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SUBJECT: Outcomes from Board on Coastal Engineering Research's Executive Session, Chicago, IL

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26 Jun 2023

MEMORANDUM FOR The Chief of Engineers

SUBJECT: Outcomes from Executive Session of the Board on Coastal Engineering Research, 28-29 March 2023, Chicago, IL

1. The Executive Session of the Board on Coastal Engineering Research met in Chicago, IL, from 28-29 March 2023. The theme of the meeting was "Coastal R&D Needs to Address Environmental Justice and Non-Structural Solutions." In my absence, the meeting was Chaired by BG Daniel Hibner, Commander of the South Atlantic Division. The meeting was hosted by USACE's Chicago District and included a technical tour of Chicago Shoreline project sites. Table 1 summarizes the BCER Recommendations and Action items. The remainder of the memo provides a narrative summary of the meeting and more details on each recommendation and action item. A synthesis of meeting outcomes is as follows:

- *Developing equitable coastal solutions that incorporate Environmental Justice and Social Equity requires these principles be integrated into coastal planning, engineering, operational and management tools, with the capability for co-production of solutions with stakeholders and partners.*
- *These tools need to evaluate the integrated system response given a range of engineering, non-stationary environmental forcing, and physical and human response scenarios.*
- *Assessments must consider project life cycles (decadal scales) including non-structural measures, potential adaptation pathways, and associated uncertainties for each variable.*

2. This Executive session of the BCER focused on understanding the USACE planning study process, and application of Environmental Justice and Non-Structural Solutions for coastal projects, with specific application to coastal Great Lakes (Agenda provided in Appendix A). The USACE Chicago District gave the BCER an overview of coastal Great Lakes studies emphasizing R&D need to understand non-stationarity in coastal forcing on the Great Lakes (including ice coverage, water level, wave, and surge conditions); need for guidance for lake levels similar to sea level change guidance that is available for all other coastal areas; and needs for tools to implement analysis of net comprehensive benefits for Coastal Storm Risk Management projects. The technical site visits provided a tour of Chicago shoreline project sites which illustrated challenges of planning, engineering, and maintaining highly urbanized coastal projects over lifecycles with uncertainties and non-stationarity in environmental forcing and human response (Figures 1 and 2).

Table 1. March 2023 Executive BCER Recommendations and Action Items

NUMBER	RECOMMENDATIONS	
2023-REC-1	<p>Pursue Development of a National Coastal Risk Map <i>Integrate with physical processes (Coastal Hazards System), Coastal Storm Risk Management projects, Structural Inventory, and Social Vulnerability/ Environmental Justice; incorporate tools for adaptation pathways.</i></p>	
2023-REC-2	<p>Conduct a Forensic Review of Coastal Storm Risk Management Projects exceeding Original Cost Estimates <i>Original projects designs may not be sufficient; review why costs were exceeded, and document lessons learned for use in future project planning and design process. Review how benefits were quantified in each of the four benefit categories, and the criteria used to approve project construction.</i></p>	
2023-REC-3	<p>Collaborate with NOAA’s Interagency Group Collecting Data on Underserved Communities as part of NOAA’s Coastal Resilience Mission</p>	
NUMBER	ACTION ITEMS	DUE
2023-Exec-1	<p>Briefing on CHART Fundamentals. <i>Brief BCER on Fundamentals of the Coastal Hazard Analysis and Risk Toolkit (CHART); Describe CHART Capability to Evaluate Range of Engineering and Environmental Scenarios</i></p>	99 th Full BCER, Aug 2023
2023-Exec-2	<p>Briefing on NAD Environmental Justice and Non-Structural Challenges <i>Brief BCER on North Atlantic Division’s non-structural challenges and potential solutions</i></p>	99 th Full BCER, Aug 2023
2023-Exec-3	<p>Incorporating Environmental Justice into Coastal Analyses <i>Summarize Approaches to Incorporate Environmental Justice data into coastal planning, engineering and design</i></p>	99 th Full BCER, Aug 2023
2023-Exec-4	<p>BCER Feedback <i>At their request, provide BCER feedback on their effectiveness in providing impactful and actionable advice and recommendations to the Coastal and Hydraulics Laboratory, the Chief of Engineers, and the Secretary of the Army</i></p>	99 th Full BCER, Aug 2023
2023-Exec-5	<p>Proposal for 100th BCER Meeting <i>BCER requested a briefing with ideas to celebrate the 100th meeting of the board which will occur Summer 2024. Briefing will include proposed theme, location and venue, and suggested VIP attendees</i></p>	99 th Full BCER, Aug 2023
2023-Exec-6	<p>“Moonshot” R&D to Address Coastal Engineering Challenges <i>Brief the BCER on “moonshot” ideas in coastal engineering to address the next-generation challenges</i></p>	2024 Executive BCER, TBD

