The incredible Flood Risk Information System (FRIS)
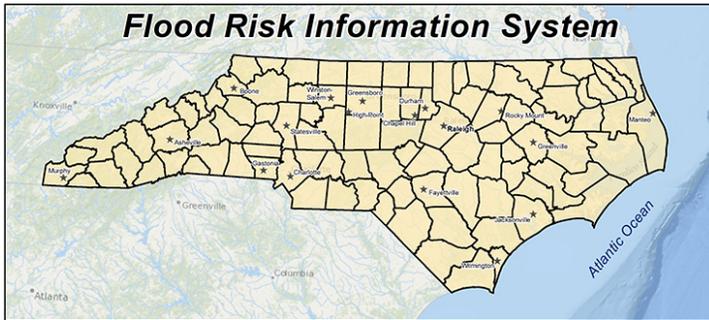
1. **Three ways to get to the NC FRIS:**

   a. Start at the NC Floodplain Mapping Program website (http://www.ncfloodmaps.com/) and click on the "**Flood Risk Information System**" map of the state.

   > Note: The NC Floodplain Mapping Program website will be deactivated during 2015 and all the info will be transferred to the FRIS website.

   ~ or ~

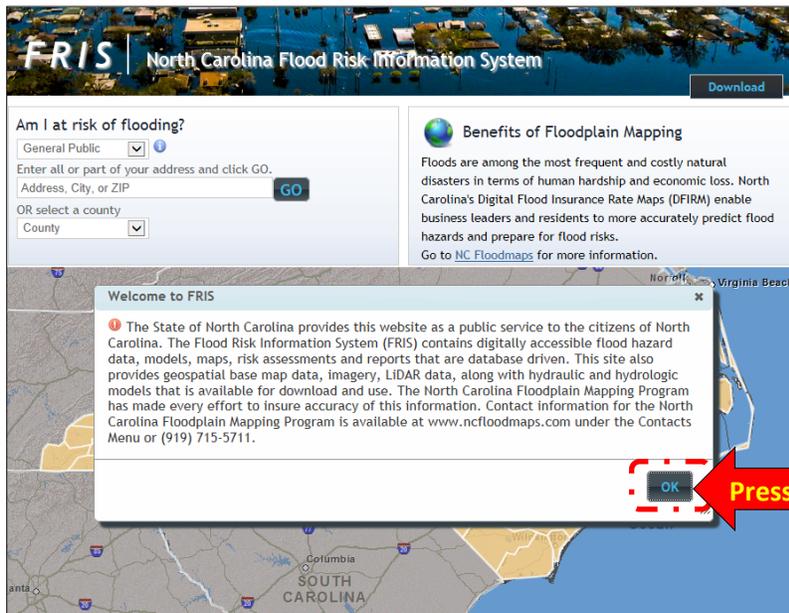   b. Start at the FRIS website (http://fris.nc.gov/fris/Home.aspx) and click on the map of North Carolina.

   ~ or ~
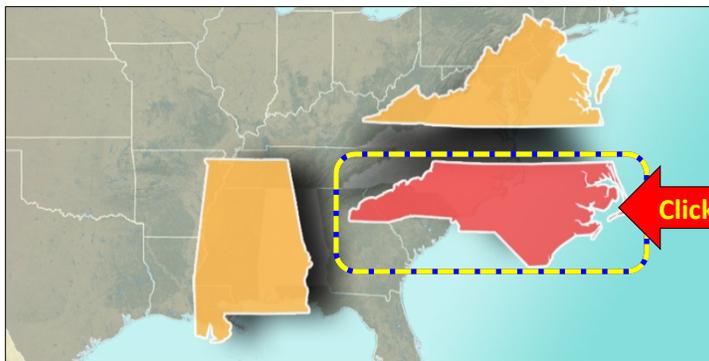
   c. Go directly to the NC FRIS website (http://fris.nc.gov/fris/Home.aspx?ST=NC).

   Note: Alternatively, Google "NC FRIS" or make a shortcut on your computer's desktop.

2. **Welcome to the NC FRIS website.**

   Press the **[OK]** button on the "**Welcome to FRIS**" box.

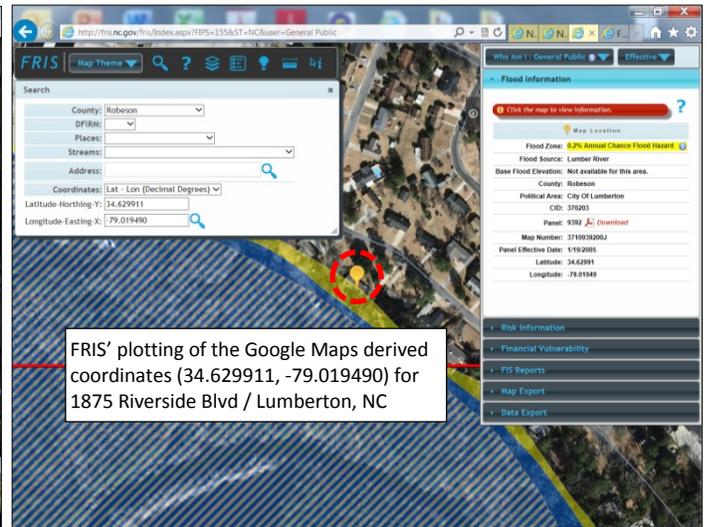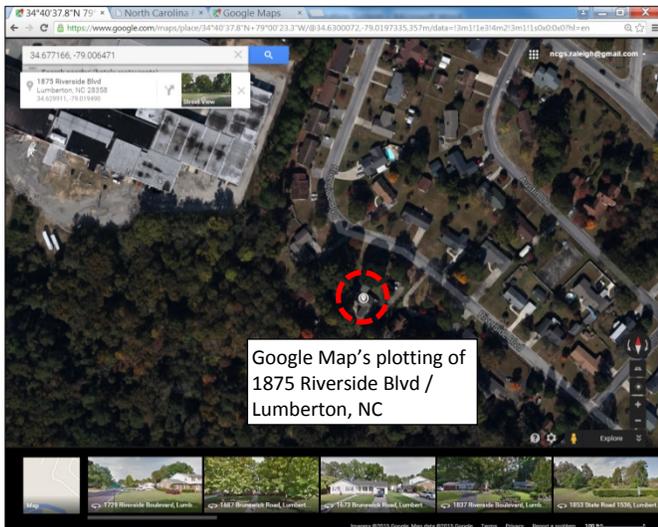# The incredible Flood Risk Information System (FRIS)

3. The FRIS website

    a. Great resource for:

        1). Digitally accessible flood hazard and risk data that are database driven, which allows for print-on-demand products such as a flood map or a Flood Insurance Study (FIS).

        2). Data files

            a). Geospatial base map data [Shapefile (*.shp) or File Geodatabase (*.gdb)]

            b). Imagery (TIFF)

            b). LiDAR data (topographic data) [Bare earth or DEM 20 (20 ft cell)]

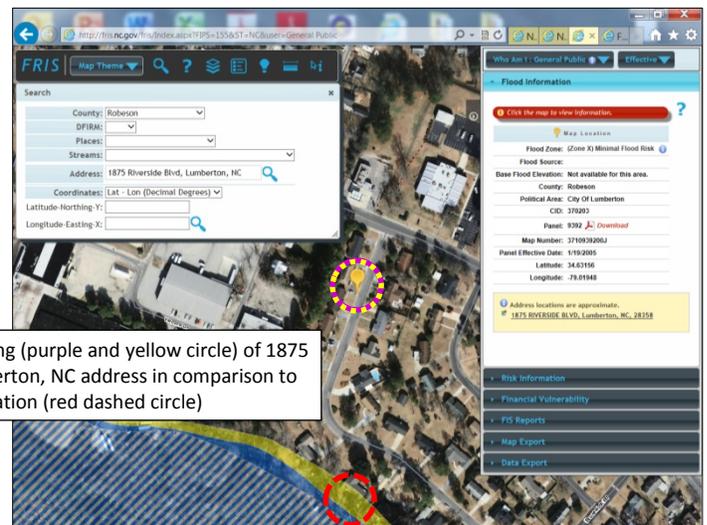   c). Hydraulic and hydrologic models (e.g. Lumber River detailed study)

    b. Unfortunately, its geocoding engine is not so great.

        1). Therefore, use Google Maps (https://www.google.com/maps/) to locate an address (e.g. 1875 Riverside Blvd, Lumberton, NC); select a county (e.g. Robeson) on the FRIS dropdown list or map, press the **[Search]** button (icon looks like a magnifying glass) on the FRIS toolbar, and then copy/paste the address' coordinates (decimal degrees format) from Google Maps into the FRIS "**Coordinates**" fields for "**Latitude**" (e.g. 34.629911) and "**Longitude**" (e.g. -79.019490).

Google Map's plotting of 1875 Riverside Blvd / Lumberton, NC

FRIS' plotting of the Google Maps derived coordinates (34.629911, -79.019490) for 1875 Riverside Blvd / Lumberton, NC

Note: The FRIS will also accept NC State Plane coordinates in USFT.

        2). Otherwise, if you enter in a parcel's street address (e.g. 1875 Riverside Blvd, Lumberton, NC) into the FRIS "**Address**" field, the address might not be plotted at the correct address.

