



California Regional Water Quality Control Board

San Francisco Bay Region



Linda S. Adams
Acting Secretary for
Environmental Protection

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Edmund G. Brown, Jr.
Governor

January 13, 2011
Site Number: 02-21-C0798 (mll)
CIWQS Place No. 756589

Marin County Parks and Open Space
Attn: Linda Dahl
3501 Civic Center Drive, Room 260
San Rafael, CA 94903
ldahl@co.marin.ca.us

**SUBJECT: CONDITIONAL WATER QUALITY CERTIFICATION – ARAMBURU ISLAND
SHORELINE PROTECTION AND ECOLOGICAL ENHANCEMENT PROJECT, RICHARDSON BAY,
MARIN COUNTY.**

Dear Ms. Dahl:

We have reviewed the water quality certification application (Application) submitted by Lux Environmental Consulting, LLC, on behalf of Marin County Parks and Open Space (Applicant), for the proposed Aramburu Island Shoreline Protection and Ecological Enhancement Project (Project) located in the northwest region of Richardson Bay on the east side of Strawberry Point, Marin County. We have determined that the Project, as proposed, will not violate State water quality standards and accordingly issue conditional Clean Water Act Section 401 water quality certification (33 U.S.C. Section 1341) for the Project. You have also applied to the U.S. Army Corps of Engineers (Corps) for permits pursuant to Section 404 of the Clean Water Act (33 U.S.C. Section 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403).

Project Background: Aramburu Island is an uninhabited wildlife refuge located adjacent to the 910 acre Richardson Bay Audubon Sanctuary. The Island, originally part of Strawberry Spit, was constructed in the late 1950s and early 1960s by the deposition of navigational dredge spoils and upland fill. As partial fulfillment of the San Francisco Bay Conservation and Development Commission's permit conditions for the development of homes on a portion of Strawberry Spit in 1983, approximately 36 acres of island and open waters were deeded to the Applicant to be managed as wildlife habitat. The permit conditions, implemented in 1987, resulted in the creation of Aramburu Island. The Marin County Board of Supervisors dedicated the Island as an open space and wildlife preserve in 1997.

Most of the habitats in the Project area are currently in a degraded state, providing limited functional value and ecological benefit to native plants, wildlife and the larger ecosystem associated with Richardson Bay. Citing the degraded habitat, chronic shoreline erosion, and the importance of the Island as a wildlife refuge, the State Water Board released \$849,103 from the State's Cleanup and Abatement Account to assist in implementation of the Project. The funds were made available as part of a settlement agreement stemming from the January 2008 Sewerage Agency of Southern Marin

(SASM) sewage spill into Pickleweed Inlet, a tributary of Richardson Bay. Additional funding will be made available through the National Marine Fisheries Service Restoration Center. In August 2009, Marin County and the Richardson Bay Audubon Center and Sanctuary (Audubon) entered into an MOA to allow for implementation of the proposed Project.

Project Description: The proposed Project will contribute to several of the regional restoration goals outlined in the *Baylands Ecosystem Habitat Goals* report for Richardson Bay and the Strawberry Spit area. The Project site consists of an island terrace (approximately 17 acres) and the surrounding intertidal and subtidal bay habitats (approximately 19 acres). The Project involves habitat restoration and shoreline protection activities within the 36-acre site. Shoreline protection and enhancement activities will take place on the east side of the Island and will involve the following activities: 1) creation of sand, gravel, and shell beach forms to provide foraging habitat for shorebirds and waterbirds; 2) construction of gravel micro-groins to restrict beach erosion and provide backshore habitat for oyster mounds; 3) installation of large woody debris to increase shoreline complexity; 4) placement of rock to promote oyster colonization; and 5) excavation of a channel to improve seal access to the Island. Additional restoration and creation activities will take place on the island terrace to create a matrix of typical Bay habitats including high tide marsh, seasonal wetlands, and terrestrial grasslands. Construction of these habitats will involve grading, seeding with native vegetation, salt and fresh water irrigation, and substrate enhancement.

The Project will result in a net increase of approximately 5.15 acres of waters of the U.S. Detailed information is provided in the attached Project Information Checklist. Water Board staff finds that the Applicant has undertaken and planned appropriate measures to minimize and then to mitigate impacts on the affected water bodies, as required by the Basin Plan.

