Regional Dredged Material Management Plan Charrette

Hosted by US Army Corps of Engineers San Francisco District

Friday, June 2nd, 2023

Location: Online

Table of Contents

I. USACE Dredging Program and RDMMP Overview

- DMMP Guidance (Engineering Regulation 1105-2-100, Appendix E-15)
  - All Federally maintained navigation projects must demonstrate sufficient dredged material placement/disposal capacity for a minimum of 20 years
  - USACE policy is to accomplish dredge material placement in the least costly manner
    - This constitutes the base disposal plan for the navigation purpose (Federal Standard)
    - Each DMMP study must establish this "Base Plan"
  - Each DMMP must include an assessment of potential beneficial uses
- SF Bay RDMMP Background
  - Prior Draft Regional DMMP (2011) – Not completed
    - Volume I Document
    - Supporting Manuscripts (30 total manuscripts)
      - Manuscript 5 = Sediment Transport Dynamics
      - Manuscript 7= Regional Sediment Management (sources and sinks)
      - Manuscript 17 = Trends in Sediment Shoaling and Projected Dredging
      - Manuscripts 24-26 = Biological resources; Invasive Species and pathways; Species of Concern
    - Informed 2015-2024 NEPA/CEQA and associated compliance for SF Bay Dredging Program
  - Individual Channel Preliminary Assessments (2019)
    - Completed – Identified need for comprehensive RDMMP to evaluate regional placement capacity for 20 years
- Current SF Bay Regional DMMP
  - Objectives
    - Evaluate placement sites & new opportunities
    - Identify capacity for 20 years of material from Federal Channels
    - Establish the Federal Standard Base Plan
    - Identify and evaluate alternatives
    - Input for new multi-year environmental compliance
      - Based on best available science to inform environmental restrictions/limitations
  - Structure
    - Comprehensive approach
      - Multiple channels and shared placement sites
    - Broad stakeholder engagement
- SF Bay RDMMP Phase I – Scoping (2020-22)
  - Stakeholder Charrettes
    - Initial public meeting

        - 5 thematic stakeholder charettes
            - Toxicology
            - Climate Change and Other Environmental Issues
            - Physical Processes
            - Economics, Social Studies and Policies
            - Summary and Next Steps
    - Knowledge Gaps Identification (SFEI)
        - Literature review of past studies
        - 25 knowledge gaps identified
        - Condensed to 18 gaps for prioritization
        - Gaps prioritized during IWG meeting
        - Final refinement by USACE
    - Scope of work for Phase II Efforts
        - Gap Analysis Studies
            - Regional analysis of potential BUDM locations
            - Hydrodynamic and sediment transport modeling for strategic shallow water placement (sediment reaches desired location)
            - BU Benefits analysis of beneficial uses
            - Ecological modeling (effects of sediment placement on benthic communities)
- RDMMP Implementation
    - PHASE I – RDMMP Scope of work (completed; 2020-2022)
        - Stakeholder Charrettes
        - Data “gap analysis”
        - Scope phase II efforts
            - Including studies to address knowledge gaps
    - PHASE II – Complete RDMMP (ongoing; 2022-2024)
        - Gap analyses studies (SFEI, ERDC, IWR)
        - Developing engineering, economic, and environmental inputs
        - Plan formulation and evaluation
        - RDMMP report and environmental approvals
            - NEPA/CEQA
            - 401 WQC
            - CZMA Consistency
- Future Annual DMMPs under Sec. 125 of WRDA 2020
    - Section 125(c) - annually prepare dredged material management plans (DMMPs) with a 5-year outlook
        - Full Federal expense
        - Minimum 30-day public input
        - Spreadsheet format
        - BUDDI process for new sites

    - Section 125(a) - authorizes USACE to cost-share (65%/35%) the incremental cost of BU placement opportunities
        - Incremental costs must be reasonable in relation to benefits
        - Federal share (65%) of increment < 25% of Base Plan Cost (or must complete benefit cost analysis)
        - Requires cost-share partner
        - Multiple placements over multiple years allowed
- WRDA 2020 Section 125 Key Takeaways
    - The Federal Standard still dictates the base plan
    - Beneficial use, when it is not the base plan, requires a source to fund the incremental cost
        - Cost-sharing of the beneficial use increment (65%/35%) to encourage more funding sources
    - Limited/higher-cost BUDM opportunities (locations) are a challenge in the region
    - Participatory 5-year DMMP process may help to identify new beneficial uses/ locations

TK (USACE): The 65-35 cost sharing isn't new per se, but what's really new is our ability to seamlessly use our O&M $'s to fund the Fed share (vs. going thru a separate authorization process to get to funding for the Fed share)

San Francisco Bay Channels and Placement Sites

- **Regional comprehensive plan**
  - Channels are interrelated by the sites
- **Placement capacity in a systematic perspective.**

Added cost – incremental cost – cost to take material to a beneficial use, minus the base plan or least cost plan.

- **Historically, 100% cost share.**

SF Bay Background.

- **Preliminary assessment for all federal channels in the SF Bay**
  - Identified a need for comprehensive plan.
  - Requires a comprehensive look.
  - Determined the need of regional drainage system.
- **Identify and evaluate additional beneficial use opportunities required by guidance.**
  - – multi year environmental compliance.
  - Approach that looks at ALL channels together in a systematic capacity across the shared placement sites.

Phase I -2020

- **Knowledge gaps identification**
  - 30 technical studies, other scientific study review.
  - Led to final refinement by the Corps.
- **Gaps identified:**
  - Where is settlement needed and where it is feasible to place.
  - Sediment modeling
  - Benefits
  - Ecological modeling
    - Effects of settlement placement.

Overall, they help inform on alternative plans, taking into account environmental compliance.

Phase I completed
As of 2022 until 2024 – SF Bay RDMMP entered Phase II – Complete study.

- Project team is developing inputs to this plan.
- Currently working on formulation and evaluation.
- Moving forward to environmental approvals.

Management plans will be conducted on an ANNUAL BASIS WITH A 5 YEAR OUTLOOK.

- Intended to be a spreadsheet exercise.
- Purpose of seeking input to help identify opportunities.

Game Changer – Section 125(a)

- Cost share.
- Important to talk about broader DMMP.

Key takeaways:

1. **As we transition, the federal standard still dictates the base plan.**
2. **Under 125 – cost shared (65/35).**
3. **Limited/high cost BUDM continue to be challenge, input is important to identify new beneficial uses/locations/techniques.**

II. Section 1. Overview of 2025 – 2044 SF Bay RDMMP Planning Process

USACE Planning 6 step process.

1. Identify problems.
    a. SF Bay sediment starved
        i. Lack of sediment.
        ii. Climate change and sea level rise.
        iii. Ecosystem loss.
    b. Limited Placement site capacity
        i. How much sediment can be taken.
        ii. logistical constraints.
    c. Federal standard needs to be updated
    d. Beneficial use expensive, requires non-federal partners.
        i. Find ways to fund incremental costs.
        ii. Seeks collaboration and critical feedback.

OPPORTUNITIES

1. Leverage existing BU
2. Develop new BU sites
    a. Over the years more sites will become available.
    b. Maximize among of material.
3. New dredging methods.

OBJECTIVES

1. Develop the Federal Standard.
2. Maximize beneficial use
    a. Identify ways to do this.
    b. Leverage engineering with nature.
    c. Placing material, drive down costs.
3. Inter-agency, regional coordination.
    a. Make it inclusive, environmental justice concerns.

CONSTRAINTS.

1. Dredging and placement costs.
    a. Considering all options, limited supply of equipment.
    b. Certain # of dredges that will be used.
    c. Environmental work windows
        i. Endangered species.
        ii. Minimize environmental impact.
        iii. Dredge within a certain “window” for each channel to mitigate impacts.
    d. Placement site capacity and accessibility
        i. Accessibility of the site can be a constraint.

III. Breakout Group Session #1

A. Group 1

Personal Introductions:

- ***Lisa (Valero):***
  - Benicia refinery; dredge multiple times a year 2-3 times a year; lots of deposition off of the Carquinez channel.
  - Lots of sediment so often in a position where they have to dredge out of the enviro window.
- ***Dick Tzou (Solano County):***
  - Solano county, Montezuma projects are on their land within the county
  - new to this project, here to learn about dredging we're more on the regulatory side issued by the county.
- ***Ellie Covington (USACE):***
  - USACE
  - Here to help move forward with dredge material
- ***Ed Keller (USACE):***
  - USACE
  - Specialty is in sediment and suitability
- ***Jim McNally (Manson Construction):***
  - Manson
  - Dredging contractor
  - Interested in long term areas of disposal
- ***Nikki Roach (San Francisco Joint Venture):***
  - Policy and communication work at Coalition
  - Main sediment person
  - Work with restoration personnel and contractors to reuse sediment
- ***Sara Azat (NOAA):***
  - Fish biologist with NOAA
  - Centered in Santa Rosa
  - Work with SF Bay Branch
  - Programmatic consultations maintenance
- ***Scott Bodensteiner (Haley and Aldrich):***
  - Permitting of dredging material
  - Beneficial reuse committee
  - Looking for opportunities to drive down the costs of beneficial reuse
  - Looking to make up the costs to use beneficial reuse
- ***Spencer Harper (USACE):***
  - Shallow water placement working with the RDMMP
- ***Savannah Miller (USACE):***
  - Been with corps for a couple years working in construction mainly in Sacramento and Stockton channels
  - Excited to see the connections between in-bay and delta processes
  - Assisting with RDMMP efforts including development of programmatic EA

Breakout Session #1 Activity Feedback

(SF Joint Venture) Nikki: Sees the need to have more creative solutions to fit into the federal standard with cost share due to DC policy exposure and procedures

(USACE) Ed: Least cost environmentally acceptable incremental costs; beneficial reuse and ecosystem restoration could be prioritized to also fulfill the goals of working against the effects of sea level rise and climate change

(Manson) Jim: Sees this as a national issue; the way to get beneficial reuse is a funding source for that increment. Thinks that environmental restoration is a great solution for placement of material like Hamilton

(USACE) Ed: Agrees with Jim, we still need opportunities to reduce these costs; goal is to get a funding source for this material. Wants to find more transfer sites or aquatic transfer site for more variability

(NOAA) Sara: There is a cost in handling the material still to the placement site if you have a transfer facility, even if the costs from the initial collection are inexpensive how can it end up being less expensive with keeping into account of species?

(Manson) Jim: the rehandling costs could be adjusted when taking into account the transportation costs to SFDODS so could be more feasible than you'd expect

(USACE) Ed Summary of talk to outgroup: What does the future look like if we prioritize beneficial reuse? Would a single location of beneficial reuse be of benefit for costs and benefits specifically for sea level rise?

(SF Joint Venture) Nikki question in the chat that was missed: "have a question? What is USACE engagement with district officials -what's the local policy connect v federal?"

Breakout Session #1

What are your objectives for regional dredged material management?

Develop the Federal Standard,

Maximize Beneficial Use

Leverage Engineering with Nature

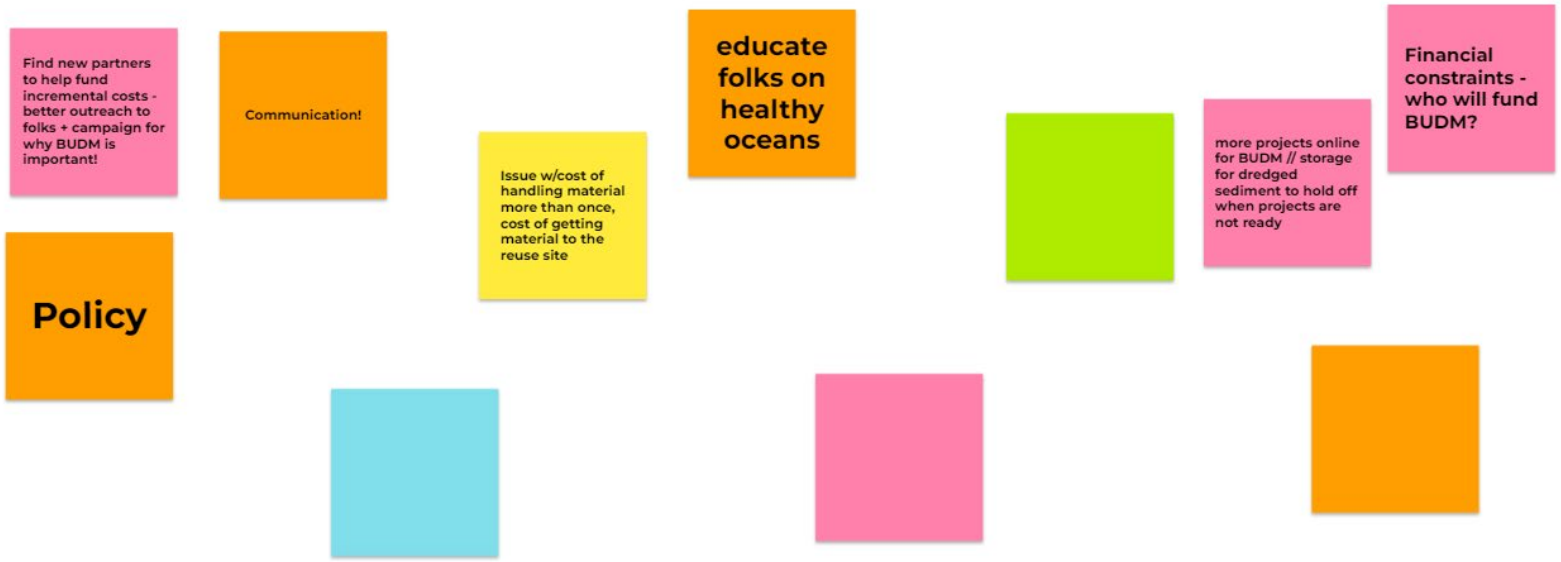
Inter-agency, regional coordination

Inclusive, accessible planning process

Breakout Session #1

What are the opportunities to improve dredged material planning at a regional scale?

What are the constraints to this regional management approach?



B. Group 2

1. Arn Arrenberg – CDFW Marine region
2. Brandon George – USACE
3. Ellen Johnck – City of San Leandro (consultant)
4. Jazzy Graham-Davis – Geologist for SFRWQB
5. JC - Dutra
6. John Coleman – CEO of Bay Planning Coalition
7. Roger Leventhal – Marin Flood Control and Montezuma
8. Roland Yip – City of Pacifica
9. Tessa Beach - USACE
10. Wendy Kordesch – NOAA Greater Farallones National Marine Sanctuary

What are your objectives for RDMMP?

1. John – Objective for today, what the need is and how do we get there in a pragmatic approach that meets the objective and is economical, how can we move forward?
2. Roger – Less concern over episodic turbidity.
3. Jazzy – There are areas around the bay that used to be marsh but aren't any longer. There's potential for these areas but there are restrictions. Want to facilitate that and get projects moving so the endangered species have somewhere to go.
4. JC – Bay Planning Coalition and the Corps did studies of impacts of turbidity on RWC and Port of Oakland. Both came back with minimal impact other than dredge areas versus natural turbidity in the bay. We need to use the information from the last 20 years and stop recreating things. We aren't looking at what the bay does if we aren't dredging.
5. Ellen – Need to provide habitat and NMFS/USFWS/ESA want to support fish and wildlife agencies.

