FEMA

Discovery Meeting
Merrimack Watershed

July 7, 2015 – Manchester, New Hampshire
July 7, 2015 – Concord, New Hampshire
July 8, 2015 – Haverhill, Massachusetts

RiskMAP
Increasing Resilience Together

Introductions

- **Risk MAP Project Team**
- **City and County partners and officials**
- **State partners and officials**
- **Other Federal Agencies partner representatives**
- **Associations**
- **Others**

Need for Updates

- **Known discrepancies in current FISs**
- **Additional problems**
  - Out-of-date hydrology
    - Re-calculation of 10-, 50-, 100-, and 500-year peakflow annual exceedance probabilities (AEPs) needed, due to additional 35+ years of streamflow data and recent large events
  - Working to identify discrepancies in current FISs with data from the spring 2010 (MA) and spring 2006 and spring 2007 (NH) floods
    - Will compare how HWMs plot on FIS profiles and on USGS streamgage statistics
    - Very different AEPs will indicate problems in effective hydraulic models used to build profiles

Need for Updates

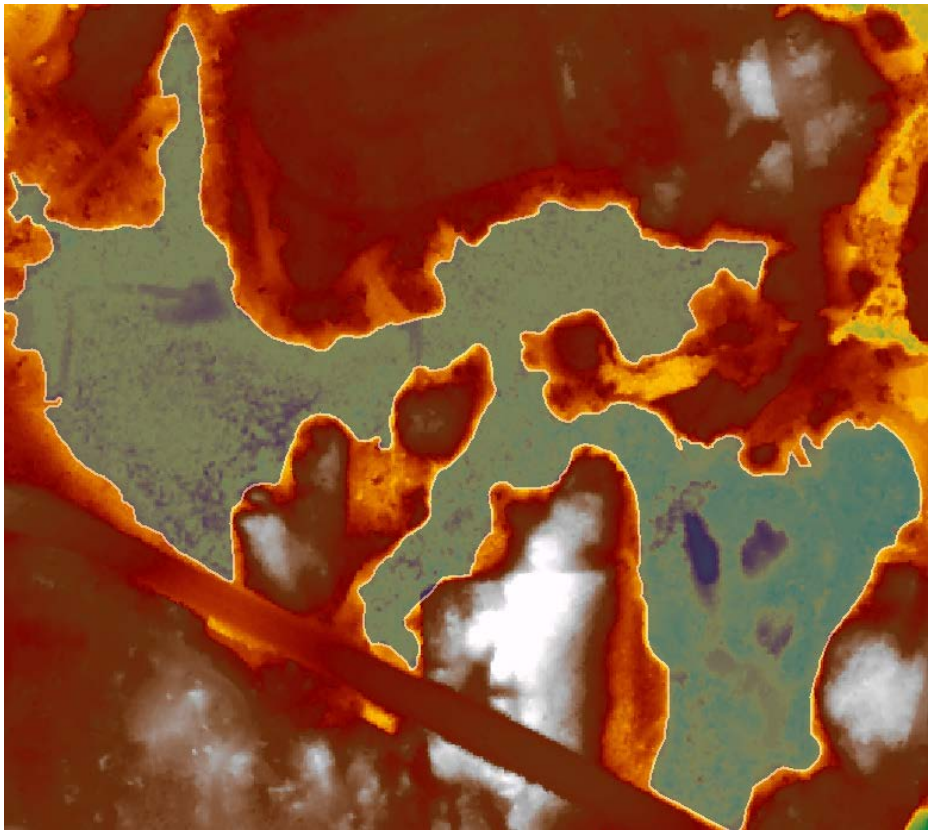
- **Additional problems (continued)**
  - Clusters of Letters of Map Change (LOMCs) indicating inaccuracies in the effective floodplains
  - In nearby watersheds, First Order Approximation (FOA) has indicated that many effective A Zones may be inaccurately mapped and/or may be based on outdated engineering

