

Sediment and Beneficial Reuse Commissioner Working Group

November 17, 2023

Chair: Andy Gunther Vice-chair: Pat Showalter

Project Team: Maya McInerney, Brenda Goeden, Erik Buehmann,
Pascale Sumoy, Jaime Lopez, Kathryn Riley



San Francisco Bay Conservation
and Development Commission



San Francisco Bay Regional
Sediment Management

Agenda

1. Welcome & Project Updates
2. Construction and Upland Soils as a Source of Sediment
 - Dave Halsing, South Bay Salt Ponds, SCC
 - Xavier Fernandez, San Francisco Bay Regional Water Board
3. Public Comments
4. Adjournment

Project Updates

Sediment for Wetland
Adaptation Project

November 17, 2023



Sediment for Wetland Adaptation Project

Goal:

“Increase beneficial reuse of sediment and soil for wetland habitat restoration, resilience, and sea level rise adaptation in the San Francisco Bay Area.”

Project Objectives:

- Sediment to Wetlands Roadmap
- Increased Collaboration
- Possible Policy Changes
- Financing Strategy

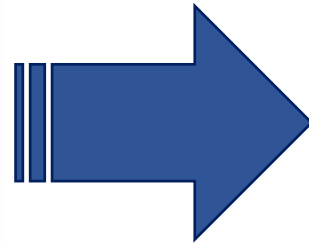
Beneficial Reuse for Green Infrastructure

Sediment & Soil

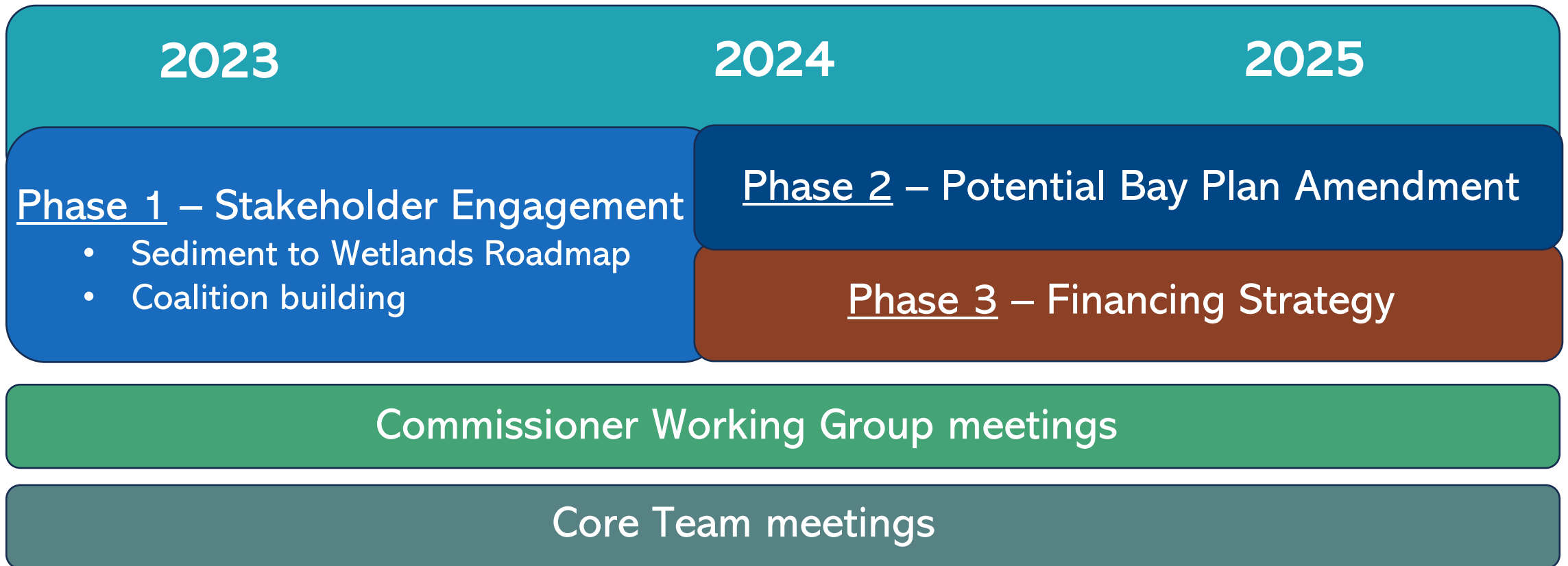
Dredging - navigation channels & flood protection channels