Opportunities and Constraints

1. Ellen – Created a dredged material management site in San Leandro Marina, but unable to dredge. City has identified that as a resource. What are other opportunities like that?
2. Tessa – finding efficiencies by finding opportunities as a part of this process. May be able to streamline permitting.
3. Jazzy – with NEPA and CEQA how can we streamline moving forward?
4. Roger – Could hydraulically place as there is a site near us. Could be more efficient in how we are getting our dredging done

Breakout Session #1

What are your objectives for regional dredged material management?

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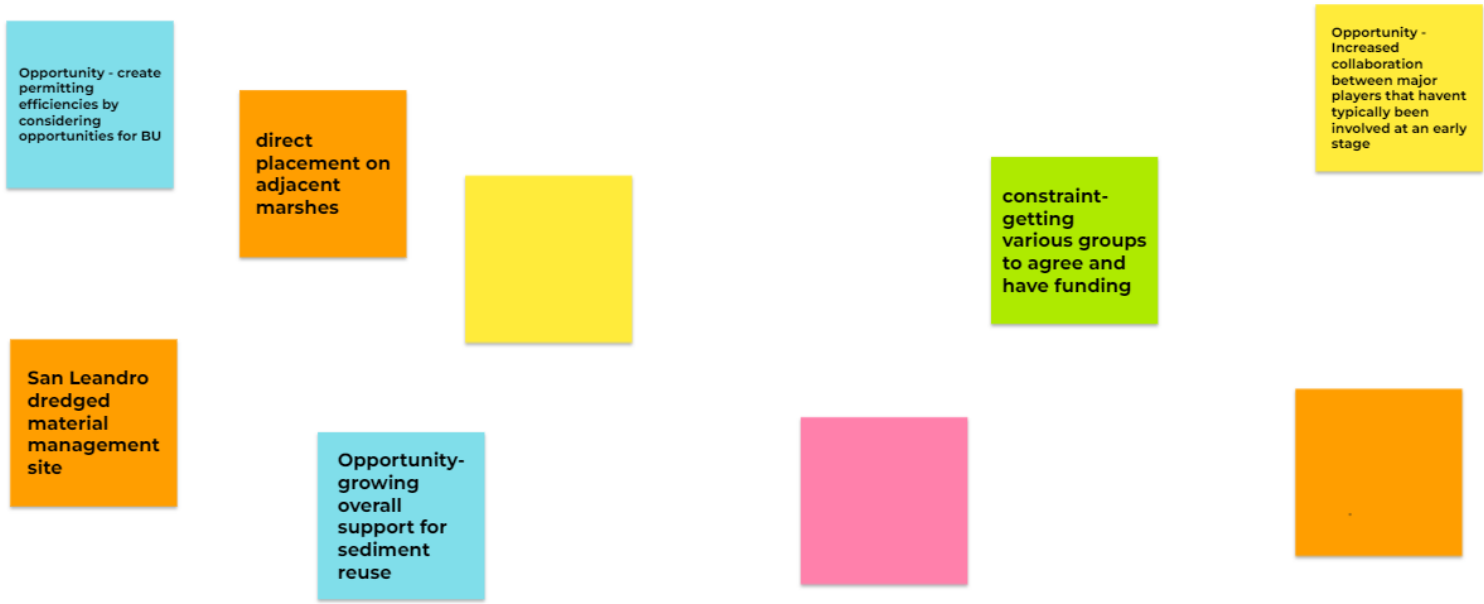


C. Group 3

Name	Organization
Kevin Lunde	Water Board
Bob Battalio	Environmental science associates lead engineer – Excited to work with dredging because of increased erosion with climate change, Wetland restoration and beach restoration
Jeremey Lowe	SFEI – regional analysis worker to find placement sites. Ecosystem services
Brenda Goeden	SFBC+D commission, sand and sediment worker around the bay. Sand mining- works with Bob, LTMS program manager, project design member RDMMP frequent member
Heather Schlosser	Coastal manager and uses beneficial use, navigation budget
Fanny Yu	Port of Oakland
Joshua Miller	GIS coordinator, USACE SPN
John Schneider	Marathon – bulk cargo and how to keep channels reliable. Maximize cargo movement.
Justin Y.	Project Manager, USACE SPN
Tiffany C.	USACE SPN
Isabel N.	USACE SPN/Army

What are objectives:

- Max beneficial reuse
- Ensure needs of bulk users of nav channels
- Cost effective options for sites
- 100% beneficial reuse for sediment with appropriate quality
- Maximize BU where it is most effective in maintaining ecosystem services such as wildlife support, flood protection
- Coordination between the projects for dredging and disposal (if it makes sense) in order to increase the BU of material (perhaps more cost effective

Breakout Group Session #1 Opportunities and constraints for RDMMP (Group 3)

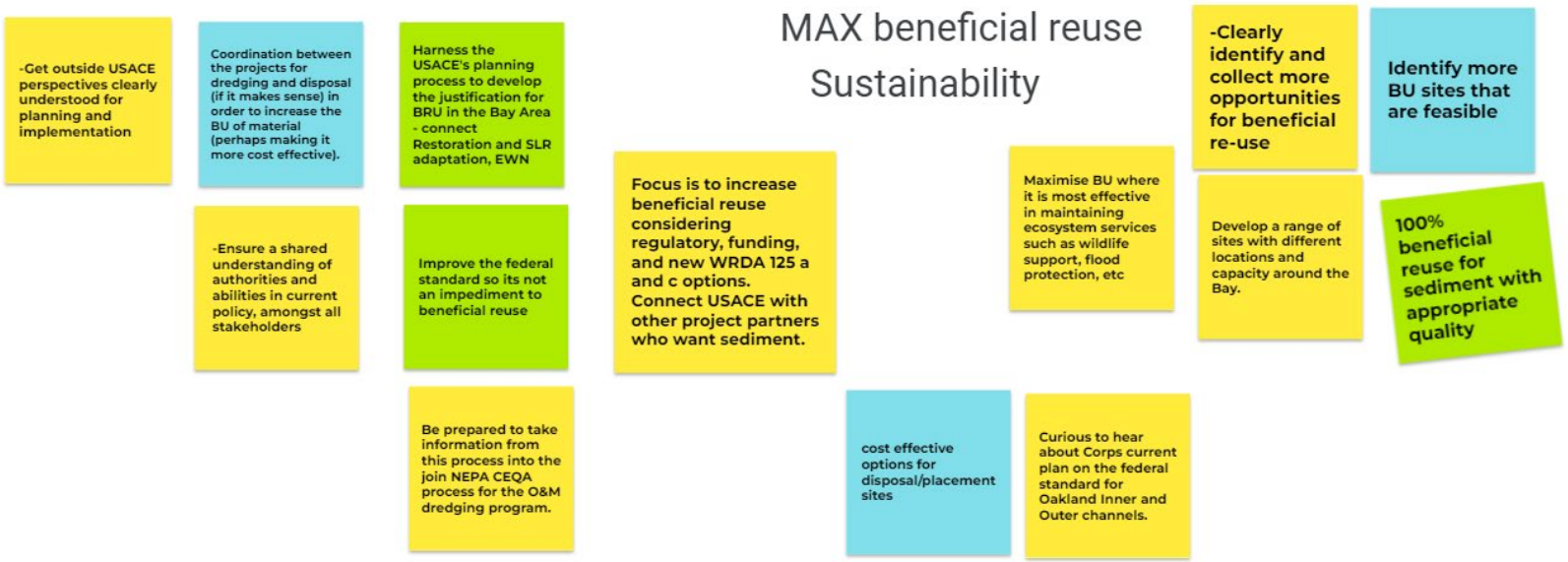
1. What are your priorities for regional dredged material management? 2. What are the opportunities to improve dredged material planning at a regional scale? 3. What are the constraints to this regional management approach?

Group 3 (In breakout group) –

- $$$$
- Work with the USACE to get out and connect with people and projects outside of their own world. Communication and coordination.
- Opp- regional approach is aware of the full picture. Corps has so many projects so need awareness and funding and process.

Breakout Session #1

What are your objectives for regional dredged material management?



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D. Group 4

Intros

Chris Milan

Edwin Draper – Port of Oakland.

Ellen Plane, SFEI

Emma Maack

Evyan Borgnis Sloane

Jessica Vargas

Joel Flannery

Rebekah Antoine

Tim Ekren – DUTRA

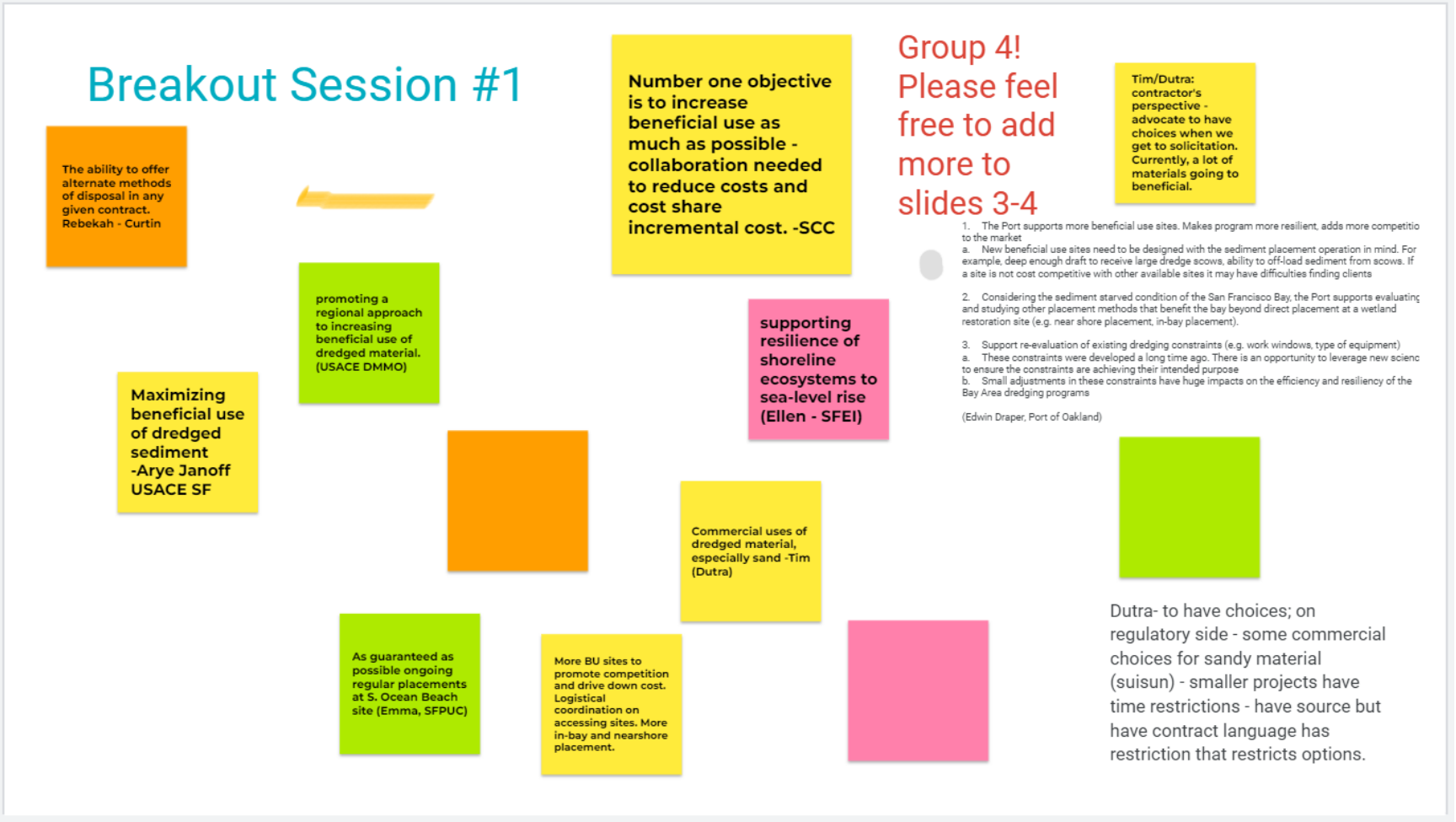
What are your **objectives** for regional dredged material management?

- Supporting resilience of shoreline ecosystems to sea level rise – Ellen – SFEI
- Ongoing regular placements at S. Ocean Beach site – Emma
- Port of Oakland – the more sites, the more competition = lower cost, sites need to consider methods of removing sediments. Unfeasible sites are not going to be used.
    - Considering sediment – evaluations of other methods, near shore placement.
- Long term – commercial use of material, sandy material.
    - Permit restriction on where materials end up.
    - Discussing commercial application/restrictions.
    - When we go to contracting – options are important.
        - Provide choices and flexibility is important for contracts.

- Alternative methods of disposal
- Flexibility (time) and support when looking at contracts. (will make things more resilient)
- Increase number of sites to increase competition.
- Cost is a constraint.

Evyan Borgnis Sloane to everyone in this session: 10:39 AM

We could add regulatory constraints beyond work windows like not allowing hydraulic dredging or something like an aquatic transfer facility


Breakout Session #1
The ability to offer alternate methods of disposal in any given contract. Rebekah - Curtin
Number one objective is to increase beneficial use as much as possible - collaboration needed to reduce costs and cost share incremental cost. -SCC
Group 4! Please feel free to add more to slides 3-4
Tim/Dutra: contractor's perspective - advocate to have choices when we get to solicitation. Currently, a lot of materials going to beneficial.
promoting a regional approach to increasing beneficial use of dredged material. (USACE DMMO)
supporting resilience of shoreline ecosystems to sea-level rise (Ellen - SFEI)
Maximizing beneficial use of dredged sediment -Arye Janoff USACE SF
Commercial uses of dredged material, especially sand -Tim (Dutra)
As guaranteed as possible ongoing regular placements at S. Ocean Beach site (Emma, SFPUC)
More BU sites to promote competition and drive down cost. Logistical coordination on accessing sites. More in-bay and nearshore placement.
1. The Port supports more beneficial use sites. Makes program more resilient, adds more competitio to the market
a. New beneficial use sites need to be designed with the sediment placement operation in mind. For example, deep enough draft to receive large dredge scows, ability to off-load sediment from scows. If a site is not cost competitive with other available sites it may have difficulties finding clients
2. Considering the sediment starved condition of the San Francisco Bay, the Port supports evaluating and studying other placement methods that benefit the bay beyond direct placement at a wetland restoration site (e.g. near shore placement, in-bay placement).
3. Support re-evaluation of existing dredging constraints (e.g. work windows, type of equipment)
a. These constraints were developed a long time ago. There is an opportunity to leverage new scienc to ensure the constraints are achieving their intended purpose
b. Small adjustments in these constraints have huge impacts on the efficiency and resiliency of the Bay Area dredging programs
(Edwin Draper, Port of Oakland)
Dutra- to have choices; on regulatory side - some commercial choices for sandy material (suisun) - smaller projects have time restrictions - have source but have contract language has restriction that restricts options.

Breakout Session #1

What are the opportunities to improve dredged material planning at a regional scale?

