

**FINAL  
INITIAL STUDY AND  
MITIGATED NEGATIVE DECLARATION**

**ARAMBURU ISLAND SHORELINE PROTECTION AND  
ECOLOGICAL ENHANCEMENT PROJECT**

PREPARED FOR:

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## **SUMMARY**

### **Introduction**

The proposed project consists of shoreline protection and habitat enhancement of Aramburu Island in Richardson Bay. The Island was originally constructed to provide mitigation for residential development. However, habitat on the Island has been degraded, significantly limiting the capacity for the Island to fully serve its intended purpose as a wildlife preserve.

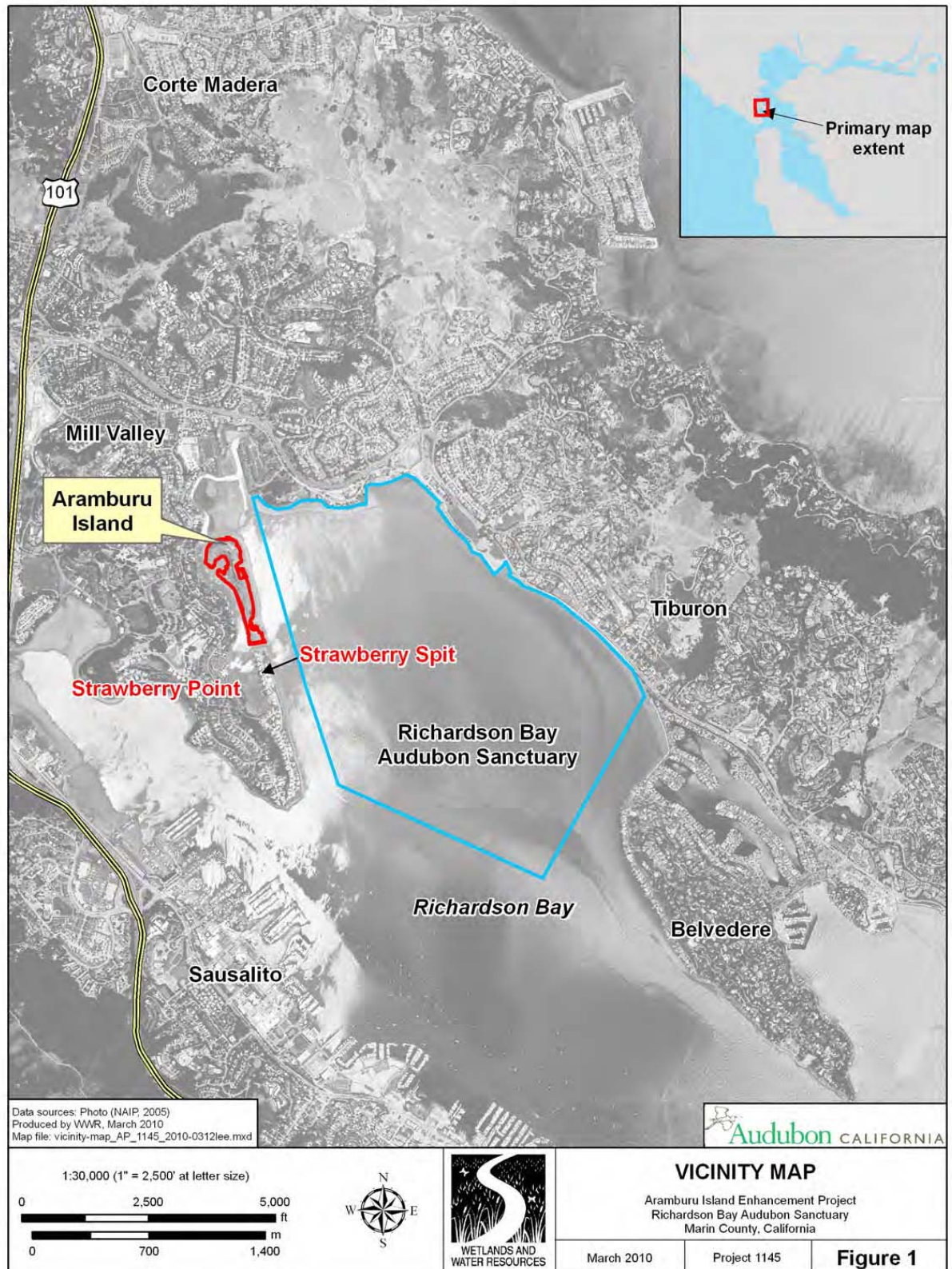
This Issues Summary provides a concise summary of the Initial Study and proposed Mitigated Negative Declaration, which have been prepared pursuant to the California Environmental Quality Act of 1970 (CEQA) and State CEQA Guidelines. The Lead Agency for the project, as defined by CEQA, is the California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board). The property owner is the Marin County Department of Parks and Open Space, a CEQA responsible agency for this project. The Richardson Bay Audubon Center is the project Applicant.

### **History and Location of Project Site**

Aramburu Island is located in the northwest region of Richardson Bay on the east side of Strawberry Point (Figure 1). The island is bordered to the east by the 911-acre Richardson Bay Audubon Sanctuary, to the north by two smaller islands supporting tidal marsh habitat, and to the south and west by a deep-water navigation channel that serves local boaters and private docks along Strawberry Spit and Strawberry Point. The Cove Apartments marina also uses the navigation channel.

Aramburu Island was originally part of Strawberry Spit, an artificial peninsula off of Strawberry Point created by placement of fill material. Once created, the Spit provided important habitat for harbor seals in the 1960s and 70s. In 1987, the northern half of Strawberry Spit was converted into an island as wildlife habitat mitigation for residential development on the southern half of the Spit, thus creating Aramburu Island. However, harbor seals never returned to the Island after its creation, and habitat on the island has been degraded over the years due to non-native plant colonization and erosion, significantly limiting the capacity of the Island to fully serve its intended purpose as a wildlife preserve. The site is designated as Open Space in the Marin County General Plan.

Currently, the 36-acre project site consists of a 17-acre island terrace (all habitats from the shoreline upward, including tidal marsh and seasonal wetland habitats, gravel pits and rip-rap) and 19 acres of surrounding “Bay” habitats, which include intertidal coves and mudflats, subtidal waterways, and an intertidal cobble-boulder “lag” field.



## **Project Objectives**

The goals of the proposed project are to:

- Reduce erosion along the eastern shoreline of the Island
- Enhance resilience of the Island to sea-level rise
- Enhance shorebird, waterfowl, and wading bird habitat
- Enhance suitability of haul-out habitat for harbor seals
- Enhance habitat for rare salt marsh plants
- Establish native vegetation on the Island terrace

## **Project Description**

The proposed project is described in detail in the Aramburu Island Draft Enhancement Plan, which outlines three options for Island habitat enhancement and shoreline stabilization. For the purposes of the CEQA project description, this Initial Study considers an “environmentally reasonable worst-case scenario,” which is the combination of restoration techniques that would result in the greatest construction-related impacts. The CEQA project description combines the maximum amounts of imported materials, grading/excavation, and saline irrigation that would occur under any combination of optional restoration techniques. As such, the full range of habitat types and acreage extents are considered for evaluation in this Initial Study.

The project design has taken into consideration concerns from nearby residents to maintain existing viewsheds, limit equipment noise, and ensure stability of the island during storm events, as discussed below.

### **Shoreline Enhancement**

The project includes shoreline enhancement activities to reduce erosion of the eastern shoreline and to enhance foreshore and beach habitat. The proposed project includes the following components:

- Beach stabilization features of sand, gravel, and shell;
- Beach retention features (micro-groins /spits);
- Large woody debris;
- Oyster habitat (subtidal reefs);
- Habitat features for harbor seals (subtidal channel immediately offshore of the southeastern corner of the island)

Proposed shoreline enhancement actions would occur only on the eastern shoreline of the island. Various shoreline enhancement features will result in a variety of shoreline and intertidal habitats, as identified in Table S-1.

**Table S-1: Pre- and Post- Project Shoreline Habitat Types and Enhancement Features**

<b>Enhancement Features</b>	<b>Existing Habitat (acres)</b>	<b>Proposed Habitat (acres)</b>
Coves	1.98	1.98
Beaches/spits	0.0	1.70
Sand Foreshore	0.0	1.22
Groins	0.0	0.39
Intertidal Boulder Field	10.28	7.86
Intertidal Mudflat	2.57	2.37
Subtidal Habitat	3.92	4.12

Island Terrace Enhancement

Enhancement activities on the island terrace would involve creating a mix of habitats once-common around San Francisco Bay, including high tidal marsh, seasonal wetlands (vernal pool, vernal marsh, and saline flats/pans), terrestrial grasslands (perennial lowland grass/sedge meadow, and salt grass meadow), and backshore sand flats. The characteristics of these native habitats are described below. Table S-2 shows the existing and proposed extent of each habitat type.

- **High tidal marsh** - Pickle weed and habitat for marsh bird's-beak and associated regionally rare salt marsh annuals such as salt marsh owl's-clover and smooth goldfields.
- **Vernal pools** - Support a characteristic suite of mostly annual wildflowers and grass-like plants that grow only in winter and spring wet months.
- **Vernal marsh** - Seasonal wet meadows with perennial, creeping native vegetation.
- **Saline flats/pans** - Poorly drained soils and with high soil salinities that exclude all but relatively salt tolerant vegetation.
- **Terrestrial grasslands (grass/sedge meadow)** - Dominated by perennial creeping native grasses and grass-like plant species.
- **Salt grass meadow** – Occur as a transition with lowland perennial grasslands and salt flats, or as extensive communities - high salinity soils that favor salt-tolerant species.
- **Backshore sand flats** - Soft-substrate, sparsely vegetated platform within easy reach of deep-water escape areas to attract harbor seals for use as haul-out habitat.

**Table S-2: Pre- and Post-Project Island Terrace Habitat Types and Enhancement Features**

<b>Enhancement Features</b>	<b>Existing Habitat (acres)</b>	<b>Proposed Habitat (acres)</b>
Tidal Marsh	6.11	6.64 – 7.81
Seasonal Wetland	2.37	2.75 – 6.34
Oak Grove	0.57	0.73
Gravel Spit	0.12	0.0
Terrestrial Grasslands	7.70	2.43 – 4.74
Backshore Sand Flat	0.0	0.0 – 0.11
Rip-Rap	0.19	0.19

### Construction Activities

Creating shoreline protection and habitat enhancement features at the project site would involve equipment mobilization, grading and excavation, materials import and placement, saline irrigation, and revegetation, as described below.

- ***Equipment mobilization*** – equipment would include low-ground-pressure (LGP) tracked bulldozer, an excavator, a LGP or amphibious excavator, a wheel loader, LGP track dump trucks, a tracked skid steer and a compactor.
- ***Grading and excavation*** – Slopes of the central shoreline would be graded to create a gentle beach profile, and shallow excavation would be required to key-in shoreline stabilization features. All earthmoving within shoreline areas would be accomplished at low tides when no water is present. High tidal marsh and seasonal wetland enhancement and expansion areas on the Island terrace would be graded to slightly improve their hydrology. The project would involve an estimated total excavation and grading of 15,430 cubic yards (CY) of onsite material (3,575 CY along the shoreline and 11,855 CY on the terrace).
- ***Material import and placement*** – Shoreline enhancement would require the import and placement of up to 5,815 CY of beach materials (sand, shell, gravel), as well as rock for shoreline stabilization features. Up to 100 logs and or tree trunks may also be imported to create beach micro-habitats. In addition, up to 8,020 square feet of geofabric may be used as matting for shoreline stabilization features constructed from rock. Island terrace enhancements would require the import of up to 12,870 CY of silty clay, sand, and/or shell material to create a mix of habitats in these areas.
- ***Saline irrigation*** – Certain Island terrace enhancement areas would require short-term irrigation with sprinklers using saline Bay water to prevent germination of undesirable invasive vegetation.
- ***Revegetation*** - Following initial grading of habitat enhancement areas and substrate reconditioning, all areas, with the exception of high tidal marsh, would be revegetated with native species. Some irrigation of newly installed vegetation may be necessary.



### Construction Timing and Duration

Shoreline construction activities are limited to seasonal construction windows set by state and federal resource agencies for the purpose of protecting essential fish habitat and migratory species. Construction duration is expected to be 3 to 4 months during the summer construction season. Construction may be phased over a two year period, in which case the shoreline enhancements and the terrace enhancements would each require approximately 2 to 3 months to complete, with equipment mobilization and demobilization occurring twice. The actual schedule is dependent upon the specific conditions of each permitting agency. The total construction time would not exceed 6 months.

### **Community Participation**

A project scoping meeting was held on April 27, 2010, at the Strawberry Recreation District Center in Mill Valley to seek early input from nearby residents, local agencies, and interested parties. The following key issues were identified during project scoping and are addressed in this Initial Study:

- Consideration of construction noise impacts;
- Construction air emissions;
- Potential visual impacts from construction;
- Measures to ensure successful revegetation;
- Potential for soil erosion to occur before plants are fully re-established;
- Risk of flooding and increased erosion due storm events;
- Increase erosion due to sea level rise;
- Impacts to common bird and wildlife species;
- Mosquito management and vector control; and
- Impacts on navigational channel and future dredging.

In May, 2010, an independent peer review of the Draft Enhancement Plan (WRR, 2010a) was conducted by Professor Mark Lorang, of the University of Montana, and lead to a number of modifications to the proposed project, including:

- Reduced need for gravel retention micro groins and an increase reliance on large woody debris to achieve the same level of shoreline protection;
- Addition of a curved spit that would be installed in the south shoreline area;
- Changes to the mix of beach material (ratio of sand and gravel) and configuration in the southern portion of the shoreline;
- Proposed installation of oyster “reefs” (that would be located in sheltered wave shadow areas behind sand flat retention micro-groins) to provide oyster habitat.

In addition, consultation with San Francisco Bay Conservation and Development Commission (BCDC) regarding public access resulted in minor changes to the project, including the addition of two flat landing rocks for kayakers near northern cove and installation of signs (near the landing site and the southern cove) describing the island as sensitive wildlife habitat and directing visitors to stay on the beach.

## Permitting

The proposed project would require consultation with and permit review by several Federal, State, and local agencies including U.S. Army Corps of Engineers (USACE), San Francisco Bay Regional Water Quality Control Board (Regional Water Board), U. S. Fish and Wildlife Service (USFWS), National Atmospheric and Oceanic Administration/National Marine Fisheries Service (NMFS), California Department of Fish and Game (CDFG), and BDCC, as outlined in Table S-3.

**Table S-3: Project Permitting Agencies**

<b>Agency</b>	<b>Regulatory Authority</b>	<b>Consultation Options</b>
<b>U.S. Army Corps of Engineers (USACE)</b>	A Section 404 Clean Water Act (CWA) permit and/or a Section 10 Rivers and Harbors Act permit would be required for placement of dredge or fill material into waters of the U.S. and work within navigable waters, respectively.	The USACE may consult with USFWS and NMFS during permit review
<b>San Francisco Bay Regional Water Quality Control Board</b>	Water Quality Certification in accordance with Section 401 of the and/or Waste Discharge Requirements in accordance with the Porter-Cologne Water Quality Control Act	The Regional Water Board may consult with USFWS, NMFS, CDFG and BDCC during permit review
<b>San Francisco Bay Conservation and Development Commission (BCDC)</b>	A San Francisco Bay Permit would be required to implement enhancement activities on Aramburu Island.	BCDC will consult with USFWS, NMFS, and CDFG during permit review.

### **Summary of Impacts and Mitigation Measures**

Table S-4 provides a summary of potentially significant impacts of the project. The Initial Study identifies several potentially significant impacts for which mitigation measures will be imposed by the Regional Water Board. Potentially significant impacts were identified in the areas of Air Quality, Biological Resources, Geology/Soils, Hydrology/Water Quality, and Noise. Less than significant impacts are not included in Table S-4 but are discussed in the Initial Study. The project applicant, the Richardson Bay Audubon Center, has agreed to implement all mitigation measures identified in this Initial Study as part of the proposed project. Implementation of all mitigation measures identified to reduce potentially significant impacts will be assured through Regional Water Board adoption of a mitigation monitoring program. The Regional Water Board may delegate mitigation monitoring or reporting to another public agency (such as Marin County) or a private entity (such as Audubon), however, the Regional Water Board will remain responsible for ensuring implementation of the required mitigation measures. The Mitigation Monitoring or Reporting Program would be adopted by the Regional Water Board when it considers adoption of this proposed Mitigated Negative Declaration (in accordance with the CEQA Guidelines Section 15097) and considers adoption of water quality certification and/or Waste Discharge Requirements.

**Table S-4: Summary of Potentially Significant Impacts and Required Mitigation Measures**

<b>Potentially Significant Impact</b>	<b>Mitigation Measure</b>	<b>Significance After Mitigation</b>
<p><u>Air Quality Impact III (b)</u></p> <p><b><i>Construction Air Emissions</i></b></p> <p>During project construction, the project would generate dust from grading, and construction vehicles would also generate some emissions.</p>	<p><u>Mitigation Measure III-1</u></p> <ul style="list-style-type: none"> <li>a. Water all active construction areas at least twice daily;</li> <li>b. Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.);</li> <li>c. Replant vegetation in disturbed areas as quickly as possible.</li> </ul>	<p>Less than significant</p>
<p><u>Air Quality Impact III (d)</u></p> <p><b><i>Exposure to Air Pollutant Emissions</i></b></p> <p>Nearby receptors could be exposed to construction emissions for a short period (approximately six months total).</p>	<p><u>Refer to Mitigation Measure III-1, above</u></p>	<p>Less than significant</p>
<p><u>Biological Resources Impact IV (a)</u></p> <p><b><i>Birds</i></b></p> <p>Project-related construction activities could disturb nesting birds protected under the MBTA and/or California Fish and Game Code and could lead to the loss or abandonment of an active nest.</p>	<p><u>Mitigation Measure IV-1</u></p> <p>To reduce impact to nesting birds, in accordance with Migratory Bird Treaty Act and California Fish and Game Code, the Applicant shall have surveys conducted by a qualified biologist within two weeks of the commencement of construction activities to identify bird nests in the area. If bird nests are detected then construction activities will be halted until either the CDFG or USFWS are contacted and their guidance on appropriate measures is provided. Typical mitigation would require that construction be halted within 300 feet of the nest to avoid disturbing nesting birds. A qualified biologist will monitor the status of the nest and will determine when the offspring have left the nest. Once the offspring have left the nest</p>	<p>Less than significant</p>



<p>During and shortly after construction, wave overwash could increase erosion potential from the Island. Large swaths of the Island terrace will be initially devoid of vegetation during construction and prior to vegetation cover establishment which could increase erosion.</p>	<p>Hydrology and Water Quality Section, below.</p>	<p>significant</p>
<p><u>Hydrology/Water quality Impact IX (a)</u></p> <p><b><i>Reduced Water Quality</i></b></p> <p>Earth-moving and material placement within the shoreline enhancement areas could cause increases in suspended sediment concentration and introduce petroleum contaminants (oil, grease, fuel, etc.) into the waters of the Bay, if performed at times when there is water on the work area. Construction activities on the Island terrace, including earth-moving and substrate placement, also could introduce sediment and petroleum contaminants into the Bay via rainfall runoff or storm wave overwash. During the period between the completion of earthmoving and vegetation reestablishment, bare graded areas could be subject to erosion from these forces as well.</p>	<p><u>Mitigation Measure IX-1</u></p> <p>In order to reduce the potential of erosion and/or degradation of water quality to a less than significant level, the following construction best management practices (BMPs) will be incorporated into the project:</p> <ul style="list-style-type: none"> <li>• Install silt fences or straw wattles along the toes of slopes and designated staging areas, and erosion control netting on sloped areas, to minimize soil erosion and prevent sediment from entering adjacent waters of the fringing marsh, Bay, and navigational channel.</li> <li>• Install winterization features (mulch, planting of cover crop, or hydroseeding) on all bare soil and new plantings prior to the rainy season.</li> <li>• Stage construction equipment in upland areas when not in use and limit refueling or maintenance of equipment to upland areas, away from aquatic habitats to prevent the introduction of hazardous chemicals into the water.</li> <li>• Training for all contractors working on the site regarding the environmental sensitivity of the project site and surrounding area and the need to minimize impacts.</li> <li>• Training for all contractors in implementation of stormwater BMPs for protection of water quality.</li> <li>• Maintain all erosion control BMPs in place along the Island perimeter (above the high tide line) to prevent the introduction of sediments from bare, graded areas on the Island terrace into Richardson Bay due to rainfall runoff or wave overwash.</li> <li>•</li> <li>•</li> </ul>	<p>Less than significant</p>

<p><u>Hydrology/Water quality Impact IX (c)</u></p> <p><b><i>Increased Erosion and Flooding</i></b></p> <p>Prior to vegetation establishment, rainfall and/or wave overtopping during storm events could cause erosion and soil loss during this initial construction and post-construction period.</p>	<p><u>Mitigation Measure IX-1, above.</u></p>	<p>Less than significant</p>
<p><u>Noise Impact XII (a)</u></p> <p><b><i>Construction Noise</i></b></p> <p>Construction activities associated with development of the project would result in a temporary increase in ambient noise levels in the vicinity of the site. The increase in noise could result in temporary annoyance to residents near the construction site.</p>	<p><u>Mitigation Measure XIII-1</u></p> <p>In order to reduce construction and ongoing maintenance noise and to comply with Marin County Noise Ordinance to a less-than-significant level, the following measures shall be implemented:</p> <ul style="list-style-type: none"> <li>a. Generators or other stationary construction and maintenance equipment, that could affect residences if utilized, shall be located as far as practical from sensitive noise receptors and shielded to further reduce noise levels.</li> <li>b. Construction and maintenance equipment that is equipped, operated, and maintained with manufacturer recommended mufflers or the equivalent shall be utilized.</li> <li>c. Construction activities and post-construction maintenance (such as irrigation, vegetation management) shall be limited from 8 a.m. to 5 p.m. Monday through Friday and 9 a.m. and 5 p.m. Saturday. Loud-noise-generating construction related equipment (backhoes, generators, jackhammers) shall be limited from 8 a.m. to 5 p.m. Monday through Friday only.</li> </ul>	<p>Less than significant</p>
<p><u>Noise Impact XII (d)</u></p> <p><b><i>Increased Ambient Noise</i></b></p> <p>The project would result in an incremental increase in temporary or periodic noise levels in the area due to the short-term construction activities for the project.</p>	<p><u>Measure XIII-1, above.</u></p>	<p>Less than significant</p>

## INTRODUCTION

This Initial Study and proposed Mitigated Negative Declaration has been prepared pursuant to the California Environmental Quality Act of 1970 (CEQA), as amended, (commencing with Section 21000 of California's Public Resources Code), and State CEQA Guidelines. The Lead Agency for the project, as defined by CEQA, is the California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board). The property owner is the Marin County Department of Parks and Open Space, a CEQA responsible agency for this project. Marin County will use this Initial Study in implementation of the proposed project. The Richardson Bay Audubon Center is the project Applicant.

The Regional Water Board has determined that the proposed project is subject to environmental assessment under CEQA. A project scoping meeting was held on April 27, 2010 at the Strawberry Recreation District Center in Mill Valley to seek early input from state and local agencies and the public. Early identification of potential environmental impacts provided the basis for necessary revisions to the project design. Thus, in addition to evaluating the impacts of the whole project, the analysis in this document concentrates on aspects of the project that are likely to have a significant effect on the environment, and identifies feasible measures to mitigate (*i.e.* reduce or avoid) these impacts. The CEQA Guidelines define "significant effect on the environment" as a "substantial, or potentially substantial adverse change in any of the physical conditions within the area affected by the project..." (CEQA Guidelines, Section 15382).

This Initial Study consists of the following major sections:

- Project Description – provides a brief description of existing site conditions, the proposed modifications and improvements, and the discretionary approvals required for the project to proceed.
- Environmental Checklist and Discussion – provides specific environmental topic chapters within which the following are addressed:
  - Environmental setting or conditions which may affect or be affected by the project;
  - Potential environmental effects and level of significance likely to result from the project as proposed;
  - Mitigation measures that can be implemented to eliminate or substantially reduce the identified potentially significant environmental effects;
  - References used in the analyses.
- Appendices – including relevant technical reports.



## INITIAL STUDY / DRAFT MITIGATED NEGATIVE DECLARATION

*pursuant to the California Environmental Quality Act, as amended*

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### A. PROJECT DESCRIPTION

1. **Project title:** Aramburu Island Shoreline Protection and Ecological Enhancement Project
2. **Lead agency name & address:** California Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, CA 94612
3. **Contact person & phone number:** Sandi Potter, Engineering Geologist,  
(510) 622-2426
4. **Project location:** Aramburu Island, located in the northwest region of Richardson Bay on the east side of Strawberry Point in unincorporated Marin County (APN: 043-271-61). (See Figure 1, Project Location)
5. **Project sponsor's name & address:** Richardson Bay Audubon Center and Sanctuary  
376 Greenwood Beach Road, Tiburon, CA 94920
6. **General plan designation:** Open Space
7. **Zoning:** BFC-RMP-0.2 (Residential, Multiple Planned, with a Bay Front Conservation Overlay)
8. **Description of project:**

#### **Site History**

Aramburu Island was originally part of Strawberry Spit, an artificial peninsula off the Marin County mainland, which was constructed in the late 1950s and early 1960s by the deposition of fill in open waters of Richardson Bay. The fill originated from dredge spoils from local navigational channel maintenance, which were later capped with hillslope material excavated during the development of adjacent Strawberry Point. Placement of fill ceased by 1964 and the spit slowly became colonized by vegetation, dominated by non-native species.

By the late 1960s, Strawberry Spit became a popular haul-out area for harbor seals. A partially completed navigational channel through the northern part of the spit subsequently became a sheltered cove and was used as the primary haul-out site by seals. From the late 1970s to the early 1980s seal use at the spit declined dramatically. In 1976 the Marine Mammal Commission (MMC) found that human disturbance was negatively impacting seals hauling out at the spit. The MMC recommended reducing these impacts by turning the northern end of the spit into an Island and redirecting boat traffic away from the primary haul-out site (Risenbrough et al. 1979).

In 1983, the development of 62 single-family homes on the southern half of Strawberry Spit was approved by Marin County and the San Francisco Bay Conservation and Development Commission (BCDC). BCDC permit conditions for this development included the following measures to mitigate for impacts to wildlife on the spit: 1) dredge a 165 foot-wide channel through the spit, thus making the northern end into an Island; 2) excavate a new seal haul-out cove 1,000 feet north of the original cove; 3) construct an earthen berm, fence, and landscaping at the south end of the Island to serve as a visual buffer; 4) permanently set aside the Island as open space to remain unfilled and undeveloped for wildlife habitat; and 5) post signs on the north end of the residential development identifying the Island as sensitive wildlife habitat. These measures were implemented in 1987.

Following Island creation, the developer deeded the Island and its surrounding waters (about 36 acres) to the Marin County Department of Parks and Open Space. The Marin County Board of Supervisors dedicated the Island as an open space and wildlife preserve in 1997.

