USACE Civil Works Program: 
Challenges and Opportunities

Presentation to 
Society of American Military Engineers
DoD & Federal Agency Programs Briefings

25 March 2014

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Deputy Commanding General
Civil & Emergency Operations

US Army Corps of Engineers
BUILDING STRONG®
USACE Priorities

- Support the Warfighter
- Transform Civil Works
- Respond to Disasters
- Prepare for Tomorrow
Global Agricultural Zones and the Basis for US Greatness
U.S. Ports and Inland Waterways: Vital to our National Economy

2 Billion Tons of domestic and import/export cargo annually
The 20th Century “Golden Age” of Infrastructure Construction
Recreation areas: 370 M Visitors/yr
Generate $18B in economic activity, 500,000 jobs

¼ of Nation’s Hydropower: $1.5B + in power sales

12,000 miles of Commercial Inland Waterways transport goods at ½ the cost of rail or 1/10 the cost of trucks

#1 Federal Provider Of Outdoor Recreation
54,879 Miles Of Shoreline at USACE Lakes

Stewardship of 11.7 Million Acres Public Lands

~12,700 Miles of Levees

926 Shallow & Deep Draft Harbors

137 Major Environmental Restoration Projects

USACE Contributions to the Economy and the Environment

US Ports & Waterways Convey > 2.2 billion Tons Commerce
Corps Maintained Ports Provide Strategic Deployment Capability
Harbor Maintenance Trust Fund collects $1.3 billion revenue

BUILDING STRONG®
Each dollar spent on the USACE Civil Works program generated ~ $9.00 in economic benefits and $2.70 in revenues to the U.S. Treasury.

<table>
<thead>
<tr>
<th>Program</th>
<th>NED Benefits (Billions of Dollars)</th>
<th>Net NED Benefits (Billions of Dollars)</th>
<th>U.S. Treasury Revenues (Billions of Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood Risk Management</td>
<td>$23.1</td>
<td>$22.5</td>
<td>$7.3</td>
</tr>
<tr>
<td>Coastal Navigation</td>
<td>$8.7</td>
<td>$7.9</td>
<td>$3.3</td>
</tr>
<tr>
<td>Inland Navigation</td>
<td>$7.6</td>
<td>$7.0</td>
<td>$1.9</td>
</tr>
<tr>
<td>Water Supply</td>
<td>$6.5</td>
<td>$6.5</td>
<td>$0.1</td>
</tr>
<tr>
<td>Hydropower</td>
<td>$2.2</td>
<td>$2.0</td>
<td>$1.1</td>
</tr>
<tr>
<td>Recreation</td>
<td>$3.3</td>
<td>$3.0</td>
<td>$1.1</td>
</tr>
<tr>
<td>Leases and Sales</td>
<td></td>
<td>$0.1</td>
<td></td>
</tr>
<tr>
<td><strong>Total Annual NED</strong></td>
<td><strong>$51.4</strong></td>
<td><strong>$48.9</strong></td>
<td><strong>$14.8</strong></td>
</tr>
</tbody>
</table>

Notes:
(1) Net NED Benefits represent total NED benefits minus the costs of operations, maintenance, expenses, the USACE Regulatory program, FUSRAP, oversight by ASA(CW) and other USACE Civil Works programs.
(2) The Benefits and Revenues numbers are not additive.
Our Nation’s Infrastructure GPA:

- Roads
- Railways
- Runways
- Rivers
Aging Water Resources Infrastructure

- Half of Locks 50+ Years Old
- Average Age 62 Years Old

Crumbling lock wall, Lower Monongahela L&D 3, opened 1907

Leaking Miter Gates, Upper Miss Lock 19

Concrete deterioration at Chickamauga Lock and Dam Project, Tenn.
Lockport Canal, Illinois River

Lock and Dam 27, Chain of Rocks Canal, Mississippi River
Lockport video
Deteriorating Infrastructure
Critical Reliability Programs
Accelerating O&M Pressure
USACE Civil Works
Construction Backlog

