CITIZENS COMMITTEE TO COMPLETE THE REFUGE

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May 31, 2024

Don Snaman, Project Manager
Port of Redwood City
675 Seaport Boulevard
Redwood City, CA 94063
Via email: c-dsnaman@redwoodcityport.com

RE: Comments on the Notice of Preparation of a Draft Environmental Impact Report and Initial Study for the Port of Redwood City Ferry Terminal Project, May 1, 2024

Dear Mr. Snaman,

Citizens Committee to Complete the Refuge appreciates the opportunity to provide scoping comments in response to the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) and Initial Study (IS) for the proposed Redwood City Ferry Terminal Project (Project). The Project would provide Water Emergency Transportation Authority (WETA) passenger ferry service between the Port of Redwood City and both San Francisco and Oakland.

Citizens Committee to Complete the Refuge (CCCR) has an ongoing interest in wetlands protection, restoration and acquisition. Our efforts have led to the establishment and expansion of the Don Edwards San Francisco Bay National Wildlife Refuge (Refuge), including the addition of 1600 acres at Bair Island in Redwood City. We have taken an active interest in Clean Water Act, Endangered Species Act and California Environmental Quality Act regulations, policies and implementation at the local, state and national levels, demonstrating our ongoing advocacy on wetland issues and our commitment to the protection of San Francisco Bay wildlife and habitats.

Redwood City's baylands and sloughs are some of the most environmentally sensitive and ecologically rich areas of San Francisco Bay, and with the exception of several short-term pilot programs, there have been no ongoing ferry operations south of the San Mateo Bridge. Elements of the proposed project are in, or are in close proximity to, sloughs, mudflats and tidal marshes and the special status and other wildlife species that use these sensitive habitats. Ferrys would transit Redwood Creek, between the shorelines of the Refuge's Bair and Greco Islands, and traverse the shipping channel in open Bay waters - habitat for waterbirds and marine mammals**.** It is imperative that all aspects of the Project are designed, constructed and operated in a manner that avoids and minimizes adverse impacts to these important natural areas and associated wildlife.

For the reasons outlined above, the scoping comments in our letter will focus primarily on the area of Biological Resources.

Project Description: According to the NOP, *"The proposed project would provide Water Emergency Transportation Authority (WETA)-operated passenger ferry service at Redwood City with origin and destination points of San Francisco and Oakland. Initial service would be during weekday morning and afternoon commute periods between the hours of approximately 6 am to 9 pm using diesel powered ferry vessels capable of carrying up to 300 passengers. As the ferry service matures, midday, evening, weekend, and special event service may be added. The ferry terminal would include waterside and*

landside components, including a ferry dock, gangway, fixed access pier and security gate, kiosks, portable restroom, bicycle storage, surface parking lot, and new utilities required to establish the proposed ferry service. The proposed project also includes widening the Seaport Boulevard loop road from the Pacific Shores Center entrance to the ferry terminal site to accommodate a bicycle trail and sidewalk and extending the Bay Trail along the north edge of the project site to the ferry terminal. The relocation of existing infrastructure (e.g., railroad spur, terminus of Frontage Road, lighting and utilities, and a maintenance building) and modifications to an existing public parking lot would be required to accommodate the access improvements. The proposed project also includes a zone change to allow future visitor serving uses consisting of a three-story hotel with an associated restaurant, retail and meeting/event facilities, a standalone restaurant, up to 10,000 square feet of standalone office space, and a permanent restroom facility at the ferry terminal."

According to the IS (Page 2-5), **the demolition of the historic wharf (dock) along Westpoint Slough, site of a Cliff Swallow nesting colony, is also part of the Project;** however, the NOP Project Description makes no mention of this Project component that would likely have significant environmental impacts. The wharf is approximately 600 feet long and demolition of the structure would require a number of regulatory agency permits, and could have potentially significant negative impacts with respect to Biological Resources, Cultural Resources, and to water quality. This is a significant omission, and in a May 28, 2024 email to Port Project Manager Don Snaman, CCCR requested that the NOP be revised to include this important project component, and that the NOP be recirculated to the agencies and the public. The requested correction and recirculation did not occur.

Project Location: *"The ferry terminal site is a 9.2-acre Port property near the confluence of Redwood Creek and Westpoint Slough. Other project improvements would occur along a portion of Seaport Boulevard west of the Pacific Shores Center, the railroad tracks and Frontage Road east of the Port, and a portion of the existing public parking lot and waterfront park northwest of Pacific Shores Center. The ferries would operate within existing navigation routes in San Francisco Bay to and from Redwood City and San Francisco and Oakland."* (NOP)

Time and Frequency of Ferry Service: The IS states, "*The initial service is proposed as a commute-period service, providing three to four trips during both am and pm peak periods on weekdays. This service would operate approximately 6 am to 10:30 am in the mornings and approximately 4 pm to 9:30 pm in the evenings. Depending on demand, midday service to either San Francisco or Oakland, and weekend service to San Francisco may be added. Future plans might also involve extending the service to include special event services to San Francisco, similar to what WETA offers on existing services*. *The proposed project evaluated in this IS assumes that full buildout service would be implemented and include all day service to San Francisco and to Oakland that has a higher frequency of service during morning and evening peak periods on weekdays, and weekend day and special event service for the San Francisco route*." (Page 2-16).

Project Area for Study in the DEIR: According to the IS, in addition to the Ferry Terminal site at the Port, the Project area includes "*San Francisco Bay (including Redwood Creek and Westpoint Slough): Existing shipping lanes in San Francisco Bay from the project site to the ferry terminals in the Port of San Francisco and adjacent to the Port of Oakland*." (Page 2-2).

Private Ferry Operator Use of WETA Terminal

The IS indicates that the terminal would accommodate vessels other than WETA ferries: "*The length of the float would accommodate the gangway landing support frame, a boarding ramp system with two high ramps and one low ramp…"* and*, "The low ramp would allow non-WETA vessels that may have low freeboards to use the float."* (Page. 2-11, emphasis added)

What non-WETA vessels would be using the float? The statement above seems to contradict the Project Overview which states, "*The proposed project would provide WETA-operated passenger ferry service at Redwood City with origin and destination points of San Francisco and Oakland. Ferry service would be provided by WETA…*" (Page 2-8)

WETA has a history of allowing private ferry service to use its facilities; for example, in 2019 WETA allowed Tideline, a private ferry service, to use its Harbor Bay dock[1]. The DEIR needs to clearly state whether non-WETA vessels will be using the facility, and if so, how will the impact of these vessels be analyzed?

If non-WETA vessels will be using the facility, the DEIR must identify the number of additional boat trips, types of vessels and routes, and analyze the potential direct, indirect, and cumulative environmental impacts from these additional transits through Redwood Creek and the open waters of the Bay. The DEIR must discuss the various sizes, speed ranges, and wake characteristics of different public and private ferries that are likely to utilize the facility, as well as identify measures that would avoid or minimize adverse impacts to adjacent habitats and wildlife. The more boats there are, the more likely there will be significant impacts to wildlife, sensitive habitats and non-motorized watercraft. An adequate analysis of impacts, and the effectiveness of mitigation measures cannot be assessed without knowing quantity and type of vessels operating at the ferry terminal. The number of vessels transiting the Project area to and from the ferry terminal cannot be open-ended, it must be clearly defined and capped, and unscheduled private ferry service, or on-demand water taxis should be prohibited.

Program vs. Project Level DEIR

At the May 15, 2024 Public Scoping Meeting for the NOP, Bill Hurrell with CDM Smith commented that some components of the Project will be subject to a project-level environmental review, and others, "in some areas like the hotel", to a programmatic level of environmental review. This was the first time the public was made aware of this dual aspect of the Project CEQA process – there is no mention of future tiering in the IS or NOP.

The DEIR must clearly identify which elements of the whole of the Project are being analyzed at the programmatic or project level – preferably summarized in a table within the DEIR. The DEIR must identify and describe how further project-level environmental review will occur for those elements analyzed at the programmatic level and whether future CEQA analysis will provide opportunities for public review and comment. We strongly recommend that subsequent components of the proposed project be subject to circulation of a Supplemental EIR (SEIR). A SEIR should be completed for the proposed zoning change and associated hotel, office and visitor-serving facilities components after detailed plans are available, the Port has vetted this proposal with the community, analyzed the financial viability of the hotel, and studied the potential adverse economic impacts on Downtown Redwood City hotels and restaurants that are hoping to benefit from the "last mile" ferry transit system.

Notification

The Project site is located across from the shorelines of Bair Island and Greco Islands, and ferries would traverse Redwood Creek between the islands. The IS documents that the Refuge owns or manages these tidal marsh areas and states: *"There is potential for construction and operation of the proposed project to conflict with the provisions of the Comprehensive Conservation Plan for Don Edwards San Francisco Bay National Wildlife Refuge or the state marine park designation. The impact is considered potentially significant and will be evaluated in the EIR."* (Page 4-12)

[1] https://www.baycrossings.com/does-a-rising-tideline-float-all-boats/

The Port should ensure the Refuge and CDFW have received the NOP and IS documents and are afforded an opportunity to submit scoping comments on the Project. Additionally, the two agencies should be included on the recipient list for any future notifications regarding the draft and final EIR, and any future study sessions, public meetings and formal hearings for the Project.

Biological Resources

Existing Conditions:

The DEIR must provide an accurate description of existing biological and physical conditions on the Project site as well as adjacent areas that could be impacted by the Project. Maps showing the location of the tidal wetlands directly adjacent to the Project site, and the Refuge tidal marsh, mudflat and slough habitats on Bair and Greco Islands must be included.

Mudflats:

The IS fails to describe or identify the location of mudflat habitat adjacent to the ferry terminal site and along the ferry route.

Figure 5 in the IS identifies "*submerged land*" to the north of the project. This area offshore is intertidal mudflat[2] and should be identified as such. The Clean Water Act Section 404 (b) (1) Guidelines (Guidelines) (40 CFR §230-233) identify "mudflats" as Special Aquatic Sites which are defined at 40 CFR §230.3(q-1) as:

> *"…those sites identified in Subpart E. They are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region (See 230.10(3)."*

"*Mudflats make up one of the largest and most important habitat types in the Estuary. Snails, clams, worms, and other animals convert the rich organic matter in the mud bottom to food for fish, crabs, and birds. Mudflats generally support a variety of edible shellfish, and many species of fish rely heavily on the mudflats during at least a part of their life cycle. Additionally, San Francisco Bay mudflats are one of the most important habitats on the coast of California for millions of migrating shorebirds*."[3] [emphasis added]

The Project description should clearly identify these Special Aquatic Sites in the Project area, including along transit routes. Potential impacts from ferries to this habitat, foraging shorebirds during low tide, other water birds, and fisheries need to be analyzed and adverse impacts must be avoided, minimized or mitigated.

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[2] Incorporating the Coastal Blue Band into a Remote Sensing Toolkit for Mapping Intertidal Mudflats in South SF Bay: A White Paper May 2017 Prepared by: Brian Fulfrost. Available at: https://www.southbayrestoration.org/sites/default/files/documents/fulfrost_mudflats_mapping_sfbay_whitepaper_final.pdf

[3] Proposed Basin Plan Amendment CRWQCBSFBR. March 22, 2024. Available at: https://www.waterboards.ca.gov/rwqcb2/water_issues/programs/bpamendments/proposed_basin_plan_amendment_climate_change_and_aquatic_habitat_protection.pdf

Location of mudflat habitat in the immediate project area. Google Earth Imagery date 6/8/2019


Shorebirds foraging on mudflat along Redwood Creek and Westpoint Slough, along with Great Egrets, Double-crested Cormorant, Bufflehead, Scaup and Western Grebe in the water, March, 24,2021[4].