### **Existing Site Conditions**

The site is designated in the Marin Countywide Plan as Open Space and is owned by the County of Marin and maintained by the Department of Parks and Open Space as a wildlife preserve. Public access to Aramburu Island is limited due to the location and lack of access to the site from the mainland.

Currently, the 36-acre project site consists of a 17-acre Island terrace (all habitats from the shoreline upward, including tidal marsh and seasonal wetland habitats, gravel pits and rip-rap) and 19 acres of surrounding “Bay” habitats, which include intertidal coves and mudflats; subtidal waterways; and an intertidal cobble-boulder “lag” field (coarse, rocky material eroded from the Island terrace over time) (Figure 2). Table 1 lists the existing acreages of habitat types on the Island.

#### *Island Terrace*

The Island terrace is relatively flat, with elevation ranging between 6 and 10 feet above the North American Vertical Datum of 1988 (NAVD88). About one third of the Island terrace is tidal marsh. The remaining two thirds of the terrace is comprised of seasonal wetlands and uplands that occur in elevations above the highest tides up to the maximum elevations of the Island, about 10 feet above NAVD88. A long elevated ridge runs along the center “spine” of the Island and a small hill exists along the western shoreline. Gravel spits occur at the southeast corner of each of the two eastern coves; elevation ranges from about mean higher-high water (MHHW) which is equivalent to about 5.9 feet NAVD88, up to about 8 feet above NAVD88.

#### *Bay Habitat*

The eastern shoreline consists of boulder lag fields. East of the boulder lag fields are low-elevation intertidal mudflats sloping gently down into Richardson Bay. Two intertidal mudflat coves also exist on the eastern shore. Intertidal mudflats fringe the Island terrace

on the west and north including a third cove in the northwest corner of the site. The western shoreline continues to slope down from the mudflats into the dredged navigation channel (Figure 2).

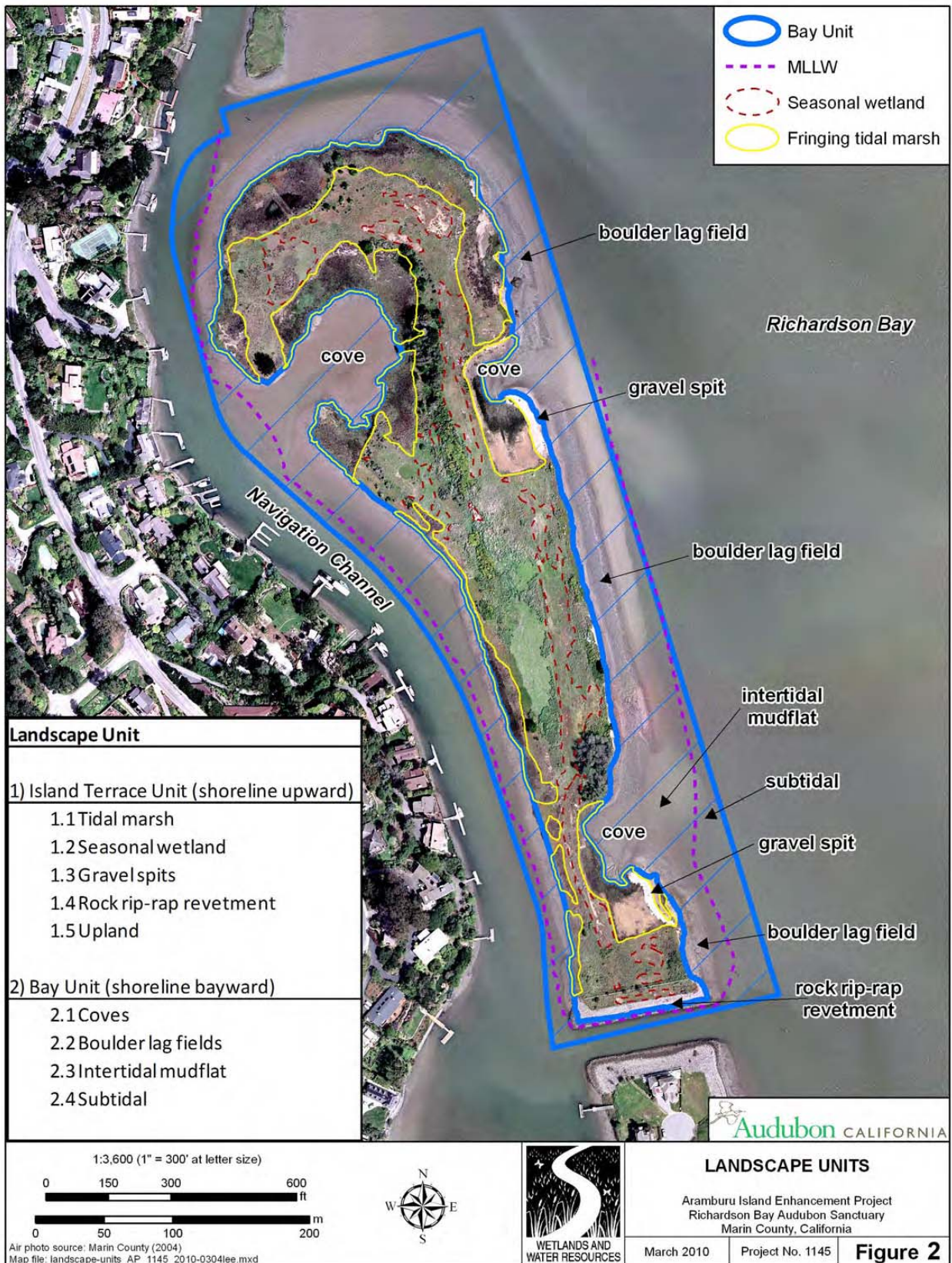
The eastern shoreline of Aramburu Island is unstable and is progressively retreating due to erosion. This erosion has created an erosional scarp (a small cliff in artificial fill). The scarp supplies a chronic source of additional fine sediment that is subject to wave erosion resulting in pulses of suspended sediment that degrades water quality and may adversely effect eelgrass beds and aquatic biota. The steep and eroded shoreline also inhibits natural salt marsh formation, formation of soft-bottom intertidal mudflats, limits the use of this area by shorebirds for foraging and high-tide roosting, acts a barrier to seal haul out, and may eventually lead to inundation of the Island as it erodes with rising sea level.

**Table 1: Pre- and Post-Project Habitat Types**

<b>Enhancement Component</b>	<b>Existing (acres)</b>	<b>Post-Project<sup>1</sup> (acres)</b>
<b><u>Shoreline Habitat</u></b>		
Coves	1.98	1.98
Beaches/Spits	0.0	1.70
Sand Foreshore	0.0	1.22
Groins	0.0	0.39
Intertidal Boulder Field	10.28	7.86
Intertidal Mudflat	2.57	2.37
Subtidal Habitat	3.92	4.12
<b><u>Island Terrace</u></b>		
Tidal Marsh	6.11	6.64 – 7.81
Seasonal Wetland	2.37	2.75 – 6.34
Oak Groves	0.57	0.73
Gravel Spit <sup>2</sup>	0.12	0.0
Terrestrial Grasslands	7.70	2.43 – 4.74
Backshore Sand Flat	0.0	0.0 – 0.11
Rip-rap	0.19	0.19

<sup>1</sup> The range of Island Terrace acreages represents the range of potential habitats associated with the various options under consideration (options 1, 2 and 3 shown in Figures 4, 5, and 6)

<sup>2</sup> After enhancement activities are complete, “Gravel Spits” would become part of “Beaches/Spits” under Shoreline Habitat.



## **Project Objectives**

### *Need for the Project*

Failure to take proactive measures to reduce erosion of the eastern shoreline of Aramburu Island will lead to reduced water quality in Richardson Bay, continued erosion of the Island, and to eventual erosion of the mainland, adjacent to homes to the west of the island. Over time with sea level rise, and especially with increased frequency and intensity of major storm events predicted by climate change scenarios, Aramburu Island would be subject to increasingly greater erosion if no action is taken.

Increased erosion of fine-grained sediments from Aramburu Island and movement of these sediments into Richardson Bay adversely affect eelgrass beds in the Bay. Eelgrass beds are rare in San Francisco Bay due to the generally high turbidity of the water and the Richardson Bay eelgrass beds are amongst the largest single patches remaining in San Francisco Bay. They provide very important fisheries and waterbird habitat, including spawning of Pacific herring.

Aramburu Island and the spit to the south, as well as the two small islands to the north, together act as breakwaters for the houses on the mainland immediately to the west. These breakwaters absorb a vast majority of wind wave energy, thereby protecting navigation, boat docks, and private property along the shoreline. By taking no action to protect Aramburu Island from erosion, the island will continue to erode and, with sea level rise and increased storm intensity and frequency, will be subject to more intense erosion and rapid loss of island habitat. If Aramburu Island were to erode below sea level, then the full force of storms would be exerted upon the navigation channel, boat docks, and private properties along the shoreline. Private landowners would then be faced with undertaking costly shoreline protection measures, resulting in increased costs to all property owners.

### *Project Goals and Objectives*

Aramburu Island was created as a mitigation for the residential development on Strawberry Spit. Once created, the Island provided important habitat for harbor seals in the 1950s and 60s. However, habitat on the Island has been degraded due to existence of non-native plants and by erosion, significantly limiting the capacity of the Island to fully serve its intended purpose as a wildlife preserve. The Island, however, has become an important refuge site for wildlife during times of stress. During the Cosco Busan oil spill in San Francisco Bay of November 2007 and the large sewage spills in Richardson Bay in early 2008, Aramburu Island provided refuge for oiled, injured, and sick birds.

The goals of the proposed project are to:

- Reduce erosion along the eastern shoreline of the Island
- Enhance resilience of the Island to sea-level rise
- Enhance shorebird, waterfowl, and wading bird habitat
- Enhance suitability of haul-out habitat for harbor seals

- Enhance habitat for rare salt marsh plants
- Establish native vegetation on the Island terrace

In addition, project design has taken into consideration concerns from neighbors and adjacent landowners. In particular, the project has been designed to minimize mosquito production, maintain existing viewsheds, limit equipment noise, and continue the currently existing limited public access to the Island.

Strawberry Channel, constructed on the 1950s, provides navigational access to Richardson Bay to residents in Strawberry and to the Cove Apartments in Tiburon. Maintenance of the Channel is funded by the Strawberry Recreation District, Zone IV. The project would also not interfere with maintenance dredging of adjacent navigation routes.

### **Proposed Shoreline Protection and Enhancement Actions for Aramburu Island**

As described below, project components focus on protecting and enhancing the eastern shoreline and enhancing habitats on the terrace. The Aramburu Island Draft Enhancement Plan (WWR, 2010a) evaluated several possible restoration options for the Island terrace, however, the proposed shoreline enhancement features would be identical under all restoration options.

For the purposes of the CEQA project description, this Initial Study considers an “environmentally reasonable worst-case scenario”, which is the project design that would consist of a combination of restoration techniques that would result in the greatest construction-related impacts. The CEQA project description combines the maximum amounts of imported materials, grading/excavation, and saline irrigation that would occur under any combination of restoration options techniques. As such, the full range of habitat types and acreage extents presented in Table 1 are considered for evaluation in this Initial Study.

The descriptions of the project components presented in the following sections are summarized from the project Draft Enhancement Plan (WWR 2010a) and have been modified in response to comments received during project scoping conducted in April and May, 2010. Peer review of the Draft Enhancement Plan in May, 2010 was conducted by Professor Mark Lorang of the University of Montana, and also lead to a number of modifications to the proposed project including:

- Reduced need for gravel retention micro-groins and an increase reliance on large woody debris to achieve the same level of shoreline protection;
- Addition of a curved spit that would be installed in the south shoreline area;
- Changes to the mix of beach material (ratio of sand and gravel) and configuration in the southern portion of the shoreline;
- Proposed installation of oyster “reefs” (that would be located in sheltered wave shadow areas behind sand flat retention micro-groins) to provide oyster habitat;

In addition, consultation with BCDC regarding public access resulted in the addition of two flat landing rocks for kayakers near northern cove and installation of signs (near landing site and near southern cove) describing the island as sensitive wildlife habitat and to stay on the beach.

Shoreline Enhancement. Shoreline and tidal flat enhancement is expected to increase foraging and roosting sites for shorebirds and wading birds as a result of the creation and expansion of existing sand-gravel beaches and sand-mud foreshore along the eastern shoreline of Aramburu. Sand-mud foreshore would provide additional foraging habitat for shorebird species of conservation concern such as the Dunlin, Sanderling, Western Sandpiper, Whimbrel, Long-billed Curlew, Marbled Godwit, Ruddy Turnstone, and short-billed Dowitcher (Andres et al. 2006). These species and other shorebird species rely on healthy tidal mudflats to fuel their migration. Gravel beach berms and rocky cobble along the spit are expected to provide foraging habitat for Black Oystercatchers, and Black Turnstone. Tidal mud flats will also provide essential roosting habitat for Elegant Tern, Forster's Tern, and Caspian Tern.

#### *Eastern Shoreline Enhancement*

For design purposes, the eastern shoreline has been divided into three shoreline cells based on geomorphic features and incident wave energy. The location of these cells and proposed enhancement features are shown in Figure 3. Design elements that would be applied to each of the shoreline cells are identified in Table 2. Eastern shoreline enhancement activities would involve the following:

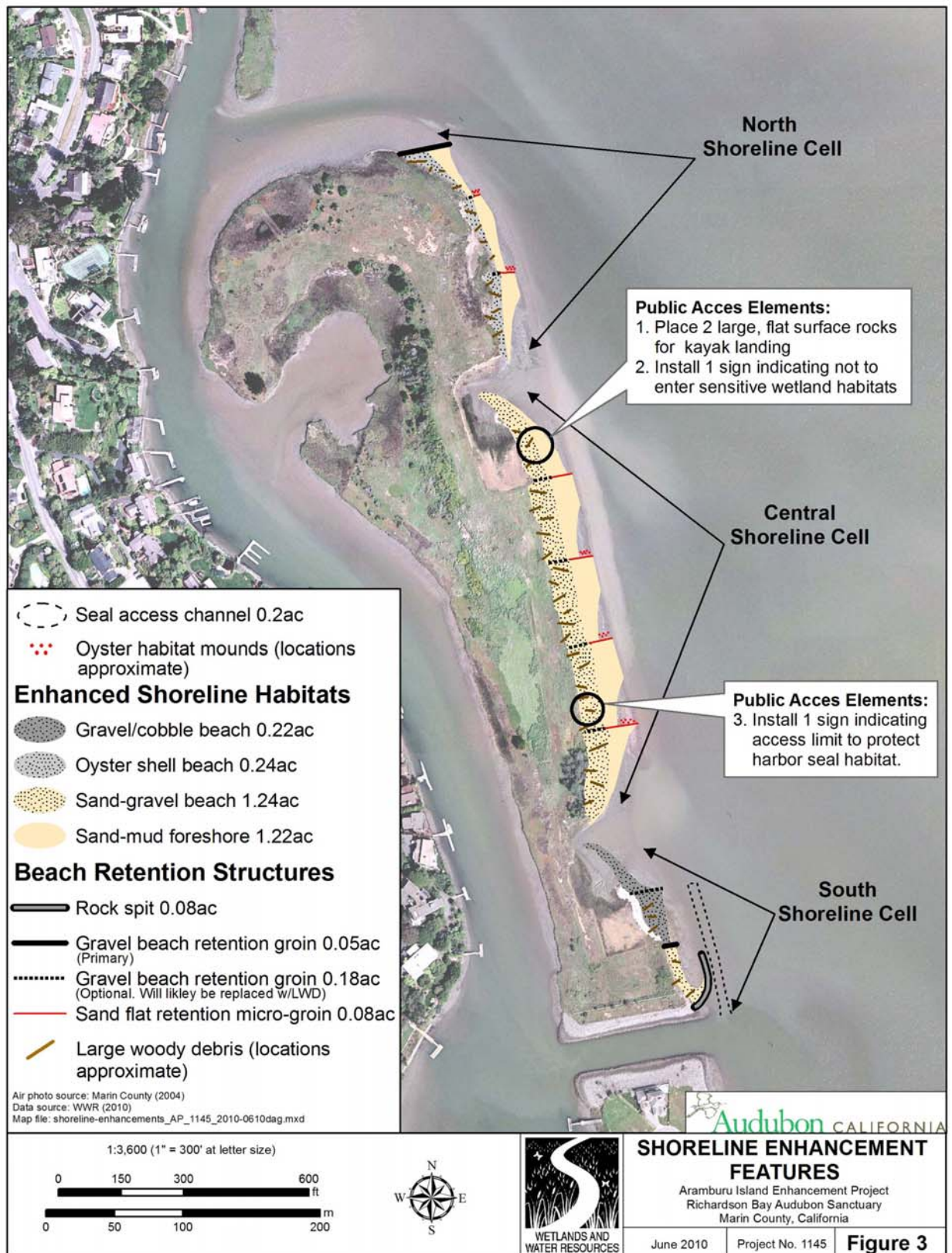
- Creating beach stabilization features of sand, gravel, and shell to buffer the eastern shoreline from wave erosion;
- providing high-quality habitat for shorebirds and harbor seals;
- constructing beach retention features (micro-groins /spits) to restrict longshore drift of imported beach materials and fostering the development of shoreline habitat;
- placing large woody debris (LWD) to increase shoreline complexity and help retain beach materials;
- creating oyster habitat from existing on-site cobbles and boulders; and,
- excavating a small, subtidal channel immediately offshore of the southeastern corner of the Island to enhance seal access to deep-water escape area

In addition, public access features including two large, flat landing rocks for kayakers and signage indentifying the Island as sensitive wildlife habitat with access restrictions on the terrace would be installed.

**Table 2: Shoreline Protection and Enhancement Elements**

Shoreline Protection and Enhancement Elements	Shoreline Cells		
	North	Central	South
<b>Beach Habitats</b>			
Shell Beach Berm	X		
Sand / Gravel Beach		X	X
Gravel Beach Berm			X
Sand Foreshore	X	X	
<b>Beach Retention Features</b>			
Beach Retention Micro-Groin/Spit	X	X	X
Sand Foreshore Retention Micro-Groin	X	X	
Oyster Habitat Reef	X	X	X
Seal Access Channel			X
Large Woody Debris	X	X	X
Island Terrace Grading		X	
<b>Public Access Features</b>			
Large Landing Rocks		X	
Signage		X	X





Northern Cell. The northern cell is approximately 475 linear feet and extends from the northeast corner of the Island to the first cove (Figure 3). The northern cell has the gentlest shore slope profile, experiences the lowest wave impacts, and contains a long, narrow gravel beach with very limited sediment supply. Given these conditions, enhancement activities in this area would focus on supplementing the existing gravel and shell berms to provide a wider, higher beach profile with more consolidated habitat area for shorebirds. Proposed enhancement activities in the northern cell include (1) placement of native oyster shell hash (a mixture of shell fragments of variable size and shape), commercially available from in-bay mining operations, on the existing gravel beach and spit; and (2) placement of sand on the foreshore (low-tide terrace). The sand may be obtained from navigational maintenance dredging operations at the San Francisco Yacht Harbor, or from in-bay mining operations. Construction of two or three beach retention micro-groins to restrict longshore transport of crushed oyster shells in the backshore and upper foreshore zones of the beach also may occur in this zone. Micro-groins would be constructed of either imported rock from local Bay Area quarries or eucalyptus tree trunks/root wads (LWD) embedded in underlying Bay mud. LWD would be placed in various locations along the shoreline to retain beach materials, provide shoreline complexity, and enhance onshore habitats.

The final combination of shoreline stabilization features consisting of beach materials, micro-groins, and LWD would be determined in the grading plan in the final design. Final design will maximize the use of more natural features for trapping and retaining beach materials. Low, cobble/boulder extensions of the beach retention micro-groins may also be constructed to restrict longshore transport of sand placed on the foreshore. Existing lag field cobbles and boulders will be arranged into piles in lower tidal elevations on the leeward (northern) side of these micro-groin extensions to provide oyster habitat “reef”. Placement of these reefs on the leeward side of the micro-groin extensions should keep them relatively free from sand build-up, which would be detrimental to oysters

Central Cell. The central cell is approximately 1,000 linear feet and includes the shoreline between the northern and southern coves. This area is subject to significant wind-wave erosion, resulting in a steeper (up to approximately 2.5 feet high) shoreline erosional scarp (small cliff). Enhancement activities in the central cell would include grading the beach slope into the Island terrace (to a flattened 12:1 to 15:1 slope) for a more stable slope profile. A mixture of sand and gravel, obtained from in-bay mining operations, would then be placed on the newly created “ramp” to allow development of a more natural beach profile and sand would be placed on the rocky foreshore. Construction of up to five low shore-perpendicular beach-retention groins (from rock or wood material as described above) may also occur within the central cell. Large woody debris would be placed in various locations along the shoreline to retain beach materials, provide shoreline complexity, and enhance onshore habitats. Similar to the northern cell, the micro-groin structures may be eliminated in favor of placing more LWD to serve beach material retention functions. Also similar to the northern cell, low, cobble/boulder extensions of the beach retention micro-groins may be constructed to restrict foreshore sand transport and oyster habitat reefs would be constructed on the leeward side of these features from existing lag field cobbles and boulders.

Southern Cell. The southern cell extends approximately 375 feet from the southern cove south to the end of the Island. This cell is exposed to the highest wind-wave energy along the eastern shoreline and has the most pronounced erosional scarp. Enhancement activities in this cell would involve the creation of two distinct beach types. In the southern half of the cell a mixed sand/gravel beach, similar to the central cell, will be constructed between the existing shoreline

scarp and a newly created, curved micro-groin “spit”. A layer of ¼ ton toe rock obtained from local Bay Area quarries may be placed at the bottom of the scarp to inhibit wave erosion should the beach and spit combination prove ineffective in resisting movement by winter storm waves. The micro-groin “spit” would be constructed of 200 lb - ¼ ton rocks placed on top of logs on the bay mud to promote stability of the placed rock/wood. Large cobble would also be placed on the leeward side of spit to provide habitat for oysters. Smaller cobbles may be distributed within the boulder interstices to provide a smoother surface for harbor seals to haul out.

The northern half of the southern cell would be protected by a coarse gravel beach berm that would provide a suitable haul-out substrate for harbor seals. One or two micro-groins, constructed of wood or rock (as described for the northern shoreline cell), may be placed between the northern and southern beach forms. Similar to the other shoreline treatments, LWD may be placed in various locations along the shoreline to retain beach materials, provide shoreline complexity, and enhance onshore habitats.

Seal Access Features. In addition, to enhance seal access to deep-water escape areas, a small subtidal channel would be excavated immediately offshore of the micro-groin spit in the southern cell. The channel would be approximately 20 feet wide, 4 feet deep, and 300 feet long, and would connect to the existing navigational channel that runs along the southern end of the Island. Excavated materials would be used to enhance habitats on the Island terrace (see below). Channel construction would progress from south to north in order to ensure continuous connection to subtidal Bay waters in order to avoid fish stranding.

Public Access Features. The primary purpose of undertaking the enhancements to the Island is to provide habitat for targeted native wildlife species. Currently, public access does occasionally occur on the Island and as structured, the project would not result in any substantial increase in public access to or use of the Island. However, features would be installed to encourage responsible public access and to avoid impacts to sensitive resources. Public access design features will include: (1) placement of two large, flat-surface rocks near the northeastern cove to serve as sitting points for non-motorized watercraft landing; these rocks would be approximately 2 to 6 feet across, placed above the high tide line and outside existing or restored wetlands; and (2) installation of two signs to manage public access that indicate presence of sensitive habitats and wildlife and that direct users to leave certain parts of the Island to leave undisturbed. The rocks would be installed only after restoration plantings have been established. Signs would be placed in the northern cove, and in the southern cove near the proposed seal haul out area. These signs would be similar in size, material, and color as other Marin County Department of Parks and Open Space signs and would be maintained by the Marin County Department of Parks and Open Space.

#### *Island Terrace Enhancement*

Enhancement activities on the Island terrace would involve creating a mix of habitats once common around San Francisco Bay, including high tidal marsh, seasonal wetlands (vernal pool, vernal marsh, and saline flats/pans), terrestrial grasslands (perennial lowland grass/sedge meadow, and salt grass meadow), and backshore sand flats. The characteristics of these native habitats and actions needed to create these habitat types are described below.

- **High Tidal Marsh:** High tidal marshes in the vicinity of Aramburu Island consist of rare salt marsh plants that have found refuge in sparse patches of pickleweed. Sea-lavender and other native salt marsh vegetation occur on eroded artificial fills in the high tide lines of Manzanita and Almonte districts in Mill Valley. Very similar soil and vegetation conditions exist at Aramburu Island. Enhancements to existing high tidal marsh areas and expansion of these areas by shallow grading to allow exposure to occasional storm overwash would provide suitable habitat for salt marsh bird's-beak and associated regionally rare salt marsh annuals such as salt marsh owl's-clover and smooth goldfields.
- **Vernal Pool:** Vernal pools that may occur on Aramburu Island are shallow vegetated or partly vegetated depressions that contain rainwater in the winter and early spring, and support a characteristic suite of mostly annual wildflowers and grass-like plants that grow only in winter and spring wet months. Vernal pools bordering the San Francisco Estuary may be freshwater, alkaline, or slightly saline, depending on parent soils and influence of extreme high tides. Soils in these areas are compacted hardpan stony soils with highly restricted rooting depth zones, resulting in short, sparse, vernal pool vegetation. Creation of these habitats would require shallow grading and compaction to enhance ponding and would be seeded with native species.
- **Vernal Marsh:** Vernal rush/sedge marshes are essentially lowland seasonal wet meadows with perennial, creeping native vegetation growing on silty-clay soils that are flooded in winter and dry in summer. Creation of these habitats would require shallow grading and compaction to enhance ponding, placing a layer of silty-clay to serve as rooting substrate, and seeding with native species.
- **Saline Flats and Pans:** Saline flats and pans are backshore seasonal wetlands characterized by high soil salinities, with little or very shallow standing water during the rainy season. These habitats are normally sparsely vegetated and thus contain large areas of saturated soil or very shallow open water (depending on drainage and topography) following rain events, similar to the vernal pool habitats described above. Pans are undrained flats or depressions that evaporate and concentrate saline water, resulting in mostly barren, unvegetated, hypersaline surface soils or mud in the dry season. Salt flats are poorly drained and subject to restrictively high soil salinities that exclude all but relatively salt tolerant vegetation. Creation of these habitats would require shallow grading and compaction to enhance ponding, irrigation with saline water to increase soil salinities, and seeding with native species.
- **Perennial Lowland Grass/Sedge Meadow:** Grass-sedge meadows are native to some transitional floodplain and lowlands habitats with clay-silt loam soils. These meadows are suitable for establishment on thick clay-loam soil profiles with relatively low salinity. They are dominated by perennial creeping native grasses and grass-like plant species. Creation of these habitats would require placement of a silty-clay rooting substrate and seeding with native species. If saline Bay mud is applied, it may take up to two years for rainfall to lower salinities appropriate for target vegetation to be planted.

