Study Purpose and Background

- The purpose of the Lee Floodplain Study (Study) was to produce planning-level potential flood inundation maps for the mainstem of the Lamprey, North, Little, and Oyster Rivers within the Town of Lee, New Hampshire. Two versions of the potential flood inundation maps were created for the current (2005) 100-year flood event and for the projected (2050) 100-year flood event.
- The models and maps developed as part of this study build upon previous technical work where a hydrologic (HEC-HMS) and hydraulic (HEC-RAS) model of the mainstem of the Lamprey River was initially developed (Wake et al, 2009), updated with future climate projections (Scholz, 2011; Scholz and Roseen, 2012), and later used to generate potential inundation maps for an array of current and future flood scenarios (Geosyntec, 2016).
- The technical approach for this study used consistent methodologies with previous technical work. Key tasks were to 1) collect data; 2) update hydrologic model and generate peak discharge estimates; 3) update hydraulic model and generate peak water surface elevation estimates; and 4) generate inundation maps.

Assumptions and Limitations

- The level of detail provided by the underlying models used to develop inundation maps is intended for planning purposes only. Results are not suitable for use in direct generation of Federal Emergency Management Association (FEMA)-level Flood Insurance Rate Maps (FIRMs), used by other insurance agencies for flood insurance purposes, or other purposes.
- Field data were collected by the University of New Hampshire at key road crossings in the Town of Lee along the North, Little, and Oyster Rivers (e.g., channel characteristics, culvert / bridge characteristics). Data were based on approximate field measurements and were not collected using a GPS unit or survey equipment.
- Peak flow estimates from the hydrologic model were not calibrated or validated as part of this planning level study; however, previous technical work did follow a calibration process as summarized by Geosyntec (2016).
- The hydraulic model includes reaches for the mainstem of the Lamprey, North, Little, and Oyster Rivers. Additional tributaries were not modeled. Cross sections were extended, where feasible, to capture potential inundation area of tributaries influenced by the mainstem of each river.
- Input data from previous technical work (i.e., original models) were not reviewed in detail. Modifications were made in some instances - for example to extend cross sections to encompass the entire potential floodplain extents along the mainstem of the Lamprey River in the Town of Lee.

References

- Geosyntec Consultants (2016). Analysis of Flood Damage Cost Avoidance in the Lamprey River Watershed in New Hampshire, prepared for University of New Hampshire, Cooperative Agreement Number: NA14OAR170083.
- Scholz, A, R Roseen, and C Wake (2012). Water Surface Elevation and Flood Flows at Lamprey River Cross Section.
- Scholz, A (2011). Climate and Land Use Consequences to 100-Year Flooding. M. Sc. Thesis, University of New Hampshire, Durham, NH.
- Wake, C (2009). Assessing the Risk of 100-year Freshwater Floods in the Lamprey River Watershed of New Hampshire Resulting from Changes in Climate and Land Use. Final Report.

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0.5 0.25 0 0.5 Miles

Legend

- Town of Lee
- Town Parcels
- Town Conservation Land
- Rivers
- Streams
- LakePond/Reservoir
- Swamp/Marsh
- Estimated Water Surface Elevation Range (see table)

Estimated Inundation Depth (ft)

High : 23

Low : 0

Estimated Water Surface El. Range Number	Minimum Elevation (NAVD88 ft)	Maximum Elevation (NAVD88 ft)
1	64	70
2	70	75
3	75	80
4	80	85
5	85	90
6	90	95
7	95	100
8	100	105
9	105	110
10	110	115
11	115	120
12	120	125
13	125	130
14	130	136

This project was funded, in part, by NOAA's Office for Coastal Management under the Coastal Zone Management Act in conjunction with the NH Department of Environmental Services Coastal Program.

Estimated Water Surface Elevation and Inundation Depth for 100-year, 24 hour storm in 2050

Lee Floodplain Study

Geosyntec consultants | University of New Hampshire | NOAA | NHDES | NHCP | Strafford Regional Planning Commission

Portsmouth, NH | July 2019

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