Upper watersheds - reservoirs, disconnected creeks

Excavated soils - construction



Three Project Phases

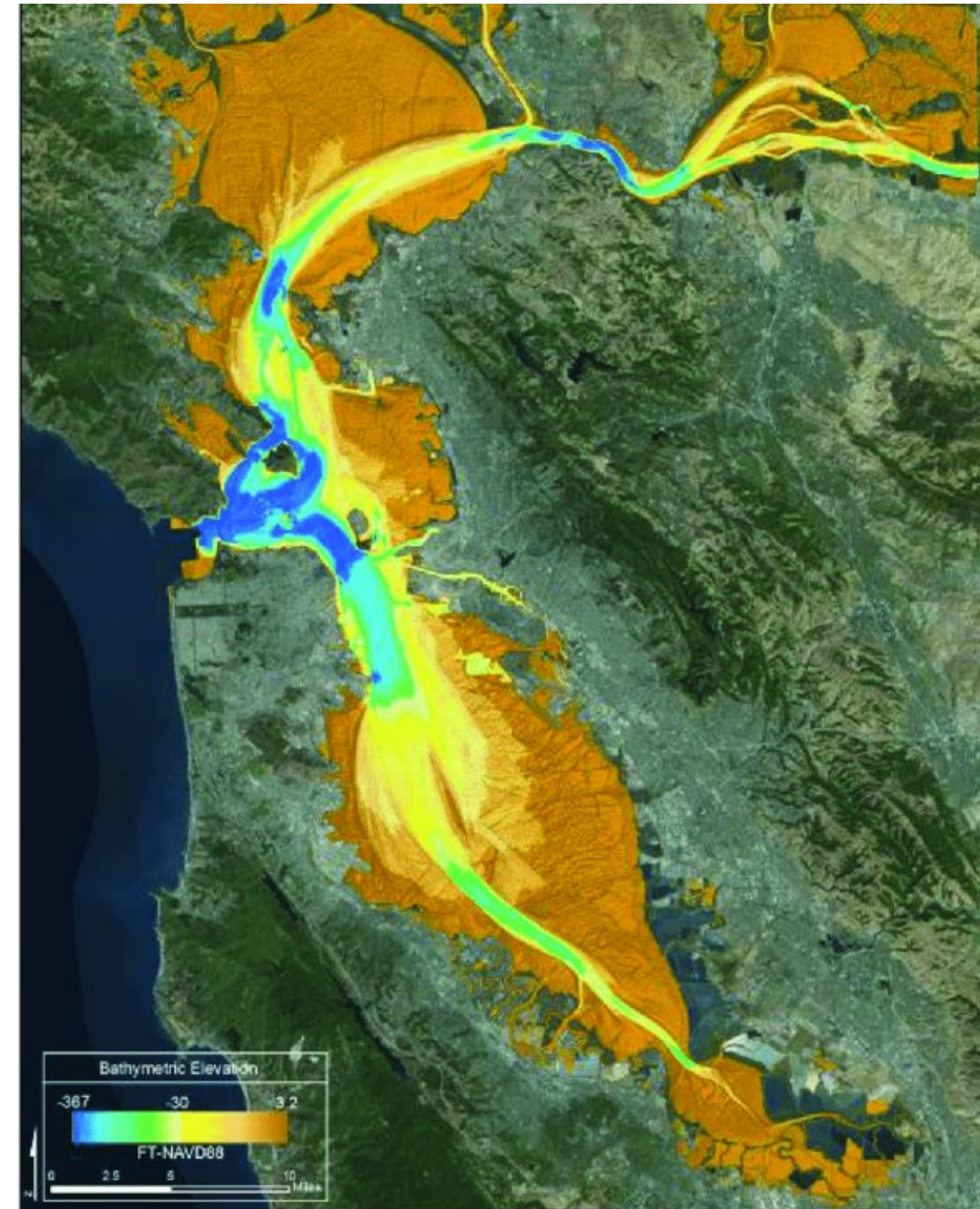


Informational Briefing #1

Bay Sediment Transport System

- Sediment comes in through watersheds
- Movement within Bay through tributaries and tides
- Fine- and course-grained sediment transport
- Erodeable sediment pool
- Human activities alter the system
- Less natural sediment supply

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AECOM 2016

Informational Briefing #2

Sediment Supply to Bay Marshes

- Tidal marshes lost due to human activities
- Natural erosion driven by wind and waves
- Erosion depends on many factors (including location and edge type)
- High tides and storms deliver sediment
- Natural accretion rate not fast enough



