FEMA

Discovery Meeting

Headwaters Connecticut Watershed
Upper Androscoggin Watershed

November 17, 2020, 11:00 AM – virtual meeting

RiskMAP
Increasing Resilience Together

Introductions

- **Risk MAP project team**
- **Community partners and officials**
- **State partners and officials**
- **Other Federal agencies**
- **Associations and non-profits**
- **Others**

The Study Process

Purpose – Risk MAP

- **Risk Mapping, Assessment, and Planning (Risk MAP)**
  - Approximately 50-month projects
  - 4-meeting format
    - Discovery Meeting today
  - Watershed-based approach
  - Mitigation planning focus
  - Best available data
  - Community and stakeholder engagement and cooperation
    - Community data available?

Purpose – Discovery

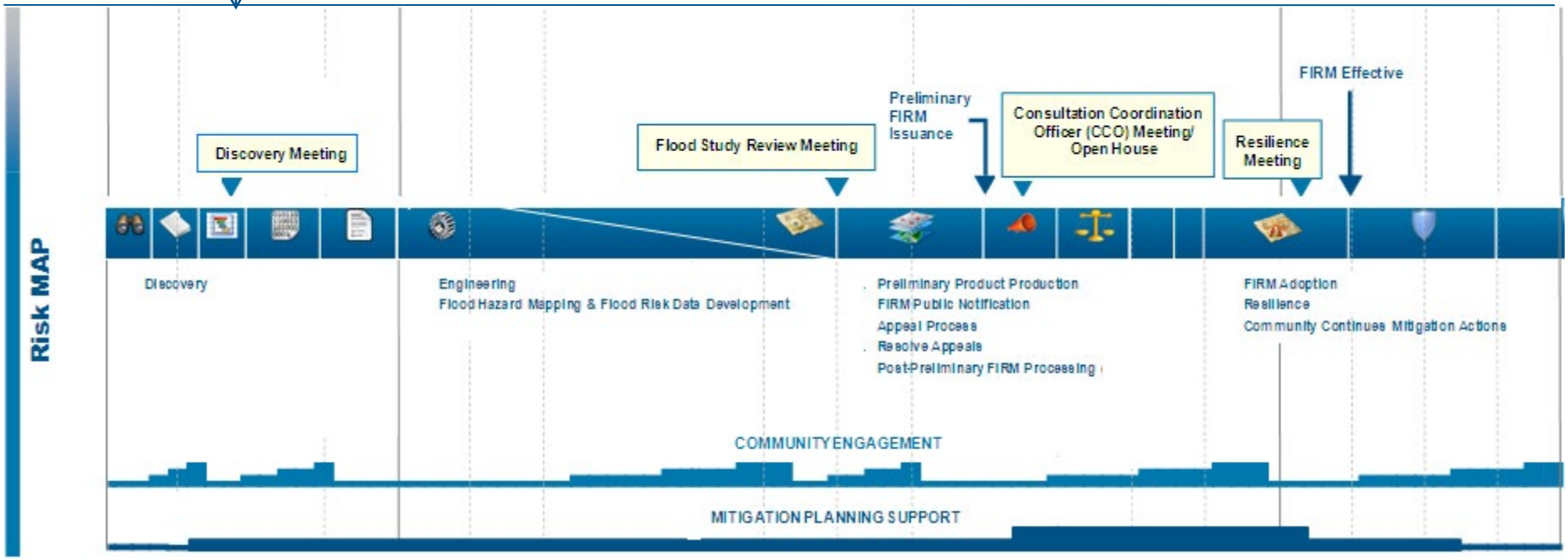
- **Discovery is the process of data mining, collection, and analysis with the goal of conducting a comprehensive watershed study and initiating communication and mitigation planning discussions with the communities in the watershed.**
- **Discovery occurs prior to:**
  - Flood studies
  - Flood risk assessments
  - Mitigation planning technical assistance projects

Community Involvement

- **Community involvement encouraged throughout study**
- **Four meetings at key points for community involvement:**
  - Discovery meeting
  - Workmap (or flood study review) meeting
  - CCO (Consultation Coordination Officer) meeting
  - Resiliency meeting (or open house)