Special Status Species:

All special status species and other wildlife currently using the Project site and the adjacent tidal wetlands and the nearby Refuge should be identified, as well as critical habitat, Essential Fish Habitat (EFH), sensitive sites, and habitat suitable for listed species. The DEIR should determine if there are potential impacts, and provide mitigation measures as appropriate.

[4] All photos by Matt Leddy unless otherwise noted.

The Initial Study makes no mention of the federal and state endangered Ridgway's Rail (formerly California Clapper Rail) which nests on both Bair and Greco Islands.
The *Baylands Ecosystem Habitat Goals Update*[5] describes Greco Island as "*the largest contiguous tidal marsh on the western side of the bay*" that is "*relatively protected from human disturbance*" and is "*one of the main population centers of centers of Ridgway's Rail in the South Bay*."

The *Tidal Marsh Recovery Plan*[6] describes Greco Island as an "important example of remnant pre-historical tidal marshes in the San Francisco Bay Estuary" and states: "*These remnant pre-historical marshes are not only critically important refuges for populations of rare species, but they contain invaluable and irreplaceable information, preserving clues of the origin, development, structure, and composition of natural tidal marsh systems over several thousand years*." [emphasis added]

In the 2020 Invasive Spartina Project Ridgway's Rail surveys[7], Greco Island South, part of the Don Edwards San Francisco Bay National Wildlife Refuge (Refuge), had the highest count of rails for the areas surveyed along the western shoreline of South San Francisco Bay and the highest density of rails.

The federal Endangered Species Act (ESA) prohibits "take" of federally listed species, e.g. Ridgway's Rail and Salt Marsh Harvest Mouse. The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [emphasis added]

All federal, state and regional agencies with jurisdiction over the Project site, the adjacent wetland areas, tidal marshes, mudflats and sloughs in and around Bair and Greco Islands and the associated listed species and other wildlife that could be impacted, should be identified in the DEIR and the basis for their jurisdiction should be provided.

Recovery and Conservation Plans:

The DEIR should document and consider that all of Redwood Creek and Westpoint and Corkscrew Sloughs and adjacent tidal marshes are included in the 2013 U.S. Fish and Wildlife Service *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California*, which identifies strategies and geographic areas suitable for the recovery of federally listed species such as the Salt Marsh Harvest Mouse and Ridgway's Rail (formerly California clapper rail) in San Francisco Bay. How will existing and suitable habitat for these two endangered species be protected from impacts associated with the Project?

Impacts to wildlife may range from loss of habitat, increased predation, inability to conduct daily functions (roosting, foraging, breeding, nesting, etc.), detrimental expenditures of energy as wildlife move away from repeated disturbance, reduced recruitment, greater distance traveled to roost sites, etc. Potential impacts to wildlife resources must have effective and enforceable mitigation measures proposed in the DEIR.

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[5] Goals Project. 2015. *The Baylands and Climate Change: What We Can Do. Baylands Ecosystem Habitat Goals Science Update 2015* prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. California State Coastal Conservancy, Oakland, CA .

[6] U.S. Fish and Wildlife Service. 2013. *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California*. Sacramento, California. xviii + 605 pp

[7] Olofson Environmental, Inc. *California Ridgway's Rail Surveys for the San Francisco Estuary Invasive Spartina Project 2020*. February 1, 2021. Report to the State Coastal Conservancy. San Francisco Estuary Invasive *Spartina* Project

Wake Impacts:

Boat wake impacts (erosion and increased suspended sediment) to shorelines are affected by boat speed, width of the waterway, number of passages, vessel length, and water depth[8]. The DEIR must take into account all of these variables and at various tidal heights, which can influence the vertical and lateral extent of impacts of boat wakes (resulting in varying waterway widths), and their impacts to determine how they will be avoided under the various conditions in which the ferries will be transiting Redwood Creek.

Potential impacts from WETA ferry service wake wash to sensitive Bay habitats, the endangered Ridgway's Rail, endangered salt marsh harvest mouse, black rail, roosting, rafting and foraging waterbirds, and marine mammals is documented in the 2003 WTA Executive Summary Final Program Environmental Impact Report, Expansion of Ferry Transit Service in the San Francisco Bay Area[9] . That study determined that, *"In the South Bay, the shoreline along the approach to Redwood City could potentially be impacted by wake wash. This is a potentially significant impact."* And that, *"Wake wash impacts from increased ferry service could have adverse effects on California clapper rail, a listed species, by inundating nests or degrading potential clapper rail nesting habitat."*

The 2007 Biological Resource Assessment Redwood City Ferry Terminal, Port of Redwood City, San Mateo County, California[10] determined that, *"a Section 7 consultation with the USFWS and NMFS would be necessary because the Project has the potential to affect wildlife species protected under the Federal Endangered Species Act (FESA) and Essential Fish Habitat (EFH) regulations."* And that, *"ferry operations (speed, distance, etc.) would be examined to determine appropriate operational protocols to protect species from habitat loss, nest inundation, acoustic disturbance, or other potential affects of ferry operations."*

In June of 2018, under the California Public Utilities Commission authorization of the existing CPCN for scheduled service, PropSF, a private ferry operator, began a 6-month trial into the Port of Redwood City. The high-speed catamaran ferries traveled up two miles of Redwood Creek from the Bay to the F Dock landing site. Two vessels made a total of 16 trips (8 round-trips) each weekday. During this time, members of our group, and others, observed the wake wash from the ferries crashing onto the shorelines and over the salt marshes of Bair and Greco Islands. In February 2019, we brought our concerns to the attention of the Redwood City Port Commission, where we provided video documentation of the wake wash generated by the PropSF ferries in Redwood Creek.

In December 2018, Dr. Emmanuel Gabet, a geomorphologist who has studied bank erosion in San Francisco Bay tidal channels, provided CCCR with his results of observations and measurements of the impacts from private high-speed catamaran ferry wakes on Bair Island (see attached Appendix A). In his report, Dr. Gabet concluded that wakes from the ferries were contributing to bank erosion of Bair Island on Redwood Creek.

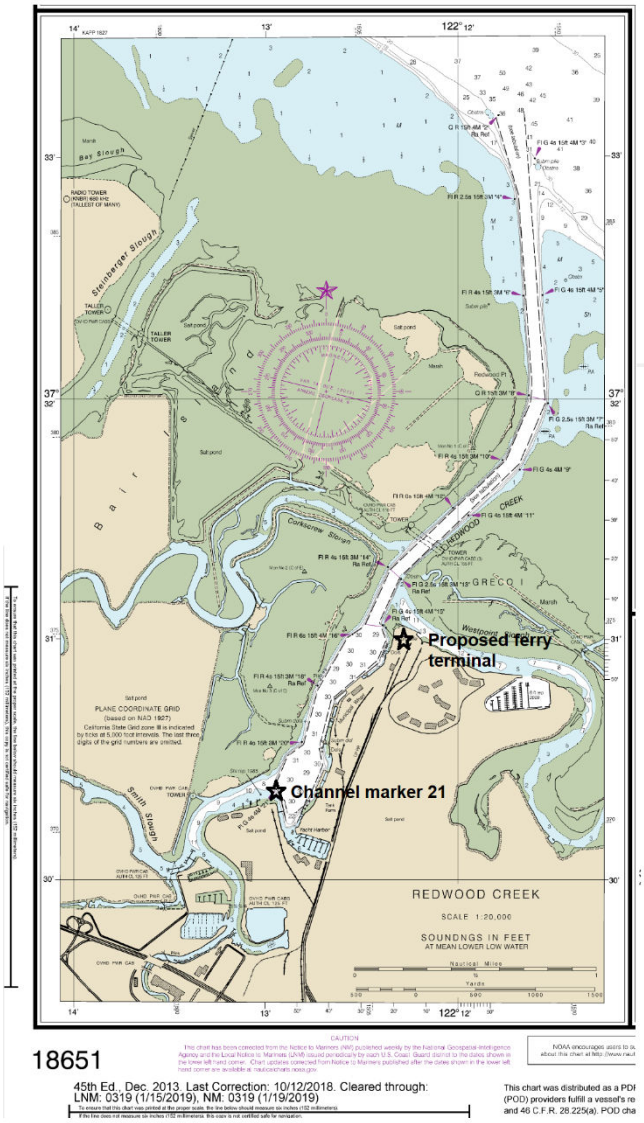
Current boat speed restrictions in Redwood Creek not applicable to Project area:

Redwood City Ordinance No. 2225, § 1, 5-6-2002 Sec. 44.6[11]. states,
"*BOAT SPEED LIMIT; EXCEPTIONS TO SPEED LIMIT FOR BOAT RACES:*

[8] Bilkovic, Donna M.; Mitchell, Molly; Davis, Jennifer; Herman, Julie; Andrews, Elizabeth; King, Angela; Mason, Pamela; Tahvildari, Navid; Davis, Jana; and Dixon, Rachel L., Defining boat wake impacts on shoreline stability toward management and policy solutions (2019). *Ocean & Coastal Management*, 182, 104945.
[9] https://weta.sanfranciscobayferry.com/sites/weta/files/weta-public/publications/WTAProgrammaticEIRExecutiveSummary.pdf
[10] 2007 Biological Resources Assessment Redwood City Ferry Terminal, Port of Redwood City. https://www.redwoodcity.org/home/showpublisheddocument/18196/636935337126270000
[11] https://library.municode.com/ca/redwood_city/codes/city_code?nodeId=CH44REHAAD

A. The speed of any boat on all waterways west of marker 21 and all sloughs shall not exceed ten (10) miles per hour; provided, however, that the speed of any boat within two hundred (200) feet from any marina and/or any moored or anchored boat shall not exceed five (5) miles per hour; provided, however, that the Port may set designated times and places within the Harbor when boat races may be held at speeds in excess of the limitation set forth in this section; "

Channel Marker 21 is located approximately a mile south (inland) of the proposed ferry terminal as are the Redwood City Marina and Port of Redwood City Warves 2,3 and 5. West of Channel Marker 21 are Bair Island's Smith Slough and Corkscrew Slough; part of the Don Edwards San Francisco Bay National Wildlife Refuge. The Refuge has designated those sloughs as "no-wake" zones[12].



Excerpt from NOAA Chart 18651 showing location of channel marker 21 and proposed ferry terminal.

[12] Bair Island Final EIS/EIR. https://repository.library.noaa.gov/view/noaa/6278

NOAA has no-wake restrictions in parts of the bay, for example Richardson Bay[13], but not in Redwood Creek[14].

The IS states that, "*Ferry speeds would comply with wake restrictions that are in place to protect both non-motorized water users as well as sea and land species and their habitat. On Redwood Creek, wake enforcement would be the responsibility of the Coast Guard in conjunction with the Redwood City Police Department*." (Page 2-16)

As shown above, **there are no codified speed restrictions in the section of Redwood Creek where the ferries will be operating to protect wildlife or habitat**, and the DEIR must correct this misinformation in the Initial Study. The lack of existing speed limits for traversing Redwood Creek in the vicinity of Bair Island and Greco Island means there is no measure currently in place to protect marine mammals, diving ducks, listed species or tidal marsh habitat for sensitive species from damage caused by ferry wakes. The DEIR must include a rigorous analysis of ferry speed restrictions that will fully mitigate this impact, such as a no-wake zone.

That analysis must include the locations in Redwood Creek and San Francisco Bay where the restrictions should be in place.

A 2007 Preliminary Wake Wash Impact Analysis for a Redwood City ferry terminal[15] recommended slow ferry speeds in the Bay, 1.5 miles (1.3 nautical miles) from the confluence of Westpoint Slough and Redwood Creek.

Additionally, the DEIR must identify ongoing enforcement measures for speed restrictions and the entity responsible for enforcement of speed restrictions, or a no-wake zone for ferries will not be an effective mitigation measure for wake impacts. The Redwood City Ferry Business Plan[16] (Page 2-5) states: "*With the initiation of public ferry service, there could be a need for additional enforcement of the port waterways. The fully burdened cost to add 1.0 FTE enforcement officer staffing to service the waterways within and near the Port is around $300,000 annually. This would be considered a cost to the City*."

