

## **Beneficial Use (BU) Virtual Workshop**

#### ERDC + USACE + HQ

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

July 12<sup>th</sup>, 13<sup>th</sup>, and 14<sup>th</sup>, 2021





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

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/Discuss different types of BU For USACE
- 2. Obstacles to BU
- 3. Levers for BU
- 4. General opportunities for expanding BU

While we wait for folks to join the meeting, please introduce yourself in the chat box;

Who are you? Where do you work? What do you hope to get out of this workshop?

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

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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)

## 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 USACE BU presence; to document what is needed to advance the practice, and move forward as 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.

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## Summary – Main Points from July 13

Outcomes from ERDC's Discussion

- The definition of BU needs to be allowed to EVOLVE
- Need to transition from R&D to common practice, and create R&D that is wanted
- We all want to make BU standard practice
- COMMUNICATION needs to be a primary focus

Goals for Today's Discussion

- Learn about USACE BU obstacles and identify how ERDC can assist
- How can we help support positive community/stakeholder engagement

- How does ERDC promote the Districts/HQ involvement more
- Define what USACE-Districts/HQ wants from ERDC partners



Evaluating ecological functions AND engineering benefits at historic dredged material management sites

Beneficial Use workshop July 14, 2021 Jacob F. Berkowitz, PhD, CPSS, PWS US Engineer Research and Development Center Jacob.F.Berkowitz@usace.army.mil Tweets @wetlandsoil



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DISCOVER | DEVELOP | DELIVER

# **Ecological functions at BU sites**

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- BU projects deliver ecological functions (e.g., habitat, energy dissipation, nutrient cycling)
- We can quantify BU ecological functions
- Long-term trajectory of BU projects remains unknown
- Need to link BU <u>ecological functions</u> with <u>engineering benefits</u>
  - Life-cycle analysis; expansion of EWN



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## **Objectives and approach**

- Projects constructed using dredged materials (1974-78)
- Represent the oldest wetland BU sites with historic monitoring data
- We re-created the previous studies to evaluate conditions at each location after >40 years
  - Also evaluated unaltered reference sites





There was no Google Earth in 1978!

Collaboration with SWG, NAB, SAM, NWP, NAE, LRE, SAS

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# **Example: Buttermilk Sound, GA**

- Originally a high, unvegetated sand mound
- Site was graded to intertidal elevation, planted, and fertilized in 1974
- Monitored through the early 1980s, then in 2019
- Currently displays a diverse array of habitats, ecological functions, and engineering benefits



1956

2019



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## 40 years of wetland functional and engineering benefits

- BU sites persisted and continue to provide a range of wetland functions & engineering benefits
- More diverse vegetation and avian communities than reference areas
  - Elevation gradients and a wider range of substrates





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- Restored sites became more similar to the reference areas over time
  - Remain on unique trajectories compared with unaltered natural wetlands



## 40 years of wetland functional and engineering benefits

 Similar response to changing ecological conditions as unaltered wetlands, despite differences in magnitude



https://www.westerndredging.org/phocadownload/2021\_Virtu al/Proceedings/2021%20Dredging%20Summit%20and%20E xpo%20Proceedings.pdf



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Functional responses differ across physical, habitat, & biogeochemical drivers



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## Linking ecological functions with engineering benefits



## Linking ecological functions with engineering benefits Habitat functions Engineering benefits/outcomes





\*These relationships need to be refined and incorporated into quantitative frameworks in collaboration with practitioners

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# 40 years of wetland functional and engineering benefits

**Conclusions:** 

- 1) The target habitats have persisted for >40 years
- 2) Wetland conditions continue to improve, but have not (and may not) reach reference conditions
- 3) Despite this, the projects deliver valuable <u>ecological functions</u> *AND* <u>engineering benefits</u>
- 4) Additional work needed to quantify engineering projects to promote BU and EWN

**Recommendations:** 

4) We should use natural processes to create sustainable wetlands
5) We should focus on maximizing the available functions and benefits
6) We should not focus on mimicking natural conditions to determine success/failure



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# Connect for questions and discussion: Email <u>Jacob.F.Berkowitz@usace.army.mil</u> Twitter @Wetlandsoil



