Flood Hazards, Assessment and Analysis in NH: Impacts, Results and Prospects

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Photo credit: Town of New Boston

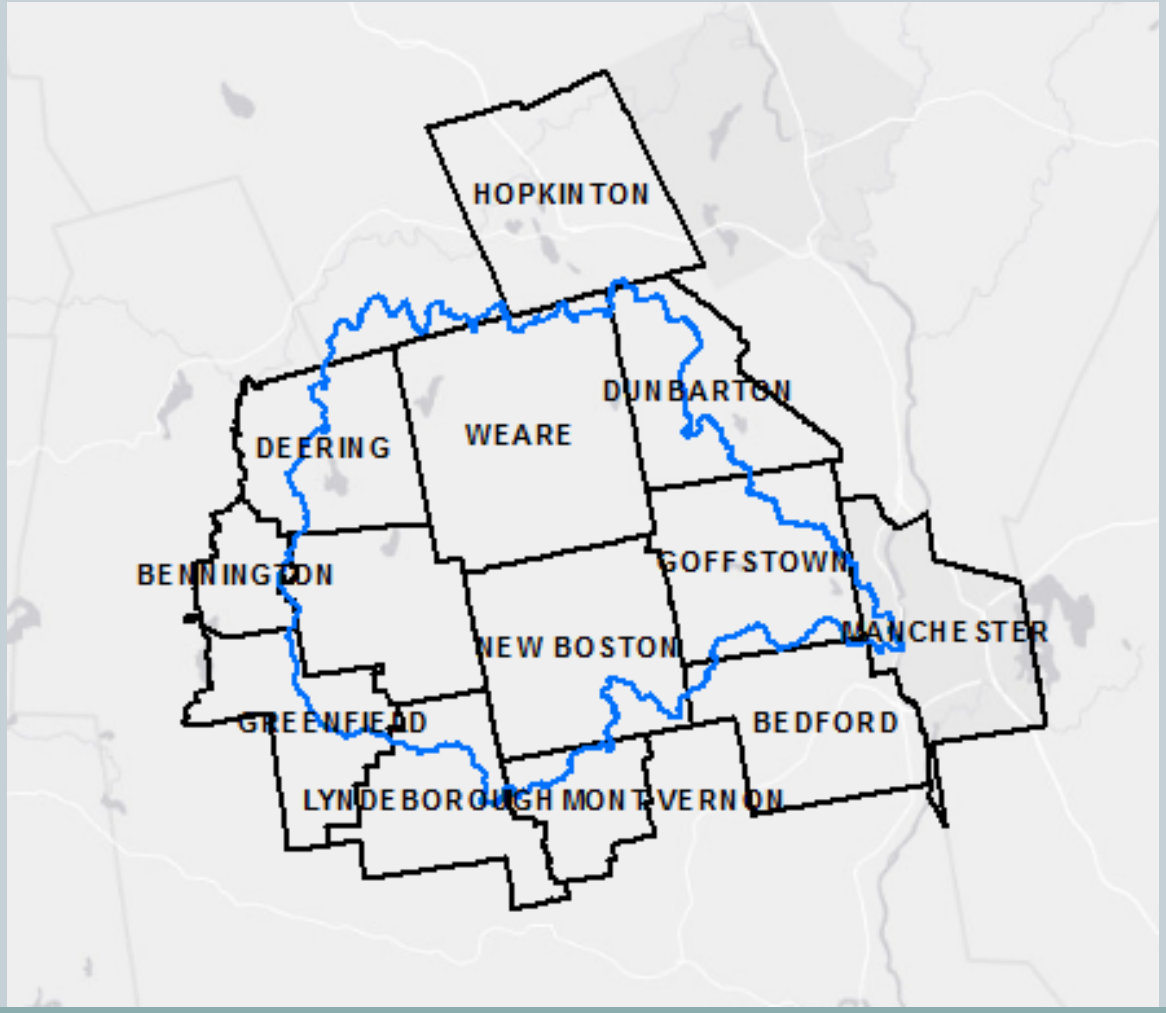
Project Goal

Photo credit: NH DES

Project Overview

- Interviewed 12 Piscataquog communities
- Transcribed flooding description
- Digitized maps
- Delineated catchments based on points of concern
- Extracted 60 attributes within catchment boundaries
- Ran correlation and prediction statistics

12 Piscataquog Communities Interviewed…



- April – June 2015

Example of Points of Concern in Manchester:

Asked to assign each site a risk value:

