Innovative Reuse Committee 2021 Workshop Series

Choose Your Own Adventure, IRC Edition

Tuesday, February 16, 5:30 pm – 7:00 pm

WORKSHOP NOTES

The following notes provide key highlights from the workshop, including summaries of presentations, group polling, and discussions. Additional information can be found in the attached appendices.

Workshop Objectives - To gather topic recommendations for the May 25, August 24, and November 23 Innovative Reuse Committee (IRC) workshops in 2021; to introduce a meeting platform and tools that may be used in subsequent workshops.

Welcome, Introductions, and Updates- *Kristen Keene, MDOT MPA*
Ms. Keene welcomed the participants and reviewed the list of attendees (**Appendix A**).

Ms. Keene provided an update on the Innovative Reuse Program, including the Ridgeley's Cove Project and the status of the Innovative Reuse and Beneficial Use Research and Development request for proposal (RFP) contracts (**Appendix B**). Ms. Keene also reviewed the five RFP contracts that have been awarded to date, which include combining sediment with other materials to create bricks and permeable pavers; using sediment to create traffic barriers and modular shoreline protection structures; mixing dredged material with mushroom compost to develop a formulation to grow sod; combining sediment with other materials to produce lightweight aggregate for structural concrete and fill applications; and combining sediment with other materials to develop general use concrete products. Currently, the solicitation is open and accepting proposals. Once closed, the committee will be notified. As projects reach completion, RFP contractors will present results of the research and development exercises to the IRC.

Workshop Introduction - *Jim Eisenhardt, Sari Rothrock, and Kim Troiani, RK&K*
Mr. Eisenhardt introduced the workshop and goals, as well as his colleagues Ms. Rothrock and Ms. Troiani. Ms. Rothrock will aid in the facilitation of the workshops and will support outreach to the IRC; members can expect to receive emails from her in the future. Ms. Troiani will be providing technical support for the workshops.

Collected Ideas
Before the workshop, participants were asked to submit concepts or themes to explore in future workshops for 2021. Mr. Eisenhardt provided a summary of the submissions, stating that over 40 ideas were collected from more than 20 individuals or organizations/agencies. The collected ideas ranged from topics that were very narrowly-defined to ones that were very broad in nature. The team organized the submissions into five topical categories:

1. Incentivizing and marketing/branding dredged material
2. Outreach and Communication (including how to best solicit and capture requests for material, how best to inform interested parties about availability, and forming partnerships)

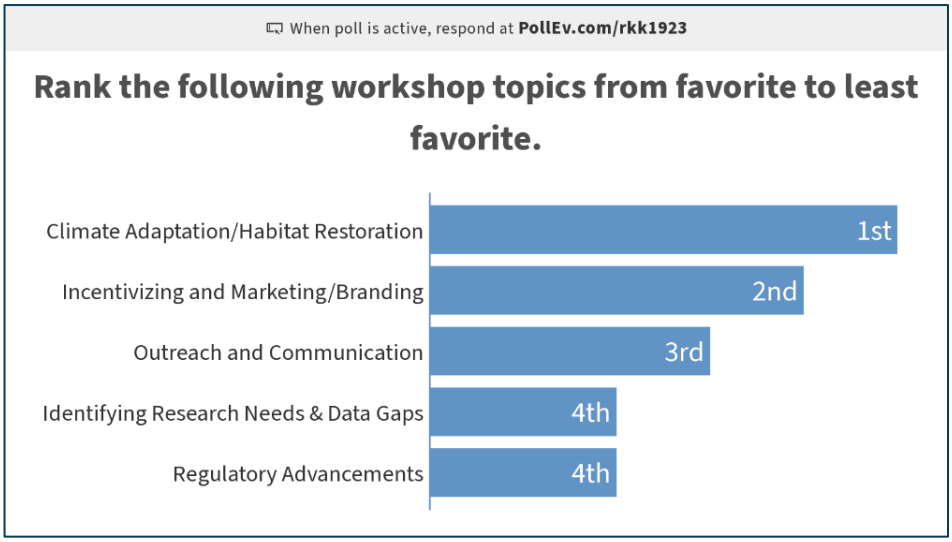
3. Innovative reuse (IR) and its use in climate adaptation, coastal resiliency, flood mitigation, and habitat restoration
4. Identification of research needs and data gaps
5. Regulatory advancements (including streamlining approvals, challenges, and partnerships)

Many of the workshop topic submissions were specific ideas for research or gap analyses. These topics were sorted into the "research needs and data gaps" category. See **Appendix D** for the full list of collected research needs and data gaps.

