



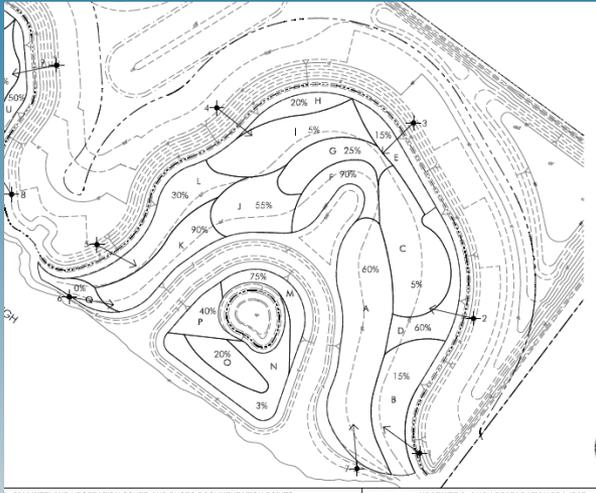
Sediment Reuse for Wetland Creation and Open Space Restoration in an Underserved Community of San Francisco

Case Study of Yosemite Slough, San Francisco Bay

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OUTLINE



Project Objectives

Site Conditions

Planning

Implementation

Challenges & Successes



PROJECT VISION

- CPSRA General Plan (1987): restoration of natural areas
- Regional goal: restoring native habitats along SF bay front
- Restoration of tidal marsh habitat, recreation, educational center
- Better balance of environmental/societal/economic impacts and benefits



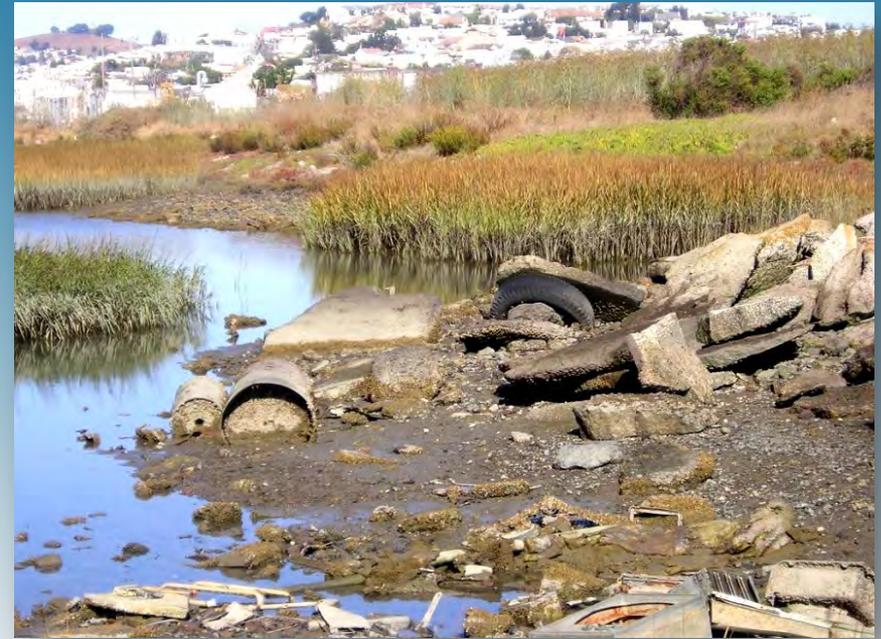
PROJECT OVERVIEW

- Centerpiece of plan to create a 34-acre wetland and park in the Candlestick Point State Recreation Area within the Bayview Community
- Will be the largest contiguous wetland area in SF and California's first urban state park
- Funding and approvals required the collaboration of government agencies, regulators, philanthropists, foundations, and community groups



PROJECT OBJECTIVES

- Protection of ecological and human health and safety
- Regulatory and stakeholder acceptance
- Provide access to outdoor recreation and open space



Cleanup goals:

- ✓ wetlands: mean concentrations = near-ambient concentrations for San Francisco Bay sediments
- ✓ uplands: direct contact or recreational ESLs according to designed land use