Enforcement would be especially difficult if non-WETA ferries are allowed to use the terminal. We have heard anecdotally that WETA ferry operators have a good track record of abiding by speed restrictions in other areas of the Bay; however, kayakers and rowers experienced many instances of private ferry operators exceeding safe speeds near their watercraft in Redwood Creek during the pilot program (see attached Appendix B). Unless private ferry operators are prohibited, the DEIR must consider the lack of available enforcement as a significant issue that must be addressed.

Pacific Harbor Seal:

Assessment of environmental impacts from vessels on harbor seals typically focus on seal haul-out sites[17]. Seal haul-out sites in Redwood City are located on the Refuge's Outer Bair Island, Greco Island

[13]BookletChart 18653 *San Francisco Bay - Angel Island to Point San Pedro* available at: https://www.charts.noaa.gov/BookletChart/18653_BookletChart.pdf

[14] BookletChart *San Francisco Bay – Southern Part NOAA Chart 18651*

[15] 2007: Port of Redwood City Ferry Terminal Locational Analysis, Environmental Assessment, & Conceptual Design, available at: https://www.redwoodcity.org/home/showpublisheddocument/18198/636935337129570000

[16] Redwood City Ferry Business Plan Port of Redwood City FINAL | April 5, 2022. https://www.redwoodcity.org/home/showpublisheddocument/25313/637964153943000000

[17] *Executive Summary Final Program Environmental Impact Report, Expansion of Ferry Transit Service in the San Francisco Bay Area*. WETA (June 2003). https://weta.sanfranciscobayferry.com/sites/weta/files/weta-public/publications/WTAProgrammaticEIRExecutiveSummary.pdf

and in Corkscrew Slough off Redwood Creek[18]. Harbor seals also pup on the banks of Corkscrew Slough in the vicinity of the slough's confluence with Redwood Creek. Harbor seals typically forage within 1-5 km (0.6-3 miles) from haul-out sites.[19]

The Corkscrew Slough haul-out site is unique because Redwood Creek is an essential corridor for these harbor seals moving from the slough into San Francisco Bay to forage. Their use of an alternate route, Steinberger Slough, to access the Bay from Corkscrew Slough is negligible[20]. In addition, seal pups are susceptible to boat strikes in San Francisco Bay,[21] and a probable boat strike on a harbor seal pup in San Francisco Bay has been reported.[22]

Although the Initial Study states on Page 4-10 that, *"…the EIR will also assess the potential to affect marine mammals*…", including (presumably) the seal, it does not describe what aspects of their life history will be studied. In the case of Redwood City, assessing impacts based on ferry routes relative to distances from harbor seal haul-out sites would not adequately determine the effects on this population.

The DEIR must analyze what impacts the significant number of ferry transits in the Project area of Redwood Creek will have on this long-established colony of seals, including impacts from noise, disturbance, vessel strikes, and impediments to accessing foraging areas in the Bay. The analysis should look at potential impacts at both high and low tides, and include cumulative impacts from both Project ferry trips and the existing boat traffic from the various marinas in Redwood Creek and Westpoint Slough. Impacts must be avoided, and the effectiveness of mitigation measures such as speed restrictions and limiting the number of ferries must be substantiated in the DEIR. Additionally, ongoing monitoring of the seal population to ensure mitigation measures are adequate must be required.

Pacific harbor seal in Westpoint Slough near confluence with Redwood Creek April 3, 2021.

[18] Kopec, A. D., AND J. Harvey. 1995. Toxic pollutants, health indices, and population dynamics of harbor seals in San Francisco Bay, 1989–1992. Moss Landing Marine Laboratories, Moss Landing, California, Report 96-4:1–168.

[19] Grigg, Emma K., Sara G. Allen, Deborah E. Craven-Green, A. Peter Klimley, Hal Markowitz, and Deborah L. Elliott-Fisk. 2012. "Foraging distribution of Pacific harbor seals (Phoca vitulina richardii) in a highly impacted estuary." Journal of Mammalogy 93 (1):282-293. doi: 10.1644/11-mamm-a-128.1.

[20] Fox, Kathlyn S. (2008). *Harbor Seal Behavioral Response to Boaters at Bair Island Reserve*. Master's thesis, San Jose State University. https://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=4587&context=etd_theses

[21] Greig, Denise J. et al. 2019. Harbor seal pup dispersal and individual morphology, hematology, and environmental contaminant factors affecting survival. Marine Mammal Science, 35(1): 187-209 (January 2019)

[22] Greig, Denise J. et al. 2019. Harbor seal pup dispersal and individual morphology, hematology, and environmental contaminant factors affecting survival. Marine Mammal Science, 35(1): 187-209 (January 2019).

Noise pollution underwater in San Francisco Bay from vessels, and marine mammal safety are a growing concern that needs to be considered in the DEIR. A 2021 study by scientists at San Francisco State's Estuary and Ocean Science Center[23] found that significant underwater noise in the Bay is generated by high-speed ferries, and that reducing speeds reduces both noise and risk of collision between vessels and marine mammals.

The Marine Mammal Protection Act (MMPA) of 1972 prohibits the "take" of marine mammals without a permit. And "take" is defined as actions that harass, hunt, capture or kill any marine mammal. Additionally, under the 1994 Amendments to the MMPA, "harass" is statutorily defined at two levels:

- "Has the potential to injure a marine mammal or marine mammal stock in the wild (known as **Level A harassment**); or
- Has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild (known as **Level B harassment**)."[24] [emphasis added]

The DEIR must identify potential adverse impacts of the proposed project on marine mammals, not just within the vicinity of Redwood Creek and the proposed ferry terminal, but also the direct, indirect, and cumulative impacts increased ferry traffic may have on marine mammals traversing the shipping channels or other locations within the Bay that may be in the path of ferry traffic.

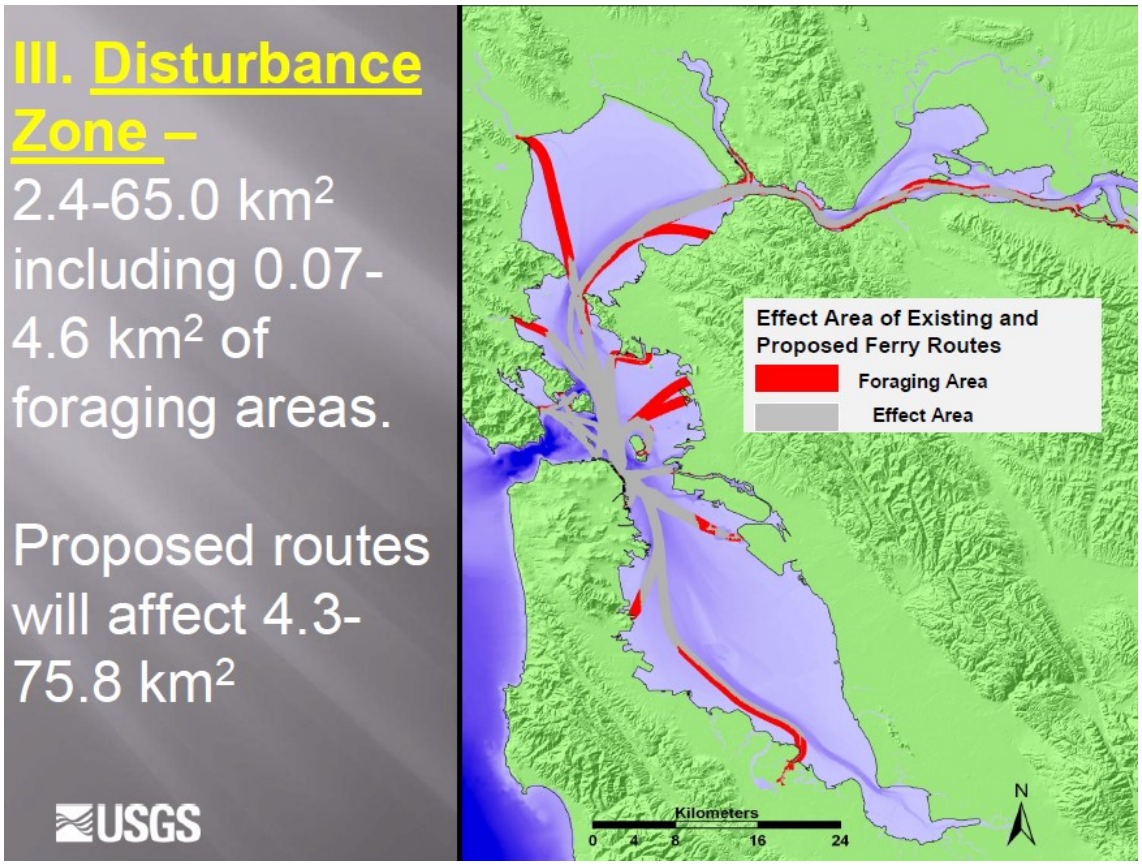
Waterbirds in the Open Bay:

The potential for adverse impacts to waterbirds in the Bay from Project ferries utilizing the route to Oakland and San Francisco must be analyzed in the DEIR. The effects of ferry traffic on waterbirds present on bay waters was studied by U.S.G.S. biologists who presented their findings at the 2008 South Bay Salt Pond Restoration Project South Bay Science Symposium[25]. A slide from their presentation is provided below:

[23] Cope S., Hines E., Bland R., Davis J.D., Tougher B., Zetterlind V. Multi-sensor integration for an assessment of underwater radiated noise from common vessels in San Francisco Bay. J. Acoust. Soc. Am., 149 (4) (2021), pp. 2451-2464.

[24] Glossary: Marine Mammal Protection Act. Harassment under the Marine Mammal Protection Act. National Oceanic and Atmospheric Administration (NOAA) Fisheries. https://www.fisheries.noaa.gov/laws-policies/glossary-marine-mammal-protection-act Accessed 5.30.24

[25] Takekawa et al. 2008. Effects of Ferry Traffic on Migratory Waterbirds in the San Francisco Bay. South Bay Salt Pond restoration Project South Bay Science Symposium 2008: Research and Restoration of the South Bay, 25 Sept. 2008. Abstracts of oral and poster presentations. https://www.southbayrestoration.org/science/2008symposium/2008Symposiumpresentations/presentations/Takekawa%20et%20al_Effects%20of%20Ferry%20Traffic%20on%20Migratory%20Waterbirds%20in%20the%20San%20Francisco%20Bay%20.pdf



Presentation slide from Takekawa et al. 2008. Effects of Ferry Traffic on Migratory Waterbirds in the San Francisco Bay. South Bay Salt Pond restoration Project South Bay Science Symposium 2008: Research and Restoration of the South Bay, 25 Sept. 2008. Abstracts of oral and poster presentations.

The Executive Summary of the 2003 WETA EIR for Expansion of Ferry Service[26] concludes that, "*ferry traffic could disturb roosting, rafting, and foraging waterfowl in the Bay*."

According to Audubon California[27], "*Forty to fifty percent of the Pacific Flyway's Surf Scoter population is believed to overwinter in San Francisco Bay…Over the past 50 years, however, their populations have declined across their range by 50-60%."* De La Cruz[28] reported Surf Scoters demonstrate strong site fidelity and only the *"…western shoreline of the Central Bay below Oakland and the eastern shoreline north of the San Mateo Bridge were used as core areas by Surf Scoters during all study months*."

