BENEFICIAL USE COMPREHENSIVE BENEFITS TOOL (BUCBT)

Chuck Theiling (EL), Burton Suedel (EL), Justin Wilkens(EL), and Ben Emery (CHL)
Engineer Research and Development Center
Vicksburg, MS

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National Conference on Ecosystem Restoration, Albuquerque, NM
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DRIVER OF THE RESEARCH:
WRDA 2020, SEC. 125, BENEFICIAL REUSE OF DREDGED MATERIAL; DREDGED MATERIAL MANAGEMENT PLANS

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** AND 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

(b) increasing the number of beneficial use of dredged material demonstration projects to 35 projects (added more Section 1122 projects),

(c) directing the Corps to develop five-year regional dredged material management plans, and

(d) emphasizing greater coordination across the Corps' dredging contracts (extended regionalization to inland projects).

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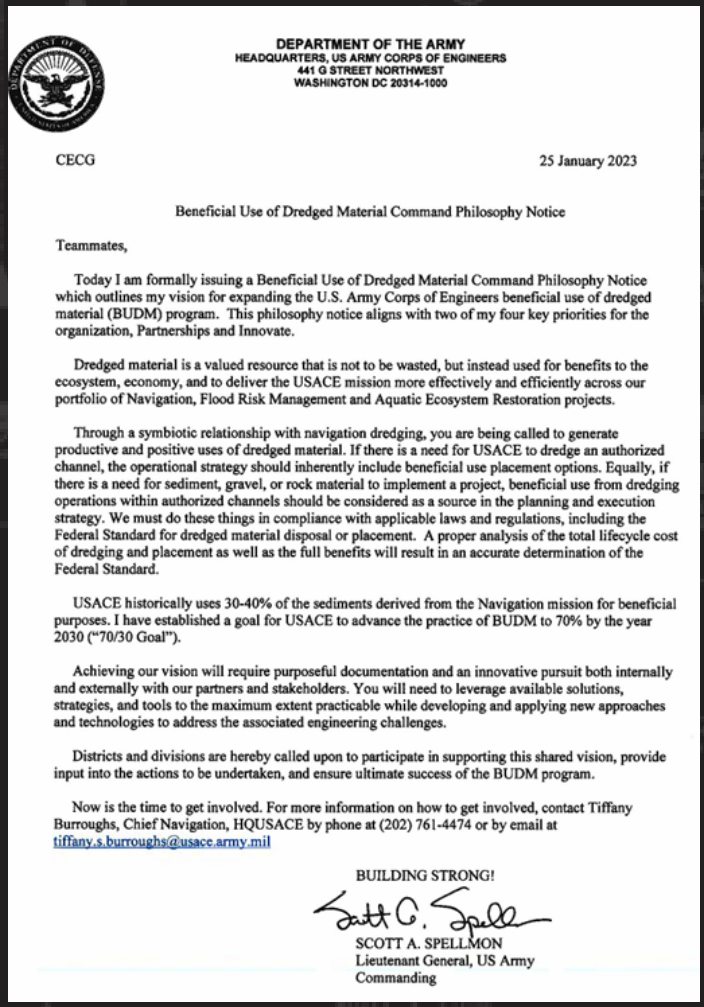
DRIVER OF THE RESEARCH: COMMAND PHILOSOPHY NOTICE (Jan 2023)

Scott A. Spellmon, Lt. General, US Army Commanding:

"USACE historically uses 30-40% of the sediments derived from the Navigation mission for beneficial purposes. I have established a goal for USACE to advance the practice of BUDM to 70% by the year 2030 **("70/30 Goal").** "



DEPARTMENT OF THE ARMY
HEADQUARTERS, US ARMY CORPS OF ENGINEERS
441 G STREET NORTHWEST
WASHINGTON DC 20314-1000

CECG

25 January 2023

Beneficial Use of Dredged Material Command Philosophy Notice

Teammates,

Today I am formally issuing a Beneficial Use of Dredged Material Command Philosophy Notice which outlines my vision for expanding the U.S. Army Corps of Engineers beneficial use of dredged material (BUDM) program. This philosophy notice aligns with two of my four key priorities for the organization, Partnerships and Innovate.

Dredged material is a valued resource that is not to be wasted, but instead used for benefits to the ecosystem, economy, and to deliver the USACE mission more effectively and efficiently across our portfolio of Navigation, Flood Risk Management and Aquatic Ecosystem Restoration projects.

Through a symbiotic relationship with navigation dredging, you are being called to generate productive and positive uses of dredged material. If there is a need for USACE to dredge an authorized channel, the operational strategy should inherently include beneficial use placement options. Equally, if there is a need for sediment, gravel, or rock material to implement a project, beneficial use from dredging operations within authorized channels should be considered as a source in the planning and execution strategy. We must do these things in compliance with applicable laws and regulations, including the Federal Standard for dredged material disposal or placement. A proper analysis of the total lifecycle cost of dredging and placement as well as the full benefits will result in an accurate determination of the Federal Standard.

USACE historically uses 30-40% of the sediments derived from the Navigation mission for beneficial purposes. I have established a goal for USACE to advance the practice of BUDM to 70% by the year 2030 ("70/30 Goal").

Achieving our vision will require purposeful documentation and an innovative pursuit both internally and externally with our partners and stakeholders. You will need to leverage available solutions, strategies, and tools to the maximum extent practicable while developing and applying new approaches and technologies to address the associated engineering challenges.

Districts and divisions are hereby called upon to participate in supporting this shared vision, provide input into the actions to be undertaken, and ensure ultimate success of the BUDM program.

Now is the time to get involved. For more information on how to get involved, contact Tiffany Burroughs, Chief Navigation, HQUSACE by phone at (202) 761-4474 or by email at tiffany.s.burroughs@usace.army.mil

BUILDING STRONG!