Backlog of Congressionally Authorized Projects by Business Line

- Environmental Infrastructure, 5%
- Environmental, 10%
- Flood Damage Reduction, 35%
- Shore Protection, 10%
- Navigation - Ports, 20%
- Navigation - Inland, 5%

Billions

- $2 billion
- $60 billion

Construction Funds (annual) vs. USACE Backlog
Historical Investments by USACE Functional Category
1928 to 2011

- ~$70.00 per person in the US!
- ~$56.00 per person in the US!
- ~$18.00 per person in the US!
USACE Capital Stock Value by Functional Category 1928 to 2011

Billions of FY 2011 Dollars

1983 Peak ~ $250B
2009 ~ $165B

Coasting on remaining benefits:
Presently at $48.8 Billion annual NED benefits

Navigation  Flood  Multipurpose  MRT  Dredging
Long Term Civil Works Funding Trends

Appropriation ($Million in 2012 $)
Current Environment

► WRDA & Reform
► Non-Earmark Environment
► Budget Cuts
► Travel cuts/meeting attendance
► Downsizing
► Debt Limit
► Governance Turmoil
## CW Program (by Account) ($ Millions)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>1471</td>
<td>1587</td>
<td>1350</td>
<td>1656</td>
<td>1125</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>2398</td>
<td>2287</td>
<td>2588</td>
<td>2861</td>
<td>2600</td>
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<tr>
<td>MR&amp;T</td>
<td>234</td>
<td>238</td>
<td>279</td>
<td>307</td>
<td>245</td>
</tr>
<tr>
<td>Regulatory</td>
<td>205</td>
<td>182</td>
<td>200</td>
<td>200</td>
<td>200</td>
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<tr>
<td>FUSRAP</td>
<td>104</td>
<td>100</td>
<td>104</td>
<td>103</td>
<td>100</td>
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<tr>
<td>Investigations</td>
<td>102</td>
<td>119</td>
<td>90</td>
<td>125</td>
<td>80</td>
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<tr>
<td>FCCE</td>
<td>30</td>
<td>26</td>
<td>28</td>
<td>28</td>
<td>28</td>
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<tr>
<td>Expenses</td>
<td>182</td>
<td>175</td>
<td>182</td>
<td>182</td>
<td>178</td>
</tr>
<tr>
<td>OASA (CW)</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>4731</td>
<td>4719</td>
<td>4826</td>
<td>5467</td>
<td>4561</td>
</tr>
<tr>
<td>Proposed Rescission</td>
<td>-100</td>
<td>-28</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Breakouts of $777M Funding Pots

By Business Program

• Navigation: $387 million
• Flood Risk Management: $255 million
• Other Authorized Project Purposes: $135 million

By Account

• Investigations: $41 million
• Construction: $437 million
• MR&T: $28 million
• O&M: $271 million
Major Construction Projects
($5 M or More in FY15 Budget)

Numbers in circles = $million budgeted
Mandatory Spending Crowds Out Everything Else

**Percent of Federal Spending**

<table>
<thead>
<tr>
<th>Year</th>
<th>Discretionary</th>
<th>Mandatory</th>
<th>Net Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>62%</td>
<td>31%</td>
<td>7%</td>
</tr>
<tr>
<td>Total Spending 1970: 19 percent GDP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>36%</td>
<td>57%</td>
<td>6%</td>
</tr>
<tr>
<td>Total Spending 2012: 22 percent of GDP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2050</td>
<td>18%</td>
<td>60%</td>
<td>22%</td>
</tr>
<tr>
<td>Total Spending 2050: 29 percent of GDP</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


**NOTE:** Projections are based on CBO’s extended baseline scenario. GDP is based on estimates following July 2013 revision. Mandatory programs include Social Security, major federal health programs, other entitlement programs and offsetting receipts.
More than a tenfold increase in GDP since 1928!

Similar level of investment will not keep pace with GDP.

