



CHIEF OF ENGINEERS ENVIRONMENTAL ADVISORY BOARD
U.S. ARMY CORPS OF ENGINEERS (CECW-P)
441 G Street NW
WASHINGTON, D.C. 20314-1000

5 March 2014

LTG Thomas P. Bostick
Commanding
Headquarters, US Army Corps of Engineers
441 G Street NW
Washington, DC 20314-1000

RE: Environmental Advisory Board Work Plan for 2014-2015

Dear LTG Bostick,

This communication provides you the 2014-2015 Work Plan for the Environmental Advisory Board. This Work Plan is designed to address the Civil Works Strategic Plan, the publication on Engineering Solutions a Sustainable and Secure Future, the U.S. Army Corps of Engineers Campaign Plan, and USACE Environmental Operating Principles.

The Board recently has engaged in 4 tasks that result in ongoing involvement, letter reports, and/or working papers:

Environmental Operating Principles – Continuing Involvement
Prioritization Criteria for Aquatic Ecosystem Restoration Projects, Phase 1 -- Completed
Environmental Flows, USACE Facilities Operations, Sustainable Rivers Project – In Progress
Dam Removal Issues for the USACE – In Progress

The EAB is now considering the tasks it should undertake for the two-year period January 2014 through December 2015. The Board agenda is to provide advice regarding the following tasks.

Priority Tasks. The Board makes a primary commitment to complete the following tasks by December 2015.

New Multi-Part Task 1: Managing Ecosystem Restoration Projects

Sub-Task 1-1. Prioritization Criteria for Ecosystem Restoration Projects – Phase 2
Sub-Task 1-2. Defining the Federal Interest for Aquatic Ecosystem Restoration Projects
*Sub-Task 1-3. Redefinition of Economic Value for Ecosystem Restoration Projects;
Ecosystem Goods and Services*

New Task 2. The Nation's Aging Infrastructure and Aquatic Ecosystem Integrity

New Task 3. STEM and Diversity: Increasing the Corps' Outreach

New Task 4. Cross-Jurisdictional Options for Partnerships

Secondary Tasks. The Board will be cognizant of the importance of the following tasks by monitoring new information about them.

Coordinating NEPA and Corps' Regulatory Activities
Sustainable Energy in the USACE
Sustainable Water Resources and the USACE

Cross-cutting Themes. The Board recognizes the following general themes as cross-cutting components of all the Board's activities, and we will strive to indicate their importance in addressing the specific tasks we undertake.

Climate Change and its Implications for USACE Water Resource Management

The Challenge of Invasive Species for the USACE Infrastructure and Ecosystem Restoration

Formed in 1970, the EAB serves as an independent source of scientific information to you on all matters related to the environment. We focused on the environmental restoration mission of the Corps, but we also address environmental considerations in other Corps missions such as flood risk reduction, navigation, and coastal protection. Over the past decade, the EAB has generated 10 letter reports, 8 working papers, and made 14 field investigations.

For the first time in many years, the EAB will be at its fully authorized strength of 10 members. We anticipate that with a full complement of committed experts meeting at least 3-4 times per year, we will be able to increase the productivity of the board in terms of number and timeliness of completed tasks. We look forward to receiving your suggestions regarding direction for our activities over the next two years.

Sincerely,

A handwritten signature in black ink that reads "Wm L. Graf". The signature is written in a cursive style and is underlined with a single horizontal stroke.

William L. Graf, Chair
Chief of Engineers Environmental Advisory Board

Encl

CF:
Director of Civil Works
Designated Federal Officer
Alternate Designated Federal Officer

Environmental Advisory Board Work Plan for 2014-2015

by

Chief of Engineers Environmental Advisory Board

Introduction

This Work Plan for the Environmental Advisory Board provides guidance for Board activities in 2014-2015 by indicating subjects for emphasis along with associated products. The following plan defines those tasks that are in progress as of the date of this document, the new high priority tasks to be undertaken in 2014-2015, potential future tasks, an indication of two over-arching and cross cutting issues, and a time line. This document concludes with a description of the EAB, its members, and its policy framework.