SCOTT A. SPELLMON
Lieutenant General, US Army
Commanding

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DRIVER OF THE RESEARCH: HQ MEMORANDUM (Aug 2023)

"Expanding beneficial use of dredged material in the USA" defined beneficial use activities

Agriculture, Horticulture, Forestry and Aquaculture *Beneficial Use*	**Beneficial Use** Material placed for use by the agriculture, forestry, horticulture, and aquaculture industries. Examples: provide livestock pastures, cattle bedding, incorporating dredged material into marginal soils.
Aquatic Habitats *Beneficial Use*	**Beneficial Use** Placed to improve submerged habitats extending from near sea, river, or lake level down several feet. Examples are tidal flats, oyster beds, seagrass meadows, fishing reefs, clam flats, and freshwater aquatic plant beds Select "Open-Water Placement TP" (described below) when sediment is kept in the system, but without specific BU intent.
Beach/Shoreline Nourishment *Beneficial Use*	**Beneficial Use** Beach nourishment is placement of material from a borrow area, channel, or rehandled stockpile directly onto a beach or river shoreline, in the littoral zone, nearshore, or shallow water with the intent to expand, stabilize or nourish the beach or shoreline. Select "Open-Water Placement TP" (described below) when sediment is kept in the system, but without specific BU intent.
Confined (Diked) Placement *Disposal*	**Disposal** Placement of dredged material in a diked nearshore or upland Confined Disposal Facility (CDF). Upland placements not intended for a BU fall into this category. If dredged material placed at a CDF will be offloaded for BU, select a placement category that characterizes the offloaded sediment use for that quantity of material.
Confined Aquatic Disposal *Disposal*	**Disposal** Confined aquatic disposal (CAD) is the placement of contaminated dredged material into an open water placement site that is capped with

Construction and Industrial/Commercial Uses *Beneficial Use*	**Beneficial Use** Placement activities to improve or construct harbor and port facilities, residential and urban areas, airports, dikes, levees and containment facilities, roads, and island and historic preservation areas. Material placed in a CDF and rehandled for construction activities would be classified in this category.
Island Habitats *Beneficial Use*	**Beneficial Use** Placement activities that construct, improve, or maintain islands and/or high zone wetland habitats.
Multipurpose Uses and Other Land Use *Beneficial Use*	**Beneficial Use** Combinations of uses, aquatic and/or land based. Purpose(s) does not need to be defined in DIS. Example: a park and recreational development built over an existing solid waste landfill using dredged material as a cap.
Open-Water Placement *Transitional Placement, Disposal or Beneficial Use* (see definitions, at right)*	Select either: **TP/Disposal/Beneficial Use** Open-water placement in riverine, lacustrine, estuarine, and marine environments with overlying volumes of water. *Open-water placement areas are classified either as: (1) *Transitional Placement (TP)* when sediment is kept in the system but will naturally move through the system or be rehandled; (2) *Disposal* when sediment is removed from the dispersive system or discharged where it has no demonstratable value; or (3) *Beneficial Use* when placement is intended for direct BU. If known, BU placement should be categorized based upon the specific intent of that placement "Aquatic Habitats", "Beach Nourishment", "Multipurpose", etc.
Parks and Recreation *Beneficial Use*	**Beneficial Use** Placement activities supporting the development of recreational areas range from simple projects such as fill for a recreation access to large and complex projects that support both public and private commercial and noncommercial recreation facilities.
Strip Mine Reclamation, Solid Waste Landfill, and Alternative Uses *Beneficial Use*	**Beneficial Use** Material, including moderately contaminated material, used for the reclamation of abandoned strip mine sites, capping or protecting solid waste landfills, or manufacturing bricks and hardened materials such as road surfaces. Material placed in a CDF and rehandled for reclamation activities would be classified in this category.
Upland Habitats *Beneficial Use*	**Beneficial Use** Material placed upland to construct or improve habitats. Upland habitat includes terrestrial communities not normally subject to inundation.
Wetland Habitats *Beneficial Use*	**Beneficial Use** Material placed to construct or nourish wetland habitats, including freshwater and saltwater marshes, relatively permanently inundated freshwater marshes, bottomland hardwoods, freshwater swamps, bogs, and freshwater riverine and lake habitats.

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WHY DOES THE CORPS CARE ABOUT ECOSYSTEM GOODS AND SERVICES?

- Initial considerations in 1980s academic literature that gained popularity following a seminal 1997 paper **(Costanza et al. 1997. The value of the world's ecosystem services and natural capital. Nature 387:253-260.** Co-author Bruce Hannon, U-Illinois, was an early modeling mentor to me).

- The **Millennium Ecosystem Assessment** (MEA, 2000) brought worldwide attention to the condition of the planet's resources and the need to address multiple environmental challenges.

- Recognition of the planet's resources was incorporated into US water resource policy in recent and ongoing changes to modernize Federal water resources planning guidance called for in **WRDA 2007** (PL 110-114).

- The intent of the changes were established in policy as **Updated Principles, Requirements, and Guidelines** (PR&G; Council on Environmental Quality 2014) to promote better investment of taxpayer dollars by analyzing a broader range of long-term costs and benefits.

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UPDATED PRINCIPLES, REQUIREMENTS, AND GUIDELINES (2014)

Promote better investment of taxpayer dollars by analyzing a broader range of long-term costs and benefits.

The PR&G gives equal value for economic, environment, and social considerations and recommends six guiding principles for Federal water projects (which includes dredging):

- Healthy and resilient ecosystems,
- Sustainable economic development,
- Floodplains,
- Public safety,
- Environmental justice, and a
- Watershed approach.