What are the constraints to this regional management approach?

Seeing communities develop plans to identify key locations for sediment placement .

Scale of need in communities - consideration for future planning.

Perhaps local commnities could partner

opportunity to reevaluate "constraints" with new science. Are the "constriants" fulfiling thier orignial purpose? what about work windows? what about equipment.

"pay in" entity- structured to share the cost to move offloader costs - when it's there turn in rotation

From the placement site perspective, the long time frame (sounds like a few years) to arrange for placement given the timing of contracting for/scheduling certain equipment etc. is something of a challenge. We are going to monitor the south Ocean Beach site, and hard to know exactly how much sand we will need and when several years in advance. (Current thought is to do placements on a regular schedule and adjust the sand amount depending on monitoring.)

Regulatory constraints beyond work windows like not allowing hydraulic dredging or something like an aquatic transfer facility

COST

Cost is a contraint for those who need material.

E. Group 5

Attendance: CH (CA State Lands Commission) dialed in 9163; SC (Ducks Unlimited); DG (NOAA); JU (Valley Water); MF (SFEI); TK/CE/MF (USACE)

Objectives

SC (Ducks Unlimited)

- Maximize dredge material for shoreline resilience

DG (NOAA)

- Concur with SC about maximizing dredge material
- Beaches outside the Bay is important too

TK (USACE) + General Notes

- Importance of giving materials to wetland around the Bay
- From the Corps' perspective anything beneficial is good
- Understand the benefits and impacts of different types of material placement
- Develop the federal standard
- Avoid negative impacts to the region
- Inter-agency, regional coordination inclusive, accessible planning process
- Maximize beneficial use, leverage engineering with nature
- Figure out how to get materials to sites in a cost-effective manner
- Minimize dredging and BU placement costs to maximize benefits and wetland acres enhanced or restored
- Improved public acceptance of use of dredged material for site restoration and resilience

Opportunities/Constraints

- Opportunities:
    - Better match making between source and recipient
    - Leverage existing BU
    - NOAA restoration center is doing restoration and exploring constraints in Louisiana
        - Learning lessons from other places and largescale restoration outside of the Bay (transferrable ideas)
    - New dredging methods

    - Allow for placement of dredged material in tidally connected sites. This would allow sites to be restored sooner (no waiting for material to reconnect sites) while addressing SLR

- Constraints:
    - Placement site capacity and accessibility
    - Equipment availability
    - Environmental work windows
    - Dredging placement and costs
    - Permitting, particularly from resource agencies because the effects are less clear, particularly for some of the methods that have not been used in Bay
    - Identifying priorities at a regional scale rather than a site-by-site approach that may not be aligned with regional goals for wetland restoration and regional needs

Breakout Session #1

What are your objectives for regional dredged material management?

Breakout Session #1

What are the opportunities to improve dredged material planning at a regional scale?

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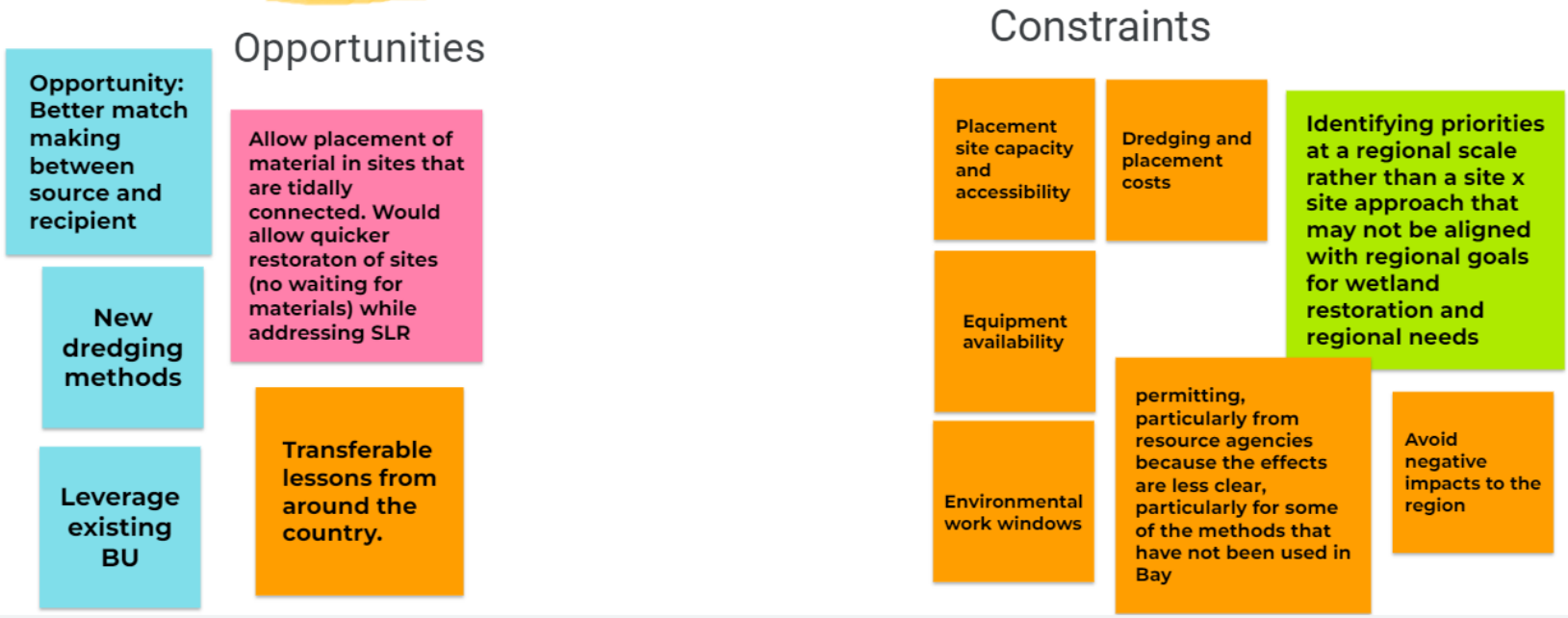


IV. Breakout Group Session #1 Share Out

Group 1 –

- How do you get BU competitive when it comes to price and how to work with regulatory team? We need to prioritize BU, but also think about how to follow dredging requirements.
- Sediment advances and backfilling to promote BU and execute navigation mission effectively.
- Discussed the importance of communication/outreach across key stakeholders and engaging the restoration community and folks on their priorities more frequently.

Group 2—

- Pragmatic dredged material management – econ + env
- Tie DMMP to regional ecosystem restoration/management plans
- Lower cost such that there might be the base plan
- Permitting efficiencies
- Direct placement at marshes adjacent to channels (minimize distance)
- Constraint: consensus across partners + funding
- Pragmatic approach that can meet overarching themes.
- Define ways to accomplish beneficial uses at a lower cost.

Group 3 –

- How do we identify sites and make sure the quality will match with site (sediment characteristics must match)
- Collaboration among stakeholders on regional scale
- Improved fed standard + shared understanding of policy/ regulations
- “I think it’s really important to unpack the assertion that the Bay is sediment starved and use language that is more appropriate and scientifically sound. None of the scientists believe the Bay is currently sediment starved. Rather, the Bay has seen a decrease in suspended sediment supply. USGS and others assert that the Bay marshes are currently keeping up with rising sea (with a few specific locations), but the concern is that the marshes will not be able to keep up with sea level rise. the other issue is that the marshes targeted for restoration, the natural sediment supply will not support the restoration to vegetated marsh in the timeframe that rising seas are expected to accelerate. Therefore, we need to maximize placement of sediment in these areas to get them up to marsh plain elevation quickly to help them adapt to rising seas in the future.” – Brenda Goeden

- “Sediment starved is too general of a statement for the Bay at large. Tidal channels in the north bay typically fill up with sediment quickly and could be a valuable source for marsh maintenance if we could get it permitted -with direct hydraulic placement without costs and impacts for barging yards of mud all around the bay. And reduce flooding as well.” – Benda Goeden
- Constraints: permitting, planning, predicting future options, uncertainty on sed transport.

Group 4 –

- Support resilience for shoreline ecosystems to SLR
- Take a regional approach
- Constraint: site accessibility and how to transport. Cost for contractor.
- Infrastructure necessary to achieve objectives
- Chris Milan
    - Access is a constraint and cost.
- Ellen Plane
    - More planning efforts, lots of groups including community and NGOs.
    - Look for cooperation.

Group 5 –

- MAX BU
- Improve public buy-in
- Better understand benefits and impacts of placement
- Minimize costs
- Transferable lessons from around the country

Other comments after Session #1 breakout--

- “Multiple sites to promote competition and drive down costs would be very difficult to make work. Someone has to invest in a site and if they aren't sure they will be the lowest cost option or they worry about finding themselves competing with a federally funded environmental restoration project (ala BMK), there is unlikely to be investment in new sites… unless those sites have their own funding stream justified by the site benefit”-- Jim McNally
- Waiting game while erosion and sediment movement is active

Breakout Group Session 1 WebEx chat:

1. from Nikki Roach to everyone: 10:04 AM In group 1 we also discussed the importance of communication/outreach across key stakeholders and engaging the restoration community and folks on their priorities more frequently.
2. from Tessa Beach to everyone: 10:08 AM
   @Nikki - great suggestion on the increased communication - as we transition to the annual DMMPs with a 5-year outlook, that will be key so the restoration community can provide USACE with information on where the opportunities are and when they might be ready to receive sediment.
3. from Brenda Goeden to everyone: 10:08 AM HI - i think it's really important to unpack the assertion that the Bay is sediment starved and use language that is more appropriate and scientifically sound. None of the scientists believe the Bay is currently sediment starved. Rather, the Bay has seen a decrease in suspended sediment supply. USGS and others assert that the Bay marshes are currently keeping up with rising sea (with a few specific locations), but the concern is that the marshes will not be able to keep up with sea level rise. the other issue is that the marshes targeted for restoration, the natural sediment supply will not support the restoration to vegetated marsh in the timeframe that rising seas are expected to accelerate. Therefore, we need to maximize placement of sediment in these areas to get them up to marsh plain elevation quickly to help them adapt to rising seas in the future.
4. from Roger to everyone: 10:13 AM Agree, sediment starved is too general of a statement for the Bay at large. Tidal channels in the north bay typically fill up with sediment quickly and could be a valuable source for marsh maintenance if we could get it permitted -with direct hydraulic placement without costs and impacts for barging yards of mud all around the bay. And reduce flooding as well.
5. from Jim McNally to everyone: 10:15 AM multiple sites to promote competition and drive down costs would be very difficult to make work. Someone has to invest in a site and if they aren't sure they will be the lowest cost option or they worry about finding themselves competing with a federally funded environmental restoration project (ala BMK), there is unlikely to be investment in new sites. unless those sites have their own funding stream justified by the site benefit

Objectives

- Balance BU with dredging requirements
- Pragmatic dredged material management – econ and env
- Tie DMMP to regional ecosystem restoration/management plans
- Minimize distance from channel to placement site
- Communication/outreach across key stakeholders and engaging the restoration community and folks on their priorities more frequently
- Collaboration among stakeholders on regional scale (with goal of reducing costs)
- Shared understanding of policy, regulations
- Identify/improve Fed Standard
- Support resilience for shoreline ecosystems to SLR
- Regional approach
- Offer alternatives placement methods in contracting process (flexibility)
- Max BU
- Improve public buy-in
- Better understand benefits and impacts of placements
- Minimize costs and make BU more cost effective

Opportunities	**Constraints**

- Sediment advance and backfilling to promote BU AND execute navigation mission effectively - BU opportunities at lower cost such that they might be the Base Plan - Permitting efficiencies - Direct placement at marshes adjacent to channels (i.e., minimized distance) - Identify feasible BU sites - Match sediment characteristics with sites - Nearshore placement - Interweave different business lines (efficiencies) - Identify locations w/ most benefit for ecosystem services - More BU sites to promote competition and drive down cost - Ongoing/regular placements at Ocean Beach - Sedimatch - Better matching of source and placement - New dredging methods - Lessons learned from around the country (existing and novel methods) - Placement at tidally connected sites - Identify leader on the regional scale to collate and manage information effectively	- Consensus across partners - Funding - Permitting (effects aren't clear on new methods) - Planning - Predicting future options - Uncertainty on sed transport - Site accessibility - Cost (dredging and placement) - Necessary infrastructure for transport and offloading of material - Balance b/w regional and site-specific priorities - Site capacity and accessibility - Env work windows - Equipment availability

V. Section 2. RDMMP potential sites and methods

Methods

- Placement methods
    - Direct placement
        - Material that is pumped off
    - Strategic placement
        - At specific locations to leverage natural processes
    - Water column seeding
    - Marsh spraying
        - Allow marsh to keep pace with SLR (examples in Marin county)
- Taking sediments by truck

Strategies

- Meet fed stand.
- Maximize beneficial use
- Minimize distance between channel and placement site

Alternative plans as part of step 3

1. **ALTERNATIVE THEMES (4)**
    a. **Future without project condition.**
        i. Use previously identified and permitted base plan under the 2015-2024 EA/EIR
    b. **Maximize beneficial use.**
        i. All direct placement sites.
            1. Ecosystem restoration within the next 20 years.
        ii. Direct + EWN techniques
            1. Marsh spraying, water column seeding, and strategic placement sites included alongside upland sites
    c. **Individual channel optimization.**
        i. How to optimize each channel.
    d. **Regional network optimization.**
        i. Least cost on a regional scale.
        ii. Timing channel to achieve lower cost.

VI. Breakout Group Session #2:

A. Group 1

Lisa (Valero): Joyce Island has been talking about their application for accepting Dredge material. I do not know much else; she is aware of one of the reps saying they were implying to put a permit on it-by Fairfield

Scott (Haley & Aldrich) and Sara (NOAA): Port of Sonoma restoration lots of capacity available; maybe 1,000,000 CY Petaluma River Ranch site-mouth of the Petaluma might be an area

Jamie (USACE-Facilitator): What are the sources for sediment possible for around the River Ranch?

Scott (Haley & Aldrich): Historically it is only used for Port of Sonoma; now it's with restoration site there might potential for capacity from other

Jamie (USACE-Facilitator): 1,000,000 CY Petaluma is the capacity? What are those parameters?

Scott (Haley & Aldrich): Yes, during the previous attempt at the RDMMP, this was discussed

Jamie (USACE-Facilitator): What are the constraints?

Scott (Haley & Aldrich): There was permissions to pump directly into the river ranch; it's one of those opportunities that will be permitted, DWRs for opportunistic for sites like the Bel Marin Keys

Nikki (San Francisco Bay Joint Venture) (chat): would it be possible to share this map with us afterwards and we can ask our partners to add more sites?

Jim (Manson): we would invest in a site if it was a placement option. Hamilton only worked because of the deepening of Oakland channel.

Need to have all of the components; the site has to have the money paid up for the placement site to pay the tipping fee and intention to invest in the site and make it competitive. There has to be some incentive for parties to invest in that area.

Ed (USACE): If you have a whole bunch of sites that need material-it is difficult for set up around those sites for costs versus the benefits of unloading that volume of material. So we should look at larger sites that have incentivize use. 1,000,000 CY of material is the annual amounts dredged every year so it would be considered a smaller site.