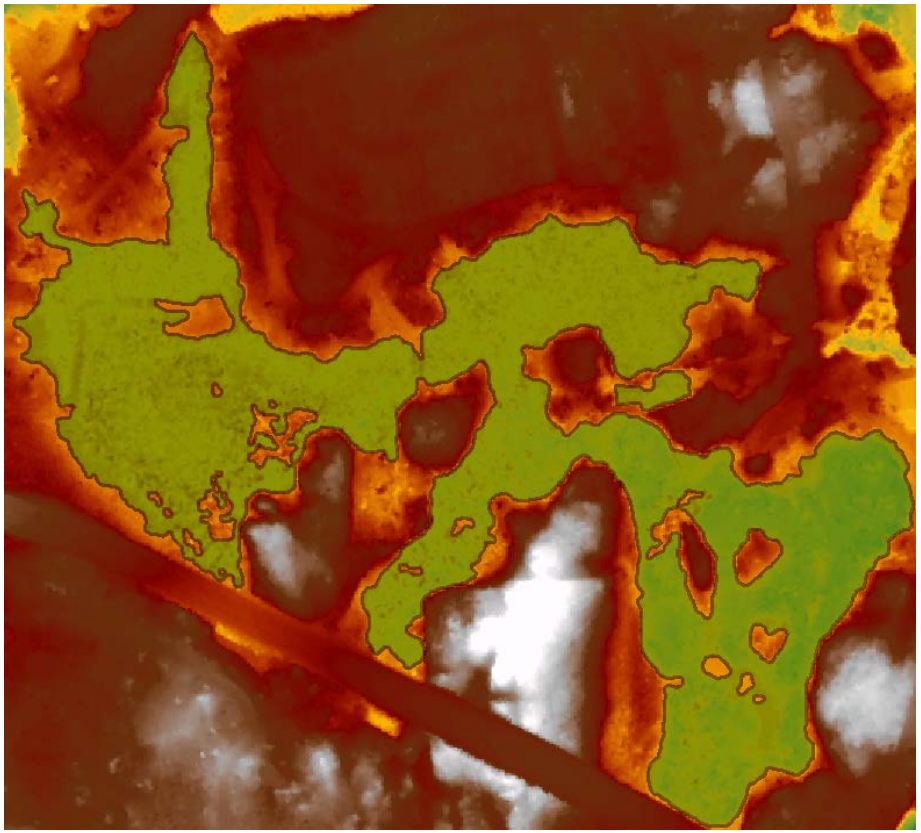
First Order Approximation

- **Goal:**
  - Perform approximate engineering analysis using modern data and tools
  - Compare effective Zone A to new one using a formula to determine pass/fail
- **Results:**
  - 311 zones in Merrimack study area
  - Analysis has begun
  - Results from nearby watershed (Charles): only 85% of zones pass with generous vertical tolerance; only 4% of zones pass without tolerance
- **Likely conclusion:**
  - A Zones in Merrimack study area are not in good shape

First Order Approximation

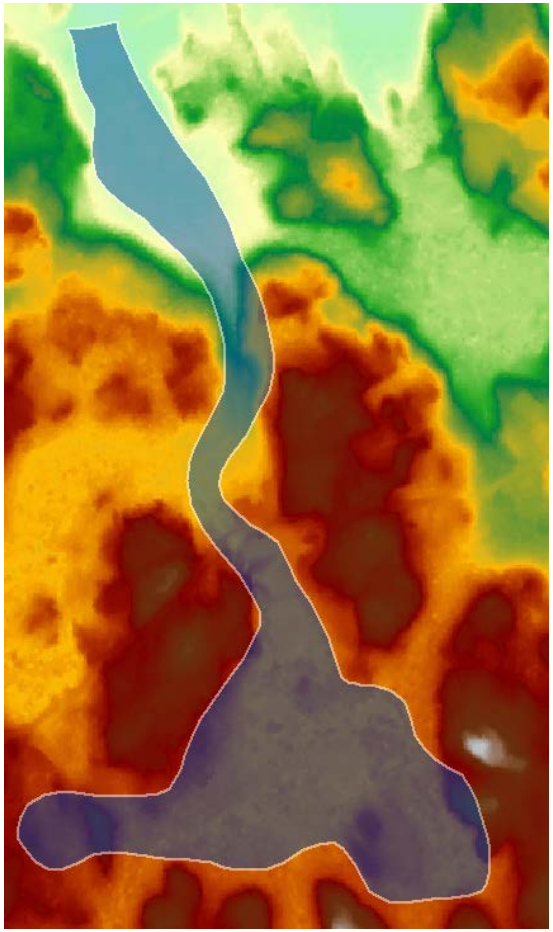
FOA Results Similar to Effective:

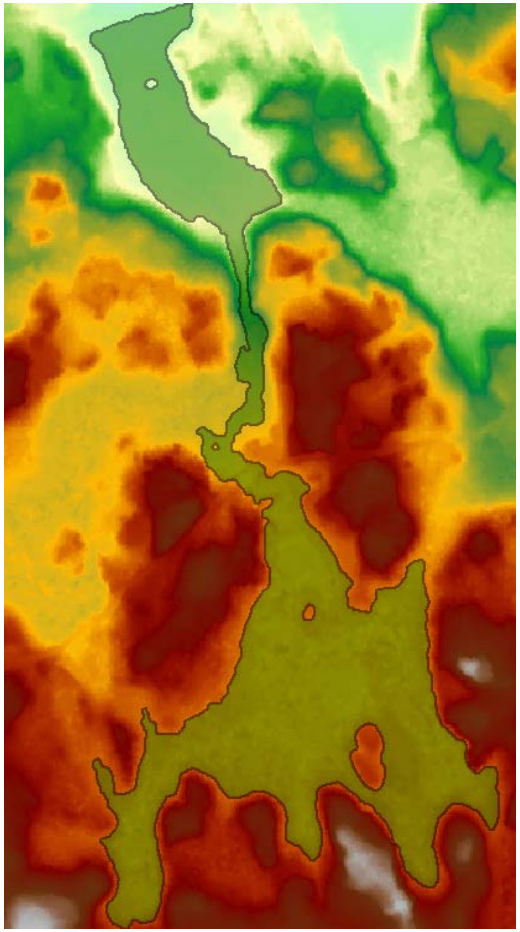




First Order Approximation

FOA Results Much Better than Effective:





Why are we here?