Mr. Eisenhardt asked the group for additional workshop topics or categories to add to this list. No new topics were added to the list; the ideas that were voiced fit under the existing topics and were captured in the breakout group notes (**Appendix C**).

Participants were then directed to an online poll and asked to rank the workshop's topics from favorite to least favorite. The three top-ranked topics would become the topics for the next three workshops of the 2021 workshop series.

Thirty-one people participated in the ranking for workshop topics. The rankings showed the top-rated topics were innovative reuse and its use in climate adaptation, coastal resiliency, flood mitigation, and habitat restoration; incentivizing and marketing/branding dredged material; and outreach and communication.



Mr. Eisenhardt reminded the group that while the other topics, "identifying research needs and data gaps" and "regulatory advancements," were not ranked in the top three, these topics could also be utilized as subtopics at a future workshop. These subtopics will be considered as the workshops are designed.

Breakout Groups and Report-Out

Participants were split into three groups to discuss the workshop topics in more detail. Breakout session notes for each group can be found in **Appendix C**.

Following the breakout group discussions, the note-takers reported out on key topics that were discussed for each workshop concept.

Next Steps

Mr. Eisenhardt informed the group that the workshop team would review and compile the information received, prepare a summary of the notes, and use that information to design the next three workshops. Once drafted, the notes from the workshop will be sent to participants. Participants were asked to save the dates for the three remaining workshops of 2021: May 25, August 24, and November 23.

Appendix A

Participant List

Innovative Reuse Committee Members:
Anne Arundel County Dept. of Public Works: Chris Phipps
Baltimore City Planning: Bruna Attila
Baltimore Port Alliance (BPA): Rupert Denney
Chesapeake Bay Foundation: Doug Myers
Maryland Department of Commerce: Wade Haerle
Maryland Department of the Environment (MDE): Matt Rowe
Maryland Department of Natural Resources: Paul Petzrick
Maryland Department of Transportation State Highway Administration (MDOT SHA): Darren Swift
MDOT, The Secretary's Office (TSO): John Denniston
Northeast Maryland Waste Disposal Authority: Andrew Kays
Stancills, Inc.: Chris Siciliano
Tradepoint Atlantic: Pete Haid
Turner Station Conservation Teams (TSCT): Larry Bannerman
United States Army Corps of Engineers, North Atlantic Division, Baltimore District (CENAB): Kevin Brennan

IRC Support Staff and Observers:
Facilitators: Jim Eisenhardt and Sari Rothrock (RK&K)
Alliance for the Chesapeake Bay: Laura Todd
Anchor QEA: Walter Dinicola
Bulldog Group: Miguel Lambert, Ano Mugwagwa
CSI Environmental: Craig Stevens
EA Engineering, Science, and Technology, Inc.: Chris Overcash
EcoLogix Group: Steve Pattison
MDOT Maryland Port Administration (MDOT MPA): Kristen Fidler, Katrina Jones, Kristen Keene, Holly Miller, Michelle McDaniel
MDOT State Highway Administration (MDOT SHA): Tyler Lane
MDOT TSO: Sandy Hertz, Josh Foster
Maryland Environmental Service (MES): Dallas Henson
Northgate Environmental Management (NGEM): Sam Merrill
Pennoni: J. Steven Donahue
RK&K: Kim Troiani
Straughan Environmental: Dirk Lueders
University of Maryland Center of Environmental Science (UMCES): Elizabeth Price
Viking Analytics: Erik Lytikainen

Appendix B

Innovative Reuse Program Update

INNOVATIVE REUSE PROGRAM UPDATES

KRISTEN KEENE
2/16/2021

Ridgley's Cove Project

22,000 cy of blended dredged material to be used as remedial capping material to support restoration of Ridgley's Cove

RFP Contracts Gaining Momentum

"Our administration is pleased to see companies explore ways to transform dredged material into products that aid construction and boost our economy. These innovative uses could turn sediment that builds up in the Chesapeake Bay into a valuable resource for making bricks, concrete and even structural support for shorelines."

