**DEPARTMENT OF THE ARMY**
U.S. ARMY CORPS OF ENGINEERS
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CECW

12 March 2020

MEMORANDUM FOR The Chief of Engineers

SUBJECT: Outcomes from Board on Coastal Engineering Research Board's Executive Meeting, Corvallis, OR

1. From 3-4 March, 2020, the Board on Coastal Engineering Research (CERB) held an Executive meeting in Corvallis, Oregon adjacent to Oregon State University's (OSU) campus, one of the leading coastal engineering and science academic institutions in the nation. The theme of this Executive CERB meeting was *Pacific Northwest Coast Processes and Coastal Resilience* with the intent to identify strategic coastal research priorities for the Pacific Northwest and the Nation. The meeting was structured to provide the Board a status update on previous action items and CERB initiatives; discuss local Corps Navigation, Coastal Storm Risk Management (CSRM), and Ecosystem challenges in the Pacific Northwest; and learn about OSU's ongoing coastal research, facilities, and opportunities to expand partnerships. Attachment A includes action items from the meeting.

2. The CERB was briefed on progress towards priority initiatives identified in previous meetings, including Sediment Transport Research Priorities and the U.S. Coastal Research Program (USCRP), and asked to provide input on these two topics (Action Item 2020-Exec-3).

a. Sediment Transport Research Priorities. Coastal sediment processes of concern for the Corps range from spatial and temporal scales that are short (meters/minutes) to very long (regions/decades). For both cohesive and sandy sediment processes, field and lab data were identified repeatedly as the most important need. These data will inform numerical modeling advancements and fundamental processes to improve Corps studies. The Board was asked for their recommendations to make the greatest leap-forward advancements in fundamental and applied sediment transport knowledge, to identify opportunities to leverage ongoing studies, and recommend approaches to increase coastal sediment research funding.

b. Quantifying the impact of the U.S. Coastal Research Program to the Corps and Nation. The USCRP is a CERB initiative that has expanded in the 5 years since inception, funding $6.3M of academic studies, a large percentage which are being conducted at the Corps' Field Research Facility in Duck, NC as part of a During Nearshore Event Experiment during Fall 2019 and 2020. Congress has recognized the value and impact of the USCRP, increasing the Corps' R&D funding through a Congressional Add by $5M in FY19 and $8M in FY20 for this collaborative research. USCRP funds are congressionally-directed to support coastal academic research that align with federal agency priorities and meet a societal need. The Board was presented with metrics to track the impact of the USCRP to coastal science and engineering in the Nation and Corps, and asked to provide feedback.

3. Briefings on OSU regional research studies were interspersed with local Corps' District coastal projects issues, providing opportunities for sharing knowledge. Attendees visited three OSU and Corps' field sites to illustrate the impact of coastal processes, Corps' challenges, and infrastructure in the region: OSU's Hatfield Marine Science Center in Newport; Yaquina Bay Jetties; and Yaquina Head.

a. OSU's coastal studies include innovations to reduce coastal erosion through natural and nature-based features such as vegetation and biocementation of coastal dunes, remote measurements of nearshore coastal processes, analysis of long-term cyclic coastal change, and tsunami hazard resilience studies and mitigations. Attendees toured a part of OSU's new earthquake-resistant marine science building. This innovative facility will provide vertical tsunami evacuation with stability for up to a magnitude 9.0 earthquake and subsequent tsunami up to 47-ft. A tour of OSU's O.H. Hinsdale Wave Research Laboratory demonstrated capability to generate tsunami waves and test coastal structures in their large wave basin, and provided an opportunity to meet with Masters' and PhD students and learn about their research.

b. Corps projects in the Pacific Northwest that could benefit from these advancements were discussed, including low-use navigation channels, dredging and the need for innovations in dredging capabilities for nearshore placement, planning for long-term sea level and storm climatology, and restoring ecosystem sediment transport and flow in Puget Sound and other locations. Challenges in maintaining jetty stability and safe navigation through the Corps' Yaquina Bay Jetty system were discussed during the site visit. Near the Yaquina Head, attendees visited a naturally-occurring cobble beach that provides a dynamic revetment, a concept utilized in some CSRM projects.

c. The Board discussed ways to more intentionally connect academic research advancements to Corps' District practitioners, and reward innovation. The USACE's Technology Innovation Strategy (in preparation) has proposed a trust fund to reward innovative District practices and sharing. The Board recommended a public-facing version of the Knowledge Management Portal to better communicate ongoing research advancements with academic and others (Action Item 2020-Exec-1), and including Water Resource Development Authorization (WRDA) language that enables innovation in Corps project studies (Action Item 2020-Exec-2).