Risk Mapping, Assessment and Planning (RiskMAP): What is different?

- **FY2015 - FY2019?**
- **Mitigation Planning - Status update**
- **4-Meeting Format**
  - Discovery meeting today
- **Study approach – Watershed based**

Best Available Data

Community data available?

Discovery

Discovery for the Merrimack Watershed is the process of data mining, collection, and analysis with the goal of conducting a comprehensive watershed study and initiating communication and mitigation planning discussions with the communities in the watershed.

Occurs prior to…

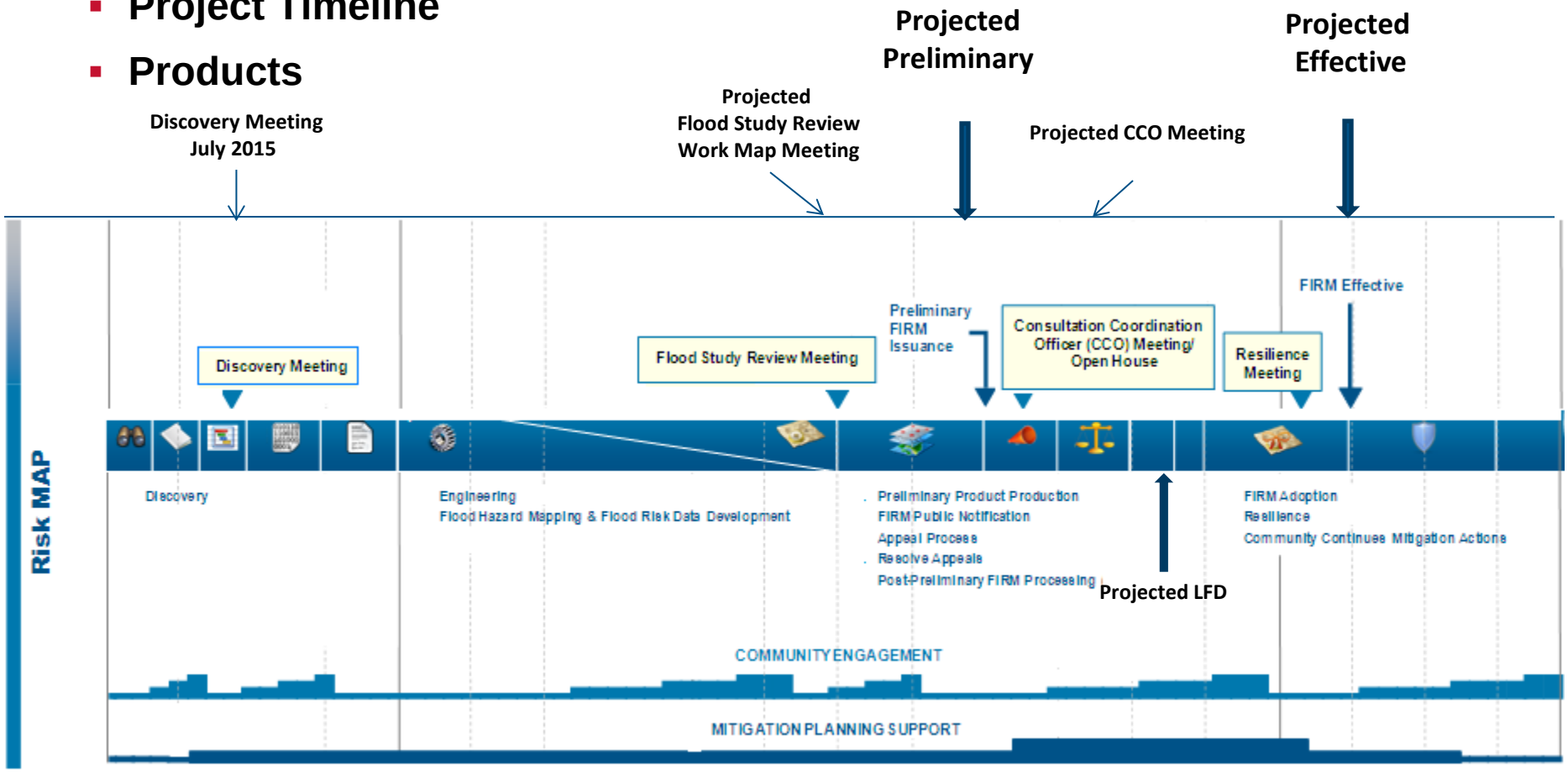
- **Flood studies**
- **Flood risk assessments**
- **Mitigation planning technical assistance projects**