Projected 50-Month Study Timeline

Discovery Meeting
November 2020

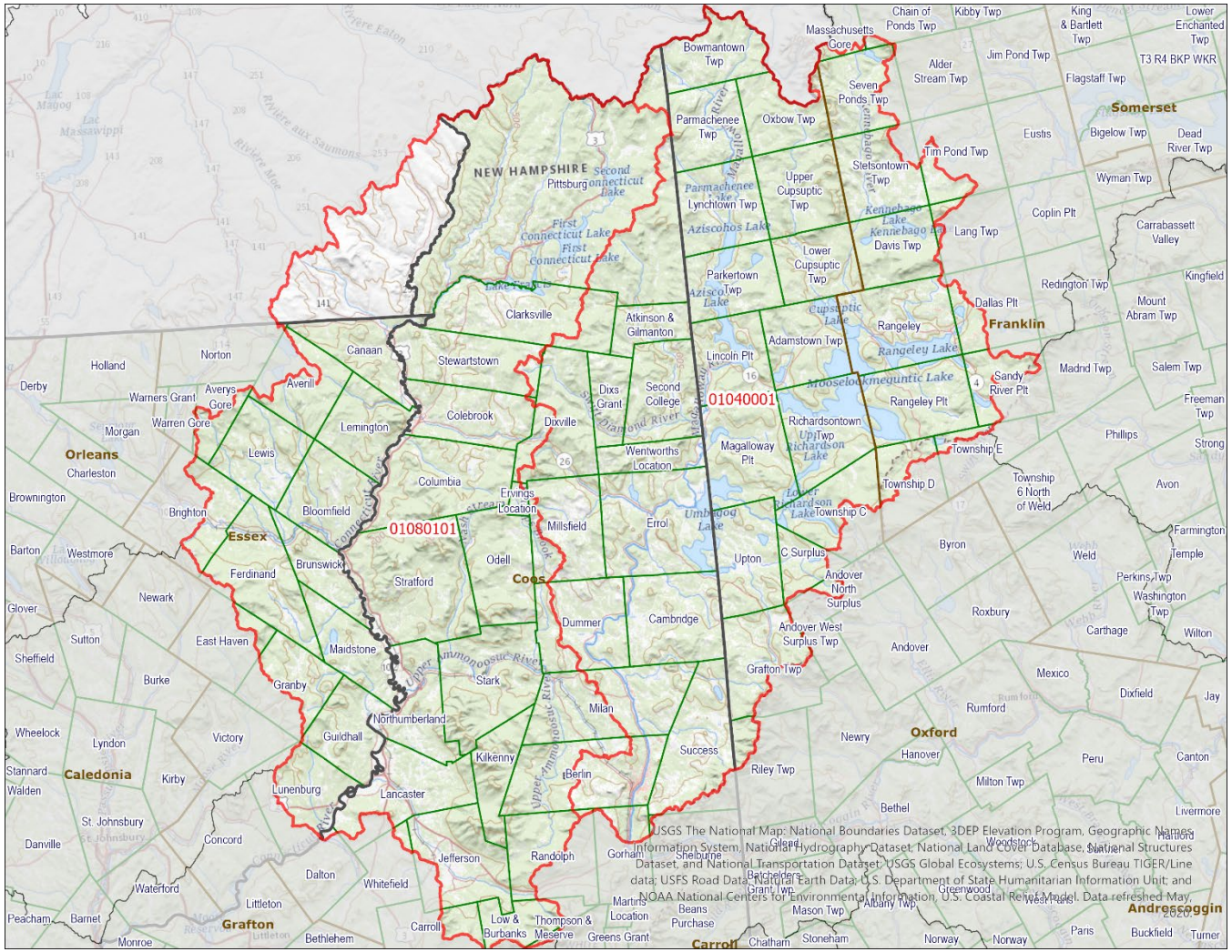


Watershed Information

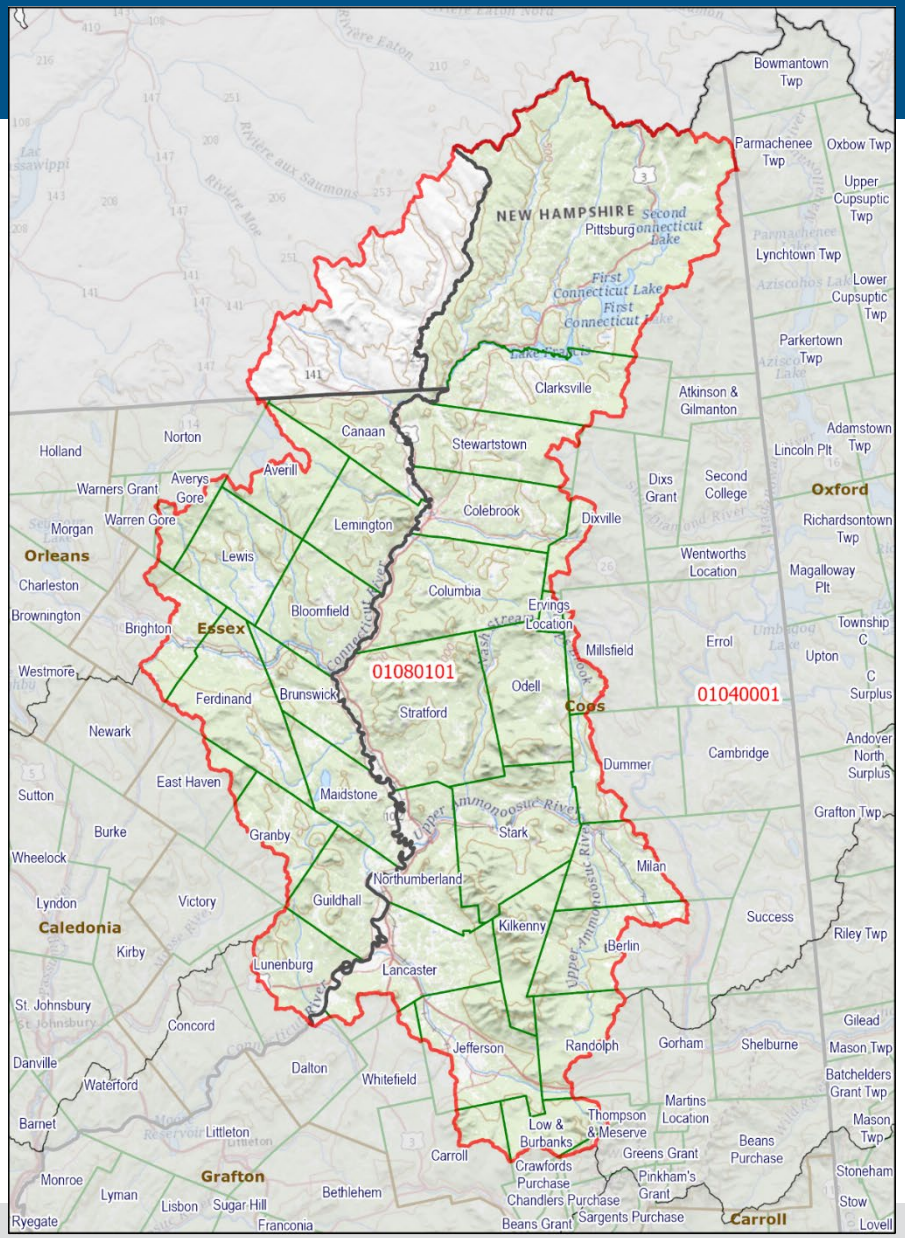
Two Watersheds

01080101: Headwaters Connecticut River Watershed

01040001: Upper Androscoggin River Watershed



Headwaters Connecticut Watershed



Headwaters Connecticut Watershed Major Reaches (alphabetical)

- **Black Branch Nulhegan River**
- **Coaticook River (in St. Francois Watershed in Essex County)**
- **Connecticut River**
- **East Branch Mohawk River**
- **East Branch Nulhegan River**
- **Israel River**
- **Mohawk River**
- **North Branch Nulhegan River**
- **North Branch Upper Ammonoosuc River**
- **Nulhegan River**
- **South Branch Israel River**
- **Upper Amonoosuc River**
- **West Branch Mohawk River**
- **West Branch Upper Ammonoosuc River**
- **Yellow Branch Nulhegan River**
- **Other rivers, streams, and tributaries**

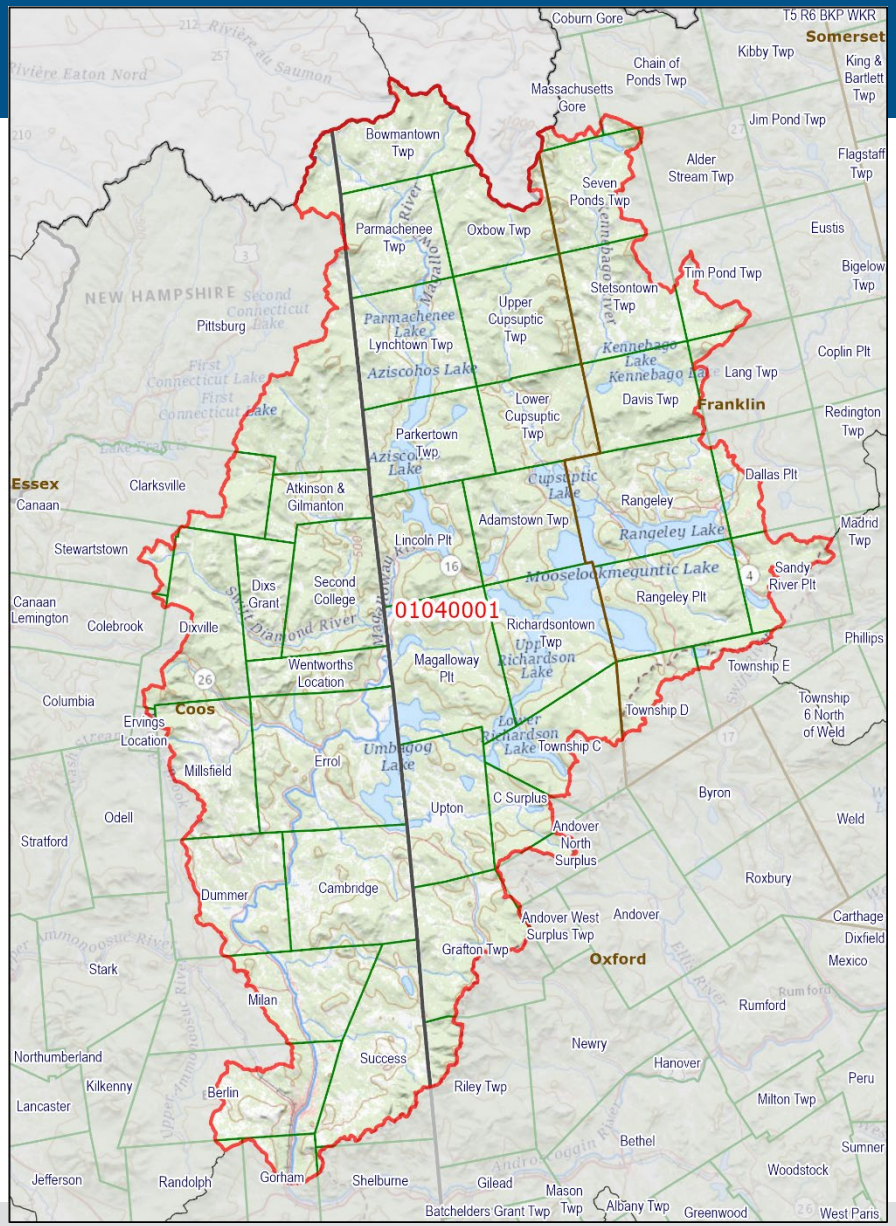
Headwaters Connecticut Watershed Statistics