Wetland Tracker System: Regional, State, and national studies have determined that tracking of mitigation/restoration projects must be improved to better assess the performance of these projects following monitoring periods that last several years. In addition, to effectively carry out the State's No Net Loss Policy for wetlands, the State needs to closely track both wetland losses and mitigation/restoration project success. Therefore, as specified under Condition No. 4 of this certification, we require that the Applicant use the California Wetlands Form to provide Project information related to impacts and mitigation/restoration measures. An electronic copy of the form and instructions can be downloaded at: <http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml>. Project information concerning impacts and mitigation/restoration will be made available at the web link: <http://www.californiawetlands.net/tracker/>.

Certification: I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law. This discharge is also regulated under State Water Board Order No. 2003 - 0017 - DWQ, "*General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification*" which requires compliance with all conditions of this Water Quality Certification. The following conditions are associated with this certification:

Work Period

1. In-water work (e.g., seal access channel) shall be completed between June 1 and November 30 to avoid impacts to aquatic life movement.
2. Shoreline work shall be performed between June 1 and November 30 unless an extension of time is granted by the Water Board. All shoreline work shall be conducted at low tide when no water is present in the work area.
3. Island terrace enhancement activities involving earthwork and grading shall be performed between June 1 and October 31 unless an extension of time is granted by the Water Board. Vegetation planting and management is not restricted to this work window.

Monitoring, Reporting, and Adaptive Management

4. The Applicant is required to use the California Wetlands Form to provide project information describing impacts and mitigation/restoration measures within three months from the date of this certification. The completed California Wetlands Form shall be submitted electronically to habitatdata@waterboards.ca.gov or shall be submitted as a hard copy to both: 1) the Water Board to the attention of Wetland Tracker; and 2) the San Francisco Estuary Institute, 7770 Pardee Lane, Oakland, CA 94621-1424, to the attention of Mike May. The California Wetlands Form and instructions may be found at the Water Board website: <http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml>.
5. To help control the spread of non-native *Spartina* cordgrass to the maximum extent practicable and as appropriate to this site, the Applicant shall implement the *Best Practices for Tidal Marsh Restoration and Enhancement in the San Francisco Estuary*. The Applicant shall monitor for *Spartina* during the required monitoring period and notify the Invasive *Spartina* Project (ISP) if *Spartina* is found at the Project site. The Best Practices document and contact information for the ISP may be found at: <http://www.spartina.org/>.
6. Monitoring, reporting, and corrective action measures shall occur as specified in an approved *Monitoring, Reporting and Corrective Action Plan* (Plan). A final Plan shall be submitted for review and approval by the Water Board no later than three months from the date of this water quality certification. The Plan shall include a monitoring and reporting schedule, specific monitoring protocols for the various biological and physical surveys, and criteria for initiating corrective action measures. Biological and geomorphic monitoring will be implemented to assess the long-term impacts of the Project. At a minimum, monitoring will include time series photographs taken before and after construction from fixed observation points, shoreline topographic cross sections, vegetation surveys, bird surveys, infaunal community sampling, oyster monitoring, and fish monitoring. If at anytime it appears that Project goals will not be met and corrective action measures are required, corrective action measures will be developed by the Applicant and submitted to the Water Board for review and approval prior to implementation.



Construction and Post-construction Management Measures

7. The Applicant shall implement appropriate construction management measures as detailed in the application materials.
8. During construction of geomorphic features, the Applicant shall retain the design consultant or other qualified party to monitor and inspect the installation of geomorphic features.

General Conditions

9. All work shall be implemented according to the plans and descriptions submitted as part of the Application and in addendum documents submitted to the Water Board.
10. All standard and special conditions of the Corps' permit authorization shall be fully implemented.
11. This certification action does not allow for the take, or incidental take of any State or federal listed threatened or endangered listed species. The Applicant is required, as prescribed in the State or federal endangered species acts, to consult with the appropriate agency prior to commencement of the Project. Any unauthorized take of such listed species may result in prosecution.
12. A copy of this document must be provided to the contractor and all subcontractors and must be in their possession at the work site.

Standard Conditions

13. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code (CWC) and Section 3867 of Title 23 of the California Code of Regulations (23 CCR).
14. This certification action is not intended to and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to FERC license unless the pertinent certification application was filed pursuant to 23 CCR Subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
15. Certification is conditioned upon total payment of the full fee required in the State regulations (23 CCR Section 3833) and owed by the applicants. The full fee of \$640.00 has been received.