STAKEHOLDERS

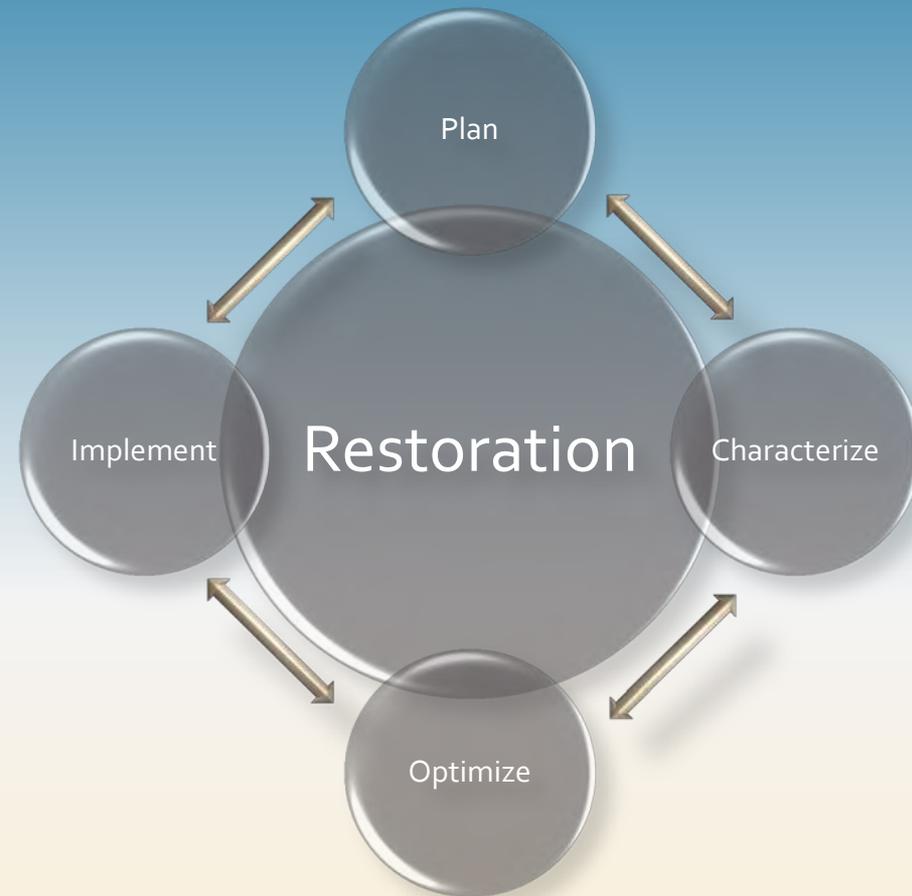
- California Department of Parks and Recreation (property owner)
- California State Parks Foundation (funding “wrangler”)
- City/County of San Francisco Departments, Redevelopment Agency
- San Francisco Bay Regional Water Quality Control Board
- US Army Corps of Engineers
- Bay Conservation and Development Commission
- Bay Area Air Quality Management District
- Philanthropists
- Immediate and local community
 - Bayview/Hunters Point neighborhoods
 - Community and environmental organizations
 - Arc Ecology, Alliance for a Clean Water Front, Bayview Hunters Point Community Advocates, Clean Water Fund, Golden Gate Audubon Society, Literacy for Environmental Justice, University of San Francisco



INTEGRATION OF REMEDIATION/RESTORATION

A plan is visualized, then...

1. Initial concept design
2. Stakeholder involvement
3. Investigation
4. Characterization (CSM)
5. Update design
6. Construct/restore
7. Open to the public
8. Iterative process



SITE CONDITIONS

- Upland area developed with buildings, pavement (20%); filled urban land, bay land, and tidal flats (80%)
- Property used for import fill/debris, light industrial/commercial development (auto salvage/wrecking yard), utility corridor, collection of storm/sanitary overflow
- Vacant land vegetated with ruderal (non-native) species
- Up to 20 feet thick, mixed, non-engineered fill with moderate levels of contamination (heavy metals, naturally occurring asbestos, TPH, PAHs)
- Adjacent channel identified as “PCB hot spot”; lead and nickel



RESTORATION DESIGN TEAM



Northgate: environmental impacts assessment, remediation planning, and construction oversight



WRA (project lead): landscape design, biology and wetland restoration planning



Noble Engineering: hydrodynamic analysis and civil engineering design



California State Parks Foundation: project proponent, public outreach and fundraising



RESTORATION PLANNING

- Removal of historic bay fill
- Functioning tidal marsh
- Nursery areas for fish, benthic organisms
- Transitional, upland buffers
- Two bird nesting islands
- Portion of the Bay Trail
- Passive public-use areas
- Environmental interpretive center



ECOLOGICAL BENEFITS AND IMPACTS

BENEFITS

- Restore tidal wetland habitat (12 acres)
- Remove/sequester contaminated soils, debris
- Restore habitat diversity
- Remove invasive species
- Improve soil and water conservation
- Catalyst for further cleanup activities within Yosemite Slough and vicinity

IMPACTS

- Erosion (runoff, dust)
- Air Quality impacts
- Waste generation
- Impacts mitigated using monitoring and Best Management Practices during construction



COMMUNITY BENEFITS AND IMPACTS

BENEFITS

- Expanded open space (ethical and equity consideration, dense urban area)
- Recreational trails, linked to regional trails
- Amenity services (enhances local living conditions by the provision of an attractive environment)
- Native plant materials collected and grown by local students
- Health and safety
- Catalyst for other recreational, open space opportunities along the Bayview/Hunters Point shoreline

IMPACTS

- Initial mistrust and resistance from community
- Construction traffic, noise
- Land use restrictions



ECONOMIC BENEFITS AND IMPACTS

BENEFITS

- Employment: local jobs, volunteers, youth groups, local businesses
- Direct/indirect economic benefits
 - Increased visitor use of park
 - Decrease in costs related to City responding to illegal dumping
 - Remediation = indirect economic benefits