- **HUC 01080101**
- **Jurisdictions:**
  - 31 communities
  - 3 counties (NH: Coos; VT: Essex; ME: Oxford)
  - 3 states (NH, VT, ME)
- **1,431 square miles**
- **Estimated population (2010) of 34,498**
- **2,673 catalogued river miles**
  - 1,266 miles of named reaches

Headwaters Connecticut Watershed Studies

- **Dates of effective FIRMs (Flood Insurance Rate Maps):**
  - Coos County, NH – effective February 20, 2013
  - All other jurisdictions – no countywide (or digital) FIRMs
    - Effective dates from 12/13/1974 to 09/30/1992
- **Riverine studies shown on FIRMs likely even older**

Upper Androscoggin Watershed



Upper Androscoggin Watershed Major Reaches (alphabetical)

- Androscoggin River
- Cupsuptic River
- Dead Cambridge River
- Dead Diamond River
- Dead River
- East Branch Cupsuptic River
- East Branch Dead Diamond River
- East Branch Swift Diamond River
- First Each Branch Magalloway River
- Kennebago River
- Little Dead Diamond River
- Little Each Branch Cupsuptic River
- Little Magalloway River
- Magalloway River
- Middle Branch Dead Diamond River
- Middle Branch Little Magalloway River
- Rangeley River
- Rapid River
- Second East Branch Magalloway River
- South Branch Little Dead Diamond River
- Swift Cambridge River
- Swift Diamond River
- Third East Branch Magalloway River
- West Branch Little Dead Diamond River
- West Branch Little Magalloway River
- West Branch Magalloway River
- Other rivers, streams, and tributaries

Upper Androscoggin Watershed Statistics

- **HUC 01040001**
- **Jurisdictions:**
  - 16 communities
  - 3 counties (NH: Coos; ME: Franklin, Oxford)
  - 2 states (NH, ME)
- **1,372 square miles**
- **Estimated population (2010) of 23,380**
- **1,941 catalogued river miles**
  - 1,589 miles of named reaches

Upper Androscoggin Watershed Studies

- **Dates of effective FIRMs (Flood Insurance Rate Maps):**
  - Coos County, NH – effective February 20, 2013
  - Oxford County, ME – effective July 7, 2009
  - All other jurisdictions – no countywide (or digital) FIRMs
    - Effective 09/08/1999
- **Riverine studies shown on FIRMs likely even older**

Discovery Analysis

Need for Updates

- **Goal: coordinate with all watershed stakeholders to select highest-priority river reaches for restudy during potential flood risk study to follow Discovery, if funded**
- **Method: analyze all possible reaches in watershed against several criteria to determine reaches in most urgent need of new detailed study**

Reach Analysis Criteria

- Coordinated Needs Management Strategy (CNMS)
- Clusters of Letters of Map Change (LOMCs)
- Clusters of paid flood damage claims
- Evaluation of Flood Insurance Study (FIS) discharges
- Evaluation of FIS profiles
- First Order Approximation (FOA)
- State NFIP Coordinator's priorities from annual business plan
- Study age
- Map age
- Risk
- Floodplain Boundary Standard (FBS)
- And most importantly, COMMUNITY INPUT

Reach Analysis Criteria

- Coordinated Needs Management Strategy (CNMS)
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Reach Analysis Criteria

- Recalculate discharges for 10%, 4%, 2%, 1%, and 0.2% annual chance events using most recent streamgage statistics and regression equations
- Compare against FIS discharges
- Differences likely, due to:
  - many years (up to 40) of additional streamflow data
  - recent large events
  - improved statistical techniques for flood frequency analysis

- And most importantly, COMMUNITY INPUT

Reach Analysis Criteria

- Coordinated Needs Management Strategy (CNMS)
- Clusters of Letters of Map Change (LOMCs)
- Clusters of paid flood damage claims
- Evaluation of Flood Insurance Study (FIS) discharges
- **Evaluation of FIS profiles**
- First Order Approximation (FOA)
- State NFIP Coordinator's priorities from annual business plan
- Study age
- Map age
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- And most importantly, COMMUNITY INPUT

Reach Analysis Criteria

- Inventory changes, construction, and removal of hydraulic structures in years since last study
- Evaluate FIS profile against high-water marks (HWMs) collected during recent flooding events, if available
- Differences likely, due to:
  - structure changes
  - channel changes
  - improved modeling techniques for flood analysis

- Floodplain Boundary Standard (FBS)
- And most importantly, COMMUNITY INPUT

Reach Analysis Criteria

- Coordinated Needs Management Strategy (CNMS)
- **Clusters of Letters of Map Change (LOMCs)**
- Clusters of paid flood damage claims
- Evaluation of Flood Insurance Study (FIS) discharges
- Evaluation of FIS profiles
- First Order Approximation (FOA)
- State NFIP Coordinator's priorities from annual business plan
- Study age
- Map age
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- Floodplain Boundary Standard (FBS)
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Reach Analysis Criteria

- Coordinated Needs Management Strategy (CNMS)
- **Clusters of Letters of Map Change (LOMCs)**
- Clusters of paid flood damage claims
- Evaluation of Flood Insurance Study (FIS) discharges
- Evaluation of FIS profiles
- Study age
- Map age
- Risk
- Floodplain Boundary Standard (FBS)
- And most importantly, COMMUNITY INPUT