This certification action applies to the Project as proposed in the application materials and approved by the Water Board Executive Officer. Please be advised that failure to implement the Project as proposed is a violation of water quality certification. Any violation of water quality certification is a violation of State law and is subject to administrative civil liability pursuant to CWC Section 13350. Also, any requirement for technical reports made as a condition of this certification is a formal requirement for a technical report pursuant to Section 13267 of the California Water Code. Failure to meet any condition of a certification may subject the Applicant to civil liability imposed by the Water Board to a maximum of \$5,000 per day of violation or \$10 for each gallon of waste discharged in violation of this certification.



Should new information come to our attention that indicates a water quality problem with this Project, the Water Board may issue Waste Discharge Requirements pursuant to 23 CCR Section 3857. If you have any questions, please contact Marla Lafer at (510) 622-2348 or email at mlafer@waterbords.ca.gov.

Sincerely,

Bruce H. Wolfe
Executive Officer

Electronic cc (with Attachment):

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SFBWRWQCB
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Project Information Checklist

Project Name	Aramburu Island Shoreline Protection and Ecological Enhancement Project
Applicant	Marin County Parks and Open Space (Parks Department) 3501 Civic Center Drive, Room 260 San Rafael, CA 94903 Contact – Elise Holland, EHolland@co.marin.ca.us , 415. 499.6387
Applicant Representatives	Administration/Implementation: Richardson Bay Audubon Center and Sanctuary (Audubon), Brooke Langston, Kathi Borgmann Permits: April Lux Environmental Consulting, LLC Technical: WWR, Stuart Siegel CEQA: Sandia Potter, Richard Grassati
Application	August 2010
Other Documents & Studies	• <i>Aramburu Island Restoration Project Wetland Delineation</i>, prepared by Wetlands & Water Resources, January 2010. Verified by USACE in November 2009. • <i>Assessment of Potential Effects of Aramburu Island Project on Federally-listed Species</i>, prepared by Wetlands & Water Resources for NOAA Restoration Center (Federal Funding Agency), June 2010. • <i>Aramburu Island Shoreline Protection and Ecological Enhancement Project Enhancement Plan</i>, Roger Leventhal, FarWest Restoration Engineering and Peter Baye, April 2010.
Project Location	• Aramburu Island, located in the northwest region of Richardson Bay on the east side of Strawberry Point. • 37 53.345 N / 122 30.05 W (~ center of the Island) • APN No.: 043-271-61
County	Marin
Receiving Water(s)	Richardson Bay
Construction Schedule	• Construction will occur during approved work windows to protect migratory fish habitat and general water quality. • Construction activities are scheduled to begin in June 2011 and be completed by October 2011.
Site History & Project Setting	• Aramburu Island, an artificial peninsula off the mainland, was constructed in the late 1950s and early 1960s by the deposition of fill in the open waters of Richardson Bay. • By the late 1960s, Strawberry Spit had become a popular haul-out area for harbor seals. From the late 1970s to the early 1980s, seal use declined dramatically. In 1976, the Marine Mammal Commission found that human disturbance was having a negative impact and recommended turning the northern end of the spit into an island and redirecting boat traffic away from the primary haul-out site. • In 1983, Marin County and BCDC approved the development of 62 single-family homes on the southern half of Strawberry Spit. BCDC permit conditions included measures to mitigate for impacts to wildlife and required that the island be set aside and managed as wildlife habitat. The permit conditions, implemented in 1987, resulted in the creation of Aramburu Island. • Following its creation, the developer deeded the Aramburu Island and its surrounding waters (~ 36 AC) to the Parks Department. The Marin County Board of Supervisors dedicated the Island as an open space and wildlife preserve in 1999. • In August 2009, Marin County and Audubon entered into an MOA to allow for implementation of the proposed Project.

