STEP 1. IDENTIFY FLOOD-HAZARD AREAS IN THE COMMUNITY

PURPOSE

The first step is to identify which parts of the community are vulnerable to flooding. This will enable the planning project team to perform Step 2, which is identifying the historic resources that are at the greatest risk of flood damage and destruction.

PRODUCT

The primary product of this step is a map of the flood-prone areas in the community.

ESSENTIAL TASKS

Flooding is by far the most impactful natural hazard in North Carolina, whether in riverine or coastal areas. The state provides floodplain data that identify the locations of coastal flooding-hazard areas, riverine floodways, high-risk flood zones (commonly referred to as "100-year floodplains"), and moderate-risk flood zones (commonly referred to as "500-year floodplains"). You can use this information to create a simple hazard analysis for your community, giving riskier locations higher points. The following tasks will help you do this.

A. **Acquire floodplain data.** The easiest way to acquire the latest floodplain-mapping data for your jurisdiction is to use the North Carolina Flood Risk Information System (FRIS) website, which allows you to access and download database-driven information:

    i. visit FRIS at fris.nc.gov,

    ii. find your community, and

    iii. follow the instructions to download the floodplain-mapping data.
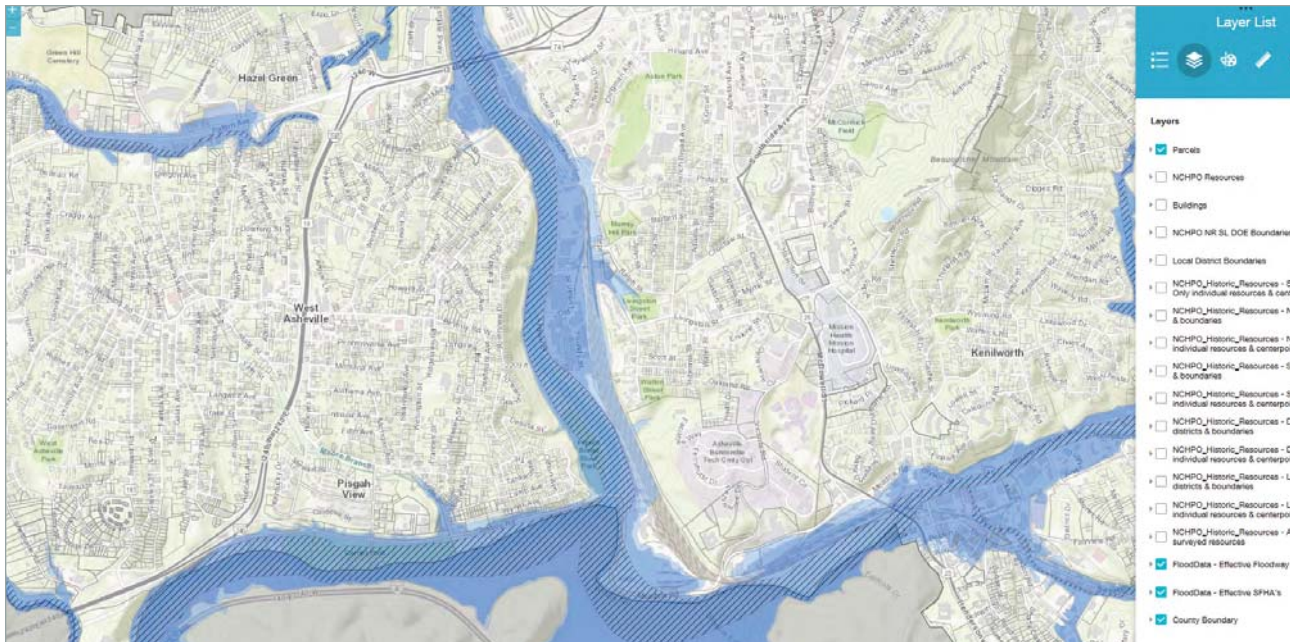
The North Carolina Historic Preservation Office and the City of Asheville use geographic information system (GIS) technology to create maps like the one above, which shows areas in the floodway, high-risk flood zones, and moderate-risk flood zones.

B. Clip the data. Clip the data in GIS based on the boundaries of your community or the area that you are interested in (if you are unsure of how to do this, see the "Finding GIS Mapping Support" sidebar).

C. Create separate data layers for different components of the floodplain. Using GIS, create separate data layers for each of the following three components of the floodplain (if you are unsure of how to do this, see the "Finding GIS Mapping Support" sidebar):

    i. floodway and coastal flood-hazard areas,

    ii. high-risk flood zones outside the floodway, and

    iii. moderate-risk flood zones outside the floodway and the high-risk flood zones.