- **Saltgrass Meadow:** Saltgrass meadows may occur in transition zones with lowland perennial grasslands and salt flats and pans, or may occur as extensive communities. They occur on high salinity soils that favor salt-tolerant species. Creation of these habitats above tides would require irrigation with saline water to increase soil salinities and would require seeding with native species.
- **Backshore Sand Flat:** The backshore sand flat is designed as a sand/shell beach terrace, above the reach of normal tides, behind the gravel beach along the eastern shoreline. This habitat is designed to be attractive to harbor seals for use as haul-out habitat and would provide them with a soft-substrate, sparsely vegetated platform within easy reach of deep-water escape areas.

As discussed above, the Project would create or enhance a variety of wetland, grassland, and backshore habitats. These habitats will serve a number of species, as described below.

**High tidal marsh.**—Enhancement of pickleweed and high tidal marsh habitat is expected to provide habitat for regionally rare salt-marsh annual plants such as salt marsh owl’s clover and smooth goldfields. High tidal marsh is also expected to provide breeding and/or wintering habitat for San Pablo Song Sparrows and Salt Marsh Common Yellowthroat.

**Seasonal wetlands.**—Enhancement of seasonal wetlands (vernal pools and marshes) is expected to provide additional roosting and foraging sites for wading birds and overwintering waterfowl. In addition this habitat feature is expected to provide foraging opportunities for Black Phoebe San Pablo Song Sparrows, and Salt Marsh Common Yellowthroat.

**Saline pan/flats.**—Enhancement of saline pan/flats is expected to provide high-tide roosting areas for shorebirds and wading birds. This area is also expected to seasonally retain water that would provide additional foraging and roosting areas for waterbirds.

**Terrestrial grasslands.**—Enhancement of the terrestrial grasslands is expected to provide habitat for native grasses as well as provide high-tide roost sites for wading birds.

**Salt grass meadow.**—Salt grass meadows are expected to provide habitat for native salt grass vegetation and high-tide roosting sites for wading birds and shorebirds.

**Backshore sand flats.**—Creation of backshore sand flats is expected to provide a sparsely vegetated platform for harbor seals to use as a haul-out area. This area is also expected to provide additional foraging and roosting areas for shorebirds.

The existing strip of coast live oak trees and scattered individual planted oaks on the Island would not be affected by the project. Three approaches to Island terrace enhancement, which combine varying quantities of the above-listed habitats, would be implemented as part of this project. These optional configurations are shown in Figures 4 through Figure 6 are broadly characterized as (1) Lowland wetland/grassland; (2) Saline backshore, and (3) Mixed habitats. All restoration options would result in the creation of a mix of similar habitats with overlapping ecological functions.

### *Construction Activities*

To create the mix of habitat features along the shoreline and on the Island terrace, the following construction activities would take place: (1) equipment mobilization, (2) grading and excavation, (3) material import and placement, (4) saline irrigation, and (5) revegetation. Excavation and material import volumes for the shoreline enhancement and terrace enhancement actions are identified in Table 3. All earthwork and material estimates include a 25 percent contingency to allow for refinement in the grading plan in the final design, there they represent a worst-case estimates.

#### Equipment Mobilization.

The heavy equipment required to construct the project is expected to consist of:

- One low-ground-pressure (LGP) tracked bulldozer;
- one 50,000-lb excavator;
- one LGP or amphibious excavator;
- one wheel loader;
- two LGP track dump trucks;
- one tracked skid steer; and one compactor.

**Table 3. Construction Quantities**

<b>Estimated Maximum Construction Quantities<sup>1</sup></b>			
<b>Description</b>	<b>Shoreline</b>	<b>Terrace</b>	<b>PROJECT TOTALS</b>
<b>Earthwork Volume</b>			
Excavation/grading of onsite materials	3,575 cy	11,855 cy	<b>15,430 cy</b>
<b>Imported Materials -- TOTAL</b>	<b>5,815 cy</b>	<b>12,870 cy</b>	<b>18,685 cy</b>
Oyster Shell Hash	750 cy	1,025 cy	
Pea gravel (waste screenings)	200 cy		
50-60 mm rounded gravel	200 cy		
Sand/gravel mixture	2,785 cy		
Sand	980 cy	470 cy	
Dredged silty clay		11,375 cy	
200lb or 1/4 ton rock (Option 1)	900 cy		
<b>Other Imported Materials</b>			
Geogrid fabric (Option 1)	8,020 sf		<b>8,020 sf</b>
30' eucalyptus trunks (Option 2)	15		<b>15</b>
Misc. tree trunks/limbs (LWD)	85		<b>85</b>

<sup>1</sup> cy = cubic yards; sf = square feet

This equipment would be brought to the Island via barge. The barge would off-load the equipment along the southeastern shoreline where the water is the deepest. The County and Audubon have successfully brought vehicles and heavy equipment to the Island in the past by using this same method, and have experienced no impact to sensitive wetland or mudflat habitat, or nuisance to nearby residents. The project would involve one barge trip per piece of equipment for a total of eight trips to mobilize equipment. The equipment would be loaded by the contractor at a nearby existing barge dock facility on the Bay, such as in Richmond, Sausalito, or San Francisco. When not in use, equipment would be staged in upland areas of the Island (outside of wetland areas). In the likely event that the terrace enhancements are constructed in a subsequent season after the shoreline enhancements are constructed, then this equipment would need to be remobilized.

Grading and Excavation. Grading and excavation would be required to re-contour areas of the Island and create the new shoreline, wetland, and transitional habitats. The central shoreline would be graded to create the gentle beach profile. Shoreline stabilization features (micro-groins and LWD) alignment would require shallow excavation to “key” the structures into the substrate, if these features are to remain in place. The seal access channel would also be excavated. All earthmoving within shoreline areas would be accomplished at low tides when no water is present.

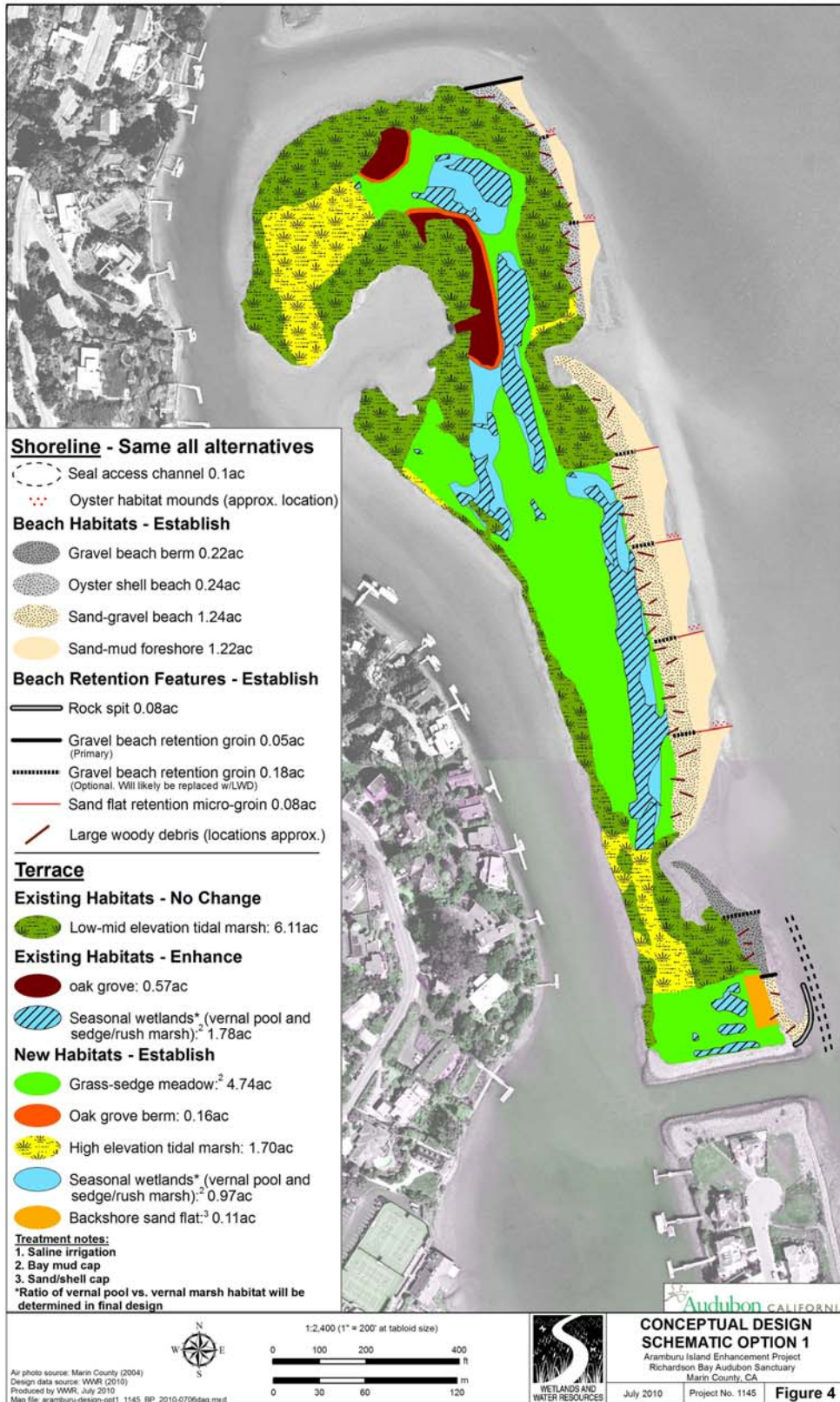
High tidal marsh enhancement and expansion areas would be graded slightly (0.5 feet to 1 feet below current grade) to bring elevations down to the approximate elevation of the high tide line (6.5 feet to 7 feet above NAVD88) to expose these areas to occasional inundation during extreme high tides and storm overwash events, thus improving habitat suitability for targeted rare tidal marsh plants, and promoting their establishment.

All enhanced seasonal wetlands would require moderate grading to deepen them by approximately 0.5 to 1 foot to increase ponding depths. Some upland areas of the Island terrace also would be graded to expand the footprint of existing seasonal wetland areas. Backshore sand flats would be graded approximately one foot below present grade to form a terrace basin immediately behind the enhanced gravel beach, which would later be filled with a sand/shell mixture.

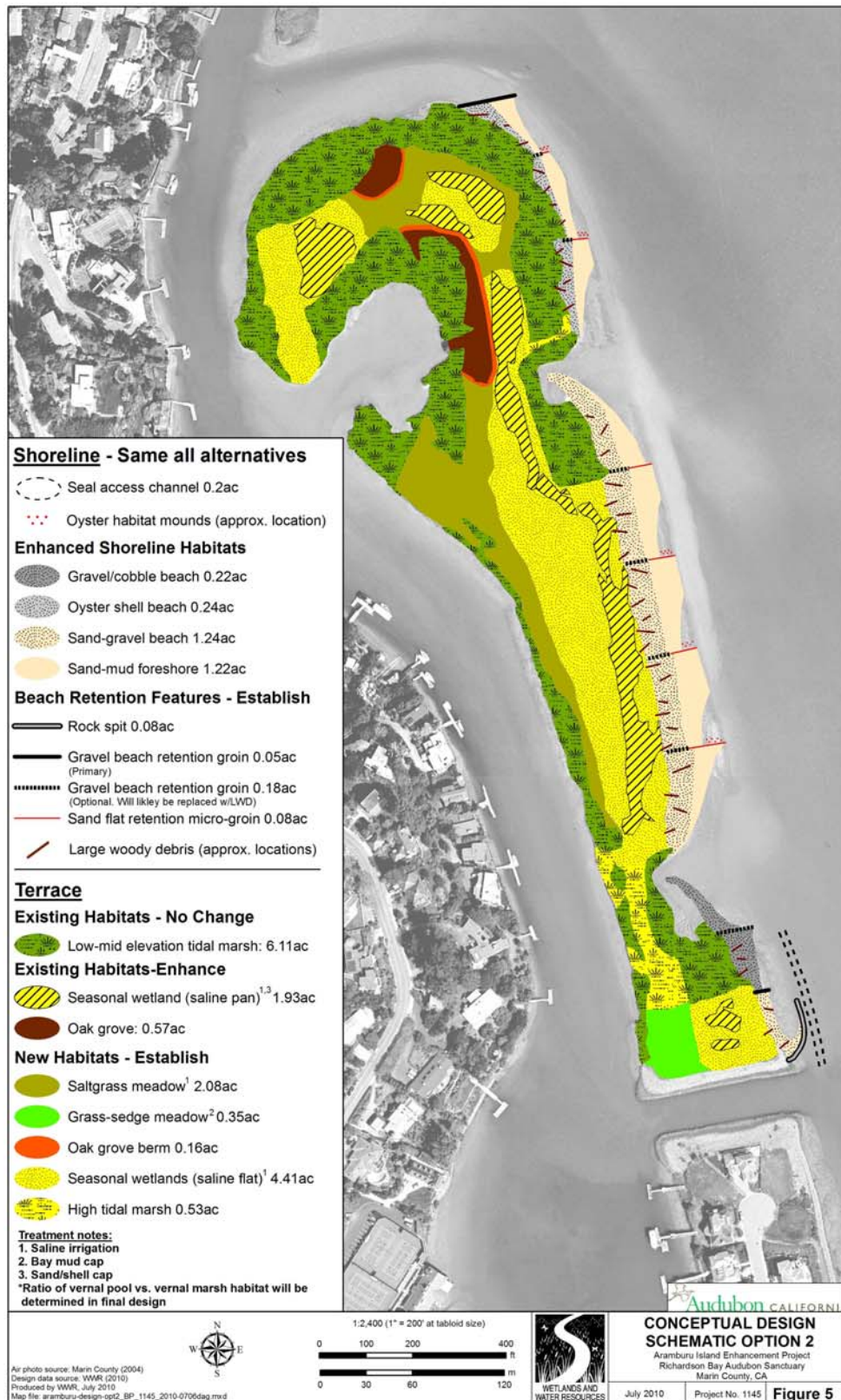
Overall, the elevations of the Island terrace would not be significantly altered. The project would result in a maximum change in elevation on the Island of 12 inches. All enhanced seasonal wetlands would be compacted to decrease soil permeability and drainage, using either the tracked bulldozer (for minimal compaction) or a specialized compactor (for heavy compaction).

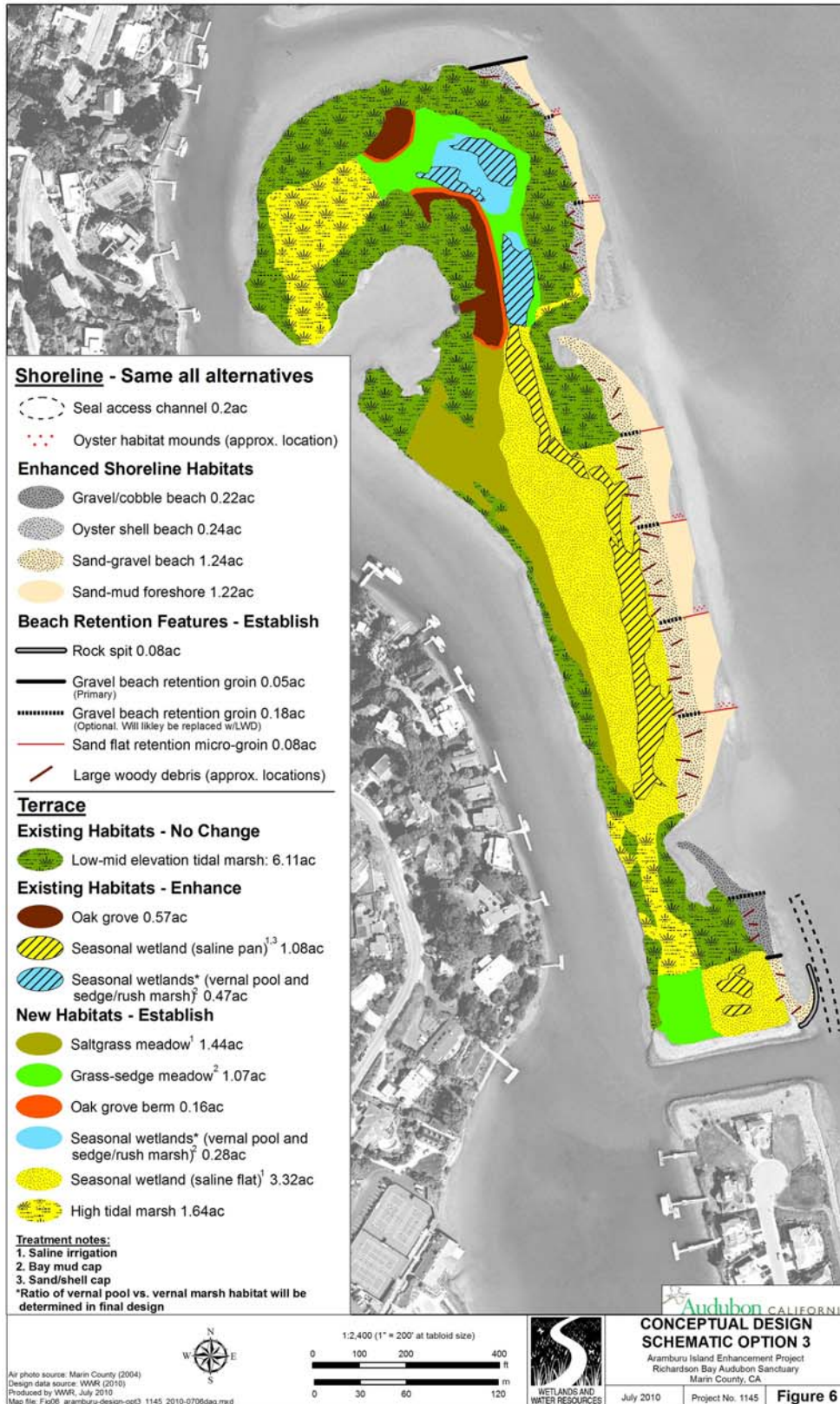
To protect sensitive habitats on the Island, exclusion fencing would be placed around fringing tidal marsh, seasonal wetland areas not proposed for enhancement activities, oak trees, and other native vegetation not proposed for modification.











Import and Placement of Materials. Shoreline enhancement would require the import and placement of up to 5,815 CY of beach materials (sand, shell, gravel), as well as rock for shoreline stabilization features. Up to 100 logs and/or tree trucks may also be imported to create beach micro-habitats. In addition, up to 8,020 square feet of geofabric may be used as matting for shoreline stabilization features constructed from rock. Island terrace enhancements would require the import of up to 12,870 CY of silty clay (Bay mud), sand, and/or shell material to create a mix of habitat in this area. The project may involve the import of a total of up to 18,685 CY of materials, as outlined in Table 3.

The material transport would likely utilize two barges – a larger “transport” barge bringing the material near the Island and a smaller “ferry” barge to bring the material through the shallow water to the Island. The larger barge (1,000 – 2,000 CY capacity) containing the shoreline materials would be anchored in the deepwater area of Richardson Bay. Material would be transferred from this barge onto a smaller barge with an estimated capacity of 65 CY, which would then ferry the material to the Island where the material would be offloaded by wheel loader. The smaller ferry barges would pull up to the southeast corner of the Island, which is adjacent to the deep-water navigation channel. The shoreline in this area is armored by rock rip-rap material, which would be temporarily removed during the material import period so that barges could pull up to the Island without being damaged. A barge would be beached at the Island for approximately 30 – 90 minutes during each trip while unloading. The Project would result in a maximum of 300 boat trips over the three-month construction period, or a maximum of six round trips per day. Material transport would occur between the hours of 8:00 AM and 5:00 PM and the timing and frequency would depend on tides, weather, and construction needs. It is likely that fewer than six daily barge trips would occur. Barges would be managed in a manner to minimize time in and around the navigational channel. Vessel movement would be in conformance with standard Coast Guard rules and regulations and channel markers would be deployed. If minor obstruction of the channel occurs, a navigational pathway will be established to allow recreational boaters to pass. The final specifications for material transport to the Island in terms of ferry barge size, method of loading, and unloading would be determined during consultation with selected contractor, but these specifications would not deviate significantly from those described above.

Materials would be stockpiled on the Island in upland areas and transported by tracked truck or loader to their placement destinations. Erosion control devices (straw wattles, silt fences, etc.) would be installed around all stockpile locations to prevent sediment from moving off site. To avoid impacts to aquatic species, all shoreline materials would be placed at low tide when no water is present on the work area. Should excavation occur in the Bay, a turbidity curtain would be installed during low tide prior to construction activities and all in-water work would occur in this isolated area. Boats and barges bringing equipment, materials, and personnel to the project site would only navigate in deep-water areas that are known to be devoid of eelgrass. Boats and barges would be moored in areas where they will not shade eelgrass.

Saline Irrigation. Certain Island terrace enhancement areas would require irrigation with saline Bay water to prevent germination of undesirable invasive vegetation. Saline irrigation would be applied to areas designated for salt-tolerant vegetation. The salinization of soil would be accomplished by an array of sprinklers installed on the Island, which are fed by saline Bay water from a floating or submersible pump placed in the adjacent deep-water navigation channel on the west side of the Island. The pump would be placed on the perimeter of the channel and clearly marked so as not to interfere with navigation. The pump would likely be powered by a shielded gasoline or propane generator that would be located on the Island and housed in a small enclosure to further reduce noise transmission. The duration of pumping would depend on several factors (soil porosity, precipitation, Bay salinity, etc.). At this time, the project anticipates multi-day (2 to 4 days) irrigation events in the fall, winter, and spring. All irrigation events (and generator use) would occur only during daylight hours on weekdays. This salinization procedure may be repeated for one to two years after construction, if necessary. The irrigation array (sprinklers and pipes) would be removed after treatment is completed.

The salinization of soil would be accomplished by an array of sprinklers installed on the Island, which are fed water from saline Bay water from the adjacent, deep-water navigational channel via a land-based pump. The pump, as described in the Draft Enhancement Plan, would be either a quiet electric pump or if a diesel pump is used would be shielded in a self-contained enclosure to reduce noise to the same level as the quiet pump. The final specifications for the pump be determined after the final design on the irrigation system has been completed, however, it would not exceed the following specifications:

- Max engine size = 6 horse power
- Max intake diameter = 2 inches
- Max flow rate = 150 gallons per minute

A pump of this capacity would measure approximately 2 feet by 2 feet by 2 feet. The pump would be positioned as far east on the Island as the intake hose will allow. The pump will be placed near the center of the north-south island axis in a noise-dampening structure that would be painted to blend in with the local landscape. The intake hose for the pump would be located on the perimeter of the deep-water navigational channel. This hose would be anchored in place to ensure that it does not move and clearly marked with a buoy so as not to interfere with navigation.

The environmental analysis of noise, aesthetics, and air emissions in the IS/MND included use of a saline irrigation pump as described in the Draft Enhancement Plan for Option 2, which would require the greatest amount of saline water pumping.

Revegetation. Following initial grading of habitat enhancement areas and substrate reconditioning to eliminate/neutralize weedy seed banks found in the soils, all areas, with the exception of high tidal marsh, would be revegetated with native species. The mode of revegetation would vary with the vegetation type to be established. Perennial grasses and other grasslike plants would be planted as dormant vegetative plugs or divisions (live transplants) in winter. Annual plants would be seeded in late fall or early winter, following weed seedling treatments. Depending on final revegetation plans, time of planting, and requirements of permitting agencies, irrigation of newly installed vegetation



may be necessary. Irrigation would be accomplished using the proposed saline irrigation system, and irrigation water would be applied to all appropriate areas. A freshwater tank or bladder system would be installed on the Island and would be connected to the irrigation system via a pump powered by a gasoline or propane generator (as for the saline irrigation system). The water tank would be refilled with a hose connected to a hydrant on the mainland. During the first year following planting, irrigation would occur immediately following installation for one week, and then twice a week from May to October. Each irrigation event would last approximately four hours and would occur only on weekdays during daylight hours. Irrigation may also be required for one additional year following planting. If so, irrigation would be needed once every three weeks from May to October.

The details of the freshwater irrigation system would be determined during final design following completion of the revegetation plan. The water storage container itself would be centrally located on the Island and would be painted to blend in with the surroundings. The water storage container would be refilled occasionally via a fire hose connected to a fire hydrant on the mainland. The hose would pass through a willing property owner's land. Where the hose crosses the navigational channel it would be weighted down so that the hose rests on the channel bottom and does not interfere with navigation.

#### *Construction Timing*

Shoreline construction activities have seasonal construction windows set by state and federal resource agencies for the purpose of protecting essential fish habitat and migratory species. These windows vary by species and will be established through consultation with California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS).

Construction duration is expected to be 3 to 4 months if shoreline and terrace are constructed in the same season. Construction may be phased over a two year, period, in which case the shoreline enhancements and the terrace enhancements would each take approximately 2 to 3 months to complete, with equipment mobilization and demobilization occurring twice. Construction would be limited to a maximum total of no more than 6 months. The actual schedule is dependent upon the specific conditions of each permitting agency.

The construction crew would likely consist of five to seven workers at a given time. The workers would park at the Audubon Sanctuary on Greenwood Beach Road in Tiburon.

Construction of the subtidal seal access feature would occur between June 1<sup>st</sup> and either October 31<sup>st</sup> or November 30<sup>th</sup>, depending upon recommendations from the state and federal resource agencies, to conform with established work windows for special status fish species, as identified in Table 4, below. These windows are established by USFWS, CDFG through consultation with the Corps of Engineers, Regional Water Board, and BCDC. To prevent the stranding of aquatic species within excavated impoundments during channel construction, the channel shall be excavated from its connection with the adjacent deep-water navigation channel.

**Table 4. In-water work windows for project location.**

<b>Special Status Species</b>	<b>Regulating Agency</b>	<b>Work Window Period</b>
Steelhead trout	NMFS	June 1 to November 30
Chinook salmon	NMFS	June 1 to November 30
Coho salmon	NMFS	June 1 to October 31
Pacific herring	CDFG	March 1 to November 30

**9. Setting and surrounding land uses:**

Aramburu Island is located in the northwest region of Richardson Bay on the east side of Strawberry Point. The Island is bordered to the east by the 911-acre Richardson Bay Audubon Sanctuary, to the north by two smaller Islands supporting tidal marsh habitat, and to the south and west by a deep-water navigation channel that serves the local boating community. A number of houses along Strawberry Spit and Strawberry Point have private docks with access to this navigation channel. The marina associated with the Cove Apartments also utilizes the navigation channel.

**10. Other public agencies whose approval is required:**

The proposed project would require consultation with the following agencies and municipalities with jurisdiction over the project area:

- U.S. Army Corps of Engineers (USACE): A Section 404 Clean Water Act (CWA) permit and/or a Section 10 Rivers and Harbors Act (RHA) permit would be required for placement of dredge or fill material into waters of the U.S. and work within navigable waters, respectively. The USACE may consult with USFWS and NMFS during permit review.
- San Francisco Bay Regional Water Quality Control Board (Regional Water Board): the Regional Water Board would issue Water Quality Certification in accordance with Section 401 of the CWA; and/or Waste Discharge Requirements in accordance with the Porter-Cologne Water Quality Control Act. The Regional Water Board is also acting as the State lead agency under CEQA. The Regional Water Board may consult USFWS, NMFS, and CDFG during permit review.
- San Francisco Bay Conservation and Development Commission (BCDC): A San Francisco Bay Permit would be required to implement enhancement activities on Aramburu Island. BCDC will consult with USFWS, NMFS, CDFG and the Regional Water Board during permit review.

