Union County Levees and LAMP

Levee repairs and FEMA's new Levee Analysis and Mapping Procedures

Sean Sheffer, PE, CFM
Davis Murphy, PE, CFM
Sturgis Levee Background

- Authorized by the Flood Control Act of 1938.
- Completed in 1969.
- There is a total of 20,782 feet of earth levee.
- 454 feet of concrete wall.
- 2 Pump Stations, 8 closures, 3 road closures.
- Protection will provide 3 feet of freeboard against 1937 flood. Elevation of 376.0 NAVD ‘88.
- Original cost of $1,919,800 in 1972 = $11,000,000 today.
Uniontown Levee Background

- Authorized by the flood control act of 1938.
- Completed in 1951.
- 9,996 Feet of Earth Levee.
- 3 Pumping Stations and 7 Closures.
- Built to protect against 1937 magnitude flood.
- Original cost of $1,143,079 in 1972= $6,500,000 today.
Accreditation Status

- FEMA NFIP Requirements
- Impacts of non-accreditation
- USACE requirements
- Flood Insurance Rates
Funding Sources

- CDBG
- Coal Severance
- USDA Funds
Levee Repair Process

- Collect Existing Data
- Conduct Field Inspections
- Perform Hydrologic and Hydraulic Analysis
- Perform Interior Drainage Analysis
- Conduct Geotechnical Analysis
- Repair or replace all sluice gates and pumping stations
- Slip-lining of existing pipes
- Final approval from USACE and FEMA
Levee Analysis and Mapping Procedure (LAMP)

- New approach to more accurately define flood risk around non-accredited levee systems.
- Created in response to letters of concern from members of Congress.
- The guidance document was finalized by FEMA on July 1, 2013.
- 25 Pilot projects selected as first implementation of the guidance.
Levee Analysis and Mapping Procedure (LAMP) cont’d

- Allows for treating levee systems as a number of distinct ‘reaches.’
  - Sound Reach (fully accredited reach)
  - Freeboard Deficient
  - Overtopping
  - Structural-Based Inundation
  - Natural Valley (without levee)

- LAMP emphasizes stakeholder engagement through creation of LLPT.

- No change to existing levee accreditation requirements (44 CFR 65.10).
Union County and LAMP

- Union County levees and the KY RiskMAP program were selected as one of the LAMP Pilot Projects.

- Both levee systems in Uniontown and Sturgis have expired PAL agreements.

- The Union County LAMP Pilot Project was initiated in late 2013.
Unions County and LAMP

- Held first LLPT meeting on March 11th, 2014
- LLPT consisted of key stakeholders:
  - Union County: FP Manager, Public Works, Emergency Mngmt.
  - USACE Levee Safety
  - KDOw
  - FEMA
- Collected data:
  - Detailed survey of levees
  - Levee inspection reports
  - LiDAR & other GIS data
  - Etc...
Union County and LAMP

- Working alongside Union County officials KDOW was able to incorporate levee repair schedules into LAMP project timeline.

- USACE Louisville provided review & comments on H&H engineering for additional study credibility.

- Detailed two-dimensional hydraulic modeling completed to assist Union County with updating Operations & Maintenance documentation.
LAMP is a new way to define flood risk around non-accredited levees rather than just assuming the levee isn’t there.

For future map updates in Kentucky, LAMP will be used to define regulatory flood hazard areas affected by non-accredited levees.

KDOW and its study contractors are providing leadership on how to apply LAMP
- Strong relationships with local stakeholders
- High quality engineering and mapping products
Questions?

Sean Sheffer PE, CFM — Sean.Sheffer@unioncountyky.org
Davis Murphy PE, CFM — davis.murphy@aecom.com