Beneficial Use (BU) Virtual Workshop

ERDC + USACE + HQ

Engineering With Nature® (EWN®)
Regional Sediment Management (RSM)
Coastal Inlets Research Program (CIRP)

July 12th, 13th, and 14th, 2021

US Army Corps of Engineers®

ERDC

BU Virtual Workshop – Day 1 Agenda

July 13, 2021: ERDC Session: Provide opportunity for ERDC scientists and engineers to share information with each other and organize internally.

1400 – Welcome & Opening remarks *Amanda Tritinger (ERDC - CHL)*

1410 – A Brief Description of the State of BU from the Perspective of Program Managers

1435 – Guided discussion: What is the status of BU at ERDC?

Moderator: *David Perkey (ERDC - CHL)*

1. **Definitions of BU.** *(Include multiple definitions from various sources)*
2. **Discuss different types of BU**
3. **Obstacles to BU**
4. **Levers for BU**
5. **General opportunities for expanding BU**

1525 – Guided discussion: What is needed for successful partnering between ERDC and Districts

Moderator: *Burton Suedel (ERDC - EL)*

1. **How to create synergy across ERDC on BU?** *(to be a good partner, we need to be united)*
2. **What is important to share with district partners?**
3. **What do we want to know from district partners?**

1555 – Closing remarks *Kelsey Fall (ERDC - CHL)*

Welcome & Opening remarks

– Purpose –

This BU workshop will discuss common BU design and application tools and procedures, as well as success stories on innovative BU projects. We will discuss challenges and lessons learned related to engaging with stakeholders, regulatory issues, state and federal policies, the federal standard, programmatic guidance, and schedule coordination.

– Objectives –

1) Develop and document the status of BU across USACE,
2) Organize a BU community across ERDC and USACE,
3) Develop effective communication and collaboration on BU within USACE,
4) Identify obstacles and levers for BU, and
5) Identify and initiate actions for making progress on BU.

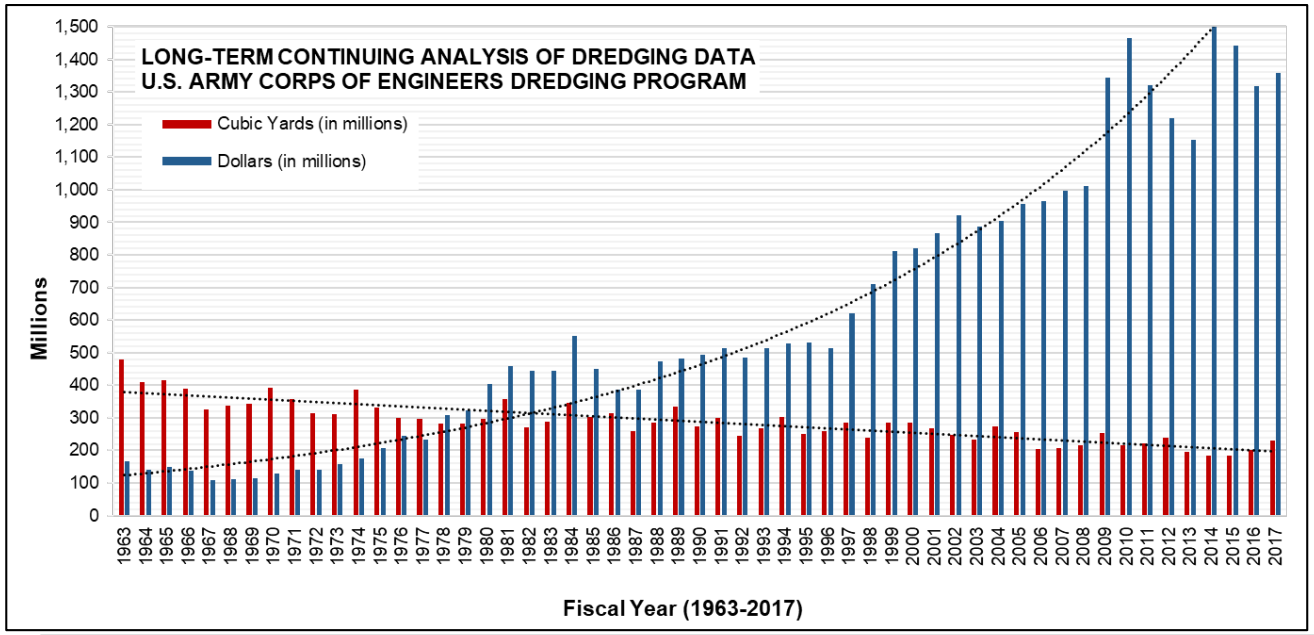
– Due Out –

The due-out of today is to create a united ERDC BU presence, so that we leave this first day, documenting the state of BU research at ERDC, what is needed to advance the practice, and to move forward with our partners.