Larsen and Laubek[29] studied the effects of high-speed ferries on wintering sea ducks in the Kattegat Sea, Denmark. Their study identified the following impacts of high-speed ferries to sea ducks (Common Eiders and Common Scoters):

[26] Executive Summary Final Program Environmental Impact Report Expansion of Ferry Transit Service in the San Francisco Bay Area. URS Corporation June 2003. https://weta.sanfranciscobayferry.com/sites/weta/files/weta-public/publications/WTAProgrammaticEIRExecutiveSummary.pdf
[27] Audubon California. N.d.) Birds: Surf Scoter. https://ca.audubon.org/birds-0/surf-scoter
[28] De La Cruz, Susan Elizabeth Wainwright, Ph.D. 2010. Habitat, Diet, Contaminant Relationships of Surf Scoters in San Francisco Bay: Implications for Conservation in Urban Estuaries. Retrieved from https://www.proquest.com/docview/814699728/933081F769084B1FPQ/1?sourcetype=Dissertations%20&%20Theses
[29] Larsen, J.K. and Laubek, B. (2005). Disturbance effects of high-speed ferries on wintering sea ducks. Wildfowl. 55. 99-116. https://wildfowl.wwt.org.uk/index.php/wildfowl/article/view/1176/1176

"*The impacts of high-speed ferries on sea ducks may be divided into three main categories: i) changes in habitat, ii) disturbance and iii) collision risk. Changes in habitat by high-speed ferries may occur where the ferries pass through shallow waters, through the physical effect of the underwater waves generated by the combined effect of the hull and the water jet, on the bottom substrate (Dahl & Kofoed-Hansen 2003). Changes in substrate composition may in turn affect the benthic fauna on which sea ducks depend. Sailing, like many other human activities, is a source of disturbance to birds. A boat passing through a sea-duck site will cause a temporary displacement of birds and a change in activity pattern within a corridor along the route travelled. Depending on the frequency of disturbance and the ability of birds to compensate for the resultant loss of feeding time, and the concomitant increase in energy expenditure, this may lead to a loss of feeding habitat. Finally, high-speed ferries may pose a collision risk to sea ducks. The speed at which a high-speed ferry travels leaves limited reaction time for sea ducks located in the ferry's immediate path, which might be especially critical during feeding bouts, when sea ducks spend much time underwater, or when visibility is reduced. Birds may collide with the ferry or, when attempting to escape by diving, become caught in the underwater turbulence*."

These studies raise significant concerns regarding the potential negative impacts of the proposed ferry service transiting the San Francisco Bay – questions that must be answered through the environmental review:

- What are the potential long-term impacts to diving duck and other waterbirds (i.e., Double-crested Cormorant) populations, and their use of foraging areas from disturbance caused by an unknown number of daily trips (from 16 to "full buildout service") of high-speed ferries transiting through San Francisco Bay on the specific Project routes?

- What are the cumulative impacts of the Project when the existing and other planned ferry routes are considered for both private ferry operations and WETA ferries?

- Could the repeated flushing response to ferry disturbance result in decreased body condition of diving ducks due to disruption of critical feeding and roosting behaviors. Repeated flushing in response to disturbance requires an expenditure of energy that may have negative impacts on energy stores for migration or reproduction (i.e., will the birds have sufficient energy store to reach their breeding ground and once there, will they have sufficient energy to successfully reproduce?). Scoters have low reproductive rate so any negative impacts on breeding success will have repercussions on the population level.

- Could the substrate disturbance of the high-speed ferry in adjacent shallower waters have negative impacts on benthic invertebrates – i.e. diving duck food supply?

Diving ducks (scaup) in Westpoint Slough, with Redwood Creek in the background, April 3, 2021.

Proposed Removal of Historic Wharf (Dock):

The IS states: *"Construction of the visitor-serving amenities would include the aforementioned activities and removal of the existing dock parallel to the shore along Westpoint Slough, building construction, and drought tolerant landscaping."* (Page 2-15, emphasis added)

The wharf is approximately 600 feet long and the removal of this historic structure constitutes a significant change from statements provided to the public in previous ferry terminal documents:

Redwood City Ferry Business Plan FINAL April 5, 2022[30] (pg. 3-10) "*Option 2 eliminates the need for dredging due to the existing navigation channel that provides deeper water for vessels operating at the Port, and is the option preferred by the Port. This site would provide easier maneuvering in and out of the berth and it also eliminates the need to demolish the existing wharf structure.*".

Redwood City WETA Ferry Financial Feasibility Study & Cost-Benefit and Economic Impact Analyses 2020[31] (pg. 5-8), "*The Option 2 location would provide easier vessel maneuvering in and out of the berth and it also eliminates the need to demolish the existing wharf structure located at the north site*."

Removal of the wharf structure is apparently related specifically to the proposed construction of a hotel (May 15, 2024 Port of Redwood City Ferry Terminal Project Scoping meeting CDM Smith consultant oral comment). The). Clearly, the ferry terminal component of the Project is not dependent on removing the old dock.

The IS identifies the dock structure as a potential historical resource:
"a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?
Potentially Significant Impact. The current leaseholder is vacating the project site and removing all improvements currently located on-site and the only structure that would be removed under the proposed project is the existing dock along Westpoint Slough. A survey will be conducted for the EIR to

[30] https://www.redwoodcity.org/home/showpublisheddocument/25313/637964153943000000
[31] https://www.redwoodcity.org/home/showpublisheddocument/22921/637442616488470000

determine if the dock or any other features at or near the project area are potentially historical resources and would be affected by the proposed project. If historical resources are affected by the proposed project, significant impacts could result; therefore, this issue will be evaluated in the EIR." (Page 4-13)

It is unclear why this historic wharf must be removed as it does not impact completion of any of the Project objectives outlined in the NOP: 1) provide WETA passenger ferry service to Redwood City, 2) widen the Seaport Boulevard loop, and 3) change zoning to allow visitor-serving uses. Buildings for the visitor-serving uses *"would be located a minimum of 100 feet from the water's edge*" (IS Page 2-14), so there is no need to demolish the wharf related to the proposed change in zoning.

The DEIR must clearly identify the reason why the removal of the wharf, and the swallow colony nesting site that is associated with this structure, is included in the Project.

Cliff Swallow Nesting Colony:

Cliff Swallows (*Petrochelidon pyrrhonota*), a migratory species fully protected under the Migratory Bird Treaty Act of 1918, nest under the old historic wharf (dock) on the north side of the site. The Project would remove this wharf located along Westpoint Slough that is a significant and long-standing nesting site for Cliff Swallows. Nesting requirements for the cliff swallow include a vertical structure such as support structures under the dock, a source of mud for nest construction – which they gather from the banks of the nearby sloughs – and open foraging areas such as nearby Bair and Greco Islands. These swallows are a unique part of the avifauna in the Refuge. Cliff Swallows are famous for their return to Mission San Juan Capistrano each spring; however, the population of Cliff Swallows has been declining in Central California[32].

The IS fails to identify this structure as a native wildlife nursery site:

"*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*?" (Page 4-11, emphasis added)

Additionally, the IS fails to identify the destruction of the wharf with the nesting colony as a **potentially significant impact** that impedes the use of a native wildlife nursery site.

[32] *Sauer, J.R., D.K. Niven, J.E. Hines, D.J. Ziolkowski, Jr, K.L. Pardieck, J.E. Fallon, and W.A. Link. 2017. The North American Breeding Bird Survey: Results and analysis 1966–2015. Version 2.07.2017 USGS Patuxent Wildlife Research Center. Laurel, MD*

Westpoint Slough historic wharf nesting colony and Cliff Swallows, May 15, 2020.

Arrival of Cliff Swallow at a nest under the old wharf on Westpoint Slough, May 15, 2020.

As stated previously, the DEIR should identify the reason for removing the dock, and document that the associated loss of this nesting site for Cliff Swallows if the wharf is demolished is a potentially significant impact.

Because of the regional decline in Cliff Swallow populations, the size of the colony, and the swallow's long-term use of this wharf nesting site, the DEIR should: 1) include the Cliff Swallow nesting site in the existing biological conditions for the Project site, 2) evaluate how destroying the existing nesting site will

impact this colony and their ongoing presence in, and use of, the Refuge, and 3) identify alternatives that avoid demolition.

Additionally, the DEIR should analyze the cumulative impacts to the population of this migratory bird species within Redwood City in light of the planned and approved demolition of the old Syufy Theater building at 557 E. Bayshore Road[33] that is also a long-standing and substantial Cliff Swallow colony nesting site. This colony is on a privately-owned parcel with a project objective of housing that clearly necessitates the removal of the structure, as compared to the historic wharf which is on City-owned property and for which there is no Project-dependent justification for demolition.

Cliff Swallow entering nest under eve of old Century 12 Theater at 557 E. Bayshore. The nesting area spans the length of the back side of the building facing the Bay Trail and Refuge. June 17, 2021.

Bird Strike Hazards:

Refuge tidal marshes, mudflats and levees, and Cargill's salt ponds along Seaport Blvd. provide roosting and foraging habitat for thousands of birds, and songbirds, migratory shorebirds and other waterfowl traverse the Project area. How will bird strike hazards associated with the proposed three-story hotel and other visitor serving buildings be avoided or mitigated?

Lighting:

Artificial night lighting that intrudes into nearby wildlife habitats can be disruptive, and may also result in increased predation on sensitive wildlife. Due to the close proximity of tidal marsh, mudflats and slough channels, what lighting design/placement and operational measures would be required at the ferry dock, terminal, parking lot, visitor-serving buildings and any perimeter outdoor use and landscaped areas to eliminate this impact?

The IS states, "*Because there is existing nighttime lighting around the perimeter of the project site and in the project area, including at the Pacific Shores Center to the east and the CEMEX marine terminal*

[33] https://www.redwoodcity.org/city-hall/current-projects/development-projects?id=67

to the south, project site lighting would not substantially increase nighttime lighting levels in the area." (Page 4-4)

Even if lighting is "not substantially increased" relative to the adjacent Cemex and Pacific Shores Center properties, the ferry terminal and visitor-serving components of the Project are adjacent to areas of sensitive habitat in Redwood Creek and Westpoint Slough and should adhere to Dark Sky[34] night lighting requirements to reduce impacts from light overspill to habitat used by aquatic wildlife, and migratory and resident waterbirds that forage at night. With the change in use, there is the opportunity and responsibility to minimize these impacts.

Outdoor Areas and Litter:

Food scraps left in any outdoor areas and garbage/recycling receptacles could attract nuisance and predatory species such as crows, ravens, gulls, rats, skunks and racoons to the detriment of wildlife in adjacent wetlands and the Refuge. How would this impact be mitigated? The DEIR should also discuss which agency/department/entity would be responsible for monitoring and dealing with nuisance species.

The Project could generate litter that could pollute the tidal marsh and waters of the Refuge, endangering wildlife in the immediate area, or get carried with the tides and currents to other locations in San Francisco Bay. What mitigation measures would be put in place to ensure that the Project does not cause an increase in the amount of litter entering tidal marshes and Bay waters either from the Project location, or from use of the new, or increased use of the existing, Bay Trail segments? The DEIR should identify the entity that would be responsible for enforcing litter mitigation measures that are proposed.

Predator Perches/Nesting Sites:

Landscaping trees, the three-story buildings, light poles and other structures and signs associated with the Project could provide perches for predatory birds such as hawks, falcons, crows and ravens. Unsuitable trees could create avian nesting sites in very close proximity to the tidal marsh. This includes palm trees that could provide nesting sites for barn owls. Endangered Ridgway's Rail and Salt Marsh Harvest Mice are especially vulnerable to predators during high tides, when they move to, and are more exposed in, the higher marsh and on the sides of levees.

The DEIR should outline requirements for building and landscape design elements that would mitigate this impact, including setting trees back from marsh areas, and utilization of the Landscape Tree Suitability Index required for the Pacific Shores Center in Redwood City. (See attached Appendix C)

Construction Noise and Vibration:

Construction of the proposed Project could impact special status species and other wildlife due to disturbance, noise and vibration from construction equipment. Noise associated with the demolition of the historic wharf in Westpoint Slough could also impact fish and wildlife. The DEIR must analyze potential impacts and identify mitigation measures if needed.