Informational Briefing #3

Sediment Considerations for Beneficial Reuse in Restoration Projects

- Elevation to keep pace with sea level rise
- Space to migrate upland
- Sediment (supply is limited)
- Time
- Prioritization of efforts, resources, & projects



Informational Briefing #4

Sediment Challenges in Wetland Restoration Projects

- Sediment and soil sources: upland soils, nav. dredging, streambed maintenance, and coarse sediment
- Beneficial reuse project examples
- Need regulatory change, local support, and increased funding

Seal Beach NWR, SCC



Informational Briefing #5

Dredging as a Source of Sediment

- Importance of dredging the Bay
- Majority is disposed of as a waste (costs, wildlife concerns, and logistics)
- Success of Long Term Management Strategy



Informational Briefing #6

Flood Control Projects as Sources of Sediment

- Reconnect creeks and historic marshes
- Ecotone for resilient flood protection
- Use natural flow regime to deliver sediment to marshes
- Pilot projects provide useful information

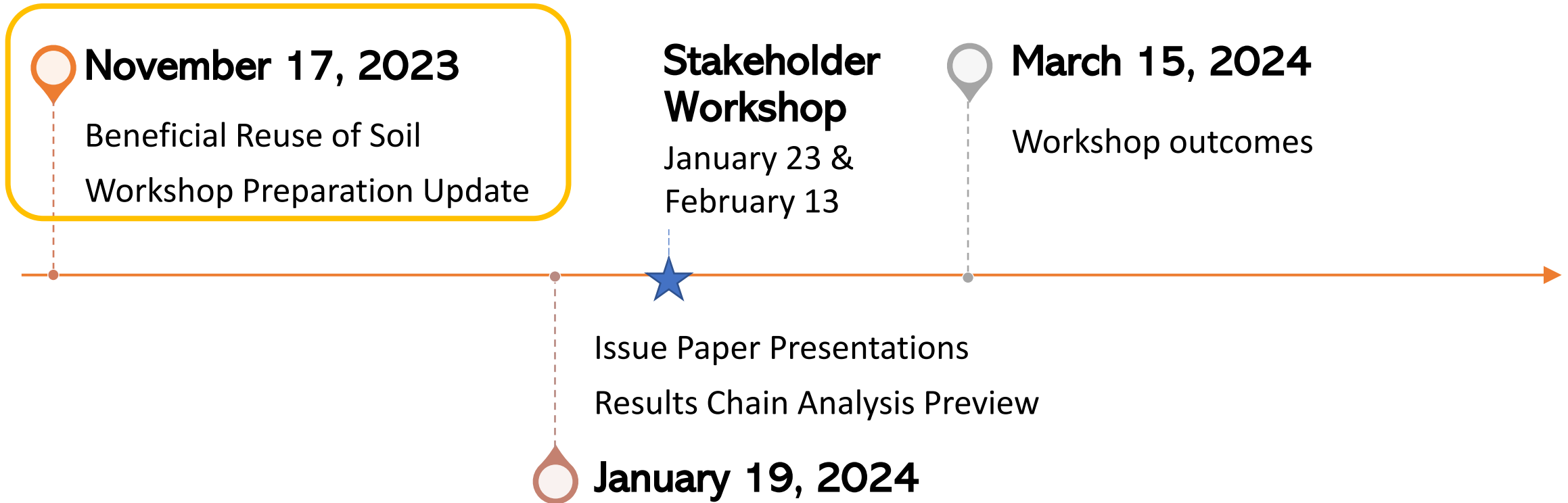


Informational Briefing #7

Construction and Upland Soils as a Source of Sediment



Upcoming Meetings and Events



Workshop Plan

- Workshop will present a series of potential pathways to get more sediment to beneficial reuse.
- Areas of focus include:
 - Sources of sediment: dredging, flood management, construction
 - Placement of sediment: direct and indirect placement methods, restoration/adaptation sites
- Expected workshop outcomes:
 1. Confirmation of the implementation framework and objectives
 2. Identification of key opportunities and barriers for sediment and soil reuse
 3. A clear understanding of ideas and recommendations regarding action plans
 4. An outline of roles/responsibilities for implementation



Photo: Bothin Marsh

Workshop Preparations

Working with our Facilitator

- Stakeholder interviews complete
- Workshop plan
- Workshop materials

BCDC Project Team

- Stakeholder outreach
- Send and track workshop invites
- Prep workshop materials (issue papers and results chain analysis outline)