At the end of this workshop, our goal is to have more BU.
The major due-out from this workshop is to define and assign specific implementable action items towards this goal.

State of BU from the Perspective of Program Managers

- Dr. Katie Brutsche
  - Regional Sediment Management
    - A systems approach using best management practices for more efficient and effective use of sediments in coastal, estuarine, and inland environments for healthier and more resilient systems.
    - SEDIMENT IS A RESOURCE!!



RSM Goals:

- Keep sediments in the system
- Mimic natural sediment processes
- Reduce unwanted sedimentation
- Environmental enhancement
- Maintain & protect infrastructure

RSM is not just BU, but BU is RSM

- R&D into types of BU
  - Pilot projects
- Quantification of BU
  - BU Database
- Case studies in BU
  - District projects

Beneficial Use: *Status and Opportunities*

"Beneficial use" is using dredged sediment to achieve additional benefits beyond its removal from a channel/waterway, including other economic, environmental or social benefits.

- USACE has a long track record of BU
  - ~30% of dredged material beneficially used over last 20 years (60 out of 200 mcy/yr)
    - >1.5 billion cy used in beach construction over last 100 years
    - 50,000 acres of wetlands created in south Louisiana since 1970s
- BU supports:
  - Climate change adaptation thru *Engineering With Nature*®
  - Habitat for fish and wildlife
    - Tribal equities, Threatened and Endangered Species
  - Social value to enhance resilience of communities and vulnerable/underserved populations
- BU challenges:
  - Budget constraints
  - Federal Standard interpretation
  - State policies/regulations
  - Advancing the 'technology'

