

Innovative Reuse and Beneficial Use of Dredged Material Program

Presented by

Walter Dinicola, PE

Anchor QEA, LLC

July 18, 2023



DREDGED
MATERIAL
MANAGEMENT
PROGRAM

IRBU Program



- What are the general program components?
- What are the major program milestones?
- How has the Port of Baltimore advanced sediment reuse?

IRBU 2020 Strategy Goal: To make long-term, sustainable innovative reuse and beneficial use programs and projects to address capacity recovery an implemented component of the Dredged Material Management Program in Maryland, to promote the long-term viability of the Port of Baltimore.



2022/2023: Complete three IR RFP Projects

2021: IRBU Webtool publicly launched; new regulatory forms established/put into practice

2020: Renewed IRBU Strategy approved

2019: IR RFP advertised; Fleming Park Restoration Project grant awarded

2018: Several IR demo projects are completed & academic studies initiated

2017: MDE published dredged material reuse Guidance Document and technical screening criteria

2016: MDOT MPA launches IRBU outreach campaign to inform and educate stakeholders

2015: Formation of Interagency Regulatory Workgroup

2014: IRBU Strategy approved by Executive Committee





How is the Port of Baltimore turning **SEDIMENT** into **SOLUTIONS**?

Innovative Reuse and Beneficial Use

Request for Proposals



- ✓ RFP was advertised on e-Maryland Marketplace Advantage in November 2019
- ✓ RFP for research and development for novel dredged material end-use applications
- ✓ Intent is to award multiple proposals – each proposal is not to exceed \$300,000
- ✓ Maximum volume of dredged material to be allocated under this RFP is 5,000 cy per proposal

AWARD #1 – Belden-Eco Products, LLC

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.



DREDGED
MATERIAL
MANAGEMENT
PROGRAM



AWARD #2 – Northgate Environmental Management, Inc.



- Northgate Environmental Management, Inc.
- Workstream 1: 3D-Printed Coastal Stabilization Structures (NATRX)
- Workstream 2: Transportation Structures (Jersey Barrier)





AWARD #3 – FasTrak Express, Inc.



- Create a re-engineered soil using dredged material from Cox Creek DMCF that meets the MDE IRBU criteria for Category 1
- Selected Blend was 50% Dredged material, 25% mushroom compost, 25% sand.
- Utilized 300 cy of DM, 3 plots (control, layered, and mix) on ½ acre

AWARD #4 – Susquehanna Concrete Products

- Suscon will value the use of Cox Creek dredged material (DM) to produce a DM-Infused Concrete product comparable to current commercially available general use concrete at commercial-scale volumes.
- Concrete Mix is approximately 15% Cement, 45% #57 coarse aggregate, 35% washed DM sand and 5% water



AWARD #5 – Harford Industrial Minerals, Inc.

- Harford Industrial Minerals, Inc. will evaluate the use of Cox Creek DM to produce a DM-infused lightweight aggregate product comparable to current commercially available products that can be produced at commercial-scale volumes.
- LWA Mix Design: Clay from washed DM ~82% and 18% water
- Concrete Mix is approximately 18.5% Cement, 63% LWA and 18.5% 5% water



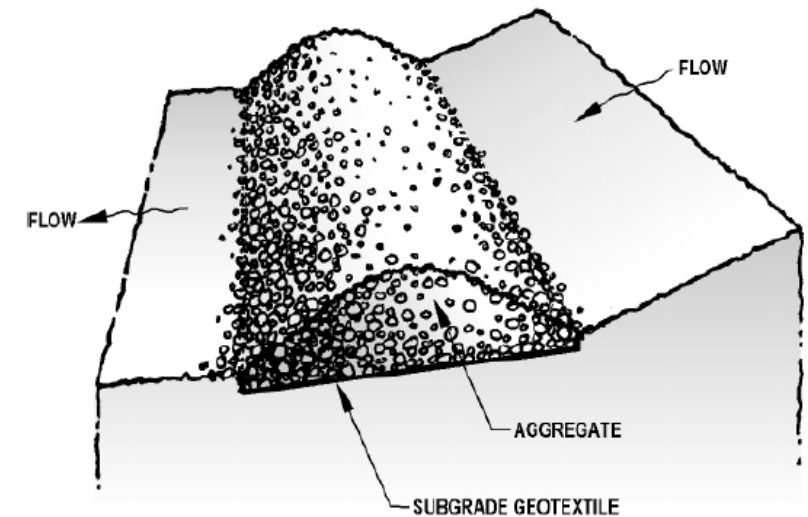
AWARD #6 – CSI Environmental, LLC

- CSI Environmental, LLC will demonstrate the feasibility of using dredged material from Cox Creek DMCF to develop upland and shoreline berms using geotextile tubes at the BGE Spring Gardens facility. It is anticipated that the berms will enhance resiliency and provide ecological uplift at the site.
- Currently 30 mini-geotubes are in place and planted and will be monitored for the next year.



AWARD #7 – University of Maryland

- U of MD explore the use of DM from Baltimore Harbor as a potential construction material in vegetated earthen berms (VEBs)..
- The overall goal of the proposed work is to provide recommendations on DM and DM blends that can be used for VEBs throughout Maryland. This will involve creating and testing DM and DM blends with three specific criteria defining a successful blend:
 - appropriate geotechnical properties
 - acceptable environmental properties, and
 - ability to rapidly establish vegetation in a berm setting.



Benefits of R&D Solicitation



- ✓ Spurs research & development to expand the portfolio of dredged material end-use options.
- ✓ Creates a foundation for private sector collaboration on the potential future Tronox property
- ✓ Aids in future capacity recover projections from Harbor DMCF; innovative reuse is an emerging tool that has the potential to expand the Port's dredged material management capabilities.
- ✓ Furthers the State of Maryland's position as a national leader in the reuse of dredged material and contributes to Governor Hogan's Waste Reduction and Resource Recovery EO, which specifically calls out the reuse of dredged material.
- ✓ Maryland Senate Bill 782 that was signed by Governor Moore in April 2023, that requires the Maryland Green Purchasing Committee to establish specifications for purchasing recycled materials and products and specifically mentions dredged material.
- ✓ IR Program is closely integrated with MDE's regulatory policies, which serves as a model for other states.

IRBU Web Tool



The screenshot shows the 'MDOT Maryland Port Administration's Innovative Reuse and Beneficial Use Program' website. At the top, there is a navigation bar with tabs for 'Background', 'IRBU Project Sites', 'Material Use Request', 'Research and Development', and 'IRBU Resources'. Below this is a 'Innovative Reuse and Beneficial Use Site Dashboard' with a search filter set to 'All Sites'. A text block explains that MDOT MPA has demonstrated options for reusing sediment dredged from Baltimore Harbor channels. Below the text is a map of Baltimore Harbor with two sites highlighted: 'Ridgley's Cove Site' and 'Hawkins Point DCMF South Cell Fill Quarantine Road Landfill Daily Cover'. On the left side of the map, there is a detailed view for the 'Hawkins Point DCMF South Cell Fill' project, including a photo of a construction site and a description: 'MDOT MPA utilized 4,500 cy of IRBU dredged material from Cox Creek DCMF as engineered fill to assist in the closure of the South Cell.' The photo is titled 'Hawkins Point Image 1 (10-11-18).jpg'.

A one-stop-shop for information related to MDOT MPA's IRBU Program

- Request dredged material from MDOT MPA
- Informational videos
- Project examples
- Program resources

<https://maryland-dmmp.com/future-solutions/>



Thank you!



DREDGED
MATERIAL
MANAGEMENT
PROGRAM