EAB Tasks in Progress

EAB tasks that are in progress have resulted from assigned topics and those that have been self-initiated by the Board. Each of the following tasks will result in letter reports and working papers to communicate results and recommendations to the Corps leadership.

Ongoing Task: Environmental Operating Principles

Consistent with EAB suggestions the USACE is making a concerted new effort to ensure the broad distribution and implementation of the Environmental Operating Principles (EOPs) throughout the Corps. The EAB is committed to monitoring the progress of the EOPs, including providing support for a Command School segment on the subject. Although the EOPs are now firmly defined, the Board will continue to take an active role in their application. Anticipated completion: ongoing.

Just Completed Task: Prioritization Criteria for Aquatic Ecosystem Restoration Projects – Phase 1

The USACE has more than 600 authorized projects, a number far too large to financially support in any realistic future. USACE leadership, political leaders, and non-governmental commentators have suggested that this backlog might be prioritized to identify about 40 highly significant projects each year for heightened consideration that would improve USACE planning and management. EAB generated a working paper, *Determining the Corps' Interest in Aquatic Ecosystem Restoration*, on this subject in 2013. The EAB will continue to address this task in Phase 2, described below as a new project.

Task Nearing Completion: Environmental Flows, USACE Facilities Operations, Sustainable Rivers Project

USACE dams and their operation have damaged downstream ecosystems by drastically altered flows created by dam/reservoir release schedules to meet demands for hydropower, flood risk reduction, navigation, and water supply. As environmental restoration becomes an increasingly important Corps mission, it is possible to reverse some environmental damages and to restore some ecosystems through new approaches to dam/reservoir release schedules. The EAB seeks environmental flows that can be established within existing authorizations and existing operational commitments so that Corps dams can generate traditional economic benefits while at the same time providing new or restored lost or degraded environmental values and ecosystem services. Anticipated completion: December 2014. Task Leaders: Board members Graf and Atkinson.

Active Task: Dam Removal Issues for the USACE

The United States has about 80,000 dams on its watercourses. Dam removal has become increasingly common on American Rivers, with about 70 dams being removed each year, a number likely to soon reach 100 per year. Although most of the removed dams are small, a few large dams are also in the removal process or are now decommissioned, including Condit, Elwha, and Glines Canyon dams in Washington State; Savage Rapids Dam in Oregon; and Rindge and San Clemente dams in California. Lower but much wider structures have been removed from many New England streams. Dam removal has three crucial connections to USACE policy. First, as Corps infrastructure becomes increasingly obsolete, become too expensive to maintain and operate, or are no longer serving their authorized purposes, removal is a viable management option. Second, the removal of numerous small dams in a watershed simplifies and enhances the water resource management options offered by remaining Corps structures. Third, through the Clean Water Act Section 404 permit process, the USACE has direct control over all dam removals, and the Corps requires a sound national regulatory policy for guiding regulatory decisions. The EAB seeks to address these three areas to inform Corps leadership on choices and implications for Corp policy. Anticipated completion: December 2014. Task Leaders: Board members Graf and Hotchkiss.

EAB New Tasks for 2014-2015

New EAB tasks will include topics directly generated by Corps leaders in addition to topics proposed by the EAB. All EAB tasks will be question driven, with tasks based on the application of scientific data, direct observation in field visits, and expert judgment. The most common form of reporting the Board's reviews, advice, and recommendations will be through direct discussions with the Chief and Corps leadership at public meetings, letter reports, and working papers. The following subjects, with attending questions, are potential tasks that may be undertaken by the Board. This list is subject to revision and additions by Corps leadership. New tasks from this list will be initiated in Dec 2013, and completed and reported by Spring 2015. It is possible that other tasks may emerge based on unidentified events such as Hurricane Katrina and the Gulf oil spill.

New Multi-Part Task 1: Managing Ecosystem Restoration Projects

The EAB seeks to contribute to effective general management of ecosystem restoration projects undertaken by the Corps in three specific topical areas: prioritization of projects, specifying the Corps' federal interest in selected potential projects, and evaluation of ecosystem benefits. Depending on the evolution of Board's efforts and the changing needs of the Corps, this task might result in a single document encompassing all three topics, or the board might report conclusions and recommendations in three separate reports.