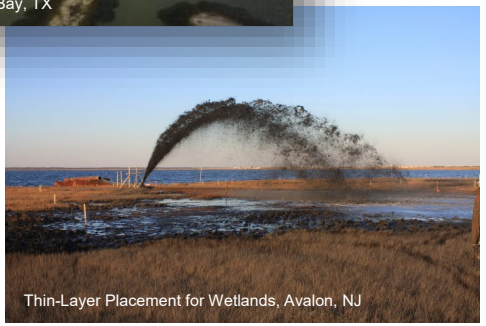

Horseshoe Bend, Atchafalaya, LA

Middle Harbor, Port of Oakland, CA


Hamilton Wetlands, San Francisco Bay, CA

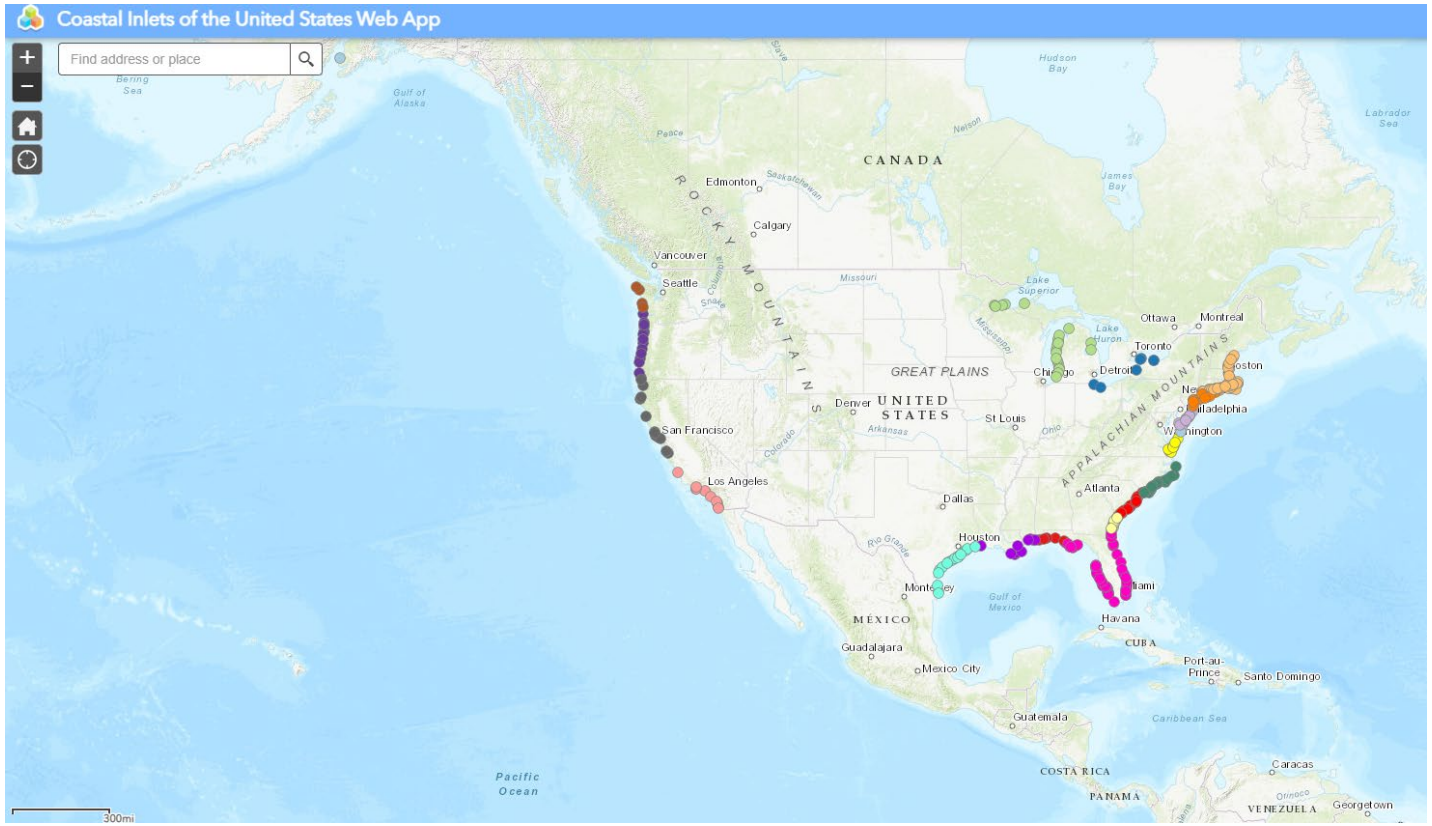

Galveston Bay, TX

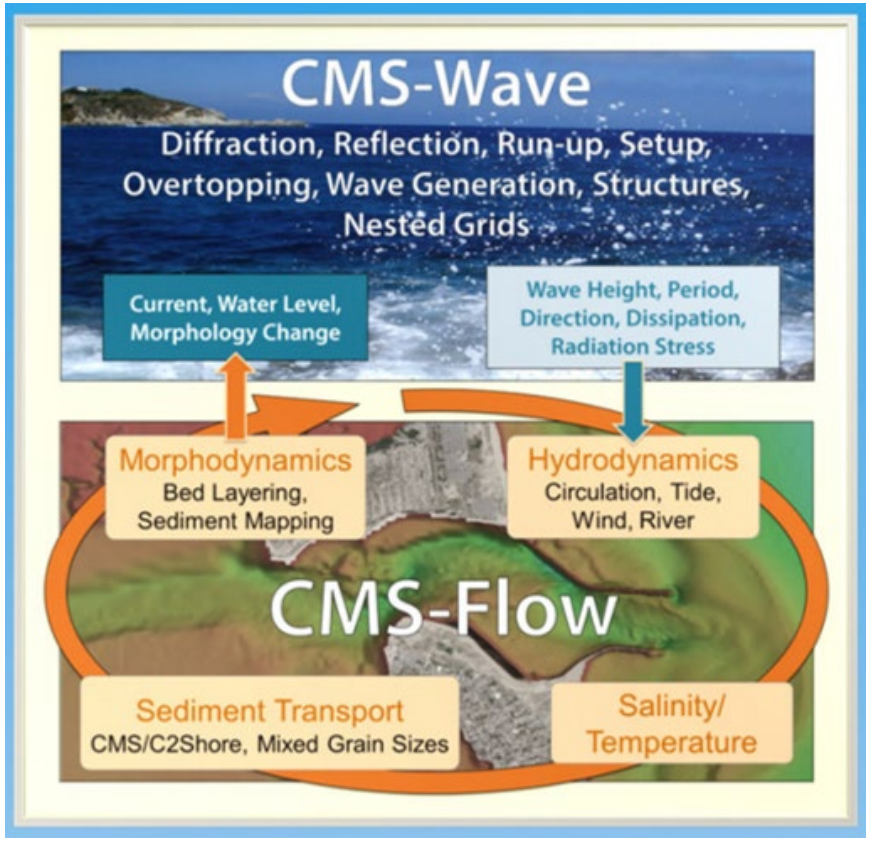

Cat Island, Green Bay, WI

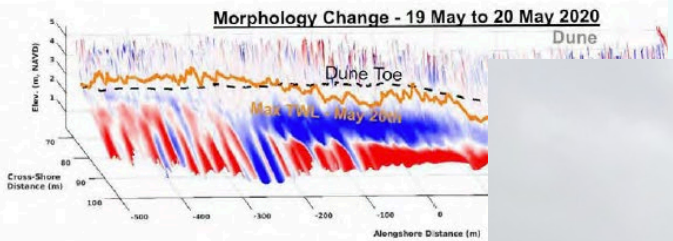

Thin-Layer Placement for Wetlands, Avalon, NJ

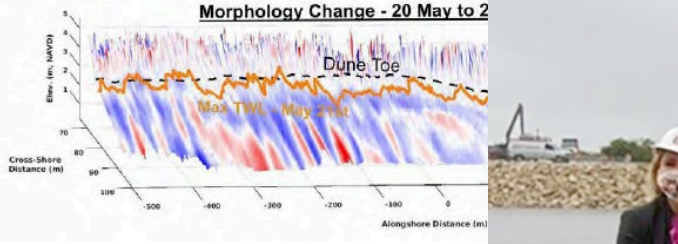