FRIS' inaccurate plotting (purple and yellow circle) of 1875 Riverside Blvd / Lumberton, NC address in comparison to the parcel's actual location (red dashed circle)

The incredible Flood Risk Information System (FRIS)

4. **Data modes:** The **Data mode toggle** (i.e. the switch between the **Effective** data mode and the **Preliminary** data mode) is located in the upper right corner.

   a. **Effective**: The official flood hazard data. Make sure that you have the FRIS set to be in the **Effective** data mode if you want the official flood hazard data.
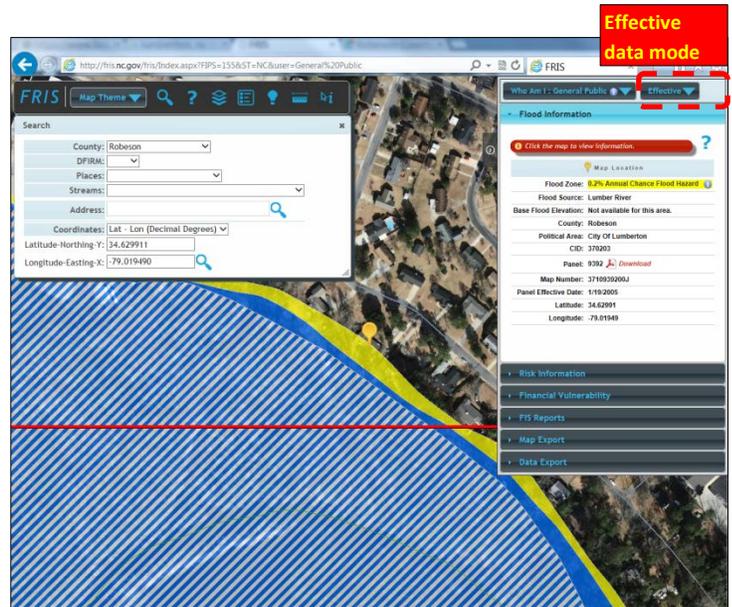

   b. **Preliminary**: Sneak peak of updated flood hazard data that is released during the community review process. The **Preliminary** data mode is indicated on the FRIS with the following statements:

   - "**Preliminary Panels are outlined in** ▢"
   - "*This panel's status is Preliminary.*"

   For more information, please read section "**8. How to access the Preliminary flood hazard data and compare it to the Effective flood hazard data.**"

   Note: Make sure that the FRIS has been returned to the "**Effective**" mode before proceeding.
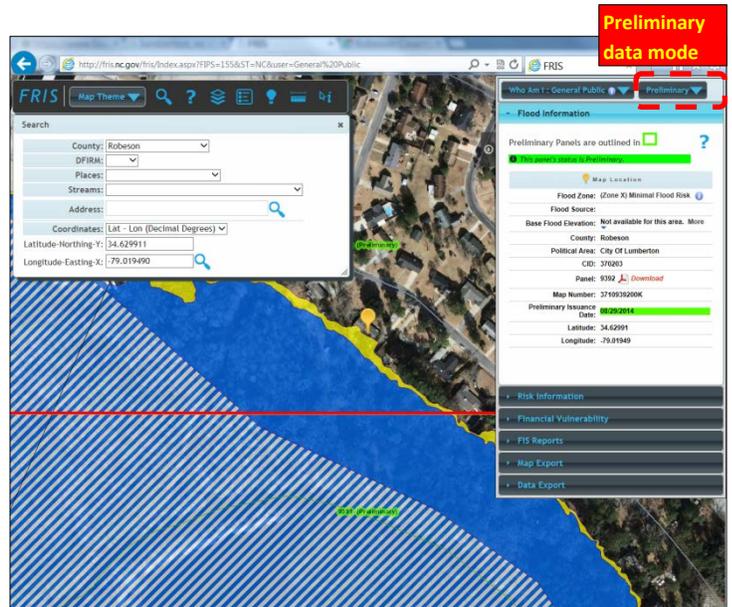
The incredible Flood Risk Information System (FRIS)

5. **User modes:** The **User mode toggle** (i.e. the switch between the **General Public** user mode and the **Advanced** user mode) is located in the upper right corner. The **General Public** user mode and the **Advanced** user mode have all the same features, except that the **Advanced** user mode includes the following additional features: **Engineering Models**, which are used by engineers, and **Flood Risk Management Plan**, which is used by community planners.
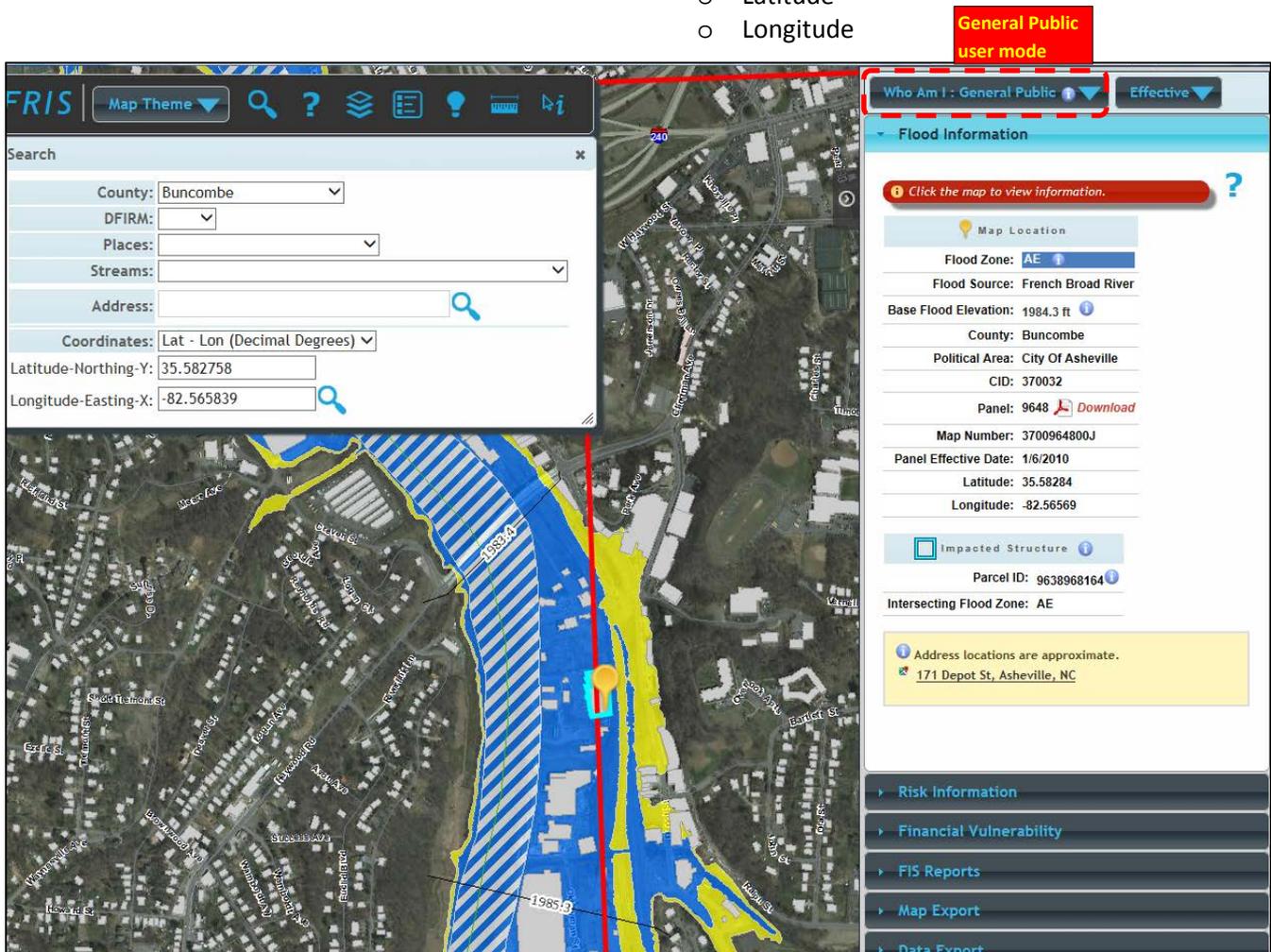
   a. **General Public user mode**

   Enter the coordinates of the desired address (e.g. 35.582758 and -82.565839, which are for 282 Lyman St, Asheville, NC 28801) into the "**Latitude**" and "**Longitude**" fields and then zoom to the needed extent.

   Note   Buncombe County is one of the few counties that have a "**Building Footprints with Risk**" GIS layer, which can be turned off by selecting the **[Layers]** button (icon looks like a 3-layer stack) in the FRIS toolbar and then deselecting that layer.

   - **Flood info**
     - Flood Zone
     - Flood Source
     - Base Flood Elevation (BFE)
     - County
     - Political Area
     - CID (Community ID)
     - Panel: DFIRM download
     - Map Number
     - Panel Effective Date
       Note: In the **Preliminary** data mode, this parameter is replaced by the "**Preliminary Issuance Date**"
     - Latitude
     - Longitude

5. **User modes:**

   a. **General Public user mode**

      - **Risk Info**
        - Availability
          - Only available in Buncombe, Durham, Edgecombe, Greene, Lenoir, Macon, Nash, New Hanover, Pitt, and Wilson counties
          - Will be available as each county's maps are updated starting with Alamance, Chatham, & Orange counties

        - **Property parameters**

          The data is from county tax records, which can be changed on the FRIS, but are not retained on the FRIS. If you change any of these values, then press the **[Recalculate]** button.

          - **Building Value**:
          - **Stories**: 1, 1.5, 2, 3, 4, 5, >5, Split Level
          - Square Feet (Ft):
          - **Foundation**: Basement, Crawl Space, Fill, Pier, Pile, Slab on Grade, and Solid Wall
          - **Occupancy Type**: 30+ occupancy types (e.g. Agriculture, Hospital, Mobile Home, Retail Trade, etc.)

          The **[Recalculate]** button needs to be pressed if a user changes any of the property values, which are not changed in the database.

        - **Derived risk**

          Based on the property's flood risk (i.e. location in the floodplain) combined with the dwelling's information (supplied either by county records or by the user), FRIS will report the following:

          - **Flooding hazard**
          - **Yearly risk**: Current year (e.g. 5%), Over the next 15 years (e.g. 56%), and Over the next 30 years (e.g. 81%)

The incredible Flood Risk Information System (FRIS)

5. **User modes:**

a. **General Public user mode**

- **Risk Info**
  - **Derived risk**

    Based on the property's flood risk (i.e. location in the floodplain) combined with the dwelling's information (supplied either by county records or by the user), FRIS will report the following:

    - **Flood damage table**

Annual Chance of Flood	Depth Above Finished Floor (in feet)	Damage	Building Losses
10 %	N/A	0%	N/A
4 %	1.3	10%	$165,423
2 %	4.3	19%	$294,121
1 %	6.3	24%	$377,861
0.2 %	14.9	58%	$912,914

  - **Reduce My Risk**

    Press the **[Reduce My Risk]** button, which will invoke a "**Mitigation**" table listing:
    - **Risk Reduction Option**: Mitigation measures
    - **Cost**: Estimated costs for each option
    - **Cost Effectiveness**: Calculated cost based on an estimated cost per square foot

    Note: **Cost Effectiveness** can be recalculated by the following steps:

    1). Press the calculator icon to the left of the desired **Risk Reduction Option** (e.g. Relocation)

    2). Enter a different cost per square foot value. Since you will be moving the entire building, then do not change the square footage value. On other Risk Reduction Options it may be reasonable to enter a square footage less than the building's total square footage.

