Metro East Levee Systems

Informational Brief to SAME

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AGENDA

- Congressional and Sponsor Interest
- Metro East Levee Program Overview
- Project Background
- FPD Objectives
- Corps Role in Project
- Activities by Levee System
Congressional and Sponsor Interest

Senators:
- Richard Durbin
- Mark Kirk

Congressional Representatives:
- 12th District: Mike Bost
- 13th District: Rodney Davis
- 15th District: John Shimkus

Sponsor:
- Local Levee Districts
- Southwestern Illinois Flood Prevention District Council (FPD)

Chief Supervisor of Construction and the Works – Mr. Charles Etwert
Metro East Levee Program Overview

- The Metro East Levee Program consists of five levee projects located in Madison, St. Clair, and Monroe Counties, Illinois.
  - Wood River Levee
  - Chain of Rock Levee
  - East St. Louis Levee
  - Prairie du Pont / Fish Lake Levees
- The Metro East Levee System protects 280,000 residents and workers, navigation and transportation, and minimizes job loss
- Total value of industrial, commercial, and residential property protected is $12.5 Billion
Project Background

- Flood of 1993 (49.58’ on St. Louis gage)
  - Equivalent to a 380-year flood event
  - 86.3 percent of levee height inundated
- Levee system authorized to protect against stresses greater than the 1993 flood
- Underseepage required extensive flood fighting to maintain protection
- August 2007, FEMA announced levees would be de-accredited as a result of underseepage
- July 2009, Southwestern Illinois Flood Prevention District Council was formed to finance, manage and oversee the repair and restoration of the levee systems
- 2010-2012, USACE completed studies on WR, Mel Price, ESTL, COR, PdP/FL
- February 2015, FPD approved Resolution to restore to the Federally Authorized LOP
- Underseepage corrections on the Metro East Projects are in progress
FPD Objectives

Short Term Goals
- Mandate Corps’ use of PLAs for construction contracts
- In process of constructing modifications (9 contracts) to attain 100-year level of protection to meet FEMA accreditation

Long Term Goals
- Restore Authorized Level of Protection
- Use WRRDA 2014 Authorities to provide cost share funds as WIK
- Restored levees returned to local levee district to O&M

Funding Capability
- Locally-funded with $160M in tax revenues
- Sponsor’s bonding capacity is insufficient to completely restore the authorized level of protection
- Projects are cost shared at 65% FED /35 Non-FED
Corps Role in Project

MISSION: Provide engineering solutions that improve safety, energize the economy, sustain the environment and enhance the quality of life for those we serve through expertise, innovation and partnerships

- Documented and Developed solutions to address underseepage problems
- Obtained report approval (2010-2012)
  - Inform FPD of what features to design, where to place them and required design standards - Ongoing
  - Design work - Ongoing
  - Provide Section 408 Review, permission, and observation on initial 9 FPD contracts – Ongoing
  - Deficiency correction construction - Ongoing
- Completed Construction on Chain of Rocks Design Deficiencies (AUTHORIZED LOP)
  - Conduct a National Flood Insurance Program (NFIP) Levee System Evaluation Report (LSER) (Upper Wood River Levee) - Pending Submission to FEMA
  - Baseline Condition Risk Assessment (BCRA) will be used for National Flood Insurance Program Levee Certification (East St. Louis and Chain of Rocks) - Pending Completion
Wood River Levee

**Constructed:** By USACE - 1950 under original authorization

**Level of Protection:** The levee is constructed to 54 feet on the St. Louis Mississippi River gage (approximately 500-yr level of protection)

**Operation:** The Wood River Drainage and Levee District operates and maintains the levee

**Federal Activities:**
- **Reconstruction:** Construction complete. Addressed aboveground aging system features (TPC: $25.8M)
- **Design Deficiency:** Addresses underseepage and through seepage issues (ETPC: $51.9M)
- Budgeted and carryover funds are being used to perform Section 408 observation of FPD construction activities, continue Authorized Project design, and shallow cutoff wall construction
- **Work In-Kind (WIK) MOU executed 19 November 2014**
- Continue to move forward with WIK implementation
Mel Price Segment