## B. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist on the following pages.

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Aesthetics                             | <input type="checkbox"/> Agriculture and Forest Resources | <input checked="" type="checkbox"/> Air Quality             |
| <input checked="" type="checkbox"/> Biological Resources        | <input type="checkbox"/> Cultural Resources               | <input checked="" type="checkbox"/> Geology/Soils           |
| <input type="checkbox"/> Greenhouse Gas Emissions               | <input type="checkbox"/> Hazards/Hazardous Materials      | <input checked="" type="checkbox"/> Hydrology/Water Quality |
| <input type="checkbox"/> Land Use/Planning                      | <input type="checkbox"/> Mineral Resources                | <input checked="" type="checkbox"/> Noise                   |
| <input type="checkbox"/> Population/Housing                     | <input type="checkbox"/> Public Services                  | <input type="checkbox"/> Recreation                         |
| <input type="checkbox"/> Transportation/Traffic<br>Significance | <input type="checkbox"/> Utilities/Service Systems        | <input type="checkbox"/> Mandatory Findings of              |

## C. LEAD AGENCY DETERMINATION

On the basis of this initial evaluation:

- ☐ I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.
- ☐ I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.
- ☐ I find that the proposed project **MAY** have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an **earlier EIR or NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

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Signature

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Date

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Bruce H. Wolfe

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Executive Officer

## **D. EVALUATION OF ENVIRONMENTAL EFFECTS**

The Environmental Checklist and discussion that follows is based on sample questions provided in the CEQA Guidelines (Appendix G) which focus on various individual concerns within 16 different broad environmental categories, such as air quality, cultural resources, land use, and traffic (and arranged in alphabetical order). The Guidelines also provide specific direction and guidance for preparing responses to the Environmental Checklist. Each question in the Checklist essentially requires a “yes” or “no” reply as to whether or not the project will have a potentially significant environmental impact of a certain type, and, following a Checklist table with all of the questions in each major environmental heading, citations, information and/or discussion that supports that determination. The Checklist table provides, in addition to a clear “yes” reply and a clear “no” reply, two possible “in-between” replies, including one that is equivalent to “yes, but with changes to the project that the proponent and the Lead Agency have agreed to, no”, and another “no” reply that requires a greater degree of discussion, supported by citations and analysis of existing conditions, threshold(s) of significance used and project effects than required for a simple “no” reply. Each possible answer to the questions in the Checklist, and the different type of discussion required is discussed below:

Potentially Significant Impact. Checked if a discussion of the existing setting (including relevant regulations or policies pertaining to the subject) and project characteristics with regard to the environmental topic demonstrates, based on substantial evidence, supporting information, previously prepared and adopted environmental documents, and specific criteria or thresholds used to assess significance, that the project will have a potentially significant impact of the type described in the question.

Less Than Significant With Mitigation. Checked if the discussion of existing conditions and specific project characteristics, also adequately supported with citations of relevant research or documents, determine that the project clearly will or is likely to have particular physical impacts that will exceed the given threshold or criteria by which significance is determined, but that with the incorporation of clearly defined mitigation measures into the project, that the project applicant or proponent has agreed to, such impacts will be avoided or reduced to less-than-significant levels.

Less Than Significant Impact. Checked if a more detailed discussion of existing conditions and specific project features, also citing relevant information, reports or studies, demonstrates that, while some effects may be discernible with regard to the individual environmental topic of the question, the effect would not exceed a threshold of significance which has been established by the Lead or a Responsible Agency. The discussion may note that due to the evidence that a given impact would not occur or would be less than significant, no mitigation measures are required.

No Impact. Checked if brief statements (one or two sentences) or cited reference materials (maps, reports or studies) clearly show that the type of impact could not be reasonably expected to occur due to the specific characteristics of the project or its location (e.g. the project falls outside the nearest fault rupture zone, or is several hundred feet from a 100-year flood zone, and relevant citations are provided). The referenced sources or information may also show that the impact simply does not apply to projects like the one involved. A response to the question may also be "No Impact" with a brief explanation that the basis of adequately supported project-specific factors or general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a basic screening of the specific project).



Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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**I. AESTHETICS** -- Would the project:

- |  |  |   |   |
|--|--|---|---|
| a) Have a substantial adverse effect on a scenic vista?  |  | X |   |
| b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? |  |   | X |
| c) Substantially degrade the existing visual character or quality of the site and its surroundings?  |  | X |   |
| d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?                                    |  |   | X |

*Background:*

Aramburu Island is visually characterized as a low-lying, mostly weed and scrub vegetated strip dotted with a number of oak trees at the northern end. Large bare soil areas and rocky areas are visible along the Island's shoreline. In addition, a large bare soil area is visible at the southern end of the Island. The only structural elements visible on the Island are a chain-link fence on the southern edge of the Island, and three large wooden signs identifying the site as a wildlife reserve.

The Island is visible (wholly or in part) in primary views from several rows of houses on Strawberry Point that face the Island (along East Strawberry Drive), and houses at the end of Strawberry Spit on Egret Way. Views of the Island from East Strawberry Drive itself are very limited due to intervening vegetation from the mainland. The Island is also visible in mid-distance and background views from the houses, parks, and open space along Greenwood Cove Drive and Tiburon Boulevard. The Island is also visible from boats in the waters of Richardson Bay. Because the Island is very low-lying, it is not clearly distinguishable from background features in these more distant views. (See Figure 7 through Figure 11).

*Discussion of Impacts:*

**a) Have a substantial adverse effect on a scenic vista.**

**Less than Significant Impact.** The project site is visible in scenic vistas from private houses and local parks and open spaces. The Island is visible in those views in the foreground of larger scenic vistas of Richardson Bay and the greater San Francisco Bay. The Island is a prominent feature in views from houses in Strawberry on the shoreline and ridge facing it. In those views, it appears as a flat, low-lying, grass and weed covered strip, with mudflats that appear at low tides. Scattered oaks provide some variation to the Island's appearance.



**Figure 7. View of Aramburu Island Looking East from Channel**



**Figure 8. View of Eastern Shore of Aramburu Island Looking North**



**Figure 9. View West from Southern End of Aramburu Island towards Strawberry Residences**



**Figure 10. View of Northern Portion of Aramburu Island from East Strawberry Drive Area**





**Figure 11. View of Southern End of Aramburu Island from East Strawberry Drive Area**

**Less than Significant Impact.** The proposed project involves excavation and grading, and revegetation of the Island with native species. During the clearing phase, the Island's appearance would change from that of a green (or brown, depending on the season) heavily vegetated landscape, to that of an active construction zone. The shoreline protection and enhancement portion of project would have minor impacts to views because this portion of the project would be limited to the eastern shoreline, which is less visible and less prominent in views from nearby houses and parks, and would involve minimal vegetation removal. The upland/terrace work would temporarily change the color and texture of views of most of the site to those of an active earth-grading operation. The existing oak trees would be preserved and no new trees would be planted. Exposed soils would be visible along with earth-moving equipment. This would be most visually apparent for the one to three month island terrace construction period, after which new vegetation would be planted and/or conditions for revegetation would be created. Visual impacts would diminish as the Island gradually revegetates over the following years. This would result in a short-term change in visual quality. The project does not include construction of structures, fences or planting of trees that could obstruct views. Because of the lack of unusual scenic character of the existing vegetation, as well as the short-term nature of this visual change, this impact is considered to be less than significant.

After earthmoving is complete, the site would be revegetated and erosion control measures would be placed to prevent erosion. Vegetation would be monitored for a five-year period, and adaptive management would assure that newly planted vegetation becomes established. The revegetated Island would have a similar appearance to the existing condition, but with greater visual variety and interest. No trees would be removed and no new trees would be planted. Newly planted shrubs would grow to a similar height as existing vegetation within three to five

years of planting. The improved wildlife habitat also would add to the site's long-term visual quality. Therefore the long-term impact would be less than significant.

- b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.**

**No Impact.** Existing planted oak trees on Aramburu Island would not be removed by the project. Shoreline enhancements that reduce the rate of shoreline retreat would likely extend the potential life of planted oaks, which are threatened by ongoing shoreline erosion and retreat in existing conditions. There are no scenic rock outcroppings on the artificially created Island. The Island was created in the 1950-1960's, and has no structures, historic or otherwise. No designated state scenic highways occur in Marin County (California Department of Transportation, website). Therefore, the proposed project would not affect any scenic resources.

- c) Substantially degrade the existing visual character or quality of the site and its surroundings.**

**Less than Significant Impact.** As described above, the Island is visible as a vegetated strip in near and more distant views. Much of the vegetation is weedy, dominated by non-native vegetation typical of East Marin roadsides, vacant lots and derelict fields, eroded hillslopes, and earthen fill stockpile areas. As such, the Island would not be considered a scenic vista. The project would strip most of the vegetation off of the Island and then replace it with native vegetation. This would temporarily alter views of the Island from both private houses and public parks and open spaces. Construction of the project would occur over a three to six month period. Vegetation would gradually grow to maturity over a period of one to five years. Significant green cover would be established in the first growing season following grading in the form of transitional cover crops and seeding. Revegetation would result in initially more homogeneous, low, sparse vegetation cover. Vegetation cover would consolidate and become denser, diverse, and continuous in designated lowland grassland areas within five years after construction. Areas designated as pans and saline flats would remain sparsely vegetated with low ground cover (saltgrass and creeping broadleaf plants). Constructed beaches would remain sparsely vegetated. The salt marshes of the Island would remain unmodified by the project below the high tide line. The impact on scenic resources would be less than significant because of the lack of visual prominence and aesthetic character of the Island currently, and because the Island would be revegetated with native vegetation.

- d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.**

**No Impact.** The project would not include any lighting or structures. Therefore it would have no impact to light and glare.

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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## II. AGRICULTURE AND FOREST

**RESOURCES:** In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

- a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
- b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?
- c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) or timberland (as defined by Public Resources Code section 4526?
- d) Resulting in the loss of forest land or conversion of forest land to non-forest use?
- e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use.

X

X

X

X

X

*Background:*

No agricultural activity or designated Prime Farmland exists in the project area. The Island was constructed in the 1960's and has always been in open space use.

*Discussion of Impacts:*

- a) **Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.**

**No impact.** All land within the project area is designated "Urban and Built-Up Land" by the California Department of Conservation (CDC) Farmland Mapping and Monitoring Program (CDC, 2009). Surrounding areas to the west and north are designated "other land" and to the southeast they are designated "grazing land." Therefore, the project would not impact prime agricultural lands.

- b) **Conflict with existing zoning for agricultural use, or a Williamson Act contract.**

**No impact.** The project area is not located within or adjacent to any lands protected by the Williamson Act, nor is the area zoned for agricultural use (Marin County, 2007).

- c) **Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) or timberland (as defined by Public Resources Code section 4526)?**

**No impact.** The proposed project is in an area that is zoned BFC-RMP-0.2 (Residential, Multiple Planned, with a Bay Front Conservation Overlay). No adjacent lands exist that meet the definitions of forest land or timberland. Therefore, there would be no impact.

- d) **Result in the loss of forest land or conversion of forest land to non-forest use?**

**No impact.** No forest lands are located within or adjacent to the project area and, as such, the project would not result in any direct loss of forest land.

- e) **Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use.**

**No impact.** The proposed site, which is in an already developed area (designated "Urban and Built-up Land" on CDC maps), would not result in conversion of Farmland.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<b>III. AIR QUALITY</b> -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				X
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?			X	
d) Expose sensitive receptors to substantial pollutant concentrations?		X		
e) Create objectionable odors affecting a substantial number of people?			X	

*Background:*

The project site is located in the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). Marin County is bounded on the west by the Pacific Ocean, on the east by San Pablo Bay, on the south by the Golden Gate and on the north by the Petaluma Gap. The prevailing wind directions throughout Marin County are generally from the northwest and average wind speeds are about five miles per hour. In the summer months, areas along the coast are usually subject to onshore movement of cool marine air. In the winter, proximity to the ocean keeps the coastal regions relatively warm, with temperatures varying little throughout the year. Coastal high temperatures are usually in the 50's in the winter and the 60's in the summer. The warmest months are September and October. In the southeast, where the proposed project is located, the influence of marine air keeps pollution levels low (BAAQMD 1999).

*Discussion of Impacts:*

**a) Conflict with or obstruct implementation of the applicable air quality plan.**

**No impact.** The Bay Area is currently designated as a nonattainment area for State and national



ozone standards and as a nonattainment area for the State particulate matter (PM10 and PM2.5) standards. As required by federal and State air quality laws, the 2001 Bay Area Ozone Attainment Plan and the 2000 Bay Area Clean Air Plan have been prepared to address ozone nonattainment issues. In addition, the BAAQMD, in cooperation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG), prepared the Bay Area 2005 Ozone Strategy. This report describes the Bay Area's strategy for compliance with State one-hour ozone standard planning requirements and how to improve air quality in the region and reduce transport of air emissions to neighboring air basins. The strategy includes stationary source control measures to be implemented through BAAQMD regulations; mobile source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with MTC, local governments, transit agencies and others. No PM10 plan has been prepared nor is one currently required under State air quality planning law.

A project would conflict with or obstruct implementation of the regional air quality plans if it would be inconsistent with the growth assumptions, in terms of population, employment or regional growth in vehicle miles traveled. The growth assumptions used for the regional air quality plans are based upon the growth assumptions provided in local general plans.

The URBEMIS 2007 Version 9.2.4 model was used to quantify project emissions of criteria pollutants (see Appendix A for emissions estimate assumptions). Although the BAAQMD CEQA Guidelines do not recommend a detailed analysis of daily emissions for projects that generate less than 2,000 vehicle trips per day (BAAQMD 1999), the model was run to quantify project emissions. The BAAQMD adopted an updated version of their CEQA Guidelines on June 2, 2010 and the new significance thresholds are used in this air quality analysis. The new significance thresholds are lower than the previous BAAQMD CEQA thresholds. Table 5 provides the estimated long-term operational emissions that would be associated with the project and compares the emissions to the new BAAQMD significance thresholds. Operational emissions associated with the proposed project would be generated primarily from periodic maintenance inspections of the Island, where access would be provided by motor vehicle and then small boat trips. Air pollutant emissions from the small boat trips were calculated based on EPA's Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data (EPA 2000).

**Table 5. Project operational criteria pollutant emissions (lbs/day)**

<b>Emission Sources</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM10</b>	<b>PM2.5</b>	<b>CO</b>
Project Sources (2011)	0.3	1.2	<0.1	<0.1	2.2
Current Thresholds	80	80	80	---	550
Recently Adopted Thresholds <sup>a</sup>	54	54	82	54	—
Significant Impact?	No	No	No	No	No

Notes: Refer to Appendix A for all assumptions used as input to the URBEMIS2007 model and calculations. ROG = Reactive Organic Gases; NO<sub>x</sub> = Oxides of nitrogen; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = fine particulate matter less than 2.5 microns in diameter; CO = Carbon monoxide.

<sup>a</sup> BAAQMD new significance thresholds were adopted on June 2, 2010.

The BAAQMD has also determined that if carbon monoxide emissions from project-related motor vehicles exceed 550 pounds per day, local carbon monoxide concentrations need to be analyzed to determine whether project emissions would result in violation of the 1-hour or 8-hour standard for carbon monoxide. The daily CO emissions attributable to the project (as shown in Table 5) would be well below the BAAQMD threshold for further analysis.

The project would have a less than significant impact on any of the growth assumptions made in the preparation of the clean air plans (no housing is proposed), and would not obstruct implementation of any of the proposed control measures contained in these plans.

**b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.**

**Less than significant impact after mitigation.** During project construction, the project would generate dust from grading, and construction would also generate some emissions from construction worker vehicles trips and construction equipment engine emissions, as discussed below.

Over the long-term, mobile air pollutant sources associated with operation and maintenance of the proposed project components (e.g., boat trips to the Island) would generate air pollutant emissions. However, the long-term operation of the project would not result in significant air quality impacts. These potential impacts are described below.

*Impact of Construction of Proposed Project*

Construction is likely to generate dust from grading (including PM10 and PM2.5). Equipment used during construction would likely include a bulldozer, excavator, wheel loader, two dump trucks, tracked skid steer, compactor, a ½ horsepower electric pump for dust control, and a ferry barge. Project construction is anticipated to span approximately four months.

Criteria pollutant emissions of VOC and NO<sub>x</sub> from construction equipment would incrementally add to the regional atmospheric loading of ozone precursors during project construction. Construction-related dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. The recently adopted BAAQMD Guidelines require quantification of construction emissions, so the URBEMIS 2007 Version 9.2.4 model was used to quantify construction emissions of criteria pollutants (see Appendix A for emissions estimate assumptions). Table 6 provides the estimated construction emissions that would be associated with the project and compares the emissions to the recently adopted BAAQMD construction thresholds. Construction emissions associated with the proposed project would be generated primarily from construction equipment on the Island and from the ferry barges used to transport the construction equipment and materials to the Island. Air emissions from the barge trips were calculated based on EPA's Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data (EPA 2000). A conservative approach for calculating construction related emissions assumed the following activities on a given day: grading on the Island and six round trips for a ferry barge transporting equipment or materials. It should be noted that the recently adopted *BAAQMD CEQA Guidelines* recommends the implementation of all Basic Construction Mitigation Measures whether or not construction-related emissions exceed applicable Thresholds of Significance.

**Table 6. Project construction criteria pollutant emissions (pounds per day).**

<b>Emission Sources</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>
Project Sources (2010)	4.2	53.8	2.3 <sup>b</sup>	1.7 <sup>b</sup>
Recently Adopted BAAQMD Thresholds <sup>a</sup>	54	54	82 <sup>b</sup>	54 <sup>b</sup>
Significant Impact?	No	No	No	No

Notes: Refer to Appendix A for all assumptions used as input to the URBEMIS2007 model and calculations. ROG = Reactive Organic Gases; NO<sub>x</sub> = Oxides of nitrogen; PM<sub>10</sub> = particulate matter less than 10 microns in diameter; PM<sub>2.5</sub> = fine particulate matter less than 2.5 microns in diameter.

<sup>a</sup> BAAQMD revised thresholds recently adopted on June 2, 2010.

<sup>b</sup> Construction exhaust emissions only.

**Mitigation Measure III-1:**

The Applicant shall require its construction contractor to implement dust abatement measures recommended by BAAQMD as feasible dust control procedures, during all construction activities, including the following:

- a. Water all active construction areas at least twice daily;
- b. Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.);
- c. Replant vegetation in disturbed areas as quickly as possible.

***Impact of Operations of Proposed Project***

Operational emissions would be generated primarily from periodic maintenance inspections of the Island, where access would be provided by motor vehicle and then small boat trips. Air pollutant emissions from small boat trips were calculated based on EPA's Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data (EPA 2000). Summary results are presented in Table 5, above, with detailed calculations provided in Appendix A. As shown in the table, operational emissions of criteria pollutants would be well below the BAAQMD thresholds. These sources would not lead to further violations of the ambient air quality standards in the area. This impact would be less than significant.

- c) **Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).**

**Less than significant impact.** As discussed above, the proposed project would result in air pollutant emissions well below the BAAQMD significance thresholds and therefore, the proposed project's individual impact on regional air quality would be less than significant. Per the *BAAQMD CEQA Guidelines*, for any project that does not individually have significant operational air quality impacts, the determination of significant cumulative impact should be based on an evaluation of the consistency of the project with the local general plan *and* of the

general plan with the regional air quality plan (BAAQMD 1999). The proposed project would be consistent with the current land use designation for the project area in the Marin Countywide General Plan (e.g., parks and open space) and as discussed in Item III a) above, the project would be consistent with the adopted clean air plan and the Ozone Strategy. Therefore, the project would not be cumulatively considerable. This would be a less than significant impact.

**d) Expose sensitive receptors to substantial pollutant concentrations.**

**Less than significant impact after mitigation.** The nearest residences are approximately 150 feet south of the project site. As discussed in Item III b), operation of the proposed project would not generate substantial pollutant concentrations and thus would not expose sensitive receptors to substantial pollutant concentrations. Toxic air contaminants (TACs) would be generated by the use of diesel fueled construction equipment. Diesel particulate matter emissions can be carcinogenic over long exposure durations (i.e., most analyses consider exposure time frames of 10 to 70 years). However, for this construction, nearby receptors would be exposed to construction emissions for a short period of approximately four months total and the construction equipment sources would move around the Island and be dispersed by various wind patterns; thus further limiting exposure of any individual residential receptors. Also discussed in III b), above, the project's construction-related dust emissions would be reduced to a less-than-significant level through implementation of Mitigation Measure III-1.

**Mitigation Measure:** Refer to Mitigation Measure III-I, above that would reduce this impact to a less than significant level.

**e) Create objectionable odors affecting a substantial number of people.**

**Less than significant impact.** The BAAQMD defines public exposure to offensive odors as a potentially significant impact. In general, the types of land uses that pose potential odor problems include refineries, chemical plants, wastewater treatment plants, landfills, composting facilities, and transfer stations. No such uses are proposed.

Diesel engines would be used for some construction equipment. Odors generated by construction equipment would be variable, depending on the location and duration of use. Diesel odors may be noticeable to some individuals at certain times, but would not affect a substantial number of people. Operation of the proposed project would not be anticipated to result in odor emissions. Offensive odors are typically associated with industrial land uses, not open space uses. The impact of the project with regard to odors is considered to be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<b>IV. BIOLOGICAL RESOURCES --</b>				
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?		X		
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

## *Background*

Existing biological conditions at the Aramburu Island project site and adjacent areas have been evaluated through site investigation, field surveys, and database research.

Queries were performed in the following databases:

- CDFG California Natural Diversity Database (CNDDB)
- California Native Plant Society (CNPS) database
- CalFish anadromous fish habitat database

Project-specific biological surveys at Aramburu Island included:

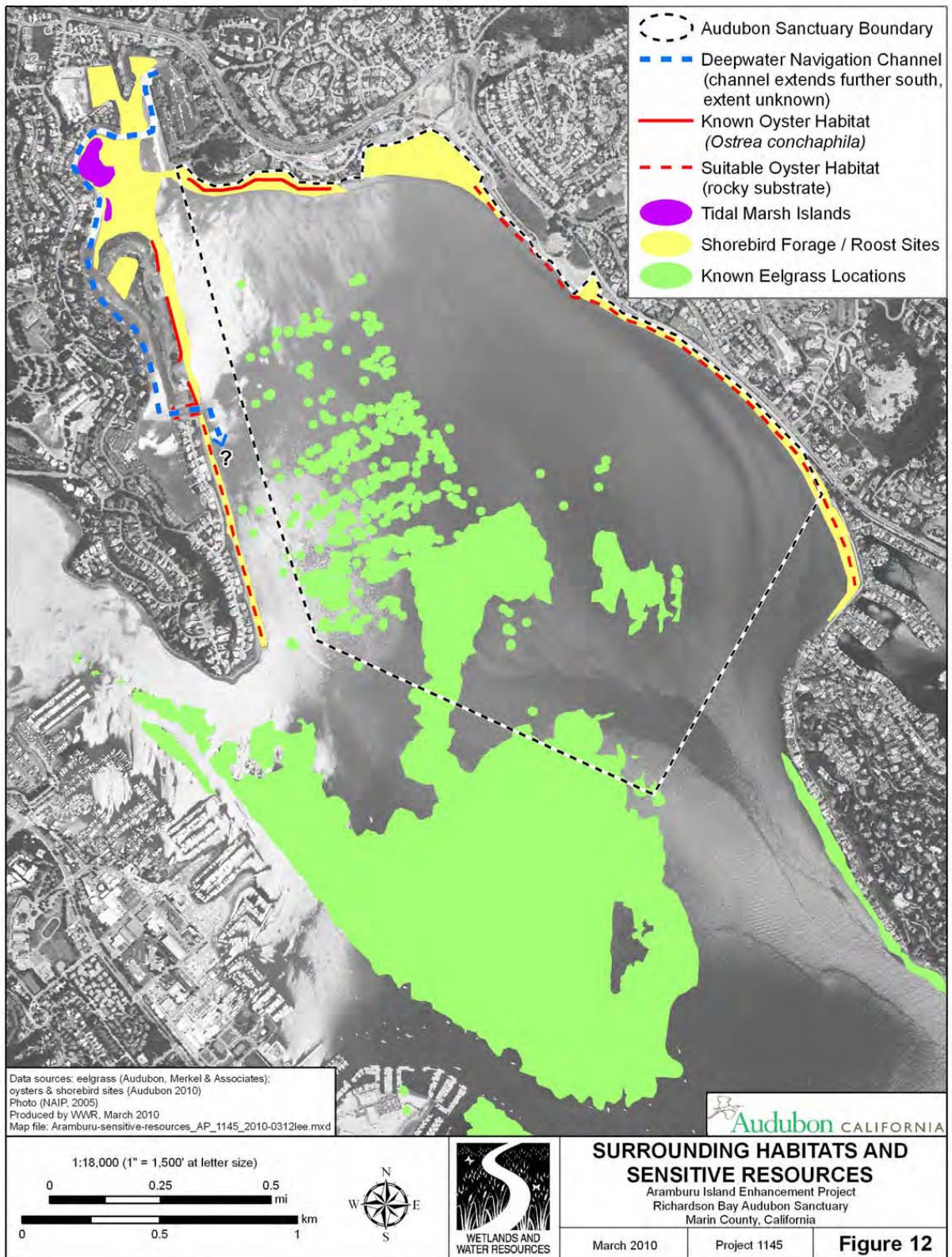
- General biological resource surveys (Spring 2009)
- Vegetation survey/floristic inventory (Spring 2009)
- Delineation of jurisdictional wetlands and waters (Spring 2009)
- Survey for native oysters (Winter 2010)
- Shorebird surveys (6x/Month since Sept 2009)
- Waterbird surveys (2x/Month, Oct-March)
- Upland bird surveys (1x/3 Weeks, April-August 2010)
- Fisheries surveys (beach seining trap netting)
- Aquatic invertebrate sampling

In addition to these project-specific surveys, the Applicant conducts ongoing monitoring of aquatic resources throughout the Richardson Bay Audubon Sanctuary. These surveys include:

- Eelgrass mapping and monitoring
- Olympia oyster surveys and settling experiments
- Water quality monitoring
- Shorebird/waterbird surveys

The information acquired from these database searches and field studies was used to describe the existing biological conditions at the project site and to determine potential impacts of project activities on these resources.