- Governor Hogan

The Maryland Port Administration

PRESS RELEASE

FOR IMMEDIATE RELEASE
January 27, 2021

CONTACT: Richard Scher (rscher@marylandports.com)
Jillian Ball (jball@marylandports.com)
410-446-1204

GOVERNOR, BOARD OF PUBLIC WORKS APPROVE CONTRACTS TO STUDY USE OF SEDIMENT FROM PORT OF BALTIMORE SHIPPING CHANNELS FOR INNOVATIVE REUSE

Dredged Material Could Be Used To Create Bricks, Concrete Barriers

(BALTIMORE, MD) – Governor Larry Hogan and the state Board of Public Works (BPW) today approved contracts with two Maryland companies to study use of sediment from shipping channels leading to the Helen Delich Bentley Port of Baltimore for innovative purposes such as creation of structural concrete. The contracts follow three others recently approved by the BPW to test use of dredged material to make bricks and pavers, concrete barriers and shoreline protection structures, as well as in sod production.

Status of RFP Contracts

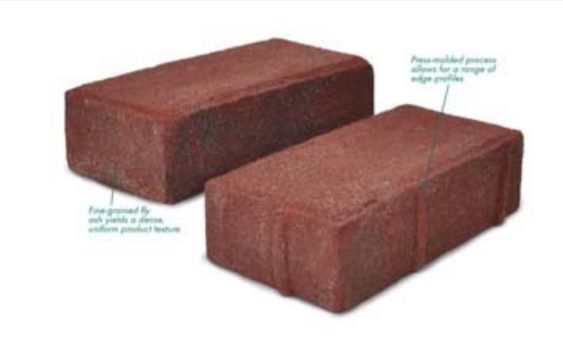
Total of **11** proposals received to-date!

- 2 proposals rejected
- 4 proposals in review stages
- 5 contracts awarded

Ceramic Bricks & Permeable Pavers

Belden-Eco Products, LLC will combine dredged sediment with other materials, such as Maryland-sourced fly ash, into various mixtures to develop ceramic bricks and permeable pavers.

Final products could serve as a stormwater management solution for the Chesapeake Bay watershed.



2 16 2021 8

Concrete Traffic Barriers & Shoreline Protection

Northgate Environmental Management, Inc. will partner with others to develop concrete traffic barriers and modular shoreline protection structures using dredged sediments.

Final products could provide coastal stabilization and support for local transportation projects.

2 16 2021 9

Re-engineered Soil for Growing Sod

Fastrak Express, Inc. will collaborate with local project partners to combine dewatered dredged material with mushroom compost and develop a preferred formulation to grow sod.

Final product could be used in the development of re-engineered soil, thereby producing an agricultural commodity.

Lightweight Aggregate

Harford Industrial Minerals, Inc. will combine dredged sediment with other materials into various mix designs, and produce lightweight aggregate for uses such as structural concrete and various fill applications.

Final product could serve as local and sustainable alternative to virgin aggregate material generated from quarries.

Precast Concrete Products

Suscon Products will combine dredged sediment with other materials into various concrete mix designs to develop general use concrete products.

Final product could be used to manufacture general use concrete products such as retainer walls and low compression strength blocks.

Appendix C

Breakout Group Notes

Breakout Group- Main Room (Mr. Dinicola and Ms. Rothrock)

Topic #1: Climate Adaptation / Flood Mitigation / Coastal Resilience / Habitat Restoration

What should our focus be for this workshop?