- May indicate inaccuracies in the effective floodplain boundaries

Reach Analysis Criteria

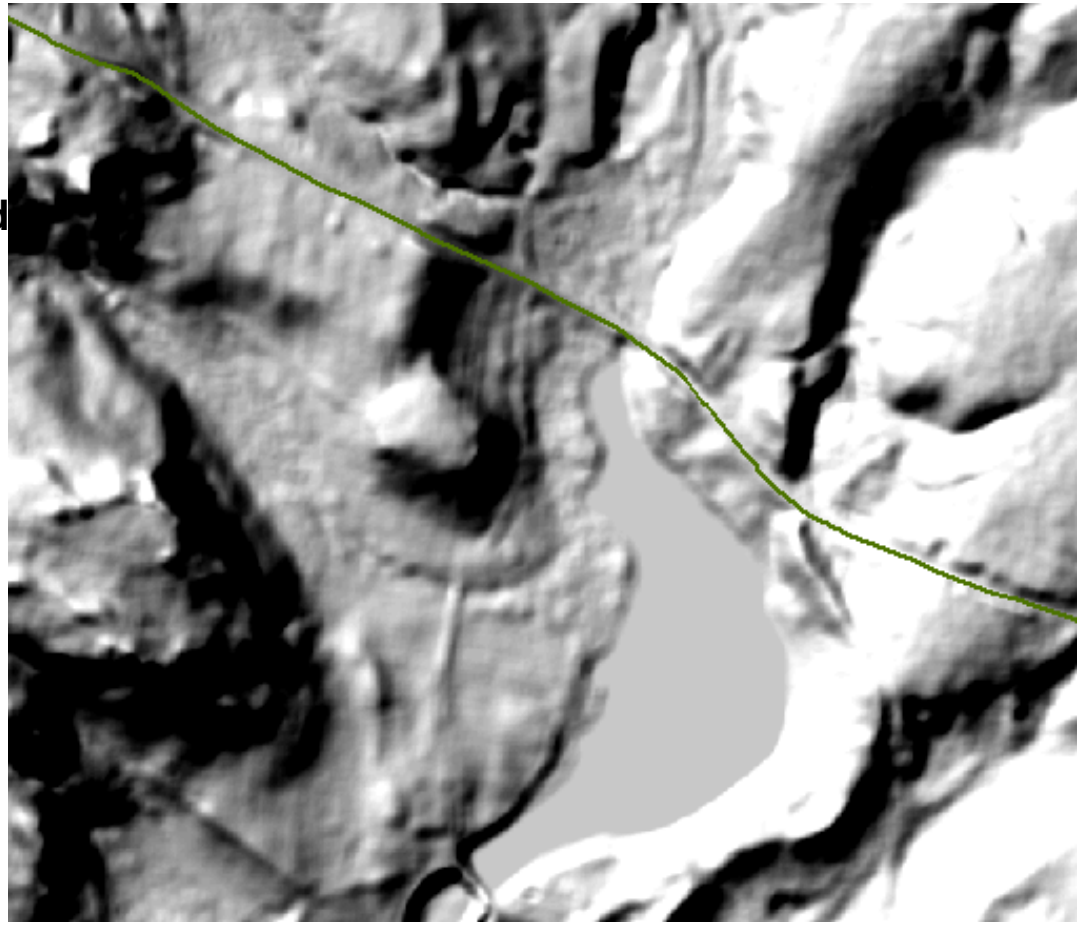
- Coordinated Needs Management Strategy (CNMS)
- Clusters of Letters of Map Change (LOMCs)
- Clusters of paid flood damage claims
- Evaluation of Flood Insurance Study (FIS) discharges
- Evaluation of FIS profiles
- First Order Approximation (FOA)
- State NFIP Coordinator's priorities from annual business plan
- Study age
- Map age
- Risk
- **Floodplain Boundary Standard (FBS)**
- And most importantly, COMMUNITY INPUT

Reach Analysis Criteria

- Coordinated Needs Management Strategy (CNMS)
- Clusters of Letters of Map Change (LOMCs)
- Clusters of paid flood damage claims
- Evaluate effective Zones AE against best available modern topography
  - Lidar (**Li**ght **D**etection **A**nd **R**anging) available for 100% of watershed
- Map age
- Risk
- **Floodplain Boundary Standard (FBS)**
- And most importantly, COMMUNITY INPUT

Lidar Data in Both Watersheds

- **New Hampshire side (Headwaters Connecticut)**
  - Collected 2015/16
  - 9.3-cm vertical accuracy
  - 0.69-m point spacing
- **New Hampshire side (Upper And**
  - Collected 2016
  - 6-cm vertical accuracy
  - 0.7-m point spacing
- **Vermont side**
  - Collected 2016/17
  - 4.5-cm vertical accuracy
  - 0.7-m point spacing
- **Maine side**
  - Collected 2017
  - 6-cm vertical accuracy
  - 0.61-m point spacing



Reach Analysis Criteria

- Coordinated Needs Management Strategy (CNMS)
- Clusters of Letters of Map Change (LOMCs)
- Clusters of paid flood damage claims
- Evaluation of Flood Insurance Study (FIS) discharges
- Evaluation of FIS profiles
- **First Order Approximation (FOA)**
- State NFIP Coordinator's priorities from annual business plan
- Study age
- Map age
- Risk
- Floodplain Boundary Standard (FBS)
- And most importantly, COMMUNITY INPUT

Reach Analysis Criteria

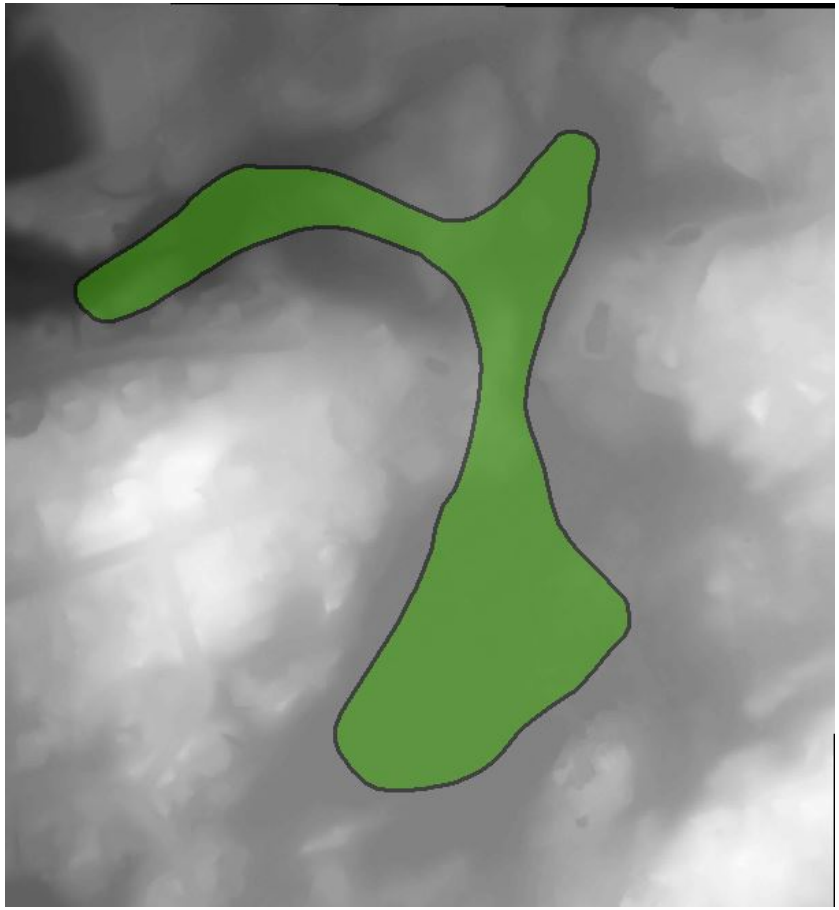
- Coordinated Needs Management Strategy (CNMS)
- Clusters of Letters of Map Change (LOMCs)
- Clusters of paid flood damage claims
- Evaluation of Flood Insurance Study (FIS) discharges
- Evaluation of FIS profiles
- What is FOA? (Now called BLE)
- State NFIP Coordinator's priorities from annual business plan
- Study age
- Map age
- Risk
- Floodplain Boundary Standard (FBS)
- And most importantly, COMMUNITY INPUT

