1

Objectives

- City Storm Water Services Dam Safety Program Overview
- Dam Monitoring, High Hazard Dam Monitors, and Emergency Notifications
- Future Monitoring

2

Long-Term Stewardship Program (L-TS)

- **Within the Regulatory Division and Surface Water Quality and Environmental Permitting Program.**
- **Necessary to meet NPDES permit requirements as an MS4 Community.**
- **Provide management of City owned stormwater natural resource assets.**
  - Assets include; Stormwater Control Measures (SCMs), stream/wetland improvement projects, and pond and dam projects.

3

City Storm Water Dam Safety Team

- **Cross-Disciplinary team of 10 Scientists, Geologists, and Engineers.**
- **Dam Safety is housed in the L-TS**
  - **L-TS Manages:**
    - Day to day operations
    - Minor repairs and maintenance
  - **Watershed Planning and Project Implementation Manages:**
    - Project evaluations
    - Manages consultants on major repairs
  - **Engineering Manages:**
    - Emergency Action Plan updates
    - Assists with developing construction plans for major repairs

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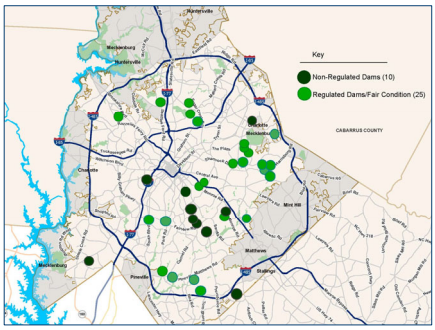
Storm Water Dams



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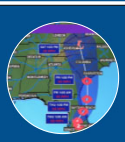
City Storm Water Dam Safety Team Initiatives



Storm Preparedness

- Pre-Hurricane Season Inspections
- Pre and Post Storm Inspections and coordination with EOP/CFD
- Pre and Post storm maintenance
- Severe Storm Preparation Procedures and annual updates

Emergency Action Plans (EAPs) for Storm Water Managed Dams

- EAP Development
- EAP Annual Updates
- EAP Training

Dam Inspections and Monitoring

- Routine Annual Inspections (35 Dams)
- Drainage Infrastructure Inspections
- Piezometer Well Monitoring
- High Hazard Dam Monitoring

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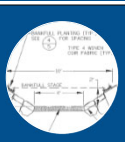
City Storm Water Dam Safety Team Initiatives

Maintenance and Repairs

- Routine Maintenance
- Minor and Major Repairs
- Resident Coordination



Evaluations

- Minor and Major repairs
- Project re-design or enhancement

Risk Management

- Dam Owner Coordination
- Hazard Mitigation Planning
- Risk Management
- Mecklenburg County Emergency Management

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Dam Monitoring

- Dam inspections
- Piezometer monitoring
- Infrastructure Inspections
- High Hazard dam monitors and emergency alert system

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Dam Inspections

- Annual Inspections
- Pre-Hurricane Season Inspections
- Pre and Post Storm Inspections

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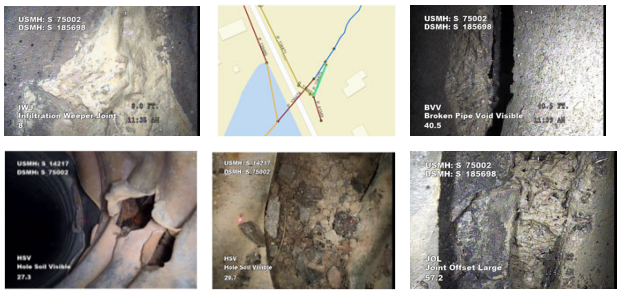
Infrastructure Inspections



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Infrastructure Inspections

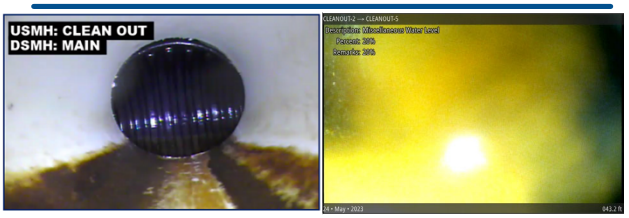

Photo 2B – PVC Outlet & HDPE Toe Drain

TOE DRAINAGE SYSTEM

- Replace 156 linear feet of 4" perforated HDPE toe drain with 156 linear feet of 6" perforated PVC toe drain.
- Remove and replace 32 linear feet of 4" PVC toe drain outlet pipe with 6" PVC, ensuring positive slope.
- Install cleanouts at all bends to provide access points for future inspection and cleaning.
- Construct small concrete headwall with screen to secure end of toe drain outlet.

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Piezometer Monitoring

- Monitoring of the phreatic surface through the dam.
- Monthly monitoring to establish baseline trends.

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High Hazard Dam Monitoring Network

- Set up through Fins and managed by Mecklenburg County Storm Water.
- Currently 10 projects – adding two in FY28.
- Data Logger: Sutron XLink 500
- Two sensor types:
  - Pressure Level Sensors
    - OTT Hydromet PLS500 (Pressure Level Sensor), accuracy = 0.05% of reading
  - Radar Level Sensors
    - OTT Hydromet RLS (Radar Level Sensor), accuracy = 0.01 ft

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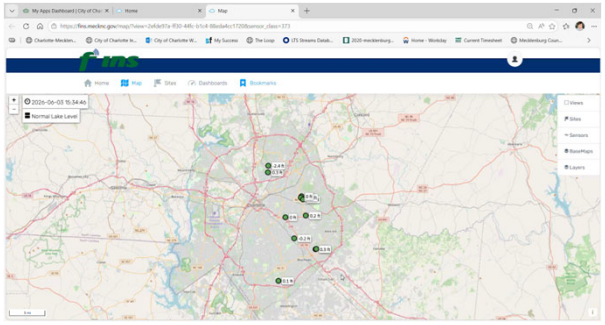
High Hazard Dam Monitoring Network



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High Hazard Dam Monitoring Network

- Pressure Level Sensor
  - OTT Hydromet PLS500 (Pressure Level Sensor), accuracy = 0.05% of reading
  - Uses a ceramic pressure cell to measure water level.
  - Selected for projects with no riser structures in the pond.
  - Provides water level, humidity, and temperature.

