



Discovery Meeting Pemigewasset Watershed

December 11, 2018

Lincoln, NH 10:00 AM – 12:00 Noon

Holderness, NH 2:00 PM – 4:00 PM



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Meeting Agenda

- ▶ **Welcome and Introductions**
 - Risk MAP Project Team
 - Community officials and State partners
 - Other Federal Agencies partner representatives
 - Associations
 - Others

- ▶ **Brief Overview of Risk MAP & Discovery**
- ▶ **Watershed Snapshot & Prioritization**
- ▶ **Looking Forward – Engineering Analysis**
- ▶ **Regulatory and Non-Regulatory Products**
- ▶ **Breakout Session and Interactive Discussions**



Overview Risk MAP & Discovery



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What is Risk MAP?



- Five year effort to modernize maps
- Result: digital flood data and digital maps for 92% of population
- Improved flood data quality
- Limited up-front coordination
- Scoping not mandatory

RiskMAP

Increasing Resilience Together

- Collaborative approach
- Goals: quality data, public awareness, action that reduces risk
- Watershed-oriented
- Focus on up-front coordination
- Discovery is mandatory



Modernization in the Pemigewasset Watershed

**Unmodernized Counties
(Belknap, NH and the
Town of Lincoln in
Grafton, NH)**



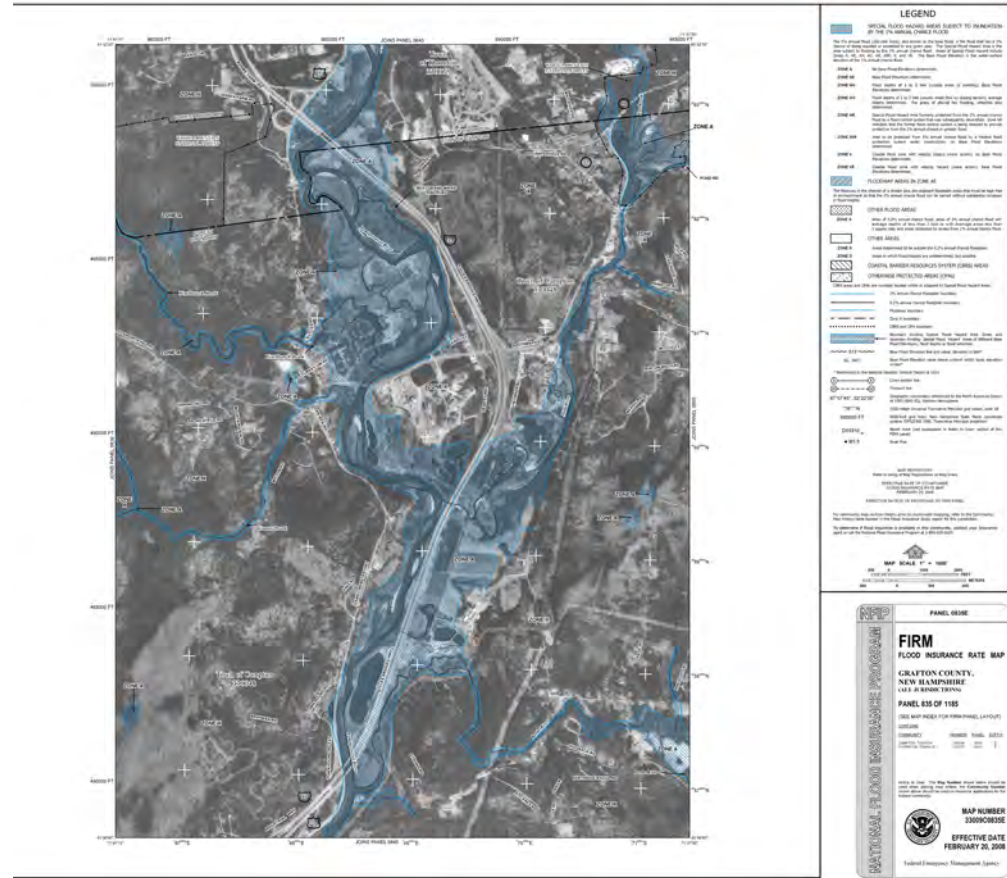
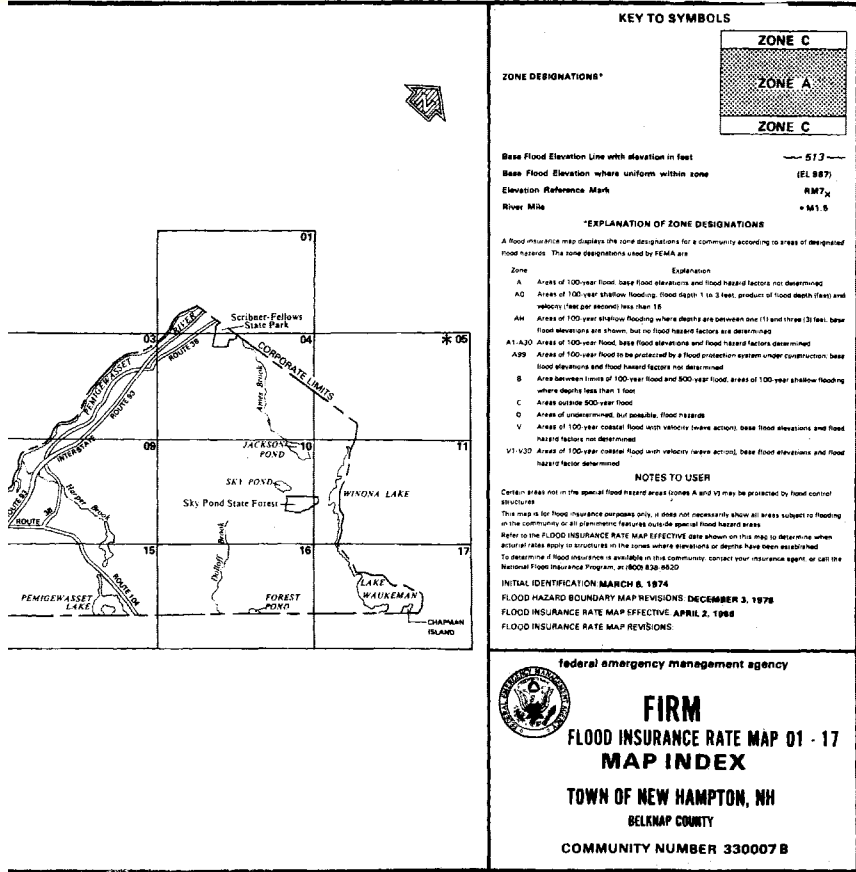
**Modernized Counties
(Carroll, NH,
Merrimack, NH,
Sullivan, NH, Grafton,
NH)**



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RiskMAP
Increasing Resilience Together

Modernization in the Pemigewasset Watershed



Unmodernized Counties (Belknap, NH and the Town of Lincoln in Grafton, NH)



Modernized Counties (Carroll, NH, Merrimack, NH, Sullivan, NH, Grafton, NH)



What is the value of Risk MAP?

Through collaboration with State, Local, and Tribal entities, Risk Mapping and Planning (Risk MAP) will deliver quality data that increases public awareness and leads to action that reduces risk to life and property



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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

When

- After an area/watershed has been prioritized
- Before a Risk MAP project scope is finalized

Why

- Increases visibility of flood risk information,
- Increases education and involvement of communities