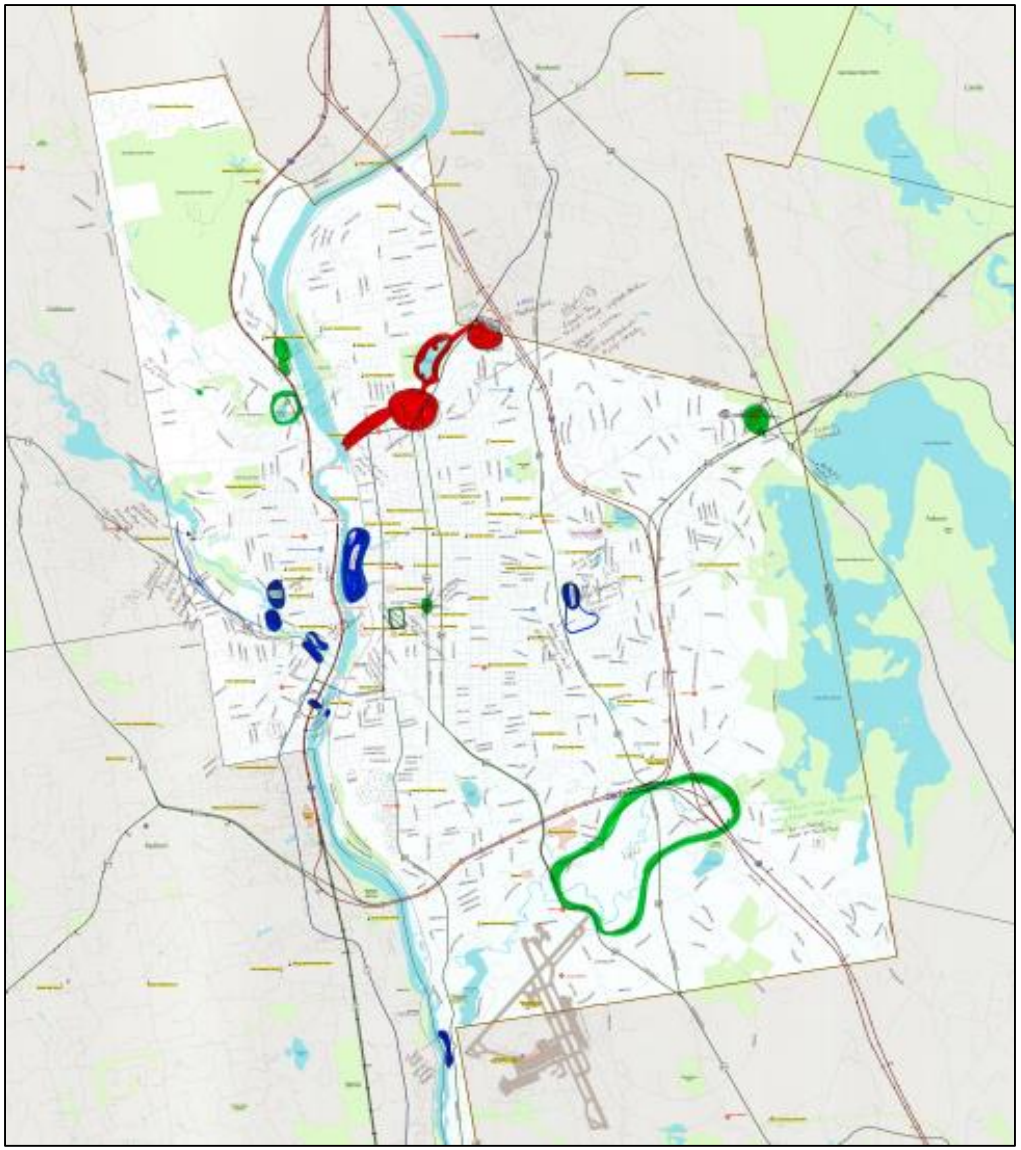
1- low risk

2- low risk-high impact

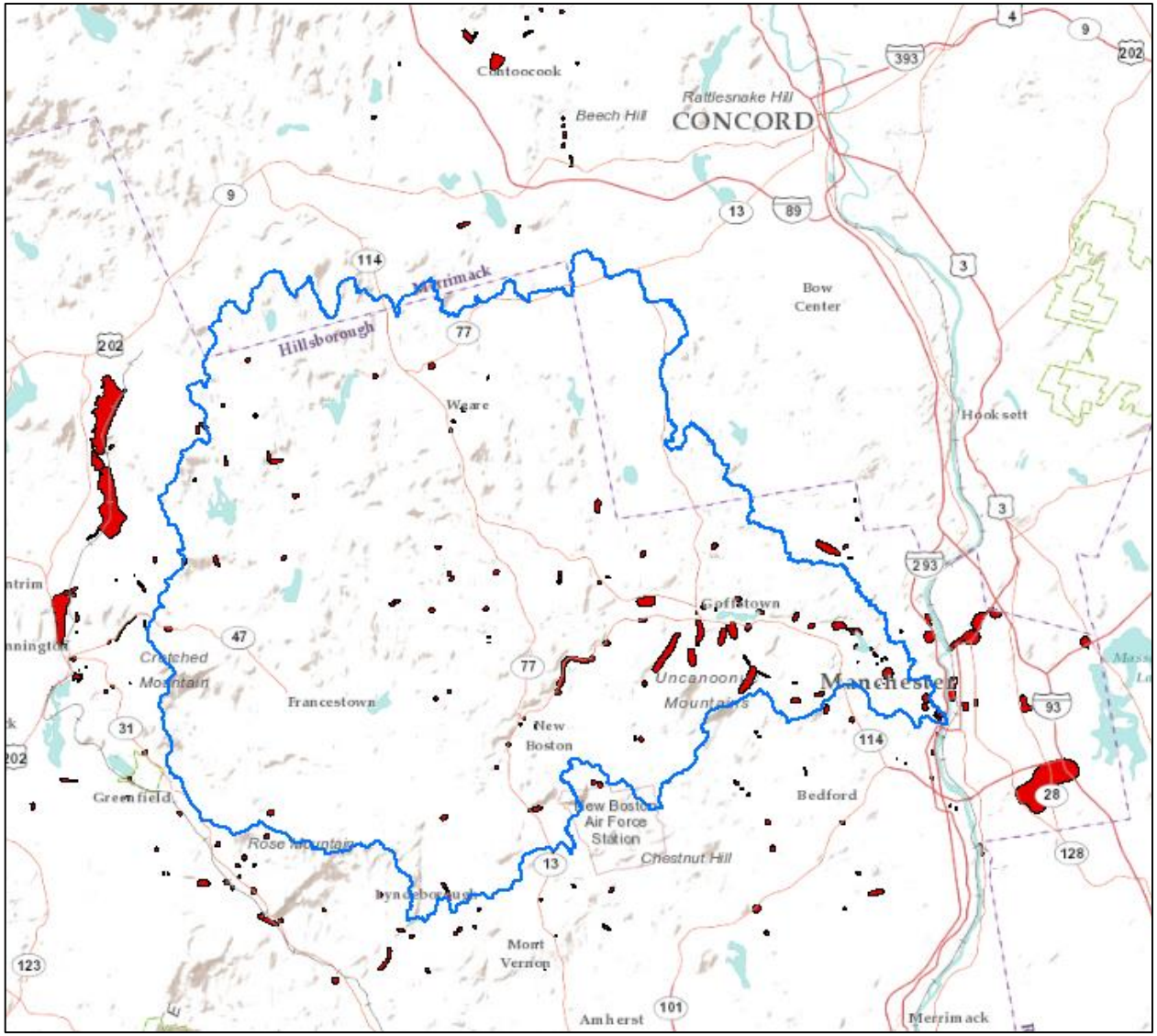
3- medium risk

4- medium risk-high impact

5- high



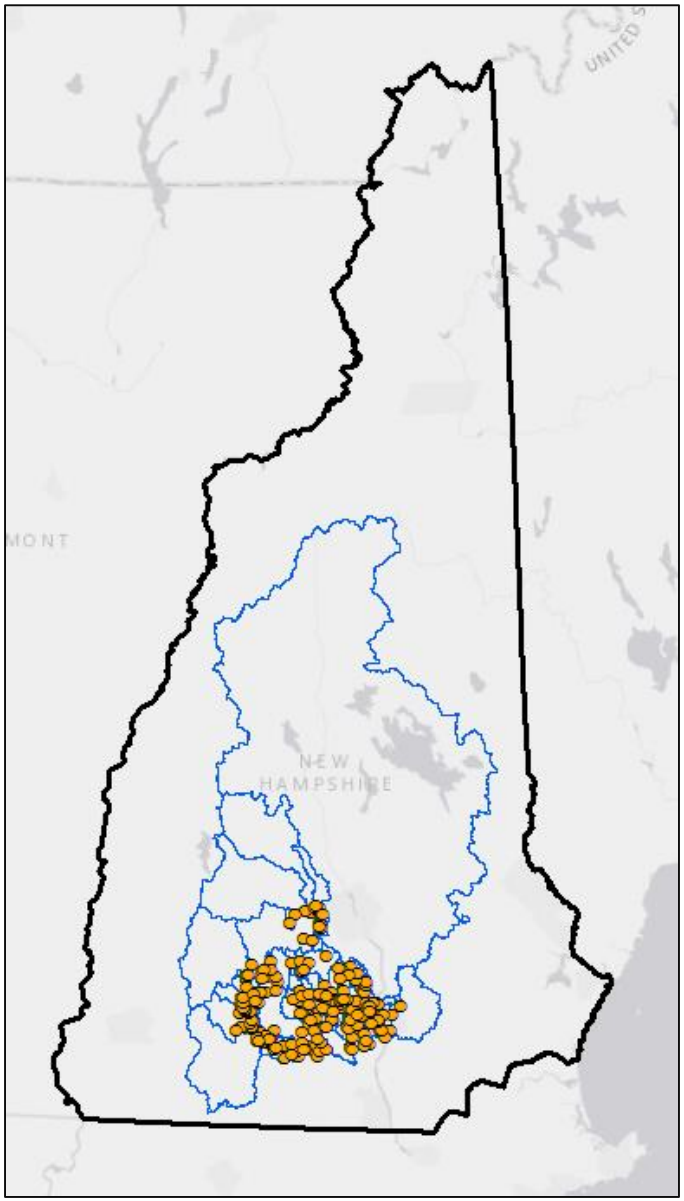
Points of Concern: All 12 communities