4. An overarching topic continued from previous CERB meetings: the future of Coastal Engineering and Science R&D. The Board expanded previous recommendations, specifically ways to focus Civil Works R&D research towards Corps priorities, increase the coastal R&D budget, and incorporate fundamental research to spur innovation. There were two main outcomes from this discussion.

a. First, the Board requested an analysis of FY20 coastal R&D that is funded/unfunded as organized by Coastal & Hydraulics Laboratory service areas (Action Item 2020-Exec-4). The intent of this action item is to both analyze the type and number of research needs that are unfunded, and construct a gap analysis on those areas that are funded as related to coastal Navigation, CSRM, and Environmental business areas. This analysis will both serve to inform the next CERB with several new military members, and also highlight gaps in research areas.

b. Second, because this topic has matured through discussions and briefings in recent CERB meetings, the civilian Board members tasked themselves to document their recommendations for Civil Works coastal R&D in a brief report to the Chief (Action Item 2020-Exec-7). This position paper is intended to provide an external, unbiased perspective from the civilian board members with their recommendations on how the Corps' would best proceed in coastal engineering and science research. The report would be directed to the Chief and non-Corps interests.

**5.** The next Full CERB planned for late summer 2020 will focus on the topic of Compound Flooding (combined coastal storm surge, wind, riverine flow, saturated ground and precipitation) such as has been experienced in populous coastal urban cities such as Houston, TX during Hurricane Harvey, and in Wilmington, NC during Hurricane Florence. This meeting will likely have several new military members, and several action items are directed towards pre-briefing the new CERB members as appropriate (Action Items 2020-Exec-6, 2020-Exec-9).

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

SCOTT A. SPELLMON
Major General, US Army
President, Board on Coastal Engineering Research

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Attachment A: Action Items from 2020 Executive Session of the Coastal Engineering Research Board, Corvallis OR

| Number | Action Item | Due Date | POC |
|---|---|---|---|
| 2020-Exec-1 | Provide version of Knowledge Management Portal to enable public access to Civil Works R&D emerging products and research updates | TBD | Sanchez/ Rosati |
| 2020-Exec-2 | Work with HQ Regional Integration Teams (RITs) to ensure that Water Resource Development Act (WRDA) language enables research and innovation in future Corps projects | TBD | Rosati |
| 2020-Exec-3 | Reiterate CERB requests to provide input on: Sediment Transport R&D Priorities, and ways to quantify impacts of the U.S. Coastal Research Program to the Corps and Nation | Spring 2020 | Rosati / Smith/ Cialone |
| 2020-Exec-4 | Provide the CERB a summary of FY20 R&D Statements of Need, Strategic Needs, and Facility Modernizations intended for funding as organized by CHL service areas. Identify unfunded needs. Identify gaps as aligned on a spectrum from Fundamental, to Applied, to Operational activities. | 2020 Full CERB | Rosati |
| 2020-Exec-5 | Incorporate USACE Data Strategy and CW R&D Big Ideas into CHL Strategy | TBD | Wamsley/ Rosati |
| 2020-Exec-6 | At 2020 Full CERB, connect researchers with practitioners | 2020 Full CERB | Rosati |
| 2020-Exec-7 | Summarize "Recommendations for CW Coastal Research" for the Chief, Congress, and others | 2020 Full CERB | CERB Civilian Board |
| 2020-Exec-8 | Next CERB Executive meeting to be organized as a business meeting to discuss and close out action items | 2021 Exec CERB | Rosati |
| 2020-Exec-9 | Provide new CERB military members onboarding briefings including a flowchart of how CERB recommendations are considered and implemented | Summer 2020 | Rosati/ Wamsley |