Decreasing levels of investment magnify the effect.
United States Relative to Other Nations

Figure: GDP Per Capita versus Gross Fixed Investment as a % of GDP: Underinvestment in the US

Estimates for 2012. The rank of Gross fixed investment as % of GDP is in the parenthesis.

At 13% of GDP, US is one of the lowest in the world. All following the 2008 recession...

Low investment in infrastructure!
(equivalent to Greece)
Relative Quality of US Infrastructure

The World Economic Forum ranks US infrastructure behind that of most other comparable advanced nations.

Overall infrastructure quality index, 2012–13
Top 15 of 144 countries
Scale: 1 = Extremely underdeveloped; 7 = Extensive and efficient by international standards

1. Hong Kong 6.7
2. Singapore 6.5
3. Germany 6.4
4. France 6.3
5. Switzerland 6.2
6. United Kingdom 6.2
7. Netherlands 6.2
8. United Arab Emirates 6.1
9. South Korea 5.9
10. Spain 5.9
11. Japan 5.9
12. Luxembourg 5.8
13. Canada 5.8
14. United States 5.8
15. Austria 5.8

Sector-specific indexes, 2012–13
Out of all 144 countries

- Ports United States #19
- Roads United States #20
- Power and telephony United States #21

Source: World Economic Forum; McKinsey Global Institute analysis

Not even among the top 15!
Global Navigation & Inland Waterway Investments

- China plans to invest $32 Billion in Yangtze River port & navigation development, 2011-15

- Brazil is investing $27 Billion in ports over the next 4-5 years

- The Army Corps of Engineers’ annual Navigation budget approximates $2 Billion
What to Do?

- **TRANSFORM CIVIL WORKS**: Develop a Balanced and Sustainable Civil Works Program

- **Balanced**:
  - Funding Accounts
  - Business Lines and Missions
  - Watersheds / Geography

- **Sustainable**:  
  - Across All Mission Life Cycles
  - Reduced Mission Requirements
  - Adequate Resources / Financing Mechanisms
  - Environmentally
Transforming Civil Works

Planning Transform’n

Methods of Delivery → Delivering on Commitments

Watershed-Informed Budget Development

Infrastructure Strategy
Investment Strategy: Public-Private Partnership Possibilities

- Recreation
- Hydropower
- Harbors
- Flood Risk Management
- Disaster Recovery

Leveraging *Private and Other Agency Capital*
Environmental Restoration & Sustainability Program
Communicating the Strategy

- Strong Points
- Factsheets
- Congressional Hearings & Briefings
- Press Releases
- Reports
- Strategic Engagements
- Policy Guidance
- Webinars
- Videos
- Brochures
- Articles
- Strategic Messages
- Websites
- OpOrds & FragOs
- The Washington Post
What Can You Do?

• *Tell the Story*

• Help us *Transform Civil Works*

• *Collaborate with ALL Stakeholders* and Beneficiaries of the Civil Works Program

• *Facilitate a Watershed-Informed* approach

• Help the Nation *Prioritize* efforts, programs, and projects

• Support innovative Approaches for *Alternative Resourcing*
Water management (and water reform) is ALWAYS political.....

Ancient Chinese Characters:

River + Dike = Political Order
**USACE Vision**
Engineering solutions for our Nation’s toughest challenges.

**USACE Mission**
Deliver vital public and military engineering services; partnering in peace and war to strengthen our Nation’s security, energize the economy and reduce risks from disasters.

What will be OUR Legacy?
Questions & Discussion
Ready for the Panama Canal?
U.S. Harbors 45’ or Greater

WEST COAST
Seattle/Tacoma (>50’)
Oakland (50’)
LA/Long Beach (>50’)
San Diego (47’)

GULF COAST
Mobile, AL
New Orleans
Houston/Galveston/Texas City
Corpus Christi
Freeport, TX

EAST COAST
NY/NJ (50’ underway)
Baltimore (50’)
Hampton Roads (50’)
Morehead City, NC
Charleston, SC
We Can’t Wait