    3). Press the **[Calculate]** button located within that Risk Reduction Option's section

The incredible Flood Risk Information System (FRIS)

5. **User modes:**

   a. **General Public user mode**

   Enter the coordinates of the desired address (e.g. 34.283286 and -77.924520, which are for 522 Fulbright St, Wilmington, NC 28401) into the "**Latitude**" and "**Longitude**" fields and then zoom to the needed extent.

   Note: New Hanover County is one of the few counties that have a "**Building Footprints with Risk**" GIS layer, which can be turned off by selecting the **[Layers]** button (icon looks like a 3-layer stack) in the FRIS toolbar and then deselecting that layer.

   - **Financial Vulnerability**

   o **Personal Vulnerability**

   Do you need flood insurance? Homeowner's insurance does not cover losses from flooding. A property owner living in a flood prone area can purchase flood insurance from the National Flood Insurance Program (NFIP), which is administered by FEMA. The **Personal Vulnerability Index (PVI)** helps home owners and aspiring home owners to determine if they are financially prepared for major losses from flooding.

   - If FRIS automatically generated PVI values for the selected property, the values come from tax records for the property and census data and insurance statistics for properties in the area.

   - To determine a more realistic PVI and the importance of purchasing a sufficient amount of flood insurance,

     1. Go to the "**Risk Information**" section, enter a realistic **Building Value ($)** (e.g. $200,000), and then press the **[Recalculate]** button.

     2. Return to the "**Financial Vulnerability**" section and enter the following:

        – **Insurance Coverage ($)**: Amount of flood insurance coverage

          Note: Repeat this exercise with different levels of flood insurance coverage.

        – **Yearly Income ($)**: The annual income of the household

        – **Savings and Assets ($)**: Available assets to cover flood losses

        – **Deductible ($)**: Insurance deductible

     2. Press the **[Recalculate]** button, which will generate the following report:

        Based on the building value of **$200,000**:

        If the building is 100% damaged, your uncovered structural losses are **$51,000.**

        It will take **93 %** of your yearly income and assets to cover structural damage.

        The PVI rating for this location is **High** .

   - **Other Losses**: FRIS will also remind the user of **Relocation Cost** and **Contents Cost**.

The incredible Flood Risk Information System (FRIS)

5. User modes:

a. General Public user mode

Enter the coordinates of the desired address (e.g. 34.283286 and -77.924520, which are for 522 Fulbright St, Wilmington, NC 28401) into the "**Latitude**" and "**Longitude**" fields and then zoom to the needed extent.

- **Flood Insurance Study (FIS) Reports**: Click on the following items to generate a table or report.

  o **Floodway Data**

  1). Click on the "**Floodway Data**" link, which will invoke the "**Floodway Data**" table.

  2). To zoom to a desired cross section, click on the magnifying glass icon located to the left of that cross section (e.g. 100).

Floodway Data

Cross Section	Distance	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
Wildcat Branch								
086	8,560	80	373	2.8	14.8	14.8	15.4	0.6
089	8,940	60	248	4.2	16.6	16.6	17.2	0.6
094	9,369	60	287	3.0	19.1	19.1	19.9	0.8
097	9,661	60	284	3.0	20.1	20.1	20.9	0.8
100	9,960	60	257	3.3	21.7	21.7	22.1	0.4
108	10,830	250	639	1.3	25.9	25.9	26.0	0.1
114	11,360	200	724	1.2	26.3	26.3	26.5	0.2

Floodway Source | Floodway | Water Surface Elevation

Print

3). To return to the previous extent, zoom out and then pan with your mouse.

4). Close the "**Floodway Data**" table.

Cross section #100

The incredible Flood Risk Information System (FRIS)

5. User modes:

    a. General Public user mode

Enter the coordinates of the desired address (e.g. 34.283286 and -77.924520, which are for 522 Fulbright St, Wilmington, NC 28401) into the "**Latitude**" and "**Longitude**" fields and then zoom to the needed extent.

Summary of Discharges

1). Zoom out until a red box is drawn around the FIRM

2). Press the "**Summary of Discharges**" link.

3). Examine the table to make sure that the discharges are for the same flooding source as for the selected property.

    a). The flooding source for the selected property is Wildcat Branch.

    b). The flooding source for the **Summary of Discharges** is Ness Creek.

4). Highlight the flooding source for **Summary of Discharges**.

    a). Press the **[Search]** button (icon looks like a magnifying glass).

    b). In the "**Streams**" dropdown list, select the stream name for the "**Summary of Discharges**" (e.g. Ness Creek), which will blue highlight the stream and zoom out the view to encompass the stream's extent.

5). Close the "**Summary of Discharges**" table.

The incredible Flood Risk Information System (FRIS)

5. **User modes:**

   a. **General Public user mode**

   - **Flood Insurance Study (FIS) Reports**: Click on the following items to generate a table or report.
     - **Limited Detail Flood Hazard Data**
       1). Press the **[Search]** button (icon looks like a magnifying glass) and then select the desired stream (e.g. Ness Creek) in the "**Streams**" dropdown list.
       2). Click on the "**Limited Detail Flood Hazard Data**" link, which will invoke the "**Limited Detail Flood Hazard Data**" table for the selected stream (e.g. Ness Creek).

3). Click on a cross section (e.g. 143) to zoom to that location.

4). Close the "**Limited Detail Flood Hazard Data**" table.

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
Ness Creek				
000	0	-8,888	7.9¹	-9,999 / -9,999
040	4,000	-8,888	7.9¹	-9,999 / -9,999
060	6,000	-8,888	7.9¹	-9,999 / -9,999
073	7,320	-8,888	7.9¹	-9,999 / -9,999
082	8,200	-8,888	7.9¹	-9,999 / -9,999
088	8,800	-8,888	7.9¹	-9,999 / -9,999
098	9,770	-8,888	7.9¹	-9,999 / -9,999
107	10,740	-8,888	9.0	-9,999 / -9,999
112	11,170	-8,888	9.7	-9,999 / -9,999
119	11,900	-8,888	10.5	-9,999 / -9,999
128	12,800	-8,888	12.1	-9,999 / -9,999
135	13,470	-8,888	13.9	-9,999 / -9,999
140	14,000	-8,888	15.1	-9,999 / -9,999
143	14,250	-8,888	16.1	-9,999 / -9,999
146	14,550	-8,888	25.4	-9,999 / -9,999
150	15,030	-8,888	25.4	-9,999 / -9,999
153	15,320	-8,888	25.5	-9,999 / -9,999
156	15,640	-8,888	25.6	-9,999 / -9,999
159	15,940	-8,888	26.8	-9,999 / -9,999
164	16,400	-8,888	27.2	-9,999 / -9,999
169	16,870	-8,888	29.0	-9,999 / -9,999
175	17,480	-8,888	30.4	-9,999 / -9,999
178	17,800	-8,888	32.4	-9,999 / -9,999

Click

Cross section #143

The incredible Flood Risk Information System (FRIS)

5. **User modes:**

   a. **General Public user mode**

      - **Flood Insurance Study (FIS) Reports**:
        - **FIS report builder** (county-wide report)

2). Click on the "**FIS Report Builder**" link, which will invoke the "**Report Builder**" dialog box with no sections of the report selected, except for the "**Cover**" section.

3). Select only those sections that you want included in your report.

   a). If a section is selected, then all the sub-sections of that section are selected, which are revealed/hid by pressing the **[+] (Expand)**/**[-] (Contract)** button located to the left of each section.

   b). If you do not want to include a specific sub-section of a section, then press the **[+] (Expand)** button followed by deselecting the unwanted section(s) (e.g. If you were working in the mountains, then you could deselect the "**5.3 Coastal Analyses**" sub-section).

4). Press the **[Print]** button, which will generate a PDF file.

   Note: If you selected "**Index Map**", then FRIS will also generate a PDF file of the county's Index Map.

5). Download and/or print the exported PDF file(s) using the controls at the bottom of the window.

The incredible Flood Risk Information System (FRIS)

5. **User modes:**

    a. **General Public user mode**

    - **Flood Insurance Study (FIS) Reports**:
        o **Effective Index Map**
            1). Press the **[Search]** button (icon looks like a magnifying lens) in the FRIS toolbar and select a desired county (e.g. New Hanover)
            2). Click on a desired FIRM panel, enter a set of coordinates (e.g. 34.283286, -77.924520), or enter an address
            3). Click on the "**Effective Index Map**" link, which will generate PDF file of the county's Index Map.
            4). Download and/or print the exported PDF file using the controls at the bottom of the window.

The incredible Flood Risk Information System (FRIS)

5. **User modes:**

a. **General Public user mode**

- **Map Export**

  1). Enter the coordinates for the desired address (e.g. 35.615396 and -77.365079, which are for 205 N Summit St / Greenville, NC 27858) into the "**Latitude**" and "**Longitude**" fields and then zoom to the needed extent.

  2). Click on the "**Map Export**" function bar.

  3). Select one of the following map templates:

     a). **Current View**

     b). **Regulatory**, which produces a FIRMette [i.e. a zoomed in section of a Flood Insurance Rate Map (FIRM) with all the required notation of a FIRM]

     c). **Flood Risk**, which produces a thematic map showing "river flooding total damage" and tabular data of the number of impacted buildings and cost of these damaged buildings over varying periods of time (e.g. 10, 25, 50, 100, and 500 years).