Jim (Manson): Shallow draft pump out hopper-we have a tool that works in Anchorage every year around 8 ft MLLW(?). Hurdles in there-it's still deep for the bay environment, also hopper dredge is controversial for the bay environment

Jamie (USACE-Facilitator): Moving onto constraints. Shallow pump off dredge?

Ed (USACE): Most of the sites where we pump off have shallow water around the site, so it's difficult to get up to the site, should we use pipeline, etc.

Sara (NOAA): In other areas of the country it seems like they use a pipeline to transfer the material. Besides the economic costs why don't we have that same methodology?

Jim (Manson): It's not that we don't have the infrastructure-it's that the cost of doing that isn't covered by anybody. Mississippi river and adjacent marshlands have the most common instances of this occurring. The scale is much bigger in many millions of CY. What you wouldn't do is do clamshell into a barge and offload it somewhere-can't do that cheaply.

Sara (NOAA): So hydraulic is the cheaper option?

Jim (Manson): Hydraulic cutterhead is most common method-in LA and Southern CA; hopper dredge is second most common. Offloader like what happens at Montezuma is the least common most expensive option that is commonly used for this material offloading. So the material that goes to Montezuma is mechanically loaded and then slurped from the barge up into the site.

Sara (NOAA): So if you had a designated offloader single site it would still be cheaper to still hydraulically dredge it?

Jim (Manson): We have an offloader, it's not difficult. We are not in the business of making items, we are moving/logistics. We have crew, equipment that we have to pay for all the processes. Cutterhead is cheaper. $9 a yard for cutterhead, ~$32 for Cullinan.

Sara (NOAA): ATF; once you have the material you still have the costs of transferring the material that have extra steps

Scott (Haley & Aldrich)(chat): Was way off on Petaluma River Ranch capacity. 18M cy, not 1M

Jim (Manson): It's the efficiency that is the expensive component. The clamshell efficiency is contingent on how much material is offloaded because offloading is so fast. If you have hydraulic dredging, you take out that extra step and therefore save time and money.

Ed (USACE): Summarizes that the barge, size of the site affects what kind of equipment we can use, Hamilton as an example.

Sara (NOAA): You're talking about a beneficial sites but really we're just seeing another in-bay site and not necessarily a beneficial use site

Ed (USACE): If we provide an appropriately large site for a big capital investment for in-bay sites the contractor can appropriately come up with equipment that finishes the job and is also sensitive to the environment at the same time.

Jim (Manson): We have all this equipment on the East Coast so can easily transfer that over.

Ed (USACE): We have specific environmental constraints such as fish entrainment issues that would need to be accounted for, for example, such as with Hamilton that would need special equipment. We had the contractor make up a screen

Jim (Manson): We have used entrainment devices in other areas and projects

Ed (USACE): We have to be sensitive to the altering of the bay and the environments

Jamie (USACE-Facilitator): Larger projects will create efficiencies for environmental

Scott (Haley & Aldrich): ATF and the effects Sara was discussing in earlier projects. NMFS effects what was their analysis of it?

Ed (USACE): Perhaps there are solutions to some of these environmental concerns. Maybe if we have a larger ATF this can provide benefits to the surrounding environments.

(meanwhile in WebEx Chat)

from Ellie Covington to everyone in this session: 11:07 AM

@ Sara with screens for fish would NMFS still have concerns (etc. copepods/diatoms/water intake)?

from Sara Azat NOAA Fisheries to everyone in this session: 11:09 AM

@Ellie -are you asking whether NMFS has concerns for copepods/diatoms?

from Ellie Covington to everyone in this session: 11:09 AM

yeah for water intake even if fish were screened out would NMFS have other concerns?

Jamie Yin's Notes (USACE-Facilitator)

New sites:

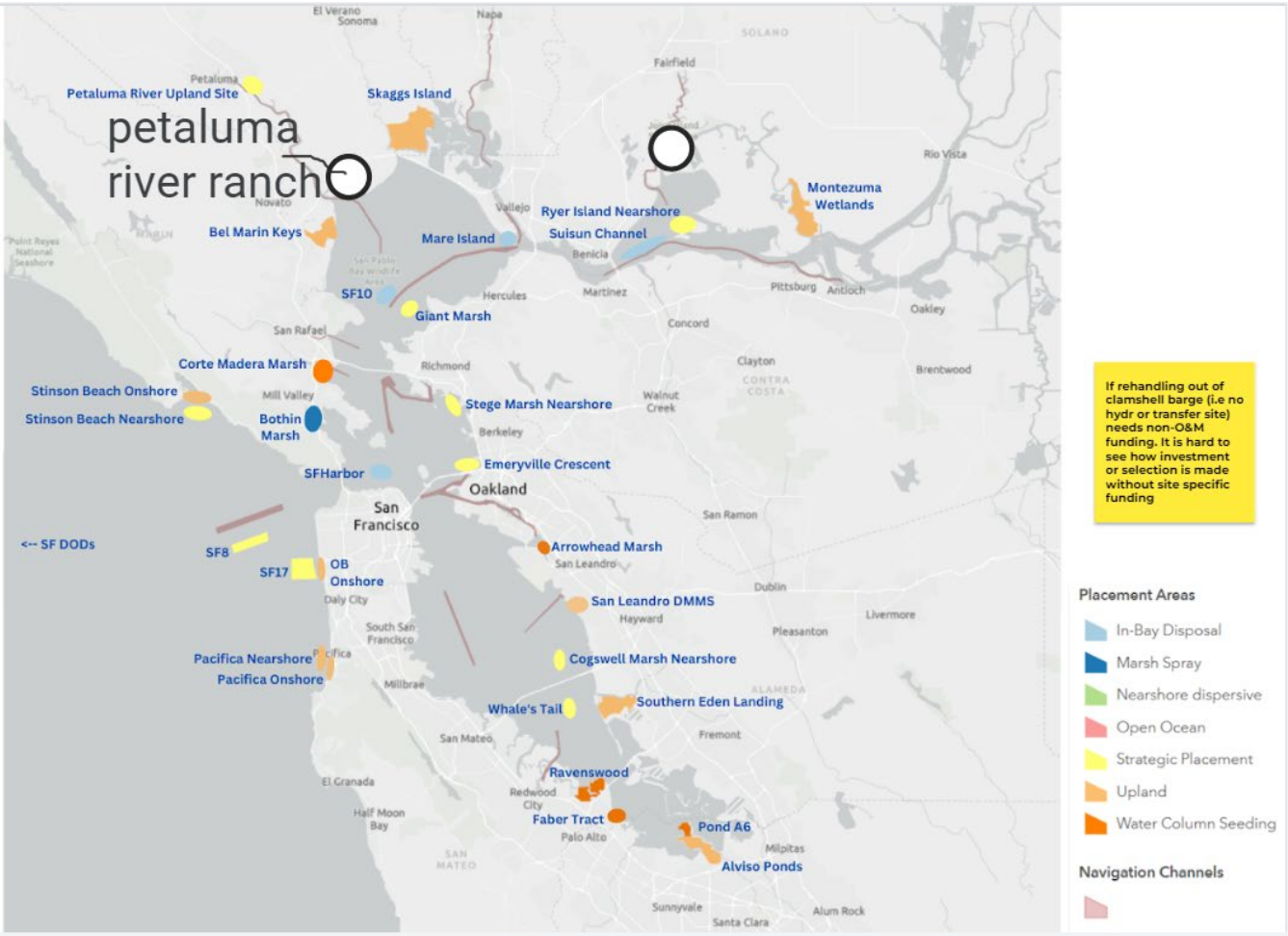
- Port Sonoma for Petaluma River Ranch
    - now a restoration site
    - capacity
        - 18 million cubic yards
    - historically used by the Port of Sonoma
    - historically used by other dredgers
    - marina hydraulically pumped
    - constraints-regulatory agencies don't permit as much hydraulic dredging
- Joyce Island
    - new site
- CONSTRAINTS: If model is we want to , multiple site environment, contractor don't want to invest
    - Montezuma was invested in, how does someone set up a new site when there is not a monetary incentive for contractor to take this material there, tipping fee
    - site has to say they will pay the tipping fee and invest in the site and make it competitive
    - can't just say I am here and accepting your material
    - A lot of small sites that need material, not really efficient to have a ton of small sites
    - Good to have overall capacity, so contractor could drop off sediment at multiple sites
    - Can't use a long pipeline hydraulic dredge as in other parts of the country
- SOLUTIONS:
    - Shallow draft pump off hopper

Breakout Session #2

Where is there a need for sediment in the SF Bay? Annotate the map.

What are the benefits associated with new sites?

What are the placement methods and constraints for new sites?



B. Group 2

1. JC – what can we learn from other districts outside of Bay area as far as beneficial reuse to reduce costs. We typically have a grade plus one foot of overdepth. It is very difficult to do that the contract doesn't get paid for. Other districts have characterized material past overdepth. If the contractor is taking material we aren't being paid for. You are paying for the inefficiency. If we can't dredge something with tolerance with lines and grades required. Then it is in the "pay prism". AM with Oakland/Richmond you likely wouldn't dredge every year as you wouldn't have the impacts for every year. You would dredge every 2 or 3 years instead. This is not a new conversation. Historical placement, we only touch the material once. Anything upland is touched twice. It is difficult to compare the two because costs between the two is different. Montezuma has assets since there is another cost. This is comparable to digging and placing somewhere with beneficial reuse. It will always be more expensive.
2. Jeneya – Montezuma still needs to be picked up and moved which has a cost associated with it.
3. Tessa – Oakland was a 50/50 split cost for beneficial reuse and SF site. IS that a sustainable model for other channels?
4. JC – 12 years ago Larkspur was slated to go offshore. Dutra and reg said can we go to Montezuma? What you are describing is better to equalize pricing. I was describing that you can't price match SF sites with Montezuma. But SF-DODS versus Montezuma may make financial sense and have a cost benefit analysis.
5. Tessa – Efficiencies in equipment types to help? Systematic change to switch to hopper for in bay placement and lower cost of program. Then taking projects closer to restoration site with clamshell or hydraulic to cost balance.
6. JC – Sacramento river. We proposed to different than how it is currently permitted. Wanted to pump to Montezuma. If you look at permitting for dredging as a whole to use different assets. Each dredge method has pros and cons depending on where it is going. When you limit the assets you can use you are limiting the competitive pricing quality. Need more flexibility and allow more competition. What's the low-price method to achieve goal? The bay area as a whole, AMM is a cost driver.
7. Arn – The department has always run into hydraulic dredging or pumping and cause impacts to species we care about. We want to offset impact with placing material. Are these areas where we are placing this area benefitting this species that we care about? We need to decide that before we say it is offsetting the impact. We can be consistent with laws and regulations if we can see that. We have a fast track permitting method if we have proven beneficial impacts to species.
8. Tessa – Type of study or information wanted, you want monitoring of the beneficial site with presence?
9. Arn – yes, we want to see if it is functional and beneficial to these species. What are the artificial marshes versus natural to see what species are utilizing.
10. Jeneya – aquatic transfer with sediment. How can we get material to BU site more quickly and reduce double handling. But how is it impacting species?
11. Roger – Not double handling but increase cost. Montezuma is unique. No way a public agency could do the project. Private we can spend more money upfront as opposed to public. Bel Marin Keys is not where it should be, and it is being impacted. Even the flexibility in this current system, it is hard for public agencies to do without taking risks or being innovative.

12. Tessa – Montezuma got a grant from restoration authority to pay incremental costs. Ups and downs of receiving sediment. If there is a longer-term source for funding. With 125A and cost share, that might create a more stable sediment supply.
13. Ellen – Went to meeting with director of sediment management and BU for NJ. Office funded by state. Every dredging project is triaged. They have a whole plan of where it goes, construction projects, habitat, etc. Dredging, economic, etc. goals and how they are aligned. Coastal conservancy has taken on a lot of that role. I would like to see the creation of something like this. Long term cost share funding.
14. John – clearly there needs to be more money coming in. state and congress have deficit, but state has to give funding to cost share. State is unwilling to look at this. Need to develop a plan for tax revenue that is set aside for beneficial reuse. As what is needed. Going to start losing vessel traffic which will cause a chain reaction of commerce to the area.
15. Jeneya – economic justification too for reducing coastal storm risk and such that the state can use for reasoning.
16. John 0 we need advocates. Somebody in assembly or state to carry this.
17. Jazzy – segregation of topics and issues. Conversation needs to be had about bigger flooding. Lot of aspects from emergency services that could be brought together in the big picture.

Breakout Session #2

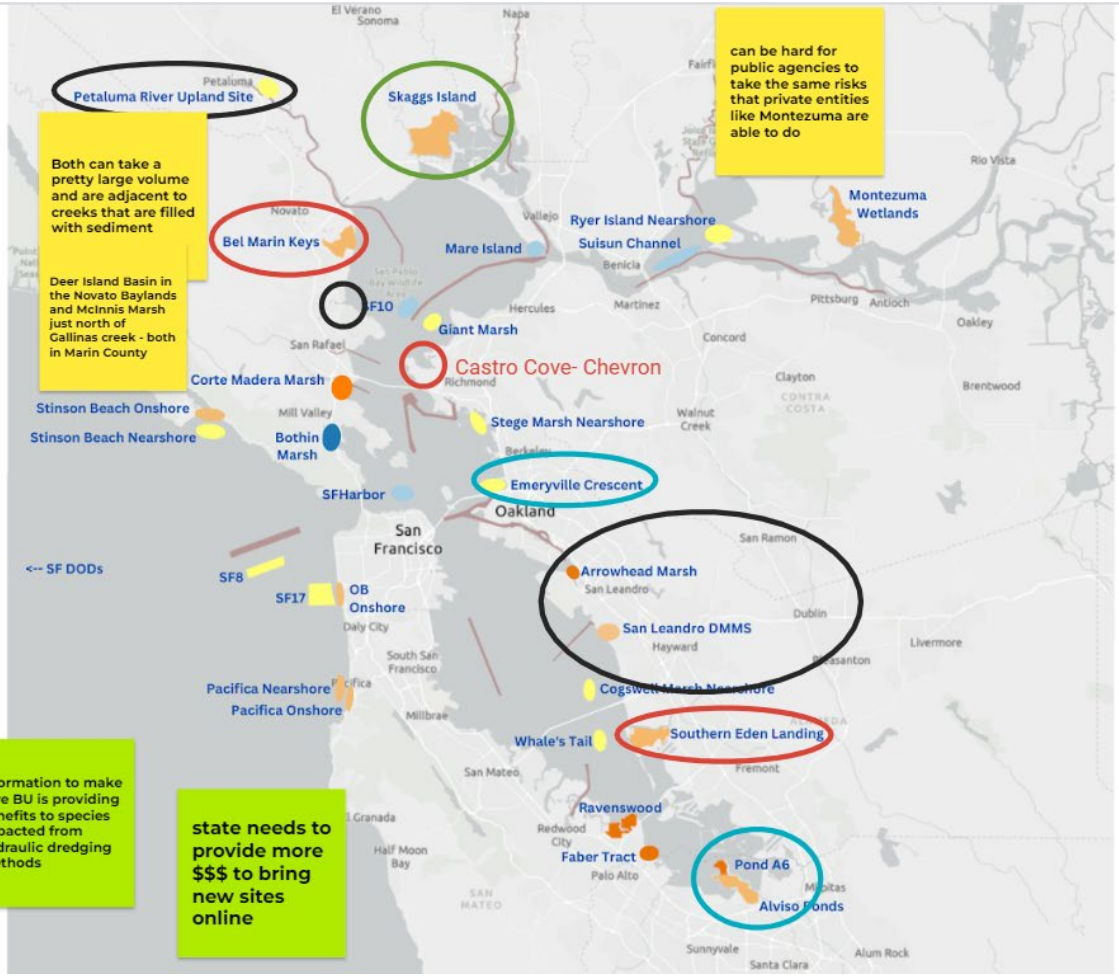
Where is there a need for sediment in the SF Bay? Annotate the map.

mixed upland and in-bay can be cost-competitive to DODS

advanced maintenance to decrease costs

What are the benefits associated with new sites?