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# EL BU meeting-WRDA 2020 section 125 beneficial use

Beneficial Use workshop July 14, 2021 Jase Ousley Dredging Program Manager HQUSACE

14 July 2021







## WRDA 2020 section 125

- This section renews the Congressional commitment to beneficial use (BU) of dredged material by:
- (a) establishing a national policy to maximize the beneficial use of material obtained from Corps projects; requiring the Corps to calculate the economic and environmental benefits of the beneficial use of dredged material when calculating the Federal Standard,
- (b) amending section 204(d) of WRDA 1992 to direct that other-than-least-cost placements of dredged material for certain purposes be funded using appropriations available for construction or operation and maintenance of the water resources development project producing the dredged material
- (c) increasing the number of beneficial use of dredged material demonstration projects to 35 projects,
- (d) directing the Corps to develop five-year regional dredged material management plans, and
- (e) emphasizing greater coordination across the Corps' dredging contracts.

## What is bu- nav

- Habitat Development
  - Marsh
  - Wetland
  - Wooded wetland
  - Upland
  - Island
  - Sea grass
  - Clam flats, oyster beds, mussel beds, other shellfish
  - Artificial reefs and underwater berms
- Beach and beach nourishment
- Parks and recreation
- Agriculture, horticulture, forestry, and aquaculture
- Strip mine reclamation, solid waste landfill and alt uses
- Multipurpose concepts

- Construction and Industrial/Commercial uses
  - Harbor and Port facilities
  - Residential and urban use
  - Airports

. . . . . . .

- Dikes, levees, and containment facilities
- Fill material and roads
- Islands and historic preservation

- EM 1110-2-5025
- BU-RSM-EWN
- What are we counting?
- What are we not counting?
- ODMDS/rotational placement
- How are we tracking?

## BU now and goals? .... 70/30? 100?

#### https://rsm.usace.army.mil/budb/



7/25/2021

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## **BU** and our portfolio



National channel framework/CSA

## \*8% of our portfolio is 80% of sed Top 25 projects

7/25/2021

# 204(d) vs 125

**204(d)** CAP- USACE can pay over the FS, cost shared with the sponsor with the delta paid from CAP

- must be in feasibility
- very engineered placements
- no O&M one and done
- limited by \$
- moved us to 1122 then to 125

-VS

•125 – USACE can pay over the FS, no established cost share [adopt 204(d)?], overage can come from the O&M/Construction account

- start it any phase of the dredging cycle
- temporary vs permanent placement
  - FY22 \$4.3B O&M budget ... and \$11B in O&M packages
  - How do you all as USACE leaders get stakeholders invested in making BU economical?
  - BU is an exercise in opportunity–Get stakeholders ready to accept material at go time?

## **BU** and our portfolio



 Not including all the economic/enviro benefits

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# 5- yr Dmmp

•All projects have a preliminary assessment or DMMP

Break into the dredging cycle for BU...

- Think: operational
- rolling spreadsheet
- regional

#### Get stakeholders involved

 You know your portfolio - project dredging cycles, typical volumes, FS placement costs, general sediment characteristics, etc

Tool to increase BU opportunities

## Path forward

- Reaffirm definition of beneficial use outlined in Engineer Manual 1110-2-5025
- Leadership to set national goals for beneficial use
- Establish reporting metrics in the Dredge Information
   System and increase visibility via RSM BU database
- Issue guidance for Section 125
- include economic and environmental benefits
- increase stakeholder engagement
- submit budget packages
- Identify and address challenges
- Real estate, timing, funding, environmental coordination
- Memorandums of Agreement for rapid execution
- Align multiple efforts
- Revolutionize USACE BU Tiger Team
- ERDC Engineering with Nature and Regional Sediment Management
- 1122 execution

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Baltimore District, Stakeholder Engagement and BU projects



## What can you do today?

- DMMP's underway or for mod: The DMMP lays out the 20 yr guaranteed placement option and establishes Fed Std. Per Sect 125 if stakeholder engagement identifies an alternative that is equal to or less than the Fed Std and retains capacity or has greater benefit- it can be used.
- Increase stakeholder engagement?
- Track BU better in DIS -> BU database
- Deeper dive into economics
- Communicate and elevate obstacles to MSCs/HQ
- Be creative