STUDY REACHES - NORTH



Figure 1. Overview of Chicago Shoreline Technical Tour Stops including Montrose Beach and Hook Pier (upper image), North Avenue, Oakwood Beach, and 67th Street/LaRabida (lower image) (courtesy USACE Chicago District)



Figure 2. BCER Members in Chicago, IL, 28 March 2023 (from left to right: Dr. H. Tuba Ozkan-Haller, BG Daniel H. Hibner, Dr. Ed Link, Dr. Nicole Elko, and COL John P. Lloyd)

3. The remainder of the agenda centered around the meeting theme and provided updates on BCER action items and initiatives. Discussion of Coastal Working Group priorities led to a recommendation for **Development of a National Coastal Risk Map** to integrate physical processes (e.g., through Coastal Storm Modeling System and Coastal Hazards System), USACE coastal projects (e.g., Coastal Storm Risk Management), structures (National Structure Inventory), and Social Vulnerability/ Environmental Justice measures. The National Coastal Risk Map would integrate economic, environmental forcing, and socially relevant measures to inform present-day risk and consequences at a detailed scale. Discussion of the planning process and need for Environmental Justice led to two additional recommendations: to **Conduct a Forensic Review of Coastal Storm Risk Management Projects exceeding Original Cost Estimates** and **Collaborate with NOAA's Interagency Group Collecting Data on Underserved Communities**, presently supported through NOAA's Coastal Resilience Mission. The BCER's support led to formalizing new CW Strategic R&D in FY24. The board asked for continued updates on status towards establishing an R&D Account.

4. BCER members requested follow-ups to discussions at the Executive Session, scheduled for the 99th BCER meeting to be held 15-17 August 2023. First, the BCER requested a detailed briefing on the **Coastal Hazards Analysis and Risk Toolkit (CHART) Fundamentals**, to discuss capability of CHART to evaluate a range of engineering and environmental scenarios. CHART is an integrated modeling system that calculates lifecycle Coastal Storm Risk Management project responses to a range of potential future forcing and climactic conditions, including impacts of status-quo and project alternatives. Outputs will provide the impact of each alternative on Flood Risk Management, Environmental Justice and Social Equity, and resulting economic and physical

CECW

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impacts to natural and built infrastructure. In part through BCER proponenty, CHART is a priority for USACE within the FY24 Strategic R&D Program. Second, the BCER asked for a summary of **NAD's Environmental Justice and Non-Structural Challenges** to understand ongoing issues related to non-structural solutions as noted by COL John P. Lloyd, NAD and BCER member. And third, the BCER asked for approaches to **Incorporate Environmental Justice into Coastal Analyses** (coastal planning, engineering, and design), as partially informed by ongoing Tactical R&D and planned in future Strategic R&D.

5. Board members requested feedback on two additional topics related to BCER future meetings. First, they requested a briefing at the next BCER Executive meeting to provide **BCER Feedback**, summarizing their effectiveness in providing impactful and actionable advice and recommendations to the Coastal and Hydraulics Laboratory, the Chief of Engineers, and the Secretary of the Army; and a **Proposal for the 100th BCER Meeting** which would occur during the summer of 2024. The briefing will discuss the proposed theme, location and venue, and potential VIP attendees.

6. The 99th Meeting of the BCER will be held in Miami, Florida, 15-17 August 2023 with a focus on community integration with non-structural and hybrid solutions.

7. For questions about topics discussed herein, please contact the Designated Federal Officer for the BCER, Dr. Julie Rosati, Julie.D.Rosati@usace.army.mil.

WILLIAM "BUTCH" GRAHAM
Major General, US Army
Chair, Board on Coastal Engineering Research

Attachment A: Agenda for the Board on Coastal Engineering Research’s Executive Meeting

AGENDA

Theme: Coastal R&D Needs to Address Environmental Justice and Non-Structural Solutions

Monday March 27, 2023

- 1800 2000 Registration Auburn/Cord Room 3rd Floor
- 1830 2100 Board Informal Dinner-Victory Tap: 1416 S. Michigan Ave.