State of BU from the Perspective of Program Managers

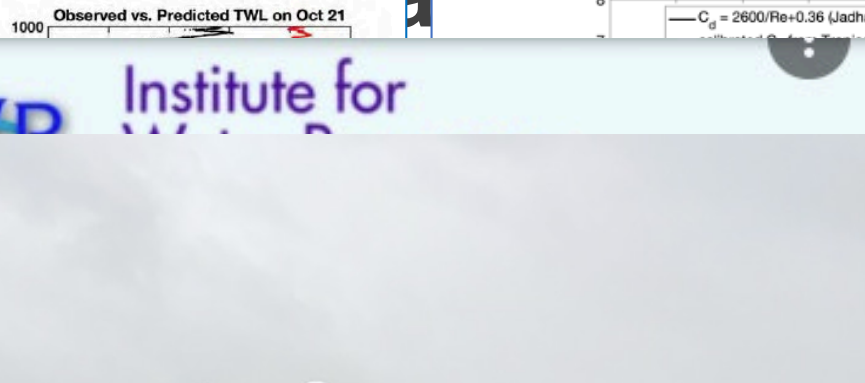
- Dr. Brian McFall (on behalf of Dr. Tanya Beck)
  - Coastal Inlets Research Program Work Unit Lead

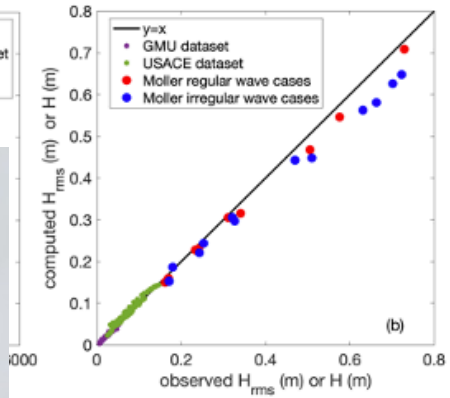












erred from Tropical Storm Lee dataset using
height. (b) Wave height comparison for three
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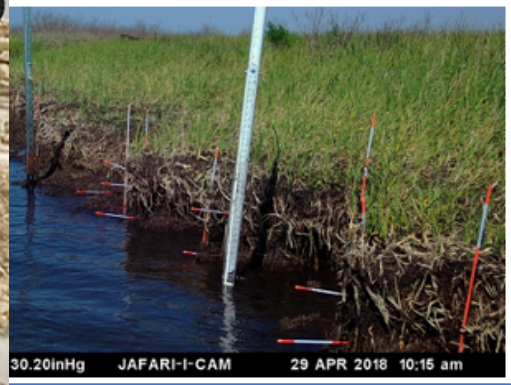