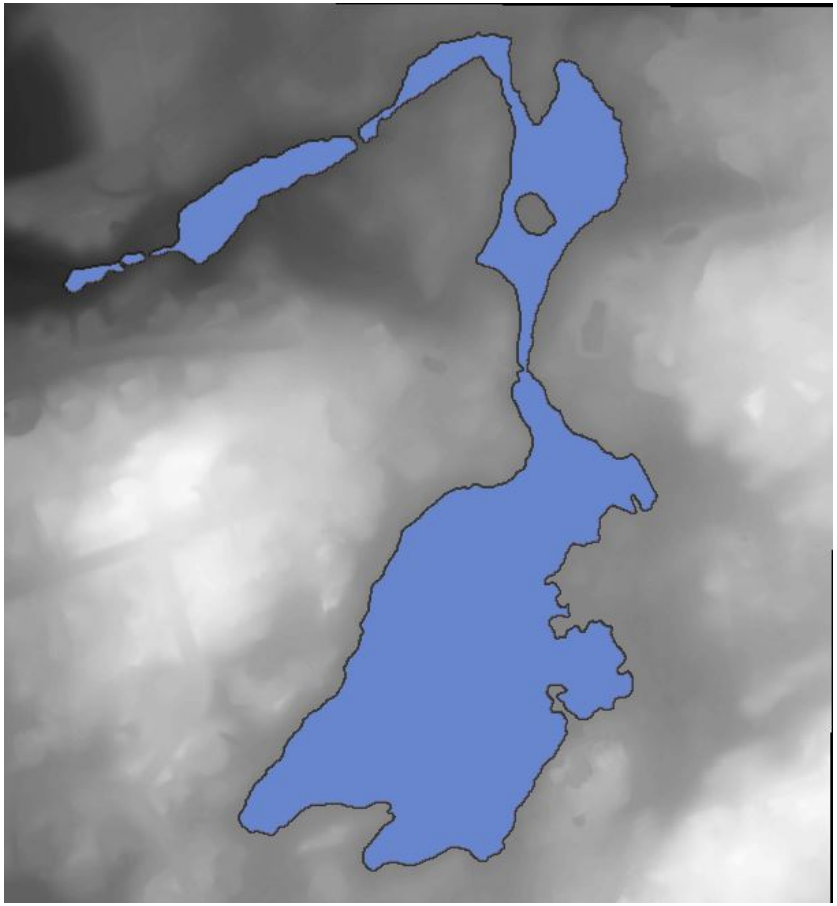
First Order Approximation (Also called Base Level Engineering)

- **Goal:**
  - Perform approximate engineering analysis using current data and tools, including lidar and updated hydrology
  - Compare effective Zone A to new one using a formula to determine pass/fail
- **Results:**
  - Typical watershed in Region I:
    - Direct comparison: about 95% of zones fail
    - Comparison with generous tolerances: about 75% of zones fail
- **Conclusion:**
  - Zones A in all three watersheds are probably poor
  - FOA (or BLE) results specific to each watershed will be examined

First Order Approximation (Also called Base Level Engineering)

Example of FOA (or BLE) results better than effective





Reach Analysis Criteria

- Coordinated Needs Management Strategy (CNMS)
- Clusters of Letters of Map Change (LOMCs)
- Clusters of paid flood damage claims
- Evaluation of Flood Insurance Study (FIS) discharges
- Evaluation of FIS profiles
- First Order Approximation (FOA)
- State NFIP Coordinator's priorities from annual business plan
- Study age
- Map age
- Risk
- Floodplain Boundary Standard (FBS)
- **And most importantly, COMMUNITY INPUT**

Reach Analysis Criteria

- Stakeholder input is an essential factor in determining priorities for study
- Please communicate your mapping needs!
  - **Online questionnaire**
    - *Link provided in invitation letter and in follow-up materials distributed in the next few weeks*
  - **Breakout session** today after presentation
  - **Contact information** for project team provided in handouts

- **And most importantly, COMMUNITY INPUT**

Understanding Your Maps

National Flood Insurance Program

- **Community studies (~1970s and '80s)**
  - Some revised, but rarely completely restudied
- **Countywide studies (~2000s)**
  - Initiated during Map Modernization program
  - Primarily for digitizing floodplains and mapping with orthoimagery
  - Involved limited (if any) new studies
- **Watershed studies (present)**
  - Initiated during Risk MAP program
  - Involves significant new engineering studies across community and county boundaries
  - Features new-format maps and reports and additional non-regulatory products for understanding flood risk

Example Map History

- **Town of Floodville, USA**
  - June 18, 1980 – initial community-wide study
  - May 17, 1982 – revision to incorporate wave height analysis
  - September 2, 1993 – revision to incorporate restudy of Big River
  - June 18, 2010 – initial countywide study (no engineering updates)
  - July 8, 2013 – revision to incorporate new countywide wave height analysis
  - October 16, 2013 – revision to countywide study (but not to Floodville specifically) to incorporate levee accreditation on Flat River

Many of you do not have any changes since the original FIRM was developed

Levels of Study

- **May be used in this Flood Risk Project:**
  - Riverine Zone AE (detailed study)
  - Riverine Zone A (approximate study)
  - Riverine Zone AE (redelineation)
- **Will NOT be used in this Flood Risk Project:**
  - Coastal Zone AE and Zone VE
  - Riverine Zone AE (**limited** detailed study)
    - BFE only; no cross-sections or floodways

Zone AE: Detailed Study

- **Structures and river cross-sections are field-surveyed**
- **Streamgage data or regression equations used for hydrology**
- **HEC-RAS one-dimensional modeling used for hydraulics**
- **Floodway Data Table and Flood Profiles included in Flood Insurance Study (FIS)**
- **Mapped features (appeal eligible):**
  - Base Flood Elevations (BFEs)
  - Cross-sections
  - Floodway
  - 1%-annual-chance floodplains
  - 0.2%-annual-chance floodplains

Zone A: Approximate Study

- **Based on First Order Approximation methods**
- **No field survey; cross-section elevations derived from lidar terrain**
- **Streamgage data or regression equations used for hydrology (input derived from lidar terrain)**
- **HEC-RAS one-dimensional modeling used for hydraulics**
- **Mapped features:**
  - 1%-annual-chance floodplains only
- **Features created but not mapped:**
  - Floodplains and analysis grids for multiple other profiles

Zone AE: Redelineation

- **No new engineering analysis; effective water surface profile and BFEs considered accurate**
- **Effective water-surface elevation overlaid on new lidar topography to create updated floodplain**
- **All FIS data (profiles and floodway data) remain the same**
- **Updated SFHAs eligible for appeal under the Expanded Appeals Process (EAP)**