Ridgway's Rails will abandon their nests if disturbed by loud noises. The DEIR should outline the consultation process and agencies that must be consulted with to ensure any nesting Ridgway's Rail are protected from construction activity impacts, and what mitigation measures might be required such as seasonal restrictions.

[34] https://darksky.org/what-we-do/darksky-approved/

Conflict with Local Policies:

The IS states the following question: *"Would the project:*
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (Page 4-11)

The IS identifies the Redwood City Street Tree Ordinance and makes the determination that the impact on trees at the Project site would be "less than significant" and that "…*There are no other local policies or ordinances protecting biological resources applicable to the proposed project."*

Although the Project would not significantly impact city trees, the Project could conflict with Redwood City General Plan Natural Resources Policy NR-5.1 and NR-6.2 as shown below.

Policy NR-5.1[35] : *"Restore, maintain, and enhance Redwood City's creeks, streams, and sloughs to preserve and protect riparian and wetland plants, wildlife and associated habitats, and where feasible, incorporate public access*."

Policy NR-6.2*: "Restore and maintain marshlands including tidal flats, tidal marshes, and salt marshes as appropriate*."

The IS identifies many areas where the Project could have potentially significant impacts on tidal marshes, Redwood Creek, Westpoint Slough, wetland plants, tidal flats and wildlife and their associated habitats. Based on potential conflict with these Redwood City Natural Resources Policies that call for maintaining these specific natural resources, the determination should be ***"Potentially Significant Impact,"*** not "***Less than Significant Impact.***"

The DEIR should reflect the Project's potential to conflict with these Natural Resources policies in the General Plan, and document how any conflicts will be mitigated.

Hydrology and Water Quality/ Hazardous Materials

The Project site is adjacent to sensitive aquatic and tidal marsh habitats that could be adversely affected by construction activities and stormwater runoff.

Construction and Stormwater Impacts – Construction activities, including construction of the ferry landing in Redwood Creek, excavation, placement of fill and grading could pollute adjacent waters and sensitive sites with excess sediment, and with chemical contamination from construction materials such as concrete, mortar, hydrated lime, fuels and paint. Stormwater run-off from the parking and landscaped areas associated with the Project could carry pesticides, fertilizer, oils, heavy metals, and other pollutants. The DEIR must identify and analyze these potential impacts and provide mitigation measures to prevent pollutants from entering Bay waters and impacting water quality, and sensitive habitat and wildlife, e.g. including the potential use of bio-swales.

Demolition of the historic wharf in Westpoint Slough would require permits from regulatory agencies to ensure there are no impacts to water quality and to adjacent mudflats, tidal marsh and aquatic species. If this structure is removed, the DEIR must identify the permitting agencies, potential impacts and required mitigation measures.

[35] https://www.redwoodcity.org/home/showpublisheddocument/28330/638484499021370000 (most recently amended February 2023).

Land Use and Planning

The Project objectives outlined in the NOP and the IS include: *"change zoning to allow visitor-serving uses."* The DEIR must analyze whether these uses are compatible with Redwood City's General Plan policies regarding Port industrial lands in the immediate area of the Project, and determine if placing transient lodging, office workers and restaurant employees in the near vicinity of Port heavy industries puts people at risk.

According to Redwood City's 2010 General Plan[36], "*The Port is one of the city's great assets. Policies emphasize the value provided by the Port and focus on retention; providing for efficient use of land to support the Port, Port-related, and Port-dependent industries and minimizing potential land use conflicts as appropriate. Policies also include encouraging development of a passenger ferry terminal station near the Port*." (pg. BE-38).

The importance of the Port as an industrial center and for industrial and environmental sustainability is reflected in the City's Goals and Policies:

"***GOAL BE-21****: Maintain the viability of the Port of Redwood City as a center for goods and people movement and large-scale industrial activity*." (Page. BE-80)

Policy BE-33.4*: Maintain the Port of Redwood City as a critically important use, and protect long-term Port, Port-related, and surrounding industrial uses from the encroachment of incompatible land uses as appropriate*." (Page BE-195)

"*Policy BE-46.4:* *Support retention and expansion of businesses and industries in Redwood City involved in recycling materials, especially in areas proximate to the Port of Redwood City*." (pg. BE-244)

The DEIR must analyze the Project's consistency with the above General Plan Goals and Policies.

The Proposed "Visitor-Serving" Amenities are not Consistent with the Port's 2020 Vision Plan

The IS states: "*Consistent with the Port's 2020 Vision Plan, the Port is proposing future uses at the project site to expand waterfront access to the community and increase visitor-serving amenities. This includes a zone change at the 9.2-acre project site that would allow the establishment of a hotel and associated restaurant and retail and meeting/event facilities, and a standalone restaurant and small office that are independent of the hotel use*." (Page 2-14)

Although the Port of Redwood City 2020 Vision Plan[37] (Page 77) states:" *In the open area surrounding the passenger boarding area, as well as in the parking lots of the Portside Lease areas, the Port can introduce new commercial /retail uses using outdoor retail carts,*" and that, "*The Ferry Terminal concept can be scaled off the Port of San Francisco's Ferry Building Plaza with similar types of land uses and amenities*."(pg. 21), **there is no mention of hotels or a zoning change in the Port's 2020 Vision Plan, and there are no hotels at the Port of San Francisco's Ferry Building Plaza.**

To be accurate, the DEIR should document that the proposed hotel and zoning change are **not** consistent with the Port's 2020 Vision Plan.

[36] Redwood City General Plan 2010 Built Environment Element (updated Aug 2023) available at: https://www.redwoodcity.org/home/showpublisheddocument/28366/638489623787530000

[37] Port of Redwood City 2020 Vision Plan January 8, 2020 https://www.redwoodcityport.com/_files/ugd/9d6aca_08cc17636948496fa38e13a4bf93d8d3.pdf

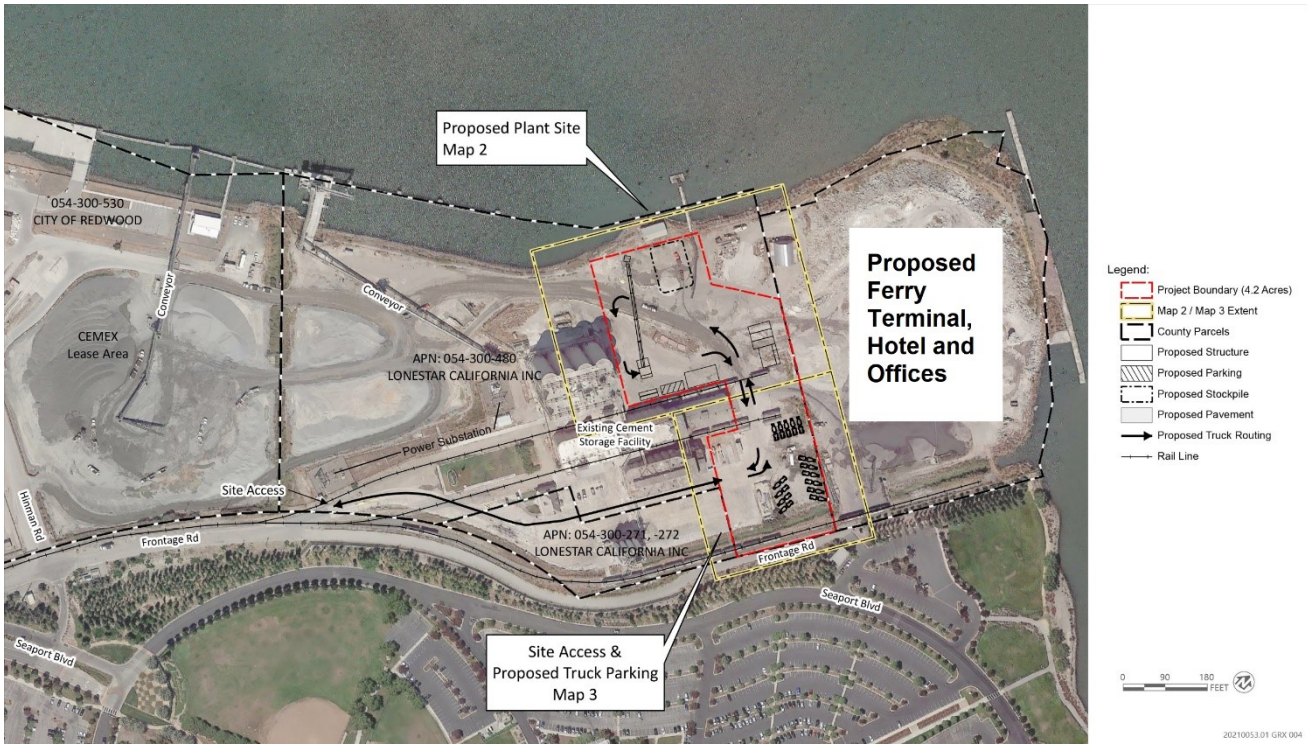
Proposed Visitor-Serving Amenities Incompatible with Port Industrial Uses

The DEIR must evaluate whether the proposed zoning change allowing the visitor-serving amenities would lead to incompatible land uses with respect to the existing Port industrial activities - threatening the continued viability of Port industrial businesses, and putting hotel guests and employees at risk.

An alternative that considers food-serving amenities only should be analyzed.

According to the Initial Study, the visitor-serving amenities (hotel, restaurant, and office) would generate about 400 new employment opportunities and guests for 100 – 200 rooms, placing a significant number of people in the area 24 hours a day, 7 days a week.

The proposed ferry terminal hotel/offices would be located adjacent to and north of the Cemex plant, in an area described as a "*marine industrial business*" in the Initial Study/Proposed Mitigated Negative Declaration for the Ready-Mix Concrete Plant Project (MNDRMC) for a proposed ready-mix concrete batch plant for Cemex Construction Materials Pacific, LLC (CEMEX)[38].



Location of Project relative to the Cemex plant (adapted from Figure 2-9 in the MNDRMC).

Air quality impacts to people residing or working in the project area from the adjacent Cemex plant.

The MNDRMC for the Cemex plant located directly adjacent to the Project states: "*Sensitive receptors (related to air quality emissions) are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, medical facilities, and places where people recreate or congregate outdoors for*

[38] Initial Study/Proposed Mitigated Negative Declaration for the Ready-Mix Concrete Plant Project at https://ceqanet.opr.ca.gov/2021120258

extended periods of time such as parks or schools are of primary concern because of the potential for increased and prolonged exposure of individuals to pollutants. The nearest sensitive receptors to the project site are outdoor baseball fields, swimming pools, and park areas located between 650 to 1,200 feet south of the project site." (pg. 3-11)

The visitor-serving amenities (hotel, restaurant, and office) would be located within ***400*** feet of the Cemex plant (estimated from "Figure 4 Project Site Plan" in the Initial Study, much closer to Cemex than the receptors identified in the MNDRMC. Toxic air contaminants from Cemex operations for cancer risk were assessed at 650 feet away (MNDRMC pg. 3-16), not 400 feet away. The DEIR must address potential impacts from air quality on restaurant employees/guests, office workers, and hotel employees/guests (sensitive transient lodging).

Noise impacts to guests in hotel transient lodging from the adjacent Cemex plant

The MNDRMC for the plant located directly adjacent to the Project (Page 3-53) states: "*Additional land uses such as schools, transient lodging, historic sites, cemeteries, and places of worship are also generally considered sensitive to increases in noise levels.*"

The MNDRNC was based on noise measurements located to the southeast and south of Cemex, but not to the north where the hotel would be located. The DEIR should evaluate noise from Cemex operations to determine impacts to restaurant employees/guests, office workers, and hotel employees/guests (sensitive transient lodging).