Tuesday March 28, 2023

Meeting Attire: Military- Cammies/OCP; Civilian-Business Casual

Meeting Room: Auburn/Cord Room 3rd Floor

- 0700 0800 Registration
- 0730 0800 Breakfast
- 0800 Call to Order Dr. Julie Rosati
ERDC/CHL
- 0800 0830 Welcome and Introductions BG Daniel H. Hibner,
SAD, Commander
LTC Matthew Broderick,
LRC, Commander
- Orientation to Theme & Ongoing Priorities**
- 0830 0900 USACE Planning Process Mr. Jeremy LaDart,
USACE Mobile District
- 0900 0930 USACE Strategic Focus Areas:
Status and Ties to Theme Dr. Julie Rosati,
ERDC/CHL
- 0930 0945 **Break**
- 0945 1015 Coastal Working Group Annual
Meeting and R&D Needs
Related to Theme Mr. John Winkelman
Coastal Working Group
USACE/HQ

Panel Session #1: Great Lakes Coastal Processes and Projects

Moderator: Steve Fischer, LRC Deputy District Engineer

- 1015 1045 Great Lakes Coastal Resiliency
Study R&D Needs Ms. Kaitlyn McClain
USACE/LRC

CECW

SUBJECT: Outcomes from Board on Coastal Engineering Research's Executive Session, Chicago, IL

1045	1115	Chicago Shoreline GRR Study R&D Needs	Mr. David Handwerk USACE/LRC
1115	1145	Overview of Chicago Shoreline Site Visit	Mr. Steve Fischer USACE/LRC
1145	1215	Break; Transition to Busses	
1215	1300	Box Lunch -- Travel to Site Visit via Bus	
1330	1600	Site Visit - Montrose Beach - North Ave / Lake Shore Drive - 41st Street Beach, Burnham Park (completed shoreline segment) LaRabida Hospital / 67th Street	LRC Technical Leads Non-Federal Sponsor Representatives: Chicago Department of Transportation (CDOT) & Chicago Park District (CPD)
1600	1730	Return to Hotel via Bus	
1830	2100	Dinner Social- First Draft, 649 S. Clark St.	

BCER Executive Session Agenda: Wednesday, March 29, 2023

Meeting Attire: Military- Cammies/OCP; Civilian-Business Casual
Meeting Room: Auburn/Cord Room 3rd Floor

0730	0800	Breakfast	
0800	0830	Welcome Board Comments on Day 1	BCER

Panel Session #2: Ongoing Research, Needs and Gaps
Moderator: Julie Rosati, CHL

0830	0900	National Coastal Environmental Justice / Non-Structural Successes and Gaps	Ms. Susan Durden Institute for Water Resources
0900	0930	The Transition from Optimal Economic Protection toward Minimal Risk Based Protection in The Netherlands	Dr. M.J.F. (Marcel) Stive, Emeritus Professor, Technical University Delft
0930	0945	Break	

CECW

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0945	1015	Environmental Justice & Civil Works Planning Policy	Ms. Jerica Richardson USACE/HQ
1015	1045	Synthesis of R&D Successes & Gaps related to Theme	Dr. Jane M. Smith ERDC/CHL
Updates on BCER Initiatives			
1045	1115	U.S. Coastal Research Program Summary	Ms. Jessie Straub ERDC/CHL
1115	1145	Next-Gen Coastal Storm Modeling Tool, CHART	Mr. Kevin Hodgens, ERDC/CHL
1145	1200	Action Item Update: Expanding USACE International Collaborations in the Arctic	Dr. Dylan Anderson, ERDC/CHL
1200	1300	Lunch	
1300	1330	Status of Civil Works R&D Account	Dr. Ty V. Wamsley, ERDC/CHL

BCER Executive Session Agenda: Wednesday, March 29, 2023 (continued)

Closing and Next Steps

1330	1430	BCER Member Discussion	BCER
1430	1445	Plans for the 99 th BCER Meeting	Dr. Julie Rosati, ERDC/CHL
1445	1515	Public Comment	Written comments must be submitted to Ms. Tanita Warren, Tanita.S.Warren@usace.army.mil
1515	1545	Closing Comments	BCER
1545	1615	Review New Action Items	Dr. Julie Rosati ERDC/CHL
1615		Adjourn	BG Hibner SAD Commander