## **Bu references**

- DOTS Beneficial Uses of Dredged Sediment: <u>https://budm.el.erdc.dren.mil/index.html</u>
- Regional Sediment Management, Beneficial Use Database: <u>https://rsm.usace.army.mil/budb</u>

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- Dredging Information System: <u>https://dredging.usace.army.mil/lpwb/f?p=116</u>
- Engineering with Nature: <u>https://ewn.el.erdc.dren.mil/</u>
- Revolutionize USACE: <u>https://www.usace.army.mil/Missions/Civil-Works/Infrastructure/revolutionize/</u>



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## **Guided discussion:**

## What is the status of BU at throughout USACE?

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**Moderator:** *Monica Chasten (USACE – NAP)* 

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

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

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## 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).

- Anything that changes the view of sediment as the problem to viewing sediment as a resource that can be used to solve another problem.
- BU is PURPOSEFUL -> We can find examples of BU dating back to the start of Navigation channel dredging, but these were not always intentional by the definitions.
- Def: ecological, engineering, and social benefits (including environmental justice and recreation) should be considered
- Not all BU is "keep in system."
- Compare BU with Reuse (I.E. KEEPING sediment in the system)
- Having a definition that speaks to ecological vs. economical systems
- How do we include the SOCIAL benefit of BU
- There is a big push from resource agencies on the Upper Mississippi to remove material from the system
- Purposeful (intentional) placement to perform ecosystem goods and services
- What does BU mean in different systems? At different scales?

How do we move from how/why are you using BU; to why ARENT you...

- The def. here is missing ecosystem restoration; are we missing the business lines of flood risk or sediment management?
- The definition should EVOLVE; the goal is not to insist on one definition "to rule them all" but to use language to help us make progress on beneficial uses of sediment. -> This will be an action item for BU WORKSHOP ATENDEES!

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## **BU - What works and what doesn't?**

"why are you doing BU?" to "why aren't you doing BU?"

### **Obstacles to BU**

- When people retire, and we want a sustainable practice to move forward, we need the POLICY to back that up. That is going to have vary by REGION.
- Technical Obstacles:
  - Use of Fine Grain Materials
  - Sediment testing is expensive (ESP with QUALITY of material)
  - Timing of dredging need and availability of BU site
  - Mixture of beach quality sand with a small percentage of fine material, but too much to meet state "beach placement" standards
  - Lack of mentoring
  - Smaller BU sites but too large of dredges
- Quantifying the ecological benefits through research will aid in those policy and regional obstacles
- Stake Holder Obstacles:
  - Different flavors of "risk aversion" within different organizations or functional areas within organizations.
  - Willingness for non-fed sponsor
  - Placing material on someone else's site (clean-up) because of perceived liabilities
- BU project perceived as more risky and more expensive
- Scheduling Obstacles:
  - Long and Short time frames are an obstacle, but also a lever
  - Resource agencies needing to understand the timeframe and not need to require 3+ years pre monitoring before allowing placement
- \$\$ Obstacles:
  - Cost, potential contaminants, commitment from cost-share partners
  - Cultural Resource survey requirements and costs
  - Cost/cy because of down time, precision of placement, etc.
- permitting via state regulating agencies
- Monitoring (can be a lever! But can be an obstacle)
- O&M not having funding for that funding
- Potential liability if private groups remove material from a upland placement site??
- Time Obstacles:
  - Timelines to reach standard USACE agreements
- NOISE-IE Guidance, un-aligned :/

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## **BU - What works and what doesn't?**

"why are you doing BU?" to "why aren't you doing BU?"