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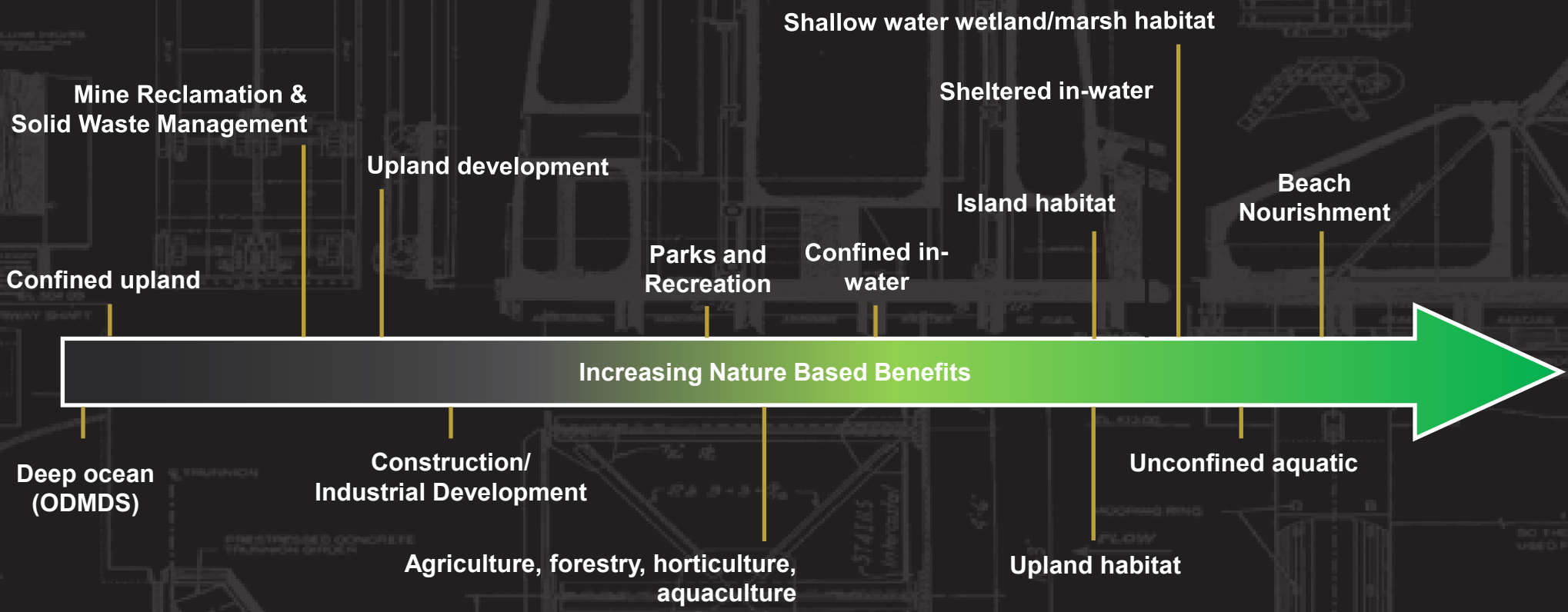
The PR&G applies to all federal water projects and is driving greater consideration of comprehensive project benefits in USACE planning.

Section 125 objectives are compatible with the PR&G, so the Ecosystem Goods and Services Framework (2020) was a good resource to use as a dredge placement alternative analysis tool.

Sediment Beneficial Use Placement as an Economic–Social–Ecological Continuum



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SEDIMENT PLACEMENT X ECOSYSTEM GOODS AND SERVICE CLASS MATRIX

Rapid - Consistent - Standardized

Providing a common framework based on existing Corps information

	Economic		Social				Environmental					
Placement Type	Raw goods/materials	Navigation maintenance	Water purification	Water supply	Hazard mitigation	Recreation	Carbon sequestration	Ecosystem sustainability	Cultural, spiritual, educational	Aesthetics	Food provisioning	Human health support
Aquatic Habitats		X	X		X			X				X
Beach Nourishment (littoral, nearshore, or shallow water)		X										
Beach Nourishment (maintenance dredging)		X			X		X	X				X
Beach Nourishment (new borrow material)		X			X					X		X
Beach Nourishment (rehandle stockpiled material)	X	X			X							
Confined (Diked) Placement	X	X										
Confined Aquatic Disposal	X	X				X			X	X		X
Construction and Industrial/Commercial Uses	X	X					X		X		X	X
Island Habitats	X	X					X		X	X		X
Multipurpose Uses and Other Land Use	X	X								X		X
Open-Water Placement	X	X							X		X	
Parks and Recreation		X				X		X		X		X
Strip Mine Reclamation, Solid Waste Landfill	X	X			X	X	X	X	X	X		
Upland Habitats	X	X			X				X	X		
Wetland Habitats		X				X	X	X		X		

Benefit accounting should use standard terms and established regulations/manuals to the extent possible

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DEFINE PLACEMENT ALTERNATIVES

EM 1110-2-5025 Dredging and Dredged Material Management/
Expanding beneficial use of dredged material in the USA (Aug 2023)

Sediment Placement Alternatives

Agriculture, Horticulture, Forestry, and Aquaculture
Aquatic Habitats
Beach/Shoreline Nourishment
Confined (Diked) Placement
Confined Aquatic Disposal
Confined (Diked) Placement
Confined Aquatic Disposal
Construction and Industrial/Commercial Uses
Island Habitats
Multipurpose Uses and Other Land Use
Open-Water Placement
Parks and Recreation
Strip Mine Reclamation, Solid Waste Landfill, and Alternative Uses
Upland Habitats
Wetland Habitats

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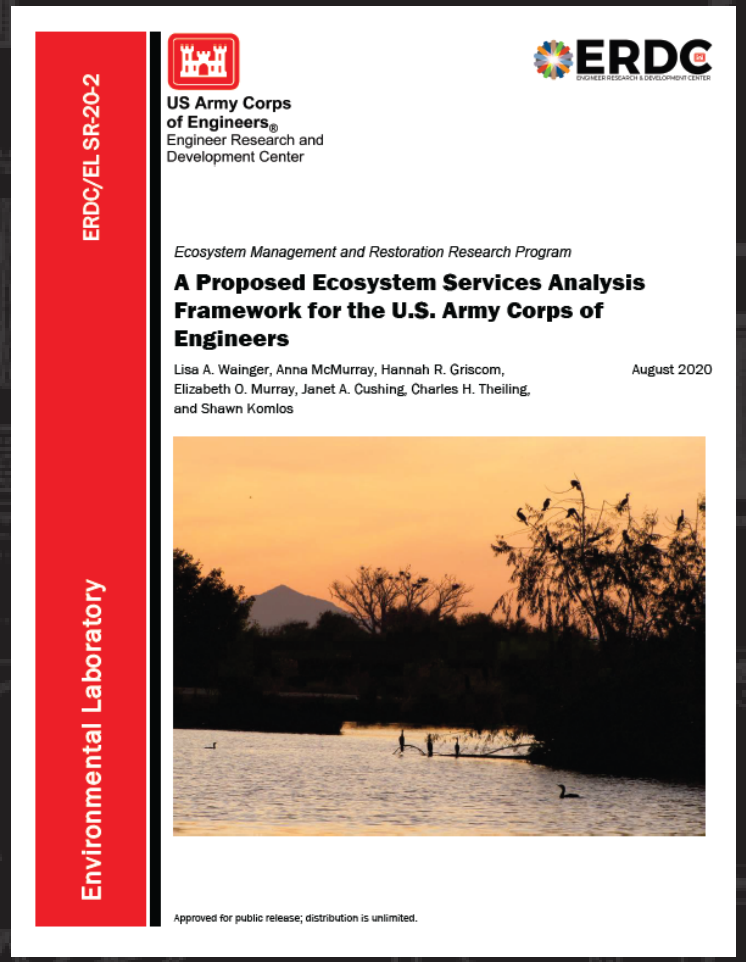
USACE ECOSYSTEM GOODS AND SERVICE FRAMEWORK