Involvement from Communities

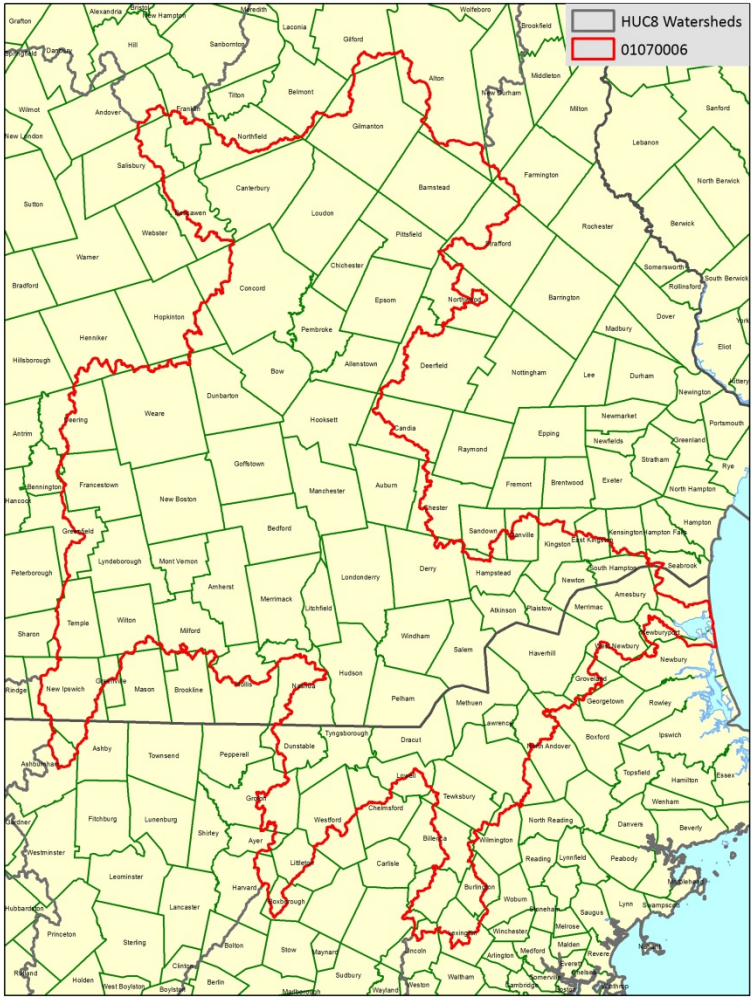
- **Four meetings during the study when involvement from communities are needed:**
  - ***Discovery meeting***
  - ***Work Map meeting***
  - ***CCO meeting*** ***(Community Coordination and Outreach)***
  - ***Open House/Resiliency meeting***

Merrimack Watershed Timeline

- **Activities**
- **Project Timeline**
- **Products**



Merrimack Watershed



Watershed Communities

- **The Merrimack Watershed contains or touches:**
  - **2 states (MA and NH)**
  - **8 counties**
  - **110 towns & cities**
  - **3,724 total stream miles**
  - **Around 1.5 million residents**

Merrimack Watershed Rivers

- **Merrimack River**
- **Soucook River**
- **Suncook River**
- **Little Suncook River**
- **Piscataquog River**
- **Souhegan River**
- **Spicket River**
- **Shawsheen River**
- **Little River**
- **Other smaller rivers and tributaries**

Priority Stream Reaches

- **One goal of Discovery: Coordinate with all watershed stakeholders to select highest-priority reaches for redelineation and/or detailed study**
- **Priority list then used to set scope of revision**
  - **Communities having DFIRM panels revised**
  - **Communities not having DFIRM panels revised**
- **Coastal areas done by other studies**

Discovery Report

- **Priority reaches will be selected based on analysis of seven sources**
  - CNMS
  - LOMCs
  - Hydrology comparisons
  - HWM comparisons
  - FOA
  - State NFIP Coordinator's annual report
  - NFIP claims
- **See FOA Report, Discovery Report, and Discovery Map for details**
  - All available in digital format upon request
- **Last source required to finalize priority list:**
- **STAKEHOLDER INPUT NEEDED! Please tell us your mapping needs.**
  - Online questionnaire
  - Breakout session today

Best Available Data

- **LiDAR (Light Detection And Ranging) elevation data – available for entire study area**
- **U.S. Geological Survey (USGS) regional regression equations for estimating peakflows for selected annual exceedance probabilities (will be) published in spring/summer 2015 (MA) and 2008 (NH)**
- **Existing Digital Flood Insurance Rate Maps (DFIRMs)**
  - Essex County, MA effective in July 2014
  - Middlesex County, MA effective in July 2014
  - Worcester County, MA effective in July 2014
  - Belknap County, NH – DFIRMs non-existent
  - Hillsborough County, NH effective in September 2009
  - Merrimack County, NH effective in April 2010
  - Rockingham County, NH effective in May 2005
  - Strafford County, NH effective in May 2005