Advance infrastructure projects at 5 East Coast ports:
- NY / NJ
- Charleston
- Savannah
- Jacksonville
- Miami
# FY16 Budget Development Timeline

As of 9 Jan 14

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-17 Jan</td>
<td>Review of draft FY 2016 Budget EC by HQ BLMs, SMEs, Account Managers</td>
</tr>
<tr>
<td>27 Jan</td>
<td>FY 2016 Budget EC – Major Changes – BLM briefs to the MSC CWID Chiefs</td>
</tr>
<tr>
<td>31 Jan-14 Feb</td>
<td>MSC Review, Update of draft EC, and Coordination w/ HQ BLMs (Phase II)</td>
</tr>
<tr>
<td>3-7 Mar</td>
<td>Final draft FY 2016 Budget Development EC to HQ BLM/SMEs/Account Managers for review</td>
</tr>
<tr>
<td>7 Mar</td>
<td>Posting of Final draft FY 2016 Budget Development EC on Intranet for MSC/District use</td>
</tr>
<tr>
<td>31 Mar</td>
<td>Publish Final FY 2016 Budget Development EC on Internet</td>
</tr>
<tr>
<td>14 Apr-16 May</td>
<td>Planning CoP/MSC CWID Chiefs brief Proposed Continuing GI For FY16 Budget</td>
</tr>
<tr>
<td>21 Apr-16-May</td>
<td>BLM priority ranking eligibility of GI studies and RI-Investigations by BL</td>
</tr>
<tr>
<td>28 May</td>
<td>Planning CoP/BLM LIR for Continuing GI &amp; RI-I applicable Budget Issue Paper to OASA</td>
</tr>
<tr>
<td>30 Apr</td>
<td>MSC CWID Chiefs brief Proposal Continuing CG For FY16 Budget</td>
</tr>
<tr>
<td>6 May</td>
<td>BLM priority ranking eligibility of CG projects and RI-Construction by BL</td>
</tr>
<tr>
<td>27 May</td>
<td>BCR Changes from FY2015 due to OASA(CW)</td>
</tr>
<tr>
<td>4 Jun</td>
<td>BLM LIR for Continuing CG &amp; RI-C applicable Budget Issue Paper to OASA</td>
</tr>
<tr>
<td>16 Jun</td>
<td>MSC CWID Chiefs brief Proposal O&amp;M For FY16 Budget</td>
</tr>
<tr>
<td>16 Jun</td>
<td>Final MSC Budget Submissions Loaded in CWIFD</td>
</tr>
<tr>
<td>17 Jun-22 Jul</td>
<td>BLMs Review, Conduct QA, and assign initial Hqs rank by BL</td>
</tr>
<tr>
<td>21 Jul</td>
<td>New Starts and Resumptions and Remaining Items for GI and CG briefings</td>
</tr>
<tr>
<td>16 Jun-26 Jul</td>
<td>Balance the Crosswalk tables</td>
</tr>
<tr>
<td>23 Jul</td>
<td>Pre-Briefing to PID Chief</td>
</tr>
<tr>
<td>24 Jul</td>
<td>Pre-Briefing to DCG and C&amp;EO</td>
</tr>
<tr>
<td>23 Jul</td>
<td>Review of draft crosswalk before brief to OASA</td>
</tr>
<tr>
<td>28 Jul</td>
<td>Submit and Brief Pre-Final Budget and balanced Crosswalk tables to OASA(CW)</td>
</tr>
<tr>
<td>NLT 7 Aug</td>
<td>Engagement 1 - Briefing to CCG and MSC Cdrs by ALL on budget submission</td>
</tr>
<tr>
<td>13 Aug</td>
<td>Briefing to ASA(CW) on Final Recommended Budget across BLs</td>
</tr>
</tbody>
</table>
Reducing Risk

Initial Risk

- Zoning: Local
- Building Codes: State, Local
- Risk Communication: Federal, State, Local
- Evacuation Plans: Federal, State, Local, Individual
- Insurance
- Natural Storage
- Non-Structural (Floodproofing, Elevation, etc)
- Structural (Levees, Dams, Floodways)

