New Hampshire’s Flood Hazards Geodatabase

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New Hampshire Department of Environmental Services
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Effort to develop statewide inventory of identified flood hazards in towns of New Hampshire

- New Hampshire Geological Survey (NHGS) at New Hampshire Department of Environmental Services (NHDES)
- New Hampshire Division of Homeland Security and Emergency Management (NH HSEM)
- Wetlands Bureau (at NHDES)

- Floods and culvert failures (i.e., photos at right) have led to a desire to have such a statewide database
- Support for State Emergency Operations Center
- Hazard mitigation planning

- Develop a geodatabase that reflects local, site-specific knowledge of flood-related hazards by towns and found in town hazard mitigation plans
Conducted interviews in New Hampshire towns
New Hampshire – 234 towns; 234 Hazard Mitigation Plans!
<table>
<thead>
<tr>
<th>OBJECTID</th>
<th>Source</th>
<th>Flooding_D</th>
<th>Frequency</th>
<th>Date_</th>
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<th>FloodPeriod</th>
<th>Impact</th>
<th>CrossType</th>
<th>CrossIssue</th>
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<tr>
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<td>Flooding and washouts with road debris, from thunderstorm with 4+&quot; rain</td>
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<td>Culvert</td>
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</tr>
</tbody>
</table>
Flood Events

Database is designed to be updated with official (state/town) flood event and damage reports so that the geodatabase reflects new flood events and establishes documentation of repetitive issues.

NHGS performs updates.

Recent flood events –

July 1, 2017

October 30-31, 2017
Long-Term Goals

• Tool for regional planning commissions (who largely perform hazard mitigation plan updates in NH) to integrate with plan update process.

• NHDES Wetlands Bureau Aquatic Resource Mitigation Fund (NH RSA 482-A:28-33) – flood hazard layer one input criteria for awarding of points to support stream crossing replacements that address aquatic resource and infrastructure improvements (flood resiliency).
HAZARD MITIGATION PLANNING

• Towns have been tracking flood hazards
  ▫ Hazard Mitigation Plans
  ▫ Records vary in quality and quantity
    • Maps versus tables
    • Anecdotal histories versus recorded singular events
    • Different attributes, varying focus
DIGITIZATION AND ASSIMILATION

- 234 Hazard Mitigation Plans
  - Existing GIS files (89)
    - 4 RPCs, 1 Contractor
  - Generated polygons
  - Digitized Maps

Online Spatial Database

GIS Files
• Combined attributes from all the different data sources

• Investigation and identification
  ▫ Commonalties and themes
  ▫ Word and event frequencies

• Simplified final attributes
  ▫ Flood Type – Road, Dam, etc.
  ▫ Flood Period – Past, Present, Potential
  ▫ Flood Description
  ▫ Date – If recorded
  ▫ Frequency – If a recurring issue
  ▫ Impact – High, Medium, Low
  ▫ Crossing Type / Issue
  ▫ Action – Maintenance, Repair, etc.
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VIEWING AND EDITING

• Being hosted in ArcGIS Online

• Viewing requires ArcMap Desktop license

• No public viewer

• Access managed through filtered group views
Ongoing questions

• Who can access the data?

• What will be the update process?
  • Who can edit?
  • Who can access?
  • How do we version?

• NHGS and HSEM will administer the database
One possibility...

- NH Geologic Survey
- HSEM
- Towns
- Regional Planning Commissions

Data Layers

Draft Spatial Data

Finalized Spatial Data

At each town’s 5 year cycle

HMPs
So, where are we right now

- Discussions and outreach are ongoing
- Slowly adding users and performing training
- Addressing issues:
  - Privacy
  - Accuracy
  - Long term maintenance
  - Responsibility

- In the mean time...
FLOOD HAZARDS AT STREAM CROSSINGS

- Stream crossing locations were intersected with flood hazards database
- Flag culverts that have flooded in the past
• Data now is more tied into other infrastructure issues

• Organized in a format that more in line with funding requirements
FLOOD HAZARDS AT STREAM CROSSINGS

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- Organized in a format that more in line with funding requirements
Acknowledgments

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Kate Poirier
Sarah Baker

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Whitney Welch
Kayla Henderson