Aramburu Island is located in Richardson Bay, a small, shallow, ecologically rich arm of San Francisco Bay. The Richardson Bay shoreline in the vicinity of the Island is dominated by suburban development with some limited areas of parks and open space. The Island is bordered to the east by the 911-acre Richardson Bay Audubon Sanctuary, which contains several important aquatic resources, including eelgrass beds, native oyster beds, and shorebird foraging and roosting areas (Figure 12). To the north of the Island are two smaller Islands of tidal marsh constructed of dredge and fill materials similar to those of Aramburu Island. These small Islands, however, were not capped with upland fill material and thus have a much lower topographic profile than that of Aramburu Island. The mudflats adjacent to these Islands are popular foraging grounds for shorebirds in Richardson Bay. Aramburu Island is bordered to the south and west by a deep-water navigational channel that serves the local boating community. The channel requires routine maintenance dredging, funded by Strawberry Recreation District, Zone IV. Harbor seals, pelicans, egrets, grebes, cormorants, and other wildlife are commonly present in this dredged channel. These species are also common in the Richardson Bay Audubon Sanctuary waters, and in other parts of Richardson Bay.



The 35.81-acre Project site consists of the Island terrace (17 acres) and surrounding intertidal and subtidal “bay” habitats (18 acres). Within these two components of the Project site are nine “landscape units” (Figure 2). These units are:

- Island terrace unit
  - Uplands throughout the terrace
  - Middle and high tidal marsh around the terrace margins
  - Non-tidal seasonal wetlands on the terrace interior
  - Gravel spits at the southeast corner of each of the two eastern coves
  - Rock rip-rap revetment at the south end
- Bay unit
  - Intertidal coves: two shallow excavated embayments (one on the east side and one on the west side), containing high mudflat and salt marsh
  - Intertidal boulder lag field on the east side, originating from upland fill soils used to construct the Island and exposed by erosion of finer grain material
  - Intertidal mudflats of variable widths around the Island
  - Subtidal waterways bayward of the intertidal areas

Plant Communities. Aramburu Island is dominated by patchy, heterogeneous, non-native terrestrial vegetation that has colonized the artificial fill substrate. The weedy plants of the Aramburu uplands reflect the prevalent weeds of the adjacent Tiburon and Strawberry residential landscapes and semi-wild vegetation of small, undeveloped patches within it. Some native plant populations exist on the Island and appear to be remnants of past artificial plantings, including a small stand of coast live oak at the north end of the Island.

The tidal wetlands along the edges of the Island have developed partly on artificial fill substrate, and partly on naturally deposited bay mud. These tidal wetlands, in contrast with uplands of the Island, support mostly native salt marsh vegetation. Non-tidal seasonal wetland flats and depressions within the terrestrial vegetation support mostly non-native vegetation. Figure 13 shows the distribution of native vs. non-native dominated vegetation on Aramburu Island.

Wildlife. Many species of wildlife, birds, and fish use Aramburu Island and the surrounding subtidal habitats of Richardson Bay. Table 7 contains a list of the species observed during the various biological survey activities on and surrounding the Island. Many common wildlife species use the Island and surrounding waters, including deer, geese, raccoons, small rodents, and harbor seals. Canada Goose have been observed nesting on the Island. These animals use the Island as transients during part of their movements. Aramburu Island is not a migratory corridor for any of these mammal species.





Jurisdictional Habitat Areas. A delineation of jurisdictional wetlands and waters was conducted in late April/early May 2009 to identify areas subject to the jurisdiction of the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA). All areas falling within the parcel boundary of the Island (including the Island terrace and surrounding open water areas) were delineated (WWR, 2010c). The delineation was verified by the Corps in October 2009. The results are summarized below and shown in Figure 14.

The tidal water areas surrounding the Island, up to the elevation of mean high water (MHW, 5.3 feet NAVD88), are subject to Corps jurisdiction under RHA Section 10 as navigable waters (18.54 acres). These areas, and additional tidal water areas between MHW and the elevation of the local high tide line (HTL) (0.39 acres), are also subject to Corps jurisdiction under CWA Section 404 as “other waters”. A total of 8.48 acres of wetlands on the project site are within Section 404 jurisdiction. Of these, 1.12 acres are below MHW and are thus subject to Section 10 jurisdiction as well, with the remaining 7.36 acres subject to Section 404 jurisdiction only. The wetlands on the site fall into two general categories: tidal marsh (6.11 acres) and non-tidal seasonal wetlands (2.37 acres).

Sensitive Plant Communities. The only sensitive plant communities documented on the Island are located in the narrow fringe of tidal marsh vegetation on the Island and in the small salt marsh patches occupying the coves (6.11 acres). The small clusters of surviving native coast live oaks on the Island are remnants of past plantings from the 1970s or 1980s, and are semi-natural stands with predominantly non-native understories of French broom and annual non-native grasses. Other traces of past native revegetation efforts on the Island are present, but non-native vegetation overwhelmingly dominates the Island. The project actions would not modify or adversely affect the sensitive tidal salt marsh plant communities present at the site.

Special Status Species. For the purposes of this Initial Study, the term “special-status species” refers to all plants or animals listed as threatened, endangered, or proposed for listing under the Federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA); plants listed as rare under the California Native Plant Protection Act; plants considered by the California Native Plant Society to be “rare, threatened, or endangered in California”; species that meet the definition of rare or endangered under CEQA; animals fully protected in California; and nesting raptors protected in California.

Plants. No sensitive, rare, threatened or endangered plant species have been observed on Aramburu Island during multiple winter, spring, summer, and fall vegetation surveys and wetland delineations. The relatively recent creation of Aramburu Island from artificial fill soils, and its current weed-dominated condition, do not provide suitable habitat for any special-status terrestrial plants species. Tidal salt marshes in southern Richardson Bay and Corte Madera do support significant large populations of one special-status plant, northern salt marsh bird’s-beak (*Chloropyron maritimus* ssp. *palustre*; syn. *Cordylanthus maritimus* ssp. *palustris*). However, none were found on Aramburu Island or in the neighboring Strawberry School tidal marsh during the early summer/late spring peak flowering period, when they were conspicuous and abundant elsewhere in southern Richardson Bay. No bird’s-beak populations have been observed in northern Richardson Bay (P. Baye, pers. obs. 1991-present). The only other potentially sensitive species known to occur in the Richardson Bay-Corte Madera shoreline area is “Marin knotweed” (*Polygonum marinense*). However, Marin knotweed has not been found on shorelines or seasonal wetlands of Aramburu Island. No other sensitive plant species are known to occur or are expected to occur at the site.

**Table 7. Wildlife observed on/adjacent to Aramburu Island**

Common Name	Scientific Name	Where Found
<b>Mammals</b>		
Black-tailed deer	<i>Odocoileus hemionus columbianus</i>	Terrace
Raccoon <sup>1</sup>	<i>Procyon lotor</i>	Terrace
Misc. rodents <sup>1, 2</sup>		Terrace
Harbor seals	<i>Phoca vitulina</i>	Offshore
<b>Birds</b>		
American crow	<i>Corvus brachyrhynchos</i>	Shoreline/Terrace
Anna's hummingbird	<i>Calypte anna</i>	Terrace
Barn swallow	<i>Hirundo rustica</i>	Terrace
Black-bellied plover	<i>Pluvialis squatarola</i>	Shoreline/Terrace
Black oystercatcher	<i>Haematopus bachmani</i>	Shoreline
Black phoebe	<i>Sayornis nigricans</i>	Terrace
Black turnstone	<i>Arenaria melanocephala</i>	Shoreline/Terrace
Canada goose	<i>Branta canadensis</i>	Shoreline/Terrace
Double-crested cormorant	<i>Phalacrocorax auritus</i>	Shoreline
Dowitcher species	<i>Limnodromus</i> sp.	Shoreline/Terrace
Duck species		Offshore/Terrace
Elegant tern	<i>Sterna elegans</i>	Shoreline/Terrace
Forster's tern	<i>Sterna forsteri</i>	Shoreline/Terrace
Grebe species		Shoreline/Offshore
Great blue heron	<i>Ardea herodias</i>	Shoreline/Terrace
Greater yellowlegs	<i>Tringa melanoleuca</i>	Shoreline/Terrace
House finch	<i>Carpodacus mexicanus</i>	Terrace
Gull species	<i>Larus</i> sp.	Shoreline/Terrace
Killdeer	<i>Charadrius vociferus</i>	Shoreline/Terrace
Long-billed curlew	<i>Numenius americanus</i>	Shoreline/Terrace
Marbled godwit	<i>Limosa fedoa</i>	Shoreline/Terrace
Osprey	<i>Pandion haliaetus</i>	Shoreline/Terrace
Sandpiper species	<i>Calidris</i> sp.	Shoreline/Terrace
Song sparrow	<i>Melospiza melodia</i>	Terrace
Snowy egret	<i>Egretta thula</i>	Shoreline/Terrace
White-tailed kite	<i>Elanus leucurus</i>	Terrace
Willet	<i>Tringa semipalmata</i>	Shoreline/Terrace

Common Name	Scientific Name	Where Found
<b>Fish<sup>3</sup></b>		
Bat ray	<i>Myliobatis californica</i>	Offshore
Leopard shark	<i>Triakis semifasciata</i>	Offshore
Bay pipefish	<i>Syngnathus leptorhynchus</i>	Offshore
Black surfperch <sup>4</sup>	<i>Embiotoca jacksoni</i>	Offshore
Dwarf surfperch	<i>Micrometrus minimus</i>	Offshore
Shiner surfperch	<i>Cymatogaster aggregata</i>	Offshore
Pile Perch	<i>Damalichthys vacca</i>	Offshore
Yellowfin goby	<i>Acanthogobius flavimanus</i>	Offshore
Pacific herring <sup>4</sup>	<i>Clupea harengus</i>	Offshore
Topsmelt	<i>Atherinops affinis</i>	Offshore
Jacksmelt	<i>Atherinopsis californiensis</i>	Offshore
Longfin smelt	<i>Spirinchus thaleichthys</i>	Offshore

<sup>1</sup>No individuals observed. Presence of tracks/runs/droppings indicates presence.

<sup>2</sup>Most likely voles, deer mice, house mice. No evidence of squirrels or ground squirrels.

<sup>3</sup>Most common fish species detected in monitoring within Sanctuary waters. No monitoring was conducted within actual Aramburu Island property boundary.

<sup>4</sup>Species most commonly detected within eelgrass beds

**Birds.** Aramburu Island does not provide breeding habitat for any of the six special status bird species (California clapper rail, California least tern, Northern harrier, double-crested cormorant, whit-tailed kite, and San Pablo song sparrow) identified as potentially occurring in the project vicinity based on review of the California Natural Diversity Database (CNDDB) and investigations of the site. Nests of these six special status bird species have not been located on Aramburu Island during pre-enhancement biological monitoring that took place during the breeding season in 2009. A complete list of all special status species within the project vicinity and their potential to occur on site can be found in Appendix B. Although song sparrows have been observed on Aramburu Island (Table 7), the subspecies of song sparrows found on the Island is uncertain (Appendix B). San Pablo song sparrow, a California Species of Concern, prefer to nest in areas containing dense patches of gumplant and coyote bush, two plants that are not abundant on the Island. Thus, Aramburu Island likely provides little suitable breeding habitat for the San Pablo song sparrow.

One species of particular concern to nearby residents is the California clapper rail (*Rallus longirostris obsoletus*) (clapper rail); the Strawberry Recreation District, Zone 4, performed a survey for clapper rail within the vicinity of the project site in 2005 as part of a condition for their dredging permit from BCDC. No clapper rails were detected during surveys.





**Figure R-1.** Location of the California Clapper Rail sighting in September 2006 on Pickleweed Island in Richardson Bay.

A single clapper rail was detected on Pickleweed Island (Figure R-1) by an Audubon staff ornithologist (Kerry Wilcox, person. Comm.. 2010) on September 7, 2006. The bird was observed again on September 8 and 15, but not at any point thereafter. It is likely that the individual bird was a dispersing clapper rail, as it was detected outside the breeding season (February through August). Protocol level clapper rail surveys conducted for the Invasive Spartina Project confirm that no clapper rails were observed during

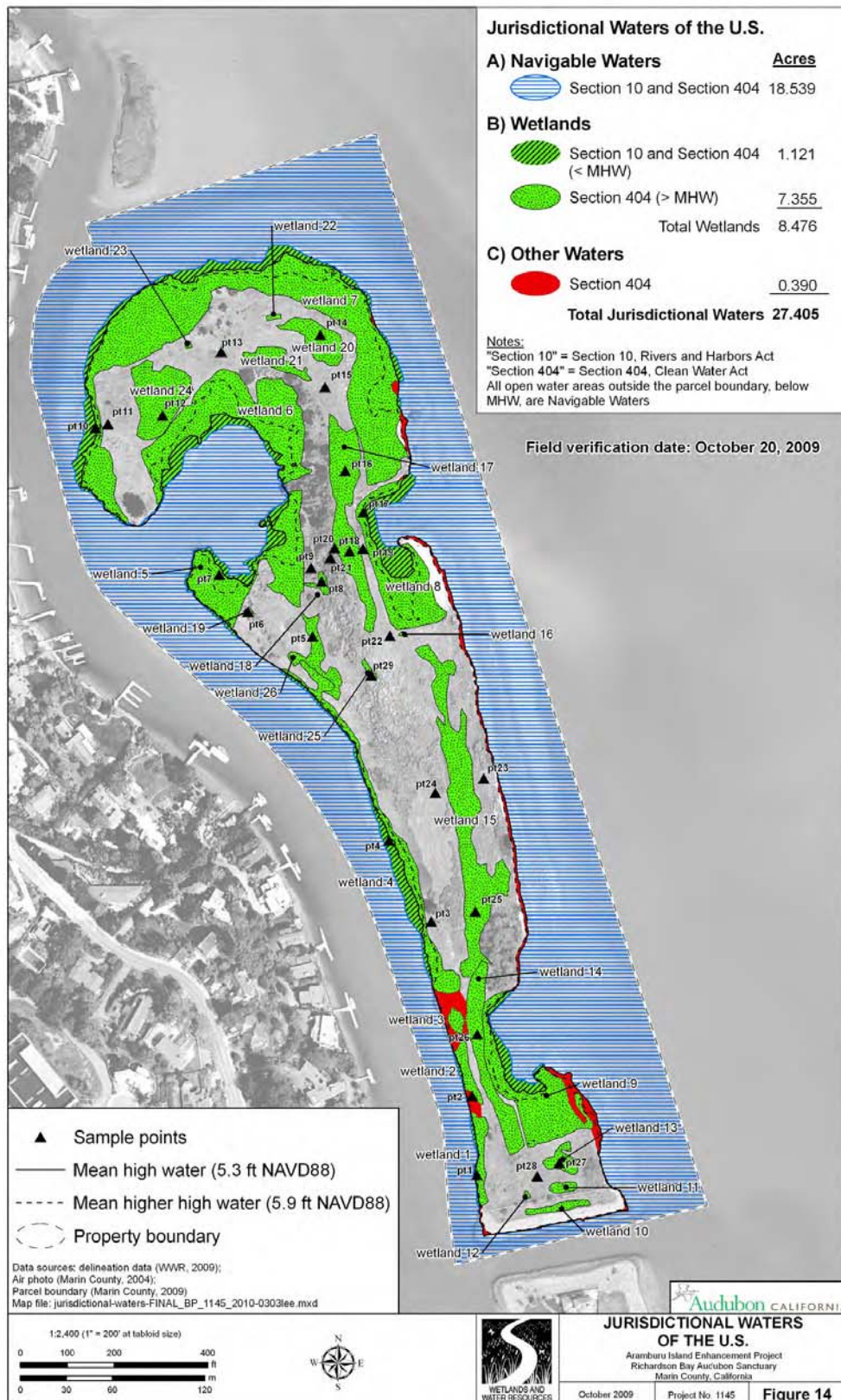
the breeding season on Pickleweed Island (J. McBroom, 2008). No clapper rails have been detected on Pickleweed Island since the individual sighting in 2006.

Clapper rails have not been observed on Aramburu Island, located approximately 600 feet south of Pickleweed Island. No clapper rails were detected on Aramburu Island during surveys conducted in 2007 (Evens, 2007). The 2007 habitat evaluation conducted by Evens with Avocet Research Associates indicated that “the south end of Strawberry Point (AKA, Strawberry Spit) supports no viable habitat. The habitat on Strawberry Island (AKA Aramburu Island) supports possible, but not ideal, clapper rail habitat. The site’s isolation from other occupied marshes and the limited extent of habitat available diminish its suitability (Evens, 2007, p 34).”

To confirm that clapper rails do not occur on Aramburu Island and to confirm that the proposed enhancement plan on Aramburu Island is not likely to adversely affect California clapper rails, protocol level surveys would be conducted between January 15 and April 15, prior to construction and habitat enhancement activities. All surveys will be conducted by a certified professional in accordance with requirements set by UFSWS (Joseph Terry, 2010). Survey results to confirm the absence of clapper rail will be submitted to USFWS prior to construction.

Fish. Pacific herring (*Clupea harengus*), a CDFG Species of Special Concern, are found within the eelgrass beds in Richardson Bay at certain times of the year. Other special-status fish species, while they have not been detected in fisheries surveys within Sanctuary waters, could occur seasonally as transients in the waters around Aramburu Island. These species could include coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), green sturgeon (*Acipenser medirostis*), and white sturgeon (*Acipenser transmontanus*). The waters of Richardson Bay are identified as Essential Fish Habitat (EFH) for the Sacramento River winter-run Chinook salmon Evolutionary Significant Unit (ESU) (federally listed as endangered) and the Central Valley spring-run Chinook salmon ESU (federally listed as threatened). Richardson Bay is also considered to be critical habitat for the Southern Distinct Population Segment (DPS) of North American green sturgeon (federally listed as threatened), Central California Coast steelhead DPS (federally listed as threatened) and Sacramento River Winter-run Chinook salmon (federally listed as endangered).

Marine Mammals. Harbor seals (protected under the Marine Mammals Act) occur seasonally in the adjacent navigation channel, but have not hauled out on the Island since the 1980s (Allen 1991).



### *Discussion of Impacts:*

- a) **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?**

**Less than significant with mitigation.** The impacts to special status plants and wildlife species and recommended mitigation measures are described individually below.

**Plants.** The project would have no adverse effects on sensitive, candidate, or special-status plant species because none are present on the Island. The project as proposed would potentially result in substantial benefits to at least several special-status plant species (northern salt marsh bird's-beak, salt marsh owl's-clover, salt marsh populations of smooth goldfields) that would be established in some Island sub-habitats following enhancement. No mitigation is necessary.

**Birds (special-status species).** No breeding records exist on Aramburu Island for special-status bird species. No suitable nesting habitat exists for these species. Therefore, the project would not have any potential to adversely impact nesting special status bird species. In addition, although the site could be used by transient special status bird species, the construction activities would not significantly adverse these species because alternate suitable habitat is available nearby. No mitigation is necessary.

**Birds (non special-status species).** Project-related construction activities could disturb nesting birds protected under the Migratory Bird Treaty Act and/or California Fish and Game Code and could lead to the loss or abandonment of an active nest. If construction activities are scheduled to occur during the nesting/breeding season (typically February through August in the project area), implementation of Mitigation Measure IV-1 would reduce the impact to a less than significant level.

**Mitigation Measure IV-1:** To reduce impact to nesting birds, in accordance with Migratory Bird Treaty Act and California Fish and Game Code, the Richardson Bay Audubon shall have surveys conducted by a qualified biologist within two weeks of the commencement of construction activities to identify bird nests in the area. If bird nests are detected then construction activities shall be halted until either the CDFG or USFWS are contacted and their guidance on appropriate measures is provided. Typical mitigation would require that construction be halted within 300 feet of the nest to avoid disturbing nesting birds. A qualified biologist will monitor the status of the nest and shall determine when the offspring have left the nest. Once the offspring have left the nest construction activities would resume in accordance with CDFG and USFWS consultation and regulation. A qualified biologist shall be on site during construction and shall continue to monitor the site for nesting birds. In the event that additional nests are detected during construction, construction shall be halted within 300 feet of the active nest until the offspring have fledged. All bird surveys, monitoring, and construction timing shall be conducted in accordance with CDFG or USFWS protocol and requirements.



**Marine Mammals.** Harbor seals, which are protected under the Marine Mammals Act, may be subject to short-term, temporary, adverse disturbance impacts during project construction. The construction of shoreline stabilization features could cause an impact to harbor seals if performed at times when there is water on the construction site. Individual animals could be impacted by construction equipment and material placement through direct physical harm or disruption in feeding/movement behavior. Increased water column turbidity from material placement could also cause a disturbance to these animals through a reduction in visibility that may inhibit feeding ability. Mitigation Measure IV-2, below, would reduce the impact to a less-than-significant level.

The project would not significantly increase Bay turbidity during storm events because of the periodically high turbidity levels that currently existing in the Bay during storms. Implementation of best management practices outlined in Mitigation Measure IX-1 in the Hydrology and Water Quality section below would further reduce sediment input into Richardson Bay. In addition, the Marin County Stormwater Pollution Prevention Program requires all projects in the County to implement construction best management practices for erosion control.

While harbor seals occur seasonally in the dredged navigation channel adjacent to the Island, they have not hauled out on the Island since the 1980s and would therefore not be directly impacted by construction activities on the Island terrace. The construction activities involved in this project would be limited to the transport and placement of imported materials and excavation/grading, which would involve the operation of boats, barges, and diesel powered construction equipment. The project proposes no pile driving or other noise-intensive activities. Post-construction activities would include saline irrigation and revegetation activities, which involve human presence on the Island and the operation of irrigation equipment. Harbor seals are accustomed to boat traffic within the adjacent navigational channel and human activities (including home construction and landscaping activities) along the highly developed shoreline of Strawberry Point, so construction and post-construction maintenance activities on the Island should not cause an increase in disturbance to this species. The project is specifically designed to improve haul-out habitat conditions for harbor seals at Aramburu Island, resulting in a long-term net benefit to the species. This project would not increase the presence of Harbor Seals in the navigation channel; rather, shoreline enhancements should encourage seals to haul out on Aramburu Island. As proposed by the project, all shoreline construction activities shall be performed at tide stages when no water is present on the shoreline, to eliminate the chance of marine animals being harmed by construction equipment and material placement. Therefore, activities performed at low tides will also eliminate increases in water column turbidity from material placement.

**Mitigation Measure IV-2:** Construction of the subtidal seal access channel shall be performed between June 1 and either October 31 or November 30, depending upon recommendations of the state and federal resource agencies, to conform with established work windows for special status fish species, as identified in Table 4, above. These windows are established by USFWS, NMFS, and CDFG. All construction activities will occur when water is not present to reduce impact.

**Fish.** Pacific herring are present within the waters of Richardson Bay and it is possible, although unlikely, species such as coho salmon, Chinook salmon, steelhead, green sturgeon and white

sturgeon could be present in Richardson Bay as seasonal transients at certain times of the year. Similar to harbor seals, fish should not be negatively impacted by construction activities on the Island terrace, but could be impacted if shoreline construction activities take place when there is water on the construction site. Individual animals could be impacted by construction equipment and material placement through direct physical harm or disruption in feeding/migration behavior. Increased water column turbidity from material placement could also cause a disturbance to these animals through a reduction in visibility that may inhibit feeding ability and reduce gill efficiency. Fish could also be harmed by the runoff of sediment and petroleum products from the Island terrace during construction. The implementation of Mitigation Measure IX-1 would reduce these impacts to a less than significant level.

**Mitigation Measure:** Refer to Mitigation Measure IX-I in the Hydrology and Water Quality Section

The seal access channel proposed for construction along the southeastern Island shoreline would occur in intertidal and/or subtidal habitat. Transitory special status fish and marine mammal species that may be present within the work area could be affected by construction. Stranding of fish could occur at low tide if the channel is constructed within intertidal areas and is not connected to subtidal areas. As indicated in the project description, the seal access channel would be constructed from the south end toward the north, providing continuous subtidal connected to the existing navigation channel, thereby precluding fish entrapment. Mitigation Measure IV-2 would reduce these impacts to a less than significant level.

In addition, the shoreline stabilization features, such as micro-groins and LWD, are designed to provide long-term habitat improvements for fish. These features are expected to increase habitat complexity, offer refugia, and provide foraging areas.

- b) **Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife.**

**Less than significant with mitigation.** No riparian woodland or scrub habitats are found on the site. Fringing tidal marsh is found on the Island and is classified as a sensitive natural community within standard California vegetation classification systems such as the Manual of California Vegetation (Sawyer *et al.* 2009) or the CDFG CNDDDB Vegetation Classification and Mapping Program (CDFG 2003), and as discussed in response to Item IV c), below.

**Mitigation Measure:** Refer to Mitigation Measure IX-1 in the Hydrology and Water Quality Section.

- c) **Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.**

**Less than significant with mitigation.** No construction is proposed for the fringing tidal marsh along the Island shoreline. However, without protection measures, contaminants and sediment from project construction elsewhere on the Island could runoff into these wetlands. Implementation of a Stormwater Pollution Prevention Plan, proposed by the project and described in Mitigation Measure IX-1 (in the Hydrology and Water Quality section) would reduce these impacts to a less-than-significant level.

The seasonal wetlands on the Island terrace would be temporarily disturbed by enhancement activities including grading, substrate import and placement, and salinization. However, the enhancements would result in a net increase in the area of both tidal marsh (6.64 to 7.81 acre) and seasonal wetlands (2.75 to 6.34 acre) (See Table 1). The enhanced wetland areas should also be of higher habitat quality, in terms of hydrology and vegetation, than those that currently exist on the project site.

The enhancements to the Island shoreline would involve grading, excavation, and material placement within waters of the U.S. Excavation and grading would be required to create gently sloping beach platforms, key micro-groins, and construct the seal access channel. Beach forms would be made by placement of up to about 6,000 CY of gravel, sand, and shell material. Beach retention would be accomplished with use of micro-groins made of rocks up to ¼ ton in size and/or with large woody debris (tree trunks). Large woody debris would also be placed along the shoreline to add habitat complexity. As described in the project description, above, all construction activities along the shoreline would be performed at low tide, when no water is present to prevent impacts to aquatic wildlife.

Most of the existing shoreline would remain jurisdictional waters of the U.S. after construction. Expansion of the beach platform along the central shoreline would add approximately 0.7 acre of jurisdictional waters. The heights of beach berms and shoreline stabilization features (after natural wave re-working) may extend above the high tide line resulting in a small loss of jurisdictional waters and excavation of the seal access channel would result in a conversion of approximately 0.2 acre of intertidal habitat to subtidal habitat. The proposed mix of shoreline habitats would improve habitat quality for native fish, birds, and wildlife compared to the current shoreline configuration. The U.S. Army Corps of Engineers and the Regional Water Board will review the project when they consider issuing a Section 404 permit and Section 404 water quality certification, and will condition project approval on avoidance of potential impacts to wetlands. Reconfiguration of waters of the U.S. is considered to be a less than significant impact.

