USACE Civil Works
Strategy and IOOS

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28 April 2015
Sustainable Solutions
To America’s Water Resource Needs
Civil Works Strategic Plan 2014-2018

US Army Corps of Engineers®
USACE Civil Works Vision

Contribute to the strength of the Nation through innovative and environmentally sustainable solutions to the Nation’s water resources challenges.

Strategic Goals

1. Transform the Program to deliver sustainable water resources solutions through integrated Water Resources Management.

2. Improve the safety and resilience of communities and water resources infrastructure.

3. Facilitate the transportation of commerce goods on the Nation’s coastal channels and inland waterways.

4. Restore, protect, and manage the aquatic ecosystems to benefit the Nation.

5. Manage the life-cycle of water resources infrastructures in order to consistently deliver sustainable services.
Overarching Strategy: **Integrated Water Resources Management**

- A holistic focus on water resource challenges and opportunities that reflects coordinated development and management of water and related resources.
- IWRM considers economic benefits, ecosystem quality and health and public safety in project formulation.
Cross-Cutting Strategies

- Systems Approach
- Collaboration & Partnering
- Risk-Informed Decision Making & Communication
- Innovative Financing
- Adaptive Management
- State of the Art Technology

You have a 1% chance of flooding this deep from hurricanes in the Lower 9th Ward / Arabi.
**CW R&D Overarching strategy**

Provide **state-of-the-art technology** through innovative science and **strategic collaboration and partnering** in support of Integrated Water Resources Management.

**CW R&D Goals:**

- **Anticipate** and address R&D to improve the scientific understanding and delivery of exceptional engineering technologies.
- **Create** sustainable, adaptive, cost-effective and integrated solutions.
- **Deliver** new science and engineering technologies into practice.
- **Maintain** scientific and technological resources through training, guidance and technical support.

**Strategic Documents**

- **CW Transformation**
- **Resilience Strategy**
- **USACE Infrastructure Strategy**
- **New R&D Strategy, FY15-20**
Transform Civil Works

Deliver enduring & essential water resource solutions by applying effective transformation strategies.

Planning Modernization

Budget Development Transformation

Quality Solutions & Services

Infrastructure Strategy
Improve Infrastructure Safety & Resilience

- Reduce the Nation’s risk and increase resilience to disasters
- Support the Department of Homeland Security/Federal Emergency Management Agency to provide lifecycle public works and engineering support in response to disasters
- Effectively and efficiently execute response, recovery, and mitigation
Facilitate Transportation on Coastal Channels & Inland Waterways

- Facilitate commercial navigation by providing safe, reliable, highly cost-effective and environmentally sustainable waterborne transportation systems
Protect & Manage Aquatic Ecosystems

- Restore aquatic habitat to a more natural condition in ecosystems in which structure, function, and dynamic processes have been degraded
- Reduce adverse impacts to the Nation’s wetlands and waterways through an effective, transparent, and efficient Regulatory process
- Clean up radioactive waste sites
- Manage, conserve, and preserve natural resources at USACE projects.
- Provide opportunities for quality outdoor public recreation.
Life Cycle Portfolio Management

- Support the Nation and the Army in achieving our energy security and sustainability goals
- Capitalize, recapitalize, operate and maintain water resources infrastructure to provide maximum value to the Nation.
- Provide reliable, renewable, hydropower to the Nation
- Provide water supply storage in partnership with state and local interests.
Infrastructure Strategy: Alternative Financing

- We are trying to think creatively about our approach to project financing and delivery

- Two national infrastructure challenges we are trying to address through alternative financing
  - For existing infrastructure, sustain performance, extend service life, and/or buy down risk for the Nation
  - Accelerate delivery of new infrastructure to reduce life cycle costs and achieve earlier accrual of project benefits to the Nation

- Value associated with CW infrastructure to the economy, commerce, environment, and job creation:
  - CW portfolio of over 3,000 infrastructure assets, with capital stock value of approx $190B
  - Is experiencing negative performance trends (unscheduled lock outages, lower peak hydropower avail, climate change, etc.)
Alternative Financing: Public-Private Partnerships (P3s)