Issue:
- Adjacent to Melvin Price Locks and Dam navigation pool
- Uncontrolled underseepage during normal conditions

Federal Study Activities:
- Design Deficiency LRR approved August 2012
- Subsurface investigation identified need to further evaluate alternatives
- Supplemental report incorporates risk assessment guidelines and includes expert elicitation from a national cadre of experts to recommend a permanent solution to the underseepage problem
- Supplemental report approval pending
- Initiate design following report approval and appropriation

Interim Risk Reduction Measures:
- Underseepage impacts are mitigated by interim risk reduction measures (IRRM) until permanent corrections are in place.
- IRRM and sponsor’s construction can be used as basis for seeking FEMA accreditation of Upper Wood River System.
**East St. Louis Levee**

**Constructed:** By USACE during the 1950’s under original authorization

**Level of Protection:** The levee is constructed to 54 feet on the St. Louis Mississippi River gage (approximately 500-yr level of protection)

**Operation:** The Metro East Sanitary District

**Federal Activities:**
- **Reconstruction:** Construction complete. Addresses aboveground aging system features (TPC: $60.6M)
- **Design Deficiency:** Addresses underseepage and through seepage issues (ETPC: $152.3M)
- Budgeted and carryover funds are being used to perform Section 408 observation of FPD construction activities and continue Authorized Project design
- Baseline Condition Risk Assessment (BCRA) by the Risk Management Center to be used for NFIP levee certification
- Emergency Action Plan developed for ESTL
- MOU for potential WIK credit executed 6 March 2015
- Continue to move forward with WIK implementation
Chain of Rocks Canal Levee

**Constructed:** By USACE during the 1950’s under original authorization

**Level of Protection:** The levee is constructed to 54 feet on the St. Louis Mississippi River gage (approximately 500-yr level of protection)

**Operation:** Operated and maintained by the USACE

**Non-Federal Sponsor:** The Levee is Federally owned; no local sponsor.

**Federal Activities:**
- Design Deficiency - Addressed underseepage
- Construction completed in 2015 (TPC: $60.1M)
- Provides Authorized Level of Protection
- Baseline Condition Risk Assessment (BCRA) by the Risk Management Center to be used for NFIP levee certification
Prairie du Pont / Fish Lake Levee

**Built:** By USACE during the 1950’s under original authorization

**Level of Protection:** The levee is constructed to 54 feet (with closure structures constructed to 52 feet) on the St. Louis Mississippi River gage (approximately 500-yr level of protection)

**Operation:** Prairie du Pont Levee & Sanitation District and Fish Lake Drainage & Levee District operates and maintains the levee

**Federal Study Activities:**
- **Design Deficiency:** Addresses underseepage and through seepage issues (ETPC: $53.1M)
- LRRR Approved October 2012
- Work will provide authorized level of protection
- Limited carryover funds are being used to perform required Section 408 Reviews and finalize features for underseepage corrections
Underseepage Corrections

- Grouting/abandoning existing wood stave relief wells
- Installing new relief wells
- Additional pump stations
- Earthwork (seepage berms and clay fill)
- Slurry trench cutoff walls (deep and shallow)
- Mitigation, relocations, and easements
Lower Wood River Deep Cutoff Wall

- Cement / Bentonite cutoff wall
- 1,900 linear foot / 135 feet deep (tied into bedrock)
- Panel construction (136 total panels) took approximately 6 months

Approximate Location of Lower Wood River Deep Cutoff Wall
LWR Deep Cutoff Wall - Plant / QC

Batching and Mixing Plant

QC Trailer – Permeability Testing
LWR Deep Cutoff Wall - Clamshell

Clamshell Excavation (0’ to 50’)
LWR Deep Cutoff Wall - Hydromill

Hydromill Cutter (50’ to 135’)

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Questions?

Chain of Rocks - South Berm Underseepage Correction