

Restoring and Preserving History along Washington DC's Shoreline - Margaret Boshek

The stone seawalls which line Washington DC's historic Potomac Parks waterfront are as iconic as the towering memorials they protect. Built in the late 1800's to retain reclaimed lands created through extensive dredging of the Potomac River, the ashlar-patterned stone walls have undergone periodic modification as the lands around them grew with our nation's capital. Sitting upon soft dredged soils, the heavy stone walls have settled as much as seven feet in some areas and long-deferred maintenance has left stretches of the walls in disrepair. Rising sea levels and more extreme precipitation/flooding events in combination with settlement have resulted in daily nuisance flooding of the land adjacent to the Jefferson Memorial and public spaces throughout the Potomac Parks making the waterfront path periodically inaccessible.

Recent funding has allowed the National Park Service to rehabilitate the walls and reduce overland flooding which damages the iconic Japanese cherry trees and inhibits visitor access and enjoyment. While there is a desire to raise the walls to elevations which will prevent overland flooding during all climatic events, this would greatly change the landscape, visitor experience, and preservation of this historic place.

Following an in-depth analysis of sea level rise and climate change impacts within the area, the National Park Service and their engineers had to decide on an acceptable risk level, now and in the future, with an understanding of the dynamics of this space. This is the first of several planned restoration efforts along several miles of the Potomac River that will face similar challenges of balancing environmental, cultural, historic, and social pressures. This talk will review the choices made on the present project and those that may be modified in other areas of the river.

Drowning Trees for Nature - Jonathon Kusa

The Don River Port Lands Flood Protection Project (PLFP) in Toronto, Canada, stands as a pioneering example of innovative ecological restoration and flood mitigation efforts. The project, situated in the heart of one of North America's largest cities, addresses the dual challenges of flood risk management and ecological restoration within an urban estuarine environment. By integrating cutting-edge engineering solutions with ecological design principles, the project aims to enhance the resilience of the Port Lands area while revitalizing vital estuarine habitats.

The PLFP encompasses a comprehensive suite of interventions, including the construction of a naturalized river valley and floodplain, the creation of wetlands and green spaces, and the implementation of flood protection infrastructure such as berms and flood walls. This project prioritizes ecological restoration by re-establishing natural hydrological processes and enhancing habitat connectivity. The creation of a diverse wetland ecosystem provides valuable habitat opportunities while also promoting biodiversity and supporting the ecological health of

the estuarine ecosystem.

The PLFP exemplifies the transformative potential of collaborative, nature-based solutions in addressing the complex challenges facing urban estuaries. By leveraging the synergy between engineering innovation and ecological restoration, the project offers a holistic approach to coastal resilience that serves as a model for coastal communities worldwide. The PLFP serves as a beacon of hope and inspiration, demonstrating the power of partnership and visionary thinking in building a more resilient and sustainable future for our estuarine environments.

Connecting Local Creeks to SF Bay to Restore Estuary Habitats Benefits Silicon Valley, Particularly Disadvantaged Communities - Judy Nam

The Calabazas/San Tomas Aquino (STA) Creek-Marsh Connection Project is the first creek-marsh connection project in Lower South San Francisco Bay. It aims to restore the estuary-watershed connection, fostering resilience to climate change. The Project will restore approximately 1,800 acres of tidal marsh, enhance 50 acres of freshwater and brackish marsh habitat, and improve over 4 miles of riverine habitat. Using nature-based solutions, Valley Water plans to reconnect salt ponds, local creeks, and the SF Bay, supplying sediment to raise pond bottoms to intertidal elevation for tidal marsh establishment. Objectives include habitat restoration, resilient flood protection, reduced future maintenance, and enhanced coastal access.

Led by Valley Water, a leader in water resource management, the Project's major partners include the U.S. Fish and Wildlife Service, California State Coastal Conservancy, County of Santa Clara, and the cities of San Jose, Sunnyvale, and Santa Clara. Located near the historically underserved community of Alviso, the restoration will benefit this area by improving shoreline access and promoting economic opportunities.

Currently in the planning phase, the Project is evaluating alternatives to maximize its objectives. The project has secured nearly \$8M in grant funding, enabling the implementation of the following innovative approaches:

1. Numerical Modeling: Used to maximize both bay and creek sediment supplies for tidal marsh restoration while reducing flood risk.
2. Comprehensive Mercury Monitoring: Used to monitor mercury levels in sediment, water, and biota to minimize mobilization risks from project-induced changes.

3. Nature-Based Solutions Pilot System for Wastewater Treatment: Used to remove nutrients, trace organic contaminants, and metals from Reverse Osmosis Concentrate (ROC), treated wastewater streams, and stormwater through a horizontal levee with nature-based treatment units.

4. Increasing Public Access: In partnership with San Jose, the Project will add 1.1 miles of Bay Trail, improving access for disadvantaged communities and incorporating Native American cultural elements.

A 20-Year Odyssey: Habitat Restoration in an Urban Estuary – Kathleen Hurley

Ports are in a unique position to implement habitat restoration that provide important ecological and community benefits. However, the process to build an ecologically functioning restoration site within a highly urbanized context is not straightforward. The Port of Seattle will present on the Duwamish River People's Park and Shoreline Habitat, a 14-acre off-channel estuarine marsh in the Lower Duwamish River (Washington State).

The Duwamish River People's Park and Shoreline habitat is the culmination of over two decades worth of effort. This presentation will describe the complexity of habitat creation within a Superfund site, including community engagement, clean-up of contamination, transition of agency oversight, incorporation of Tribal requests, the business case for habitat creation, and innovative habitat restoration techniques. It will provide a summary of challenges and opportunities the Port addressed to achieve the goal of creating a 14-acre habitat restoration site in the Duwamish Waterway. This presentation will provide updates on the ecological function of the site from recent monitoring results.

The restored habitat site is located within the Lower Duwamish Waterway Superfund area and is located in an ecologically important part of the Duwamish River. The project created 14 acres of habitat and shoreline access and restored priority habitat for Chinook salmon and other imperiled species along over 2,000 linear feet of the Duwamish River shoreline. The site has been identified by other local, state, tribe, and federal officials as a high-priority habitat area that will benefit the community for decades to come. However, the process to create habitat in a Superfund site presented many challenges and opportunities along the way.

Implementing Nature-Based Solutions at US Marine Corps Facilities – Amy Hunt

Within the Department of Defense, the United States Marine Corps (USMC) is at the forefront in developing innovative approaches to increase the resilience of coastal habitats while simultaneously ensuring resilience of the military mission. Through technical support from the USACE Engineering With Nature program and its research partners, USMC is working on military installations and with regional partners to develop nature based solutions across various sea level rise scenarios which improve ecosystem function, sequester carbon, reduce risk, and build community relationships.

Planning level efforts which identify mission/infrastructure and ecosystem vulnerabilities have occurred at multiple installations along with the conceptual development of nature-based solutions which reduce risk associated with those vulnerabilities. Since risk to coastal USMC assets and mission activities can originate beyond the fence line, these efforts extend to assessments and solution development in close development with community partners. While historically not seen as hubs for the regional promotion of habitat improvement activities, the presentation will explore how DoD installations can support and sometimes lead regional efforts to adapt to a changing climate in the coastal environment.

Specific examples of planning efforts, pilot project implementation, initiation of regulatory coordination involving challenging compliance related to beneficial use of dredge material for marsh restoration/preservation, and similar forward leaning efforts will be discussed for USMC facilities in the Southeast US as well as Hawaii.