What are the placement methods and constraints for new sites?



information to make sure BU is providing benefits to species impacted from hydraulic dredging methods

state needs to provide more $$$ to bring new sites online

C. Group 3

Group 3 (in breakout group) --

- "USACE is perpetuating false narratives. We need to be clearer on language and facts – Bay is not starved of sediment" – Brenda Goeden

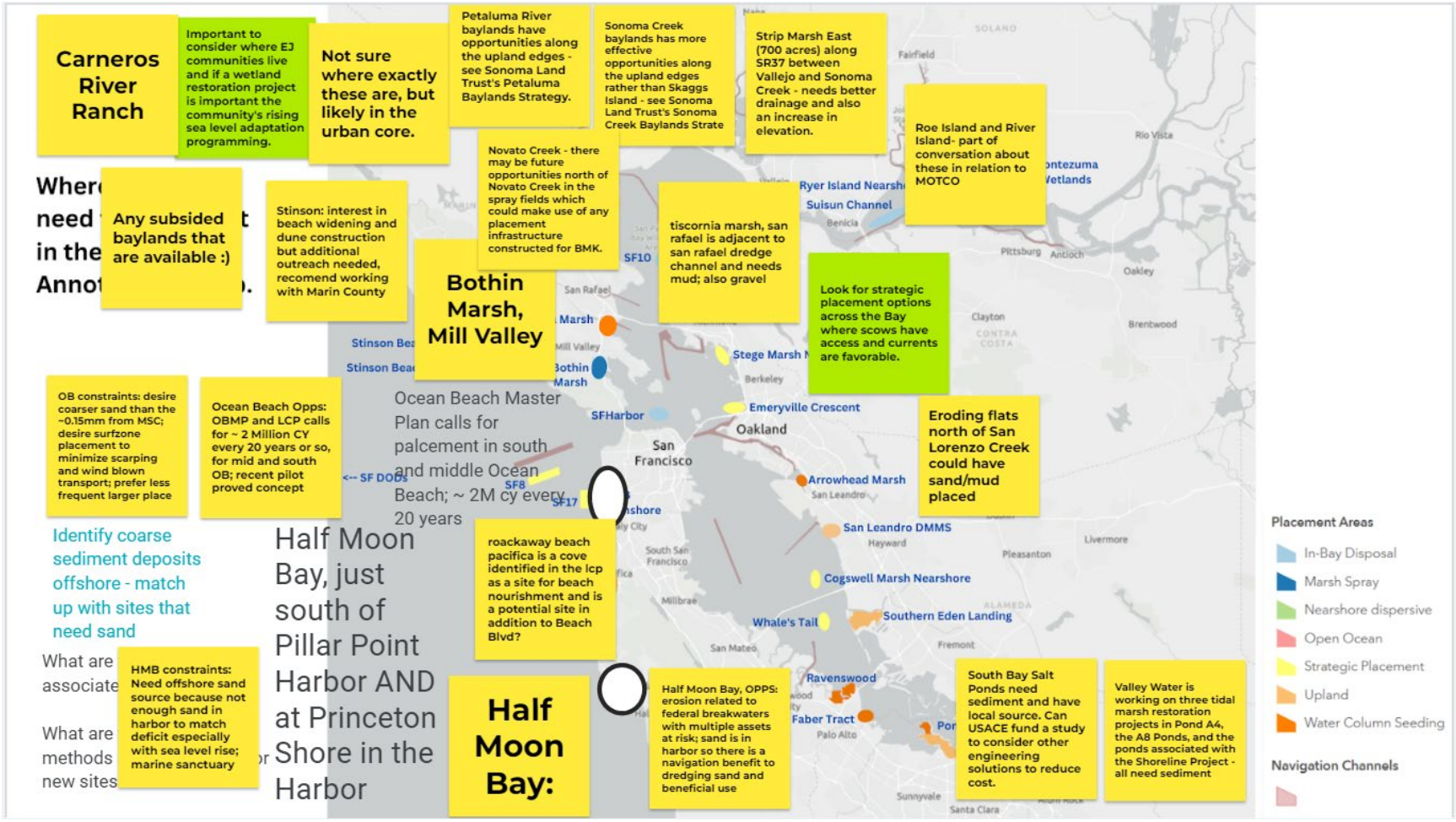
Sites:

1. Half Moon Bay, just south of pillar point harbor and Princeton shoreline – jetties that were built are eroding and USACE is aware.
    a. Constraint – need offshore sand source because not enough sand in harbor to match deficit especially with sea level rise.
    b. The place is a sand trap.
2. Ocean Beach Master plan calls for placement in South and middle Ocean Beach ~ 2m cycle every 20 years.
    a. Constraints: desire coarser sand than the ~ 0.15 mm from MSC, desire surf zone placement to minimize scarping and wind-blown transport; prefer less frequent larger place.
3. Any subsided Baylands that are available.
4. Strip marsh east along SR37 between Vallejo and Sonoma creek – needs better drainage and also, there is an increase in elevation.
5. South bay salt ponds need sediment and have local source. Can USACE fund a study to consider other engineering solutions to reduce cost.
6. Eroding flats north of San Lorenzo Creek could have sand/mud placed – increasing waves because too much erosion.
7. Stinson – interest in beach widening and dune construction but additional outreach needed, recommend working with Marin country.
8. Sonoma creek Baylands have opportunities along the upland edges rather – see Sonoma creek Baylands strategy.
9. Bothin Marsh, Mill Valley.
10. Petaluma river Baylands have opportunities along the upland edges- see Sonoma land trust's Petaluma Baylands strategy.
11. Carneros river ranch – Sonoma land trust has investigated restoration, maybe find individual sites.
12. Novato creek – there may be future opportunities north of Novato creek in the old spray fields which could make placement infrastructure constructed for BMK?
13. Highway 37 is losing marsh, needs better drainage but also more sediment.
14. Rockaway Beach, Pacifica is a cove identified in the ICP as a site for beach nourishment and is a potential site in addition to Beach Blvd.
15. Tiscornia marsh, San Rafael is adjacent to San Rafael dredge channel and needs mud + gravel – just wasn't ready for material but it is right next to a USACE dredging site so maybe syncing up the two projects would be beneficial.
16. "Would be nice to have USACE assistance for a way to do beach nourishment when it comes to sand/sediment matching, disposal site might have coarse sediment that could be expanded to disperse at other sites." - Bob Battalio
17. Valley water is working on three tidal marsh restoration projects in pond A4, the A6 pond, and ponds associated with the shoreline project.

THINK ABOUT EJ- consider where communities impacted by EJ live and if a wetland restoration project is important the community's rising sea level adaptation programming

Is there some benefit to regional management?

If we do find a strategy to get material up, can it link up with Bayland goals?


Carneros River Ranch
Important to consider where EJ communities live and if a wetland restoration project is important the community's rising sea level adaptation programming.
Not sure where exactly these are, but likely in the urban core.
Petaluma River baylands have opportunities along the upland edges - see Sonoma Land Trust's Petaluma Baylands Strategy.
Sonoma Creek baylands has more effective opportunities along the upland edges rather than Skaggs Island - see Sonoma Land Trust's Sonoma Creek Baylands Strate
Strip Marsh East (700 acres) along SR37 between Vallejo and Sonoma Creek - needs better drainage and also an increase in elevation.
Roe Island and River Island- part of conversation about these in relation to MOTCO
Novato Creek - there may be future opportunities north of Novato Creek in the spray fields which could make use of any placement infrastructure constructed for BMK.
Any subsided baylands that are available :)
Stinson: interest in beach widening and dune construction but additional outreach needed, recomend working with Marin County
Bothin Marsh, Mill Valley
tiscornia marsh, san rafael is adjacent to san rafael dredge channel and needs mud; also gravel
Look for strategic placement options across the Bay where scows have access and currents are favorable.
OB constraints: desire coarser sand than the ~0.15mm from MSC; desire surfzone placement to minimize scarping and wind blown transport; prefer less frequent larger place
Ocean Beach Opps: OBMP and LCP calls for ~ 2 Million CY every 20 years or so, for mid and south OB; recent pilot proved concept
Ocean Beach Master Plan calls for palcement in south and middle Ocean Beach; ~ 2M cy every 20 years
Eroding flats north of San Lorenzo Creek could have sand/mud placed
Identify coarse sediment deposits offshore - match up with sites that need sand
Half Moon Bay, just south of Pillar Point Harbor AND at Princeton Shore in the Harbor
roackaway beach pacifica is a cove identified in the lcp as a site for beach nourishment and is a potential site in addition to Beach Blvd?
HMB constraints: Need offshore sand source because not enough sand in harbor to match deficit especially with sea level rise; marine sanctuary
Half Moon Bay:
Half Moon Bay, OPPS: erosion related to federal breakwaters with multiple assets at risk; sand is in harbor so there is a navigation benefit to dredging sand and beneficial use
South Bay Salt Ponds need sediment and have local source. Can USACE fund a study to consider other engineering solutions to reduce cost.
Valley Water is working on three tidal marsh restoration projects in Pond A4, the A8 Ponds, and the ponds associated with the Shoreline Project - all need sediment
Placement Areas
In-Bay Disposal
Marsh Spray
Nearshore dispersive
Open Ocean
Strategic Placement
Upland
Water Column Seeding
Navigation Channels
Suisun Channel
Emeryville Crescent
Oakland
San Francisco
Arrowhead Marsh
San Leandro DMMS
Cogswell Marsh Nearshore
Southern Eden Landing
Whale's Tail
Faber Tract
Ravenswood
Stege Marsh
SFHarbor
SF10
SF8
SF17
Fairfield
Benicia
Pittsburg
Antioch
Oakley
Brentwood
Clayton
Berkeley
Hayward
Pleasanton
Livermore
Fremont
Palo Alto
Sunnyvale
Santa Clara
San Mateo
Millbrae
South San Francisco
Rio Vista

D. Group 4

ADDITIONAL SITES - PRR

Chris Milan
Edwin Draper – Port of Oakland.
Ellen Plane, SFEI
Emma Maack
Evyan Borgnis Sloane
Jessica Vargas
Joel Flannery
Rebekah Antoine
Tim Ekren – DUTRA

- Find deficiencies

Ellen Plane

- Site next to the airport.

Alviso ponds – Evyan Borgnis Sloane

- A12-a13 – extremely deep – will require a lot of sediment.
- A9 could also need sediment.
- Think about A18 (shallow)– owned by city of SJ
- Alviso area would probably need sediment.

Evyan Borgnis Sloane to everyone in this session: 10:46 AM

wondering why not marsh spraying at more sites than bothin - my guess is just because of listed species, but we should probably set that aside for this effort.

I'm feeling like maybe we shouldn't limit ourself to one method at the sites that are experiencing drastic marsh edge erosion like Corte Madera/Muzzi Marsh, Whales Tail, Arrowhead Marsh. Maybe include strategic placement, water column seeding, and spraying all as options.

Emma Maack, SFPUC

- Challenge in last slide.

Chris Milam – The Dutra

- Clarity on what will be done.
- What is going to make sites work.
- Question about what will happen to the materials.

Will material be available for communities?

- Sediment is available mostly for commercial uses, not public.

- On the regional scale, storage should be considered.
    - Bring material to be taken when needs come up.

PRR – highway 37 – PETALUMA RIVER RANCH as possible site. (BROUGH UP BY SCOTT BODENSTEINER AS WELL)

10:42-11:10- Approx 25 mins

Breakout Session #2

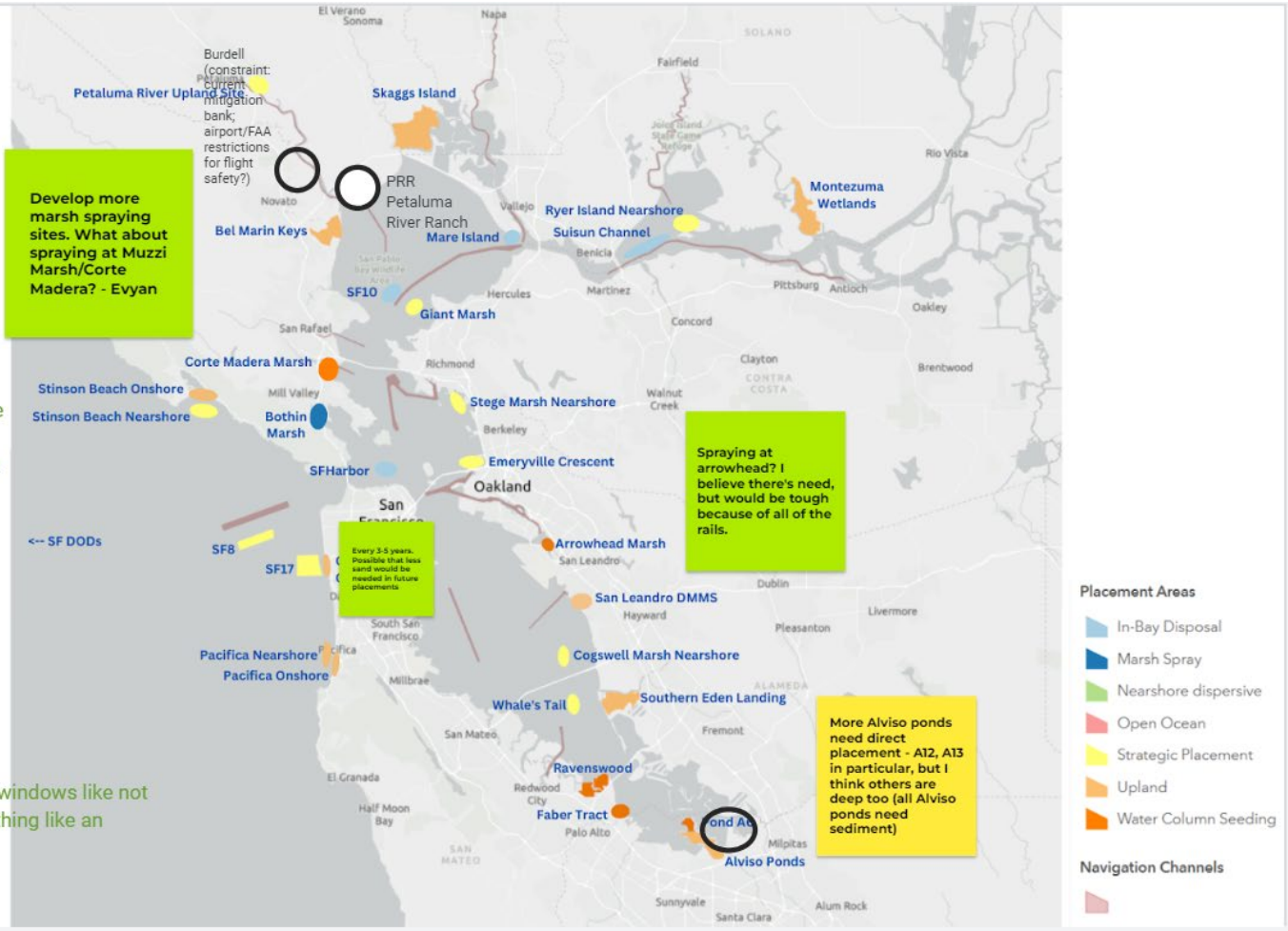
Where is there a need for sediment in the SF Bay? Annotate the map.