Noise impacts in the Project area from freight trains

Freight trains do not transit through the area of the proposed Project because it is a railroad terminus where trains stop. This activity creates very loud sounds from "coupler slack" and trains braking, as well as idling. CCCR member Matt Leddy has observed Union Pacific train activity in the area generating these noises well past 10:00 PM. The DEIR should measure these sounds relative to the proposed location of the hotel/restaurants/office as they may impact employees and guests (sensitive transient lodging) very late at night.

Hotel employee/guest evacuation in the event of hazardous material release

The proposed hotel is in an area with heavy industrial activity. The DEIR should determine potential health impacts to the proposed restaurant employees/guests, office workers, and hotel employees/guests (sensitive transient lodging) from hazardous materials associated with these industrial activities.

The Redwood City E. Bayshore Road Evacuation Assessment (Phase 1) Memorandum (February 24, 2022)[39], is an evacuation assessment for the E. Bayshore Road and Bair Island Road areas for proposed residential developments in an area with a single point of vehicular access and egress. The assessment lists several hazardous materials at 876 Seaport Boulevard (the Cemex plant adjacent to the Project). The hotel would have a single point of access and egress.

The DEIR should evaluate the potential risks to restaurant employees/guests, office workers, and hotel employees/guests (sensitive transient lodging) from hazardous materials at the adjacent Cemex plant, and determine and provide an evacuation plan in an area with only one point of access/egress.

[39] https://webgis.redwoodcity.org/community/documents/projects/phed/67/appendix_i-1.pdf

Potential hazardous smoke exposure to people in the project area from nearby industries

On Wednesday, May 22, 2024 a fire broke out at the Sims Metal Management facility at 699 Seaport Boulevard, requiring San Mateo County to recommend that, "*those who are sensitive to smoke to stay indoors, close windows and doors, and ensure that air conditioners and fans are not pulling in air from outdoors*"[40]. Previous fires at the Sims facility have occurred in November 2013 (resulting in a "shelter in place" warning), December 2013, and March 2022.

The DEIR should evaluate whether the proposed zoning change would create potential hazards for restaurant employees/guests, office workers, and hotel employees/guests (sensitive transient lodging) from future fires of this nature.

The DEIR should evaluate potential hazards to passengers waiting for a WETA ferry that is enroute to Redwood City in the event of a fire.

April 7, 2007, fire at Sims Metal Management facility. Photo courtesy of Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Metal_Recycling_Plant_burning.jpg)

[40] Statement on SIMS Fire https://www.smcgov.org/ceo/news/statement-sims-fire

Air Quality

The DEIR must provide the estimated number of truck trips and routes for diesel trucks moving soil to or from the site from Project-related excavation and fill, and analyze the amount of greenhouse gas emissions from the trucks in combination with construction equipment.

The ferries are often considered "green" because they remove some number of commuter vehicles from the road, but how significant is that reduction in greenhouse gas emissions when it is offset by the diesel emissions of the ferries? Additionally, growing numbers of cars are electric, and the ferries are now competing with an electrified Caltrain in September 2024, and with company-sponsored electric buses. DEIR should look at the amount of ferry emissions per passenger carried/per mile and compare this with other modes of transportation.

To address the ferry greenhouse gas emissions, the DEIR should include an alternative that would delay initiation of service until there is sufficient battery capacity available to run electric ferries to the Redwood City Terminal where they can be recharged for the return trip.

Cumulative Impacts

Our letter has previously discussed the need for the DEIR to analyze and address potential cumulative impacts in a number of specific areas. Additionally, the DEIR must look at the cumulative impacts from the Redwood City ferries increasing the number of vessels transiting the highly congested waters between Oakland and San Francisco. With the advent of new WETA ferry routes, private ferry operators providing scheduled and unscheduled service and on-demand water taxis, how many vessels traversing the Bay are too many when considering impacts to marine mammals?

Marine mammals are increasingly using San Francisco Bay, with increased chances of vessel strikes. A significant increase in the endangered humpback whale foraging in San Francisco Bay has occurred since 2016, resulting in an area of concern 5-6 km east of the Golden Gate Bridge "… where the whales overlap with high-speed ferry routes. These commuter ferries are the fastest commercial vessels on the bay, regularly reaching 30 kn."[41] And bottlenose dolphins have become permanent Bay residents since 2016.[42]

Thank you for the opportunity to provide comments. We request that we be notified of future opportunities for public review and comment on the proposed Ferry Terminal Project.

Sincerely,

Gail Raabe Carin High

Gail Raabe, Co-Chair Carin High, Co-chair
Citizens Committee to Complete the Refuge

Cc: SFBNWRC
DESFBNWR

[41] **Markowitz, T.M.**, **Keener, W.**, **Webber, M.A.**, Payne, A.R., **Lane, R.S.**, Fahlbusch, J.A. and Calambokidis, J., 2024. New urban habitat for endangered humpback whales: San Francisco Bay. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 34(3), p.e4107. https://onlinelibrary.wiley.com/doi/10.1002/aqc.4107

[42] Do Dolphins and Porpoises Live in San Francisco Bay? *Bay Nature Magazine* Summer 2020. https://baynature.org/article/do-dolphins-and-porpoises-live-in-san-francisco-bay/

Cc: USEPA
USACE
SFBRWQCB
BCDC
USFWS
CDFW
NMFS

Attachments:

Appendix A Redwood City Wetlands – Boat Wake Effects
Appendix B Summary of the Ferry issue, March 2016
Appendix C Pacific Shores Tree Suitability Index

Appendix A, Redwood City Wetlands – Boat Wake Effects

REPORT

TO: Brian Gaffney
representing Citizen's Committee
to Complete the Refuge

FROM: Dr. Emmanuel Gabet
1403 Saint Francis Way
San Carlos, CA 94070

DATE: 12/4/2018

PROJECT TITLE: Redwood City Wetlands – Boat Wake Effects

SITE LOCATION: Bair Island

Dear Mr. Gaffney,
This report summarizes my observations and measurements of the impacts of the wakes generated by ferry traffic on 3 December 2018. In addition, I provide my professional opinion regarding the long-term effects of these wakes on the erosion of the marsh plain.

METHODS

On 3 December 2018, I visited Redwood Creek twice, once at high tide and, again, at low tide. During these visits, I documented the effects of wakes generated by ferry traffic. The observations at high tide coincided with the passage of the Billie J for its 10:10 am arrival at the Port of Redwood City, and the low-tide observations coincided with its passage after its 3:16 pm departure. During both visits, observations and measurements were made approximately 50 – 100 meters west of Redwood Creek's junction with Corkscrew Slough, along the southern edge of Bair Island (Figure 1). During both visits, water samples were taken approximately 3 feet from the shoreline at two locations immediately before and after passage of the ferry. These water samples were filtered to recover, dry, and weigh the suspended sediment; these data were then used to calculate sediment concentrations.

RESULTS

During the visit at high-tide, passage of the ferry generated waves that were approximately 2feet high when they hit the marsh plain. These waves were high enough to inundate the edge of the marsh plain to an inland distance of 6 feet (refer to Figure 2 for an illustration and Figure 3 for a photograph taken during the event). Water samples taken near the shoreline show a modest increase in sediment concentration due to the impact of the waves on the marsh bank (Table 1). During this visit, I also noted many patches of bare soil and clumps of dead pickleweed along the edge of the marsh plain (Figure 4).

During the visit at low-tide, I noted the presence of grapefruit-to-soccerball sized blocks of marsh plain littering the mudflat (Figure 5). These blocks had broken off the edge of the marsh and fallen onto the mudflat below; some blocks had been transported down the mudflat's gentle slope (Figure 6). I also noted notches eroded into the base of the marsh plain (Figure 6). Water samples taken at the shoreline before and after the passage of the ferry (Figure 7) had a dramatic increase in sediment concentration; indeed, sediment concentrations at the site that I was able to reach first (Site 3) increased by over 2500% (Table 1). Sediment concentrations at Site 4 were somewhat lower because some material had settled to the mudflat surface by the

time I was able to take a water sample but, nevertheless, the sediment concentrations were still high, having increased by 638%. These data are evidence for significant resuspension of mudflat sediment due to the boundary shear stress exerted by the waves as they broke along the shore, ran up the mudflat, and then drained back down.

CONCLUSION

The wakes from the ferries are contributing to erosion at all stages of the tidal cycle, albeit by different processes. During low tide, the waves washing up the unvegetated mudflat are eroding sediment; the coarser sediment (ie. Sand) is then redeposited lower on the mudflat while the finer grained sediment (which can remain suspended for hours) is carried away by the channel's current. At mid-tide levels, the erosion of the mudflat sediment directly beneath the marsh plain sediment (distinguished here by the presence of roots – live or dead) creates a notch that undercuts the marsh plain (Figure 6). At high-tide, the increased frequency of saltwater washing over the edge of the marsh plain by the waves is killing the pickleweed, which is neither adapted to high levels of saltwater inundation nor frequent high shear stresses from fast-moving waves. Unfortunately, pickleweed roots are an important source of bank strength in tidal channels in the SF Bay (Gabet, 1998); indeed, the critical role of roots in strengthening the banks explains the cliff-like nature of the marsh edge as it erodes backwards.

The cumulative effect of the wakes from the ferries at all tidal stages leads to the following set of processes. Erosion of the mudflat sediment undercuts the marsh plain. Undercutting of the marsh plain, coupled with the loss of bank strength due to the loss of the pickleweed, leads to collapse of the marsh-plain banks and retreat of the marsh-plain surface. Therefore, based on my observations, my measurements, and my expertise in the processes of bank erosion in tidal channels, it is my professional opinion that the wakes generated by the passage of the ferries in Redwood Creek are contributing to erosion of the banks along Bair Island.

Sincerely yours,

E Gabet

Emmanuel Gabet, PhD
Geologist

Table 1. Sediment concentration data.

Site	Condition	Sediment concentration (g/l)	Change in sediment concentration
1	High tide, before ferry	0.11	
1	**High tide, after ferry**	**0.27**	**145%**
2	High tide, before ferry	0.12	
2	**High tide, after ferry**	**0.15**	**25%**
3	Low tide, before ferry	0.17	
3	**Low tide, after ferry**	**4.55**	**2567%**
4	Low tide, before ferry	0.21	
4	**Low tide, after ferry**	**1.55**	**638%**

Figure 1. Map of study area. Sites 1 and 2 are at the edge of the marsh-plain surface and were visited at high tide. Sites 3 and 4 are along the mudflat and were visited at low tide.

Figure 2. Illustration of observations during boat wake impact at high tide.

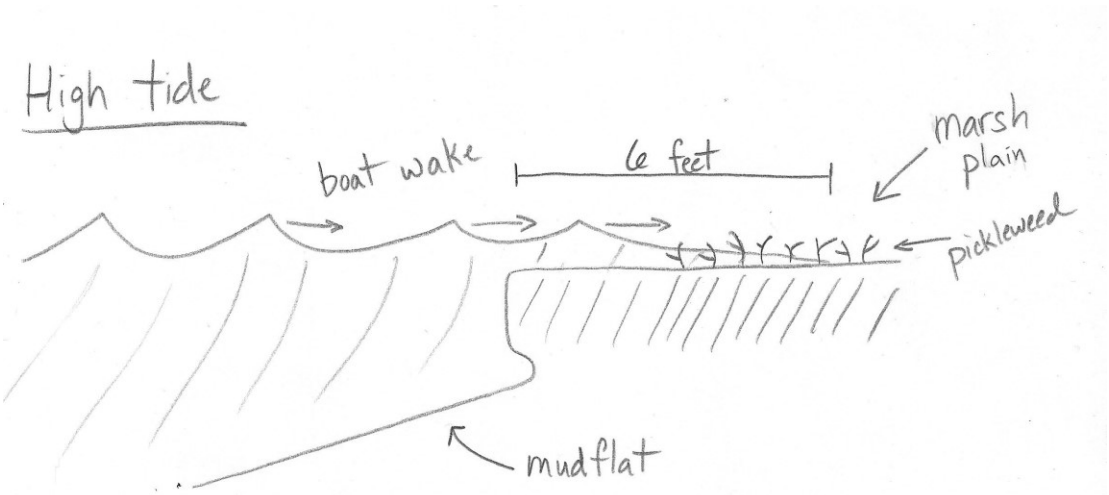


Figure 3. Photograph, taken near Site 1, of the ferry wake inundating the edge of the marsh plain.