- **Demonstration projects** explore potential to apply P3 within existing authority as another delivery tool
  - Examine P3 applicability in different project contexts and the extent to which national infrastructure needs can be filled within existing authority
- The diversity of projects in the Civil Works program typically requires unique solution sets for different asset types
  - A P3 structure that works for an FRM project will be different than that for a navigation system, and both will be different yet from a hydropower application
- In some cases we are developing a P4 type structure - with USACE and a Non-Federal entity partnering with the private sector to execute a project
Environmental RD&T Strategic Needs & Priorities

• Establish & Incorporate Ecosystem Goods & Services in Corps Planning and Environmental Benefits Evaluation
• Characterize Physical, Chemical and Biological Variations Affecting Degradation in Coastal Environments
• Improve Capabilities to Design and Implement Aquatic Ecosystem Restoration in Urban Settings
• Optimize Management of T&E and Invasive Species
• Deliver sound engineering and scientific solutions that meet Planning Modernization guidelines
Navigation RD&T Strategic Needs & Priorities

- Extend the useful life of existing navigation infrastructure
- Operate and manage national waterborne transportation assets as an integrated system
- Optimize and prioritize channel availability for commercial freight movement
- Engineering with nature to enhance ecosystem and project processes, benefits and services
- Implement eNavigation throughout the National MTS
- Deliver sound engineering and scientific solutions to align with the Planning Modernization initiative
Flood & Coastal RD&T Strategic Needs & Priorities

- Determine Risk & Uncertainty for Project Alternatives Evaluation & Performance
- Optimize Management of Coastal & Estuarine Resources
- Assess Comprehensive & Multidisciplinary Management of Urbanized Watersheds
- Improve Flood Risk Management & Water Control Infrastructure Resiliency & Reliability
- Engineering with nature to enhance ecosystem and water resources processes, benefits and services
- Deliver sound engineering and scientific solutions that meet Planning Modernization guidelines
USACE Significant Activities
IOOS Committees/Participation

• Lead: National wave data collection through partnership w/Coastal Data Information Program (Scripps) since 1977
• Co-Chair Interagency Working Group Ocean and Coastal Mapping (IWG-OCM)

IOOS/IOOC Teams

• Data Management & Communications DMAC Steering Team
• DMAC Working Group
• Reference Implementation Workgroup
• Quality Assurance of Real-Time Ocean Data - QUARTOD BOA
• QUARTOD Temperature and Salinity Committee
• Numerical Modeling Strategy Team
• Puerto Rico Numerical Modeling Testbed Team
• Animal Telemetry Network Steering Committee
  • Biological Integration and Observation Task Team
  • IOOS Summit Steering Team
IOOS Associations & USACE District Participation

- IA Board Representative – 4
- IA Participation – 13 of 21 Coastal Districts
Waves: Coastal Ocean Data Systems Program

USACE contribution to IOOS

Wave Observations
- Coastal Data Information Program (CDIP)
  - With Scripps
  - IOOS component before there was IOOS
- Nat’l Data Buoy Center directional sensors

Wave Hindcasts (Wave Information Study-WIS)
- 20+ years of 3-hourly hindcasted wave data
- Nationwide & online

USACE Field Research Facility, Duck, NC
- Coastal Observation, models, research

Island Surge and Wave Measurements, Modeling
- Pacific Islands Land Ocean Typhoon Experiment
- Surge & Wave Island Modeling Studies
- In partnership with NOAA, FEMA, Others

2009 National IOOS Wave Observation Plan
- USACE/NOAA co-leads
USACE Needs From IOOS

• Greater Participation From Other Federal Agencies
  - Identify Agency needs and contributions
  - Reach beyond IOOC into organizations for participation
  - Establish virtual IOOS liaisons – networking

• Expand DMAC Participation to Other Federal Agencies

• More IOOS Association – Federal Agency Interaction

• Expand IOOS Data Variables to Meet USACE needs
  - Coastal (nearshore) - waves, water-levels, winds, currents, bathymetry, sediment properties/transport
  - Environmental - endangered species, ecosystem restoration, environmental assessments, habitat, land use

• Integrated Federal Agency Numerical Models

• Integrate JALBTCX Data and Products into IOOS Catalogue and Products
Discussion