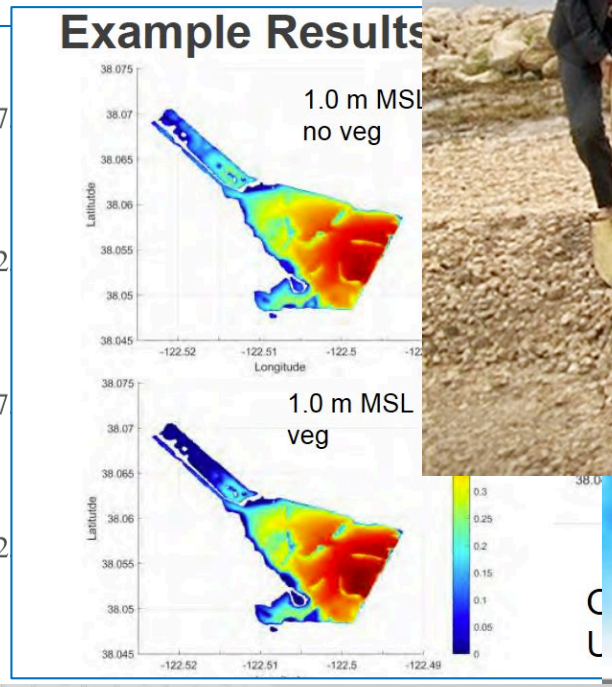

Dredged Material (million
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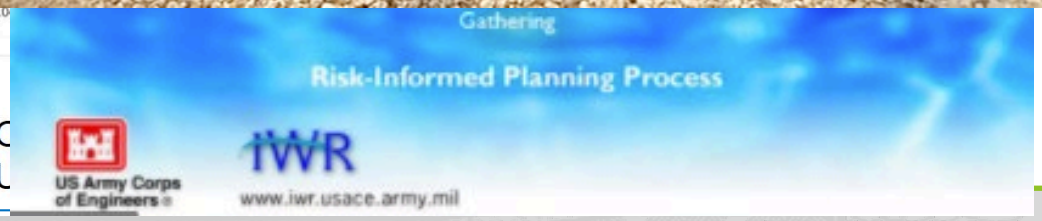

State of BU from the Perspective of Program Managers

- Dr. Jennifer Seiter-Moser
  - - CW ENV

Ecosystem Management and Restoration Research Program

Research focus: Aquatic Ecosystem & Floodplain Restoration

- General Investigations (GI) Appropriation
- Focus Areas: Multi-Objective Restoration, Integrity & Sustainability, Inland Resource Management, Coastal, T&E and Invasive Species Management, Modeling and Decision-Making Tools, Ecological Infrastructure

Aquatic Plant Control Research Program

Research focus: biology and ecology of invasive aquatic plants species; technologies to manage invasive aquatic plants

- Construction General (CG) Appropriation
- Focus Areas: Biological Control; Chemical Control; Ecological Assessments; Management Strategies and Applications; Harmful Algae

Aquatic Nuisance Species Research Program

Research focus: on invasive aquatic animals, as well as harmful algal blooms (HABs)

- Operations and Maintenance (O&M) Appropriation
- Focus Areas: invasive fish and mussels. Congressional Interests: HAB Research and Next Generation Ecological Models

Wetlands Regulatory Assistance Program

Research focus: provides science and technology support to the USACE Regulatory Program.

- USACE Regulatory
- Focus Areas: National Plant Wetland List, Ordinary High Water Mark and Stream Science, Wetland Delineation Science and Assessment Methodology

Env: State of BU from the Perspective of Program Managers

Benefits & Challenges of Beneficial Use of Sediment

- Needs & Benefits
  - Ecosystem restoration (ER) is a major mission area of the USACE
  - Acquiring required materials for ER activities can be limiting both in terms of expenses and accessibility
  - Beneficial use of sediment, when done successfully, can enhance the effectiveness of ER activities
    - Long lasting projects, enhancing native floral and faunal species through habitat restoration
    - Sustaining the landscape
    - Removing sediment from areas where it is accumulating and moving it to locations where it is either depleted or could be used advantageously, i.e. Thin Layer Placement

- Challenges
  - In order to effectively and routinely use sediments in ecosystem restoration projects, the USACE needs access to a steady supply of sediments
  - Sediment matching: physicochemical requirements of sediments for specific restoration needs: marshes, riparian restoration, beach restoration.
  - Moving sediment to places of need in an economically feasible and reliable way

BU Considerations in CW ENV:

Beneficial Use to Create Habitat for Threatened, Endangered, and at-Risk Species:

- Shoreline and streamline erosion causes loss of habitats in riparian and coastal environments central to species of concern.
- ER activities can serve as a mechanism either directly or indirectly for habitat creation.
- Beneficial use of sediments and rock can be an excellent source of sustainable source material for habitat restoration if it can be obtained using cost effective means and the material meets the required characteristics.

Weighing Impacts of Beneficial Use on Ecosystems

- Positive and negative impacts of BU on ecosystems must be evaluated in order to be included in ER plans in sensitive ecosystems.
- Assessing both removal and placement of BU need to be completed
- Does the good outweigh the negative impacts?
- Are any negative impacts temporary or longer term?