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	The State Water Board is providing partial funding of the Project in the amount of \$849,103. Funding has been made available through the Cleanup and Abatement Account. The funds were made available as part of a settlement agreement stemming from the January 2008 Sewerage Agency of Southern Marin (SASM) sewage spill into Pickleweed Inlet, a tributary of Richardson Bay.
Related Projects	- Following Island creation, the Salt Works Canal navigation channel was relocated to utilize the new cut through Strawberry Spit. The original navigation channel to the east was abandoned and allowed to fill in with sediment over time. - Strawberry Recreation District Zone IV performs maintenance dredging of the navigation channel every 6 to 10 years.
Existing Conditions	The 36 AC Project site consists of: 17 AC island terrace –all habitats upward of the shoreline – includes tidal marsh and seasonal wetland habitats, gravel spits and riprap. 19 AC of surrounding bay/shoreline 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). - Structural elements are limited to defunct groundwater monitoring wells, wooden signs identifying the site as a wildlife refuge, navigational pilings, and a chain link fence on the southern end of the Island. <u>Island Terrace.</u> - The island terrace is relatively flat, with most of its elevations ranging between 6’ to 10’. About 35% of the island terrace is tidal marsh; seasonal wetlands and uplands occupy the remaining 65%. - There is a long, elevated ridge along the center “spine” of the Island and a small hill along the western shoreline. - Most of the island terrace, with the exception of a few fringing tidal marsh wetlands, is above the normal range of the tides. - Uplands are dominated by patchy, heterogeneous non-native terrestrial vegetation. Some areas are occasionally subject to storm overwash. There are a few small groves of coast live oak supported by a perched fresh groundwater. - Several seasonal wetlands found throughout the Island are fed by rainwater and, in some locations, overwash during storm events. These non-tidal seasonal wetlands are dominated by mostly non-native vegetation. <u>Bay/Shoreline Habitats</u> <u>Tidal wetlands</u> are dominated by native salt marsh vegetation and occur along the edges of the Island. They have developed on both artificial fill substrate and on naturally deposited bay mud. <u>Eastern shoreline</u>, characterized by boulder lag fields that grade gently down into Richardson, is unstable and progressively retreating inland. The steep shoreline inhibits the formation of natural salt marsh and soft-bottom intertidal mudflats, limits use by shorebirds for foraging and high tide roosting, acts as a barrier to seal haul-out, and provides a source of fine sediment that may be detrimental to adjacent eelgrass beds and aquatic biota. <u>Intertidal mudflats</u> fringe the Island on the west and north. The western shoreline grades down from the mudflats into the adjacent dredged navigation channel. <u>Coves (3)</u> – Two intertidal mudflat coves are located on eastern shoreline

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	and a third cove is in the northwest corner of the project area. • <u>Southern shoreline</u> is protected by rock revetment.
Project Description	The proposed Project will be broadly focused on protecting and enhancing the Island's eastern shoreline and enhancing existing habitats on the island terrace. Project activities include: <u>EASTERN SHORELINE ENHANCEMENT</u> Eastern shoreline enhancement activities will involve creating new beach forms along the eastern shoreline, grading back the eroding terrace scarp to generate a gentler slope conducive to beach formation, constructing micro-groins perpendicular to the shoreline, placing large woody debris (LWD) in various locations along the shoreline, and excavating a small, subtidal spur channel off of the existing navigational channel near the southeastern corner of the Island. For design purposes, the eastern shoreline has been divided into three segments or (cells) based on geomorphic features and incident wave energy. Northern Cell. The northern cell extends from the northeast corner of the Island down to the first cove (~ 475 LF). The northern cell has the gentlest, most dissipative shore profile, experiences the lowest wave impacts, and contains a long, narrow gravel beach with very limited sediment supply. Proposed enhancement activities in the northern cell will include: • <u>Beach enhancement</u> will include supplementing the existing gravel and shell berms to provide a wider, higher beach profile with more foraging areas for shorebirds. • <u>Large Woody Debris (LWD)</u> will be placed in various locations along the shoreline to retain beach materials, provide shoreline complexity, and enhance onshore habitats. The number and location/configuration of the LWD will be determined during final design &/or in-field during construction. • <u>Shore-perpendicular micro-groins</u> (2-3) may be constructed to restrict the long-shore transport of crushed oyster shells in the backshore and upper foreshore zones of the beach. If included, micro-groins would be constructed of either imported rock from local quarries or eucalyptus tree trunks/rootwads embedded in underlying bay mud. • <u>Low, cobble/boulder extensions of the beach retention micro-groins</u> will be constructed to restrict long-shore transport of sand placed on the foreshore. • <u>Oyster habitat mounds</u> will be constructed on the leeward (northern) side of the micro-groin extensions. To construct the mounds, existing lag field cobbles and boulders will be salvaged and arranged into piles in lower tidal elevations. Central Cell. The central cell is ~ 1,000 LF and includes the shoreline between the northern and southern coves. This cell experiences significant wind-wave erosion as evidenced by a steep (up to ~ 2.5' high) shoreline erosional scarp. Enhancement activities in the central cell will include: • <u>Grading the beach slope into the island terrace</u> (12:1 to 15:1 H:V) for a more stable, dissipative flattened backshore profile. A mixture of sand and gravel will be placed on the newly created ramp to allow development of a more natural beach profile, and sand will be placed on the rocky foreshore. • <u>LWD</u> will be placed in various locations along the shoreline. • <u>Shore-perpendicular micro-groins</u> (up to 5) may be constructed. Micro-groin structures may be eliminated in favor of placing more LWD to serve

