

EXECUTIVE SUMMARY

Aquatic Park Improvement Program

In 2006, the City of Berkeley initiated the Aquatic Park Improvement Program (APIP) to prepare concept-level designs for the hydrology and habitat improvement recommendations in the 2003 Natural Resource Management Study.

Existing Conditions

Aquatic Park was created from intertidal and subtidal areas in the 1930s as part of the construction of the Bayside Freeway. Aquatic Park has three lagoons: the Main Lagoon (ML), the Model Yacht Basin (MYB), and the Radio Tower Pond (RTP). The entire park is 102 acres and includes: 68.0 acres of open water in the three lagoons, 0.7 acres of salt/brackish wetlands, 1.1 acres of freshwater wetlands, 11.0 acres of lawn, 7.0 acres of roads and trails, and 14.0 acres of buildings and uplands.

The lagoons are connected to the Bay by small 24 inch culverts or tide tubes, many of which are deteriorating. The five main tide tubes under I-80 are falling apart on the bay side, and failing riprap and parts of the pipes are blocking tidal flows into the Main Lagoon. The Model Yacht Basin tide tube is buried in sand on the bay side. The Radio Tower Pond tide tube has collapsed under the frontage road and appears to have separated on the bay side.

The primary type of habitat in Aquatic Park is shallow subtidal aquatic habitat in the three lagoons. In San Francisco Bay shallow subtidal habitat is a highly productive zone which supports a nursery for many marine crustaceans and fish. Bay fish species require cold water temperatures (58-68°F) and marine salinities (22 to 33 ppt.) These small fish are a major food source to diving ducks which overwinter in San Francisco Bay and Aquatic Park. Wading birds—egrets and herons, as well as pelicans, cormorants, mergansers, and other fish-eating birds—also feed on the small fish.

In 2004 the Regional Water Quality Control Board's Surface Water Ambient Monitoring Program monitored summer and fall water temperatures and dissolved oxygen (DO) levels at three sites in the Main Lagoon. The monitoring found chronic high water temperatures and low dissolved oxygen levels that are fatal to fish.

The three lagoons have small areas of salt/brackish wetland. The lagoons of Aquatic Park have steep slopes and a very small average tidal range of 0.1 ft. in contrast to the 6.2 ft. average tidal range in the Bay. The shoreline areas offer an opportunity to eradicate invasive non-native plants and revegetate with high marsh/transition zone native plants.

Habitat improvement of Bird Island and upland areas on the western side of the Main Lagoon are included in the APIP. These areas have a greater degree of isolation from recreational use and a higher potential for a successful habitat restoration. Bird Island is 0.45 acres and is inundated in storms. The island needs to be filled in order to raise elevations and revegetate for bird roosting habitat.

A large portion of the City of Berkeley drains towards Aquatic Park. The majority of this runoff drains into the Potter Street and Strawberry Stormdrains. During high runoff periods, stormwater can enter the lagoons from these two drains. A portion of the watershed immediately east of the park also drains directly into the Main Lagoon. Many contaminants are carried on clay particles in stormwater. These particles can deposit out when they reach slow-moving water in creeks, the lagoon system or San Francisco Bay. Under the current conditions it takes 48.5 days to remove stormwater from the lagoons after a 100-year event. Under the proposed project it will take only 10.4 days to remove the stormwater following a 100-year event, resulting in greatly improved habitat for fish and other wildlife.

There is a total of 1.1 acres of small freshwater wetlands on the eastern border of the park adjacent to the railroad berm. There are many characteristics of Aquatic Park's freshwater wetlands which greatly reduce their value as wildlife habitat. Most of the wetlands are immediately adjacent to active recreation areas where disc golf, hiking, walking, dog walking, and other sports occur.

SUMMARY OF RECOMMENDATIONS

Hydrology Improvements

1. Aquatic habitat improvement is the highest priority action for park enhancement. Aquatic habitat is the primary habitat in Aquatic Park and suffers from poor water quality conditions in the summer and fall. A major increase in water circulation and tidal exchange is needed to improve habitat for fish and other wildlife.