  4). Select one of the following PDF paper sizes:

     a). **8.5 x 11**

     b). **11 x 17**

The incredible Flood Risk Information System (FRIS)

5. **User modes:**

    a. **General Public user mode**

    - **Map Export**

        3). Select the following map template:

        a). **Current View**

            1)). Enter a title for your map in the "**Map Title**" field (e.g. 205 N Summit St, Greenville, NC 27858)

            2)). Press the **[Print]** button

            3)). Download and/or print the exported PDF file using the controls at the bottom of the window.
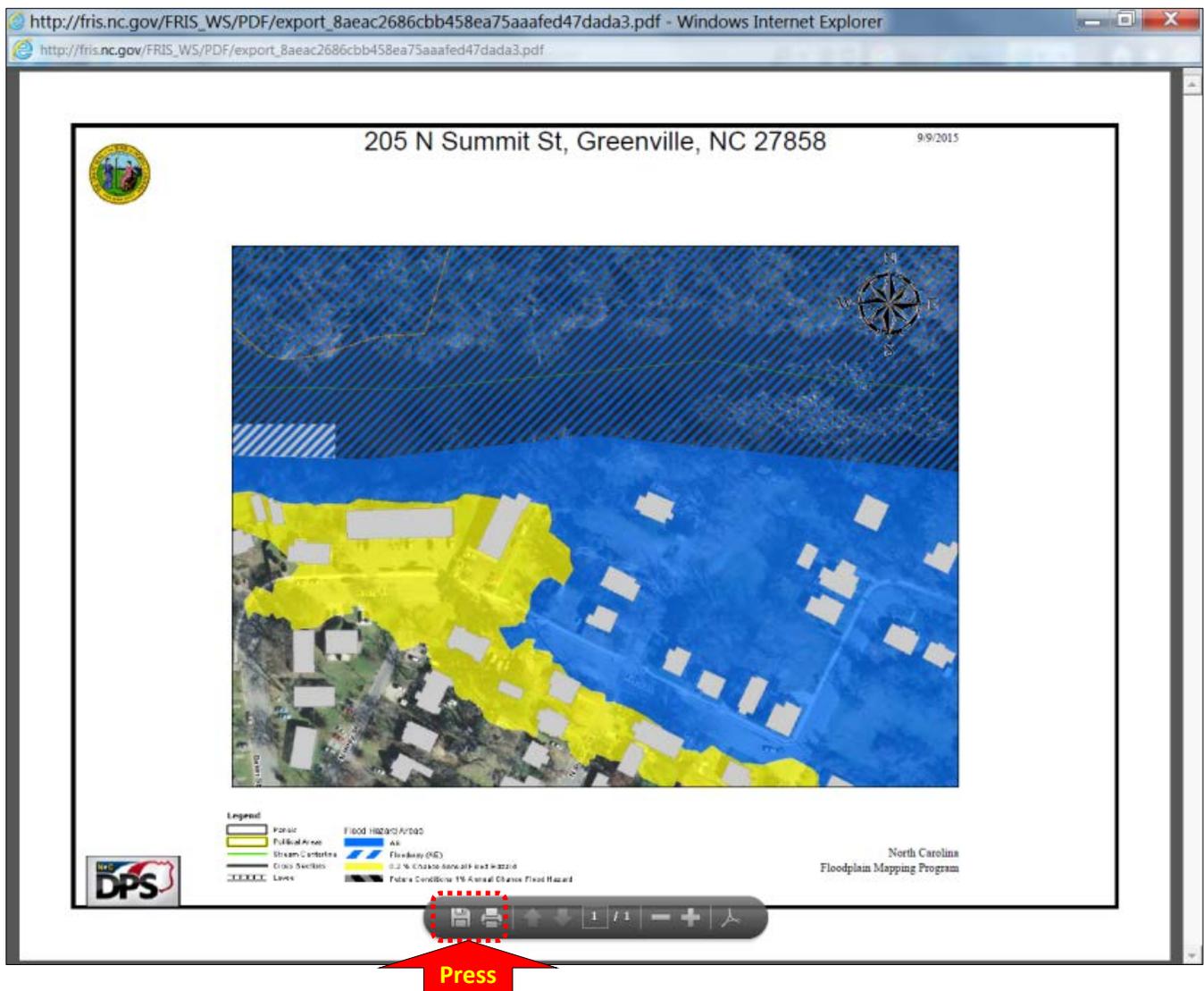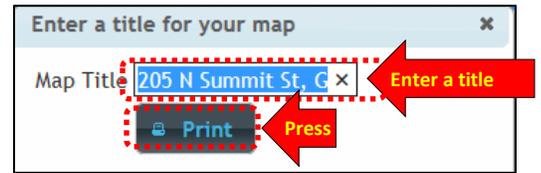
The incredible Flood Risk Information System (FRIS)

5. **User modes:**

    a. **General Public user mode**

        - **Map Export**

            3). Select the following map template:

                b). **Regulatory**

                    1)). Press the **[Print]** button at the
                        bottom of the FIRMette preview
                        window.

                    2)). Download and/or print the exported
                        PDF file, which is composed of two
                        (2) pages, using the controls at the
                        bottom of the window.
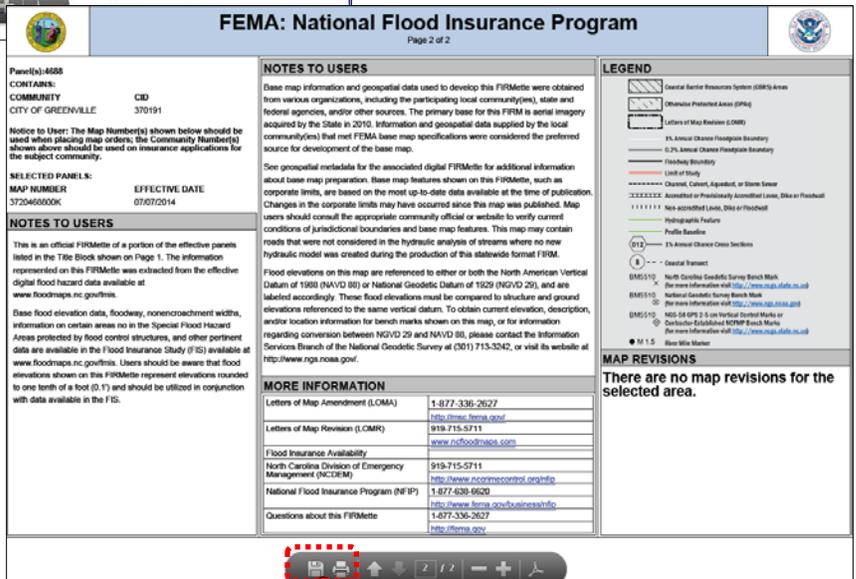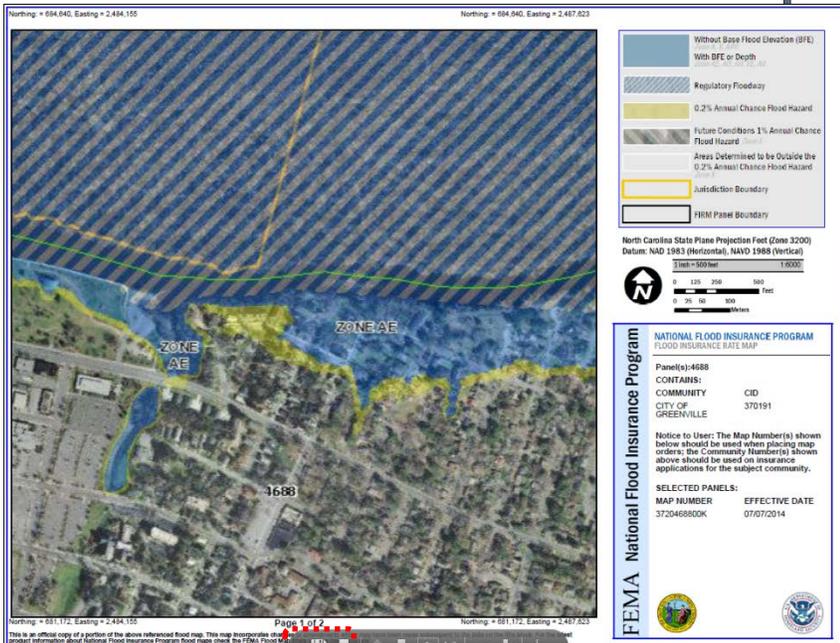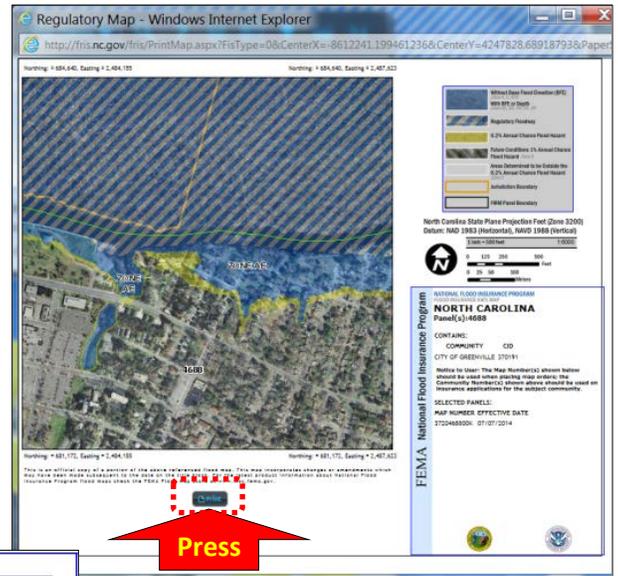
Press

Press

Press

The incredible Flood Risk Information System (FRIS)

5. User modes:

    a. General Public user mode

        • **Map Export**

           3). Select the following map template:

               c). **Flood Risk**

                    1)). Although the "**Flood Risk Map**" opens showing the tabular data of the corresponding county, it does not open showing the extent of the corresponding county. Therefore, pan (use your mouse to drag) and zoom to the needed extent using the map's **[+]/[-]** buttons.

                    2)). Press the **[Print]** button at the bottom of the "**Flood Risk**" preview window.