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	beach material retention features. • <u>Low, cobble / boulder extensions of the beach retention micro-groins</u> may be constructed to restrict foreshore sand transport. • <u>Oyster habitat mounds</u> may be constructed on the leeward side of these features utilizing salvaged rocks from the boulder lag field. Southern Cell. The southern cell extends ~ 375' 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 includes the most pronounced erosional scarp. Enhancement activities in this cell will include creation of two distinct habitat types – an area sheltered from wave energy at the southern half of the cell and an unsheltered beach along the northern half of the cell. <u>Southern half of Southern Cell</u> • Construction of a recurved spit extending from the southern end of the Island and running parallel to the shoreline is proposed to shelter the southern half of the cell from wave energy. • The micro-groin spit will be constructed of ¼ ton rocks placed on bay mud to promote substrate stability and provide oyster habitat. Smaller cobbles may be distributed within the boulder interstices to provide a smoother surface for harbor seal haul-out. A layer of ¼ ton toe rock 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. • A mixed sand/gravel beach will be constructed between the existing shoreline scarp and a newly created curved micro-groin spit. <u>Northern half of Southern Cell</u> • This cell, exposed to wind and waves will be protected by a coarse gravel beach berm providing a suitable haul-out substrate for harbor seals. • 1-2 micro-groins may be placed between the northern and southern beach forms. • LWD will be placed in various locations along the shoreline to retain beach materials, provide shoreline complexity, and enhance onshore habitats. <u>Seal access channel</u> • A seal access channel will be constructed to enhance seal access to deepwater escape areas. A small (~20'-wide, 4'-deep, and 300'- long) subtidal spur channel will be excavated immediately offshore of the micro-groin spit and will connect to the existing navigational channel that runs along the southern end of the Island. • Material excavated to create this channel will be used to enhance seasonal wetland and transitional grassland habitats on the southern end of the island terrace. <u>ISLAND TERRACE ENHANCEMENT</u> Enhancement activities on the island terrace will involve creating a matrix of habitats once common around San Francisco Bay, including high tidal marsh, seasonal wetlands (vernal pool, vernal marsh, and saline flats/pans), and terrestrial grasslands (perennial lowland grass-sedge meadow, and salt grass meadow). <u>The northern island terrace</u> (north of the northern cove) will become a matrix of grass-sedge meadows interspersed with vernal marsh and vernal pools, built on a bay mud substrate cap. Some existing high tidal marsh habitat in this area will be enhanced and expanded as well.
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	<u>The central portion of the island terrace</u> (between the two coves) will become a matrix of saltgrass meadows and saline flats/pans. <u>The southern portion of the island terrace</u> (south of the southern cove) will be restored to grass-sedge meadows and saline flats/ pans. These will be established on bay mud that will be excavated as part of the seal access channel improvements. High Tidal Marsh • Enhancement will require minor grading and will result in an increased capacity to support several rare plant species within the Project area – including salt marsh bird's-beak (<i>Cordylanthus maritimus</i>), salt marsh owl's-clover (<i>Castilleja ambigua</i>), and smooth goldfields (<i>Lasthenia glaberrima</i>). Seasonal Wetlands <u>Vernal Pools</u> • Enhancement activities include shallow grading and compaction to enhance ponding and seeding with native species. <u>Vernal Marsh</u> • Enhancement activities include shallow grading, compaction to enhance ponding, placement of a layer of silty-clay soil to serve as rooting substrate, and seeding with native species. <u>Saline Flats and Pans</u> • Creation of these habitats will involve shallow grading and compaction to enhance ponding. • These areas will be irrigated over a 2 to 3 year period with salt water to reduce non-native plant growth and will then be seeded with native species. • ~ 50% of the surface area of the saline flats will be capped with a thin (2") layer of oyster shell hash to maintain sparsely vegetated pan habitats. Terrestrial Grasslands <u>Perennial Lowland Grass-Sedge Meadow</u> • Grass-sedge meadows will be dominated by perennial creeping native grasses. Creation of these habitats will involve placement of a silty-clay rooting substrate and seeding with native species. • In areas where saline bay mud is applied, it may take up to 2 years for rainfall to lower salinities to levels appropriate for target vegetation to be planted. <u>Saltgrass Meadow</u> • Saltgrass meadows occur on high salinity soils that favor salt-tolerant species. Irrigation with saline water is proposed to increase soil salinities and seeding with native species. Oak Grove • The existing strip of coast live oaks and scattered individual oaks in the project area will not be impacted. • Understory vegetation around these trees will be manually managed to eliminate non-native species and foster establishment of native ecosystem. • Excavated soils may be placed in berms around oak groves to protect them from saline irrigation. <u>PUBLIC ACCESS FEATURES</u> Public access features could be installed to manage access and avoid impacts
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	to sensitive resources. The public access features will include: • Placement of two large flat rocks placed above the high tide line and outside existing or restored wetlands. • Installation of signs that indicate presence of sensitive habitats and wildlife and that direct users to leave certain parts of the Island undisturbed. <u>CONSTRUCTION</u> Equipment • Heavy equipment required includes: low-ground-pressure (LGP) tracked bulldozer, 50,000-pound excavator, LGP or amphibious excavator, wheel loader, LGP track dump trucks, tracked skid steer, and compactor. • All equipment and construction materials (e.g., rock, bay mud, eucalyptus trees) necessary to construct the proposed project will be brought to the Island via barge. Routine Maintenance Activities <u>Seal Access Channel Maintenance Dredging</u> • Maintenance dredging may occur in conjunction with maintenance dredging of the adjacent deep-water navigational channel, which typically occurs every 6 to 10 years. • Dredging will be contingent on seal use. If no seals use the channel in the first 5 years after its completion, maintenance dredging will not occur. <u>Manual Weeding</u> • Upland areas around the oak groves, which are not either capped with bay mud or saline irrigated, may require manual weeding to remove invasive plants. • Vegetation management may be needed for a period of up to 5 years.
Species/Habitats of Concern	• Central California Coast steelhead (<i>Oncorhynchus mykiss</i>) • Central Valley steelhead (<i>Oncorhynchus mykiss</i>) • Sacramento River winter-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) • Central Valley spring-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) • American Green Sturgeon (<i>Acipenser medirostris</i>) • Pacific herring (<i>Clupea pallasii</i>) • Pacific Harbor Seal (<i>Phoca vitulina</i>)
Potential Water Quality Impacts	The Project is expected to result in a net benefit to water quality and habitat. Minor temporary impacts may result during construction.
Design & Construction Elements to Avoid Adverse Effects	The Applicant will implement appropriate BMPs to minimize potential construction-related water quality impacts. Measures include: • All equipment and material imported to the Island will be staged/ stockpiled in upland areas. These areas will be identified in advance of construction and demarcated in the field. Erosion control devices (straw wattles, silt fences) will be installed around all stockpile locations to prevent sediment mobilization. • When not in use, construction equipment will be staged in the demarcated staging areas. • Refueling or maintenance of equipment will occur in upland areas, away from aquatic habitats to prevent the accidental introduction of hazardous chemicals into the water. • All contractors working on the site will receive training regarding the environmental sensitivity of the project site and surrounding area and the need to minimize impacts. Contractors will also be trained in implementation of stormwater BMPs for protection of water quality. • Following construction, erosion control structures such as straw wattles, silt