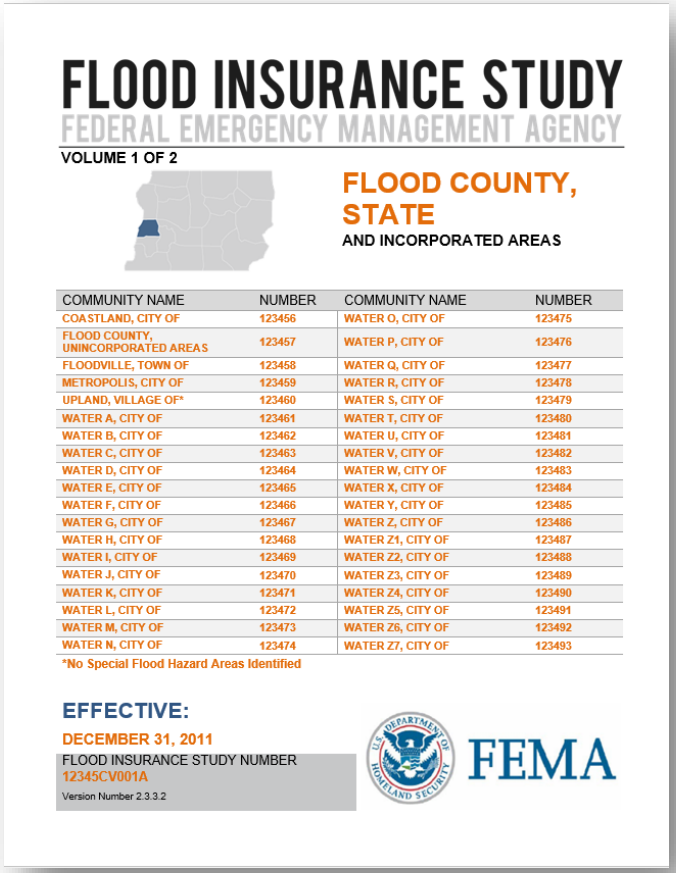
Flood Risk Project Deliverables

Discovery

- **Discovery Report and Discovery Map will summarize and present results of Discovery analysis when complete**
- **All watershed stakeholders will be notified of scope and methods selected for ensuing Flood Risk Project**
- **Stakeholder review, discussion, data exchange, and engagement is encouraged throughout the Flood Risk Project**

Regulatory Products

- **FIS reports and DFIRM maps will continue to fulfill regulatory requirements and support the NFIP**



FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2

FLOOD COUNTY, STATE

AND INCORPORATED AREAS

COMMUNITY NAME	NUMBER	COMMUNITY NAME	NUMBER
COASTLAND, CITY OF	123456	WATER O, CITY OF	123475
FLOOD COUNTY, UNINCORPORATED AREAS	123457	WATER P, CITY OF	123476
FLOODVILLE, TOWN OF	123458	WATER Q, CITY OF	123477
METROPOLIS, CITY OF	123459	WATER R, CITY OF	123478
UPLAND, VILLAGE OF*	123460	WATER S, CITY OF	123479
WATER A, CITY OF	123461	WATER T, CITY OF	123480
WATER B, CITY OF	123462	WATER U, CITY OF	123481
WATER C, CITY OF	123463	WATER V, CITY OF	123482
WATER D, CITY OF	123464	WATER W, CITY OF	123483
WATER E, CITY OF	123465	WATER X, CITY OF	123484
WATER F, CITY OF	123466	WATER Y, CITY OF	123485
WATER G, CITY OF	123467	WATER Z, CITY OF	123486
WATER H, CITY OF	123468	WATER Z1, CITY OF	123487
WATER I, CITY OF	123469	WATER Z2, CITY OF	123488
WATER J, CITY OF	123470	WATER Z3, CITY OF	123489
WATER K, CITY OF	123471	WATER Z4, CITY OF	123490
WATER L, CITY OF	123472	WATER Z5, CITY OF	123491
WATER M, CITY OF	123473	WATER Z6, CITY OF	123492
WATER N, CITY OF	123474	WATER Z7, CITY OF	123493

*No Special Flood Hazard Areas Identified

EFFECTIVE:

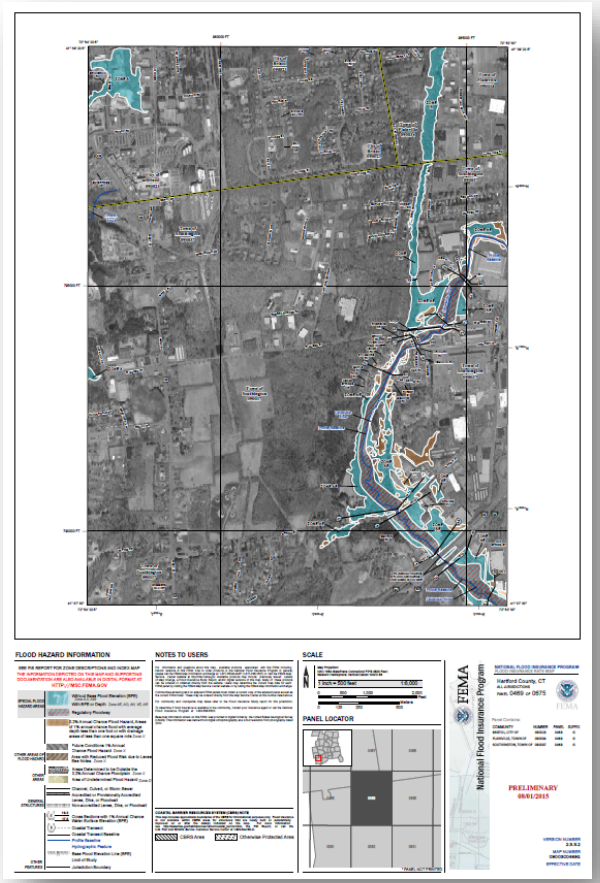
DECEMBER 31, 2011

FLOOD INSURANCE STUDY NUMBER

12345CV001A

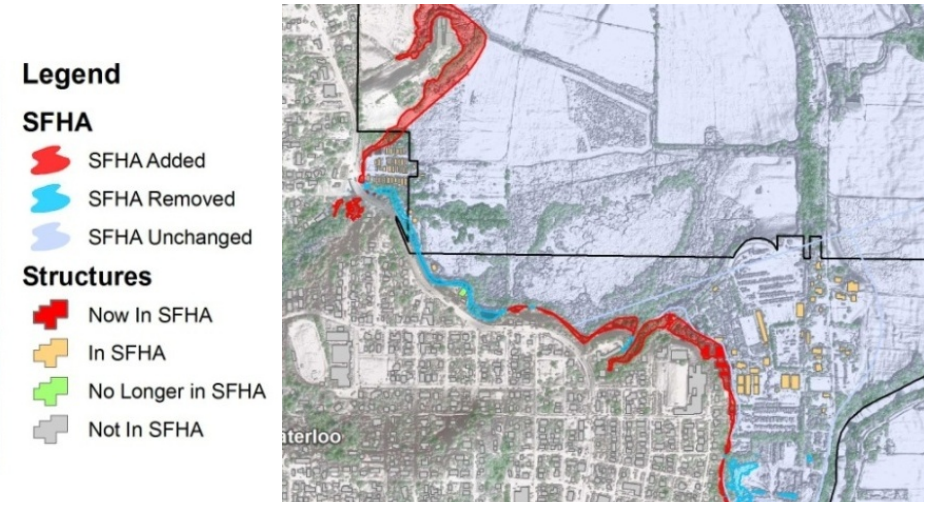
Version Number 2.3.3.2

FEMA

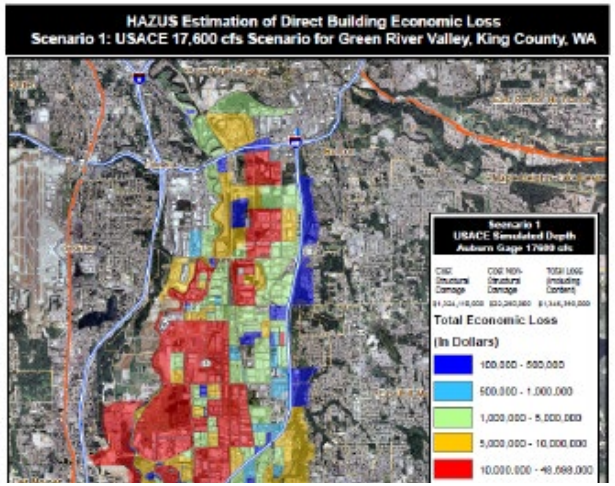


Non-regulatory (Flood Risk) Products

- **Changes Since Last FIRM (CSLF)**
  - Shows areas of change in SFHA
  - Useful for improved outreach

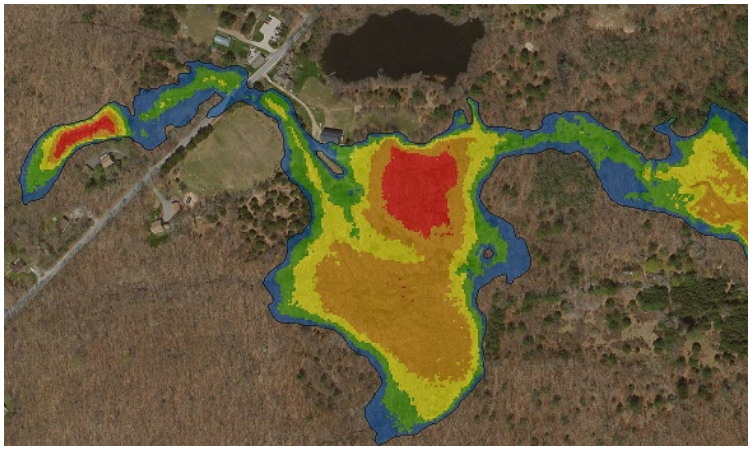


- **Hazus Risk Assessment**
  - Quantifies potential losses in structure counts and dollars due to modeled floods
  - Useful for understanding flood risk



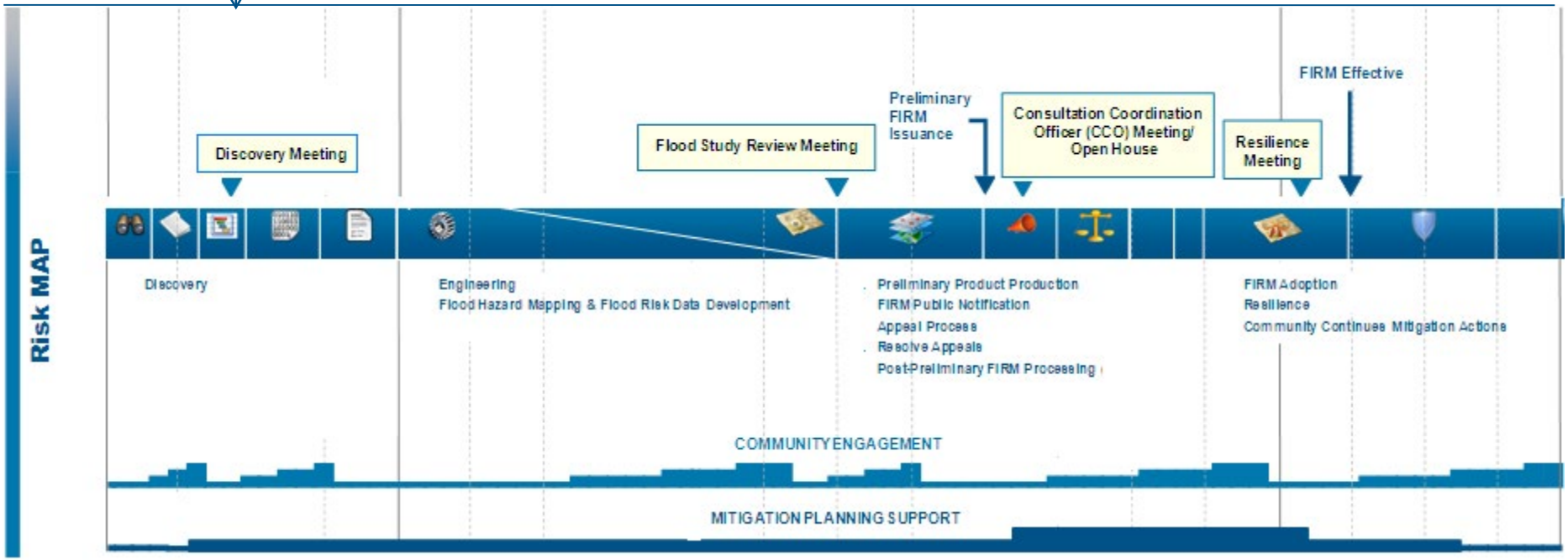
Non-regulatory (Flood Risk) Products

- **Depth grid**
  - Shows depth of inundation of 1%-annual-chance flood
  - Useful for locating highest-risk properties
- **Analysis grids**
  - Percent-chance of flooding in any year
  - Percent-chance of flooding during 30-year period
  - Change in water-surface elevation from effective



Projected 50-Month Study Timeline

Discovery Meeting
November 2020



Hazard Mitigation

Hazard Mitigation Plans

- **Complete list of Hazard Mitigation Plan (HMP) status for each community available upon request**

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
- **Community Rating System –** proactive communities receive insurance discounts for residents
- **National Dam Safety Program –** dam safety standards

Communication

- **Each community has a role in keeping their residents informed of:**
  - Flood risk
  - Steps they can take to protect themselves and their property
  - Flood Risk Project progress
- **Communication tools are available to help communities communicate about risk and projects**

Community Outreach Plan Template

COMMUNITY LETTERHEAD

COMMUNICATIONS PLAN OBJECTIVES

To support the communications goal, this section of the Plan will describe up to five objective statements to which measures can be applied to evaluate whether the objective is met. In addition, all communications activities (tools/tactics) undertaken by the community need to accomplish one or more of the objectives defined in this section. It is recommended that no outreach activities are conducted that do not meet at least one of the Plan objectives.

The following are example objective statements:

- Increase understanding of flood risk by 50 percent among homeowners in high-risk flood areas.
- Increase awareness of flood risk by 30 percent among insurance agents in **[Community Name].**
- Ensure that all information sent to target audiences contains at least one key message about flood risk.

