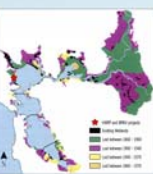


HAMILTON WETLAND RESTORATION PROJECT



Wetlands in the San Francisco Bay Region

Benefits of wetlands: Provide habitat for wildlife, plants, fish, and birds; filtration of pollutants for better water quality; floodplain protection; and recreation. 90% of Bay area wetlands have been destroyed as a result of sedimentation from gold rush-era hydraulic mining, diking, and draining/filling for agriculture, industrial, and urban purposes. Today approximately 48 square miles of the historic 540 square miles of wetlands remain.

Hamilton Army Airfield and Bel Marin Keys Unit V

The Hamilton and Bel Marin Keys Unit V sites were originally tidal salt marsh habitat. The sites were converted to agriculture in the late 1800s. In 1931, the Hamilton site was converted to a military airfield for the U.S. Army and was operational until 1994. In 2003, the federal government transferred the Hamilton Airfield site to the California State Coastal Conservancy (SCC).



HWRP and BMKV Design

The HWRP and BMKV sites are deeply subsided and must be raised in order to facilitate wetland establishment. In order to raise the site elevations, it is estimated that about 24.4 million cubic yards (mcy) of sediment is required (10.6 million cubic yards for HWRP and 13.8 mcy for BMKV).

Dredged sediment from the Port of Oakland's -50 Foot Deepening Project and other Bay area navigation projects is being beneficially used to raise site elevations. Sediment from these projects is hydraulically offloaded and pumped to the HWRP sites.

In order for the site to accept dredged material, levees were constructed to create cells. The cells were then filled with dredged material from the Port of Oakland and other maintenance dredging projects.

A dredged material offloader, located in San Pablo Bay, hydraulically transfers clean dredged material from scoops through approximately 27,000 linear feet of submerged pipeline to the restoration sites.

The HWRP and BMKV sites were designed with decant water paths to the settling pond to ensure water quality parameters are met prior to returning decant water to San Pablo Bay.

Once complete, the HWRP and BMKV restoration project will provide approximately: 1,600 acres of tidal wetlands, 142 acres of subtidal and tidal mudflat habitat, 41 acres of tidal penines, 364 acres of seasonal wetland and open water ponds, 12 acres of emergent wetland, 2 acres of perennial emergent wetland, 85 acres of grassland, a wildlife corridor through the site, and public access (Bay Trail).

Hamilton Wetland Restoration Project (HWRP) and Bel Marin Keys Unit V Expansion Project (BMKV)

The HWRP and BMKV restoration projects are a collaborative effort between federal, state and local agencies, and stakeholders, including the U.S. Army Corps of Engineers (USACE), SCC, San Francisco Bay Conservation and Development Commission (BCDC), Port of Oakland, and State Lands Commission.

Once restored, the sites will provide approximately 2,600 acres of tidal and seasonal wetlands, as well as upland and transitional habitat for several fish, wildlife and bird species.

Planning Milestones:

- 1994: Hamilton Army Airfield is closed under Base Realignment and Closure (BRAC) Act.
- 1998: Feasibility Study and National Environmental Policy Act/California Environmental Protection Act (NEPA/CEQA) compliance complete.
- 1999: Congress authorizes the HWRP in the Water Resources Development Act (WRDA) of 1999.
- 2001: Project Cooperation Agreement (PCA) signed between USACE and the Port of Oakland (a PCA is a funding agreement).
- 2002: PCA signed between USACE and SCC.
- 2003: BMKV Expansion Project NEPA/CEQA compliance complete.
- 2006: BRAC cleanup is complete.
- 2007: Congress authorizes the BMKV Expansion Project in WRDA 2007.
- 2007: Dredged material placement at HWRP begins.
- 2008: Dredged material from the Port of Oakland's -50 foot deepening project is placed at HWRP.
- 2009: Cleanup of some portions of the site begins under the Formerly Used Defense Sites (FUDOS) program.
- 2011: Proposed construction of BMKV Expansion site.
- 2013: Proposed HWRP's outboard marsh levee breach. HWRP wetland will be monitored for 15 years.
- 2018: Proposed BMKV wetland restoration construction complete. BMKV wetland will be monitored for 15 years.



HWRP and BMKV Construction

To date, 7,500 linear feet of tidal berm levees, 26,950 feet of permanent levees and 4,750 feet of temporary levees were constructed to provide dredged material containment cells.

The Liberty offloader hydraulically slams dredged material with Bay water and transfers it through approximately five miles of submerged pipeline and two miles of land-based pipeline to the restoration sites. To date, approximately 4.0 mcy of sediment has been beneficially used to raise site elevations at the HWRP (3.0 mcy from the Oakland -50 foot deepening project and 1.0 mcy from other maintenance dredging projects).

The offloader's water intake is screened to protect fish from entrapment.



Problems and Opportunities

Local residents often complain about wetland construction	Several community meetings with residents resulted in change of construction hours.
Hazardous waste from the former airfield	The site was cleaned under the BRAC program and the FUDOS cleanup is ongoing.
Logistics of dredged material delivery	Dredged material is offloaded from scoops by the Liberty offloader and pumped through approximately 5 miles of pipeline to the restoration sites. Two electric booster pumps on the super booster located in San Pablo Bay and one landside booster at the HWRP site provide additional pressure to move the sediment.
Chemical and physical suitability of material	Dredged material used at HWRP must meet stringent requirements specified by the Regional Water Quality Control Board and the U.S. Fish and Wildlife Service.
Storm water management	USACE and Manson Dutra Joint Venture prepared a stormwater pollution prevention plan for decant process water placed at HWRP with the dredged material.
Tidal area mud layer	Water is actively pumped to the tidal area portion preventing consolidation and cracking of dredged material and to provide unimpeded natural channel formation.
Construct with and on Young Bay Mud	Young Bay Mud has low strength, high compressibility and "shrink-swell" behavior, which creates settlements, depressions, slope failures and desiccation cracks. To minimize these effects several tests were conducted to measure consolidation and monitors were installed to measure sediment movement.
Sea level rise	The topographical gradient of the restoration sites will ensure that the wetland habitat will be protected against sea level rise.
Funding constraints	Project funding is cost shared between USACE (75%) and the SCC (25%). Due to the State's recent economy and the federal appropriations budget cycle, funding is a challenge.
Seasonal wetland construction with dredged material	Creation of season wetland with dredged material is novel and untested, therefore, a science-based adaptive management approach was developed.
Team dynamics	Dedicated team members have worked on this project since its inception.