Figure 4. Patch of bare marsh-plain surface and distressed pickleweed near Site 1.

Figure 5. Evidence of recent bank failure along the edge of the marsh plain.

Figure 6. Illustration of features observed during low tide as well as an explanation of terms and concepts used throughout this report.

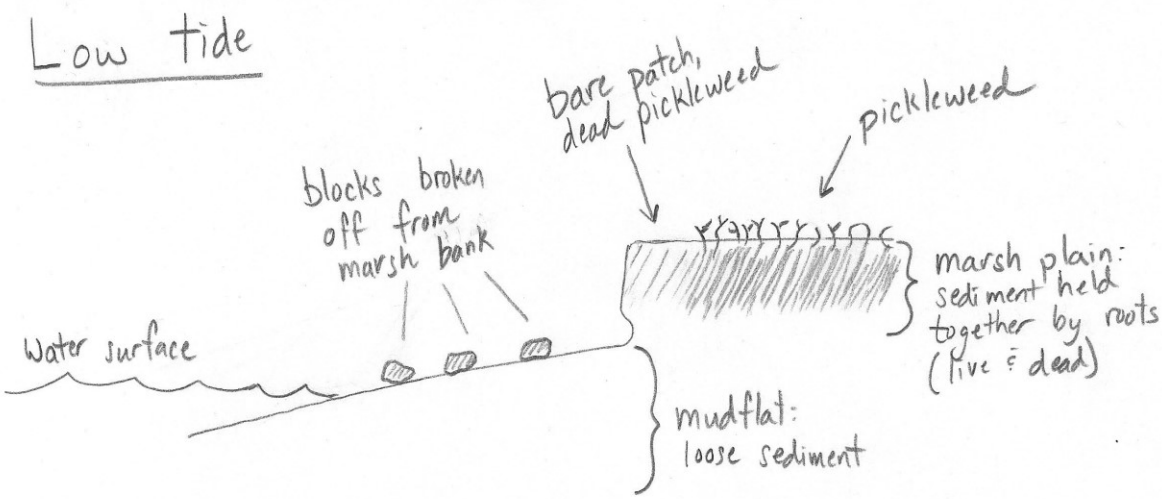
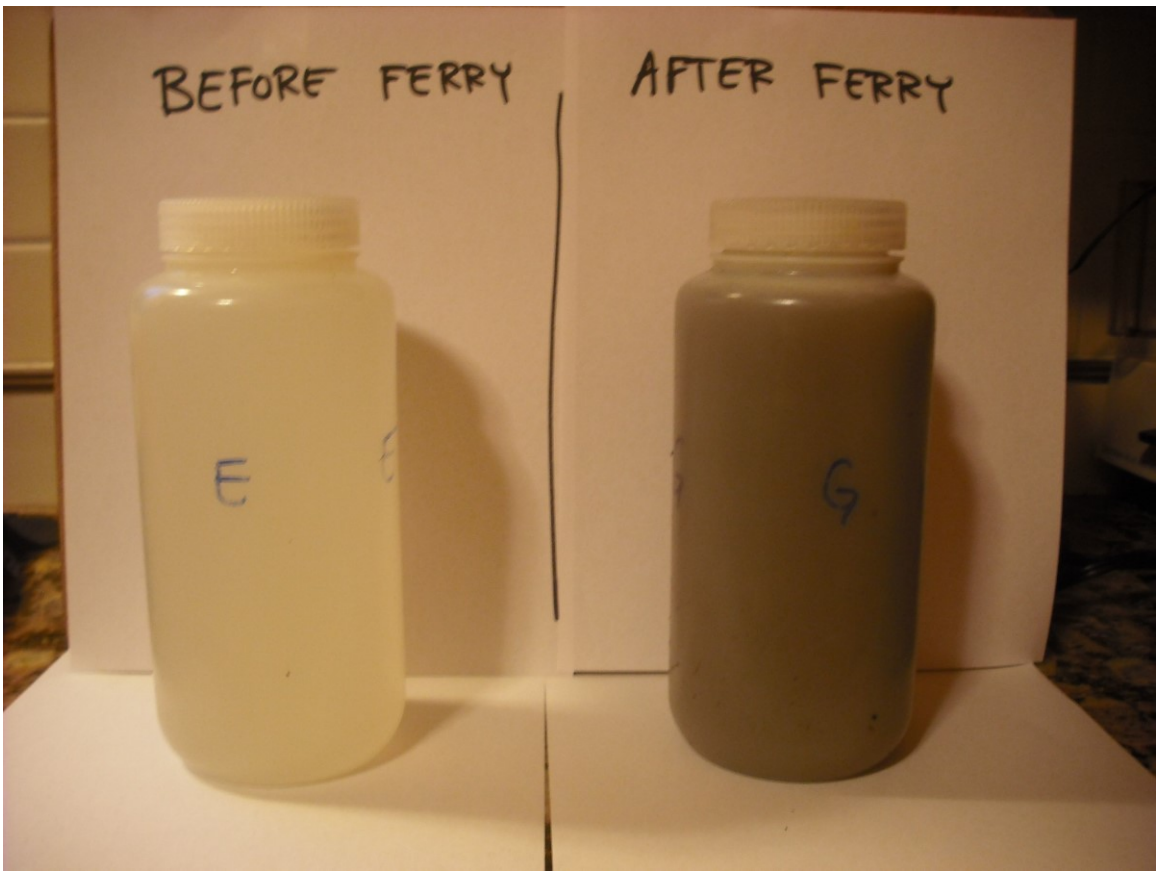


Figure 7. Water samples taken along the shoreline immediately before and after passage of the ferry during low tide (Site 3).



LITERATURE CITED

Gabet, E. J., 1998, Lateral migration and bank erosion in a saltmarsh tidal channel in the San Francisco Bay, California: Estuaries, v. 21, no. 4B, p. 745-753.

Summary of the Ferry issue, March 2016

High speed passenger ferry service to Westpoint marina has been operating for a few months and there have been some problems with small boats, including swamping large rowing shells and flipping smaller sculling boats. These issues were discussed in a meeting of port users on Mar 8, 2016 and some actions agreed on to improve safety.

The **ferry is hazardous to small boats** in two ways:

- **Speed** – fast enough to give reduced time to see and avoid contact
- **Wake** – it produces an unusual wake that is hazardous to rowing shells and other small boats

The **most critical area is from the mouth of Westpoint slough out to about marker 9.** The ferry operator wants to maintain his schedule and does not want mandated low speed zones.

- **Schedule** – Weekdays at 8am, 9am, 4:30pm and 6:45pm, plus or minus 10-15 minutes
- **Round trips** – ferry will go inbound to Westpoint, then outbound around 10 minutes later If you feel unsafe around this ferry, **consider avoiding the channel during these times.**

Actions the ferry and small boats should take to mitigate the hazard

When the ferry is approaching a small boat or boats from the rear, i.e. both travelling the same direction, the ferry will slow down to a low wake speed. **The small boat should stop** to allow it to pass. Once clear, it will resume normal (fast) operating speed.

When an encounter occurs near the mouth of Westpoint slough, it will slow to a low wake speed and allow the small boat user to get across the mouth (past the "crayon buoys") to Marker 13. The **small boat user should stop at Marker 13** and allow the ferry to get past at low speed, so it can then resume normal (fast) speed.

If possible, **multiple small boats should form a single group** so it can get past easier.

Increased lateral distance helps with the wake – leave space for the ferry to operate by moving to the side.

General tips and reminders for small boat safety

- Always remember – **you are primarily responsible for your own safety**
- **Stay to the side of the channel**. Outside the channel may be better when the tide is high enough, but shallow water may make wake encounters worse, so use caution.
- **Make yourself visible** – wear bright clothing during the day and use good lights the dark
- **Never wear earbuds on the water** – use all your senses to remain aware of other boats
- **Use extra diligence** near the mouth of Westpoint slough, through the wires and out to about Marker 9. This area is where the space constraints make the hazard most acute.

Any small boat users who have a dangerous incident, especially if you are capsized or injured, **should report the details** so authorities can be notified. Reports can be made to BIAC at sculling@gobair.org or board@gobair.org. **Emergencies should always be reported via 911**.

A follow up statement from the ferry operator is included on the following page. A more detailed summary of the meeting that was held are on subsequent pages.

Statement from the ferry operator

We are happy that most clubs have been able to work with all commercial traffic in the channel. And while we understand the confusion that comes with a change in the status quo and want to understand everyone's concerns we want stress that all of our captains are educated and experienced professional Mariners equipped with newest most modern navigation and safety equipment.

At Prop our values are not focused on making money though we rely on it to make it work, the company was founded on making people's lives better. The areas number one concern for large employers and the populous at large is traffic. We all share the traffic and commute frustration. We move our families and take jobs based on commutes. Our friends loved ones and our spouses drive frustratingly long and stressful commutes sometimes to go a few miles. The Bay Area moves less than 10% of the ferry traffic that other cities with similar access to water take. Props modern low wake, shallow draft vessels represents a step forward in efficiency and with low shore side effect.

Prop is the first commercial, private NON SUBSIDIZED ferry carrier in the Bay Area. We have invested our own money to develop a public carrier, with design and delivery of the first boat to the area with the dream of improving the lives of the people in our community. By no means has this been easy, the legal hurdles and management challenges outside of the cost of operating a business like Prop has been a massive and at times a trying challenge. Outside the legal and financial realm, the support from agencies, cities and most of all the public has kept our motivation high as it's clear, relieve is here and it's long over due.

By adding scheduled service to Redwood City we bring sorely needed relief to the problematic 101 commute and Bay Bridge and San Mateo bridge. The challenge is the distance to Redwood City, to make it financially feasible we need to perform 3 trips in the morning and two in the evening to make the project work financially. 2 trips would be the absolute minimum to make it work. Slowing down for a full 10 minutes in and 10 minutes out in open water would effectively eliminate the potential to run a second trip within the commuter window.

We hope to engage the channel users at large on a semi regular basis to create and convene with a channel safety committee as an additional step to make our skills expertise and time available to this who have a concern or just want to learn more about us. To this end we hope to maintain our current course and actions to slow when needed so that we all can use the commercial channel to its potential safely without confrontation or angst.

My name is James Jaber the founder of Prop and thank everyone for being professional and courteous. Further I am here for questions, introductions or to provide background or additional information.

Sincerely,

James
james@bayareafastferry.com http://www.propsf.net

Summary of the March 8, 2016 port users meeting regarding the Ferry

Strictly from memory, by Jon Carlson

Estimate of attendance, 30-40 people.

Ferry captain, “Capt Andy” (sorry, do not remember his last name), represented the Ferry.
Lt. John Gunderson of RWCPD mediated.
Others included rowers (Stanford coaches, BIAC coaches, Norcal coach, Redwood Scullers, Santa Clara coach, several individual scullers), sailors, recreational boaters, Sea Scouts, Coast Guard, Marine Science Institute, and the Head of the Port of RWC.

Capt Andy initiated discussion by talking about wanting to work with other users in the interest of safety. However, he was adamant about his right to use the waterway within the legal bounds, including the speeds at which he operates. He was unwilling to commit to any kind of “no wake” or “low speed” zones. He expressed that if a small boat felt unsafe using a “commercial waterway” with traffic like the ferry then perhaps the small boat user should evaluate whether it was safe to use that waterway in that type of boat at all.