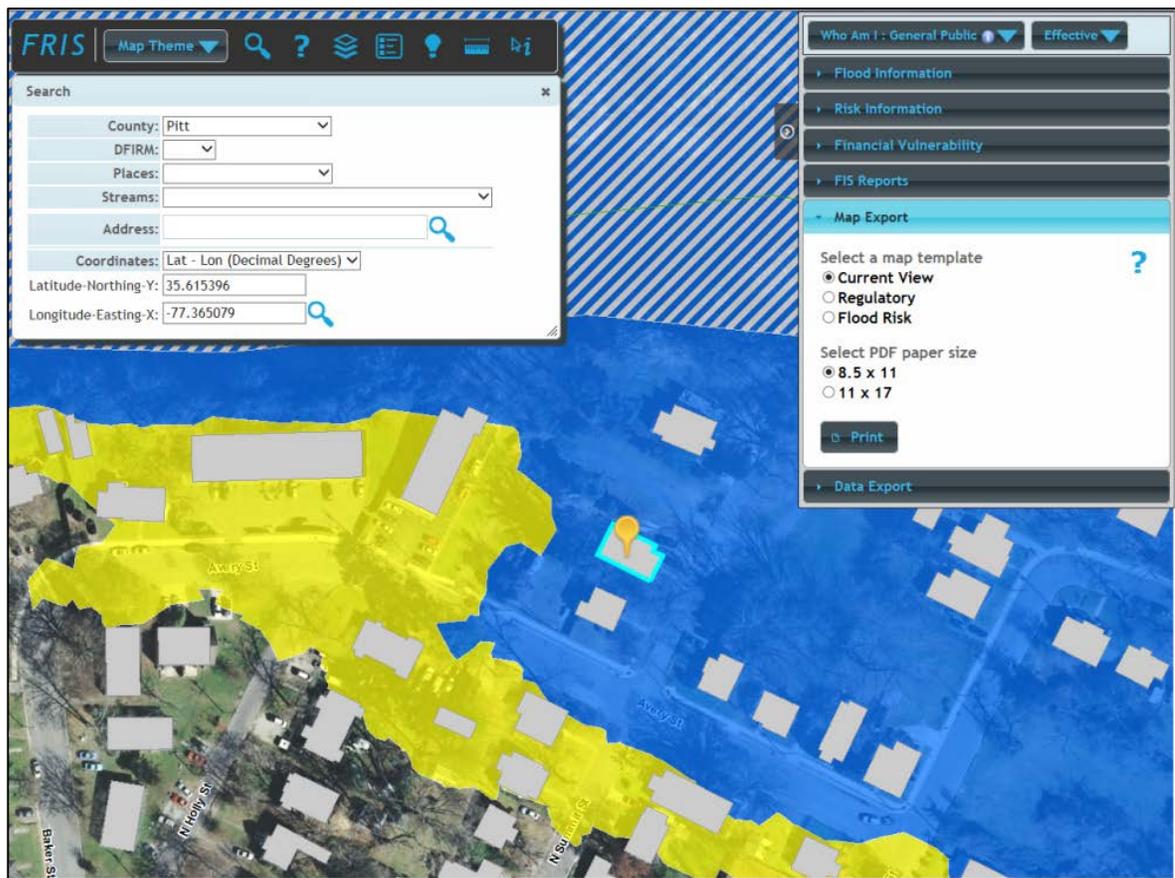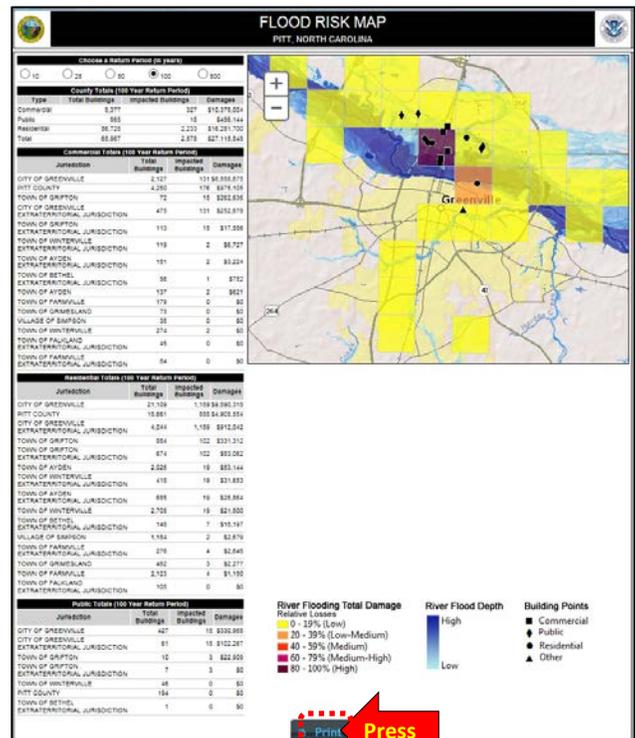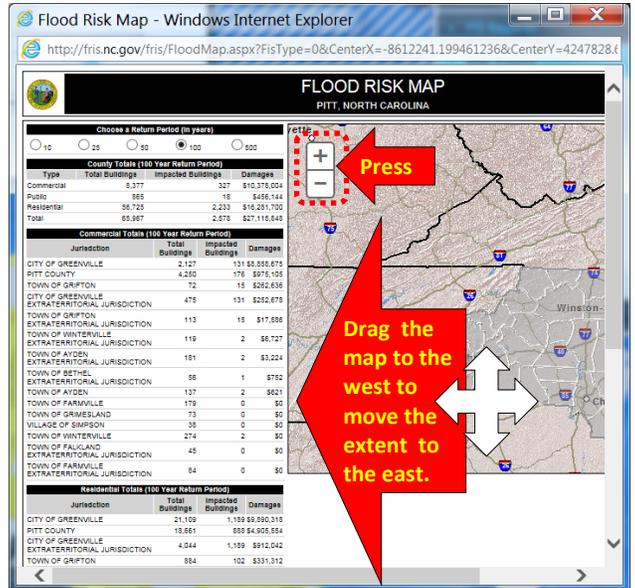# The incredible Flood Risk Information System (FRIS)

5. **User modes:**

    a. **General Public user mode**

        •   **Map Export**

            3). Select the following map template:

                c). **Flood Risk**

                    3)). Download and/or print the exported PDF file, which is composed of three pages, using the controls at the bottom of the window.

Residential Totals (100 Year Return Period)

Jurisdiction	Total Buildings	Impacted Buildings	Damages
CITY OF GREENVILLE	21,109	1,189	$9,890,318
PITT COUNTY	18,661	888	$4,905,554
CITY OF GREENVILLE EXTRATERRITORIAL JURISDICTION	4,044	1,189	$912,042
TOWN OF GRIFTON	884	102	$331,312
TOWN OF GRIFTON EXTRATERRITORIAL JURISDICTION	674	102	$83,062
TOWN OF AYDEN	2,026	19	$53,144
TOWN OF WINTERVILLE EXTRATERRITORIAL JURISDICTION	418	19	$31,653
TOWN OF AYDEN EXTRATERRITORIAL JURISDICTION	685	19	$25,864
TOWN OF WINTERVILLE	2,705	19	$21,800
TOWN OF BETHEL EXTRATERRITORIAL JURISDICTION	148	7	$18,197
VILLAGE OF SIMPSON	1,184	2	$2,679
TOWN OF FARMVILLE EXTRATERRITORIAL JURISDICTION	276	4	$2,648
TOWN OF GRIMESLAND	482	3	$2,277
TOWN OF FARMVILLE	2,123	4	$1,150
TOWN OF FALKLAND EXTRATERRITORIAL JURISDICTION	105	0	$0

Public Totals (100 Year Return Period)

Jurisdiction	Total Buildings	Impacted Buildings	Damages
CITY OF GREENVILLE	427	15	$330,968
CITY OF GREENVILLE EXTRATERRITORIAL JURISDICTION	61	15	$102,267
TOWN OF GRIFTON	10	3	$22,909
TOWN OF GRIFTON EXTRATERRITORIAL JURISDICTION	7	3	$0
TOWN OF WINTERVILLE	46	0	$0
PITT COUNTY	194	0	$0
TOWN OF BETHEL EXTRATERRITORIAL JURISDICTION	1	0	$0

County Totals (100 Year Return Period)

Type	Total Buildings	Impacted Buildings	Damages
Commercial	8,377	327	$10,378,004
Residential	56,725	2,233	$16,281,700
Public	865	18	$456,144
Total	65,967	2,578	$27,115,848

Commerical Totals (100 Year Return Period)

Jurisdiction	Total Buildings	Impacted Buildings	Damages
CITY OF GREENVILLE	2,127	131	$8,858,675
PITT COUNTY	4,250	176	$975,105
TOWN OF GRIFTON	72	15	$262,636
CITY OF GREENVILLE EXTRATERRITORIAL JURISDICTION	475	131	$252,678
TOWN OF GRIFTON EXTRATERRITORIAL JURISDICTION	113	15	$17,586
TOWN OF WINTERVILLE EXTRATERRITORIAL JURISDICTION	119	2	$6,727
TOWN OF AYDEN EXTRATERRITORIAL JURISDICTION	181	2	$3,224
TOWN OF BETHEL EXTRATERRITORIAL JURISDICTION	56	1	$752
TOWN OF AYDEN	137	2	$621
TOWN OF FARMVILLE	179	0	$0
TOWN OF GRIMESLAND	73	0	$0
VILLAGE OF SIMPSON	38	0	$0
TOWN OF WINTERVILLE	274	2	$0
TOWN OF FALKLAND EXTRATERRITORIAL JURISDICTION	45	0	$0
TOWN OF FARMVILLE EXTRATERRITORIAL JURISDICTION	84	0	$0

River Flooding Total Damage
Relative Losses
- 0 - 19% (Low)
- 20 - 39% (Low-Medium)
- 40 - 59% (Medium)
- 60 - 79% (Medium-High)
- 80 - 100% (High)

River Flood Depth
- High
- Low

Building Points
- ■ Commercial
- ◆ Public
- ● Residential
- ▲ Other

The incredible Flood Risk Information System (FRIS)

5. User modes:

a. General Public user mode

- **Data Export**
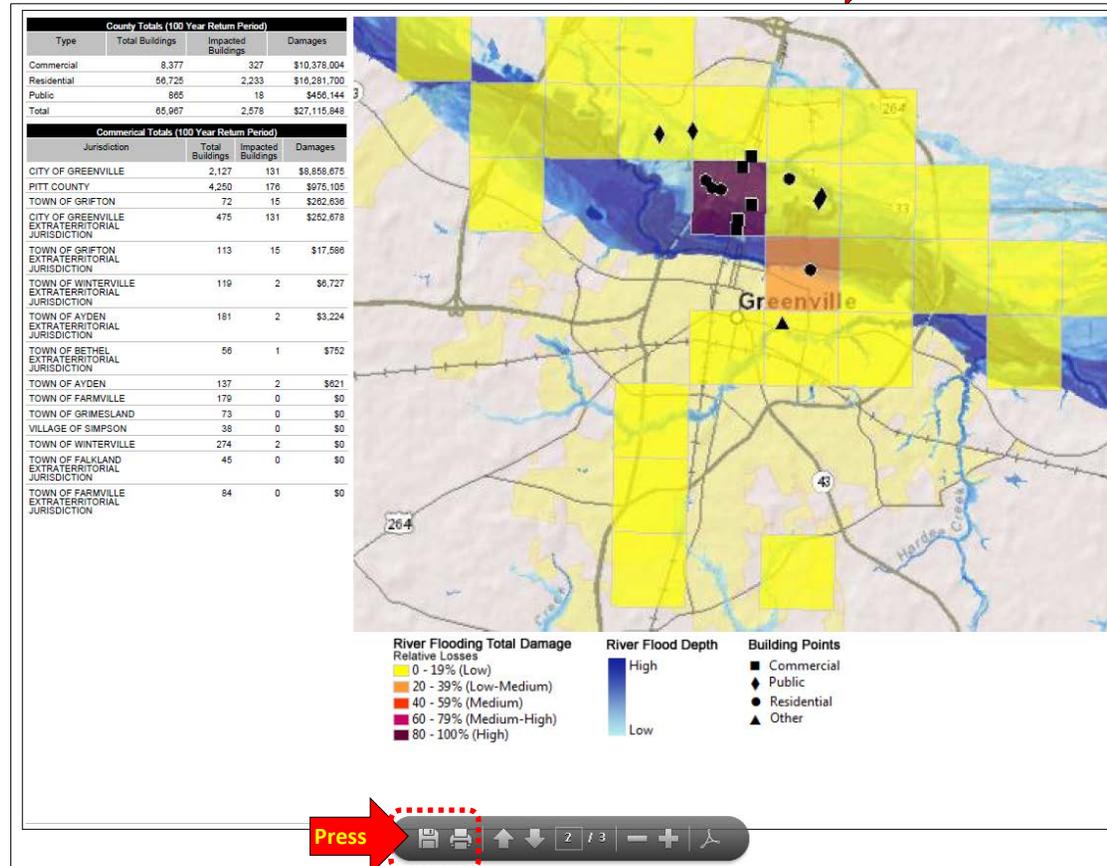   - ○ Data files for the panel
        - ▪ DFIRM: Effective
        - ▪ DFIRM: Preliminary
        - ▪ LiDAR Bare earth
        - ▪ LiDAR DEM 20 (20 ft cells)
        - ▪ Imagery: TIFF file
    - ○ Extract and download
        1). Enter the coordinates for the desired address (e.g. 34.629911 and -79.019490, which are for 1875 Riverside Blvd / Lumberton, NC 28358) into the "**Latitude**" and "**Longitude**" fields and then zoom to the needed extent.