Identify risks and make decisions based on relative risk – recognize not all will get the same protection

- Absolute protection from floods is not possible – must plan for exceedence (Residual Risk)
- Cannot rely on single structural approach - implement a portfolio of measures

BUILDING STRONG®
Modified from USACE
California Meets the Challenge: Taking Steps to Manage Flood Risk in the Central Valley

- Initial Risk
  - Critical Levee Repairs
  - Levee Evaluations
  - State-Local Early Implementation Projects
  - Federal Projects
  - Central Valley Flood Protection Plan
  - Mitigation Banking
  - Flood Corridor Easements
  - Designated Floodways
  - Reservoir Reoperation and Forecast Based Operation
  - Climate Change Adjustments to Flood Hydrology
  - Floodplain Mapping
  - Annual Flood Risk Notifications
  - New Building Standards
  - Emergency Response Plans
  - Emergency Supplies and Stockpiles
  - Improved Maintenance and Inspection Procedures
  - Local Agency Reports on Maintenance
  - Local Agency Risk Acknowledgement
  - Shared Liability between State and Local Agencies
  - 200-year Minimum Protection for Urban Areas
  - General Plan Amendments and Zoning Ordinances

Time / Investment

Residual Risk
To Meet the Challenges, We Need to Change

• We are in a non-earmark environment
• We have funded too many studies/projects at less than capability
• It takes too long to complete studies and projects
• Sponsors and stakeholders are concerned about timeliness and cost effectiveness
• We need emphasis on importance of quality assurance and quality products
Challenges in CW’s Future

- **Aging infrastructure**: Critical need for robust asset management & a long-term recapitalization program
- **Domestic discretionary funding**: Need for innovative financing, capital stock divestment, market-based solutions
- **No focus on America’s infrastructure needs and investment** – need to elevate water infrastructure to national level of attention
- **Competition for water**, including increasing environmental & water supply needs
- **Climate change adaptation & water-food-energy nexus**
Trends Influencing CW’s Future

- **Aging infrastructure**: Critical need for robust asset management & a long-term recapitalization program
- **Major Floods & Lessons learned**: Katrina, 2011 Floods, Super Storm Sandy
- **Focus on sustainability**: IWRM perspective, collaborative planning, revised PR&G
- **Climate change adaptation** & water-food-energy nexus
- **Competition for water**, including increasing environmental & water supply needs
- **Intersection of international water security** & USACE OCONUS missions
- **Globalization**: Waterborne trade implications, homeland security & international water resources, expansion of Panama Canal
- **Domestic discretionary funding**: Need for innovative financing, market-based solutions
Harbor Deepening Challenges

- **Study Process:** Difficult and lengthy from study to authorization
- **Funding:** Federal appropriation process uncertainties
- **Dredging:** Escalating costs, placement, environmental mitigation
- **Handling Facilities and Space:** Need expanded cargo handling facilities and improved intermodal connections
Moving National Infrastructure Policy

Reforms:

- Limit feasibility studies to 3 years, $3 M
- Penalty for agencies failing to render decisions within 180 days of Corps completion of NEPA process.
- Credit for nonfederal entities building flood damage reduction projects
- Pilot program for nonfederal construction
- Minimum annual HMTF spending, moving toward total annual HMTF receipts and interest.
- Use of certified project managers, risk-based cost estimates, acquisition procedures and best management practices.
- Inland Waterways User Board to meet at least twice a year.
- Encourages development of hydropower generation at existing Corps projects.
- Amends the Planning Assistance to States program to include levee safety.
- Re-issued regulations regarding vegetation on levees
# Implementation of the Capital Projects Business Model