EGS categories have multiple metrics depending on site/project

Economic	Raw goods/materials
	Navigation maintenance
Social	Water purification
	Water supply
	Hazard mitigation
	Recreation
	Cultural, spiritual, educational
	Aesthetics
Environmental	Carbon sequestration
	Ecosystem sustainability
	Food provisioning
	Human health support

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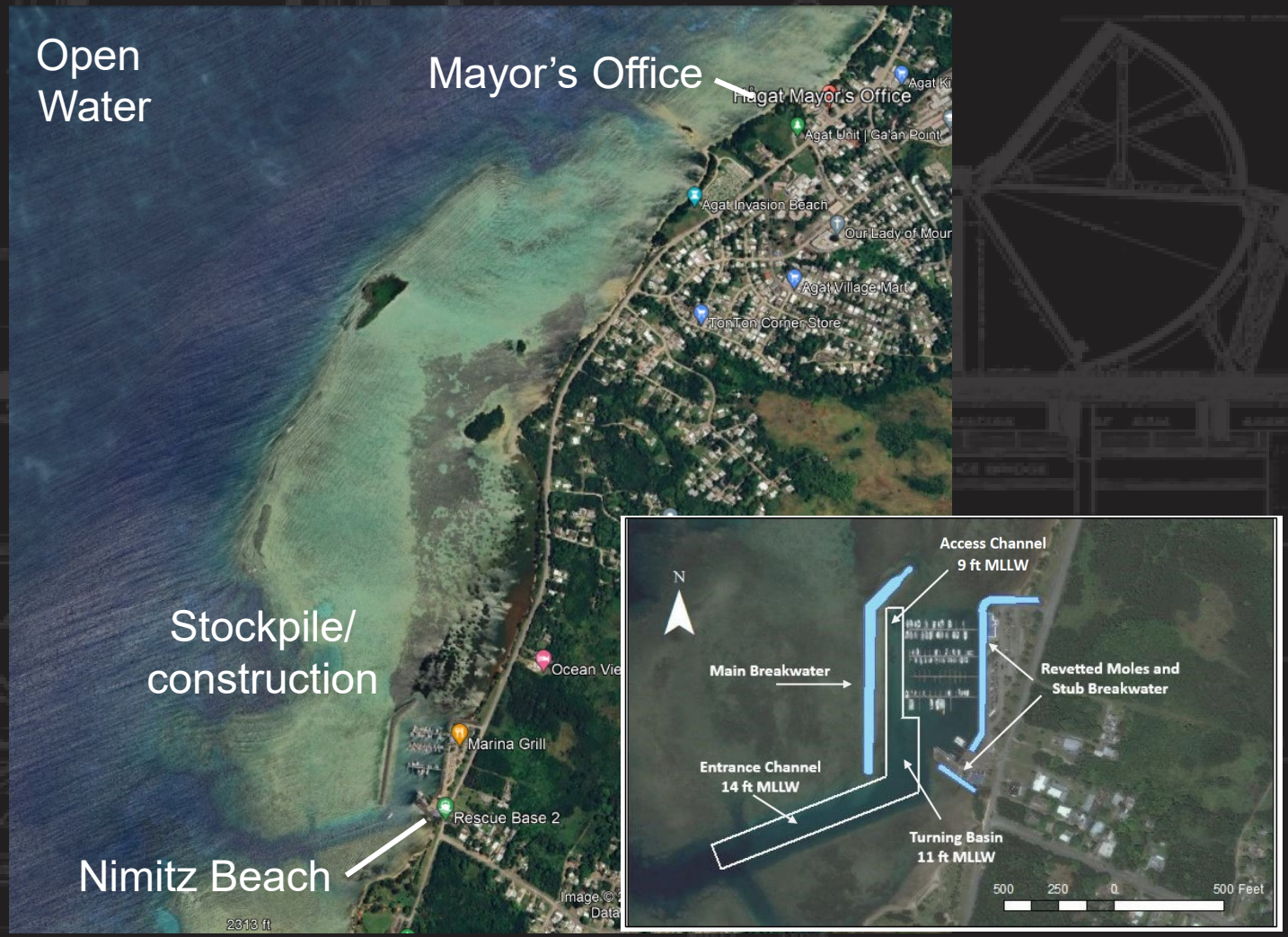
APPLYING BUCBT TO BU ALTERNATIVE ANALYSIS

Agat Harbor, Guam
Maintenance Dredging (8,000 CY)

Placement_type	Placement_name
Beach Nourishment	Nimitz Beach Park
Beach Nourishment	Agat Mayors Office
Open-Water Placement	G-DODS
Construction and Industrial/Commercial Uses	Dredge Harbor and Stockpile at Dock