Sub-Task 1-1. Prioritization Criteria for Ecosystem Restoration Projects – Phase 2

As indicated above, the USACE has more than 600 authorized projects, a number far too large to financially support in any realistic future. USACE leadership, political leaders, and non-governmental commentators have suggested that this backlog might be prioritized to identify about 60 highly significant projects for heightened consideration that would improve USACE planning and management. In Phase 1 of this effort, EAB generated a working paper, *Determining the Corps' Interest in Aquatic Ecosystem Restoration*, on this subject in 2013. For Phase 2 the Board will focus on developing specific criteria or measures for identifying those projects that are of high significance in achieving the USACE mission to restore degraded aquatic ecosystems and prevent future environmental losses. Task Leaders: Board members Atkinson and Simenstad.

Sub-Task 1-2. Defining the Federal Interest for Aquatic Ecosystem Restoration Projects

Review of potential Corps projects by Congress, the Executive Branch (particularly the Office of Management and Budget), and external reviewers require that for all new projects the Corps define the federal public interest that is served by the project. Some proposed Corps projects in environmental restoration have not received approval because this federal public interest has not been effectively articulated. How can the Corps more effectively justify its role in environmental restoration given existing policies? How can the Corps better articulate its policies with new statements and innovative thinking about its role? Leaders for this task: Task Leaders: Board members Joe and Cook.

Sub-Task 1-3. Redefinition of Economic Value for Ecosystem Restoration Projects; Ecosystem Goods and Services

Present accounting practices in the Corps make environmental restoration projects difficult to justify in financial terms, but this is because the Corps uses outdated discounting approaches, does not effectively account for the total value of ecosystems, and is only now beginning to explore the valuation of ecosystem services. In some cases, the Corps is "leaving benefits on the table" because improved ecosystem services are resulting from its projects and operations, but they are not formally recognized. The recently released guidance from CEQ stresses the use of monetary and nonmonetary measures to quantify benefits and costs of projects. As the Corps and other federal agencies move to implement these requirements, focus will be on how ecosystem services should be quantified and used in economic valuation. How can the Corps update its accounting practices to ensure that it is not leaving environmental benefits unaccounted for in its analyses? How can better valuation for ecosystem services

improve the Corps' budget position and decision processes? Task Leaders: Board members Hotchkiss and Barber.

New Task 2. The Nation's Aging Infrastructure and Aquatic Ecosystem Integrity

The majority of the Corps' dams, levees, and other water infrastructure are either beyond or rapidly approaching their design life expectancy: many structures will need costly maintenance, reconstruction or replacement efforts within the foreseeable future; authorized uses for some structures are no longer valid; and operating costs for some structures exceed widely recognizable benefits. When these structures are modernized, modified for new purposes, operated in different ways, or removed, they create opportunities for environmental restoration of degraded aquatic ecosystems. What are specific opportunities for the Corps to meet its flood risk reduction and navigation responsibilities, while simultaneously improving ecosystem integrity? The Board will produce a formal report on these issues. Task Leaders: Board members Cook and Barber.

New Task 3. STEM: Increasing the Corps' Outreach

The USACE needs to be a larger player in the general effort to improve educational opportunities in science, technology, engineering, and mathematics (STEM) for two reasons: first the Corps is a primary consumer of new knowledge in such fields, and second, the Corps needs to improve the diversity of its workforce in STEM fields. Recruiting young STEM specialists into the Corps will be a key to the long-term intellectual health of the Corps. How can the Corps better interact with educational institutions to provide work experiences and recruiting opportunities for STEM students in universities, and how can the Corps broaden the diversity of its workforce to include larger numbers of women and racial, ethnic and other underrepresented populations? The Board will produce a formal report with a detail recommendation for action on STEM and diversity issues. Task Leaders: Preston and Graf