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Management Certification</td>
<td>Olmsted team and Lower Mon team certified; KY Lock team working on certification</td>
</tr>
<tr>
<td>Risk-based cost estimates</td>
<td>Updated for Olmsted; Lower Mon scheduled for spring 2014</td>
</tr>
<tr>
<td>Conduct Independent External Peer Reviews of IMTS project</td>
<td>Conducted on Olmsted Post Authorization Change Report and certified cost estimate and will be completed for all future projects and PACRs</td>
</tr>
<tr>
<td>Appoint a board member to each IMTS Project</td>
<td>Rep appointed to Olmsted team; others in progress</td>
</tr>
<tr>
<td>Project status updates to IWUB</td>
<td>Updates provided at each meeting</td>
</tr>
<tr>
<td>Include Board Chairman signature on PMPs</td>
<td>Unable to accommodate per Corps counsel, but participation in meetings ok.</td>
</tr>
<tr>
<td>Evaluate use of Early contractor involvement</td>
<td>To be considered when new projects begin</td>
</tr>
<tr>
<td>Apply Military Construction Principles</td>
<td>Large projects are difficult to fully fund given Civil Works budget constraints</td>
</tr>
<tr>
<td>Establish new start recommendation procedures</td>
<td>Limited applicability at this time given IWTF constraints. Will revisit in FY14 with CPBM update.</td>
</tr>
</tbody>
</table>
# Implementation of the Capital Projects Business Model

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtain approval for CPBM model regulation</td>
<td>Awaiting implementation via OPORD</td>
</tr>
<tr>
<td>Create Design Centers of Expertise</td>
<td>Inland Nav Design Center established</td>
</tr>
<tr>
<td>Develop standardized designs</td>
<td>Inland Nav Design Center is developing lessons learned to be used when design work proceeds. Used at small scale by designing similar components for KY and Chick Locks</td>
</tr>
<tr>
<td>Revisit use of continuing contracts-increase threshold to $50M from $20M</td>
<td>Requires Congressional legislation. Prohibited by Congress in approps bills from using continuing contract on IWTF projects</td>
</tr>
<tr>
<td>Increase Capital Investment Program Funding to $380M per year</td>
<td>Limited by IWTF revenues</td>
</tr>
<tr>
<td>Decrease IWTF cost share for major rehabs on all dam projects and major rehab lock projects below $100M</td>
<td>Requires Congressional legislation; opposed by Administration</td>
</tr>
<tr>
<td>Establish cost-sharing cap</td>
<td>Requires Congressional legislation; opposed by Administration</td>
</tr>
<tr>
<td>Increase waterways fuel tax</td>
<td>Requires Congressional legislation</td>
</tr>
</tbody>
</table>
# USACE Lock Levels of Service

<table>
<thead>
<tr>
<th>Level</th>
<th>Title</th>
<th>Guideline</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Full Service</td>
<td>&gt; 1000 Commercial Lockages</td>
<td>24x7, Every Day</td>
</tr>
<tr>
<td>2</td>
<td>Reduced Service</td>
<td>500-1000 Commercial Lockages</td>
<td>2 Shifts, Every Day</td>
</tr>
<tr>
<td>3</td>
<td>Limited Service</td>
<td>&lt; 500 Commercial Lockages; or &gt; 1000 Recreational Lockages</td>
<td>1 Shift, Every Day</td>
</tr>
<tr>
<td>4</td>
<td>Scheduled Service</td>
<td>Limited Commercial and/or substantial Recreational traffic, with a more consistent daytime pattern of lockages</td>
<td>Lockages at set times each day</td>
</tr>
<tr>
<td>5</td>
<td>Weekends &amp; Holidays</td>
<td>Little or no Commercial Lockages; &gt; 500 Recreational Lockages</td>
<td>1 Shift per day, weekends and holidays only</td>
</tr>
<tr>
<td>6</td>
<td>Service by Appointment</td>
<td>Limited commercial traffic with no consistent pattern of lockages (&lt;500 commercial or recreational)</td>
<td>Commercial Lockages by appointment</td>
</tr>
</tbody>
</table>

**Data source:** USACE Lock Performance Monitoring System, (LPMS) database; FY 2010 and 2011 average Lockages

Future: 3-year rolling average