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PLACEMENT SITE INFORMATION – AGAT HARBOR, GUAM

B10 | Construction and Industrial/Commercial Uses

	B	C	D	E	F	G	H	I	J
1			Table 1. Placement Sites						
2	Honolulu	District POC:	Jessica Podoski, Coastal Engineer						
3	Agat Small Boat Harbor	Description	After 30+ years of operation, Agat SBH requires dredging for the first time. Evaluations of the dredged sediment show it is predominantly coarse sands (>98%). While the sediment is conditionally approved for ocean disposal at G-DODS, it would be more beneficial for the local residents of Guam to utilize it elsewhere. Instead of ocean disposal, several opportunities near the dredging site have been identified where the sand can positively affect the island's environmental, economic, and social well-being. Coral reefs are located near the dredging site and proposed beneficial use sites. However, through close coordinated with local stakeholders, methods can be agreed upon to minimize the impact on corals (e.g., turbidity) while still deriving benefits. This exercise presents various options for the beneficial use of sediments and includes a comparison with the ocean disposal site in terms of ecosystem goods and services benefits.						Notes: The most significant costs are potentially linked to environmental challenges such as turbidity, dredging methods, and water quality standards. To use the sediment beneficially, a probable sequence of events would involve mechanical dredging, transporting the sediment to land, trucking, offloading, dewatering, and ultimately placing the sediment. There are concerns that excessive handling of the calcium carbonate sands may cause them to break down into smaller particles, leading to increased turbidity near the placement area over several days. Silt curtains will likely be required at the site of dredging and placement.
4	**1.2 Select all placement site(s) being considered for this FNP**	**1.3 Placement site name**	**unique site**	**1.4 Placement Site Volume**	**1.5 Unit Cost**	**1.6 Total Cost**	**1.7 Duration**	**1.8 Priority**	**1.9 Placement site narrative/justification**
5	*see placement site list and descriptions*	*Name of placement site provided by District*	*Concatenated 1.2 and 1.3. Duplicate sites will be highlighted in red. Delete duplicate sites.*	*Volume of sediment for this placement option (cubic yards)*	*Approximate cost per cubic yard of sediment.*	*[unit cost]*[volume]*	*Number of days to complete the project. Select a range (e.g., 0-25*	*Select: low, medium, or high*	*Provide narrative explaining why this placement site is important to the USACE and/or stakeholders. 250 word max.*
6	Placement_type	Placement_name	Unique_Site	Sediment_volur	Unit_Cost	Total_Cost	Duration	Priority	Placement_site_note
7	Beach Nourishment (littoral, nearshore, or shallow water)	Nimitz Beach Park	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	8,000	$263.03	$2,104,204	240 d	High Priority	Nimitz Beach Park is a popular recreational park with a pedestrian walkway and is recognized as a turtle nesting habitat. There's noticeable erosion near the walkway. Sediment from the dredge could be utilized nearshore. The park is situated approximately 0.25 miles from the dredge site. Placement of dredged material will be beneficial for restoration at this beach/shoreline, with an estimated construction cost of $2.10 million and is considered a 'high priority' because of the multiple ecosystems goods and services benefits that can be realized, as well as non-Fed sponsor priorities. ** Estimate duration for NEPA document ~ 1 yr ** Duration = permitting during design plus construction duration
8	Beach Nourishment (littoral, nearshore, or shallow water)	Agat Mayors Office	Beach Nourishment (littoral, nearshore, or shallow water), Agat Mayors Office	8,000	$266.20	$2,129,633	240 d	High Priority	The Agat Mayor's Office beach is a popular community gathering area known for turtle nesting with a deteriorating sea wall. The beach is located approximately 1.5 miles from the dredge site. Placement of dredged material will be beneficial for restoration at this beach/shoreline, with an estimated construction cost of $2.13M and is considered a 'high priority' because of the multiple ecosystems goods and services benefits that can be realized. ** Estimate duration for NEPA document ~ 1 yr ** Duration = permitting during design plus construction duration
9	Open-Water Placement	G-DODS	Open-Water Placement, G-DODS	8,000	$148.03	$1,184,245	30 d	Low Priority	The Marine Protection, Research and Sanctuaries Act (MPRSA) ocean dredged material disposal site is located roughly 17.5 nautical miles northwest of Agat SBH. Offshore disposal of material at this site will be permanent and material will not be returned to the system. Depending on logistics and equipment availability, there could be up to 12 trips to the ocean site for disposal. The estimated construction cost is approximately $1.18 million. 'Low priority' because aside from the disposal of dredged sediment, the benefits in terms of ecosystem goods and services would essentially be negligible. ** Estimate duration for NEPA document ~ 1 yr ** Duration = permitting during design plus construction duration
10	Construction and Industrial/Commercial Uses	Dredge Harbor and Stockpile at Dock	Construction and Industrial/Commercial Uses, Dredge Harbor and Stockpile at Dock	8,000	$174.34	$1,394,719	60 d	Medium Priority	Alternative to place dredged material at dock for use by Gov Guam which could include construction/profit. Stockpiled material as construction and industrial use could be cost savings for Gov Guam. The estimated construction cost is approximately $1.39 million. 'Medium priority' due to minimal environmental benefits associated with this option and non-Federal sponsor preference for beach placement. ** This alternative does not account for actual disposal ** Duration = permitting during design plus construction duration ** Estimate duration for NEPA document ~ 1 yr **
11						$0			
12						$0			

About | Table 1. Placement Sites | Table 2. EGS | Table 1. Summary | Table 2. Summary | BU scoring | BU Scoring chart | BU EGS Scoring Charts | EGS ...

EGS PICK LIST METRICS – AGAT HARBOR, GUAM

	Numbe	Placement_site	EGS	EGS_details	EGS_Priority	EGS_notes
21	17	Beach Nourishment (littoral, nearshore, or shallow water), Agat Mayors Office	Food provisioning	Fishing	Medium Priority	Agat community benefit (subsistence)
22	18	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Aesthetics	Native landscape	Low Priority	
23	19	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Cultural, spiritual, educational	Environmental education	Medium Priority	
24	20	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Cultural, spiritual, educational	Viewshed	Medium Priority	
25	21	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Ecosystem sustainability	Turtle nesting	Medium Priority	Turtles have been documented to use this beach area.
26	22	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Hazard mitigation	Coastal resilience	High Priority	Improvements to eroding shoreline
27	23	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Hazard mitigation	Bankline protection	High Priority	Improvements to eroding shoreline
28	24	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Hazard mitigation	Flood risk reduction	High Priority	Improvements to eroding shoreline
29	25	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Human health support	Exercise/outdoor recreation	Medium Priority	Nimitz Beach Park patron benefit
30	26	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Human health support	Leisure	dium Priority	Nimitz Beach Park patron benefit
31	27	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Navigation maintenance	Regional Economic Development	High Priority	Recreation and commercial fishing
32	28	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Navigation maintenance	Safety Improvement	High Priority	Safe and continuous access to Agat SBH
33	29	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Recreation Supply	Beach	Low Priority	Nimitz Beach Park patron benefit
34	30	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Recreation Supply	Fishing	Low Priority	Nimitz Beach Park patron benefit
35	31	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Recreation Supply	Parks	Low Priority	Nimitz Beach Park patron benefit
36	32	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Recreation Supply	Trails	Low Priority	Nimitz Beach Park patron benefit
37	33	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Recreation Supply	Wildlife viewing	Low Priority	Nimitz Beach Park patron benefit
38	34	Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park	Food provisioning	Fishing	Medium Priority	Nimitz Beach Park patron benefit
39	35	Construction and Industrial/Commercial Uses, Dredge Harbor and Stockpile at Dock	Raw goods & materials provisioning	Sand	Low Priority	Use in construction materials (concrete)
40	36	Open-Water Placement, G-DODS	Climate regulation/Carbon sequestration	Contaminant removal	Low Priority	
41	37					

About | Table 1. Placement Sites | Table 2. EGS | Table 1. Summary | Table 2. Summary | BU scoring | BU Scoring chart | BU EGS Scoring Charts | EGS ...