He expressed that his experience with small boat encounters was frustrating for him in that there is a lot of inconsistency. Not following the traffic pattern, not giving way when appropriate to allow him to safely pass, and generally having numerous groups and individuals being “strung out” all along the channel. He stated he would not be able to commit to slow down to pass rowers and small boats because there were frequently many groups or individuals and so there was no common location at which he could resume his desired speed.

He stated several times that his schedule is very consistent within a relatively small window (+- 10-15 minutes) and that if small boats felt unsafe operating near him they could plan to avoid the channel during those windows of time. His scheduled timing is roughly:

- Weekdays – 8:00am, 9:00am, 4:30pm, 6:45pm

These times are approximate, and he is typically coming into the harbor/Westpoint a few minutes before and then departing the harbor/Westpoint a few minutes after, though based on my experience there is some natural variability. All trips involve a round trip – arrive, drop off/pick up passengers, depart.

Many rowers expressed concern for their safety relative to wake size and operating speed of the ferry. Two main hazards are risk of being flipped or swamped by the wake and the risk of a collision. It was emphasized to him that his wake is physically unusual for whatever reason and that it seems to have a greater risk of flipping or swamping a rowing shell than the wake of other large boats, even tugs or ships. It was emphasized to him that space/distance helps – the hazard presented by his wake dissipates somewhat with distance and is particularly hazardous when he is close to a shell. It was also emphasized to him that his operating speed made it more difficult to see, anticipate, and react to an encounter with the ferry. A boat at rowing speed does not have very much time to react because of the speed at which the ferry moves.

Many rowers and other port users emphasized the waterway is a “mixed use” waterway.

It was discussed that the most hazardous area is generally between marker 13 (mouth of Westpoint) and marker 9 (about where the bay begins to open up). This is because the channel is physically constrained by islands on both sides, on low tide there is mud on both sides that makes outside the markers unavailable even to rowing shells, the wake gets reflected by the shoreline resulting in it not dissipating as quickly, and the number of users that go through there leads to increased traffic density. Further out, the bay opens up and small boat users begin to naturally spread out and also have less expectation about being as protected from wind, waves and larger boats. The space in the more open water also allows the wake to dissipate better and gives the ferry somewhat more space to avoid small boats.

Capt Andy said he thought he could take the following actions to help reduce the risk to small boats:

- If he is approaching a small boat from the rear, i.e. both are travelling the same direction, if the small boat stops to allow him to pass he is better able to slow to a no wake speed for a moment to pass and then resume. However, this does not work if the small boat does not stop because he must slow down so much he can't get past. He does not want to do this all the way out the channel, so to the extent he can do it for a small group or cluster of boats at once, it helps his ability to do that.
- At the mouth of Westpoint slough, if a small boat is crossing that area (i.e. near the red/green "crayon" buoys), he could slow for a moment until the small boat crosses, then once across the small boat stops momentarily at marker 13, he can make the corner slowly to get past the small boat before resuming his speed. Kind of a conceptual "cross walk area" across the mouth of Westpoint slough, assuming the small boat stops on the other side to allow him to get past.

My personal takeaways, which may be obvious but worth re-emphasizing anyway:

- Above all else, **I'm the only one who is truly looking out for me**! Pay attention out there!
- **Regardless of who has what legal right of way**, if I am in a dangerous encounter with the ferry while sculling, **I'm physically going to lose**. So I will do what I can to reduce the odds of getting run over!
- **Being on the correct side of the channel is very important**. It gives the ferry more room to use the full width of the channel to go around, and it increases the likelihood that groups of opposite direction rowing traffic will not effectively block the whole channel. Using the correct traffic pattern is more crucial than ever. Keep in mind the ferry simply cannot go outside the channel markers.
- I am going to **wear bright clothing** to help be seen by a faster, larger boat.
- In the dark, I am going to **use the brightest lights I can find**, recognizing that while better than nothing, all of the small portable lights available may still not be terrifically visible to a faster, larger boat. For me personally, I buy and maintain my own lights because they are brighter than the club lights.
- When rowing near the ferry's scheduled trip times, I need to **be extra diligent about looking carefully before going between markers 15 and 13, i.e. crossing the mouth of Westpoint slough**. The ferry comes in and out of there at relatively high speed. The "cross walk area" concept, while nice if it works, should not be 100% relied on by small boats.
- **Don't wear earbuds on the water**. You need all your senses to keep your awareness sharp on the water.

Appendix C, Pacific Shores Center Suitability Analysis for Preliminary Landscape Palette Relative to Minimizing Raptor and Raven Nesting Suitability

FS/DFS	ADMIN	EC	ESD		WR
FILE					

LSA

LSA Associates, Inc.

Environmental Analysis
Transportation Engineering
Biology and Wetlands
Habitat Restoration
Resource Management
Community and Land Planning
Landscape Architecture
Archaeology and Paleontology

April 28, 1998

MAY 01 1998

Dan Bufford
Endangered Species Division
U.S. Fish and Wildlife Service
3310 El Camino Avenue, Suite 130
Sacramento, CA 95821

Subject: Pacific Shores Center, Corps File No. 16783S41

Dear Dan:

Enclosed is the preliminary tree species plant palette for the Pacific Shores Center Project for your review. The plant list was initially supplied by Merrill and Befu, the project's landscape architectural firm. We have analyzed the list with respect to the landscaping suitability criteria described in Section 4.2.2 on pages 4-7 to 4-9 of the February 1988 Mitigation and Monitoring Plan. As described in the mitigation and monitoring plan, only trees falling into the moderate to high suitability index values would be used for project landscaping. High index value trees would be used for general landscaping. Moderate suitability trees would be used in specific locations such as the screening barrier on the western edge of the site where taller trees are required as mitigation for other environmental affects.

The applicant has also proposed to fund regular monitoring and to implement control measures to eliminate specific problems should such conditions arise in the future (see Section 4.2.3, pages 4-9 to 4-10 of the plan). If you have any questions or require additional information, please feel free to contact me.

Sincerely,

LSA ASSOCIATES, INC.

Steve Foreman
Project Manager/Wildlife Biologist

Enclosure

04/28/98(H:\STEVEF\FILES\PSC\BUFFORD1)

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Pacific Shores Center
Suitability Analysis for Preliminary Landscape Palette
Relative to Minimizing Raptor and Raven Nesting Suitability

Tree Species	Tree Characteristics[1]	Landscaping Suitability Index[2]
Acacia baileyana Bailey acacia	20-30 feet; round form; closed dense crown	High
Casuarina stricta Drooping she-oak	20-35 feet, oval to dome shaped crown, upright fine branches	Moderate to High
Casurina cunninghamiana River she-oak	to 70 feet:, oval to dome shaped crown; crown with large branches and openings	Low
Cedrus deodara Deodar cedar	to 80 feet; pyramidal crown, large horizontal limbs	Very Poor
Cercis occidentalis Western redbud	10 to 18 feet; irregular crown; small upright limbs	High
Cornus nuttallii Western dogwood	to 50 feet; irregular crown; small limb structure; some openings in canopy at maturity	Moderate
Cornus florida Eastern dogwood	to 20 feet; irregular shape with fine horizontal branches to 40'	High
Crataegus phaenopyrum Washington hawthorn	to 25 feet; fine limb structure, spreading crown	High
Cupaniopis anacardioides Carrot wood	to 40 feet; dome shaped form	Moderate
Cupresses arizonica (glabra) pyramidalis Arizona cypress	to 40 feet; oval, dense compact crown	High to Moderate
Cupresses sempervirens Italian cypress	to 60 feet; dense, narrow columnar form; upright fine branches to 80'	High
Eucalyptus citriodora lemon-scented gum	75 - 100 feet; irregular, open crown	Very Poor
Eucalyptus ficifolia Red flowering gum	to 40 feet; round-headed tree; compact crown	Moderate
Feijoa sellowiana Pineapple guava	18 to 25 feet; round to spreading form; dense crown	High
Fraxinus ornus "Raywood" Raywood ash	25 to 35 feet; compact, round headed crown; generally small narrow limbs to 60'	High
Geijera parviflora Australian willow	25 to 30 feet; dome shaped crown, with small upswept branches	High
Gleditsia triancanthos Moraine locust	35 to 70 feet; spreading, arching branches; open crown	Poor to Low
Koelreuteria paniculata Goldenrain tree	20 to 35 feet; spreading form with open branching crown	Low to Moderate
Laurus nobilis Sweet bay	12 to 40 feet; compact, broad-based , multistemmed cone-shaped crown	High

1

Tree Species	Tree Characteristics[1]	Landscaping Suitability Index[2]
Liquidambar formosa. Sweet gum	to 25 feet; generally dense cone to pyramidal shaped crown to 120'	High
Lyonothamnus floribundus Catalina ironwood	30 to 60 feet; 20 to 40 foot dome-shaped spread	Moderate
Melaleuca neophilia Pink melaleuca neosophila	15 to 20 feet, occasionally 30 feet; irregular to round dense crown; can develop heavy gnarled branches if unpruned; branches generally upright	High
Melaleuca quinquenervia Cajeput tree	20 to 40 feet; upright, open dome to round crown	Moderate to Low
Nyssa sylvatica Sour gum	30 to 50 feet, pyramidal when young to spreading at maturity; short horizontal branches	Poor
Olea europea European olive	25 to 30 feet; vase shaped;	Moderate to High
Pinus canariensis Canary island pine	60 to 80 feet; pyramidal when young to round crown at maturity; large open branches	Poor
Pittosporum crassifolium	to 25 feet; dense dome to round crown to 35'	High
Podocarpos gracilor Fern pine	to 60 feet; oval crown with heavy dense foliage	Low to Poor
Populus nigra Lombardy poplar	40 to 100 feet; dense columnar shape with upward reaching branches	Poor to Very Poor
Pyrus calleryana Bradford pear	25 to 50 feet; dense, round crown; horizontal branches	Moderate
Quercus agrifolia Coast live oak	20 to 70 feet, open round to spreading crown; large horizontal branches	Poor
Schinus terebinthifolius Pepper tree	to 30 feet; broad, umbrella-shaped crown; dense foliage	High
Ulmus parvifolia Chinese evergreen elm	40 to 60 feet; spreading with long, arching to weeping branches	Moderate to High
Umbellularia californica California bay	20 to 25 feet in cultivation; dense foliage	Moderate to High (if kept low)
Cycas revoluta Sago palm	to 10 feet trunk	High
Sygrus (Arecastrum) romanzoffianum Queen palm	to 50 feet; dense growth of feather-type fronds	Moderate
Washingtonia robusta Mexican fan palm	to 100 feet	Moderate to Poor

[1] **Source:** Sunset Western Garden Book. 1988. Lane Publishing Co., Menlo Park, California

[2] **Landscaping Suitability Index**
Trees must possess at least two of the specified characteristics in order to fall within a designated index value. All characteristics refer to trees at maturity. Trees with high landscaping suitability have low potential for raptor and raven nesting and roosting where as trees with poor or very poor landscaping index values have high potential for raven and raptor nesting and roosting.

High: 20 to 25 feet or less in height; columnar shape; preponderance of fine limbs; or closed dense crown structure.

Moderate: 25 to 50 feet in height; moderate arch in limb structure; or crown with openings consisting of 20 percent on the crown area.

Low: 50 to 70 feet in height; fairly horizontal limbs structure; limbs 3 to 5 inches in diameter at trunk; or crown openings of 20 to 30 percent.

Poor: 50 to 70 feet in height; fairly horizontal limb structure; limbs >8 inches in diameter at trunk at >50 feet in height; or 50 percent crown area open.

Very Poor: >70 feet in height; horizontal limb structure; limbs >8 inches in diameter at trunk at >50 feet in height; crown structure > 50 percent open; or good potential for sentinel perches>70 feet high from nearby trees.