IMPACTS

- Costly and complex funding
 - Over 10 public and private funding sources
 - CSPF raised \$14.3 million for Phase 1 construction – 17 acres
 - Phase 2 = \$15M – 17 acres (currently fundraising)
 - Phase 3 = \$5M – education and recreational facilities, trails, etc. (in design)



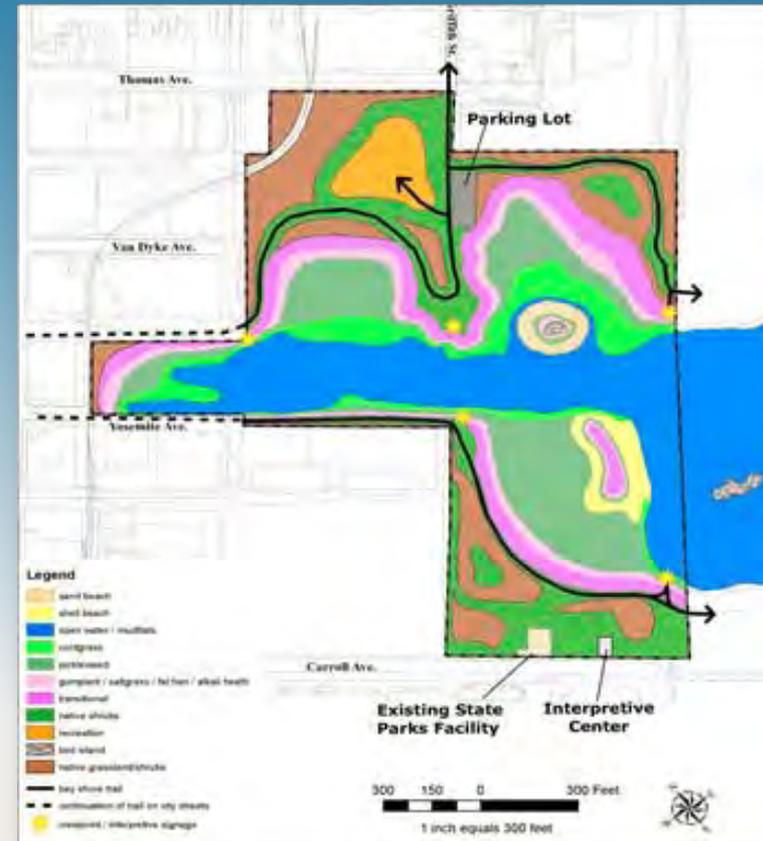
REMEDIATION/RESTORATION

- Phase I ESA, Phase II characterization
- Three phases of restoration
 - ✓ Remediation / soil management in all three phases
 - ✓ Completed in series, dependent on funding
- Environmental mitigation and risk management approach
 - ✓ Soil Screening Criteria
 - ✓ Cover Design
 - ✓ Soil Handling
 - ✓ Soil Treatment
- Restoration design plans and specifications



DESIGN OBJECTIVES

- Beneficial reuse of soil for:
 - Tidal marsh habitat
 - Upland recreational uses
- Segregate and recycle debris for offhaul
- Lead contaminated soil stabilized, offhauled, and properly disposed
- Encapsulated serpentinite fill (naturally occurring nickel and asbestos)
- Reduce transportation needs, fill import/export
- Training or job opportunities for local community
- Improve storm water, recharge quality
- Collaborative decision-making, community events and public meetings



CHALLENGES

- Funding: no possibility of increasing the budget
- Uncertainties in field conditions – required flexibility to adapt during construction
 - Example: more debris than anticipated, budget constraints limited off-haul/import
- Collaborative decision-making
- Highly visible project, actively involved local community
 - Environmental justice concerns
 - Redundant air quality mitigation, monitoring
 - Community meetings, fact sheets, outreach w/ local youth/environmental/faith communities



RESTORATION PROGRESS

- First phase complete
- Achievements and successes
 - ✓ Funding/decision-making took longer than anticipated, but construction schedule accelerated
 - ✓ 2 years → 5 months
 - ✓ Tidal barrier breached!
 - ✓ 7 acres of new tidal marsh



RESTORATION PROGRESS

- Stormwater infiltration improved; erosion/sediment runoff minimized
- Risk pathways eliminated; post-construction air quality improved
- Biodiversity goals on-track; non-native species removed, revegetated with locally-grown native plants
- K-12 environmental science, public participation education
- First steps towards becoming a model urban park



NEXT STEPS

- Yosemite South restoration
 - ✓ 13 acre restoration, 5 acres of wetlands, cost: \$15M
- Interpretive center, parking, trails, picnic tables, restrooms, lawns, cost: \$4M
- Risk management plan
 - ✓ Erosion control, long-term O&M for wetland and upland cover
- Annual monitoring/reporting for five years
 - ✓ Performed by Park staff and volunteers, overseen by qualified wetlands biologist
- Ongoing economic and public outreach influences



SUCCESS: Site functions as typical bay tidal marsh habitat!

Questions

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