New Task 4. Cross-Jurisdictional Options for Partnerships

The modern USACE emphasizes watershed and river-basin scale planning and perspective to improve water resource management, a strategy that is especially helpful in achieving the Environmental Operating Principles. This strategy also automatically draws on a systems-based approach. Ecosystem restoration and protection are best pursued in a river-basin context. However, there are often no partnerships or planning structures that operate effectively at the river-basin scale to integrate the interests of federal, state, tribal, and local stakeholders. Basin or system boundaries are usually not coincidental with political boundaries. Prior to the early 1980s, river basin commissions were more common, but financial and political concerns cooled interest in them. Now, stakeholders continue to seek systems-based partnerships such as metropolitan water planning, integrative management institutions, and in a few cases river-basin commissions. One area that is in need of improved partnership strategies is the connection between river basins and coastal systems. What approach should the Corps use to provide insights into alternative means for better addressing water matters in a large river-basin perspective? The Board will produce a formal report recommending a course of action for the USACE in inter-jurisdictional partnerships. Task Leaders: Newcomb and Daniels.

Potential Future Tasks.

Discussions among Board members, interactions with managers and decision makers in various Corps districts, and with Corps leaders have indicated potential future interest in many ideas that might evolve into Board tasks, but three subjects have generated continuing interest even though they are not yet mature enough to outline as tasks: National Environmental Policy Act – USACE coordination, sustainable energy, and sustainable water resources. The Board does not anticipate any direct actions in these areas for the time being, though we have a continuing interest in these matters.

Coordinating NEPA and Corps' Regulatory Activities

The USACE administration of its regulatory responsibilities under various mandates such as the Clean Water Act often includes synchronization of regulatory processes with the Corps' responsibilities under the National Environmental Policy Act (NEPA). Regulatory activities are often geographically defined by boundaries that derive from the Corps' "jurisdictional limits." Sometimes the same approach is used to define the boundaries of the Corps' NEPA analysis, with the study boundaries being legally defined rather than functionally defined. Congressional mandate is that NEPA analysis should be broad, often much broader than Corps' jurisdictional limits. The result is often litigation on the scale of analysis used in NEPA processes, litigation that the Corps frequently loses. How can the Corps more effectively apply its emphasis on watershed-based analysis of NEPA activities, and how can this watershed-based approach be made to fit into Clean Water Act and other regulatory responsibilities? This task is complex and has far-reaching implications that require further refinement with input from HQ-USACE.

Sustainable Energy in the USACE

Energy sustainability is a key focus of the Department of Defense, the U.S. Army, and the USACE. The Corps is broadly responsible for the construction and maintenance of the Army's (and some other) infrastructure ranging from barracks to airfields. The Corps and the EAB have three primary points of interest in sustainable energy issues. First, reducing energy use and the resulting carbon footprint of Corps facilities and activities; second, exploring ways to develop alternative sources of energy such as solar or wind systems installed at Corps projects; and third, examining the effects of energy development by others (e.g., fracking, transmission lines) on Corps facilities and lands. The energy/water nexus is also an important issue for the Corps. How can the Corps contribute to national objectives related to sustainable energy and water?

Sustainable Water Resources and the USACE

Changing economic, social, and climatic conditions challenge water resource planners to find more flexible and resilient methods of supplying the nation's water. The Corps plays a central role national water management. How can the USACE modify its present practices to secure new water supplies and maintain a resilient water resource base for the nation? How can the Corps use its own operations and facilities to alter behavior of water users to a more strongly conservation-oriented perspective?

Cross-cutting Themes in EAB Tasks

Climate change and invasive species are two major cross-cutting themes recur in almost every task that the EAB undertakes, and we recognize that these themes are likely to play major roles in the Corps' mission related to environmental issues.

Climate Change and its Implications for USACE Water Resource Management

Climate change will be a major science and policy issue facing the USACE in coming decades. Wide-reaching change will likely affect the physical and biological environmental systems that concern the Corps, but hydrologic systems and sea levels, primary interests of the Corps, will likely experience particularly important changes with major societal implications. In many of the Board's tasks we will need to address a central question: what adjustments in policy and research directions should the Corps undertake now in anticipation of these changes?