Contacts

Jennifer Seiter-Moser, Ph.D.
Technical Director
Environmental Engineering and Sciences
USACE ERDC Environmental Laboratory
Jennifer.M.Seiter-Moser@usace.army.mil
Office: (601) 634-4038

Christine M. VanZomeren, Ph.D.
Acting Associate Technical Director
Environmental Engineering and Sciences
USACE ERDC Environmental Laboratory
Christine.M.VanZomeren@usace.army.mil
Cell: (601) 814-9145

Al Cofrancesco, Ph.D.
Senior Technical Advisor, HAB Program
USACE ERDC Environmental Laboratory
Alfred.F.Cofrancesco@usace.army.mil
Cell: (601) 831-0686

Mandy Michalsen, Ph.D., P.E.
PM for Strategic Initiatives
USACE ERDC Environmental Laboratory
Mandy.M.Michalsen@usace.army.mil
Cell: (206) 605-6075

Brook Herman, Ph.D.
Acting Program Manager, Ecosystem Restoration & Management Research Program
USACE ERDC Environmental Laboratory
Brook.D.Herman@usace.army.mil
Office:

EMRRP

https://emrrp.el.erdc.dren.mil/

Guided discussion: What is the status of BU at ERDC?

Moderator: *David Perkey (ERDC - CHL)*

1. **Definitions of BU**
2. **Discuss different types of BU**
3. **Obstacles to BU**
4. **Levers for BU**
5. **General opportunities for expanding BU**

Please make extensive use of the WebEx chat feature – we want to capture all of your ideas!

How do we define Beneficial Use?

Beneficial uses are defined as “productive and positive uses of dredged material, which cover broad use categories ranging from fish and wildlife habitat development, to human recreation, to industrial/commercial uses” (USACE Beneficial Uses of Dredged Material, Engineer Manual 1110-2-5026, 2015).

- *BU = using dredged sediment to achieve additional benefits beyond the purposes related to its removal, including other economic, environmental, or social benefits.*
- *Results in some net quantifiable benefit*
- *Perception that BU is only marsh creation, beach restoration, what about inland?!?! Keeping sediment in system as a goal vs. pulling out of system (ex. Graveyards WI). BU to utilize in construction (but do people consider that). Challenges with permissions to do this type.*
- *I think there would be value in producing a short TN on the history of the definitions of BU that have been used and the evolution of BU practice, to include everything between strategic placement to location-specific placement (e.g., to create wetlands). Both USACE, states, regulators, resource agencies must evolve their perspectives and concepts.*
- *Need to identify BOTH the environmental AND engineering benefits of BU. ENVR = habitat, nutrient cycling, energy dissipation. ENG = reduced storm surge, nav channel maintenance, shoreline stabilization. AND social benefits beyond economic/engineering benefits.*
- *Things we don't normally count as a benefit (e.g., using contaminated material capped with clean material to fill anoxic borrow pits to restore elevation and productive benthic habitat.)*
- *Upper Mississippi River Restoration calls it BU and uses up to 500,000 cy is a single restoration project. it facilitates offload of temporary storage sites.*
- *Not all BU is keep in system.*
- *How do we define the difference between "in-channel disposal" and "in channel beneficial reuse"?*
- *I heard lots of discussion on removing sediment from the "system" is not beneficial. But depends on the "system"...*
- *Getting the public behind BU has the potential to help increase the total amount of sediment that is used beneficially*
- *Social and recreational benefits have value, and raises the profile, and even allows us to address environmental justice issues*
- *Need a typology to help organize the categories of BU: in water vs out of water, use for land enhancement vs. construction material.*
- *Document different historic projects (Jacob Berkowitz, paper- Also talking tomorrow, so tune in!)*
- ***Outcome-Create BU working group. Meet semiregularly, and work on this definition. (Working/living definitions to fit USACE Needs)***
- *Part of the value of the factsheets and case studies is to develop patterns, examples, models (generally) for how to create narratives and arguments about the benefits produced through a BU application. This growing library will itself be a lever to help move people and organizations to new ideas and approaches.*

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Types of BU?

From Beneficial use Planning manual (USEPA/USACE 2007; citied in 2015 Engineering Manual: Dredging and Dredged Material):

Let us know if there are any BU activities we are missing.

Use the annotate feature to populate the table; add a shape to show us which type you use the most.

