WALTON LAKE DAM
OVERTOPPING AND WASHOUT

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SUMMARY

- First call
- Lake history
- Lake uses
- Emergency repairs
- Interim repairs
- Funding
- Permanent repairs
- Implementation
- Conclusion
LOCATION

Litchfield
FIRST CALL

- Sunday, September 14, 2008
- Several inches of rain
  - 6.6 inches in prior 96 hours
  - 3.9 inches in prior 24 hours
- Lake flowing around spillway
- Several homes evacuated
- Closed road along dam
OVERFLOW MOVIE
OVERFLOW MOVIE
PHOTOS AFTER WASHOUT EVENT

September 18, 2008
LAKE HISTORY

• Walton Lake Dam built in 1870s
• First water supply lake for City of Litchfield
• Used as water supply until 1920s
• Used as park since 1920s
• Park - 58 acres
• Lake - 29 acres
• Drainage area - 4.5 square miles
• Walton Lake owned by City of Litchfield
• Park is operated by Litchfield Park District
• Road is under Montgomery County jurisdiction
LAKE AND PARK USES

- Fishing
- Boating (self propelled or electric motors)
- Basketball
- Volleyball
- Disc golf
- Softball and baseball
- Remote control cars tracks
- Four pavilions (reunions, outings)
EMERGENCY REPAIRS

- Sandbags
- Siphon pipe for drawdown
- Close road
SANDBAG REPAIR
SIPHON PIPE FOR DRAWDOWN
INTERIM REPAIRS

- Engineering evaluation of bridge foundation
- Construction drawings and IDNR permit
- Remove debris
- Haul fill dirt to site
- Place and compact dirt
  - Under spillway
  - In dam washout
- Install gabions
- Re-open road

Work not completed due to winter onset
INTERIM REPAIR
FUNDING

• EMERGENCY AND INTERIM REPAIRS
  – Federal Emergency Management Agency (FEMA)
  – Federal share 75%
  – City & County share 25%

• PERMANENT REPAIRS
  – Federal Highway Administration (FHwA)
  – First 6 months 100%
  – Project Federal share 80%
  – Project County share 10%
  – Project City share 10%
  – Funding through IDOT

• INTERGOVERNMENTAL AGREEMENT
REGULATORY

• Illinois Department of Natural Resources

• Issued letter day after overtopping
  – Maintain drawdown in lake
  – Repair will be major modification
  – Will issue first permit for dam

• Issued permit for interim repairs

• Will issue permit for permanent repairs
PROJECT DESIGN

• No records of construction
• Watershed boundary and characteristics
• Hydrologic and hydraulic analysis – HEC-1
• Determination of Class III
• No breach analysis required
• Prepared for IDOT letting
PERMANENT REPAIRS

• Principal spillway replacement
• No emergency spillway
• Outlet channel area
• Fill downstream dam slope to 3:1
• Repair road and guardrail
• Replace bridge deck and guardrail
• Replace telephone cable
• Supplement riprap on upstream slope
• Permanent drawdown method for upper 50%
• Diversion outlet during construction
OVERALL PLAN

- Outlet Channel
- Stilling Basin
- Chute
- Road and Bridge Repair
- Site Plan
- Add Riprap
- New Intake

Notes:
1. The city of Litchfield will lower the lake level during construction. Control structures will be designed and installed to prevent flood waters from overtopping Control Bank.
SPILLWAY SECTION

PROPOSED SPILLWAY PROFILE

NEW SPILLWAY PROFILE
IMPLEMENTATION

• Dam overtopped September 2008
• Corps of Engineer Permit December 2009
• IDNR Construction Permit April 2010
• IDOT Bid letting June 2010
• IDOT Second letting January 2011
• Construction begins March 2011
• Completion August 2011
• Road re-opened September 2011
NEW SPILLWAY AND BRIDGE
UPSTREAM SLOPE OF DAM
DOWNSTREAM SLOPE OF DAM
CONCLUSIONS

- The 140 year old dam was overtopped for the first time in memory of residents.
- No injuries and no property damage occurred as a result of the washout.
- Dam and spillway were brought up to current IDNR regulations for existing dams.
- A period of 30 years elapsed from the time that the bridge was replaced until the washout occurred.
- Rainfall event was much less than the 100 year frequency event. The new spillway is designed to pass the peak flow of the 100 year rainfall event.