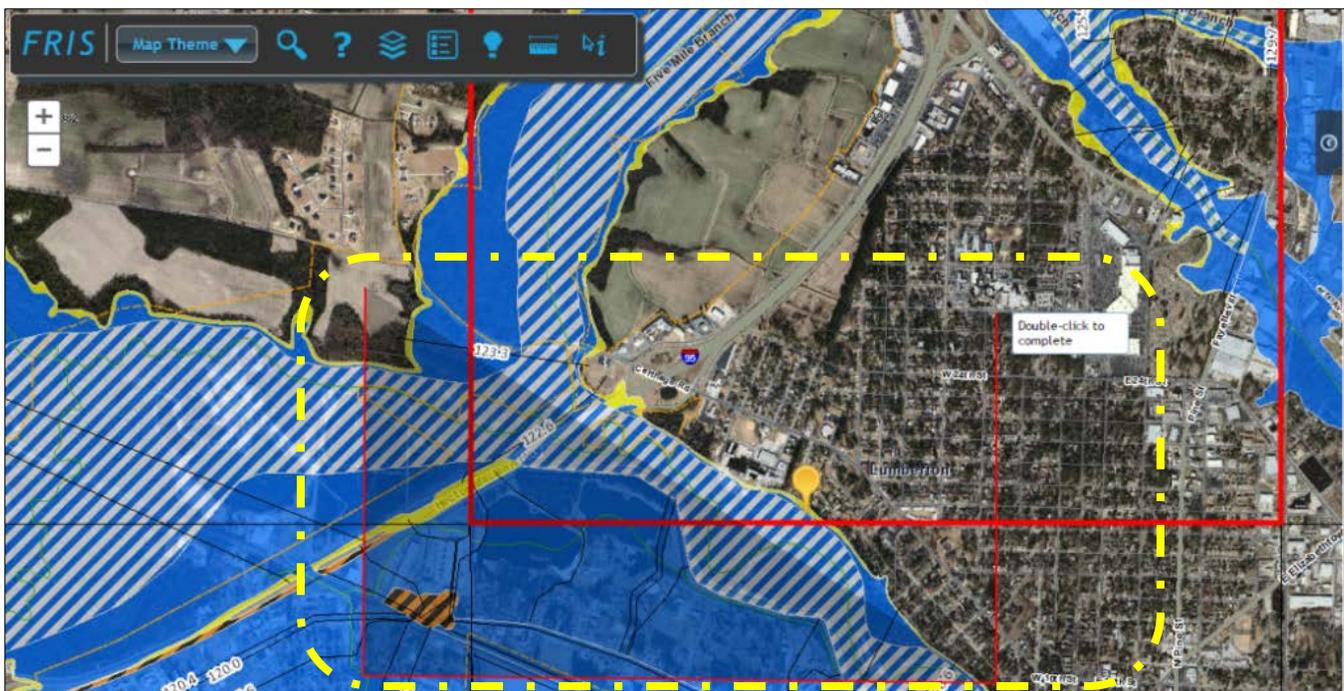   2). Select your area of interest by doing the following steps:

        a). Press the **[Draw]** button

        b). Use your cursor to draw the desired boundary

            1)). Single left click on each vertex, which leaves an unclosed polygon

            2)). Double left click to close the polygon

The incredible Flood Risk Information System (FRIS)

5. User modes:

a. General Public user mode

- **Data Export**

  2). Select the layers to extract data from:

  - Base Flood Elevations (FT)
  - Benchmarks
  - Coastal transect
  - Structures (e.g. levees)
  - Cross section
  - Stream centerline
  - Coastal Barrier Resource Systems (CBRS)
  - Political areas
  - Flood hazard lines
  - Flood hazard areas
  - Water areas
  - Counties

  3). Specify download format

  - Shapefile – SHP- .shp

    ~ or ~

  - File Geodatabase – GDB - .gdb

  4). Press the **[Extract & Download]** button.

  5). Press the **[Zip Folder]** button, which will initiate the download process of an "**outputN.zip**" file.

The incredible Flood Risk Information System (FRIS)

5. **User modes:**

   b. **Advanced user mode:**

   Includes all the features that are in the "**General Public**" mode:

   - **Flood Info**
   - **Risk Info** (only available in Buncombe, Edgecombe, and New Hanover counties)
   - **Financial Vulnerability**
   - **FIS Reports**
   - **Map Export**
   - **Data Export**

   Plus, the following additional features:

   - **Flood Risk Management Plan** (for planners)

     1). Click on the "**Go to Flood Risk Management Plan**" link, which will take you to the iRISK website (https://irisk.ncem.org/irisk/)]

     2). Enter the street address for the desired property. Confirm the location on Google Maps.

   - **Engineering Models**

     1). Click on a stream with a defined floodway.

     2). Download the model if available. Some models are not available online, but can be obtained by contacting the NCFMP Program Manager (919-715-5711).
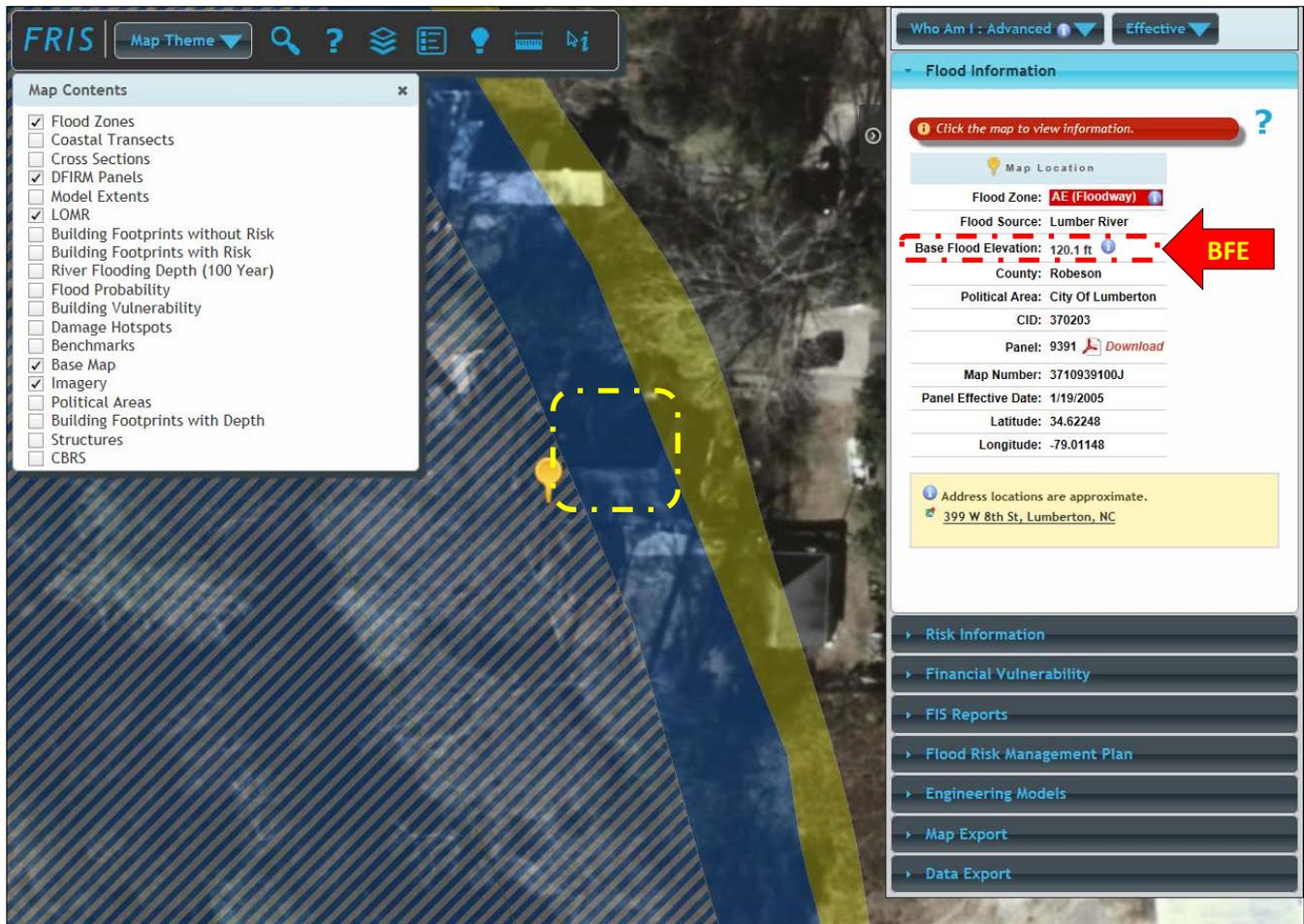
The incredible Flood Risk Information System (FRIS)

6. How to determine Base Flood Elevation (BFE)

    a.   Enter the coordinates for the desired address (e.g. 34.629911 and -79.019490, which are for 1875 Riverside Blvd / Lumberton, NC 28358) into the "**Latitude**" and "**Longitude**" fields and then zoom to the needed extent.

    b.   The FRIS website can determine a location's Base Flood Elevation (BFE), because it has integrated the Flood Profile data as a grid layer. Therefore, if you use FRIS to determine a BFE for an Elevation Certificate, then enter "**Flood Profile**" as that BFE's data source.