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SITE SUMMARY – AGAT HARBOR, GUAM

Beneficial Use Placement Site Alternatives

To refresh, go to Data tab and select 'refresh all'

Placement site type, name, and narrative	Cost	Site Priority	CY	Cost/CY
(blank)	$0			
Beach Nourishment (littoral, nearshore, or shallow water)				
Agat Mayors Office				
The Agat Mayor's Office beach is a popular area known for turtle nesting. It has a deteriorating sea wall and is located approximately 1.5 miles from the dredge site. This is considered a 'high priority' because of the multiple ecosystems good and services benefits that can be realized.	$2,662,134	High Priority	8000	$ 332.77
Nimitz Beach Park				
Nimitz Beach Park is a popular park with a walkway and is recognized as a turtle nesting habitat. There's noticeable erosion near the walkway. Sediment from the dredge could be utilized nearshore. The park is situated approximately 0.25 miles from the dredge site, with an estimated cost of around $2.6 million. This is considered a 'high priority' because of the multiple ecosystems good and services benefits that can be realized.				
** Estimate duration for NEPA document ~ 1 yr **	$2,630,454	High Priority	8000	$ 328.81
Construction and Industrial/Commercial Uses				
Dredge Harbor and Stockpile at Dock				
Alternative to place dredged material at dock for use by Gov Guam which could include construction/profit. No enviornmental benefits associated with this option.				
** This alternative does not account for actual disposal **	$1,742,219	Medium Priority	8000	$ 217.78
Open-Water Placement				
G-DODS				
The MPRSA ocean dredged material disposal site is located roughly 17.5 nautical miles northwest of Agat SBH. Depending on logistics and equipment availability, there could be up to 12 trips to the ocean site for disposal. The estimated cost is approximately $1.5 million. Aside from the disposal of dredged sediment, the benefits in terms of ecosystem goods and services would essentially be negligible.				
** Estimate duration for NEPA document ~ 1 yr **	$1,480,495	Low Priority	8000	$ 185.06

About | Table 1. Placement Sites | Table 2. EGS | Table 1. Summary | Table 2. Summary | BU scoring | BU Scoring chart | BU EGS Scoring Charts | EGS

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BU DECISION SUPPORT MATRIX – AGAT HARBOR, GUAM

Beneficial Use Placement Site Alternatives

Decision guidance matrix

				1			2			3			4		
				Beach Nourishment (littoral, nearshore, or shallow water), Nimitz Beach Park			Beach Nourishment (littoral, nearshore, or shallow water), Agat Mayors Office			Open-Water Placement, G-DODS			Construction and Industrial/Commercial Uses, Dredge Harbor and Stockpile		
				Capacity:		8,000	Capacity:		8,000	Capacity:		8,000	Capacity:		8,000
				Unit Cost:	$	263.03	Unit Cost:	$	266.20	Unit Cost:	$	148.03	Unit Cost:	$	174.34
				Total Cost:	$	2,104,204	Total Cost:	$	2,129,633	Total Cost:	$	1,184,245	Total Cost:	$	1,394,719
				Duration:		240 d	Duration:		240 d	Duration:		30 d	Duration:		60 d
	Criteria			*Benefit*	*Urgency*	*Priority*	*Benefit*	*Urgency*	*Priority*	*Benefit*	*Urgency*	*Priority*	*Benefit*	*Urgency*	*Priority*
	Ecosystems Goods and Services (EGS)	Weight													
1	Aesthetics	5%		High	High	5%	High	Medium	4%	None	None	0%	None	None	0%
2	Climate regulation/Carbon sequestration	5%		None	None	0%	None	None	0%	Low	Low	1%	None	None	0%
3	Cultural, spiritual, educational	10%		High	Medium	8%	High	Medium	8%	None	None	0%	None	None	0%
4	Ecosystem sustainability	10%		High	High	10%	High	High	10%	None	None	0%	None	None	0%
5	Food provisioning	10%		Low	Medium	3%	Low	Medium	3%	None	None	0%	None	None	0%
6	Hazard mitigation	20%		Medium	Medium	10%	Medium	High	15%	None	None	0%	None	None	0%
7	Human health support	10%		High	Low	5%	Medium	Low	3%	None	None	0%	None	None	0%
8	Navigation maintenance	20%		High	High	20%	High	High	20%	High	High	20%	High	High	20%
9	Raw goods & materials provisioning	5%		None	None	0%	None	None	0%	None	None	0%	Medium	Low	1%
10	Recreation Supply	5%		High	Medium	4%	High	Medium	4%	None	None	0%	None	None	0%
11	Water Purification & Waste Treatment	0%		None	None	0%	None	None	0%	None	None	0%	None	None	0%
12	Water Supply & Regulation	0%		None	None	0%	None	None	0%	None	None	0%	None	None	0%
13	(Other): *enter here*	0%		None	None	0%	None	None	0%	None	None	0%	None	None	0%
		max													
	**notes*	100%			*Score*	64%		*Score*	65%		*Score*	21%		*Score*	21%

About | Table 1. Placement Sites | Table 2. EGS | Table 1. Summary | Table 2. Summary | BU scoring | BU Scoring chart | BU EGS Scoring Charts | EGS ...