Level of Study

- **Zone AE: Redelineation**
- **Zone A: Approximate Study**
- **Zone AE: Limited Detail Study**
- **Zone AE: Detail Study**

Level of Study

ZONE AE: Redelineation

- **No new engineering analysis**
- **Acceptable when effective Detailed Study Base Flood Elevations (BFEs) are considered accurate – Appeal Eligible**
- **Effective model data is transferred to new LiDAR terrain data to create new floodplain delineations**
- **Digital Flood Insurance Rate Map (DFIRM) / Flood Insurance Study (FIS) Data: Same as Detailed Study**

Level of Study

ZONE A: Approximate Study

- **Hydrologic and Hydraulic modeling analysis based on new terrain data.**
- **Streamgage data or regression equations for hydrology and HEC-RAS modeling used for hydraulics**
- **No field survey**
- **Cross-section values derived from new lidar terrain data**
- **Provides an approximate delineation for the 1% annual exceedance probability (100-yr flood) event.**
- **No BFEs are provided – Appeal Eligible**

Level of Study

ZONE AE: Limited Detail Study

- **Hydrologic and Hydraulic modeling analysis based on new terrain data**
- **Streamgage data or regression equations for hydrology and HEC-RAS modeling used for hydraulics**
- **Basic field survey**
- **Cross-section values derived from new Light Detection And Ranging (lidar) terrain data**
- **Provides an approximate delineation and Base Flood Elevations (BFE) for the 1% annual exceedance probability (100-yr flood) event – Appeal Eligible**

