DIGITAL DAM INSPECTION VIA THE CLOUD

TFMA Spring Conference – Houston, Texas
Ruth Haberman, PE, CFM
Mike Moya, PE, CFM
Cindy Engelhardt, PE, CFM
Erin Atkinson, PE, GISP, CFM
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OVERVIEW

- Upper Brushy Creek WCID
- Dam Inspection Application Development
- Dam Inspections
- Inspection Reporting
- Dam Maintenance Tracking Application
- Operations and Maintenance Database
- O&M Reporting
**Upper Brushy Creek Water Control and Improvement District**

**History**

- 1956 – Original Brushy Creek WCID No. 1 of Williamson and Milam Counties was established, responsible for 46 floodwater retarding structures.
- 1972 – Congress passes the Dam Inspection Act authorizing the USACE to review all federal and state dam safety programs and regulations and to inspect all high-hazard dams.
- 2001 – Voters of Williamson and Milam Counties voted to split the District into 2 new water districts (Upper and Lower).
- 2002 – Voters in Upper Brushy Creek WCID approve ad valorem tax of max. 2 cents per $100 of property evaluation to finance the dam modernization program.
Upper Brushy Creek Water Control and Improvement District

- Responsible for O&M of 23 Dams

www.upperbrushycreekwcid.org
DAM INSPECTION APPLICATION DEVELOPMENT

- Start with TCEQ Dam Inspection Form
  - General Dam Information
  - Collection of Issues
    - 10 Categories
    - 20+ Possible Problems for each Category
    - Notes
**DAM INSPECTION APPLICATION DEVELOPMENT**

- Collection of Issues

### Upstream Embankment

- **General Condition:**
  - Good
  - Fair
  - Poor
  - Slope: __________
- **Problems Noted:**
  - None
  - Rip-Rap
  - Erosion
  - Too Steep
  - Burrows
  - Trees
  - Cattails
  - Depressions
  - Bulges
  - Livestock Damage
  - Slides
  - Concrete Decay
  - Cracks
  - Sinkhole
  - Benching
  - Misalignment of Rip-rap
  - Open Joints in Concrete
- **Comments:** __________

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### Emergency Spillway

- **Condition:**
  - Good
  - Fair
  - Poor
- **Depth:** __________
- **Width:** __________
- **Problems Noted:**
  - None
  - Blockage
  - Not Located
  - Trees
  - Burrows
  - Back-Cutting Erosion
  - Inaccessible
  - Livestock Damage
  - Concrete Cracking
  - Concrete Spalling
  - Reinforcement Corrosion
  - Damaged Water-stops
  - Open Joints
  - Sinkholes
  - Holes in Spillway Chute
  - Seepage
  - Misalignment of Walls/Slabs
  - Damaged Gates
  - Nonfunctional Gates
  - Lubrication of Gates
  - Testing of Gates
- **Comments:** __________
Digital Dam Inspection

- Mobile GIS Data Collection
  - Data access with smartphone/tablet
  - Secured access
  - Multiple Users
  - Streamlined field data collection
  - Direct photo attachment
  - Offline editing
DIGITAL DAM INSPECTION
EXAMPLE DATA ENTRY

- Parapet Wall Entry

UBC/DCD SDE
A SDE database for infrastructure and GIS information

Observation
Hazard observations for each dam.

Parapet Wall

Notes:
- Concrete Cracking
- Concrete Spalling
- Reinforcement Corrosion
- Misalignment of Slabs/Walls
- Open Joints
- Exposed Reinforcement
- Foundation Excessive
- Transition (Tie-In)
- Other

Map Layers
- Inspection Points
- Observation
- Maintenance
- Repair
- Dam
- ADC
- Foundation Elevation
- On
- Off

DONE

CANCEL

Parapet Wall Entry

- Hazard observations for each dam.

- Exposed Reinforcement
- Foundation Excessive
- Transition (Tie-In)
- Other

Map Layers
- Inspection Points
- Observation
- Maintenance
- Repair
- Dam
- ADC
- Foundation Elevation
- On
- Off

DONE

CANCEL
DAM INSPECTIONS

- 7 Dams
  - Data Collection
    - Dam Design
    - Previous TCEQ Inspection
  - On-site Inspection
  - Draft Report
  - Data Refinement
  - Final Reporting
  - TCEQ Submittal
7 Complete Inspections
• TCEQ Approved

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**Dam Inspection Management**

- Extended the user interface to support tracking and managing the collected inspection points
- Management interface includes:
  - GIS based web map
  - Dashboard for overall summaries
  - Searching for issues
  - Listing issues by Dam location
  - Updating inspection information
  - Adding Dam components
  - User defined query interface
Management Portal

Upper Brushy Creek WCID
Reservoir Management

UBCWCID Resources
- Database Management
- Flood Monitoring System Web Map
- Dam Maintenance Web Map
- User Management

Hosted by:

HALFF
DAM INSPECTION WEB MAP
Dashboard

Issues identified within date range

| Start Date: | 3/8/2015 | End Date: | 3/8/2016 |

Show: 10 entries

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## Dashboard Cont.

Summary of issues by class and status within date range

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Previous | 1 | 2 | 3 | Next
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# SUMMARY OF COMPONENTS BY DAM

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Questions?