**Mitigation Measure.** Refer to Mitigation Measure IX-1 in the Hydrology and Water Quality section.

- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.**

**Less than significant with mitigation.** The Island in its current configuration provides only marginal habitat for native wildlife species. Construction activities on the Island terrace would result in a short-term loss of habitat for a small number of resident mammals and birds (See Table 7). However, the retention of existing oak groves would provide habitat refugia for small mammals and birds that reside on the Island during project construction. Deer and raccoons, which occasionally use the Island, may not use the Island during construction but would likely return to the mainland during construction and revegetation period. These species, however, should quickly recolonize the Island following construction. The planned enhancement activities would greatly improve the quality of habitat for these and other native species. While the Island does provide limited habitat for native wildlife and migratory birds, the Island is not a “migratory wildlife corridor” or “native wildlife nursery site”.

The surrounding waters of Richardson Bay may serve as migration corridors for special-status fish and marine mammals. However, as described under Item IV (a) above, shoreline stabilization features and seal haul-out habitat have been designed to avoid impeding the movement of marine mammals and special status fish species, and these impacts would be less than significant. In addition, implementation of Mitigation Measure IV-2, above, would also reduce impacts to migratory fish and marine mammals.

#### **Mitigation Measure**

Implementation of Mitigation Measure IX-1, in the Hydrology and Water Quality section, would reduce potential construction water quality impacts, thereby reducing potential adverse impacts to fish and wildlife, to a less-than-significant level.

Refer also to Mitigation Measure IV-2, above, would also reduce impacts to migratory fish and marine mammals.

**e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.**

**No impact.** The project would not conflict with any local policies or ordinances aimed at protecting biological resources because the projects would enhance Island habitat and would not remove existing oak trees.

**f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.**

**No impact.** The project was designed to contribute to the regional restoration effort presented in the Baylands Ecosystem Habitat Goals Report, which specifically identifies the following recommended restoration and management actions for “Strawberry Spit” (of which Aramburu Island was formerly a part) and Richardson Bay that are incorporated into the enhancement design:

- Protect and enhance harbor seal haul-out sites at Strawberry Spit
- In Richardson Bay, restore and enhance fringing marsh along northwest edge for Point Reyes bird’s-beak (*Chloropyron maritimum*)
- Restore and enhance tidal marsh
- Restore high marsh near populations of rare and uncommon salt marsh plants to enable their expansion

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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**V. CULTURAL RESOURCES -- Would the project:**

- a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?
- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?
- c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?
- d) Disturb any human remains, including those interred outside of formal cemeteries?

X

X

X

X

*Background:*

The Island was constructed from imported fill material in the late 1950's and early 1960's and never developed, no significant cultural resources have been observed at the site; however, a full archeological investigation has not been performed. There are several small, manmade structures present on the site including an abandoned groundwater monitoring wells, wooden signs, navigational pilings, and a chain-link fence. There are no utility lines (PG&E, water, cable, etc.) at the project site.

*Discussion of Impacts:*

- a) **Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?**

**No impact.** The project would not involve demolition or modification of any structures. Therefore, no historic resources would be affected by the proposed project.

- b) **Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?**

**No Impact.** Aramburu Island was constructed in the 1950's and 1960's of sediment material dredged from nearby channels overlain by material excavated from the hillside to the west. The Island did not exist as upland prior to this time, and no archaeological resources would be expected to occur.

- c) **Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?**

**No impact.** The Island was artificially constructed from excavated and dredged materials. There are no known paleontological resources or unique geological features on the proposed project site, nor would any be expected to be found because of the artificial nature of the Island and its lack of natural geologic strata. See also response to item V.(b), above.

**d) Disturb any human remains, including those interred outside of formal cemeteries?**

**No impact.** The proposed project site did not exist prior to the 1960's; therefore it is unlikely that the site would contain any human remains.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<b>VI. GEOLOGY AND SOILS -- Would the project:</b>				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				X
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?				X
iii) Seismic-related ground failure, including liquefaction?				X
iv) Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?		X		
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

*Background:*

Aramburu Island was originally part of Strawberry Spit, an artificial peninsula connected to the mainland that was constructed in the late 1950's and early 1960's by the deposition of fill in the open waters of Richardson Bay. The fill originated from dredge spoils from local navigational channel maintenance, which were later capped with hillslope material excavated during the development of residential neighborhoods on adjacent Strawberry Point.

The US Department of Agriculture (USDA) soil survey of Marin County indicates that the soils of Aramburu Island and Strawberry Spit are upland fill material. The soils of Strawberry peninsula, where this fill material originated, are from the Los Osos-Urban Land-Bonny Doon complex. These well-drained soils are derived from weathered sandstone and shale and typically have a 10-40 inch profile of gravelly loam and clay overlying parent bedrock.

Sub-surface investigations of Aramburu Island in September 2009 (WWR 2010a) indicated that subsurface soils are characterized by a layer of rocky, upland fill material from three to seven feet thick overlaying navigational dredge spoils and native Bay mud. The thickness of this fill layer increases from south to north. Approximately 25-50 percent of the fill layer is composed of rock material. The division between the upland and marine material layer occurs between 5.5 and 1.5 feet NAVD88. Groundwater saturation was generally observed between 4 and 8 ft below ground surface. The groundwater salinity was around 20 parts per thousand, indicating that the Bay was the primary water source at the time of the field investigation.

On the eastern side of the Island and within the footprint of the originally constructed northern tip of Strawberry Spit that is now Aramburu Island are three cells of boulder lag fields Figure 2. This boulder lag consists of a variety of angular rock sizes from about 2 to 6 inches. This rock fill originally came from the adjacent hill slopes and has been eroded from the Island terrace over time. Interspersed amongst these rocks are interstitial fine sediments, mainly sands, silts and clays. Bayward of these boulder lag fields are typical intertidal and subtidal silt-clay mudflats of Richardson Bay. North of the Island terrace is further silt-clay intertidal and subtidal mudflats. West of the Island is a modest band of silt-clay intertidal mudflat that slopes down into the dredged navigation channel.

The project site is located between the San Andreas and Hayward faults in the seismically active San Francisco Bay Area. A 2003 report by the U.S. Geologic Survey (USGS) predicts a 62 percent probability of an earthquake of magnitude 6.7 or greater by 2031 (USGS 2003). As such, seismic activity is a constant threat to humans and man-made structures in the Bay Area.

*Discussion of Impacts:*

- a) **Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:**

- i) **Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**

**No impact.** The site is not located within an Alquist-Priolo earthquake fault rupture hazard zone (California Geological Survey, 1997). Although very strong seismic shaking can be expected in the project area in a major earthquake on a nearby fault, there are no structures currently on the Island, nor are any proposed as part of the project, that could be potentially harmed by an earthquake. The Island is a wildlife preserve and human access is limited to occasional visits by Audubon and Marin County staff for monitoring and maintenance activities. The project would not increase the likelihood of property damage or human injury on the site, or in the surrounding areas, resulting from seismic activity.

- ii) **Strong seismic shaking?**

**No impact.** Refer to response to Item VI i), above.

- iii) **Seismic-related ground failure?**

**No impact.** Refer to response to Item VI i), above. Although ground failure could potentially occur at the Island in a major earthquake, ground failure would not result in loss of property, injury, or death because the Island is not used for structures of human occupancy.

- iv) **Landslides?**

**No impact.** Refer to response to Item VI i), above. The site is generally flat and low-lying, and therefore not prone to landslides.

- b) **Result in substantial soil erosion or the loss of topsoil?**

**Less than significant with mitigation.** The project is designed to reduce long-term erosion along the eastern Island shoreline, resulting in improved water quality of Richardson Bay. During and shortly after construction, wave overwash could increase erosion potential from the Island. The project would involve grading, ground clearing, and the import and placement of substrate materials on the Island terrace, which would result in large swaths of the Island terrace being initially devoid of vegetation during construction and prior to vegetation cover establishment. It should be noted that the project would enhance long-term shoreline protection, which would reduce the likelihood of overwash. In addition, the project would not lower the existing maximum island elevations. Implementation of the Stormwater Pollution Prevention Plan, as outlined in Mitigation Measure IX-1 described in Section IX, Hydrology and Water Quality, would reduce this short-term impact to a less-than-significant level.



**Mitigation Measure:** See Mitigation Measure IX-1 in the Hydrology and Water Quality section.

- c) **Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?**

**Less than significant impact.** The project earthmoving activities include grading, excavation, compaction, and substrate import and placement. Construction on the Island terrace will not drastically alter the sub-surface profile of the Island, increase slope heights, or over-steepen slope and should therefore not lead to any decreased geologic stability over current conditions. The shoreline enhancement would involve the placement of gravel, sand, and shell material to create beach forms, 200lb or ¼ ton rock (and/or eucalyptus trunks) would be placed along the shoreline to create beach retention micro-groins, and large woody debris would be placed along the shoreline to add habitat complexity. The beach forms, by nature, are mobile features that would be constantly reworked by wave action. Micro-groin features have been designed to remain stationary over time, but slight movement or lateral spreading of these features would not cause any environmental impact or danger to humans or structures.

- d) **Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?**

**No impact.** No structures are proposed as part of the project and no impacts to buildings should occur in keeping with current existing conditions.

- e) **Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?**

**No impact.** No septic tanks or waste water disposal systems exist on the Island, nor are any included in the proposed project.

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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## VII. GREENHOUSE GAS

**EMISSIONS** – Would the project:

- a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

X

- b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

X

## *Background:*

In 2006, California passed the California Global Warming Solutions Act of 2006, which requires the California Air Resources Board (CARB) to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide greenhouse gas (GHG) emissions are reduced to 1990 levels by 2020 (representing an approximate 25 percent reduction in emissions).

California now recognizes seven GHG: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>) (California Health and Safety Code section 38505(g)), and nitrogen trifluoride (NF<sub>3</sub>). Carbon dioxide is the reference gas for climate change because it gets the most attention and is considered the most important GHG. To account for the warming potential of different GHGs, GHG emissions are quantified and reported as CO<sub>2</sub> equivalents (CO<sub>2</sub>E). The effects of GHG emission sources (i.e., individual projects) are reported in metric tons/year of CO<sub>2</sub>E.

In June 2008, CARB published its Climate Change Draft Scoping Plan (CARB 2008a). The Climate Change Draft Scoping Plan reported that CARB met the first milestones to develop a list of early actions to begin sharply reducing GHG emissions; assembling an inventory of historic emissions; and establishing the 2020 emissions limit. After consideration of public comment and further analysis, CARB released the Climate Change Proposed Scoping Plan in October 2008 (CARB 2008b). The Proposed Scoping Plan proposed a comprehensive set of actions designed to reduce overall carbon emissions in California.

The Climate Change Proposed Scoping Plan also included recommended measures that were developed to reduce GHG emissions from key sources and activities while improving public health, promoting a cleaner environment, preserving natural resources, and ensuring that the impact of GHG reductions are equitable and do not disproportionately impact low-income and minority communities. These measures also put the State on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels. These measures were presented to and approved by CARB on December 11, 2008. The measures in the Scoping Plan approved by the Board will be developed over the next two years and be in place by 2012. In June 2010, the BAAQMD adopted CEQA significance criteria for emissions of GHG's from project operations. To be in compliance with the proposed GHG operational threshold, a project must be in (1) be in compliance with an adopted County Climate Action Plan or (2) generate GHG operational emissions less than 1,100 tons/year (CO<sub>2</sub>E). The BAAQMD recently adopted guidelines have no thresholds for construction GHG emissions. No criteria were adopted applicable to construction activities.

State law requires local agencies to analyze the environmental impact of GHG under CEQA. The Natural Resources Agency adopted the CEQA Guidelines Amendments in December 2009. Marin County adopted the Marin County Greenhouse Gas Reduction Plan October 2006 for the purpose of reducing GHG emissions. The plan identifies a target to reduce GHG emission 15-20% below 2000 levels by the year 2020 for internal government and 15% countywide and a list of measures intended to add to Marin's GHG reduction. Measures applicable to the project include:

- CD-1.b: Preserve resources in the Baylands corridor (Marin County 2006).

*Discussion of Impacts:*

- a) **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

**Less than significant.** Operational emissions associated with the proposed project would be generated primarily from periodic maintenance inspections of the Island, where access would be provided by motor vehicle and then small boat trips. Annual CO<sub>2</sub>E operational emissions associated with the proposed project were estimated using the CARB-approved URBEMIS 2007 (version 9.2.4) computer program based on the Project Description, default assumptions contained in the model, and EPA's Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data (Appendix A). Maximum project construction GHG emissions would be approximately 112 metric tons per year of CO<sub>2</sub>E, and project operations would be approximately 7 metric tons per year of CO<sub>2</sub>E (including emissions from vehicle and small boat trips) (Appendix A). This is far below the proposed BAAQMD proposed GHG threshold of 1,100 metric tons per year of CO<sub>2</sub>E.

Also, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG. The project would be consistent with the Marin County Greenhouse Gas Reduction Plan's measure CD-1.b: Preserve resources in the Baylands corridor.

- b) **Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

**No Impact.** As stated in response to item VII a) above, the proposed project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG and no impact would occur.

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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**VIII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:**

- a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

X

- b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

X

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	X

*Background:*

The Island was constructed in the 1950's and 1960's of material dredged from nearby navigation channels and excavated from nearby hillsides. The hillsides were pristine open space at the time they were excavated, so there should be no hazardous materials present in the extracted fill. No land uses have occurred on the site since its construction that may have resulted in the use, generation, or disposal of hazardous materials on or near the site. Construction of the proposed project would not involve the use or transport of any hazardous materials, aside from fuels and lubricants for construction equipment.

*Discussion of Impacts:*

- a) **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

**No impact.** The proposed project does not include any elements which would expose people to potential health hazards through the routine transport of hazardous materials.

- b) **Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

**Less than Significant Impact.** The project would involve the use of small amounts of fuels and lubricants during construction. Construction may involve a slight increase in vessel traffic around the Island during the one to three month construction period. None of the materials being transported to the Island for use in the various enhancement elements (substrate materials, micro-groin materials, large woody debris, etc.) could be considered hazardous. The project would not result in any reasonably foreseeable upset or accident conditions, on either water or land. No herbicides or fertilizers would be used as part of the project.

- c) **Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

**No impact.** Strawberry Point Elementary School is located about 2000 feet north of Aramburu Island. However, as noted in response to Items VIII a) and VIII b), above, the project would not handle or emit any hazardous materials. Therefore it would have no impact on the school.

- d) **Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

**No impact.** None of the properties in project area are included on the Hazardous Waste and Substances Site List (California Department of Toxic Substances Control, 2010).

- e) **For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?**

**No impact.** The project area is not within an airport land use plan (Marin County, Airport Land Use Plan, 1991) and the proposed project is a revegetation effort that would not result in any new structures or other features that could potentially pose an airport safety hazard.

- f) **For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?**

**No impact.** The proposed project is not located in the vicinity of a private airstrip (Countywide General Plan, 2007).

- g) **Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

**No Impact.** The proposed shoreline protection and ecological enhancement project would not interfere with any adopted emergency response or evacuation plans because the project would be located on an uninhabited Island not easily accessible to the public where the need for emergency access is not needed. There will be no change from current conditions

- h) **Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?**

**No Impact.** The project area is not located within the designated wildland-urban interface (Marin County Fire Department, 2005). The proposed earthwork, removal of vegetation, and revegetation with native species on an Island separated by water from nearby urbanized areas would not create new fire hazards.

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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## IX. HYDROLOGY AND WATER QUALITY -- Would the project:

- a) Violate any water quality standards or waste discharge requirements?

X

- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

X

- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

X

- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

X

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	X
f) Otherwise substantially degrade water quality?	X
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	X
j) Inundation by seiche, tsunami, or mudflow?	X

*Background:*

The project site is located in Richardson Bay, a shallow arm of San Francisco Bay approximately 2 miles north of the Golden Gate. Table 8 presents the tidal datums at Sausalito. Most of the Island terrace, with the exception of a few fringing tidal wetlands, is above the normal range of the tides. However, the presence of lines of dried marine vegetation and salt tolerant vegetation indicate that certain areas are occasionally subject to storm overwash. There are a few small groves of oak trees on the Island, indicating that a perched, fresh groundwater table exists in certain areas of the Island. There are also several seasonal wetlands found throughout the Island that are fed by rainwater and, in some locations, by overwash during storm events. Saline groundwater saturation was found at various depths below ground surface in September 2009, indicating that the Bay was the primary groundwater source at the time of sampling (WWR 2010a). Salinity levels in Richardson Bay normally range from 24 to 33 parts per thousand (ppt), depending on the time of year (based on Audubon Center surveys). Sub-surface investigations conducted in September were near the end of the dry season, however, it is expect that direct rainfall would contribute to shallow groundwater during wet times of the year. The subsurface soil and rock types and the presence of oaks (low salinity tolerance) on the Island also suggest that perched, freshwater lenses may occur in some areas.



**Table 8. Tidal datums, Sausalito**

<b>Tidal Datum for NOS 941-4806<sup>1</sup></b>		<b>Elevation (ft NAVD88)</b>
Highest Observed Water Level <sup>2</sup>	(HOWL)	8.48
Mean Higher High Water	(MHHW)	5.86
Mean High Water	(MHW)	5.26
Mean Tide Level	(MTL)	3.29
Mean Low Water	(MLW)	1.31
Mean Lower Low Water	(MLLW)	0.17
Lowest Observed Water Level <sup>3</sup>	(LOWL)	-2.54

<sup>1</sup>National Ocean Service. 2004. Tidal Benchmark, Sausalito, CA. Feb 5. Period of record 11/77 – 10/79

<sup>2</sup>HOWL observed 1/9/78

<sup>3</sup>LOWL observed 5/5/77

Richardson Bay, in the vicinity of the project site, is home to several sensitive aquatic resources including eelgrass beds, oyster beds, tidal marsh, and mudflats (Figure 12), which are sensitive to changes in water quality. The eastern shoreline of Aramburu Island is subject to the erosive forces of storm generated waves approaching from the southwest. The ongoing erosion along this shoreline in response to these events may contribute large quantities of suspended sediments to the water column that may impact offshore eelgrass beds and other aquatic resources. One of the primary objectives of this project is to stabilize the eastern shoreline to reduce the erosion rates and subsequent spikes in suspended sediment concentration within Richardson Bay.

The Regional Water Board has identified the following Beneficial Uses for Richardson Bay in the current Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) (Regional Water Board, 2007). The Basin Plan sets narrative and numeric water quality objectives for a wide range of physical, chemical, and biological properties to protect the following beneficial uses in Richardson Bay and the vicinity:

- Industrial water supply
- Ocean, commercial, and sport fishing
- Estuarine habitat
- Fish migration
- Navigation
- Preservation of rare and endangered species
- Water contact recreation
- Non-contact water recreation
- Shellfish harvesting
- Wildlife habitat
- Fish spawning

## *Discussion of Impacts:*

### **a) Violate any water quality standards or waste discharge requirements?**

**Less than significant with mitigation.** It is possible that construction activities both along the shoreline and on the Island terrace could cause short-term, temporary impacts to water quality. Earth-moving and material placement within the shoreline enhancement areas could cause increases in suspended sediment concentration and introduce petroleum contaminants (oil, grease, fuel, etc.) into the waters of the Bay, if performed at times when there is water on the work area. Construction activities on the Island terrace, including earth-moving and substrate placement, also could introduce sediment and petroleum contaminants into the Bay via rainfall runoff or storm wave overwash. During the period between the completion of earthmoving and vegetation reestablishment, bare graded areas could be subject to erosion from these forces as well. Implementation of Mitigation Measure IX-1, below, would reduce these impacts to a less than significant level.

**Mitigation Measure IX-1:** The project includes the development of a Stormwater Pollution Prevention Plan (SWPPP) that includes best management practices (BMPs) for minimizing stormwater runoff, erosion, and potential water quality impacts associated with construction activities. An erosion control plan will be developed and will identify erosion control BMPs and construction phasing and techniques to prevent excessive erosion and sedimentation. The beach nourishment components of the project and shoreline stabilization would occur prior to the storm season and before vegetation is removed from upland areas to ensure maximum shoreline protection during storms. In addition, construction will occur during low tide when water is not present.

Construction BMPs that would be incorporated into the project include:

- Installation of silt fences or straw wattles along the toes of slopes and designated staging areas, and erosion control netting (such as jute) on sloped areas, to minimize soil erosion and prevent sediment from entering adjacent waters of the fringing marsh, Bay, and navigational channel.
- Install winterization features, such as mulch, planting of cover crop, or hydroseeding, of all bare soil and new plantings prior to the rainy season.
- Stage construction equipment in upland areas when not in use and limit refueling or maintenance of equipment only to upland areas, away from aquatic habitats to prevent the introduction of hazardous chemicals into the water.
- Training for all contractors working on the site regarding the environmental sensitivity of the project site and surrounding area and the need to minimize impacts.
- Training for all contractors in implementation of stormwater BMPs for protection of water quality.
- Following construction, erosion control structures such as straw wattles, silt fences,

and/or erosion control netting will be left in place along the Island perimeter (above the high tide line) to prevent the introduction of sediments from bare, graded areas on the Island terrace into Richardson Bay due to rainfall runoff or wave overwash. These structures will be left in place until adequate vegetation cover has re-established on the Island terrace.

As discussed in the Project Description, the project has been designed to reduce erosion along the eastern Island shoreline, thereby reducing pulses of suspended sediments into the adjacent water column. The project should therefore have long term beneficial impacts upon water quality in Richardson Bay.

- b) **Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?**

**No impact.** The proposed project would not include any features that would interfere with local groundwater recharge or supply.

- c) **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?**

**Less than significant with mitigation.** The proposed project would involve grading, excavation, and substrate material placement on the Island that will result in altered drainage patterns. Prior to vegetation establishment, large swaths of the Island terrace would be initially devoid of vegetation following these construction activities. Rainfall and/or wave overtopping during storm events could cause erosion and soil loss during this initial construction and post-construction period. The proposed design grades back a gentle slope up to the Island crest fronted by a coarse-sediment beach, which would be sufficient to intercept and dissipate wave energy (overwash) even without vegetation. Overtopping is a process that would not cause substantial erosion (minor surface scour only). Implementation of Mitigation Measure IX-1, above, would reduce erosion potential to a less than significant level.

The project would assist in protecting the residential shore across the channel. The long-term threat to the residential shore is scarp retreat of the Island shoreline, and reduction of the Island to a low intertidal feature that would leave the inner shore exposed to waves at high tide and elevated sea level during southerly storms.

**Mitigation Measure:** Refer to Mitigation Measure IX-1 in the Hydrology and Water Quality Section, above.

- d) **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?**

**Less than significant impact.** There would be no increase in surface runoff from the site as a result of the project that could lead to flooding of adjacent areas. All runoff from the Island enters Richardson Bay, the hydrology of which is minimally impacted by the local Aramburu Island watershed. The project would increase impounding of water on site in the enhanced and expanded seasonal wetlands, which are designed for the benefit of native plants and wildlife.

- e) **Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

**No impact.** Stormwater systems currently do not exist on the Island and the proposed project will not add stormwater systems. The project involves enhancement of natural habitats, which would decrease runoff and would not be a source of polluted runoff.

- f) **Otherwise substantially degrade water quality?**

**No impact.** All potential water quality degradations are covered in the above responses.

- g) **Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**

**No impact.** No housing is proposed as part of the proposed project.

- h) **Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?**

**No impact.** The proposed project does not involve the construction of any new structures. See response to item g, above.

- i) **Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?**

**No impact.** No people, structures, levees, or dams occur on the Island nor proposed for the Island. The proposed project does not change flooding conditions on the Island or in its vicinity. The Island is not within an area subject to flooding in the event of failure of a levee or dam.

The proposed project does not raise water levels or increase exposure to wind wave energy on nearby properties. In addition, the project improves shoreline protection on the Island which improves its breakwater function.

- j) **Inundation by seiche, tsunami, or mudflow?**

**No impact.** In its current configuration, the Island could be inundated by seiche or tsunami. The project would have no effect on this condition.

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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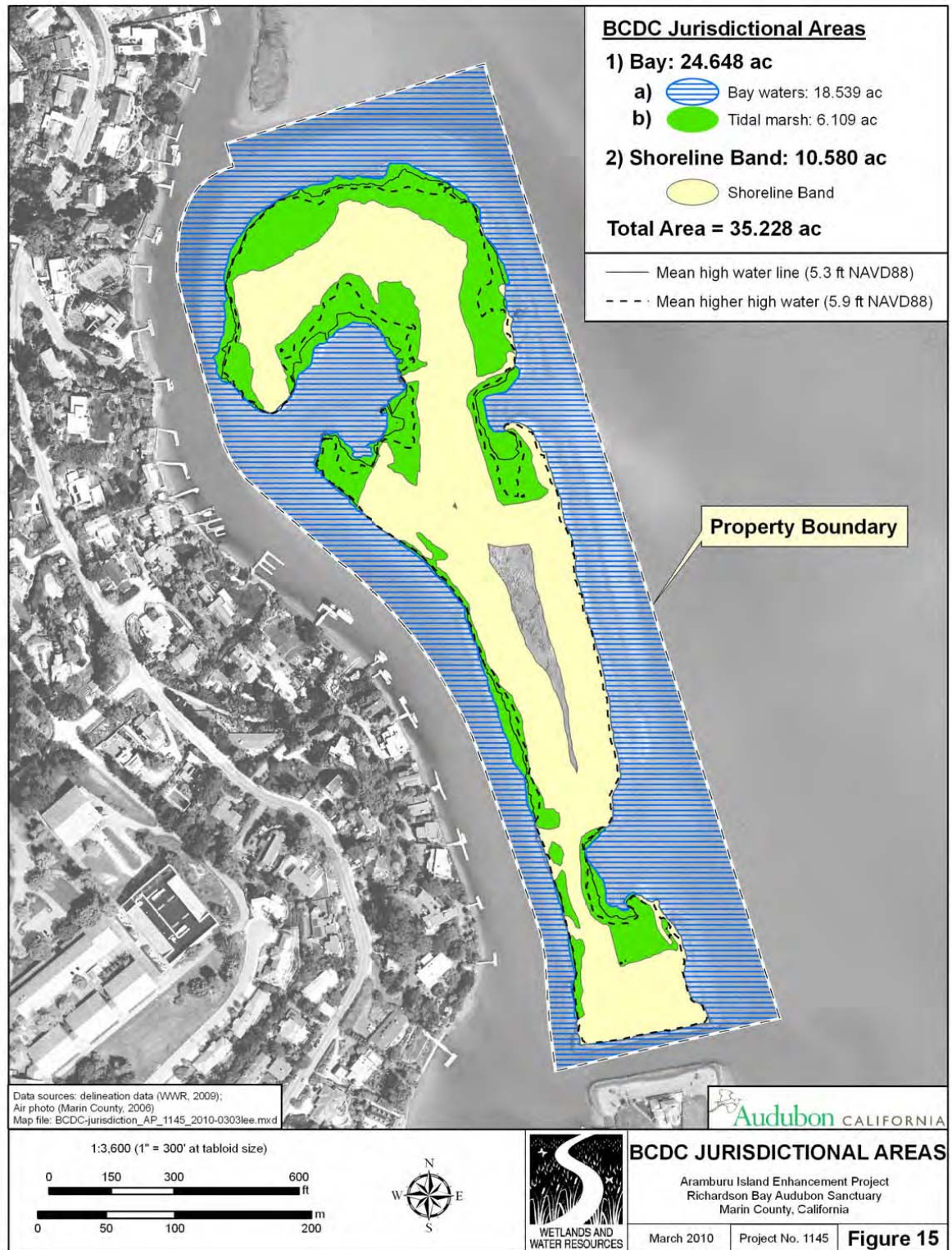
**X. LAND USE AND PLANNING** - Would the project:

a) Physically divide an established community?				X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X

*Background:*

The project site is undeveloped open space designated as Open Space in the County General Plan Land Use Element and is zoned Residential, Multiple Planned, with a Bay Front Conservation Overlay in the County Zoning Ordinance. Aramburu Island is separated from nearby urbanized areas by narrow channels and the waters of Richardson Bay. BCDC required creation of this shorebird and harbor-seal-refuge Island as a permit condition for residential development of the remainder of Strawberry Spit. Specifically, this permit stated: “The 11-acre Island created by excavating the channel will be set aside and managed as wildlife habitat. Public access provided by the project includes approximately 3.9 acres of landscaping, seating area, and shoreline paths along approximately 3,340 linear feet of Bay shoreline.” The existing shoreline path is located along Strawberry Point.