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	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 (1 to 2 years).
Fill/Excavation	<u>Project Area – ~ 36 AC of Shoreline and Island Terrace Habitat</u> 27.41 AC jurisdictional waters include: • 6.11 AC fringe tidal salt marsh wetland • 2.37 AC seasonal wetland • 18.54 AC other waters <u>Temporary Impacts – 1.33 AC</u> • Seasonal Wetlands ~ 1.01 AC • Other Waters ~ 0.32 AC • Linear Impacts ~1,850 LF <u>Permanent Fill – 3.79 AC</u> • Seasonal Wetlands ~ 1.36 AC (1,220 CY) • Other Waters ~ 2.43 AC (5,815 CY) • ~ 8,105 CY of material and up to 85 pieces of LWD may be imported to Project site. <u>Excavation</u> • ~ 1,125 CY along 300 LF of Bay will be excavated to create seal access channel. This will result in ~0.2 AC intertidal habitat being converted to subtidal habitat. • ~ 18,000 CY of material will be moved on-site to allow for construction of various components. No material will be transported off-site. <u>Creation & Enhancement – 5.15 AC</u> • Seasonal Wetland Habitats ~ 2.78 AC • High Tidal Marsh ~ 1.64 AC • Other Waters ~ 0.73 AC
Compensatory Mitigation	None required. Enhancement activities within the Project area are expected to result in long term benefits to the aquatic environment, including wetland habitats and result in a net benefit to water quality.
Monitoring, Reporting And Corrective Action Measures	Biological and geomorphic monitoring will be implemented to assess the long-term impacts of the proposed Project. Monitoring, reporting, and corrective action protocols have been developed in coordination with regulatory and resource agencies. An initial proposal was submitted as part of the application materials; a Final Monitoring, Reporting, and Corrective Action Plan will be submitted to the Water Board for review and approval prior to construction. In summary, monitoring will include: <u>Time Series Photographs</u> Time series photographs will be taken both before and after construction from fixed observation points to visually document changes in shoreline and terrace habitats. <u>Shoreline Topographic Cross Section Surveys</u> Shoreline topographic cross sections will be used to monitor the geomorphology of the enhanced shoreline elements and the long-term effect of the proposed project on shoreline topography and sediment distribution. Surveys will be performed along existing shoreline topographic transect alignments, established during project design, to allow for comparison of pre- and post-construction conditions, and to monitor changes over time. <u>Vegetation Surveys</u>