### Levers for BU

- Quantify the actual value delivered by BU projects
- One "solution" for those with contaminant focus, would be to get them focused on the bigger problem "predator" chasing them
- Bring in potential monitoring partners early and often as soon as there is an idea for BU, once relationships are established they can be used as a resource over and over again. Bring those monitoring partners in for design aspects as well
- Demo or Pilot type projects can help with bringing Resource Agencies on board and they can play a larger part in the planning
  - What is the right word for Pilot? -> Talk about "Standard Practice"
- Adaptive Management -> this works with many, very helpful to work with navigation community
- Collaboration, Communication Levers:
  - Coordination that enables mutual understanding and shared risk.
  - Align implementation with research.
  - Communication Opp.s creating from events
  - Managing stakeholder expectations these are natural systems that SHOULD change and evolve in response to environmental perturbations
  - communication of the negative impact and outcome of non-BU action scenario
- How other Districts handle the potential liability if private groups remove material from a upland placement site; is there an opportunity/lever there? The liability is a opportunity.

#### District BU managers and champions!

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## **General opportunities for expanding BU**

- One potential solution for addressing timing issues is to expand flexibility through open-water temporary storage. MVN has been doing this on the Miss River for many years. But there are other contexts where this could work, including in bays (e.g. SF Bay).
- Maryland just established an Innovative Reuse set of Guidelines in 2017 to remove sediment from the CDFs to allow for greater capacity.
  - Learn how states are embracing BU, how are other agencies embracing BU?! How can we learn from these guidelines.
- In water management -> Handling the material and having in STAY in the system is an OPPORTUNITY
  - Need to communicate the benefit of this.
  - Persistence. How have districts/BU champions been successful doing this? Build on that; working with our CORPS regulatory committee has been helpful in doing this.
- Restore proposals going in to set funds aside to maintain all the restoration sites. Partnerships will align these sites with the source of material within our channels.
- Climate Change has increased awareness, and thus created opportunities.
  - Status Quo is not an option anymore.
- We have leveraged our Biological Opinion program partners to identify the habitat types needed in the Miss. River. Still trying to get those habitats created through dredge placement.
- There is a huge need for BU nourishment when lake levels are high, which happens to coincide with reduced dredge activity (higher water levels reduce need for nav. projects).
- RSM program has enabled us to put some science behind our assertions of the value of BU this has built us a lot of trust and value with our stakeholders for partnering when they do have to cost share
- Working with ERDC, and bringing the science to our projects!
- *Resource agency becoming our partners, developing the plans and having shared ownership.*

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## **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)
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# What are ingredients for successful partnering/collaboration between ERDC and Districts?

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- ERDC is not a contractor, we are a partner. Find where the research aligns with implementation side; that is where you
  can share positive OUTCOMES and SUCCESSES
- When we try to push the boundaries, when Districts are interested in doing something new, stepping outside of the comfort zone, that is when we have a successful collaboration!
  - When we are not afraid of failure, but hopeful for state-of-the art expansion!
- If we make it more common, to strategize BEFORE a project, this could be a more efficient/cleaner path to progress.
  - We need streamlined ERDC+District connections; pick up the phone, engage EARLY EARLY EARLY.
- Having Program Managers is really helpful for TRUST with the agencies.
- ERDC Researchers coming out, boots on the ground, to help with research implementation; application.
  - This is how ERDC can effectively become a PARTNER.
- Communication and Consistency are key;
  - There are so many challenges (funding cycles, workload cycles, attention to the problem cycles). Consistency in communication is the key. And if consistency in funding is possible, that is a huge help.
  - early and constant communication between ERDC and district team members. Elizabeth, I agree we are a team, partners, all USACE. So i guess my question for district personnel on here, how is best to communicate?
- There is a challenge with communication inside and outside the USACE. Doing that well -> Leads to Success
  - COMMUNICATION THROUGHOUT THE PROCESS

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## How to create synergy across USACE on BU?

#### District Customer & ERDC Customer : Partners

- Communicate as Partners
- Have a mutual understanding; share early, share often
- Have ERDC team members participate on regular PDT meetings.
- Leverage the RARG/SON process to test innovative solutions to add value to more District projects.
  - Hmmmm Action Item?
- Where do we find limiting factors or OPPURTUNITIES within Districts
  - Contracting and council -> Jase's work is an opportunity to move this forward
  - Districts have to administer a contract, so there has to be balance between ERDC Research and Contracting; there needs to be oversight, make sure we keep trust by keeping in constant communication
  - Getting your OPPS folks and your Contract Adim. To agree, is an issue, but we are starting to move past this by using the word PARTNERSHIP
  - RE has been an issue for MVR
  - Real-Estate can be an issue to getting the synergy we all want....
- We don't speak "one language"
  - Regulatory feels like it is stifling bu
  - How do we get ONE MESSAGE, unite on ONE FRONT
- communication, I think it works best on an individual level. If an ERDC expert can find a District person that does something they are very
  interested in, then I think individual check-ins (monthly, quarterly) would be best. Likewise, if a District person can find an ERDC expert
  doing something they are interested in. Often when things go up and across through leadership chains, the
  motivation/excitement/engagement in the topic of solving the problem gets lost.