Almost the entire extent of the project site is within BCDC jurisdiction (35.228 acres of 35.81 acres total) (Figure 15). There are 24.65 acres that fall under BCDC Bay jurisdiction: open waters of the Bay (18.36 acres), tidal marshes on the Island terrace (6.11 acres), while 10.58 acres on the Island terrace fall under Shoreline Band jurisdiction, which extends 100-ft inland from the landward limit of Bay jurisdictional areas. The Island is located within the Richardson Bay Special Area Plan (BCDC 1984), which functions as a specific plan under the Bay Plan. The site has no special designation in the Richardson Bay Special Area Plan. Aramburu Island was not yet an Island, and is shown as part of Strawberry Spit on Map 4 of that 1984 Plan. The northern portion of Strawberry Spit was made into Aramburu Island in 1987 by excavating a navigation channel in the middle of the Spit. The BCDC required creation of this shorebird and harbor seal refuge Island as a permit condition for housing development on the spit.



*Discussion of Impacts:*

**a) Physically divide an established community?**

**No impact.** The proposed restoration project would be located on an uninhabited Island and would not change the Island's character or land use. Therefore it would not physically divide an established community.

**b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?**

**No Impact.** As noted above, the site is designated as Open Space in the Marin County General Plan. The project would comply with this designation. The Marin County General Plan includes a number of policies that would apply to the proposed project. These are summarized in Table 9, below, along with an assessment of the project's compliance. As can be seen in the table, the proposed project would fully comply with and help to implement relevant general Plan goals and policies.

**Table 9. Marin County Land Use Policies**

<b>POLICY</b>	<b>PROJECT COMPLIANCE</b>
<b>BIO-1.1 Protect Wetlands, Habitat for Special-Status Species, Sensitive Natural Communities, and Important Wildlife Nursery Areas and Movement Corridors.</b> Protect sensitive biological resources, wetlands, migratory species of the Pacific flyway, and wildlife movement corridors through careful environmental review of proposed development applications, including consideration of cumulative impacts, participation in comprehensive habitat management programs with other local and resource agencies, and continued acquisition and management of open space lands that provide for permanent protection of important natural habitats.	The project would protect and enhance habitat for sensitive bird species on the Island. It also would create additional wetland and marine mammal habitat.
<b>BIO-1.2 Acquire Habitat.</b> Continue to acquire areas containing sensitive resources for use as permanent open space, and encourage and support public and private partnerships formed to acquire and manage important natural habitat areas, such as baylands, wetlands, coastal shorelines, wildlife corridors, and other lands linking permanently protected open space lands.	The project would be a public/private partnership between Marin County and the Audubon Society to manage and enhance sensitive bayland, shoreline, and wetland habitat.
<b>BIO-1.3 Protect Woodlands, Forests, and Tree Resources.</b> Protect large native trees, trees with historical importance; oak woodlands; healthy and safe eucalyptus groves that support colonies of monarch butterflies, colonial nesting birds, or known raptor sites; and forest habitats. Prevent the untimely removal of trees through implementation of standards in the Development Code and the Native Tree Preservation and Protection Ordinance. Encourage other local agencies to adopt tree	The project would not remove mature oak trees on the Island.

preservation ordinances to protect native trees and woodlands, regardless of whether they are located in urban or undeveloped areas.	
<b>BIO-1.5 Promote Use of Native Plant Species.</b> Encourage use of a variety of native or compatible nonnative, non-invasive plant species indigenous to the site vicinity as part of project landscaping to improve wildlife habitat values.	The proposed revegetation plan would use native, non-invasive species designed to improve habitat values.
<b>BIO-1.6 Control Spread of Invasive Exotic Plants.</b> Prohibit use of invasive species in required landscaping as part of the discretionary review of proposed development. Work with landowners, landscapers, the Marin County Open Space District, nurseries, and the multi-agency Weed Management Area to remove and prevent the spread of highly invasive and noxious weeds. Invasive plants are those plants listed in the State's Noxious Weed List, the California Invasive Plant Council's list of "Exotic Pest Plants of Greatest Ecological Concern in California," and other priority species identified by the agricultural commissioner and California Department of Agriculture.	One of the project's primary goals is to remove invasive, non-native, weedy species and their effective seed banks from the Island. The project would replace those species with native species.
<b>BIO-1.7 Remove Invasive Exotic Plants.</b> Require the removal of invasive exotic species, to the extent feasible, when considering applicable measures in discretionary permit approvals for development projects unrelated to agriculture, and include monitoring to prevent re-establishment in managed areas.	As noted above, the project would remove invasive, non-native species from the site and replace them with natives. Ongoing monitoring and management are included in the project plans to prevent re-establishment of invasive species.
<b>BIO-1.8 Restrict Use of Herbicides, Insecticides, and Similar Materials.</b> Encourage the use of integrated pest management and organic practices to manage pests with the least possible hazard to the environment. Restrict the use of insecticides, herbicides, or any toxic chemical substance in sensitive habitats, except when an emergency has been declared; the habitat itself is threatened; a substantial risk to public health and safety exists, including maintenance for flood control; or such use is authorized pursuant to a permit issued by the agricultural commissioner. Encourage nontoxic strategies for pest control, such as habitat management using physical and biological controls, as an alternative to chemical treatment, and allow use of toxic chemical substances only after other approaches have been tried and determined unsuccessful. Continue to implement the Integrated Pest Management ordinance for county-related operations.	The project does not propose the use of herbicides. Instead soil inversion, soil salinization (by irrigation with bay water), or burial of existing non-native seed banks would be used to eliminate non-native species. No use of herbicides is planned.
<b>BIO-2.1 Include Resource Preservation in Environmental Review.</b> Require environmental review pursuant to CEQA of development applications to assess the impact of proposed development on native species and habitat diversity, particularly special-status species, sensitive natural communities, wetlands, and important wildlife nursery areas and movement corridors. Require adequate	This Initial Study contains an extensive review of the impact of the proposed project on sensitive species and habitats.



mitigation measures for ensuring the protection of any sensitive resources and achieving “no net loss” of sensitive habitat acreage, values, and function.	
<b>BIO-2.3 Preserve Ecotones.</b> Condition or modify development permits to ensure that ecotones, or natural transitions between habitat types, are preserved and enhanced because of their importance to wildlife. Ecotones of particular concern include those along the margins of riparian corridors, baylands and marshlands, vernal pools, and woodlands and forests where they transition to grasslands and other habitat types.	The project is specifically designed to improve transitions between aquatic, wetland, and terrestrial habitats. Specific design elements include beach, tidal marsh, seasonal wetland, and transitional grassland enhancements.
<b>BIO-2.4 Protect Wildlife Nursery Areas and Movement Corridors.</b> Ensure that important corridors for wildlife movement and dispersal are protected as a condition of discretionary permits, including consideration of cumulative impacts. Features of particular importance to wildlife for movement may include riparian corridors, shorelines of the coast and bay, and ridgelines. Linkages and corridors shall be provided that connect sensitive habitat areas such as woodlands, forests, wetlands, and understory species and associated wildlife, and providing for sustainable regeneration	The project is designed to enhance a variety of habitats for native species on an Island designated as a wildlife preserve, which is adjacent to a 911 acre wildlife sanctuary. The project, by its nature, protects wildlife nursery areas and movement corridors.
<b>BIO-2.5 Restrict Disturbance in Sensitive Habitat During Nesting Season.</b> Limit construction and other sources of potential disturbance in sensitive riparian corridors, wetlands, and baylands to protect bird-nesting activities. Disturbance should generally be set back from sensitive habitat during the nesting season from March 1 through August 1 to protect bird nesting, rearing, and fledging activities. Preconstruction surveys should be conducted by a qualified professional where development is proposed in sensitive habitat areas during the nesting season, and appropriate restrictions should be defined to protect nests in active use and ensure that any young have fledged before construction proceeds.	As described in Section IV. Of this Initial Study, project construction has been timed to avoid sensitive nesting periods.
<b>BIO-2.8 Coordinate with Trustee Agencies.</b> Consult with trustee agencies (the California Department of Fish and Game, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration Fisheries, U.S. Army Corps of Engineers, Environmental Protection Agency, Regional Water Quality Control Board, and Bay Conservation and Development Commission) during environmental review when special-status species, sensitive natural communities, or wetlands may be adversely affected.	The project would be developed in close coordination with all of the applicable resource agencies. The Regional Water Quality Control Board is lead agency for the CEQA review. The CEQA documents would be provided to all applicable resource agencies for review. In addition, permits would be obtained from the various resources agencies (as identified in Item 10 of this IS.)
<b>BIO-2.9 Promote Early Consultation with Other Agencies.</b> Require applicants to consult with all agencies with review authority for projects in areas supporting wetlands and special-status species at the outset of project planning.	See response to Policy BIO-2.8, above.
<b>BIO-3.1 Protect Wetlands.</b> Require development to avoid wetland areas so that the existing wetlands and upland buffers	The Island is designated as open space and is a dedicated wildlife preserve. There are currently no

are preserved and opportunities for enhancement are retained (areas within setbacks may contain significant resource values similar to those within wetlands and also provide a transitional protection zone). Establish a Wetland Conservation Area (WCA) for jurisdictional wetlands to be retained, which includes the protected wetland and associated buffer area. Development shall be set back a minimum distance to protect the wetland and provide an upland buffer. Larger setback standards may apply to wetlands supporting special-status species or associated with riparian systems and baylands under tidal influence, given the importance of protecting the larger ecosystems for these habitat types as called for under Stream Conservation and Baylands Conservation policies defined in Policy BIO-4.1 and BIO-5.1, respectively. Regardless of parcel size, a site assessment is required either where incursion into a WCA is proposed or where full compliance with all WCA criteria would not be met.	threats of development on the Island, and the Bay serves as a natural buffer.
<b>BIO-5.3 Leave Tidelands in Their Natural State.</b> Require that all tidelands be left in their natural state to respect their biological importance to the estuarine ecosystem. Any modifications should be limited to habitat restoration or enhancement plans approved by regulatory agencies.	The proposed project modifications to tidelands would be limited to habitat restoration and enhancement to be approved by regulatory agencies.
<b>BIO-5.4 Restore Marshlands.</b> Enhance wildlife and aquatic habitat value of diked bay marshlands, and encourage land uses that provide or protect wetland or wildlife habitat and do not require diking, filling, or dredging.	The project is not located on diked marshlands. There would be no diking. Some fill would be imported for beach enhancement and substrate enrichment.
<b>BIO-5.7 Limit Access to Wetlands.</b> Design public access to avoid or minimize disturbance to wetlands, necessary buffer areas, and associated important wildlife habitat while facilitating public use, enjoyment, and appreciation of bayfront lands.	The proposed project would continue the controls currently in existence on the Island to protect wildlife habitat while facilitating public appreciation of this sensitive site. The enhancement project will improve the public viewshed and provide additional wildlife view opportunities.
<b>BIO-5.8 Control Shoreline Modification.</b> Ensure that any modifications to the shoreline do not result in a loss of biodiversity or opportunities for wildlife movement. Possible modifications may include construction of revetments, sea walls, and groins, as permitted by State and federal agencies.	The proposed project includes shoreline modifications, including micro-groins, intended to stabilize the shore of the Island while providing enhanced wildlife habitat opportunities. No impediments to wildlife movement would be constructed. All improvements would be fully permitted by state and federal agencies.
<b>OS-1.1 Enhance Open Space Stewardship.</b> Promote collaborative resource management among land management agencies. Monitor resource quality. Engage the public in the stewardship of open space resources.	The proposed project is a collaborative effort between the Marin County Parks and Open Space Department (MCPOS), the Richardson Bay Audubon Center and Sanctuary (Audubon), and the Regional Water Quality Control Board. MCPOS is the landowner and would continue to clear the Island of debris and trash. Audubon would engage the public in stewardship efforts focused on the newly established native habitats.

<b>OS-1.2 Protect Open Space for Future Generations.</b> Ensure that protected lands remain protected in perpetuity, and that adequate funding is available to maintain it for the benefit of residents, visitors, wildlife, and the environment.	The Island is protected in perpetuity. The project includes an adaptive management plan to assure long-term maintenance of habitat and other environmental attributes.
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The proposed project also would be fully compatible with the 1987 BCDC permit condition designating the site for bird and harbor seal habitat.

**c) Conflict with any applicable habitat conservation plan or natural community conservation plan?**

**No impact.** As described in Section IV, Biological Resources, Item (f), the project has been specifically designed to contribute to the regional restoration effort presented in the Baylands Ecosystem Habitat Goals Report, which specifically identifies the following recommended restoration and management actions for “Strawberry Spit” (of which Aramburu Island was formerly a part) and Richardson Bay (Goals Project 1999, p. 117 and Appendix D) that are incorporated into the enhancement design:

- Protect and enhance harbor seal haul-out sites at Strawberry Spit
- In Richardson Bay, restore and enhance fringing marsh along northwest edge for Point Reyes bird’s-beak (*Chloropyron maritimum*)
- Restore and enhance tidal marsh
- Restore high marsh near populations of rare and uncommon salt marsh plants to enable their expansion

<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
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**XI. MINERAL RESOURCES --** Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

X

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

X

*Background:*

Aramburu Island was constructed from bay dredge spoils and does not contain any economically valuable mineral resources.

*Discussion of Impacts:*

- a) **Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

**No impact.** According to the Marin Countywide General Plan no mineral resources that would be of value to the region and the residents of the state are known to occur within the project area (Marin County, 2007).

- b) **Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?**

**No impact.** No locally important mineral resources recovery area is designated for the site on in the Countywide General Plan (Marin County, 2007).

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<b>XII. NOISE</b> -- Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		X		
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		X		
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

### *Background:*

The A-weighted decibel scale (dBA)<sup>1</sup> is cited in most noise criteria. The most commonly used noise descriptors are the equivalent sound level over a given time period (Leq)<sup>2</sup>; average day-night 24-hour average sound level (Ldn)<sup>3</sup>; and community noise equivalent level (CNEL)<sup>4</sup>.

Noise levels that are generally considered acceptable or unacceptable can characterize various environments. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Table 10 identifies decibel levels for common sounds heard in the environment.

**Table 10. Typical noise levels**

Noise Level decibels (dBA)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at 3 feet, jet flyover at 1,000 feet	Rock Band
80–90	Diesel truck at 50 feet	Loud television at 3 feet
70–80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at 3 feet, vacuum cleaner at 10 feet
60–70	Commercial area	Normal speech at 3 feet
40–60	Quiet urban daytime, traffic at 300 feet	Large business office, dishwasher next room
20–40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10–20		Broadcast / recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Source: (modified from Caltrans Technical Noise Supplement, 1998)

### *Marin County Standards*

The applicable noise standards governing the project site are set forth in the Built Environment Element of the Marin Countywide Plan and the County's Noise Ordinance.

<sup>1</sup> A decibel (dB) is a unit of sound energy intensity. Sound waves, traveling outward from a source, exert a sound pressure level (commonly called "sound level") measured in dB. An A-weighted decibel (dBA) is a decibel corrected for the variation in frequency response to the typical human ear at commonly encountered noise levels.

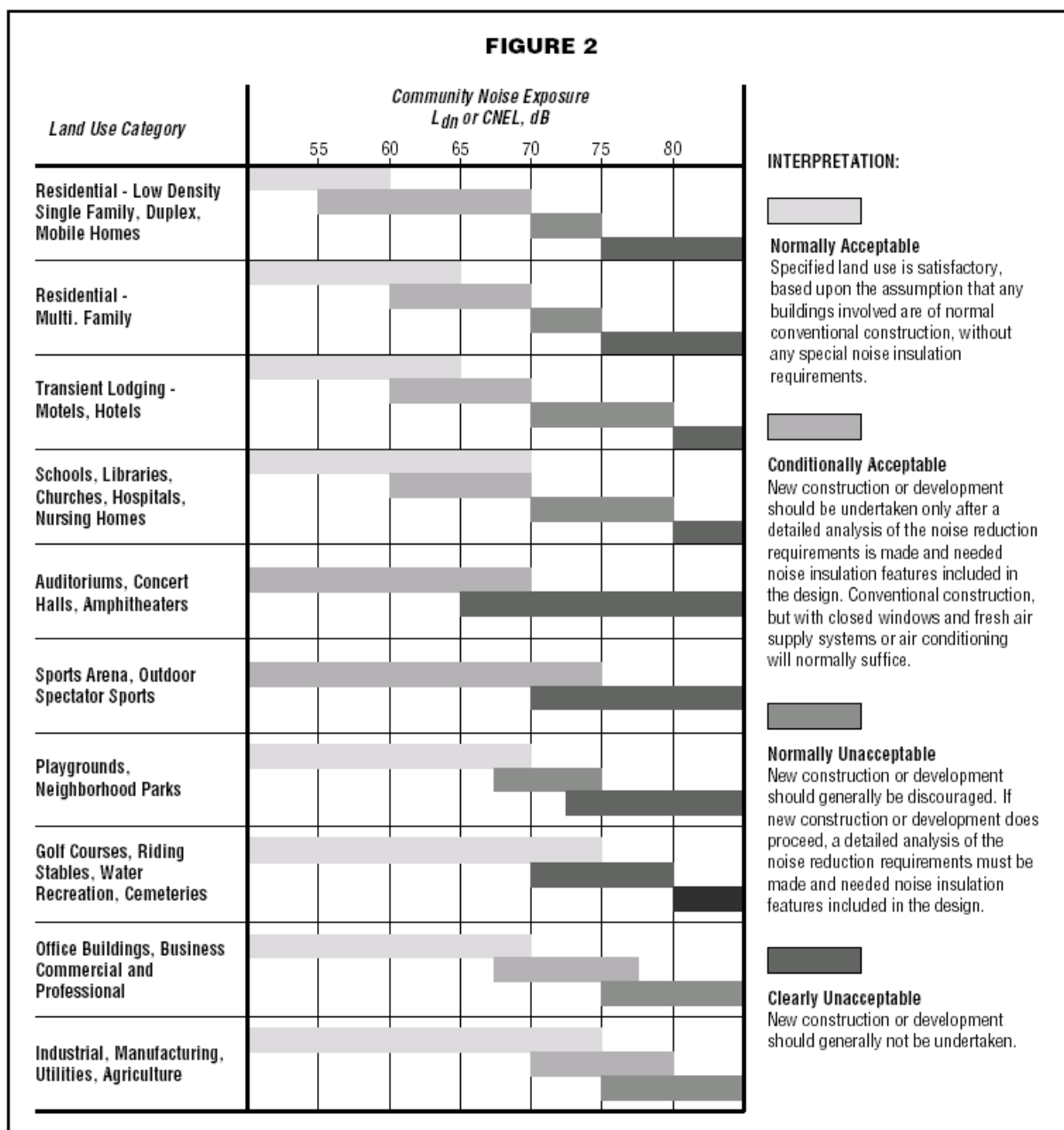
<sup>2</sup> The Equivalent Sound Level (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time-varying sound energy in the measurement period.

<sup>3</sup> Ldn is the day-night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a ten-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.

<sup>4</sup> CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of five decibels in the evening from 7:00 to 10:00 p.m., and an addition of a ten-decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

The Marin Countywide Plan Built Environment Element does not identify any compatibility standards specifically for parks and open space. However, the most appropriate land use category would be Playground and Neighborhood Parks. The Built Environment Element identifies compatibility standards for residential and park uses as shown in Table 11 (Marin County 2007).

**Table 11. Acceptable noise levels**



SOURCE: California Office of Planning and Research, 1998 General Plan Guidelines.

The County of Marin has an adopted noise regulation in the County's Code of Ordinances, Title 6 Public Peace, Safety, and Morals, Chapter 6.70 Loud and Unnecessary Noises (Marin County 2010). Per 6.70.030 – Enumerated Noises (5) Construction Activities and Related Noise, hours for construction activities shall be limited to Monday through Friday, 7 a.m. to 6 p.m. and Saturday, 9 a.m. to 5 p.m., and prohibited on Sundays and holidays. Loud-noise-generating construction related equipment (backhoes, generators, jackhammers) can be maintained, operated, or serviced at a construction site for permits administered by the Community Development Agency from 8 a.m. to 5 p.m. Monday through Friday only. Special exceptions to these limitations may occur for construction projects of city, county, state, other public agency, or other public utility.

#### Existing Conditions

Noise sensitive receptors (land uses associated with indoor and/or outdoor activities that may be subject to stress and/or significant interference from noise) typically include residential dwellings, hotels, motels, hospitals, nursing homes, educational facilities, and libraries. The nearest sensitive receptors to the site include the residential areas approximately 150 feet south and 200 feet west of the proposed project.

The analysis presented in this section is based on noise measurements and observations by Miller Environmental Consulting at and near the project site on May 3, 2010.

To quantify existing ambient noise levels in the immediate project vicinity, short-term noise levels were measured. Noise measurements were made using a Metrosonics db308 Sound Level Meter. Noise level measurement locations were selected to measure existing noise sources and to measure locations that could be affected by the project. The noise measurements are summarized in Table 12.

**Table 12. Existing noise environment at project site.**

Location	Time Period	Leq (decibels)	Noise Sources
<b>Site 1:</b> 50 feet west of intersection of E. Strawberry Drive and Herring Drive	Monday 5/3/10 3:15 – 3:30 PM	5-minute Average Noise Levels, Leq 47, 50	Noise from traffic. Passing cars 53 - 62 dBA
<b>Site 2:</b> East end Island Drive (east of E. Strawberry Drive near the Bay – directly west of Aramburu Island)	Monday 5/3/10 3:32 – 3:47 PM	5-minute Average Noise Levels, Leq 44, 47	Noise from birds, traffic, aircraft. Helicopter up to 59 dBA
<b>Site 3:</b> Aramburu Island, approximately 350 north of southern end of Island	Monday 5/3/10 4:45 – 5:00 PM	5-minute Average Noise Levels, Leq 51, 54, 57	Noise from birds and aircraft. Helicopter up to 65 dBA
<b>Site 4:</b> Near center of Aramburu Island	Monday 5/3/10 5:08 – 5:23 PM	5-minute Average Noise Levels, Leq 47,55	Noise from birds and aircraft. Birds up to 67 dBA

SOURCE: Miller Environmental Consultants, 2010.

The existing ambient noise levels at the project site are defined primarily by birds and aircraft flying overhead. The existing ambient noise levels in the immediate project vicinity are defined primarily by cars on surface streets (Strawberry Drive and Tiburon Boulevard) and background noise from traffic on Highway 101. No construction or loud landscaping activity noise (lawn mowing, string-trimming, leaf blowing, etc) was captured in the monitoring. It is noted that such noise levels occur intermittently in the project area.

Short-term measurements near the project site indicate that the project is in a very quiet area with average noise levels range from 44 to 57  $L_{eq}$  dBA. Noise levels are dependent upon type and distance of the noise source. The existing noise levels are normally acceptable for parks and residential land uses.

#### *Discussion of Impacts:*

- a) **Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

##### *Impact of Construction of Proposed Project*

**Less than significant with mitigation.** Project construction is anticipated to span approximately two to three months for shoreline enhancements and possibly two to three months for Island terrace enhancement. The total construction time would not exceed 6 months over two construction seasons. Shoreline enhancement construction activities would occur primarily on the east side of the Island and would be slightly shielded by the remaining Island to the west. Island terrace enhancement would occur primarily on top of the Island and would have direct line of sight of the residences to the west. Construction activities require the use of noise-generating equipment, such as a bulldozer, excavator, wheel loader, two dump trucks, tracked skid steer, compactor, a ½ horsepower electric pump for dust control, a transport barge, and a ferry barge. Pile driving is not part of the project. Construction-related material haul trips would raise ambient noise levels; however, the number of haul trips made would be relatively minor and occur over six months total. Construction activities associated with development of the project would result in a temporary increase in ambient noise levels in the vicinity of the site. The increase in noise could result in temporary annoyance to residents near the construction site. However, proposed construction activities would occur only during the hours permitted in accordance with the County's Noise Regulations.

Noise levels typically associated with outdoor construction noise levels are listed in Tables 13 and 14. Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance from the source, depending on the topography of the area and environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured, etc.). Where topography or physical structures obstruct a line of sight from the noise-producing equipment to the receptor location, noise levels would be further reduced (generally by at least 5 dBA).



**Table 13. Typical construction noise levels**

Construction Phase	Noise Level (dBA Leq)
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

Notes: Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

dBA = A-weighted decibel; Leq = equivalent sound level

Source: U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971

As shown in Tables 13 and 14, the estimated construction noise levels at a distance of 50 feet could reach 89 dBA Leq if there are no intervening barriers. At the closest location, the proposed construction activities could be within 150 feet of the nearest home south of the proposed project. Noise levels could reach 80 dBA and would likely exceed the acceptable noise levels identified in the Countywide Plan. Therefore, construction noise would be considered a potentially significant impact.

**Mitigation Measure XII-1:** In order to reduce construction and ongoing maintenance noise and to comply with Marin County noise ordinance to a less-than-significant level, the following measures shall be implemented:

- Generators or other stationary construction and maintenance equipment, that could affect residences if utilized, shall be located as far as practical from sensitive noise receptors and shielded to further reduce noise levels.
- Construction and maintenance equipment that is equipped, operated, and maintained with manufacturer recommended mufflers or the equivalent shall be utilized.
- Construction activities and post-construction maintenance (such as irrigation, vegetation management) shall be limited from 8 a.m. to 5 p.m. Monday through Friday and 9 a.m. and 5 p.m. Saturday. Loud-noise-generating construction related equipment (backhoes, generators, jackhammers) shall be limited from 8 a.m. to 5 p.m. Monday through Friday only.

Implementation of Mitigation Measure XII-1 would substantially reduce the potential construction noise impacts. Noise monitoring has shown that these standard noise reduction mitigation measures typically reduce noise to an acceptable level. Marin County will ensure compliance with the County Noise Ordinance at the project site, and potential impacts would to a level of less than significant.