The following are the community's objective statements for this Plan:

1. _____
2. _____
3. _____
4. _____
5. _____

Community Outreach Plan Template

KEY MESSAGES

Provided in this section of the Plan are the primary and secondary key messages that the community will convey in all information products about flood risk and the Risk MAP project. Primary messages convey broader, less detailed information, and secondary messages include more detailed information in support of the primary message. *[Appendix B provides a list of key messages for consideration.]*

The following is an example of a primary message and supporting secondary messages:

The new maps that result from our Risk MAP project will help us better understand which parts of our community are at a greater risk of flooding.

- The new maps were prepared using information from storms and flood events that happened since the previous flood risk maps were developed.
- The high-risk flood areas on the new maps are an *indication* of where flooding will occur.
- Flooding can occur outside of these high risk zones, depending on the unique characteristics of a storm or flood event.

Each Risk MAP information product that a community prepares should include at least one of the key messages described below.

The following are the community's primary and secondary messages for this Plan:

Closing Remarks

Project Team and Points of Contact

- **NH state contacts:**
  - Jennifer Gilbert, State NFIP Coordinator, VT DEC, jennifer.gilbert@osi.nh.gov
  - Meghan Wells, State Hazard Mitigation Officer, NH DOS, meghan.k.wells@dos.nh.gov
- **VT state contacts:**
  - Rebecca Pfeiffer, State NFIP Coordinator, VT DEC, rebecca.pfeiffer@vermont.gov
  - Sacha Pealer, Northeast Region Floodplain Manager, VT DEC, sacha.pealer@vermont.gov
  - Stephanie Smith, State Hazard Mitigation Officer, VT DEMHS, stephanie.a.smith@vermont.gov
- **ME state contacts:**
  - Sue Baker, State NFIP Coordinator, ME DACF, sue.baker@maine.gov
  - Anne Fuchs, State Hazard Mitigation Officer, ME EMA, anne.p.fuchs@maine.gov
- **FEMA contacts:**
  - Kerry Bogdan, Project Manager, FEMA Region I, kerry.bogdan@fema.dhs.gov
  - Bob Desaulniers, Floodplain Management & Insurance Branch, FEMA Region I, robert.desaulniers@fema.dhs.gov)
  - Jay Neiderbach, Planner, Risk Analysis Branch, FEMA Region I, Josiah.neiderbach@fema.dhs.gov
- **USGS contacts:**
  - Scott Olson, Project Manager, USGS, solson@usgs.gov
  - Greg Stewart, Project Manager, USGS, gstewart@usgs.gov
- **Region I Regional Service Center contacts:**
  - Alex Sirotek, RSC Lead, Compass PTS, sirotekar@cdmsmith.com

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) – view effective maps online for free: http://msc.fema.gov/**

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

Optional Breakout Session

- **5 to 30 minutes**
- **Ask us community-specific questions**
- **Share community-specific data and information**
- **Discuss potential study areas and data availability**

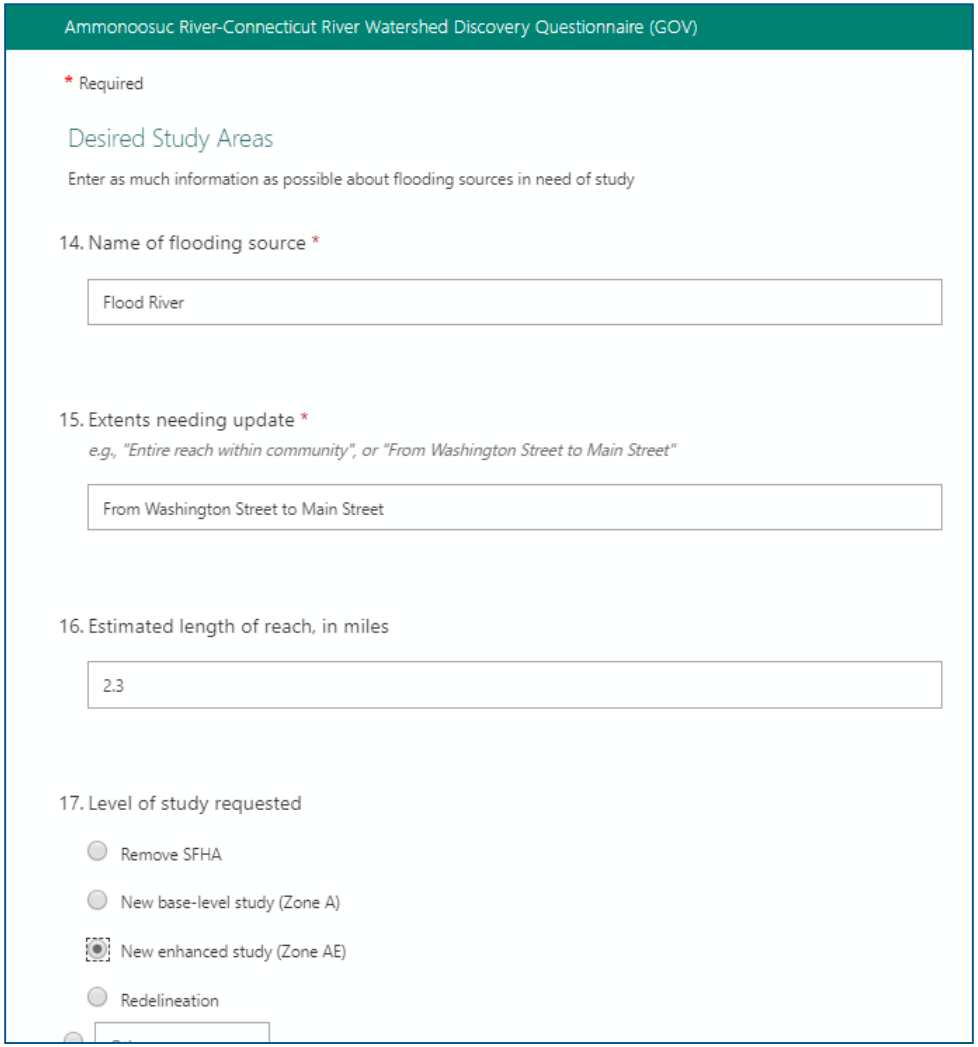
- **QUESTIONS?**

Data Request Summary

- **Names, titles, roles, addresses, emails, and phone numbers of community officials involved in NFIP program, floodplain management, etc.**
- **Desired study reaches**
- **Existing data studies**
- **Available funding or data to contribute to potential studies**
- **Areas of mitigation interest**
- **Existing, proposed, or altered dams and levees**
- **Past mitigation successes, future mitigation goals**
- **Environmentally sensitive areas**
- **Community-level flood hazard, risk, or general GIS data**
- **Outreach or training methods, goals, and needs**

- **See questionnaire, and/or provide information whenever possible**

Questionnaire Example



Ammonoosuc River-Connecticut River Watershed Discovery Questionnaire (GOV)

* Required

Desired Study Areas

Enter as much information as possible about flooding sources in need of study

14. Name of flooding source *

Flood River

15. Extents needing update *

e.g., "Entire reach within community", or "From Washington Street to Main Street"

From Washington Street to Main Street

16. Estimated length of reach, in miles

2.3

17. Level of study requested

- ○ Remove SFHA
- ○ New base-level study (Zone A)
- ◉ New enhanced study (Zone AE)
- ○ Redelineation