opportunity to reevaluate "constraints" with new science. Are the "constriants" fulfiling thier orignial purpose? what about work windows? what about equipment.

rehandling facilities to support local needs? Perhaps by county/ region?

pay in" entity- structured to share the cost to move offloader costs - when it's there turn in rotation

Regulatory constraints beyond work windows like not allowing hydraulic dredging or something like an aquatic transfer facility



E. Group 5

- **Where is there a need for sediment in the SF Bay?**

CH (CA State Lands Commission)

SC (Ducks Unlimited)

DG (NOAA)

- Sediments are broad; different locations require different needs
    - Be more specific about what different material different sites needs
    - Beaches need sand, wetlands need mud, etc.
- Current model of prioritizing whoever shows up first with funding
    - Has Corps thought about setting up grant style – put in applications for sites a year ahead and open continuous
- San Rafael shorelines need sediment, sand on beaches and mud on the softer shorelines
    - Living shoreline offshore of San Rafael could be charged with mud
    - One of the most threatened from SLR
        - Benefits: SLR protection more than restoration (China camp is exception)
        - Adjacent beaches to roads that could be shored up

MF (SFEI)

- What are different benefits associated with these sites and how to prioritize them? (Restoration, flood, etc.)
    - Does strategic placement work and how does it evolve?
    - Trajectory of marshes at different elevations; which will be inundated sooner than later?

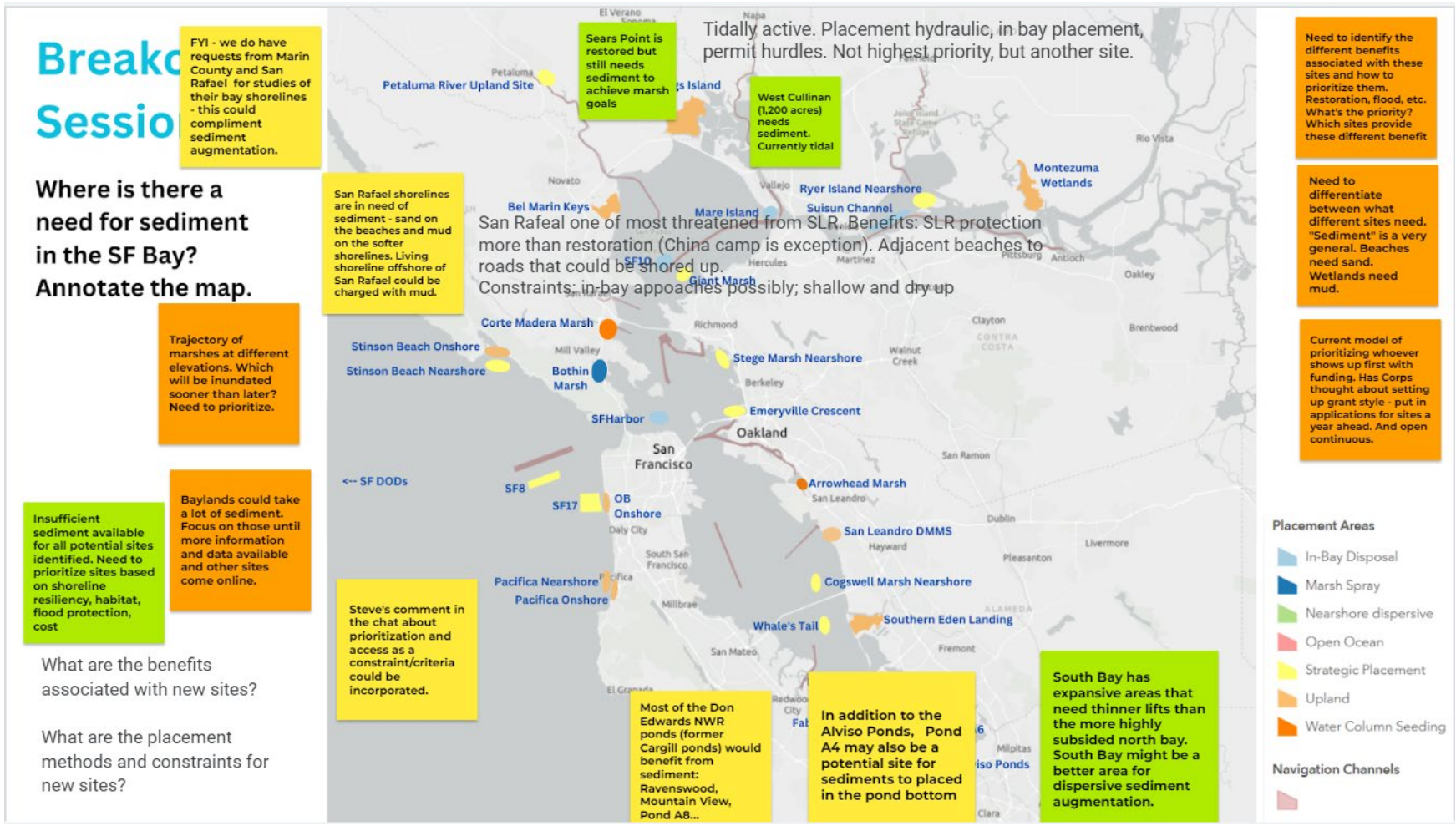
JU (Valley Water)

TK/CE/MF (USACE)

- Most of the Don Edwards NWR ponds (former Cargill ponds) would benefit from sediment; Redwood, Mountain View, Pond AB . . .
- In addition to the Alviso Ponds, Pond A4 may also be a potential site for sediments to place in the pond bottom
- Steve's comment in the chat about prioritization and access as a constraint/criterion could be incorporated
    - Multiple sites would likely result in extended restoration timelines due to lower sediment import rates from competition. This means the restored habitat would be unavailable to the resource for a longer period. There is no regional mechanism for deciding which sites are the highest priority for material. Some sites may be in areas that are more easily accessible for placement, but they might not be the ones with the greatest need for

sediment. Perhaps one balance to having multiple beneficial use sites would be to allow placement of material within these sites while they are tidally connected.

- Sears Point is restored but still needs sediment to achieve match goals
    - Tidally active; placement hydraulic, in bay placement, permit hurdles; not highest priority but another site
- South Bay has expansive areas that need thinner lifts than the more highly subsided North Bay
    - South Bay might be a better area for dispersive sediment augmentation
- Insufficient sediment available for all potential sites identified
    - Need to prioritize sites based on shoreline, resiliency, habitat, flood protection, cost, etc.
- There are requests from Marin County and San Rafael for studies of their bay shorelines; could compliment sediment augmentation
- Baylands could take a lot of sediment
    - Focus on those until more information and data is available and other sites come online


Breako
Sessio
Where is there a need for sediment in the SF Bay? Annotate the map.
What are the benefits associated with new sites?
What are the placement methods and constraints for new sites?
FYI - we do have requests from Marin County and San Rafael for studies of their bay shorelines - this could compliment sediment augmentation.
Trajectory of marshes at different elevations. Which will be inundated sooner than later? Need to prioritize.
Insufficient sediment available for all potential sites identified. Need to prioritize sites based on shoreline resiliency, habitat, flood protection, cost
Baylands could take a lot of sediment. Focus on those until more information and data available and other sites come online.
San Rafael shorelines are in need of sediment - sand on the beaches and mud on the softer shorelines. Living shoreline offshore of San Rafael could be charged with mud.
Steve's comment in the chat about prioritization and access as a constraint/criteria could be incorporated.
Sears Point is restored but still needs sediment to achieve marsh goals
Tidally active. Placement hydraulic, in bay placement, permit hurdles. Not highest priority, but another site.
West Cullinan (1,200 acres) needs sediment. Currently tidal
San Rafeal one of most threatened from SLR. Benefits: SLR protection more than restoration (China camp is exception). Adjacent beaches to roads that could be shored up.
Constraints: in-bay appoaches possibly; shallow and dry up
Most of the Don Edwards NWR ponds (former Cargill ponds) would benefit from sediment: Ravenswood, Mountain View, Pond A8...
In addition to the Alviso Ponds, Pond A4 may also be a potential site for sediments to placed in the pond bottom
South Bay has expansive areas that need thinner lifts than the more highly subsided north bay. South Bay might be a better area for dispersive sediment augmentation.
Need to identify the different benefits associated with these sites and how to prioritize them. Restoration, flood, etc. What's the priority? Which sites provide these different benefit
Need to differentiate between what different sites need. "Sediment" is a very general. Beaches need sand. Wetlands need mud.
Current model of prioritizing whoever shows up first with funding. Has Corps thought about setting up grant style - put in applications for sites a year ahead. And open continuous.
Petaluma River Upland Site
Petaluma
Novato
Bel Marin Keys
Mare Island
Ryer Island Nearshore
Suisun Channel
Montezuma Wetlands
Rio Vista
Vallejo
Hercules
Martinez
Pittsburg
Antioch
Oakley
SF10
Giant Marsh
Corte Madera Marsh
Richmond
Clayton
Brentwood
Stinson Beach Onshore
Stinson Beach Nearshore
Mill Valley
Bothin Marsh
Stege Marsh Nearshore
Walnut Creek
Berkeley
Emeryville Crescent
SFHarbor
Oakland
San Francisco
San Ramon
<-- SF DODs
SF8
SF17
OB Onshore
Arrowhead Marsh
San Leandro
Dublin
Daly City
San Leandro DMMS
Hayward
Livermore
Pleasanton
South San Francisco
Pacifica Nearshore
Pacifica Onshore
Cogswell Marsh Nearshore
Millbrae
Whale's Tail
Southern Eden Landing
ALAMEDA
San Mateo
Fremont
El Granada
Redwood City
Milpitas
Clara
Placement Areas
In-Bay Disposal
Marsh Spray
Nearshore dispersive
Open Ocean
Strategic Placement
Upland
Water Column Seeding
Navigation Channels

VII. Breakout Group Session #2 Share Out

- New sites
  - Petaluma River Ranch
    - Port Sonoma Marina is user of that site
    - Potential multi-user site during 2011 DMMP effort
    - Sonoma Land Trust took it over and transitioned from farming to restoration
    - 18 million CY capacity
    - Still a desire to receive dredged material to meet restoration objectives
    - Easement currently on it
  - Joyce Island
    - Currently being permitted
  - Castro Cove (near Chevron Refinery)
    - Restoration site
  - Deer Island Basin in Novato Baylands
  - McInnis Marsh (north of Gallinas Creek)
  - Half Moon Bay on outer coast
  - Rockaway Beach in Pacifica
  - Sears Point still needs sediment (tidal connections already exist)
  - West Cullinan
  - San Rafael is one of most threatened cities by SLR
    - Shorelines there could submit requests and realize important benefits
  - Burdell
  - Alviso A12, A18, and others
- What are the benefits associated with new sites?
  - Larger sites provide more opportunity for dredgers and investment in the infrastructure
  - Focus BU sites on providing benefits to the species we're affecting by dredging
    - CDFW – this could get them on board with more hydraulic dredging
  - Flooding, restoration, etc.
  - Sites are at different elevations and benefits are different (/will be realized at different times)
- What are the placement methods and constraints for new sites?
  - Cutterhead vs. clamshell for offloader
  - Size of offloader?
  - How big of a site to get the benefits and investment necessary
  - Mixed in-bay and upland can be cost competitive
  - Extensive sediment transport analysis and monitoring of our placed sediment
  - Coarse sediment – can we take out of non-dispersive sites and use that in a beneficial manner to allow for more placement site capacity?
  - Leverage offloading infrastructure at BMK for other sites in north bay
  - Not enough sediment available at some of the sites to achieve shoreline resiliency and the benefits we'd like to see
  - Grant style model to get proposals in for new placement sites that are maybe not first in line but can be incorporated via the 125 process
  - Regionally
    - South Bay is more dispersive
    - North Bay requires a different approach
- What are the benefits associated with new sites?
- What are the placement methods and constraints for new sites?
  - Site accessibility – need to dredge to allow access to sites

Group 1 –

1. In summary discussed the economic costs and benefits of using cutterhead hydraulic dredging versus clamshell, in particular the costs of using and maintaining an offloader facility even in between loads of material the extra costs.
2. Started out talking about two different placement sites but trailed off into the need to have and prioritize larger placement sites so that contractors are more incentivized to invest in creating specialty equipment for the methodology that works well in the bay.
3. Petaluma River ranch site
4. Large site will bring more competition with contractors
5. ***Scott (Haley & Aldrich):*** Brought up that because have worked on that before as well as it's been involved in other areas with Sonoma restoration site; there is interest from the group for dredge material placement; formerly Carneros River Ranch now it's Petaluma River Ranch

Group 2 –

1. Deer Island Basin, McInnis Marsh
2. Castro cove – Chevron
3. Two sites in Marin – next to creeks filled with sediment. Might be a win-win situation.
4. CA dept of wildlife – Permit sites if beneficial use are providing benefits to the species that might be impacted.
5. Ellen – New Jersey example of sediment management to possibly apply in SF/CA.
6. Lots of circling of existing site; near Gallinas creek there should be a lot of opportunities
7. Making it more cost effective to use some of these upland sites
8. Idea of combining upland disposal can be cost competitive with ocean disposal
9. It would help them to permit something if we could show the benefits to Long Fin smelt hydraulic dredging could be better permitted
10. New Jersey might have an effective triage of dredging finding placement sites, etc.