The Challenge of Invasive Species for the USACE Infrastructure and Ecosystem Restoration

Invasive plant and animal species pose highly probable impacts and increased risks for the USACE, with significant problems already apparent. For example, invasive plant species and their control are particularly common in freshwater systems and in USACE reservoirs, while invasive fishes in the nation's freshwater systems pose national-level challenges that must be addressed at national scales. Other invasive species, such as the zebra mussel, pose direct threats to the operations of USACE infrastructure. Questions that affect several of the Board's tasks include: what sorts of policies are needed to mount effective control and containment efforts for invasive species, and what types of research are required for success in combating them?

Timeline for Tasks

Existing, in-progress tasks will be completed with final letter reports and accompanying in-depth working papers by mid-2014. The EAB will continue to monitor and be involved with the implementation of the Environmental Operating Principles, including participation in Command School and other Corps activities such as the Mississippi River Low and High Water Cruises if invited to do so. New Priority tasks initiated by December 2013 make up the agenda of the Board to be finished by August 2015. Additional tasks may be levied on the Board by Corps leadership. The reach goal for the Board is to complete all 5 of the priority tasks by August 2015. This ambitious goal is attainable because as of December 2013 the Board will have 10 active members and 3-4 working meetings per year to support the increased productivity of the EAB. The list of new tasks will be reviewed in August each year or at other times if necessary to account for new, unforeseen requirements.

The EAB

As the entity accomplishing these various tasks, the EAB has a useful, unique identity and position in the Corps of Engineers. Chief of Engineers LTG Frederick J. Clarke created the Environmental Advisory Board (EAB) in 1970 to obtain outside expert advice on environmental issues facing the U. S. Army Corps of Engineers (USACE). The EAB also serves as a means of outreach to build partnerships with the environmental community and the general public. The

Board presently meets 3 to 4 times per year, including work sessions, field investigations, and sessions with the Chief that are open to the public in accordance with the Federal Advisory Committee Act (FACA). The Board announces all public meetings in the *Federal Register*. A charter, renewed every two years, defines the Board and its operation. Board members participate on a voluntary basis and are not paid for their Board service.

The Board currently consists of the following members:

Dr. William L. Graf, Board Chair, University of South Carolina, river scientist
Dr. Samuel F. Atkinson, University of North Texas, environmental scientist
Dr. Mary Barber, RTI International, environmental scientist
Mr. Terry Cook, The Nature Conservancy, conservation scientist and administrator
Dr. Melinda Daniels, Stroud Water Research Center, river scientist
Dr. Rollin H. Hotchkiss, Brigham Young University, civil engineer
Mr. Robert Joe, City Councilman, City of South Pasadena, project manager
Dr. Kurt Preston, University of Nebraska-Lincoln, civil & environmental engineer
Dr. Tammy J. Newcomb, Michigan Department of Natural Resources, water policy manager
Dr. Charles A. Simenstad, University of Washington, wetland & estuarine ecologist

Composition of the Board will change in February 2015 with 3 members rotating off and 3 new members to be appointed. Members rotating off take a total of 18 years of board experience and the institutional memory gleaned from their tenure. The infusion of new members will result in a reset action for the culture of the board.

Communication between the EAB and the Chief occurs in three primary ways: (1) statements and discussions at public meetings held once or twice per year, (2) written letters and reports prepared by the Board and submitted to the Chief, and (3) open public Board meetings with the Chief typically twice each year.

Guiding Policies for the EAB

The EAB operates within a policy context defined by the USACE Strategies as generally outlined in *Sustainable Solutions to America's Water Resources Needs* (Department of the Army Civil Works Strategic Plan 2011-2015). Additional guidance is from the document *The U.S. Army Corps of Engineers: Engineering Solutions for a Sustainable and Secure Future*, the USACE Campaign Plan and its associated map, and from a set of specific policy directions defined by the document *U.S. Army Corps of Engineers Environmental Operating Principles*.