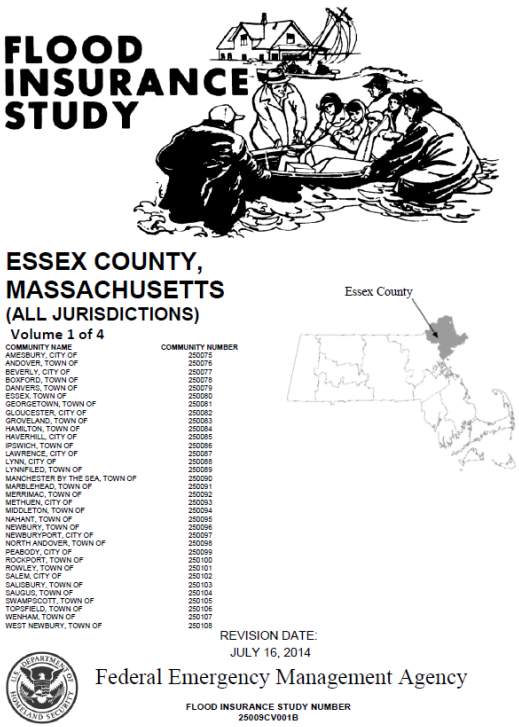
Level of Study

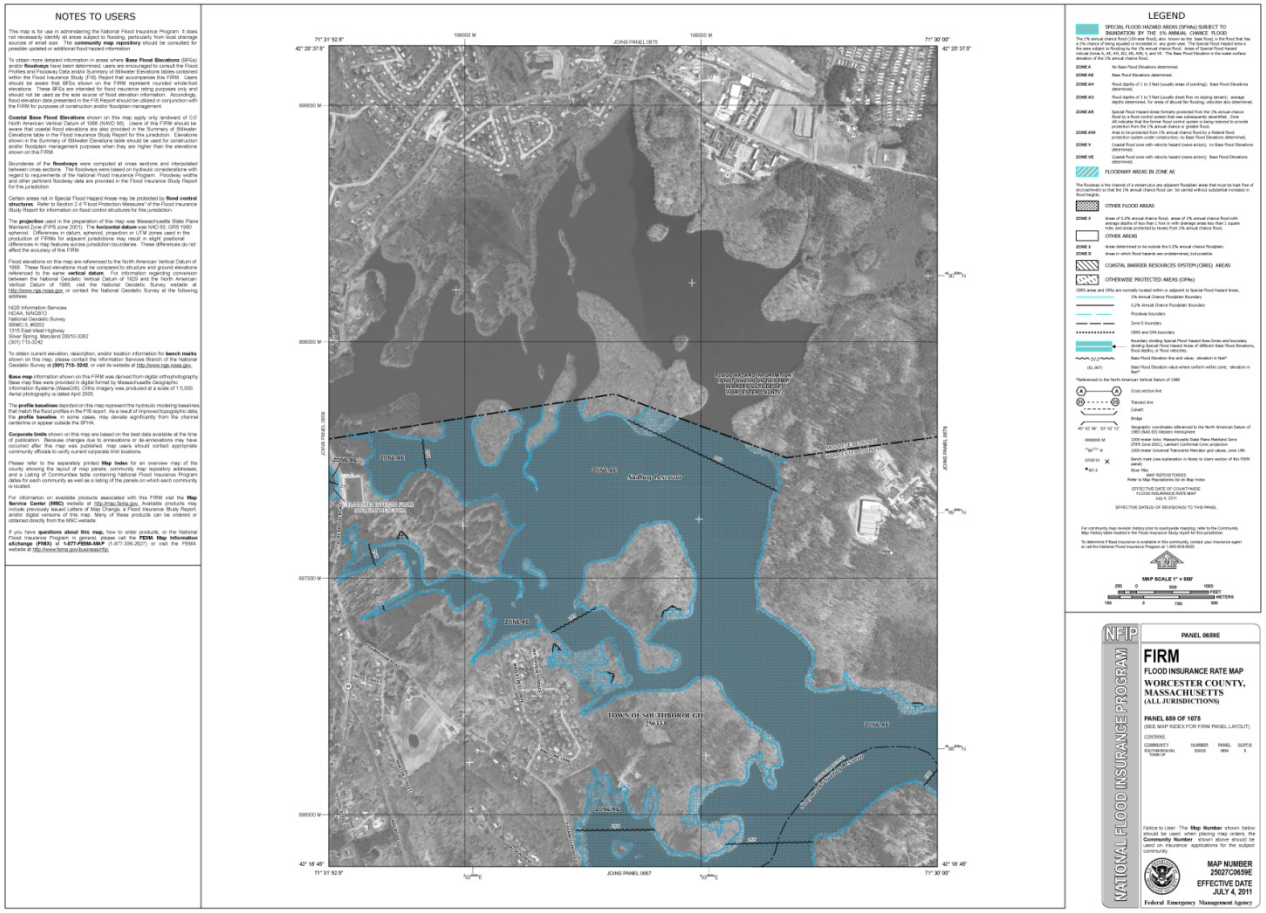
ZONE AE: Detailed Study

- **Most Detailed and most expensive study**
- **Structures and cross-sections are field surveyed**
- **Streamgage data or regression equations for hydrology and HEC-RAS modeling used for hydraulics**
- **Floodway Data Table and Flood Profiles included in Flood Insurance Study (FIS)**
- **Provides:**
  - BFEs – Appeal Eligible
  - Cross Sections
  - Floodway
  - 1% annual exceedance probability(100-yr flood) floodplain
  - 0.2% annual exceedance probability (500-yr flood) floodplain

Digital Flood Insurance Rate Maps / Flood Insurance Study

FIS Reports and DFIRM Maps will continue to fulfill regulatory requirements and support the NFIP

