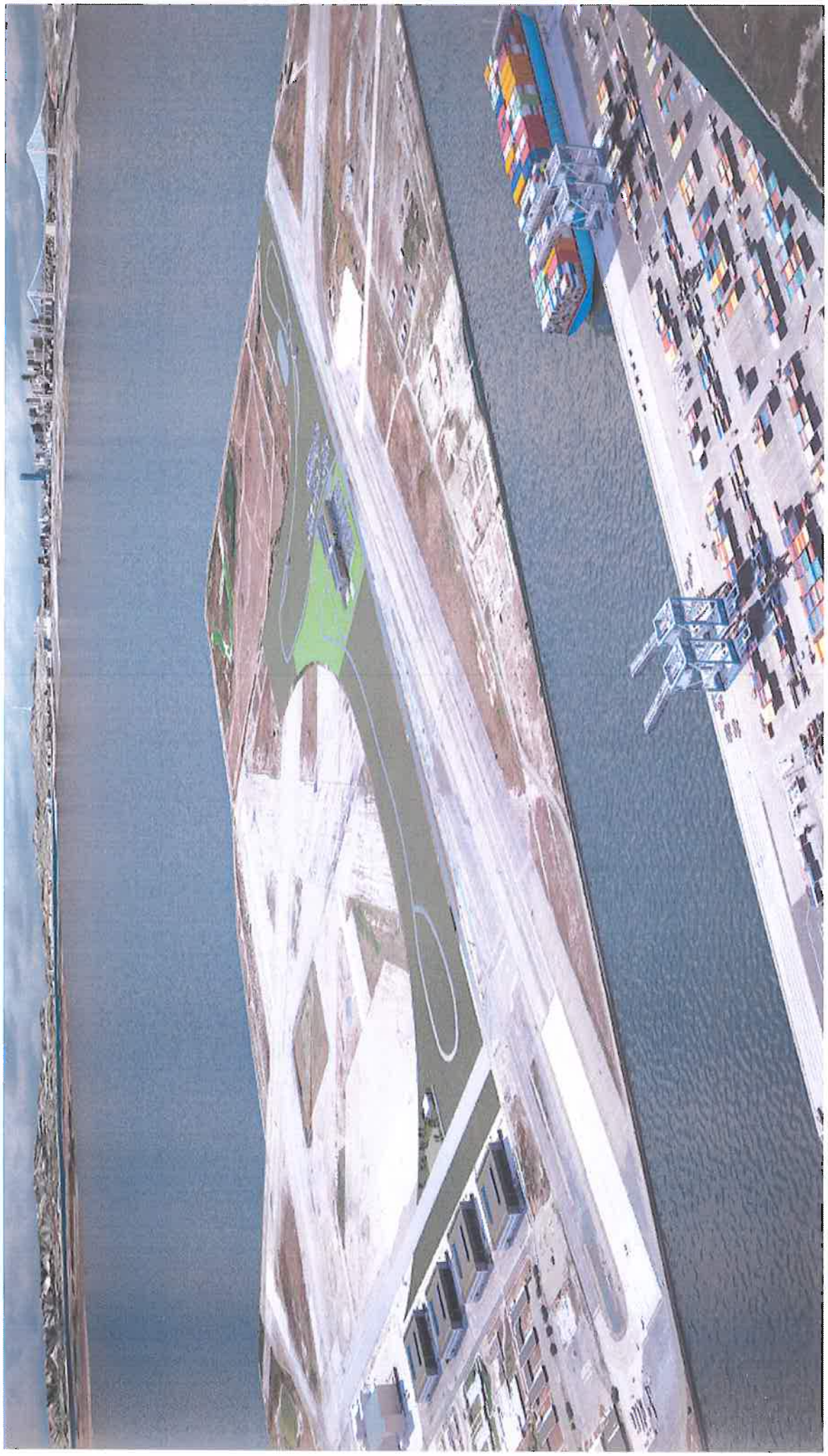
1. Mare Island FC measurement @ 1000 ft. projected to 1850 ft.

