



## USACE Campaign Plan Objective 3C

Deliver reliable infrastructure using a risk-informed  
asset management strategy

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## USACE Campaign Plan

- **Vision:** A GREAT engineering force of “highly disciplined people” working with our partners through “disciplined thought and action” to deliver innovative and sustainable solutions to the Nation’s engineering challenges.
- **Mission:** Provide vital public engineering services in peace and war to strengthen our Nation’s security, energize the economy, and reduce risks from disasters

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## Campaign Plan Goals

- **Goal 1:** Deploy and support the warfighter and disaster recovery operations
- **Goal 2:** Deliver enduring and essential water resource solutions through collaboration with partners and stakeholders
  - Planning, collaboration, streamline regulatory processes, Gulf Coast recovery
- **Goal 3:** Deliver innovative, resilient, sustainable solutions to the armed forces and the Nation
  - Improve resilience, asset management, innovation (R&D)
- **Goal 4:** Build a well trained, competent team with the tools necessary to deliver high quality products

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**Objective 3c:** Deliver reliable infrastructure using a risk-informed asset management strategy

Develop a strategy, which includes an integrated national plan for [assessing the infrastructure](#) and an [investment strategy](#) for operation, maintenance, and enhancements [to improve reliability, minimize risk, and meet projected infrastructure demands](#). USACE is already engaged in several key ongoing programs that directly support this objective including: Asset Management, Dam Safety, Levee Safety, and the Inland Marine Transportation System initiative.

### Strategies:

1. Continue the USACE-wide deployment and utilization of the [Facility and Equipment Maintenance \(FEM\)](#) system.
2. Implement [national condition assessment methodologies](#) to the navigation, flood risk management, hydropower, and recreation infrastructure to ensure consistency in prioritization and development of the investment strategies.
3. Apply a national risk-based [investment strategy](#) to 75% of major business lines by [utilizing a common risk matrix](#) for the preparation of the budget Engineering Circulars

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## Drivers

- External
  - Civil Works infrastructure plays a vital role in US economy
  - Growing competition for funds within US Government
- Internal
  - Aging infrastructure
  - Limited resources
  - Growing competition for funds within Corps' expanding missions
  - Ability to convey a clear business case for investing in water resource infrastructure
    - To augment
    - To maintain

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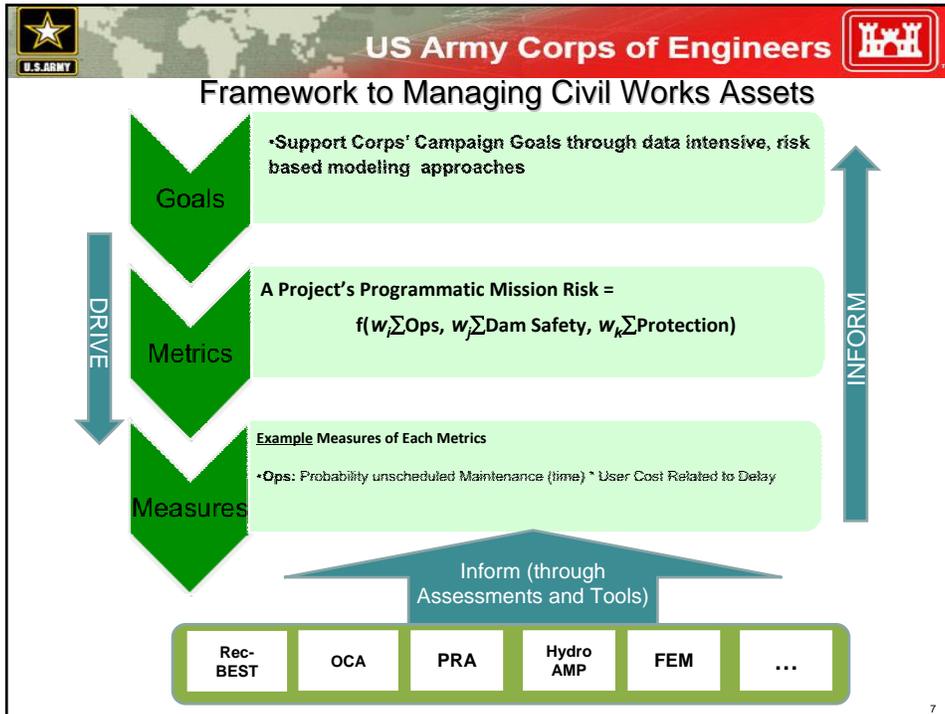


## Asset Management Program

- Mission: **Managing the life-cycle of infrastructure assets** with innovative and adaptive strategies **to ensure** those assets continue to provide **value to the Nation and** meet expected levels of service while **mitigating risk**
- Simply stated:
  - Inventory (what you own)
  - Condition (what is the condition of what you own)
  - Investment Strategy (driven by risk-informed decision-making)

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- ### Condition Assessments for Inland Navigation
- Assess the project at the Sub-System Level or the Component Level
  - Keep a record of the people who perform the inspections
  - During Assessment, user have ability to view previous reports and photos to assist in their decision
  - Users will be able to upload documents and provide comments on each component
  - Once submitted, results are sent in for QA/QC
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## Operational Condition Assessments Inland Nav

Upload for QA/QC when Done    Inspector Name(s)

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## Operational Condition Assessments

OCA Condition at Component, Sub-Component and Sub-Sub-Component Level...