Questions / Discussion



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Photo: Eden Landing



Terrestrial Material Reuse in Restoration and SLR Adaptation

Presentation to BCDC Working Group on Sediment & Beneficial Reuse

Xavier Fernandez, SF Bay Regional Water Quality Control Board

Dave Halsing, South Bay Salt Pond Restoration Project

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Material Sources

- Dredging
- Upland excavation
- Stream maintenance



Material Sources

- Dredging

- Upland excavation

- Stream maintenance



Danger of Too Much Focus on One Piece of the Puzzle

- Plenty on long-term need and demand
 - e.g., Sediment for Survival
- Most focus on dredging
 - LTMS & DMMO; Bay Planning Coalition
- Ignores shorter-term problems and needs
 - Establish marshes before SLR accelerates
- Dredge material → limited utility
 - Not good for levees, ecotones/horizontal levees, islands
- Urgent need is for “true dirt”
 - Marsh restoration, flood mgmt, and SLR adaptation projects
 - Large quantities needed NOW

Uses for Upland Material

- Raising / repairing old salt pond berms
 - Avoids tidal encroachment or unplanned failure





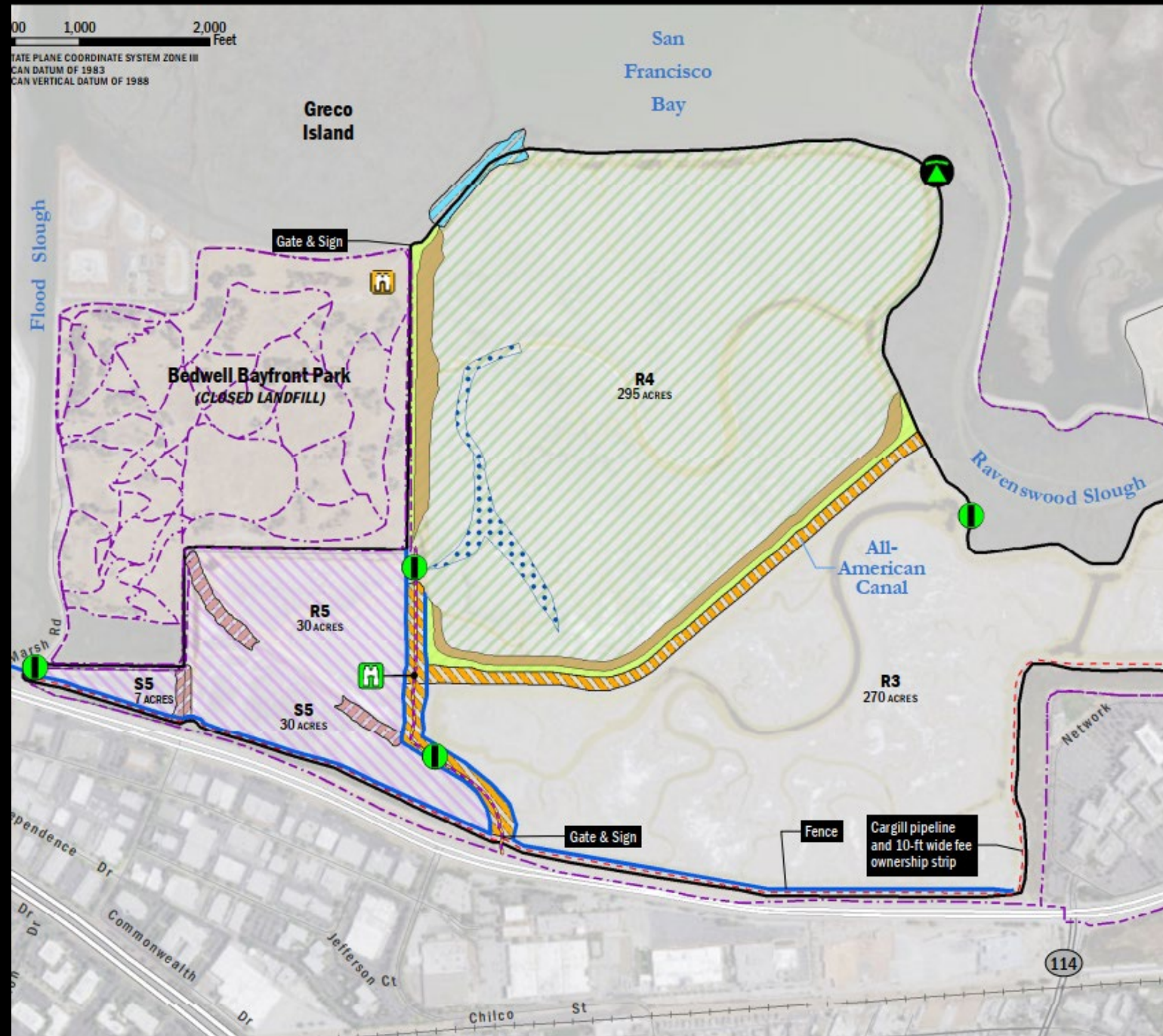
Ravenswood Point

Ravenswood Slough




Uses for Upland Material

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 - Allows safe reintroduction of tides for restoration



Uses for Upland Material

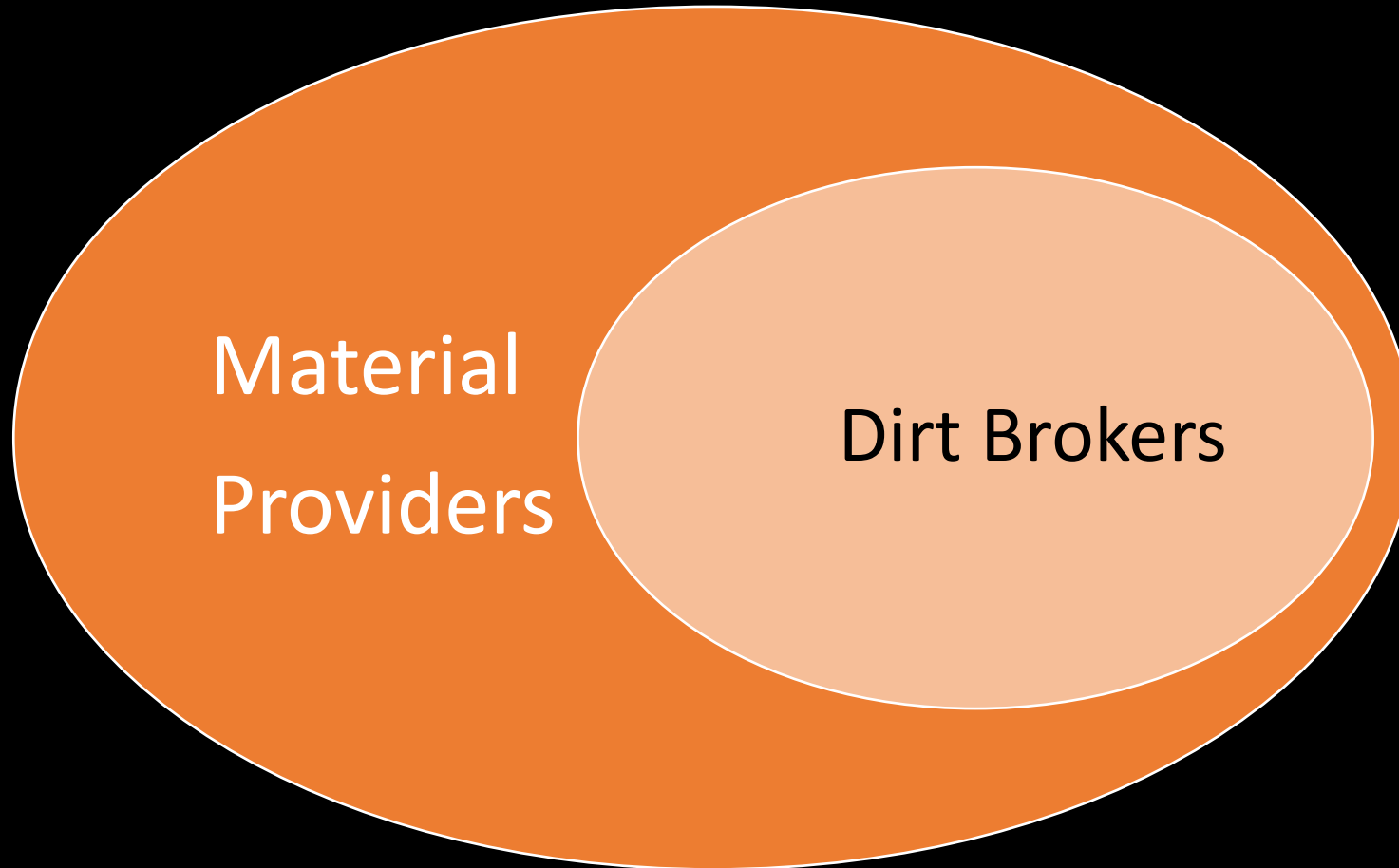
- Raising salt pond berms
 - Avoids tidal encroachment / unplanned failure
 - Allows safe reintroduction of tides for restoration
 - Habitat transition zones / Ecotones
 - More & better habitat
 - Flood management
 - SLR adaptation
 - Habitat islands
 - Wave breaks
 - Loci of future sediment accretion
 - SMP material can be too coarse – still helpful
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The 'Free Dirt Model' of Beneficial Reuse