$$\frac{.02}{x} = \frac{3{,}240{,}000}{1{,}000{,}000}$$

$$x = .006 \text{ FC}$$

2. Sports Complex projection of FC level 2500 ft. from anticipated pole light.
30’ pole, 50 FC at pole.

$$\frac{12.5}{x} = \frac{6{,}250{,}000}{960} = .0018 \text{ FC}$$



VELOCITY

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California MLPA Master Plan Science Advisory Team
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October 13, 2009

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APPENDIX I

Proposed Vegetation List

Proposed Vegetation List for the VA Cemetery, Alameda Pt.

Native

Ceanothus cuneatus – buckbrush

- Under 10 ft.
- Majority are evergreen
- Drought resistant
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1770

Mimulus aurantiacus – Bush Monkey Flower

- Grow in dry, sunny environments
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=5489

Rhamnus californica – Coffeeberry

- Evergreen shrub
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=7072

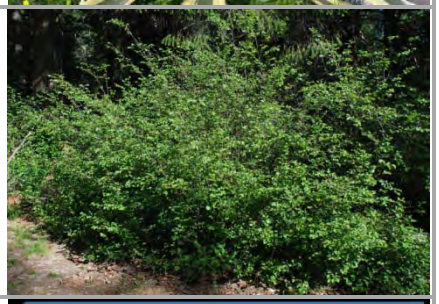
Lupinus arboreus – yellow bush lupine

- Good for lining a path
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=5106

Juniperus californica – California Juniper

- Maximum height is 25 ft., but can be trimmed easily
- Thick shoots
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=4503

Proposed Vegetation List for the VA Cemetery, Alameda Pt.

Agave Americana – American century plant • Symmetrical shapes • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=9006	
Corylus cornuta – beaked hazel • Maximum height around 20 ft. • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=9831	
Heteromeles arbutifolia –toyon • Drought-resistant • 15 ft. maximum height • Perennial shrub • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=4140	
Sambucus nigra – black elderberry • 20 ft. maximum height • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=10347	
Amelanchier alnifolia – western serviceberry • 24 ft. maximum height • Edible fruits • Deep roots • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=304	

Proposed Vegetation List for the VA Cemetery, Alameda Pt.

Cercis occidentalis – Western redbud • Showy flowers • 7-20 ft. tall • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1877	
Arctostaphylos glauca – big berry Manzanita • Ornamental plants • Evergreen, highly drought-tolerant • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=556	
Baccharis pilularis – dwarf chaparral broom • Dense, yet flexible stem structure o Good windbreak • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1031	
Koeleria macrantha – junegrass • One of the earliest maturing grasses • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=4539	
Bromus carinatus - California Brome • Aggressive root system that establishes itself quickly • Can adapt to soils that range from moist to dry • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1195	

Proposed Vegetation List for the VA Cemetery, Alameda Pt.

Danthonia californica – California oatgrass • Good for re-vegetation • Long lived perennial species • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=2610	
Deschampsia elongata – slender hairgrass • Recommended for restoration of disturbed sites • Commonly found in riparian habitats • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=2692	
Nassella pulchra - purple needlegrass • Extensive root system can reach 20 ft. deep • http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=5767	
Hordeum brachyantherum - Meadow Barley • Quick cover for soil stabilization • Moderately drought tolerant	

Proposed Vegetation List for the VA Cemetery, Alameda Pt.