Dredged Material Sediment Type					
Examples of BU Activities	**Rock**	**Gravel & Sand**	**Consolidated Clay**	**Silt/Soft Clay**	**Mixture**
Land creation	X	X	X	X	X
Land improvement	X	X	X	X	X
Berm creation	X	X	X		X
Shore protection	X	X	X		
Replacement fill	X	X			X
Beach nourishment		X			
Capping		X	X		X
Construction materials	X	X	X	X	X
Aquaculture			X	X	X
Topsoil				X	X
Wildlife habitats	X	X	X	X	X
Fisheries improvement	X	X	X	X	X
Wetland restoration			X	X	X
What is missing?					
What is missing?					
What is missing?					
What is missing?					
What is missing?					

BU - What works and what doesn't?

Obstacles to BU

- How do we quantify benefits
- Obstacle - perceived liability by USACE Counsel
- Different regions of country view types of BU differently. This would lead to different definitions.
- Talking about types of BU engage districts, and get their types
- Overly conservative contamination thresholds
- Real Estate/Council, wanting to track material "cradle to grave“
- Communication
- cost, regs, risk aversion, short term thinking, linking disperate projects to achieve regional/ecosystem long-term goals
- Promoting collaboration amongst busy researchers. Develop ways to share what is going on.
- District interest and capacity. Some are easy to work with, others more challenging.
- There's a need for clear and understanable requirements for material to be used for different types of habitat restoration.
- Some areas have not identified beneficial use options or there are none nearby
- The ERDC BU community needs effective ways for sharing information about ongoing research and demonstration projects across our community to facilitate self-assembled collaboration rather than top-down directed collaboration.
- I think we could do an overhaul of the BU Website or teams site that already exists (Due Out)

Levers for BU

- Levers for BU - Stakeholder and partner engagement, early and often
- Interagency working groups
- Communication
- pilots to demo to nay sayers. Previously, had to demonstrate applications on regional basis.
- Dredge material as a carrier of other useful things
- climate change and rising sea levels should be a consideration for keeping sediments near- or onshore

Please make extensive use of the WebEx chat feature – we want to capture all of your ideas!

General Opportunities for expanding BU

- Industry coalition public/private partnership for BU applications. Pilot scale demo opportunities or cost share/investment for support. They can help push for policy changes (they can talk to congress, we can't)
- High impact and effective documentation and communication products describing successful BU of a wide range of types.
- Establish ERDC regional experts who can participate with regional coordination committees like upper Miss and Great Lakes.
- Biggest opportunity = transitioning from demos and 'boutique" projects to BU as THE default practice. To do this and justify the cost we need to assess the FULL suite of positive project outcomes
- Education and outreach to prompt/grow/improve district relationships (as well as outreach to other partners/public)
- Engaging other organizations in the demos so they can also own credit for the success, e.g., NOAA-NMFS, USFWS, state agencies, etc.
- Newly formed Upper Mississippi Beneficial Use Working Group which include all states (WI, MI, IA, Il, MO) DOT, DNR, US Fish and Wildlife, EPA, etc.
- Share contacts to make for outreach and partnering
- A National Conference on BU
- A library of 2-3 minute videos documenting BU projects and how they got done.

Guided discussion: What is the status of BU at ERDC?

Moderator: *Burton Suedel (ERDC - EL)*

1. **How to create synergy across ERDC on BU? (to be a good partner, we need to be united)**
2. **What is important to share with district partners?**
3. **What do we want to know from district partners?**

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BU - How to create synergy across ERDC on BU?

- BU working group!!!!
  - Formalize group. Establish regular meeting (quarterly) with potential annual or semi annual meeting for more intense discussions.
  - Identify action items and plan to act on them
- A library of 2-3 minute videos documenting BU projects and how they got done.
- High impact and effective documentation and communication products describing successful BU of a wide range of types.
- Lab level, program level, PI synergies
- Revamp BU workshop (Brook and Justin lead team).
  - Place to connect to different programs, so don't take away from programs, but have them linked for easier communication. Facilitate communication within and outside of ERDC
  - The "ERDC" BU website should be evolved into the USACE BU website. No other entity in USACE will step up to doing this.
  - ACE-IT website?
- Developing and maintaining list of current ERDC BU projects: title, 3 sentence description and POC.
- Teams website-for ERDC interaction (living document, reduce meetings).
- Consider a push to consolidate the information to fewer websites. Lots of BU information is fragmented
- As program managers, we should think about whether many small projects or fewer large projects would bring more overal impact and value.
- I think there would be lots of value in putting the emphasis on sponsoring externally oriented events, like a webinar series, short virtual workshops, etc. that cast toward a national audience.