Group 3 –

1. Sites around Ocean Beach
2. Bothin Marsh – Mill Valley (also discussed in group 4).
3. Idea of sediment transport analysis
4. Federal standard counting the benefits can impact beneficial analysis.
5. Jeremy Lowe SFEI – restoration opportunities around Petaluma area.
6. Strategies at the landscape level that should be considered.
7. Conservation investment strategy.
8. Nevada Creek – strategies being used there that might help.
9. Putting things into context is important, particularly in terms of landscape
10. Questions that were brought up during 1122, sites were adjacent to a federal channel-so are we collecting information from areas surrounding the federal channel? It would be great for the corps do a sediment analysis internally within the bay
11. Federal standard could affect the benefits of it
12. Could we take some of that course sediment and have more capacity opportunities
13. Open coast offshore placement?
14. ***Jeremy Lowe (SFEI):***

a. Regional conservation measurement strategy
b. Novato creek
c. Putting things into context, of the landscape and the ecological impacts you could have from that

Group 5 –

1. Sears point
2. West Cullinan
3. SLR protection more than restoration in San Rafael
4. Don Edwards NWR ponds would benefit from sediment Ravenswood, Mountain View Pond
5. Higher need places should be considered.
6. Similar sites as previous groups.
7. MARIN COUNTRY and San Rafael/shorelines could benefit.
8. South Bay – (green box at bottom of jamboard). Better suited for dispersive sediment.
9. Potentials for flooding-take that into account
10. Sediment needed in areas-connecting them to the benefits
11. First in line model; we need to take into account where material is needed as well as who is "first in line"
12. North Bay sites: Sears Point-could still be used for sediment even though its already restored land
13. San Rafael could use sediment since it's at risk for sea level rise
14. South Bay sites: generally more expansive areas that need lower lift-different dynamics than northern bay

Group 4 --

1. Spraying at Arrowhead
2. Burdell area
3. Ocean Beach regular placement and quantity specifics
4. Area of opportunity – Novato region.
5. Petaluma RR
6. Alviso ponds
    a. Ponds are different and very deep, might need more material.
7. Spraying around areas like Arrowhead, Corte Madera.
8. Ocean Beach – need for regular placement, what it would take to figure out amount of material.
9. Went over constraints:
    a. Attention to equipment.
    b. Rehandling.
10. Burdell area in Novato region has some constraints as far as mitigation, etc.
11. Alviso ponds-A12 and A13 were mentioned specifically
12. Sediment spray in the bay-Bothin Marsh, Corte Madera
13. Ocean Beach-how long do we need to deposit sediment
14. Constraints-see opportunities such as equipment and fish screens
15. Offloading-where is the equipment and what should we do can communities be involved within this process?

(Notes from WebEx Chat)

is that the DOT group that did the presentation at WEDA last week?

from Brenda Goeden to everyone: 11:25 AM

Here's the new jersey presentation from WEDA, apparently the talk starts at the 9:40 mark for reference

from Brenda Goeden to everyone: 11:25 AM

http://www.westerndredging.org/phocadownload/Webinars/WEDA%202023%20BenUseWebinar.pdf

from Doug George NOAA to everyone: 11:25 AM

Also, here is the NJ program home page: https://nj-crc.org/buln-webinars

from Doug George NOAA to everyone: 11:26 AM

https://nj-crc.org/homeand webinars

from Chris Milam-The Dutra Group to everyone: 11:26 AM

Joyce island has two areas they want material. about 2500 cy total capacity from what I remember. could be a bit more than that

from Evyan Borgnis Sloane to everyone: 11:28 AM

I have to take off due to another meeting. Thanks everyone!

from Brenda Goeden to everyone: 11:31 AM

oh -yeah, SR area next to Home Depot is a large site -believe there's some challenge around SMHM habitat, but Audubon has been looking at that site.

from Ellen Johnck to everyone: 11:31 AM

to Jeremy's point, put into context, that is exactly what the NJ state BU office does. The same approach could be mimicked in the RDMMP. Thanks for putting in the links to the WEDA presentation and the NF website.

VIII. Session #3: Discussion on RDMMP alternatives and evaluation

- What are some themes of alternatives using ingredients discussed (i.e., objectives, constraints, sites, methods, benefits)
    - Themes (example: take all suitable material to BU)
        - Theme 1: Dredge access or flood control channels to unlock BU (be creative and expand beyond navigation mission if possible)
        - Theme 2: Take all suitable material to BU
        - Theme 3: Reduce cost by building in efficiencies (network approach for sediment source/placement, governments, etc.)
        - Theme 4: Beach enhancement/nourishment, marsh creation for multiple benefits (i.e., ecology, SLR resilience, etc.)
        - Theme 5: Focus on BU *needs*
        - Theme 6: Provide multiple benefits for historically disadvantaged communities (e.g., **Central Bay**) – more equitable use of resources, focus wetland restoration in regions where people live
        - Theme 7: Develop appropriately scaled projects to accomplish BU goals to build in cost efficiencies and enhance demand for market response
- What screening criteria/metrics to evaluate alternatives
    - How much (volume) dredged material goes to BU (restoration) (Brenda Goeden)
    - Has market equipment capacity increased in line with needs
        - Is existing equipment being utilized effectively
    - How is BU $$ changing over time on project- and regional-scale
    - Cost savings via SLR resiliency, community health benefits, flood/coastal storm risk reduction benefits
    - Better outreach to engage key stakeholders (quality over quantity)
        - Partner with local sponsors, workshops, public accessibility
    - Time spent dredging and placing
    - Efficiency of dredging/placement methods
    - Funding availability
    - Accomplish navigation mission (Ed Keller)
    - How many people does each alternative serve (how many communities, how many EJ communities) (Jeremy Lowe)
    - How much flood reduction, coastal storm risk reduction
    - Is the alternative monitorable? (Bob Battalio)
    - Impacts and benefits to species and habitat
    - Willing financial sponsor
    - Reduce/minimize ocean disposal
    - Is alternative providing multiple benefits
        - How to choose among very different types of projects with different types of benefits—e.g., protecting critical infrastructure/property vs. habitat restoration-type projects. (Recognizing that some projects do some of both...) (Emma Maack)

	Alternative 1	**Alternative 2**	**Alternative 3**
Theme	Dredge access or flood control channels to unlock BU (be creative and expand beyond navigation mission if possible)	Take all suitable material to BU; Focus on BU *needs*	Reduce cost by building in efficiencies (network approach for sediment source/placement, governments, etc.)
Sites			
Methods			

	Alternative 4	**Alternative 5**	**Alternative 6**
Theme	Beach enhancement/nourishment, marsh creation for multiple benefits (i.e., ecology, SLR resilience, etc.) and protect critical infrastructure, recreation, etc. (on the multiple benefits theme)	Provide multiple benefits for historically disadvantaged communities (e.g., **Central Bay**) – more equitable use of resources, focus wetland restoration in regions where people live currently and where they **will** live based on housing development plans (use CalEnviroScreen tool)	Develop appropriately scaled projects to accomplish BU goals to build in cost efficiencies and enhance demand for market response
Sites	• Ocean Beach onshore/nearshore? • Pacifica (Beach Blvd., Rockaway, Esplanade?) • Surfer's Beach in HMB • Stinson/Bolinas?	• Giant Marsh • Pinole • San Pablo Creek • Chevron • Tiscornia marsh • Bothin marsh • SFEP regional grouping • Carquinez shorelines (Benicia, Crockett) • Arrowhead Marsh • Damon Marsh	

		• Bay Point (diked bayland near future housing)	

- Additional Notes
    - Recommendations on future engagement (sp. on equity)
        - Tap in OHTB outreach efforts in Oakland
        - BCDC EJ advisors group
        - Bring EJ groups into the planning room (rather than separate discussions)
        - Women in Environment (Ellen)

Discussion Points

(consultant) Ellen J:

- Chris Milam brought up access and lack of access. BU. Hamilton comes to mind.
- San Leandro is working on that but there's no money despite it being a US Army Corps project
- How do we get permitted to add more channels/have more money for that?

(USACE) Alev: Types of dredging that we use; Building in efficiencies

(ESA consultant) Bob:

- Beach enhancement/beach nourishment for multiple benefits-ecology adaptation to sea level rise
- Opportunities to be creative for enhancements; focus more on the needs

from Arye Janoff to everyone: 11:43 AM

As a NJ native, the area also has a ton more beach nourishment projects/sites

from Steve Carroll, Ducks Unlimited to everyone: 11:46 AM

I like the example: take all suitable material to BU.

from Jeneya Fertel to everyone: 11:48 AM

another theme was to pair dredging flood control channels with marsh placement

Jeremy SFEI: Look at the opportunities to provide to the most disadvantaged communities. Lots of the examples previously discussed are either rural or historically more affluent communities in the North bay. Why don't we look in the more centralized urban communities of the bay

Brenda BCDC: As Bob was talking, thinking whether or not RDMMP can switch it's focus that the mission is navigation to then thinking more about beneficial use because a purely navigation approach minimizes the abilities to evaluate the benefits for beneficial uses. How does the corps check all the boxes with the money that it has? Brenda agrees with Jeremy's point. Wetlands are wanted but the groundwork to find how to do that is not being done.

(NOAA) Doug: Theme 3, having more of a networking approach-sees it subtly being mentioned throughout all these motions. Establishing a network of funding and governance structure to get into the how we can make these changes and not just what we need to do

(ESA Consultant) Bob: NOAA-can we dredge those offshore placement sites?

(USACE) Ed: Realize that there are costs that go into making a project feasible AND environmentally sensitive to the areas we are working in.

(USACE) Alev: What are the methods we should take into account to move forward into these alternatives

from Alev Bilginsoy to everyone: 11:57 AM

Theme 1: Dredge access or flood control channels to unlock BU (be creative and expand beyond navigation mission if possible)

Theme 2: Take all suitable material to BU

Theme 3: Reduce cost by building in efficiencies (network approach for sediment source/placement, governments, etc.)

Theme 4: Beach enhancement/nourishment, marsh creation for multiple benefits (i.e., ecology, SLR resilience, etc.)

Theme 5: Focus on BU needs

Theme 6: Provide multiple benefits for historically disadvantaged communities (e.g., Central Bay) –more equitable use of resources, focus wetland restoration in regions where people live

Theme 7: Develop appropriately scaled projects to accomplish BU goals to build in cost efficiencies and enhance demand for market response

from Brenda Goeden to everyone: 11:58 AM

on the EJ front, it would be interesting to see the invite list for this meeting and see who was invited and if there are any EJ folks included at this level of discussion.

from Nikki Roach to everyone: 11:59 AM

@brenda agreed, EJ folks should be a part of the discussion.

(SFEI) Jeremy: Dodson Family marsh, SFEP, giant marsh on living shoreline (missed a lot will follow up)

the discussion.

from Alev Bilginsoy to everyone: 11:59 AM

Sites for equity focus: Giant Marsh, Pinole, San Pablo Creek, Chevron Area, SFEP has a regional grouping,

from Alev Bilginsoy to everyone: 12:00 PM

Equity focus: tiscornia marsh

(ESA Consultant) Bob: Tiscornia in San Rafael

(BCDC) Brenda: Should also think about protecting infrastructure when looking at all of this like Highway 1

from Steve Carroll, Ducks Unlimited to everyone: 12:00 PM

This touches on a need to prioritize BU sites so that the greatest good is achieved. Maybe we need to capture prioritization criteria to help identify sites. Beyond this scope?

from Ellen Plane, SFEI she/her to everyone: 12:00 PM

Another equity focused option is San Leandro Bay -Arrowhead Marsh, Damon Marsh

from Doug George NOAA to everyone: 12:00 PM

+1 Steve

(Consultant) Ellen Johnck: Have been working near Crockett site; it's a disadvantaged historic community and there's a huge opportunity there

(SF Water) Emma M: 101 infrastructure-if we're looking to expand that alternative-BU projects that benefit critical infrastructure.

(ESA Consultant) Bob and (SF Water) Emma: Have to also take into account recreation and infrastructure components

(ESA Consultant) Bob: Pacifica could also be considered for it; Rockaway Beach; Surfer's Beach in HMB

Open coast has a lot of infrastructure and private property at risk

(SFEI) Jeremy: Bay Point there maybe opportunities in the future maybe within the next 10 years. Common theme is planning for housing is diked baylands is planned for where houses will be placed-plan for where the bay will exist not where it is just existing already

from Ellen Plane, SFEI she/her to everyone: 12:00 PM

Another equity focused option is San Leandro Bay -Arrowhead Marsh, Damon Marsh

from Doug George NOAA to everyone: 12:00 PM

+1 Steve

from Thomas Kendall to everyone: 12:05 PM

Pacifica has 125 BU requests in for Esplanade and Beach Blvd.

from Doug George NOAA to everyone: 12:06 PM

Using Cal Enviro Screen could be very helpful with Alt 5.

from Jessica Vargas -USACE to everyone: 12:06 PM

Pillar Point Harbor is currently in the permitting process for a beach nourishment project at surfer's beach, using the dredged material from the navigation areas in the Harbor.

from Doug George NOAA to everyone: 12:06 PM

https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40

(Waterboard) Kevin Lunde: Appreciate the thoughts people have committed to understanding and collecting all of the information together. Where can we store information that goes beyond the scope of the RDMMP in one place?

(USACE) AIev: Speaking about equity and reach outs-looking beyond this venue to have better outreach with a more diverse base-reach out for comment

(BCDC) Brenda: Oakland Turning Basin group has been working already; BCDC. Keeping conversations separate further disadvantaged communities. Bring them in, don't have separate conversations.

(Consultant) Ellen J: Founder of Women in the Environment-just had a presentation on how to involve women in groups that are typically not involved.

from Ellie Covington to everyone: 12:12 PM

@EllenJohnck -we would love if you could send your list over! thanks!

(AIev) AIev: What screening criteria is available?

(BCDC) Brenda: How much dredge material is going to upland beneficial reuse?

Is the equipment ready for the regional needs of the bay?