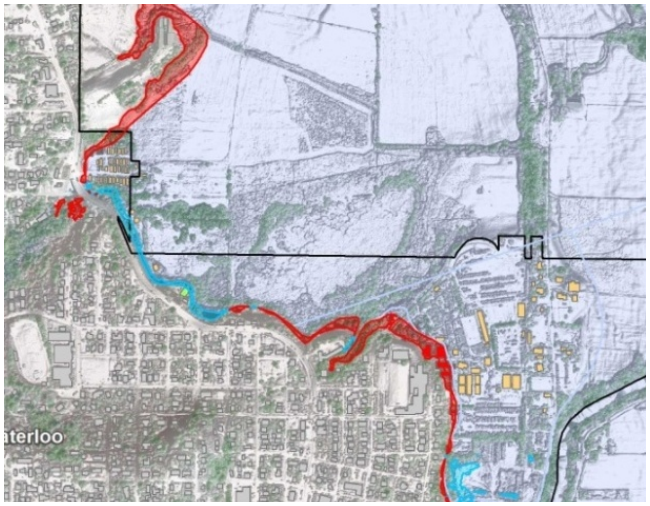




Flood Risk Products

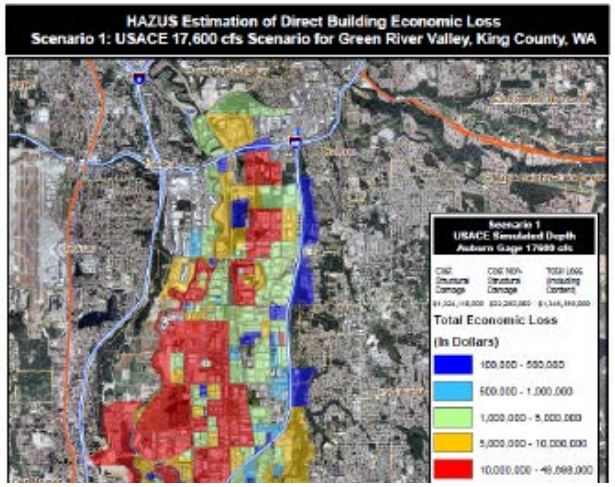
Changes Since Last Map

- Shows areas of change
- Improved outreach



HAZUS Risk Assessment & National Flood Risk Layer

Enables communities to understand risk by reference to existing structure loss



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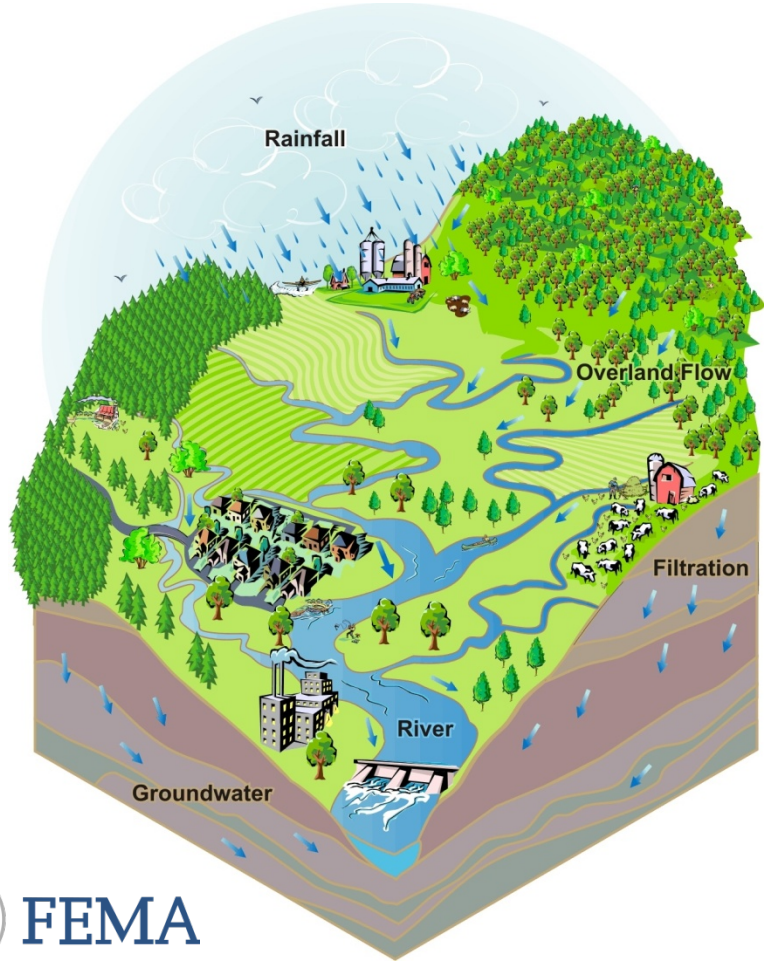
Merrimack Watershed
Flood Risk Report

Watershed
Flood Risk Report

- **Changes Since Last Map**
- **HAZUS Risk Assessment**



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Merrimack Watershed Timeline

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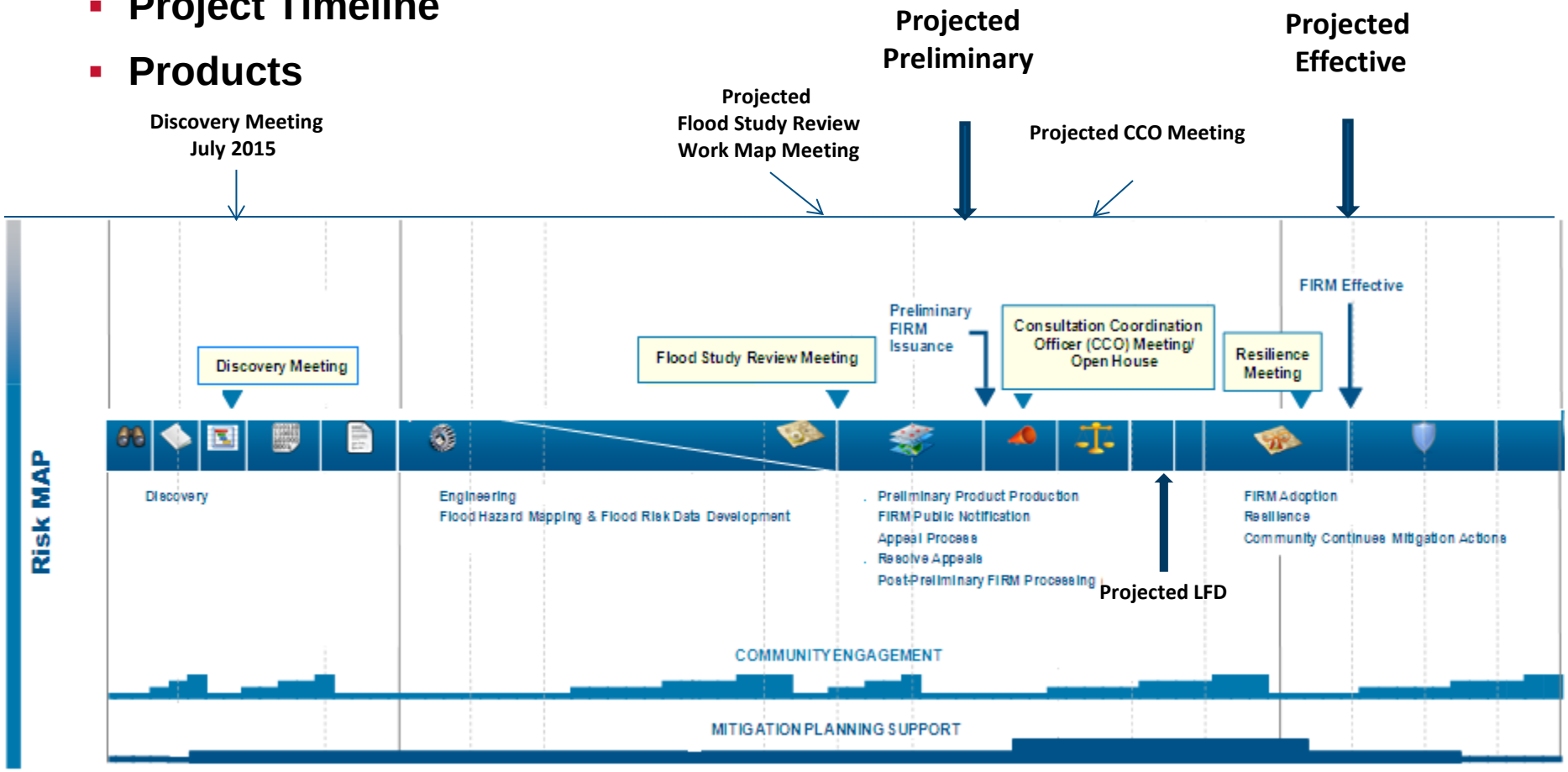
- **Products**