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

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# What are ingredients for successful partnering between USACE and others (i.e. Federal Agencies, Academia, etc)?

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- How do we tend to perceive Fed. Agencies, Academia, INDUSTRY (not just dredge industry- material managers as well), that we are sometimes "just required" to work with
  - Each partner has a different motivator, how do we motivate each
  - Industry: Seems like motivation is \$\$, but also SCALE, and a large enough INITIATIVE
  - The industry will get motivated any time they can tell a GOOD NEWS STORY
  - How do we get industry to help us implement new research tech into application?
    - ENGAGEMENT WITH THEM; invite them to planning meetings, that have value in being there, and when they are able to add that value, they'll have buy in.
    - ► We explain the WHY of research, they will embrace that challenge
- Bring them to the table. COMMUNICATE what the issues are, make sure we reach an understanding.
  - Share the PURPOSE. Share the PROCESS. Share the BENEFIT.
  - Don't barge in and say "this is what we HAVE TO DO" but say "this is what we can't do.." -> Helps us find the solution together
- How do we work through policy changes (or staff changes)? What happens when our champions move on?
  - Vertical Chains of Communication -> create sufficient vertical relationships that create consistency
  - This is where it has been helpful to have PMs and Program Leads at the Hill Level
  - Have relationships at District, but also DIVISION level
  - We have to keep engaging UP
- USACE NEEDS TO DECLARE A GOAL FOR BU
  - This is gives our partners/champions the tools to fight for us
  - We can't reach this declared valued without industry (without these partners)

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# How can we share successes and best practices most effectively across the USACE enterprise?

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- What communication products or pathways or platforms for doing this?
- Example of Successful Tech Transfer: Planning Community of Practice has bi-weekly seminars (Kimberly Townsen)
  - -> I.E. FRM, Planning Relating Topics
  - USACE only? Open Access? Combo? There have been outside presenters, but mostly internal.
  - There is definitely need for this! Find our United Front and have more open communications
  - · Need to have a source to communicate updates with Partners as well
- Good way to share successes: Coastal Working Group -> Heather Schlosser
- We need to speak simply about complicated things, and share this with a broader audience
- Work on revamping the BU website; Be a good communication source on BU
  - Reach out to Brooke Stevens!
  - · What are the district needs from this website?
  - Goal: Get Public Buy In from Stakeholders; show the work that the USACE is doing, build awareness, but also hear from industry/other agencies, meet the needs of the corps overall
- We aren't great at telling our own stories at the district, it is our goal to implement.

Build Story Maps that tell the story (from beg to the end).

Share Vertically, Share Outward.

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## **BU Virtual Workshop Day 3 – See you tomorrow!**

#### July 15, 2021: ERDC, Districts, HQ Develop Alternative Actions and Next Steps AUDIENCE – ERDC + Districts/Field

**1400 – Opening remarks and summary of past two days** *Kelsey Fall and Amanda Tritinger (ERDC - CHL)* 

**1415 – Importance of BU to the Nation** *Todd Bridges (ERDC – EL)* 

1425 – Guided Discussion: What's Next?

Moderator: Julie Rosati (ERDC – CHL) & Danielle Szimanski (USACE – NAB)

- 1. What are BU big picture needs?
- 2. Create action items. (i.e. Statement of Need dev. plans)
- **1535– Final thoughts/Comments** *Kelsey Fall (ERDC CHL)*
- **1545 Announce Award** *Katie Brutsche (ERDC CHL)*
- **1555 Closing remarks** Amanda Tritinger (ERDC CHL)