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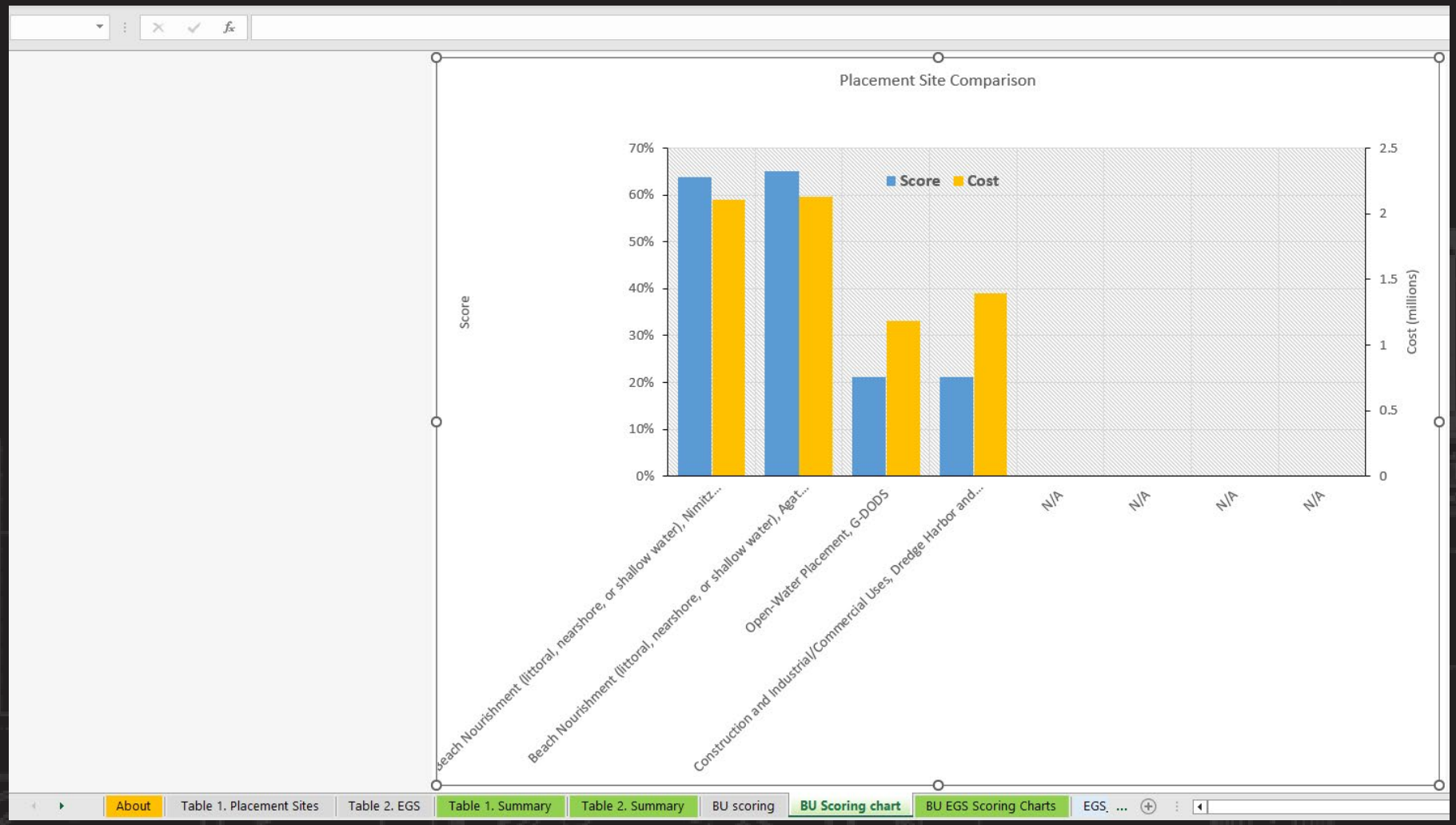
BU PLACEMENT SITE COMPARISON – AGAT HARBOR, GUAM



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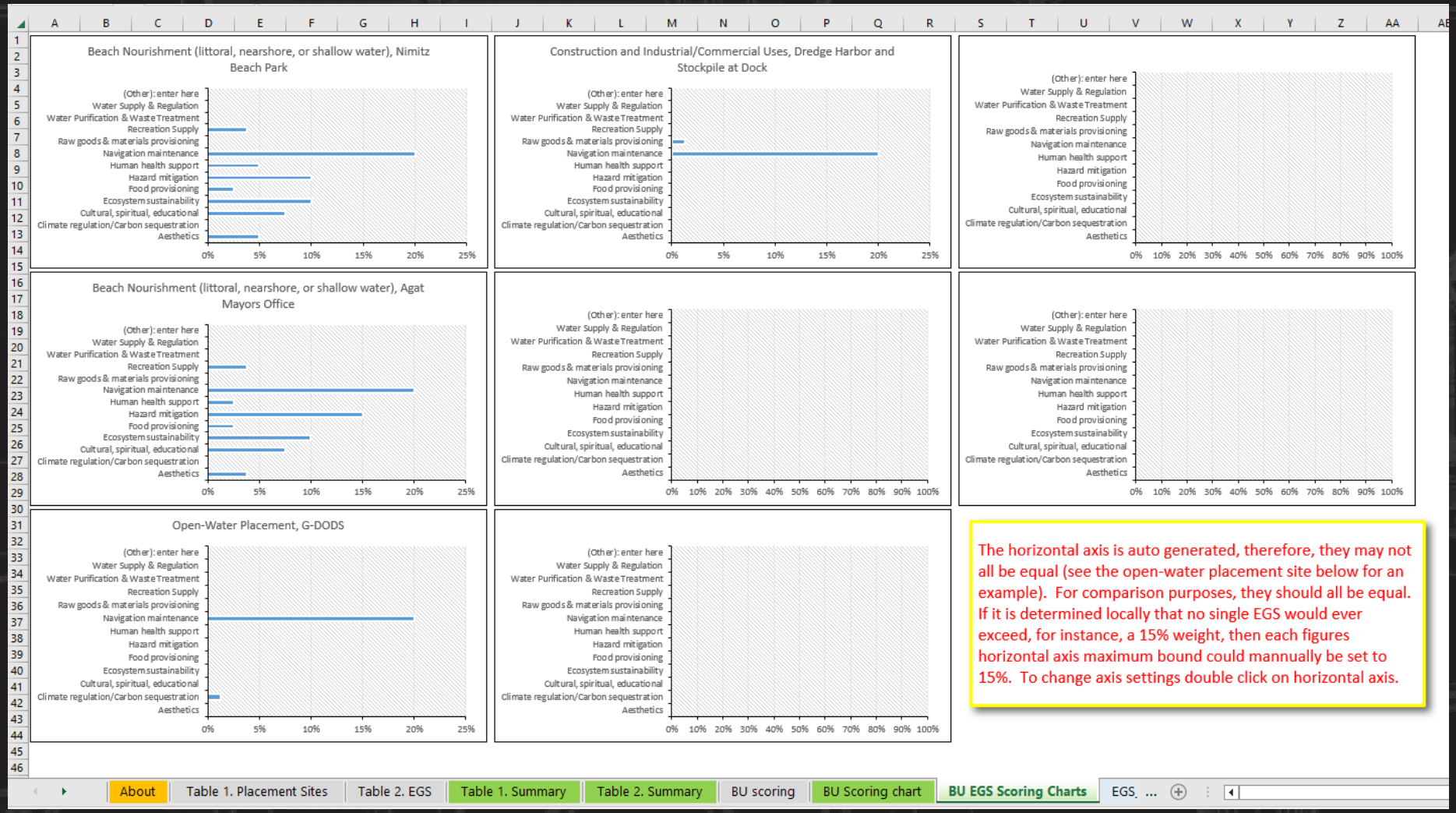
BU DECISION SUPPORT MATRIX – AGAT HARBOR, GUAM