Crataegus douglasii – Douglas' hawthorn

- small tree
- matures to about 20 ft. in height
- densely branched
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=2412

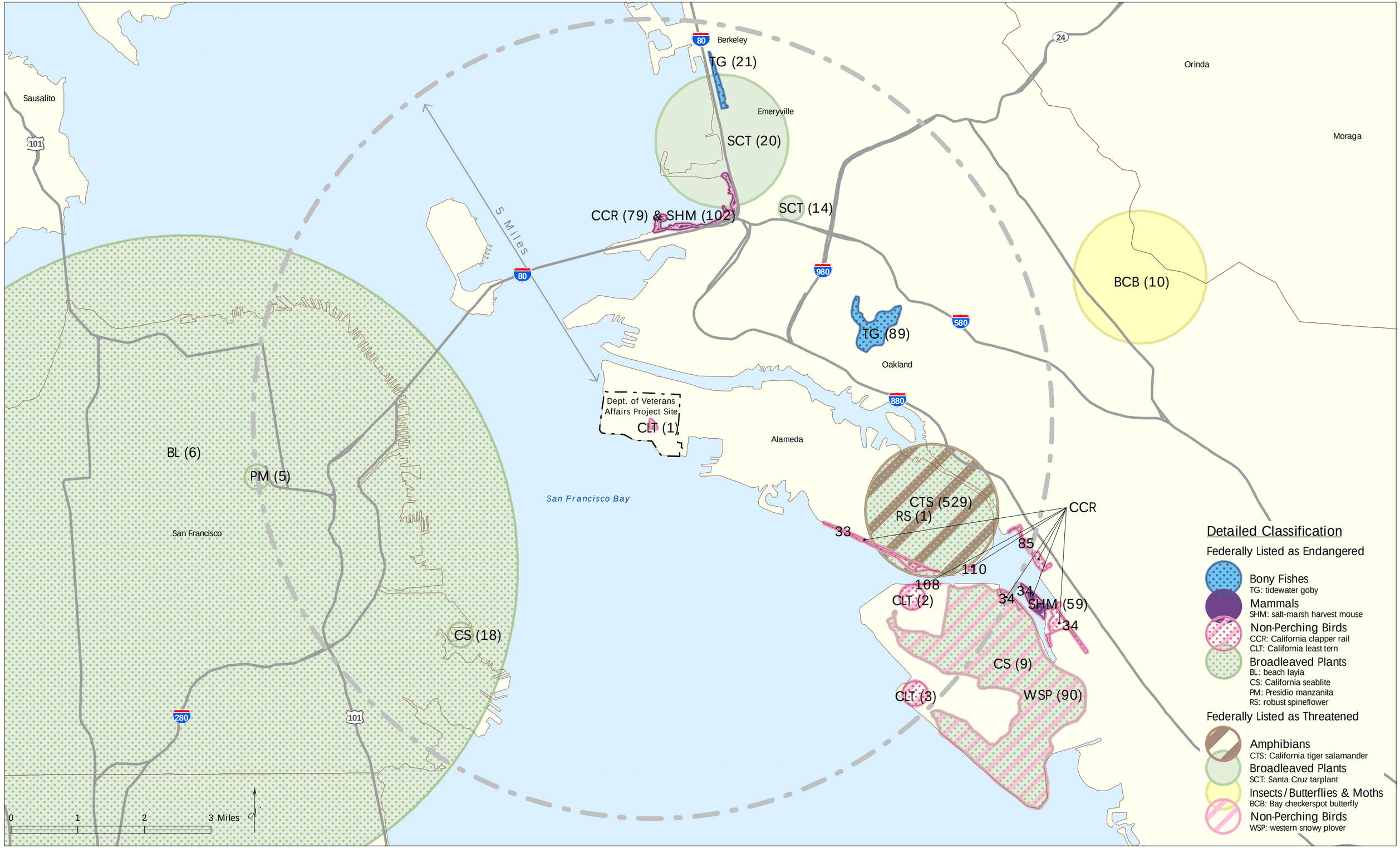
Non-native

Lagerstroemia indica – crapemyrtle

- can reach 20 ft. when mature
- requires semi-moist climate
- flowering shrub
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=9354

Arbutus unedo – Strawberry tree

- Grows in Mediterranean climate
- Grows 8-12 ft. tall
- http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=9284



Federally Listed as Threatened & Endangered: CNDDB, December 2007