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BU Partnership Plan

What is important to share with district partners?

- Unified USACE Viewpoint
- ERDC needs to be unified to give clear reach back to the district partner. COMMUNICATION all the way.
- Communicate ERDC capabilities to leverage the program funded activities AND get engaged with reimbursable
- Should our deliverables change? (Communication tools):
  - PIs make sure districts are apart of the review process
- Establish regional experts to coordinate personnel
- We also have other potential partners, industry, other agencies etc.
- The districts and divisions should have regional experts. They won't pay us to be on retainer.
- Turnover with ERDC employees- need to promote relationships between new employees with district contacts
- Look to leadership for encouragement.
- ERDC needs to think about opportunity costs (researchers spread to thin)
- ERDC are too risk adverse in taking on small commitments and not being ready for the big issues
- Establish District BU Champion (lead into the district) or BU ERDC group linked to district or division (tough with schedules). Follow nearshore nourishment example, include district in working group or have different neighborhoods of group.
- We need to think hard about what makes ERDC a worthy and valued partner for a District or any other organization. (sometimes have to say no).
- How do we leverage some outside contractors, A&E firms, to have them help us deliver impact. For example, the programs jointly funding a few large contracts.
- District: Operation vs planning.
- ERDC and/or District details- great way to learn and create connections
  - Need to send folks who can "cross-sell" across the labs and disciplines
  - FCS is implanting ERDC PIs in districts for planning WUs across the country. Could be for BU as well

What do we want to know from district partners?

- Talking about types of BU engage districts, and get their types
- We need to be more aware about how some people in the field view ERDC.
  - Looking for money, always just trying to advance our “agenda”.
- How can we demonstrate we are a good partner?
- How can we better communicate?
- What makes ERDC a good partner in respect to BU?
  - Listen to what they need, talking early, reaching out.
  - Not overcommitting
- Early ERDC engagement in the planning and design phases

Please make extensive use of the WebEx chat feature – we want to capture all of your ideas!

What do we want to get out of Day 2, with the districts?

- What are your biggest problems or obstacles for doing BU, that I can help? Is it technical? Cost?
- How should we be communicating with Districts?
- What makes a good ERDC partner (stolen from last slide, but think this is something multiple people were interested in)
- How can we help them with their relationships with difficult stakeholders and nay-sayers?
- understanding big project schedules is important. We can implement their adaptive management planning and evaluation with them.
- How do we transition from R&D to common practice?
- How do we create the R&D districts want/need?
- "when do you need help?", "what science can we provide to defend your position to stakeholders?“
- What projects do they have where they think applications or demonstrations of emerging tools and technology would be timely and helpful?
- What communication products from ERDC could help with their relationships and communication with stakeholders?
- How many people know ERDC exist and we are here to partner with them?
- Other avenues (along with DOTS) that they can pair up with us
- For tomorrow: Let's make sure they understand the SON process and how to partner.
- Also think bigger picture than SoN to project work plan requests.
- Every program has a responsibility for tech transfer. money is not as scarce as we think. Ask a PM.

BU Virtual Workshop Day 2 – See you tomorrow!

July 14, 2021: ERDC, District, and HQ Session: Provide opportunity to share information across the USACE enterprise.

We really want to hear feedback from the Districts and HQ (ERDC -> remember to listen)

1400 – Welcome & Opening remarks *Kelsey Fall (ERDC - CHL)*

1410 – A Historic Look at USACE BU Case Studies *Jacob Berkowitz (ERDC – EL)*

1420 – Overview of BU Guidance *Jase Ousley (USACE - HQ)*

1435 – Guided discussion: What is the status of BU at throughout USACE?

Moderator: *Monica Chasten (USACE – NAP)*

1. **Definitions of BU.** *(Include multiple definitions from various sources)*
2. **Discuss different types of BU – For USACE**
3. **Obstacles to BU**
4. **Levers for BU**
5. **General opportunities for expanding BU**

1525 – Guided discussion: What is needed for successful partnering between USACE (ERDC+ Districts) and beyond (i.e. Federal Agencies, Academia, etc.)?

Moderator: *Elizabeth Godsey (USACE – SAM)*

1. **What are ingredients for successful partnering/collaboration between ERDC and Districts?**
2. **How do we create synergy across USACE on BU?** *(to be a good BU stewards, we need to be united)*
3. **What are ingredients for successful partnering between USACE and others?**

1555 – Closing remarks *Amanda Tritinger (ERDC - CHL)*