Catchment Approach:

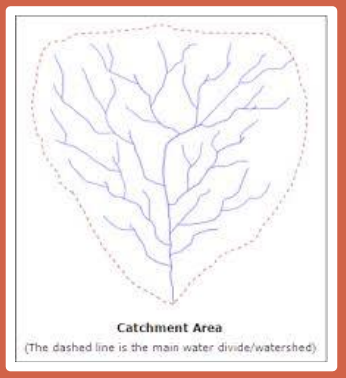
256 delineations

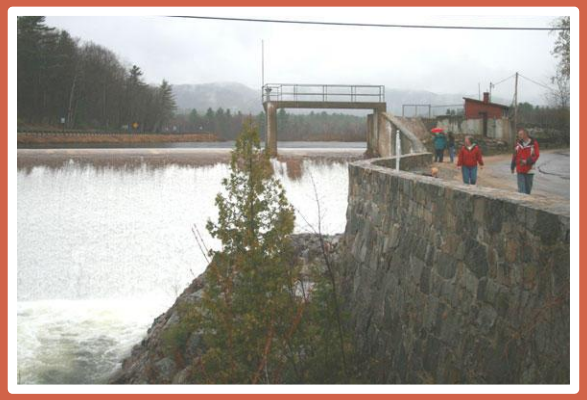
Is there a pattern of what is upstream of these points of concern?

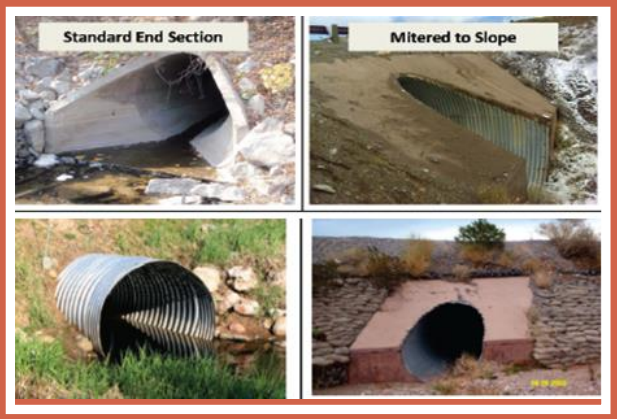


Source Data → 60 attributes

NATIONAL LAND COVER DATASET| 2011
NH GEOLOGICAL SURVEY| GEOMORPHIC ASSESSMENTS
NRCS | STATSGO SOIL DATA, 1995
NH GEOLOGICAL SURVEY | WELL INVENTORY
NH GEOLOGICAL SURVEY | STRESSED BASIN DEM
NH DAM BUREAU | INVENTORY
NH DOT| PUBLIC ROADS
BEVEN & KIRKBY, 1979| TWI CALCULATION