Buying dirt is REALLY expensive (\$40-50/cy for ecotone; more for “levees”)

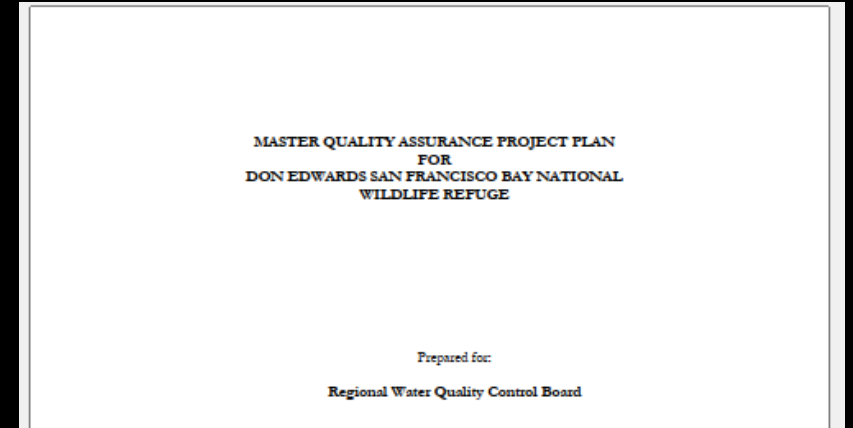
Material Providers & Their Processes



- Not synonymous
- All bring their own material
- Dirt brokers bring theirs and others
- How they do what they do
- *(Why they sometimes don't...)*

Cleanliness and Environmental Safety

- QAPP and its history
 - Borrow site history
 - Env Screening Limits
 - Surface vs foundation standards
 - Requirements for sampling, testing, submitting for approval, tracking, reporting, etc.
 - Specific to each recipient site landowner
- Roles of source project owner, reuse site owner, material provider, QA Officer, etc.



Upsides

- Why it works
- Who's got incentives
- Benefits to env and society
 - Waste → input good
 - Landfill use avoided
 - Overall costs reduced
 - Projects happen more cheaply & better
- Success stories – examples



Challenges

- Construction industry has peaks & valleys
- Not all material is clean enough (more on this)
- Timing of excavation vs. project constraints
 - Hours of operation, traffic, seasonal work windows, wet weather
- Physical limitations
- Other projects in the way
- Hauling distances too large
- Imperfect source projects



Challenges

- Access to reuse sites not in our control
 - Cities often object to large #'s of trucks
 - Easements or local permits are TOUGH
- Testing labs not all equal – data questions arise
- Duplicative review-and-approval processes
- Material providers don't want to share
 - Liability risk *AND* they like monopolies



Adds schedule and financial risk/uncertainty to projects

More funding needed to replace lost grant \$ or to buy fill







We Sometimes Overcome

- 1 monopolistic dirt broker → 5 competing material providers
- Advanced statistical analysis
 - UCL, Hazard Quotient Method, etc.
- Developing ideas for improving QAPP processes
 - Allow more material reuse while being appropriately protective
 - Conceptual site model to track exposure to biota
 - Material mixing to achieve balance across all criteria
 - Evaluate ESLs to be more about marsh species
 - Possible future changes in ecotoxicologic risk to biota

Will It Be Enough?

Not if we don't change some things

- Smaller/fewer ecotones → reduce material demand
- Alternatives to ecotones in some places
- Still: most SLR adaptation projects need fill

(And that's where the money is...

...Public support too)

- New approaches to testing & screening, approval, etc. could help



Still Limited

- Need for easements and local permits
 - Can 'veto' project implementation
- Better outreach could help but won't solve
- More policy changes are needed
 - Visions & strategies are not enough
 - Features are still fill and adverse impacts; permitting not easy; mitigation is often required
 - Short-term impacts/risks > long-term needs, benefits, and costs

Thank You

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