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High Hazard Dam Monitoring Network

- **Radar Level Sensor**
  - OTT Hydromet RLS (Radar Level Sensor), accuracy = 0.01 ft
  - Uses impulse radar technology to measure water level.
  - Easy to install, chosen for projects with riser structures in the pond.
  - Provides water elevation only.
  - Energy-efficient
  - No impact from temperature, water pollution, or sediment load.
  - Flat antenna design means less insect / spider interference.

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Storm Event Monitoring

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Emergency Alerts

- **Investigate Level, Event Level 2, Potential Dam Failure**

Test Notification- INVESTIGATE Level:
This is a message from the Charlotte-Mecklenburg FINS at 1970-01-01 00:00:00 UTC A flood INVESTIGATE is in effect; MECKL-207 - Hunter Acres Pond Dam is at 1 foot below the Crest of the Dam.

THREAT STATUS: INVESTIGATE LEVEL, EVENT LEVEL 2, YELLOW: Potential dam failure situation, rapidly developing FINS observed sensor Level, Pond Elevation @ MECKL-207 - Hunter Acres Pond Dam, current value is -9999.99. This is 1 foot below the Crest of the Dam 783.32 feet.
In the last 10 min, FINS observed sensor Level, Pond Elevation @ MECKL-207 - Hunter Acres Pond Dam, had a change > threat threshold of 0 feet.

FINS LAST REPORTED:
Sensor Level, Pond Elevation @ MECKL-207 - Hunter Acres Pond Dam, last reported at 2025-11-12 19:00:06 UTC with a value of -9999.99.

https://fins.mecknc.gov/site/?site_id=1496&site=cf0bc5a4-e4d0-4b7f-be5a-e73fcf83d366

Do not reply to this message.
If you need additional information, send an email message to damsafety@charlottenc.gov END OF MESSAGE

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Emergency Alerts

- **Emergency Level, Event Level 2, Dam Failure Imminent**

Test Notification- EMERGENCY Level:
This is a message from the Charlotte-Mecklenburg FINS at 1970-01-01 00:00:00 UTC A flood EMERGENCY is in effect; MECKL-207 - Hunter Acres Pond Dam is at 1 foot below the Crest of the Dam.

EMERGENCY STATUS: ALERT LEVEL, EVENT LEVEL 1, RED: Urgent!!! Dam failure imminent or is in progress FINS observed sensor Level, Pond Elevation @ MECKL-207 - Hunter Acres Pond Dam, current value is -9999.99. This is at the Crest of the Dam 783.32 feet.
In the last 10 min, FINS observed sensor Level, Pond Elevation @ MECKL-207 - Hunter Acres Pond Dam, had a change > threat threshold of 0 feet.

FINS LAST REPORTED:
Sensor Level, Pond Elevation @ MECKL-207 - Hunter Acres Pond Dam, last reported at 2025-07-25 17:30:20 UTC with a value of -9999.99.

https://fins.mecknc.gov/site/?site_id=1496&site=cf0bc5a4-e4d0-4b7f-be5a-e73fcf83d366

Do not reply to this message.
If you need additional information, send an email message to damsafety@charlottenc.gov END OF MESSAGE

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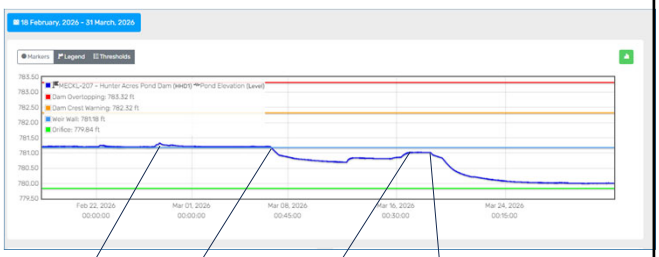
Monitoring for maintenance



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Monitoring for construction

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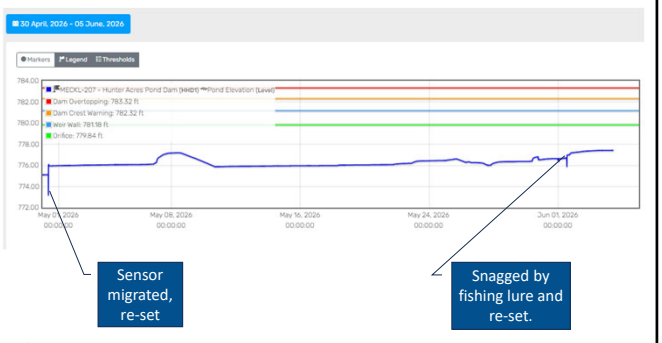
Monitoring for construction



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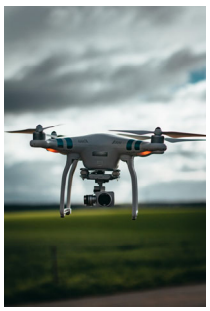
Future monitoring

- Cameras with HHD monitors
- Low level alerts
- Drone inspections
- Toe-drain monitoring
- Future piezometers will have blue tooth data logger capability



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Thank you
Questions?
Beca Deal
L-TS Program Supervisor
Beca.deal@charlottenc.gov (980.310.6494)

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