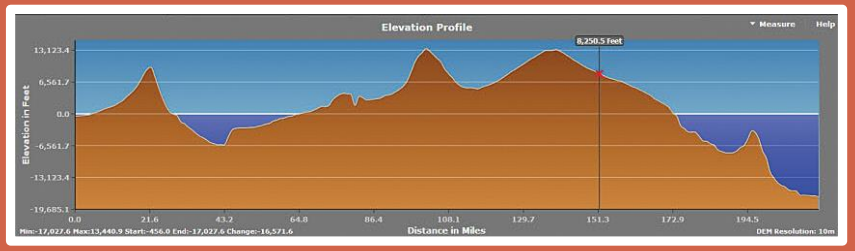


Photo credit: NHFG, NLCD/USGS, en.wikipedia.org, nhpr.org, NHGS, ssp.maharashtra.gov.in, esri.com

Spearman's Correlation

Attribute	p	rho
Barren	0.000	0.239
Evergreen	0.000	0.248
Mixed	0.000	0.242
Herbaceous	0.000	0.258
Crops	0.000	0.239
Open water	0.001	0.202
Number of dams	0.000	0.266
Floodshed area	0.000	0.287
Hypsometric integral	0.000	-0.269
Depth to Bedrock	0.000	0.286
elongation ratio	0.000	0.285
Road Density (mi/mi2)	0.001	0.205

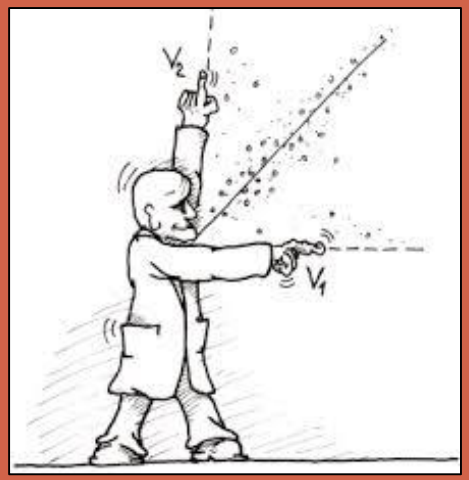
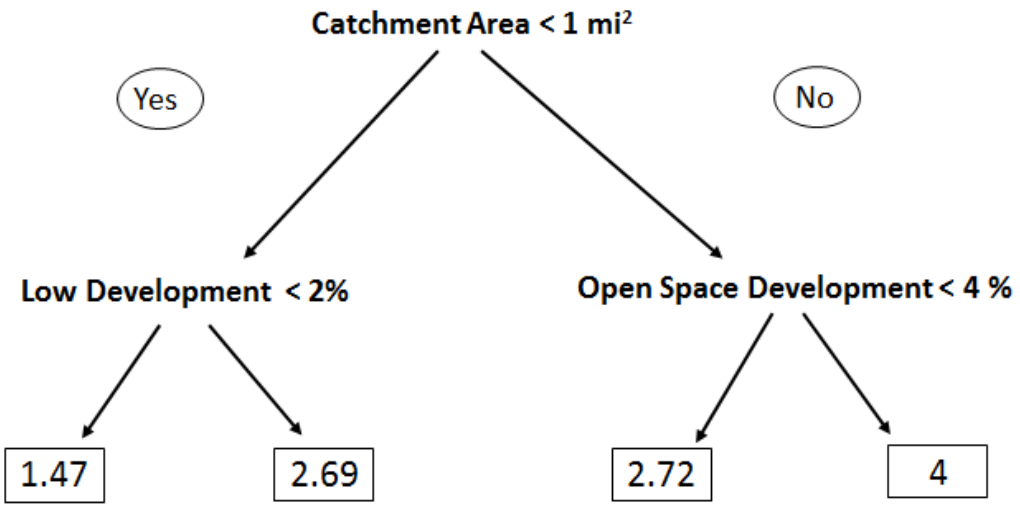


Photo credit: paper-money.blogspot.org

Significant correlations but strength of relationship was weak.

Regression Trees

P value = 0.000
R^2 = 0.32



Lowest flood risk is in small, undeveloped catchments.

Highest is in larger watersheds with more open space.

Next Steps…

NEED MORE DATA!

CONTINUE TO MEET WITH COMMUNITIES IN THE REST OF NH.

- Spatial statistics

CONSULTING COMPANY USING DATA FOR FURTHER INVESTIGATION.

Conclusions…

No prioritization scheme could be immediately derived.

NH's diverse geology, topography, land cover and river morphology might be too varied to draw general conclusions.

Standardized method for collecting flood risk data will be beneficial for NH.

Photo credit: Town of New Boston

Comments? Questions? Suggestions?

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