- Link back to the strategy as it relates to this topic
- Build on the "Advancing Coastal Resilience" webinar
- Specific Tactics?
    - Thin layer application
    - Shoreline restoration
    - Geographic-specific topics- Eastern Shore
    - Berms/Breakwaters for resilience and habitat
- Component: logistics of obtaining and moving
    - Marketing and Branding piece
- Scale
    - Large
    - Micro- coastal public lands (and logistics)
- Case Studies
    - Hart Miller Island
    - Multi-year
    - Large scale
- NOAA's engineering with Nature
- USACE- Todd Bridges

Topic #2: Incentivizing/Marketing/Branding Material

- Ways to get TMDL credits
- Tax Credits/Financial Incentives/Subsidy
    - Less expensive along the water vs. trucking/further inland source
- Characterize it as sustainable reuse
    - Certification process (seal from the state?)
- Water Words that Work approach (**clean** dredge material)
- Risk tolerance for end user/characterizing safety
- Blending for other purposes and leveraging those marketing tactics (LeafGrow, Fly ash)
- Who are the customers/consumers? Private, public? What are their needs?
- Help companies implementing projects (who are they marketing to?)
- Streamlined approval process for pilot projects?
- Contracting documents
- Pair up people with projects with the people with materials (MDA Phosphorus Management Tool…Manure Transport Component)

Topic #3: Outreach and Communication

(including how to best solicit and capture requests for material, how best to let people know about availability, forming partnerships)

- Component: logistics of obtaining and moving
- Certified sustainable products- partnerships between producers and retailers
- How to do outreach to the larger public?

Breakout Group #1 (Mr. Eisenhardt and Ms. Keene)

Universal Comments:

- 1 hour for each topic is sufficient; keep topics/workshop focused to stay within 1-hour
    - May need to give certain topics ~1.5 hours to cover additional sub-topics
- Polls + breakout sessions work well
- Bringing in experts may be useful for various topics; within or outside IRC membership

Topic #1: Climate Adaptation/Habitat Restoration

- 2 categories: Use of DM directly in habitat restoration efforts (e.g. beneficial use) and indirectly via shoreline restoration structures, etc.
    - Better define "habitat restoration" (suggestion: living shorelines and/or upland restoration)
- Additional sub-topic: Use of DM in nearshore environments

Topic #2: Incentivizing and Marketing/Branding Dredged Material

- RFP contracts will produce materials using DM; understanding how DM products can be marketed/branded + how that information is communicated to the public is important and valuable
- Any stigmas that exist in terms of marketing + incentivizing DM?
- Think about marketing the ideas/components to generate more widespread use, compared to marketing a single, specific product
- Timing of these actions may be tied to DM production rates and ability to consistently produce large volumes of material; can be laying groundwork in preparation for marketing activities
- Identifying DM as a "recycled" material is positive; lead outreach with the positivity/benefits of DM/sustainability of DM
- Ability to market DM in a multitude of ways to different audiences

Topic #3: Outreach and Communication

- Stigma still present among some members of public; not so much in the regulatory community
    - Idea of "contaminated spoils" still exists

  - Need to continue to provide distinction between new work and maintenance dredged material; also distinction needed between Baltimore Harbor material vs. Bay channel material
- Continue to participate in conferences, speaking engagements, etc to reach diverse and large audiences; focus on education
- May want to consider researching other successful programs and tools that have been used
- Consider defining various audiences and targeting education accordingly
- Enhance communications about great projects; lead with project details, followed by DM use

Breakout Group #2 (Mr. Overcash and Ms. Henson)

Overall Feedback:

- Format: Should depend on how narrow the topic is. If the topic is narrow the workshop could have a speaker. If the topic is broad the workshop could have a panel.