Although the EAB is an independent Department of Defense Federal Advisory Committee activities of the Board are linked to and supportive of the U.S. Army Corps of Engineers Campaign Plan. In general terms, the EAB is a primary search engine for comprehensive, sustainable, and integrated solutions to water resources challenges. The Board's reports from field experiences in rivers and on coasts throughout the nation contribute to this objective. The Board advises Corps' leadership on ways to respond to, recover from, and mitigate disasters, as exemplified by activities on the lower Missouri River after the 2011 floods. The Board's generation of and continuing support of the Environmental Operating Principles are a primary example of how the EAB advises the Corps in preparing for tomorrow's challenge of developing resilient managers, teams and processes.

The EAB supports the Campaign in specific, readily identifiable ways. The Board's activities connect directly to the Map of the Campaign Plan in the following items:

- 1c, reaching energy sustainability goals
- 2d, developing reliable, sustainable infrastructure
- 4a, maintaining and advancing technologies
- 4b, enhancing connections with stakeholders and the public
- 4c, addressing governance issues for the Corps.

The EAB also contributes to the USACE mission in many ways that connect directly to the Strategic Plan for Civil Works. The Board partly prioritizes its activities based on statements in the Strategic Plan. The Board pursues the strategic goals of using integrated water resource management, maintaining a holistic focus on water resource challenges, searching for ways to maximize economic services and environmental quality, and strives to ensure public safety while providing sustainable resources.

EAB Tasks Completed

During the last decade, the EAB communicated to the Chief and senior staff in 10 key correspondences on the following subjects:

Criteria for Ecosystem Restoration Projects (2013)
USACE Environmental Operating Principles (2012)
Lower Mississippi and Missouri River Floods (2011)
Gulf of Mexico Recovery (2010)
Sustainable Rivers (2010)
EAB Comments on the Proposed Principles and Guidelines (2010)
EAB Observations from ERDC Site Visit (2009)
Wetlands Jurisdiction (2006)
Hurricane Response (2005)

The EAB also explored some issues in considerable depth in 8 Working Papers that support the Board's recommendation and advice to the Chief on the following subjects.

Determining USACE Interest in Aquatic Ecosystem Restoration (2013)
Update of the Environmental Operating Principles (2009)
EAB Work Plan (2009)
Environmental Benefits and Performance Measures (2006)
Integrating Ecosystem Restoration into Programs of the USACE (2006)
Restoration Authorities of the USACE (2005)
EAB Work Plan (2005)
Independent Scientific Review (2004)

The completion of these tasks has entailed field visits over the last decade to Corps facilities and associated ecosystems on the Gulf Coast (Alabama, Mississippi and Louisiana), Lower Mississippi River (Louisiana), Lower Missouri River (South Dakota and Nebraska), Savannah River (Georgia and South Carolina), Chicago waterways (Illinois), Salt and Gila Rivers

(Arizona), Elwha River (Washington), the Everglades and Kissimmee River (Florida), Chesapeake Bay (Maryland), Salmon Habitat Restoration (Washington), and San Francisco Bay Delta (California).

In addition to these products, the Board has provided the Chief and senior staff with input on a number of environmental challenges including: climate change and sea level rise, invasive species, woody vegetation on levees, levee setbacks, mountain-top removal mining, and sediment management.

Board members also participated in the Strategic Leadership Conference, 3rd National Floodplain Summit, Environmental Community of Practice National Conference, National Ecosystem Restoration Conference, New Commanders Training Program, and National Collaborative on Sustainable Water Resources. A member of the Board serves on the Agency Technical Review Team for the Greater Mississippi Basin Post-Flood Assessment of Response Operations. Members of EAB have also participated in numerous peer review processes for the USACE, including peer reviews of the Engineer Research and Development Center.

Conclusions

A substantial portion of the mission of the USACE entails environmental considerations, ranging from taking into account the environmental consequences of water resource management to large-scale ecosystem restoration. The EAB is an instrument for supporting the Corps in meeting the challenges of managing the nation's water resources. In the next two years, the Board will undertake tasks to improve the Corps' management of ecosystem restoration projects, suggest ways to deal with the aging water-control infrastructure, improve and diversify the Corps' outreach efforts in STEM fields, and explore inter-jurisdictional partnerships. The Board will continue to be a leader in integrating the Environmental Operating Principles as an every-day practice in the Corps.