D. Create your flood-hazard scoring system. The Sample Flood-Hazard-Vulnerability Scoring System in Table 1, below, provides a recommended scoring system. This system

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Finding GIS Mapping Support: This planning methodology relies heavily on the ability to conduct GIS analysis and mapmaking. If you and/or the members of your project team do not possess these skills, here are several options:

1. **County Government:** Enlist the help of GIS staff in your county government. Counties in North Carolina maintain local land records systems and often have people with GIS skills on staff.

2. **Councils of Governments (COGs):** Enlist the help of GIS staff at your Council of Governments. COGs often use GIS in their work for Rural Planning Organizations (RPOs) and to provide assistance to member governments.

3. **Private Consultants:** Many planning and engineering consulting firms have strong GIS capabilities and can potentially support you with this work.

4. **Do It Yourself:** See the DIY options in Appendix A, which includes a step-by-step guide as well as screenshots to help readers use online mapping tools.

According to local merchants, the parking lot of the historic Cotton Mill in Asheville's River Arts District along the French Broad River has flooded two or three times in the last seven years. Photo by Ben Hitchings.

is based on the frequency and magnitude of flooding in specific areas, and it will help you rate the vulnerability of your community's historic resources in Step 2. You will also use it in later steps to help prioritize the vulnerable historic resources that need protection. We recommend assigning the points as follows:

    i. **Floodway and coastal flood-hazard areas:** 3 points.
    ii. **High-risk flood zones outside the floodway:** 2 points.
    iii. **Moderate-risk flood zones outside the floodway and the high-risk flood zones:** 1 point.
    iv. **Areas outside the moderate-risk flood zones:** 0 points.

E. Assign the appropriate score to each flood-hazard area. In GIS, create a data attribute with the appropriate score for each type of flood-hazard area (if you are unsure of how to do this, see the "Finding GIS Mapping Support" sidebar).

F. Map the flood-hazard areas. Create a map of areas vulnerable to flooding showing the different types of flood zones described above. In Step 2, you will combine this with a map of historic resources to identify which properties are vulnerable to flooding.

Table 1. Sample Flood-Hazard-Vulnerability Scoring System

HAZARD AREA	POINTS	NOTES
Coastal Flooding	3	Area denoted as "V" on floodplain maps
Floodway	3	Channel needed to discharge the base flood
High-Risk Flood Zone	2	Area with 1% chance of flooding each year
Moderate-Risk Flood Zone	1	Area with 0.2% chance of flooding each year
Other	0	These areas are outside the risk zones but are not free from flooding

KEY CONSIDERATIONS

- Finding good GIS assistance is crucial to successfully completing this step in the planning process.
- Resist the temptation to skip this step. Without a good understanding of the hazard-prone areas in your community, it will be difficult to identify and prioritize the most vulnerable historic resources.
- In addition to data analysis, some professional judgment may be needed to determine which areas have the highest risk of exposure to flooding and which historic resources are most vulnerable. To conduct this assessment, planners should consider collaborating with other professionals such as emergency managers, engineers, and hydrologists.

RESOURCES

Federal Emergency Management Agency (FEMA), Flood Maps, fema.gov/flood-maps.

FEMA, "How to Read a Flood Map" (2022), fema.gov/sites/default/files/documents/how-to-read-flood-insurance-rate-map-tutorial.pdf.

FEMA, "National Risk Index for Natural Hazards" (2023), fema.gov/flood-maps/products-tools/national-risk-index.

FEMA, *National Risk Index Technical Documentation* (2023), fema.gov/sites/default/files/documents/fema_national-risk-index_technical-documentation.pdf.

North Carolina Floodplain Mapping Program, Flood Risk Information System (FRIS), fris.nc.gov.

North Carolina Floodplain Mapping Program, N.C. Flood Information Center, flood.nc.gov/ncflood/.

Philip Berke, Galen Newman, Jaekyung Lee, Tabitha Combs, Carl Kolosna, and David Salvesen, "Evaluation of Networks of Plans and Vulnerability to Hazards and Climate Change: A Resilience Scorecard," *Journal of the American Planning Association* 81, no. 4 (2015): 287–302, coastalresiliencecenter.unc.edu/wp-content/uploads/sites/845/2018/09/Berke_et_al._best_paper_JAPA_2015.pdf.

Philip McDaniel, *PlanNC Computer Mapping Handout: Getting Started with (Q)GIS* (UNC School of Government and UNC Davis Library, 2021), available on the Historic Resilience Project website, hrp.sog.unc.edu.