    Note: Since the house at 1875 Riverside Blvd, Lumberton, NC is not in an AE zone, but is instead partially located in a 0.2% Annual Chance Flood Hazard zone (i.e. the 500-year flood zone), FRIS will report "**Not available for this area**" for the BFE. However, the home further downstream at 301 W. 8th St (34.622513, -79.011354) is located in an AE zone and in the floodway. Thus, FRIS will be able to report a BFE.

    1). To determine a BFE, click on a location within an AE zone or a VE zone.

    2). The BFE will be reported in the "**Flood Information**" dialog box in the "**Base Flood Elevation**" field.

The incredible Flood Risk Information System (FRIS)

7. **How to retrieve LOMRs in the vicinity**

   a. If the **User mode** is not in the **Advanced** user mode, then switch it to the **Advanced** user mode.

   b. Enter the coordinates for the desired address (e.g. 34.622513 and -79.011354, which are for 301 W. 8th St / Lumberton, NC 28358) into the "**Latitude**" and "**Longitude**" fields, close the "**Search**" window, retract the "**Feature**" side panel by pressing the **[>] (right arrow)** block, and then zoom to the needed extent.

   c. Press the **[Layers]** button on the FRIS toolbar

      1). In the "**Map Contents**" dialog box, select the following layers and deselect any other layer:

      - **Flood Zones**
      - **DFIRM Panels**
      - **LOMR**
      - **Base Map**

      2). Close the "**Map Contents**" dialog box.

   d. Zoom-out until the red LOMR polygons are visible

      Note: In our example, the closest LOMRs are in Whiteville, Hope Mills, and Fayetteville.

   e. Press the **[↖i] (Identify)** button in the FRIS toolbar

      1). In the "**Identify**" dialog box, click on the "**LOMR**" tab.

      2). On the map:

         a). Pan over to the desired red LOMR polygon, zoom-in, and then click on it.

         b). The LOMR's case number will be reported in the "**Identify**" dialog box in the "**LOMR**" tab.
             Note: This example used the LOMR in Whiteville and its case number is **10-04-6817P**.
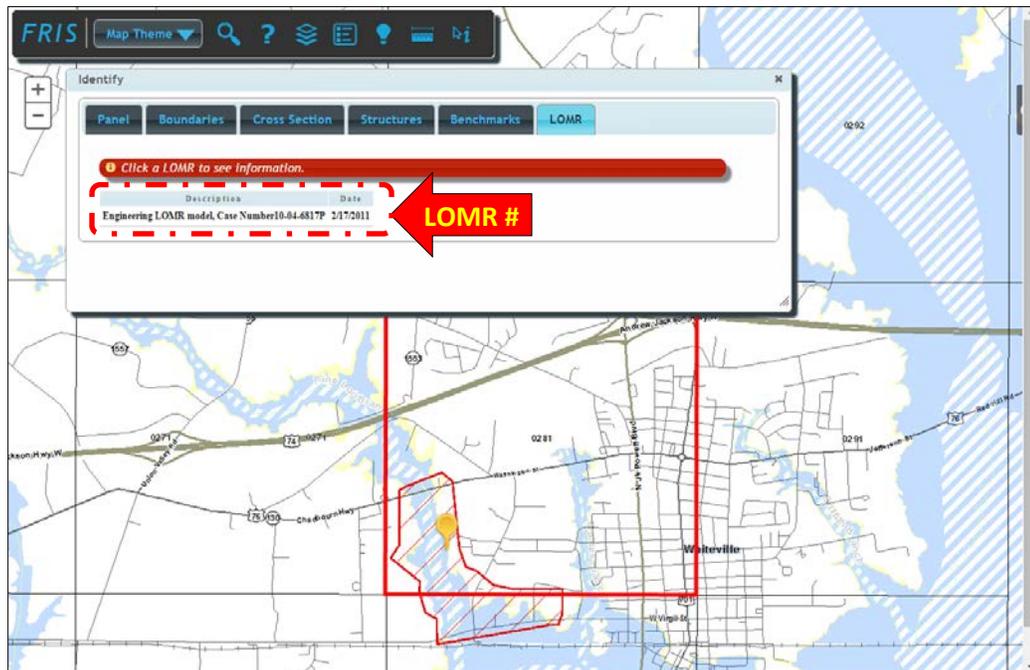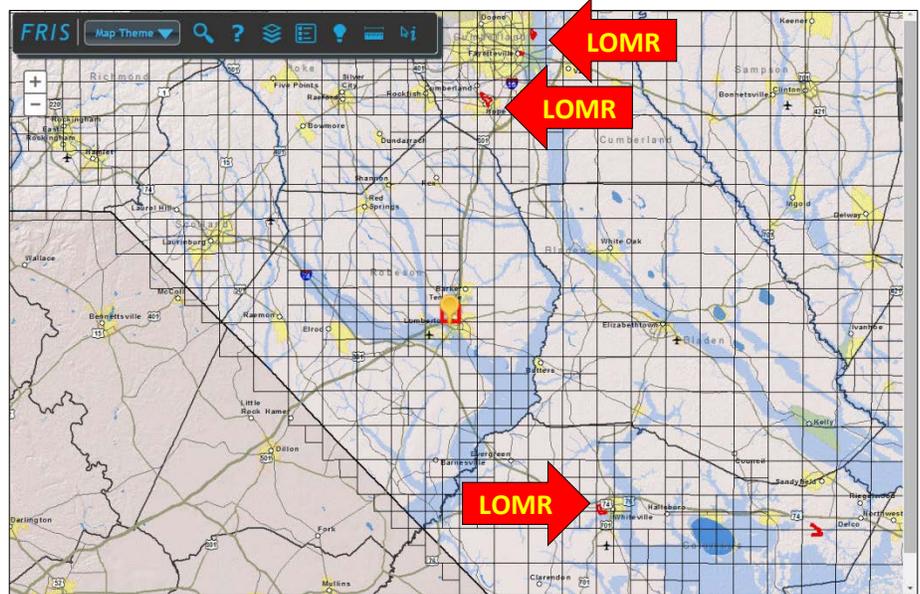
The incredible Flood Risk Information System (FRIS)

7. How to retrieve LOMRs in the vicinity

f. Retrieve the desired LOMR case:

1). Expand the retracted "**Feature**" side panel by pressing the **[<] (left arrow)** block in the upper right corner of the FRIS map.

2). Select the "**Engineering Models**" drawer

a). Confirm that the Engineering LOMR model (e.g. Case Number 10-04-6817P) matches the desired LOMR number.
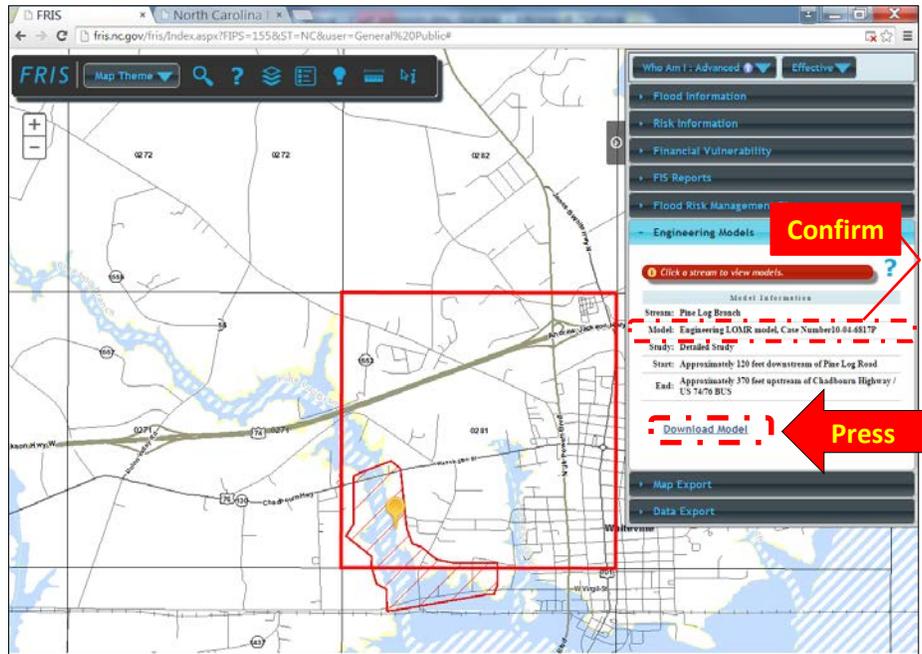
b). Press the "**Download Model**" link.

3). File naming format:

a. Downloaded zip file

County FIPS LOMR issue date (YYYYMMDD)-LOMR case #_Documents.zip

e.g. **3704720110217_10-04-6817P_Documents.zip**

b). The "**LOMR Determination Document**" will be:

1)). Located in the following folder of the zip file:

LOMR case number_Documents\LOMR case number-determination

e.g. **10-04-6817P_Documents\10-04-6817P-determination**

2)). Labeled accordingly:

LOMR case #-Community # (CID)-FEMA form # 102.pdf

e.g. **10-04-6817P-370071-102**.pdf

g. LOMRs can also be downloaded from the FEMA "Status of Map Change Requests" webpage for North Carolina (http://www.floodmaps.fema.gov/fhm/Status_MapCh/ST_srch.asp?state=NC).

h. If you need assistance with any Letter of Map Change, please contact Steve Garrett (steve.garrett@ncdps.gov / 919-825-2316).

The incredible Flood Risk Information System (FRIS)

8. **How to access the Preliminary flood hazard data and compare it to the Effective flood hazard data.**

   a. Open a second window in your browser.

   b. Copy/paste (http://fris.nc.gov/fris/Index.aspx?FIPS=155&ST=NC&user=Advanced) into the URL field.