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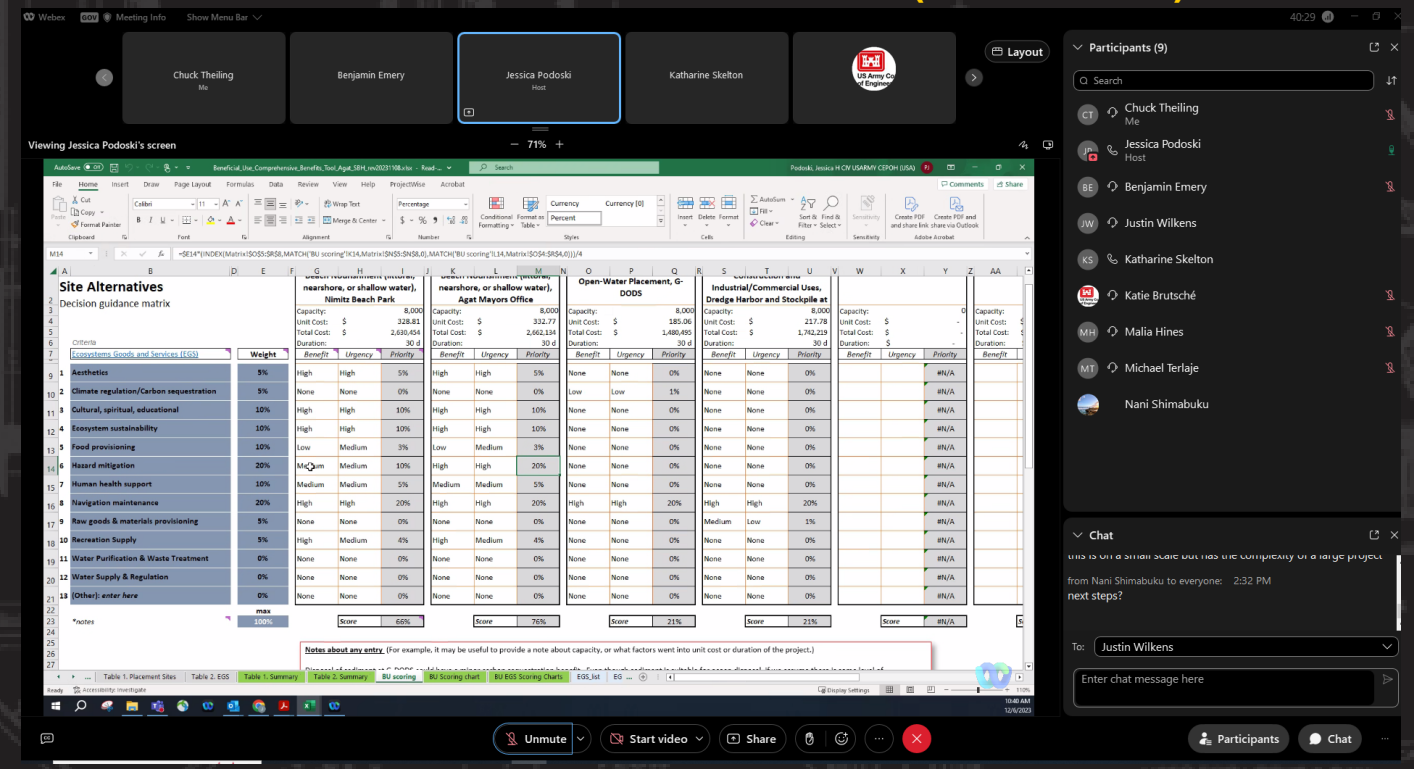
OUTCOME– AGAT HARBOR, GUAM

- BUCBT used to evaluate project
- HQ preliminary review (positive)
- BUCBT output will be used in Beneficial Use Decision Document Integration (BUDDI)
- NEPA documentation and review
- FY2025 Decision (?)

HQ Webex with POH & ERDC (6 Dec 2023)



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BU DECISION SUPPORT MATRIX – SUMMARY/NEXT STEPS

Recent Activity:

- Early development with HQ review
- Summer 2023 – NAD BUCBT evaluation
- Fall 2023 – POH BU DOTS engagement, MVR DOTS engagement

Next Steps:

- DOER funding received
- Web App development
- Regional dredge team workshops (FY24)
- Refinement, Web-based training (FY25)

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CONNECT WITH US:

Chuck Theiling
USACE ERDC-EL
Vicksburg, MS
Charles.h.Theiling@usace.army.mil

Justin Wilkens
USACE ERDC-EL
Vicksburg, MS
Justin.l.wilkens@usace.army.mil

Burton Suedel
USACE ERDC-EL
Vicksburg, MS
Burton.c.suedel@usace.army.mil

Ben Emery
USACE ERDC-CHL
Vicksburg, MS
Benjamin.e.emery@usace.army.mil

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