Topic #1: Climate Adaptation/Habitat Restoration

- The topic is clear.
- It would be nice to have statistics or tracking on how climate is affecting Maryland (facts/basis).
  - How much IR material can be used to protect X amount of shoreline.
  - Investigate current studies/lessons learned.
- Keep target audience in mind (experience).
- Goals:
  - Inspire what can be achieved. Is a keynote address possible? Can an example be provided.
  - Translate science into policy.
- Consider sending information in advance/as a follow up.
- Would like to see information on research done in adaptive plants. Would like to know what plants will survive if utilized.
- Determining key locations for soft vs hard infrastructure.
- Strategies for dynamic shoreline restoration
  - Include in water placement
  - Sand motor
- Create dredge narrative on focusing on resilience and dredge material, shoreline restoration

Topic #2: Incentivizing and Marketing/Branding

- Soil blenders would be interested in using material. But the material would need to be in a usable state. The material in a state spec or at the recommendation of a landscape architect would aid in the reuse.
- Get regulatory acceptance (SHA level)
- ID where the material can be placed. Can we make bricks and aggerate?

- ID, what is the market? What percent of the material in the DMFC will be reused? Have industry ID the market.
- Develop a list of uses and products specifically for the Baltimore material.
- Safe branding of Maryland recycled products.

Topic #3: Outreach and Communication

- Market the material to hot spots. Connect dots for reuse opportunities.
- Short video/documentary from dredge to end use.
- Define who outreach/communication will be with.
- Outreach based on each achievement.

Appendix D

Research Needs and Data Gaps Collected in Advance of the Workshop

Research Needs and Data Gaps Collected in Advance of the Workshop

Before the workshop, participants were asked to submit concepts or themes to explore in future workshops for 2021. The following list includes all research needs and data gaps suggested by IRC members in response to this prompt.

- Methanogenic capability of dredge material
- Data gap- what uses for dredge material are not viable?
- Data gap- in the future, will volume of material increase or decrease?
- Using dredged material blended with other materials such as fly ash to create pH 8 stable reef ball substrate for nearshore oyster reef restoration throughout Chesapeake Bay
- Survey of low areas (like parts of Broening Highway) in Maryland that would benefit from being raised by receiving dredged material in view of expected rise in sea level or to be used as Solar Energy Power Plants.
- Survey of major industries that use clay (Clay Construction Products and Clay Metal Matrix Industries) and may substitute dredged material and coal ash for at least 50% of their clay. (Thanks for already funding the feasibility study of brick making with dredged material and coal ash.)
- Evaluation of using dredged material in SIRGE (Solids Injection to Raise Ground Elevation) concept at critical locations in Maryland such as the Naval Academy and City of Annapolis.
- Remediation of toxics in dredge material - processes, examples, history of this work
- The use of dredge material as “mineral filler” in asphalt mixtures and concrete compositions.
- Construction material specifications
- Should MPA establish a sediment preprocessing facility? Whether this would be on the Tronox property or elsewhere, what are the interests in a facility where, for example, industry could put in an order for sediment of a specific grain size distribution and receive material that is cheaper than buying it on the open market and processing it themselves (and being stuck with unusable residual they have to dispose of)?
- "Sea level rise and IR products: if some of these products, once deployed, will be underwater at high tide in 30-50 years, should they actually be considered BU products for MDE-related testing purposes?" There is much to unpack here about non-stationary coastlines, uncertain SLR curves, and the appropriateness of various leachability tests on IR products given a changing coastal future.
- How to combine DM with compost for a superior landscaping material
- What is the possibility of using dredged material for agricultural purposes – why doesn’t dredge material qualify for use as an agricultural medium? Is there a relatively inexpensive way to treat dredged material to enable its use in agriculture (treat with compost, lime, etc.)? Have tests been done to study if there is bioaccumulation of toxins in plants grown in it?

- Comprehensive list of the current uses of dredged material by MPA
- Use of dredge material for agricultural/food system purposes. Have studies been developed to assess heavy metal or other contaminants uptake in agricultural yields? Could dredge be combined with composting to increase its marketability and acceptance for that purpose?
- How many projects in MD have utilized dredge material for living shorelines? What are the (market, stakeholder, access, knowledge) barriers for the utilization of dredge material for that purpose?
- How to use DM in tidal and nontidal flood mitigation BMPs
- Cooperation other agencies or sectors (for example, MDA and manure waste) on testing and blending DM with their "waste" streams to create some kind of new material or access different markets