      Note: The "**FIPS=155&ST=NC**" code directs FRIS to Robeson County.

   c. Set the first FRIS window into the **Effective** data mode and the second FRIS windows into the **Preliminary** data mode.

   d. Enter the coordinates for the desired address (e.g. 34.629911 and -79.019490, which are for 1875 Riverside Blvd / Lumberton, NC 28358) into the "**Latitude**" field and "**Longitude**" field of each FRIS window, close the "Search" dialog box, and then zoom to the needed extent.

   e. Examine the comparison between the **Effective** data mode and the **Preliminary** data mode:

      1). Onscreen map

Parameter	Effective	Preliminary
Panel outline	Thin black line	Thick neon green line
Active panel outline	Red line	Red line
Panel number	Black font that shrinks too much as you zoom in.	Black font highlighted in green and identified as "Preliminary" [e.g. 9392 (Preliminary)].
	Effectively invisible	Very visible

      2). Onscreen "**Flood Information**" panel

Parameter	Effective	Preliminary
Info presented between the "**Flood Information**" title and the "**Map Location**"	Click the map to view information	Preliminary Panels are outlined in ☐ *This panel's status is Preliminary.*
Date	Panel Effective Date: MM/DD/YYYY	Preliminary Issuance Date: MM/DD/YYYY
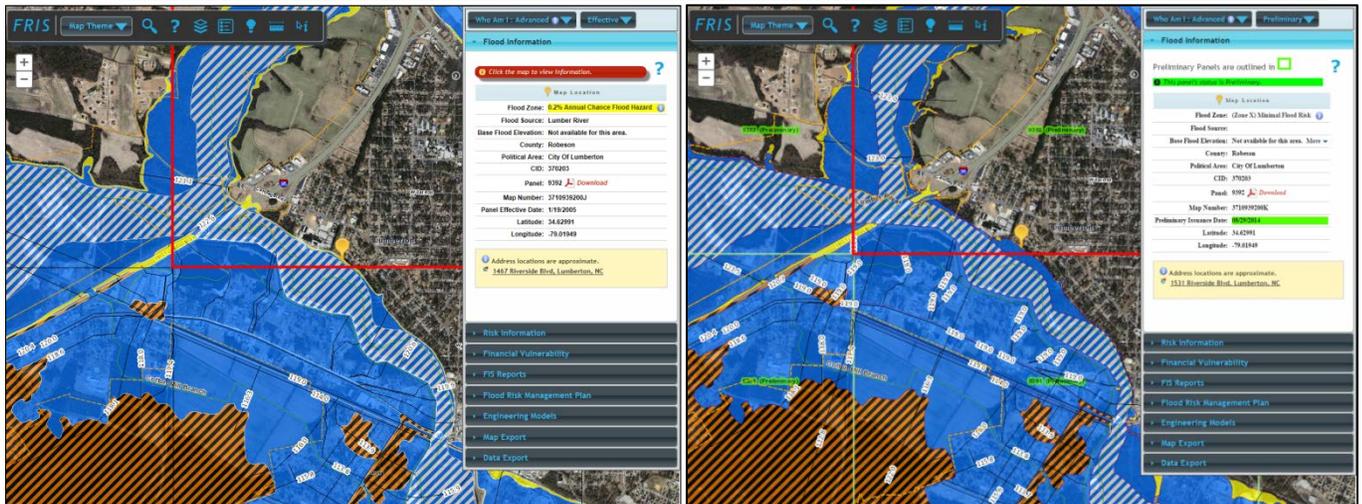
      3). Downloaded DFIRM

Parameter	Effective	Preliminary
Map date	**EFFECTIVE DATE**: MM/DD/YY **MAP REVISED**: MM/DD/YY	**PRELIMINARY** **MM/DD/YYYY**

The incredible Flood Risk Information System (FRIS)

8. **How to access the Preliminary flood hazard data and compare it to the Effective flood hazard data.**

   d. Does the Preliminary data change the floodway?

      1). Open three windows in your browser

      2). Copy/paste (http://fris.nc.gov/fris/Index.aspx?FIPS=155&ST=NC&user=Advanced) into the URL field.

         Note: The "FIPS=155&ST=NC" code directs FRIS to Robeson County.

      3). Set the first FRIS window into the **Effective** data mode and the second and third FRIS windows into the **Preliminary** data mode.

      4). Enter the coordinates for the desired address (e.g. 34.617300, -79.007475, which are for the Exploration Station at 104 N Chestnut St / Lumberton, NC 28358) into the "**Latitude**" field and "**Longitude**" field of each FRIS window and then close the "**Search**" dialog box of each FRIS window.

      5). Set the second FRIS window to show how the Preliminary data has changed the floodway
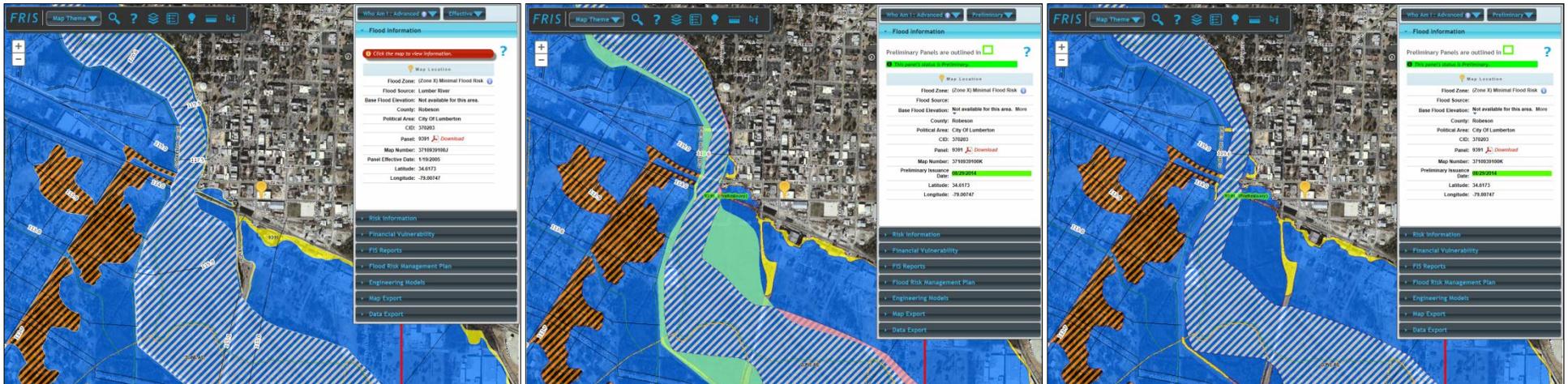
         a). Press the **[Layers]** button in the FRIS panel at the top of the window

         b). In the "**Map Contents**" dialog box:

            1). Select the "**Changes Since Last FIRM Floodway**" option.

            2). Close the "**Map Contents**" dialog box.

      6). Zoom out two (2) clicks on the **[-] (zoom out)** button in each FRIS window.

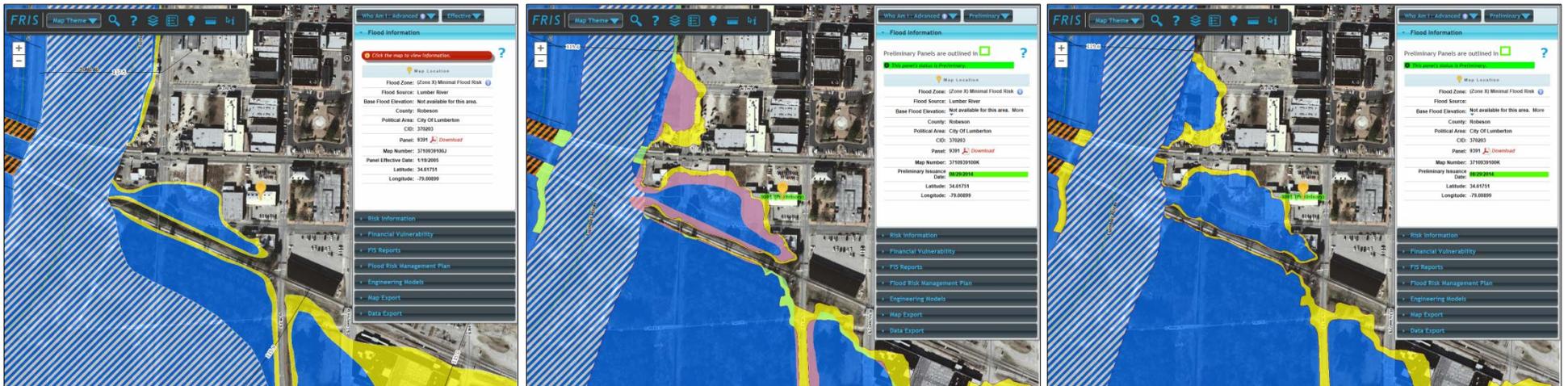| **Effective**	**Preliminary (changes since last FIRM floodway)**	**Preliminary**
The changes to the floodway since the last FIRM are shown in the center image with the floodway reductions shown with green shading and the floodway expansions shown with pale pink shading.		

      e). Afterwards, deselect the "**Changes Since Last FIRM Floodway**" option in the second FRIS window.

The incredible Flood Risk Information System (FRIS)

8. **How to access the Preliminary flood hazard data and compare it to the Effective flood hazard data.**
   e. Does the Preliminary data change any Special Flood Hazard Area (SFHA)?
      1). Open three windows in your browser
      2). Copy/paste (http://fris.nc.gov/fris/Index.aspx?FIPS=155&ST=NC&user=Advanced) into the URL field.
         Note: The "FIPS=155&ST=NC" code directs FRIS to Robeson County.
      3). Set the first FRIS window into the **Effective** data mode and the second and third FRIS windows into the **Preliminary** data mode.
      4). Enter the coordinates for the desired address (e.g. 34.617507, -79.008994, which are 103 Elmo Rd / Lumberton, NC 28358) into the
         "**Latitude**" field and "**Longitude**" field of each FRIS window and then close the "**Search**" dialog box of each FRIS window.
      5). Set the second FRIS window to show how the Preliminary data has changed any Special Flood Hazard Area (SFHA)
         a). Press the **[Layers]** button in the FRIS panel at the top of the window
         b). In the "**Map Contents**" dialog box:
            1). Select the "**Changes Since Last FIRM SFHA**" option.
            2). Close the "**Map Contents**" dialog box.

Effective	Preliminary (changes since last FIRM SFHA)	Preliminary

The changes to any Special Flood Hazard Area (SPFA) since the last FIRM are shown in the center image with the SFHA reductions shown with green shading and the SFHA expansions shown with pale pink shading.

   e). Afterwards, deselect the "**Changes Since Last FIRM SFHA**" option in the second FRIS window.

You are now a six σ FRIS expert.