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	Vegetation surveys will be conducted to document the establishment of target plant species and to monitor changes in density and richness over time. <u>Shorebird Monitoring</u> Shorebird surveys, utilizing a Before-After-Control-Impact (BACI) design, will be conducted along the eastern shoreline of Aramburu Island and at 2 control islands north of Aramburu Island (Pickleweed Island and Unnamed Island) to document the effects of Island enhancement on migratory shorebirds. <u>Landbird Monitoring</u> Landbirds will be monitored to assess the potential effects of enhancement activities on species that utilize the terrace of Aramburu Island. <u>Infaunal Community Sampling</u> Infaunal species will be sampled before and after construction to determine the effects of proposed project on the relative abundance and richness of these communities. <u>Oyster Monitoring</u> The density of native oysters on the created oyster mounds along the Aramburu shoreline will be monitored before and after construction. <u>Fish Monitoring</u> Beach seine hauls will be conducted to estimate fish species richness and abundance before and after construction.
Water Board	Site No.02-21-C0798 CWIQS Place No. 756589 Cleanup and Abatement Account Agreement No. 09-693-552 [C/A 309]
USACOE	File No. 2009-00347N NWP 27 (<i>Aquatic Habitat Restoration, Establishment, and Enhancement Activities</i>) Section 10 Project area wetland delineation completed in spring 2009 and verified by Corps in November 2009. Contact – Jim Mazza
FWS/NMFS Consultation	The Project is funded in part by the NOAA Restoration Center (RC). As the Federal funding agency, NOAA RC responsible for consultations with the USFWS &/or NMFS. NLAA determination, September 22, 2010. Contacts • Pat Rutten, NOAA RC – patrick.rutten@noaa.gov 707.575.6059. • Amanda Morrison, NOAA • Ryan Olah, USFWS
DFG	Contact – Greg Martinelli EFH Contact – George Isaac
BCDC	Contact – Max Delaney
CEQA Compliance	Mitigated Negative Declaration. SCH No. 2010072045 Lead Agency – Water Board Contact – Sandia Potter
Application Fee	Total: \$640.00