Constructed Asset Risks and Associated Components Risks

Algorithms

Algorithms

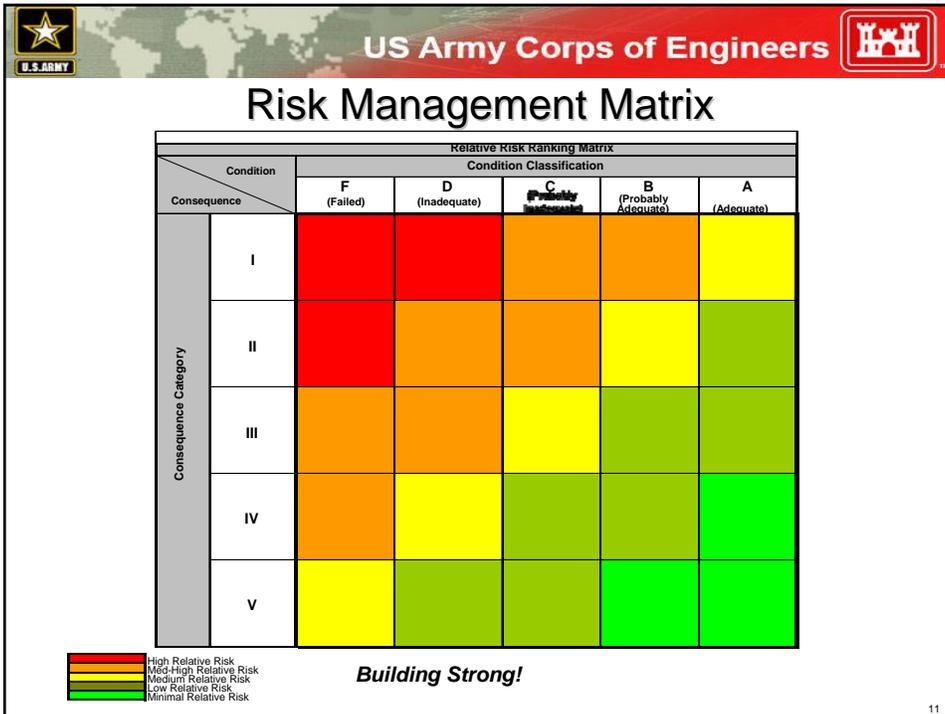
...as it relates to relative risk of mission impact for that level...

**RESULT -- Project Priority Summary for LRD with drill down capability**

Navigation Project	O	M	S	C	Components at Risk
LID 52	Red	Green	Green	Green	Bear Traps, Miter Gates, Lock Walls, Access
Orange	Red	Green	Green	Green	Miter Gates, Dam/Lock Bulkheads, Crane
McIntosh	Red	Green	Green	Green	Dam/Miter Gates
Markland	Red	Green	Green	Green	Miter Gates, Valves, Bulkhead Crane
LID 53	Red	Green	Green	Green	Lock Walls (Missing Section), Miter Gate, Valves, Access
Smithland	Red	Green	Green	Green	Dam Gates & Connections, Sill Damage
Ensworth	Red	Green	Green	Green	Dam Gates, Bulkheads & Structure
Montgomery	Red	Green	Green	Green	Dam Gates, Valve Machinery, Bulkhead Lifting Beam
London	Red	Green	Green	Green	Dam Bulkheads, Bulkhead Crane
Marmet	Red	Green	Green	Green	Lock Wall, Mooring Cell, Dam Gates

Priorities

Overall Project Risk Summary



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## How it Supports Objective 3c

- Improve performance
- Reduce long-term costs
- Regional strategy to justify investments based on mission impacts
- Process driven by measurable metrics
- Budget submissions that clearly reflect regional/National priorities based on risk

US Army Corps of Engineers Great Lakes & Ohio River Division

### Asset Management Approach

**Asset Management Goal**  
 Optimize both the long term and day-to-day performance, considering when to make investments, for a complex portfolio of physical assets

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### Operational Condition Assessment Timeline

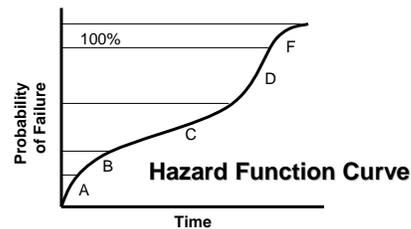
- Inland Navigation structures
  - Two tier approach
    - Baseline condition assessments (FY2010)
      - Existing reports
      - Expert elicitation
      - Risk index computed (input for 5x5 matrix)
      - Online tool to compute and collect information
    - Risk assessments (3 years after baseline)
      - Periodic assessment information
      - Fault tree analysis
      - Failure curves for all components
      - Risk and probability of failure computed

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### Objective 3c Initiatives - Where We Are Going Risk & Reliability/Condition Assessment

- Merge “science” of Risk and Reliability with Expert Elicitation for condition assessment
- Establish relationship between “Probability of Failure and Condition Index A-F” for each component



- Establish a suite of Hazard Curves for component types
- Improve credibility, FEM use
- Automated Analysis & Presentation Tool

Condition Index	
Condition	Definitions
A-Adequate	• Limited probability of failure
B-Probably Adequate	• Low probability of failure
C-Probably Inadequate	• Moderate probability of failure
D- Inadequate	• High probability of failure
F-Failed	• The feature has FAILED

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