**Table 14. Typical noise levels from construction equipment**

<b>Construction Equipment</b>	<b>Noise Level (dBA Leq at 50 feet)</b>
Dump Truck	88
Portable Air Compressor	81
Concrete Mixer (Truck)	85
Scraper	88
Jackhammer	88
Dozer	87
Paver	89
Generator	76
Piledriver	101
Backhoe	85

Notes: dBA = A-weighted decibel; Leq = equivalent sound level

Source: Cunniff, Environmental Noise Pollution, 1977

***Impact of Operations of Proposed Project***

**Less than significant.** Operation-related noise associated with the proposed project would be generated primarily from saline and freshwater irrigation activities and periodic maintenance/monitoring inspections of the Island. Saline and freshwater irrigation would involve the use of a gas or propane generator to run a sprinkler array, which could exceed acceptable noise levels. As with construction activities, implementation of Mitigation Measure XII-1 would reduce these potential noise impacts to a less than significant level. Periodic maintenance and monitoring would involve access of the site by motor vehicle and then small boat trips. The volume of motor vehicle and boat traffic would be minor and would have a less-than-significant impact on operation-related noise. Enhancements to the Island could attract different species to the site. While, the change in species composition is unpredictable, wildlife noise levels on the Island would likely be similar to current noise levels of 67 dBA from birds. With attenuation, this currently results in a noise level of 58 dBA at the nearest sensitive receptor 150 feet south of the Island, well within the normally acceptable range for residential areas (see Table 11).

**b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?**

**Less than significant.** Depending on the construction equipment used, groundborne vibrations could be perceptible within 30 to 100 feet of a source. The nearest sensitive receptor would be approximately 150 feet south of the project site. Therefore, this would be a less than significant impact.

**c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

**Less than significant.** See discussion under a) above. The project would have a less-than-significant impact on operation-related noise.

- d) **A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

**Less than significant with mitigation.** As discussed above in a), the project would result in an incremental increase in temporary or periodic noise levels in the area due to the short-term construction activities for the project. Implementation of Mitigation Measure XII-1, above, would reduce this impact to less than significant.

**Mitigation Measure:** See Mitigation Measure XII-1 in the Noise Section Above.

- e) **For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

**No impact.** The project site is not located within two miles of a public airport land use plan area. The project is not located within an airport land plan or within two miles of an airport. The nearest public airport, Gness Field Airport, is approximately 17 miles northwest of the project site. Noise from the airport does not have any effect on the project. No impact would occur.

- f) **For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?**

**No impact.** The project site is not located within the vicinity of a private airstrip. The project would not increase onsite exposure to aircraft noise and thus, no impact would occur.

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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### **XIII. POPULATION AND HOUSING --**

Would the project:

- a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

X

- b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

X

- c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

X

#### **Background:**

Aramburu Island is undeveloped and contains no residences or other habitable structures.

*Discussion of Impacts:*

- a) **Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

**No Impact.** As noted in the Project Description, the proposed project would not involve construction of any new homes, or any growth inducement.

- b) **Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?**

**No impact.** No housing exists on the Island and none would be displaced with project implementation.

- c) **Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?**

**No impact.** See Item (b), above. The proposed project would not displace any people or housing.

<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
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#### **XIV. PUBLIC SERVICES**

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire protection?	X
Police protection?	X
Schools?	X
Parks?	X
Other public facilities?	X
Vector Control Services	X

### *Background:*

The site currently requires minimal public services. It is served by the Southern Marin Fire Protection District and the Marin County Sheriff's Department. The Marin-Sonoma Mosquito Abatement District is responsible for vector control on the Island.

### *Discussion of Impacts:*

- a) **Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:**
  - i) **Fire protection**
  - ii) **Police protection**
  - iii) **Schools**
  - iv) **Parks**
  - v) **Other public services – Vector Control**

#### *Fire and Police Protection, Schools, Parks*

**No Impact.** The proposed project would reduce the weedy vegetation on the site and, therefore, reduce fire hazards compared with existing conditions. The proposed project would have no impact on the need for police services. The project site would remain under the ownership and management of the Marin County Parks and Open Space Department. The project does not include new housing or commercial uses and would not result in demand for schools or other public services.

#### *Other Public Services – Vector Control*

**Less Than Significant Impact.** The proposed project would increase the spatial extent of tidal wetlands by 1.64 acres to a total of 7.75 acres and would increase seasonal wetlands by 4.42 acres to a total of 11.78 acres. These increases in wetland extent have the potential to increase mosquito production. The project design has included measures intended specifically to minimize this effect. Tidal wetlands would be graded to drain and would be vegetated with pickleweed and thus should not provide the duration of standing water necessary to support mosquito production. Seasonal wetlands are intended to have minimum vegetation cover so as to promote shallow ponding for bird roosting and foraging and thus their edges are the main areas where additional mosquito breeding may be of concern. Where seasonal wetland vegetation would be reestablishment, the plants selected would be low-growing plants that maximize the ability of ambient winds to interfere with the breeding cycle of mosquitoes. Even with all these measures, we do anticipate that the Marin-Sonoma Mosquito Abatement District will need to continue its existing monitoring and treatment activities on Aramburu Island. Because of the targeted low-growing vegetation, it is anticipated that treatment methods can continue as currently used – larvicides that are easy to apply and effective. Need for adulticide treatment or other mosquito management techniques is not expected beyond any currently implemented on the Island.

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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## XV. RECREATION --

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

X

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

X

### *Background:*

Aramburu Island is owned by the Marin County Department Parks and Open Space and receives periodic general maintenance (debris and trash removal). There is currently very limited public use of the Island. The project site would be stewarded by the Richardson Bay Audubon Center and Sanctuary as bird and wildlife habitat.

The Strawberry Channel, constructed on the 1950s, provides navigational access to Richardson Bay to residents in Strawberry and to the Cove Apartments in Tiburon. Maintenance of the Channel is funded by the Strawberry Recreation District, Zone IV. The project would also not interfere with maintenance dredging of adjacent navigation routes.

### *Discussion of Impacts:*

- a) **Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

**No Impact.** The proposed shoreline protection and enhancement plan would have no effect on existing parks. Access and use would not change from current conditions. Project activities are limited to transporting materials to the Island and to proposed physical changes on the Island and near shore environment, as described in the Project Description. These actions would not result in substantial physical deterioration to Strawberry Channel itself nor would they create any significant adverse impacts for recreational boating use of the Channel. The project would not result in restricted dredging or use of Strawberry Channel.

- b) **Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

**No Impact.** Refer to response to Item XV a), above. The project is not designed to alter public use

of the Island. However, BCDC has indicated that some public access additions, such as large, flat rocks for boater resting and enhanced signage describing the sensitive habitat and wildlife nature of the Island should be included in the project. The applicant has incorporated these features into the project.

#### **XVI. TRANSPORTATION/TRAFFIC --**

Would the project:

**Potentially  
Significant  
Impact**

**Less Than  
Significant with  
Mitigation**

**Less Than  
Significant  
Impact**

**No Impact**

a) Exceed the capacity of the existing circulation system, based on applicable measures of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

X

b) Conflict with an applicable congestion management program, including but not limited to, level of service standards and travel demand measures and other standards established by the county congestion management agency for designated roads or highways?

X

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

X

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

X

e) Result in inadequate emergency access?

X

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

X

#### ***Background:***

Access to the project area by land is via US 101 to State Route 131 (Tiburon Boulevard). Access to Aramburu Island is limited to boats. There is no roadway access to the Island. There are no airports or rail lines near the site. Richardson Bay is used extensively for recreational boating.

*Discussion of Impacts:*

- a) **Exceed the capacity of the existing circulation system, based on applicable measures of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?**

**No Impact.** The proposed project would generate minimal amounts of traffic (fewer than 5 trips per day) during construction. Workers would arrive and park at the Audubon Sanctuary's facilities on Greenwood Beach Road, from which they would be transported by boat to the site. Therefore would have no effect on circulation, roadway capacities, intersection operations, bicycle paths, or mass transit.

- b) **Conflict with an applicable congestion management program, including but not limited to, level of service standards and travel demand measures and other standards established by the county congestion management agency for designated roads or highways?**

**No Impact.** See response to Item XVI a), above.

- c) **Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?**

**No impact.** The proposed project would not result in increased air travel or otherwise affect air travel.

- d) **Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

**No impact.** No new roads or new/changes land uses are proposed as part of this project.

- e) **Result in inadequate emergency access?**

**No Impact.** The proposed project would not affect access along local streets.

- f) **Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?**

**No impact.** The proposed project would not interfere with the provision of alternative transportation services, and would therefore not conflict with any associated alternative transportation policies.



Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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## XVII. UTILITIES AND SERVICE

### SYSTEMS - Would the project:

- a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?
- b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?
- c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?
- d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?
- e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?
- f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?
- g) Comply with federal, state, and local statutes and regulations related to solid waste?

X

X

X

X

X

X

X

### *Background:*

Aramburu Island is undeveloped and has no public services or utilities.

*Discussion of Impacts:*

**a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?**

**No Impact.** The proposed project is a habitat enhancement and shoreline protection project, and, as such, would result in no demand for wastewater treatment. Portable toilets would be placed on the site to serve project workers.

**b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

**Less than Significant Impact.** The proposed project is a habitat enhancement and shoreline protection project, and, as such, would result in no demand for, or construction of, water or wastewater treatment facilities. If irrigation were required, water would be provided via tanks refilled by Audubon Sanctuary staff and transported to the Island by boat. Saline irrigation would be via water pumped from the surrounding Bay waters.

If irrigation of native plants is required following planting, freshwater would be provided by one of two methods: (1) a tank or bladder system on the Island that would periodically be filled via a hose from a fire hydrant on the mainland, or (2) via tanks refilled by Audubon Sanctuary staff and transported to the Island by boat. Alternatively, if only small-scale watering (scattered individual plants) is required, then use of time-released gel packs may be employed that provide water to seedlings without the need of a water pump. An example of such a small-scale water system is DriWater® time-release water.

**c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

**No Impact.** The proposed project would include an erosion control plan. No new stormwater runoff would be generated by the project and no stormwater facilities exist or are proposed.

**d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?**

**Less than Significant Impact.** No expanded entitlements would be needed for the project. Saline irrigation water will be pumped directly from the Bay and freshwater irrigation needs would be minor.

**e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

**No Impact.** See response to Item XVII a), above.

**f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?**

**Less than Significant Impact.** Project construction would generate small amounts of solid wastes. These would be transported by boat to existing waste receptacles at the Richardson Bay Audubon facility. Impact to landfills would be minimal. In addition, if dredged materials are available for use as fill at the project site, than the overall regional need for disposal of those materials at disposal sites would be reduced.

**g) Comply with federal, state, and local statutes and regulations related to solid waste?**

**No Impact.** All solid wastes would be disposed of at approved facilities.

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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**XVIII. MANDATORY FINDINGS OF SIGNIFICANCE --**

- |  |   |
|--|---|
| a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | X |
| b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?   | X |
| c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?   | X |

*Discussion of Impacts:*

- a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

**Less than significant impact with mitigation incorporation.** As noted throughout the Checklist above, the project area contains some sensitive biological resources that could be affected by the proposed project. All of these would be reduced to a less-than-significant level with the implementation of mitigation measures identified in this Initial Study. With mitigation identified in this document, and incorporated into the project, the proposed project would not significantly affect local waterways or cause a fish or wildlife species to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

- b) **Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?**

**Less than significant impact.** The project is located within the urbanized San Francisco Bay. Most nearby projects in Richardson Bay with in-water work involve navigational dredging. The Strawberry Recreation District IV will be dredging the neighboring deep-water navigational channel that runs along the west side of the Island sometime in the next two to three years (Tirrell Graham, personal communication). Several small marinas in Sausalito also require periodic maintenance dredging. The only Sausalito marina that is proposed for dredging during the summer of 2010 is Pelican Harbor.

A review of the Marin County Community Development Agency's current projects list shows no pending applications for development in the immediate project area (Marin County, website). Ongoing home construction and remodeling projects, however, are occurring along the Strawberry shoreline. These minor projects could have some degree of temporary impact on biological and water resources through habitat disturbance construction noise, and increased suspended sediment concentrations. The Aramburu Island Enhancement project would involve short-term in-water work within a small area. Therefore impacts from the Aramburu project are unlikely to overlap in any substantive way those of other nearby projects. The project's contribution to cumulative impacts would be minimal.

The cumulative impact of the proposed Aramburu Island enhancement project and past, present, and likely future projects would be less than significant.

- c) **Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?**

**No impact.** As noted above in the Environmental Review Checklist, the proposed project would not have any significant environmental effects that could not be mitigated to less than significant levels. All mitigation measures identified in the Initial Study are incorporated into the project and will be implemented by the applicant. Mitigation Monitoring and Reporting Plan will be developed prior to project implementations.

## E. REFERENCES, PERSONS CONTACTED, AND REPORT PREPARERS

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## **Appendix A: Air Quality Calculations**

Refer to the electronic file containing Air Quality Calculations (pdf file name: ARAMBUAir Appendix revised). The document consists of 23 pages of Urbemis air quality model results as well as marine vessel and greenhouse gas calculations.



## **Appendix B: Special Status Wildlife Species Documented in the Project Vicinity**

## Special Status Wildlife Species Documented in the Project Vicinity

Abbreviations used in this table are: 1) for Federal status: FE: Federal Endangered; FT: Federal Threatened; BCC: Bird of Conservation Concern and 2) for State status: CE: California Endangered; CT: California Threatened; CFP: California Fully Protected; and CSC: California Species of Concern.

**Table - Appendix B: Special Status Wildlife Species Documented in the Project Vicinity**

Common and Scientific Name	Status <sup>1</sup>		Habitat Requirements	Potential On-Site Occurrence <sup>2</sup>
	Federal	State		
<i>Amphibians and Reptiles</i>				
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	FT	CT	Valley-foothill hardwood habitat of the coast ranges.	<i>Excluded.</i> Outside of historic range. No adjacent mainland populations in range; no terrestrial dispersal corridors from mainland to island; inadequate prey base on island.
California red-legged frog <i>Rana draytonii</i>	FT	CSC	Freshwater sources such as ponds, lakes, reservoirs, streams and adjacent riparian woodlands.	<i>Excluded.</i> No terrestrial dispersal corridors from mainland to island; no known adjacent mainland habitat or populations in range; no breeding or foraging habitat on island; salinity of tidal channels are dispersal barrier
California tiger salamander <i>Ambystoma californiense</i>	FT	CSC	Need deep vernal pools or other seasonal water sources for breeding, underground refuges, especially ground squirrel burrows (estivation habitat)	<i>Excluded.</i> no terrestrial dispersal corridors from mainland to island; no known adjacent mainland populations in range, no breeding or foraging habitat on island; salinity of tidal channels are dispersal barrier
Foothill yellow-legged frog <i>Rana boylei</i>	--	CSC	Partly shaded, shallow streams & riffles with rocky substrate in a variety of habitats.	<i>Excluded.</i> No terrestrial dispersal corridors from mainland to island, no habitat (gravel-bed freshwater streams) in adjacent mainland no breeding or foraging habitat on island, salinity of tidal channels are dispersal barrier
Northwestern pond turtle <i>Actinemys (Clemmys) marmorata marmorata</i>	--	CSC	Associated with permanent or nearly permanent water in a wide variety of habitats.	<i>Excluded.</i> No terrestrial dispersal corridors from mainland to island; no known adjacent mainland habitat or populations in range; no perennial fresh-brackish breeding or foraging habitat on island.
<i>Invertebrates</i>				
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT	--	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay.	<i>Excluded.</i> No historic or modern records in Marin Co. No serpentine soil or native grassland larval host or nectar plant species present on artificial fill island (sandstone-derived

				soils, weed-dominated). suitable micro-habitat conditions not present.
Callippe silverspot butterfly <i>Speyeria callippe callippe</i>	FE	--	Restricted to the northern coastal scrub of the San Francisco peninsula. Hostplant is <i>Viola pedunculata</i> .	<i>Excluded</i> . Modern known populations are restricted to San Bruno Mt and one Alameda Co. locality. No historic Marin records. No coastal scrub larval host or nectar plant species present on sandstone-derived, weed-dominated artificial fill island.
Mission blue butterfly <i>Plebejus (Icaricia) icarioides missionensis</i>	FE	--	Inhabits grasslands of the San Francisco peninsula and portions of Marin Headlands. Three larval host plants: <i>Lupinus albifrons</i> , <i>L. variicolor</i> , and <i>L. formosus</i> , of which <i>L. albifrons</i> is favored.	<i>Not expected</i> : Not observed north of Marin Headlands (Fort Baker). No coastal scrub or grassland present, no larval host or nectar plant species present.
San Bruno elfin butterfly <i>Callophrys (Incisalia) mossii bayensis</i>	FE	--	Coastal, mountainous areas with grassy groundcover, mainly in the vicinity of San Bruno Mountain, San Mateo County	<i>Excluded</i> . Narrow endemic, San Bruno Mt, San Mateo Co.; no Marin records.
<b>Fish</b>				
Chinook salmon - Sacramento River winter-run ESU <i>Oncorhynchus tshawytscha</i>	FE	SE	Migrate through the estuary to spawn in clean cold streams with gravel bars and ample forest cover in Sacramento and San Joaquin River tributaries	<i>Potential (low probability)</i> : Individuals could be present as seasonal transients during migrations to and from spawning grounds in Sacramento River tributaries.
Chinook salmon - Sacramento River spring-run ESU <i>Oncorhynchus tshawytscha</i>	FT	ST	Migrate through the estuary to spawn in clean cold streams with gravel bars and ample forest cover in Sacramento and San Joaquin River tributaries	<i>Potential (low probability)</i> : Individuals could be present as seasonal transients during migrations to and from spawning grounds in Sacramento River tributaries.
Coho salmon – central CA coast ESU <i>Oncorhynchus kisutch</i>	FE	CE	Cold streams with gravel bars, persistent channel pools, ample riparian woodland or forest cover. Federal listing: populations between Punta Gorda & San Lorenzo River. State listing: populations south of Punta Gorda.	<i>Potential (low probability)</i> : Project is within species range. However, no modern coho-bearing streams in San Francisco Bay; all known modern populations inhabit cool, forested watersheds draining to the Pacific Ocean.
Delta smelt <i>Hypomesus transpacificus</i>	FT	CT	Sacramento-San Joaquin delta, seasonally in Suisun Bay, Carquinez Strait & San Pablo Bay. Seldom found at Salinities >10ppt. Most often at salinities <2ppt.	<i>Not expected</i> : Near extinction (2009). Occurs in San Francisco Bay incidentally during wet years with low salinity; core population in summer ranges from Suisun Bay to Delta.
Green sturgeon – southern DPS <i>Acipenser medirostris</i>	FT	--	Migrate through the estuary to spawn in the Sacramento River and its tributaries. Can spawn on a variety of substrates, but prefer cobbles beds.	<i>Potential (low probability)</i> : Individuals could be present as seasonal transients during migrations to and from spawning grounds in Sacramento River tributaries.
Sacramento perch <i>Archoplites interruptus</i>	--	CSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of physio-chemical water conditioning.	<i>Excluded</i> . Not present in saline tidal San Francisco Bay waters; SF Bay population limited to off-channel ponds, Alameda Creek.
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	--	--	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay & Associated marshes.	<i>Not expected</i> : Occurs in San Francisco Bay incidentally during wet years; core

			Slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning & foraging for young.	population in summer ranges from Suisun Bay to Delta.
Steelhead-Central California Coast ESU <i>Oncorhynchus mykiss</i>	FT	--	Spawn in streams with clean, cool, swift water over gravel beds. Juveniles require persistent pools for summer refugia	<i>Potential:</i> Arroyo Corte Madera del Presidio, which drains into Richardson Bay, is considered critical spawning habitat for steelhead. Individuals could be present in project area during migrations to/from this creek.
Tidewater goby <i>Eucyclogobius newberryi</i>	FE	--	Brackish aquatic habitats along the California coast; found in shallow nontidal or barrier-choked tidal lagoons and stream mouths.	<i>Excluded:</i> Brackish lagoon habitat absent; no modern San Francisco Bay records are reported. Nearest known source population is Rodeo Lagoon, Marin Headlands, outside Golden Gate.
<b>Birds</b>				
Alameda song sparrow <i>Melospiza melodia pusillula</i>	--	CSC	Resident of salt marshes bordering south arm of San Francisco Bay.	<i>Not expected:</i> project area outside known range of subspecies; no records in Richardson Bay.
Bank swallow <i>Riparia riparia</i>	--	CT	Nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	<i>Not expected:</i> Suitable habitat (unvegetated bluff, unconsolidated substrate) conditions not present.
Burrowing owl <i>Athene cucularia</i>	--	CSC	Open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation. Subterranean nester, depended upon burrowing mammals, most notably, the California ground squirrel.	<i>Not expected:</i> Suitable habitat conditions not present; no prey adequate prey base on artificial island.
California black rail <i>Laterallus jamaicensis coturniculus</i>	--	CT	Salt marshes bordering larger bays; pickleweed typically present.	<i>Not expected:</i> No suitable habitat (brackish tidal marsh with channels, high tide cover) present, insufficient tidal marsh habitat patch size for minimal territory.
California clapper rail <i>Rallus longirostris obsoletus</i>	FE	CE	Salt-water & brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Salt-water & brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay.	<i>Potential (low probability):</i> Present in southern Richardson Bay where sufficient habitat patch sizes and structure exist. Insufficient salt marsh habitat for minimal territory size present on site. Individuals (dispersing juveniles, vagrants) observed in Richardson Bay during post-breeding period
California least tern <i>Sternula antillarum browni</i>	FE	CE	Nests along the coast from SF Bay south to Northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, land fills, or paved areas.	<i>Potential (low probability):</i> Suitable nearshore foraging habitat exists adjacent to site, but site is distant from known breeding, foraging, and roost sites; minimal roost habitat (gravel beach) present; potential foraging, incidental occurrences possible; no records of occurrence
Double-crested cormorant <i>Phalacrocorax auritus</i>	--	WL	Colonial nester on coastal cliffs, offshore islands, & along lake margins in the interior	<i>Observed present</i> and expected adjacent to site, in subtidal

			of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	channel: foraging habitat present; common seasonally, variable with prey abundance.
Northern harrier <i>Circus cyaneus</i>	--	CSC	Coastal salt- and fresh-water marshes. Nests and forages in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge.	<i>Potential (low probability):</i> Forages in San Francisco Bay tidal marshes and adjacent ruderal grasslands. Small island area and minimal prey base (small mammals) suggests at most incidental occurrence.
Saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	--	CSC	Fresh and salt water marshes; requires thick continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	<i>Not expected:</i> Small salt marsh areas on island lack channel development and gumplant-lined banks; no riparian woodland present. Incidental occurrence possible.
San Pablo song sparrow <i>Melospiza melodia samuelis</i>	--	CSC	Resident of salt marshes along the north side of San Francisco and San Pablo Bays. Inhabits tidal sloughs in the <i>Salicornia</i> marshes; nests in <i>Grindelia</i> bordering slough channels.	<i>Potential:</i> Site is within range of subspecies; some suitable foraging and nesting habitat present. Subspecies of song sparrows in vicinity are uncertain
Short-eared owl <i>Asio flammeus</i>	--	CSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/Tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	<i>Not expected:</i> Suitable habitat not present. Small island area and minimal prey base (small mammals).
White-tailed kite <i>Elanus leucurus</i>	--	CFP	Usually nests in large bushes or trees, often in isolated stand, surrounded by open grasslands, meadows, or marshes for foraging.	<i>Potential:</i> Occasionally observed foraging in Richardson Bay.
Yellow-headed blackbird <i>Xanthocephalus xanthocephalus</i>	--	CSC	Nests in freshwater emergent wetlands with dense vegetation & deep water. Often along borders of lakes or ponds.	<i>Not expected:</i> Outside of range, no freshwater marsh habitat present.
<b>Mammals</b>				
American badger <i>Taxidea taxus</i>	--	CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Needs sufficient food & open, uncultivated ground.	<i>Excluded.</i> No terrestrial dispersal corridors from mainland to island; no known adjacent mainland populations in range, no prey base on island; tidal channels are significant dispersal barrier
Pallid bat <i>Antrozous pallidus</i>	--	CSC	Deserts, grasslands, shrublands, woodlands & forests. Most common in open, dry habitats with rocky areas for roosting.	<i>Not expected:</i> suitable habitat (cavities, caves) conditions not present on site.
Point Reyes jumping mouse <i>Zapus trinotatus orarius</i>	--	CSC	Primarily in bunch grass marshes on the uplands of Point Reyes. Also present in coastal scrub, grassland, and meadows.	<i>Not expected:</i> Outside known maritime geographic range; no terrestrial dispersal corridors from mainland to island; no known adjacent mainland populations in range, no prey base on island; tidal channels are significant dispersal barrier
Salt-marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE	CE	Only in the saline emergent wetlands of San Francisco Bay and its tributaries.	<i>Not expected:</i> No modern records in Richardson Bay; no dispersal corridors from potential or known habitats, population sources; open bay is significant dispersal barrier

Salt-marsh wandering shrew <i>Sorex vagrans halicoetes</i>	--	CSC	Salt marshes of the south arm of San Francisco Bay. Medium high marsh 6-8ft. above sea level where abundant driftwood is scattered among Salicornia.	<i>Not expected:</i> No modern records in Richardson Bay; no dispersal corridors from potential habitats or population sources to the island; open bay is significant dispersal barrier.
San Pablo vole <i>Microtus californicus sanpabloensis</i>	--	CSC	Saltmarshes of San Pablo Creek, on the South Shore of San Pablo Bay.	<i>Not expected:</i> Outside known geographic range; no terrestrial dispersal corridors from mainland to island; no known adjacent mainland populations in range, open bay is significant dispersal barrier
Southern sea otter <i>Enhydra lutris nereis</i>	FT	CFP	Nearshore marine environments from about Ano Nuevo, San Mateo County south to Point Sal, Santa Barbara County; needs canopies of giant and bull kelp for rafting and feeding. Prefers rocky substrates with abundant invertebrates.	<i>Not expected:</i> Incidental occurrences in San Francisco Bay; no suitable foraging habitat present around island.
Suisun shrew <i>Sorex ornatus sinuosus</i>	--	CSC	Tidal marshes of the northern shores of San Pablo and Suisun Bays. Requires dense low-lying cover and driftwood and other litter above the mean high tide line for nesting and foraging.	<i>Not expected:</i> Outside known geographic range; no dispersal corridors from potential population sources to island; open bay is significant dispersal barrier;
Western red bat <i>Lasiurus blossevillii</i>	--	CSC	Roosts primarily in trees 2-40 ft above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	<i>Not expected:</i> uncommon within wide range; suitable habitat (foraging, roosting) is present on island and vicinity

1 Notes:

Federal

FE: Federal Endangered

FT: Federal Threatened

BCC: Bird of Conservation Concern

State

CE: California Endangered

CT: California Threatened

CFP: California Fully Protected

CSC: California Species of Concern

2 Grey shading indicates species with the potential to occur at the project site.