Discover the Watershed Communities

Understand local interest, issues, capabilities of communities

- Status of Mitigation Plan
- Communication desire, skills, resources
- Interest in and resources for mitigation
- Experience with flood disasters and recovery
- Floodplain administration
- Interest in cost-share
- Mitigation support needs and interests

Discover FEMA Programs

Flood Mitigation Assistance – annual funding to reduce risk to NFIP-insured structures

Hazard Mitigation Grant Program – declared disaster funding for long-term hazard mitigation measures

Pre-Disaster Mitigation Program – annual funding for hazard mitigation planning and implementation

Repetitive Flood Claims - annual funding to reduce risk to NFIP-insured structures with one or more claims

Severe Repetitive Loss – annual funding to reduce risk to NFIP-insured severe repetitive loss structures

Community Rating System – proactive communities receive insurance discounts for residents

National Dam Safety Program – dam safety standards

Merrimack Watershed

Hazard Mitigation Plan Status

Please see handout

Points of Contact
Charles Watershed

- **MA State Contacts**
  - Eric Carlson, State Hazard Mitigation Officer/NFIP Coordinator, MA DCR

  Eric.Carlson@state.ma.us

- **NH State Contacts**
  - Jennifer Gilbert, State NFIP Coordinator, NH OEP

  Jennifer.Gilbert@nh.gov

- **FEMA Regional Service Center**
  - Alex Sirotek, RSC Lead, Compass PTS

  sirotekar@cdmsmith.com

- **USGS Contacts**
  - Scott Olson, Project Manager, USGS

  solson@usgs.gov
  - Greg Stewart, Project Manager, USGS

  gstewart@usgs.gov

- **FEMA Contacts**
  - Kerry Bogdan, Project Manager and Senior Engineer, FEMA Region I

  Kerry.Bogdan@dhs.gov
  - Marilyn Hilliard, Chief

    Risk Analysis Branch, Mitigation Division, FEMA Region I

  Marilyn.Hilliard@dhs.gov

General Points of Contact

- **For general FEMA mapping and Letter of Map Change (LOMC) questions contact FEMA's Map Information Exchange (FMIX): 1-877-FEMA MAP (1-877-336-2627) or email a Map Specialist: FEMAMapSpecialist@riskmapcds.com**

- **Map Service Center (MSC): where you can view effective maps online for free http://www.msc.fema.gov/**

- **To learn more about the National Flood Insurance Program (NFIP): http://www.floodsmart.gov/floodsmart/ or call 1-888-379-9531**

Data Request

- Disaster High Water Marks (HWM)
- Existing/new dams or levees
- New construction of culverts and bridges
- Planimetric Data (i.e. Building Footprints)
- Information obtained from research by other Federal agencies, non-profit organizations, Universities, etc.
- Information from dam Emergency Action Plans
- Much more – anything affecting the floodplain

Optional Breakout Session

Optional Breakout Session for community specific questions

(5-30 minutes):

To discuss Study Areas and Data Availability on a Community and Watershed Basis

QUESTIONS??