2. Maximize the increase in tidal circulation and tidal volume. The current five tide tubes that provide tidal water to the Main Lagoon are falling apart. A new and improved tidal connection and water circulation system is needed. Alternative 4B would create larger connections at the Potter Street and Strawberry stormdrains, excavate a new open channel between the Model Yacht Basin and the Main Lagoon, install a structure to protect the bay side of the five tide tubes. This alternative would increase the volume of tidal water entering the Main Lagoon from 22 acre-feet to 115 acre-feet per tidal cycle. Alternative 4B provides the largest tidal range and the greatest water quality improvement. Due to the low elevation of the Radio Transmitter Building, the tidal range at the Radio Tower Pond cannot be changed unless a berm is constructed around the building.

3. Block stormwater inflow volumes at new connections. Slide gates will be installed at the new connections. The gates will also be used to block the maximum amount of stormwater. In addition, increasing tidal circulation will remove stormwater at a much faster rate than under current conditions and will reduce effects on aquatic life.

4. Consider installing a bioswale along the road/lawn on the northeastern end of the park to filter stormwater flowing directly from streets into the park.

5. Consider creating a demonstration area for ultra urban stormwater treatment using biofiltration facilities installed on streets, parking lots and other locations in the local Aquatic Park watershed. These facilities will reduce the concentration of pollutants in stormwater which directly enters the Main Lagoon.

6. Consider as an optional action installation of in-line vortex filtration units on stormdrains at the eastern edge of the railroad/western ends of Dwight, Channing, and Bancroft Streets. For the stormdrains at Parker, Carleton, Grayson, and Heinz Streets, vortex filter units can be installed in the park to replace the oil/water separators. The vortex filters would not remove the small particulates which transport many of the persistent pollutants, but could provide a treatment option while the biofiltration program is implemented.

Habitat Improvements

1. Implement a salt/brackish wetland restoration on 1.3 acres north of the Rowing Club. Excavate the site to the -1.5 ft. (Berkeley Datum) elevation to create salt marsh and high marsh

transition areas. Install a berm along the road edge of the site to serve as a vegetated transition area and barrier to unleashed dogs.

- 2. Reuse excavated soil from wetland creation to restore additional areas.** The Rowing Club site elevations are -1 to +4 ft. and will require excavation of 6,230 cubic yards of soil. If soils tests show the material is acceptable, the soil could be used for improving bird roosting habitat on Bird Island and native plant re-vegetation areas in the three abandoned parking areas on the west side of the park.
- 3. Remove invasive plants in all shoreline areas and all stem and seed-reproducing invasive plants in other areas of the park.** Invasive plants on and near existing wetlands, especially in the Radio Tower Pond and near the wetland restoration site, need to be eradicated to make the wetland restoration a success.
- 4. Replant shoreline areas with native plants.** Replant shoreline areas with a variety of native species and cypress trees.
- 5. Fill Bird Island with soil excavated from the wetland creation to create bird roosting habitat.** The City will need to eliminate recreational use of the island.
- 6. Restore native vegetation on asphalt parking areas on the western side of the Main Lagoon (P1, P2, and P3).** These areas are no longer used. Asphalt would be removed and covered with 2.5 feet of excavated soil and revegetated with native plants.
- 7. Consider an optional action to construct a 1.02 acre pilot freshwater wetland incorporating Freshwater Wetland 1 and removing the adjacent lawn.** Summer water from the stormdrain system would be needed for the wetland and may not be permitted by the Regional Water Board. Eradicate ivy in freshwater wetlands and increase riparian habitat in FW-3 and FW-4 areas.
- 8. Monitor water quality and aquatic life in the lagoons before and after water circulation improvements**
- 9. Post and enforce wildlife protection regulations, including leash laws, throughout the park.**
- 10. Address homeless encampments and evaluate the number and location of trash cans to reduce dumping and littering.**
- 11. Plan a tree replacement program for invasive Eucalyptus and Acacia in the park.**