(Waterboard) Kevin: What is the cost of beneficial reuse and how does it change over time? What are the efficiencies?

from Doug George NOAA to everyone: 12:13 PM

In a similar way as EJ, how is the Corps engaging with Native American tribes in the region?

from Dick Tzou Solano County to everyone: 12:13 PM

multi-benefit approach

(Consultant) Ellen J: USACE has a criteria list to evaluate these concepts; NY times article

(USACE) Ed: We have to think about how we have to accomplish the navigation mission first and foremost

(SFEI) Jeremy: We haven't analyzed the effects of certain actions and who it affects. The ultimate results instead of the economic costs of it

(ESA Consultant) Bob: Monitoring would be helpful, especially physical sediment transit monitoring

from Dick Tzou Solano County to everyone: 12:13 PM

multi-benefit approach

from Nikki Roach to everyone: 12:14 PM

Could there be something in here about how we engage key stakeholders -and not just numbers of folks, but more nuance -resource sharing and movement in these other objectives based on better outreach

from Chris Milam-The Dutra Group to everyone: 12:14 PM

For industry and windows, (time, efficiency, cost/funding)

from Chris Milam-The Dutra Group to everyone: 12:15 PM

equipment is here, just need direction to apply it where you want it. the west coast has an overabundance of equipment available.

from Bob Battalio to everyone: 12:15 PM

re: Outreach-I suggest partnering with local sponsors to have workshops and have public accessibility to listen / participate. The outreach can include special actions for disadvantaged communities (e.g. coordinate with culture-groups NGOs; language translation, meeting location)

from Sara Azat NOAA Fisheries to everyone: 12:17 PM

Impacts and benefits to species and habitat

from Thomas Kendall to everyone: 12:17 PM

another basic Corps criteria is a willing financial sponsor

from Jazzy Graham-Davis, they/them, Water Board to everyone: 12:18 PM

How much money is saved over a long time span through SLR resiliency, community health benefits, storm flood protection

from Brenda Goeden to everyone: 12:18 PM

ocean disposal is minimized

from Thomas Kendall to everyone: 12:19 PM

@Ellen -were you referring to the new PR&G/comprehensive benefits guidance?

from Ellie Covington to everyone: 12:19 PM

defining "clean" material i.e. sediment suitability

from Bob Battalio to everyone: 12:20 PM

Thank you for this meeting ! nice to have the opportunity to talk !

from Emma Maack, SFPUC to everyone: 12:20 PM

re: criteria and evaluating different options in general, seems like it would be helpful to sort out how to choose among very different types of projects with different types of benefits—e.g., protecting critical infrastructure/property vs. habitat restoration-type projects. (Recognizing that some project do some of both...)

from Brenda Goeden to everyone: 12:20 PM

please share slides, jam boards, notes and chat -this has been a great conversation and meeting

from Sara Azat NOAA Fisheries to everyone: 12:21 PM

Agree with Brenda -please share info & great conversation & meeting.

from Kevin Lunde Water Board to everyone: 12:22 PM

I heard the Corps funded a summary of over 100 wetland restoration sites in SF Bay. Can the Corps compare this list with that older document?

from Nikki Roach to everyone: 12:22 PM

Excellent meeting, well done team! Thanks for sharing everything afterwards. Please let us know how we can continue to engageand move these convos forward

IX. Next Steps

- Progressing through the Planning Process – Summer 2023
    - Formation of Alternatives
    - Alternative Analysis
    - Recommended Plan
- Environmental Agency Coordination – Fall 2023
    - NEPA Documentations, Public Comment, FONSI (Fall 2023-Winter 2024)
    - RWQCB, BCDC, NMFS, USFWS consultations and approvals (Fall 2024-Winter 2025)
- Dredging Schedule
    - Plans and Specifications (Fall 2024-Winter 2025)
    - Dredging (Summer – Fall 2025)
- Future Updates – Winter 2023 through Summer 2025
    - Studies and technical reports will inform current and future RDMMP updates
    - The RDMMP can be revised if new information warrants changes to the base plan
- Closing remarks
    - Ellie Covington – how can we bring everyone together to share a common goal.
    - Doug George NOAA –
        - One way to support should expand or create a coordinating group to bring different players to the effort. Bring in new efforts in coordination including NOAA.
    - Ellen Johnck
        - Consider management committee.
        - How to integrate other voices.
    - Joshua Miller
        - Presenting an idea of creating an agency that can help with coordination.
        - Seek consensus on the foundational data, example: criteria or potential benchmarks.

X. List of Participants

Name	Organization
Tiffany Cheng	US Army Corps of Engineers
Jamie Yin	US Army Corps of Engineers
Arye Janoff	US Army Corps of Engineers
Kevin Arnett	US Army Corps of Engineers
Alev Bilginsoy	US Army Corps of Engineers
Savannah Miller	US Army Corps of Engineers
Edward Keller	US Army Corps of Engineers
Heather Schlosser	US Army Corps of Engineers
Spencer Harper	US Army Corps of Engineers
Stu Townsley	US Army Corps of Engineers
Thomas Kendall	US Army Corps of Engineers
Jeneya Fertel	US Army Corps of Engineers
Joel Flannery	US Army Corps of Engineers
Jessica Vargas	US Army Corps of Engineers
Tessa Beach	US Army Corps of Engineers
Jaime O'Halloran	US Army Corps of Engineers
Christopher Eng	US Army Corps of Engineers
Alexandra Voight	US Army Corps of Engineers
Ellie Covington	US Army Corps of Engineers
Lorena Guerrero	US Army Corps of Engineers
Christopher Huitt	California State Lands Commission
Brenda Goeden	San Francisco Bay Conservation and Development Commission
Roxanne Grillo	Valley Water
Roland Yip	City of Pacifica
Chris Milam	Dutra Group
Jim McNally	Manson Construction
Courtney USACE	US Army Corps of Engineers
Doug George	National Oceanic and Atmospheric Administration, Office of Coastal Management
Ellen Johnck	Ellen Johnck Consulting
John Krause	Dutra Group
Nikki Roach	San Francisco Bay Joint Venture
Tim Ekren	Dutra Group
Chris Milan	Dutra Group
John Coleman	Bay Planning Coalition
James Ujah	Valley Water
Ryan Hernandez	Contra Costa County
Mike Edde	Dutra Group
Dr. Ken Wysocki	East Bay Recreation and Parks District

Alex Braud	San Francisco Estuary Institute
Steve Carroll	Ducks Unlimited
Emma Maack	San Francisco Public Utilities Commission
Sara Azat	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
Dick Tzou	Solano County
Scott Bodensteiner	Haley & Aldrich
Wendy Kordesch	National Oceanic and Atmospheric Administration, Greater Farallones National Marine Sanctuary
Melissa Foley	San Francisco Estuary Institute
Jazzy Graham-Davis	San Francisco Regional Water Quality Control Board
Arn Aarreberg	California Department of Fish and Wildlife
Jeremy Lowe	San Francisco Estuary Institute
Ellen Plane	San Francisco Estuary Institute
Edwin Draper	Port of Oakland
Josh Miller	US Army Corps of Engineers
Fanny Yu	Port of Oakland
Roger Leventhal	Marin County Public Works
Bob Battalio	Environmental Science Associates
Melissa France-USACE	US Army Corps of Engineers
Evyan Borgnis Sloane	California State Coastal Conservancy
Max Delaney	National Oceanic and Atmospheric Administration, Greater Farallones National Marine Sanctuary
Kenna Fung	US Army Corps of Engineers
Lisa Crowley	Valero
John Schneider	Marathon Petroleum
Rebekah Antoine	Curtin Maritime
Kevin Lunde (Water Board)	San Francisco Regional Water Quality Control Board
Brandon George	US Army Corps of Engineers
Miryana Valenzuela (She/Her)	US Army Corps of Engineers
Isabel Nieman	US Army Corps of Engineers
9163****17	
7072****25	
+15105****49	
9163****17	
5106****88	

XI. Email Distribution List

First Name	Last Name	Agency
Joseph	Seto	Alameda County Flood Control Zone 7
J	Layton	BART
John	Coleman	Bay Planning Coalition
George	Jacob	Bay.org
Phoenix	Armenta	BCDC
Brenda	Goeden	BCDC
Steve	Goldbeck	BCDC
Larry	Goldzband	BCDC
Michael	Peterson	BP
Cameron	Carr	BPC
Betty	Kwan	BPC
Jessica	Davenport	CA State Coastal Conservancy
Marilyn	Latta	CA State Coastal Conservancy
Ashmika	Singh	CA State Coastal Conservancy
Evyan	Sloan	CA State Coastal Conservancy
Amy	Hutzell	California Coastal Conservancy
Eric	Larson	California Department of Fish and Wildlife
Karen	Taylor	California Department of Fish and Wildlife (CDFW)
John	Paasch	California Department of Water Resources
Laura	Ivey	Caltrans
Arn	Aarreberg	CDFW
Melissa	Farinha	CDFW
John	Krause	CDFW
Greg	Martinelli	CDFW
Karen	Mogus	CDFW
Becky	Ota	CDFW
Carl	Wilcox	CDFW
Eric	Wilkins	CDFW
Maureen	Dunn	Chevron
Brian	Hubinger	Chevron
Danielle	Mieler	City of Alameda
Teresa	Barrett	City of Petaluma
Jason	Beatty	City of Petaluma
G	Petnic	City of Petaluma
Dan	St. John	City of Petaluma
Scott	Grindy	City of San Francisco
Bill	Guerin	City of San Rafael
April	Miller	City of San Rafael
Janelle	Kellman	City of Sausalito
Dave	Stalters	Civil Engineering Unit Oakland, US Coast Guard
Jim	Haussener	CMANC
Ryan	Hernandez	CMANC

Suzy	Watkins	CMANC
Mario	Consolacion	Contra Costa County Flood Control and Water Conservation District
Chris	Kitting	CSU East Bay
Martin	Curtin	Curtin Maritime
Lauren	Hastings	Delta Council
M	Sutton	Dixon Marine Services
C	Garner	Ducks Unlimited
Steve	Carroll	Ducks Unlimited (Cullinan 204)
Renee	Spenst	Ducks Unlimited (Cullinan 204)
O	Duranczyk	Dutra Group
C	Milam	Dutra Group
H	Stewart	Dutra Group
W	Wallgren	Dutra Group
Sabrina	Landreth	East Bay Parks
Yule	Padmore	East Bay Parks
Tomas	Torres	EPA
Josh	Gravenmeier	ERM/ Bay Planning Coalition
Robert	Pesapane	FEMA
Jim	McNally	Manson Construction
K	Williams	Manson Construction
M	Emerson	Mare Island Dry Dock
M	Zuidema	Mare Island Dry Dock
Roger	Leventhal	Marin County
S	McMorrow	Marin County
Talia	Smith	Marin County
Bill	Price	Marin County
Kathrin	Sears	Marin County
R	Barrios	Moran Shipping
Richard	Thomasser	Napa County
Jeremy	Sarrow	Napa County Flood Control and Water Conservation District
Sarah	Azat	NMFS
Robert (Bob)	Coey	NMFS
Alecia	Vanatta	NMFS
Chris	Yates	NMFS
Doug	George	NOAA
Chris	Libeau	NOAA
Korie	Schaeffer	NOAA
Gary	Stern	NOAA
Susan	Wang	NOAA
Wendy	Kordesch	NOAA
Laura	Joss	NPS
B	Nelson	NRDC
Len	Materman	One Shoreline
Makena	Wong	One Shoreline

M	Elliott	Point Blue Conservation Science?
Edwin	Draper	Port of Oakland
Chris	Lytle	Port of Oakland
Jan	Novak	Port of Oakland
Justin	Taschek	Port of Oakland
Thanh	Vuong	Port of Oakland
David	Fisch	Port of Redwood City
Kristine	Zortman	Port of Redwood City
Jim	Matzorkis	Port of Richmond
Lucy	Zhou	Port of Richmond
Shannon	Alford	Port of San Francisco
Dominic	Moreno	Port of San Francisco
Brad	Benson	Port of SF
Daley	Dunham	Port of SF
Elaine	Forbes	Port of SF
Jason	Cashman	Port of Stockton
Jeff	Wingfield	Port of Stockton
Rick	Toft	Port of West Sacramento
Randy	Steed	RI Dredge
Caitlin	Sweeney	San Francisco Estuary Partnership
Jim	Pruett	San Mateo Harbor
David	Lewis	Save SF Bay
Amy	Hutzel	SCC
Evyan	Sloane	SCC
Dave	Halsing	SCC/SBSP
M	Rainey	Schoonmaker Marina
Dave	Pine	SF Bay Restoration Authority
Lynn	Korwatch	SF Marine Exchange
Nikki	Roach	SFBJV
Warner	Chabot	SFEI
Scott	Dusterhoff	SFEI
Melissa	Foley	SFEI
Jeremy	Lowe	SFEI
Ellen	Plan	SFEI
Joe	Birrer	SFO
Emma	Maack	SFPUC
Anna	Roche	SFPUC
Jia	Li	SFVAMC
Jimmy	Eduljee	Shell
Roy	Mathur	Shell
J	Bell	Solano County
B	Corsello	Solano County
M	Kaltreider	Solano County
R	Liu	Solano County
T	Schmidtbauer	Solano County

Ed	Hoener	Sonoma County
Caryl	Hart	Sonoma County Regional Parks
Jessica	Martini-Lamb	Sonoma Water
Al	Franzoia	State Lands Commission
Christopher	Huitt	State Lands Commission
Stas	Margaronis	Stevedoring Services of America (SSA)
M	Jessop	Suisun
S	Chappell	Suisun Resource Conservation District
Marc	Bayer	TSO Corp
Robert	McCaughey	TSO Corp
Christina	McDowell	TSO Corp
Mark	Nielsen	TSO Corp
Bryan	Vogel	U.S. DOT
Melissa	France	USACE
Debra	O'Leary	USACE
Cynthia	Fowler	USACE SPD
David	Colby	USACE SPK
Lorrena	Guerrero	USACE SPK
Legese	Abebe	USACE SPN
Tessa	Beach	USACE SPN
Julie	Beagle	USACE SPN
Alev	Bilginsoy	USACE SPN
Juliana	Carmody	USACE SPN
Fanny	Chan	USACE SPN
Tiffany	Cheng	USACE SPN
Allison	Conn	USACE SPN
Ellie	Covington	USACE SPN
David	Demko	USACE SPN
Ruzel	Ednalino	USACE SPN
Jason	Emmons	USACE SPN
Chris	Eng	USACE SPN
Jeneya	Fertel	USACE SPN
Son	Ha	USACE SPN
Ali	Hajali	USACE SPN
Spencer	Harper	USACE SPN
Neil	Hedgecock	USACE SPN
Eric	Jolliffe	USACE SPN
Tom	Kendall	USACE SPN
Janice	Lera-Chan	USACE SPN
Jim	Mazza	USACE SPN
Josh	Miller	USACE SPN
Savannah	Miller	USACE SPN
Peter	Mull	USACE SPN
Isabel	Nieman	USACE SPN

Jaime	O'Halloran	USACE SPN
Sid	Osgood	USACE SPN
Al	Paniccia	USACE SPN
Pam	Patton	USACE SPN
Stu	Townsley	USACE SPN
Tawny	Tran	USACE SPN
Jessica	Vargas	USACE SPN
Sasha	Voight	USACE SPN
Justin	Yee	USACE SPN
James	Zoulas	USACE SPN
Marie	Byrd	USCG
Anthony	Solares	USCG
Roberto	Rivera	USCG
Walt	Sykes	USDA
Sahrye	Cohen	USEPA
Jennifer	Siu	USEPA
Luisa	Valiela	USEPA
Ryan	Olah	USFWS
Kim	Squires	USFWS
Lisa	Crowley	Valero
John	Lazorik	Valero
Rechelle	Blank	Valley Water
James	Ujah	Valley Water
Xavier	Fernandez	Water Board
Selina	Louie	Waterboard
Kevin	Lunde	Waterboard region 2
Ellen	Johnck	Ellen Johnck Consulting
John	Schneider	Marathon Petroleum
Leslie	Lacko	Marin County
Isaac	Pearlman	Marin County
James	Jackson	ESA
Michelle	Orr	ESA
Bob	Battalio	ESA
Matthew	Brown	USFWS
Chris	Barr	USFWS
Laura	Cholodenko	SCC
Carly	White	CDFW
Anna	Spainhower	USFWS
Kathryn	Langstaff	Wild Oyster Project
Lisa	Peterson	City of Pacifica
Roland	Yip	City of Pacifica
Kevin	Woodhouse	City of Pacifica

XII. USACE Presenters, Facilitators, and Notetakers

- Presenters
  - LTC Kevin Arnett
  - Dr. Tessa Beach
  - Dr. Arye Janoff
- Facilitators
  - Alev Bilginsoy
  - Jamie Yin
  - Jeneya Fertel
  - Tiffany Cheng
  - Joél Flannery
  - Jaime O'Halloran
- Notetakers
  - Savannah Miller
  - Kenna Fung
  - Courtney Anderson
  - Miryana Valenzuela
  - Isabel Nieman