Potential Next Steps

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

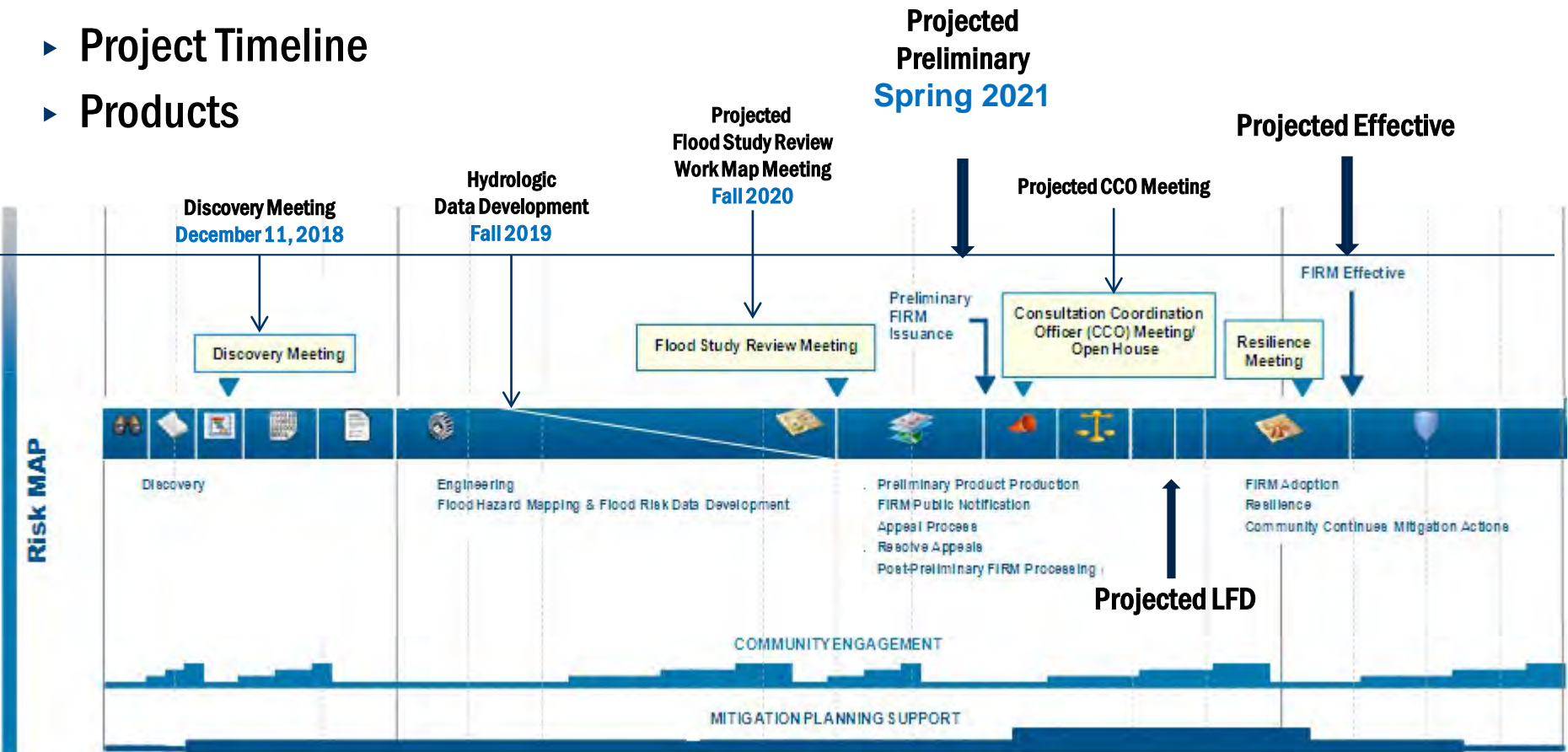


Involvement from Communities

- ▶ **Four meetings during the study when involvement from communities are needed:**
 - **Discovery meeting**
 - **Work Map meeting (Flood Study Review [FSR] Meeting)**
 - **CCO meeting (Community Coordination and Outreach)**
 - **Open House/Resiliency meeting**

What are the Risk MAP activities, timeline, and products?

- ▶ Activities
- ▶ Project Timeline
- ▶ Products



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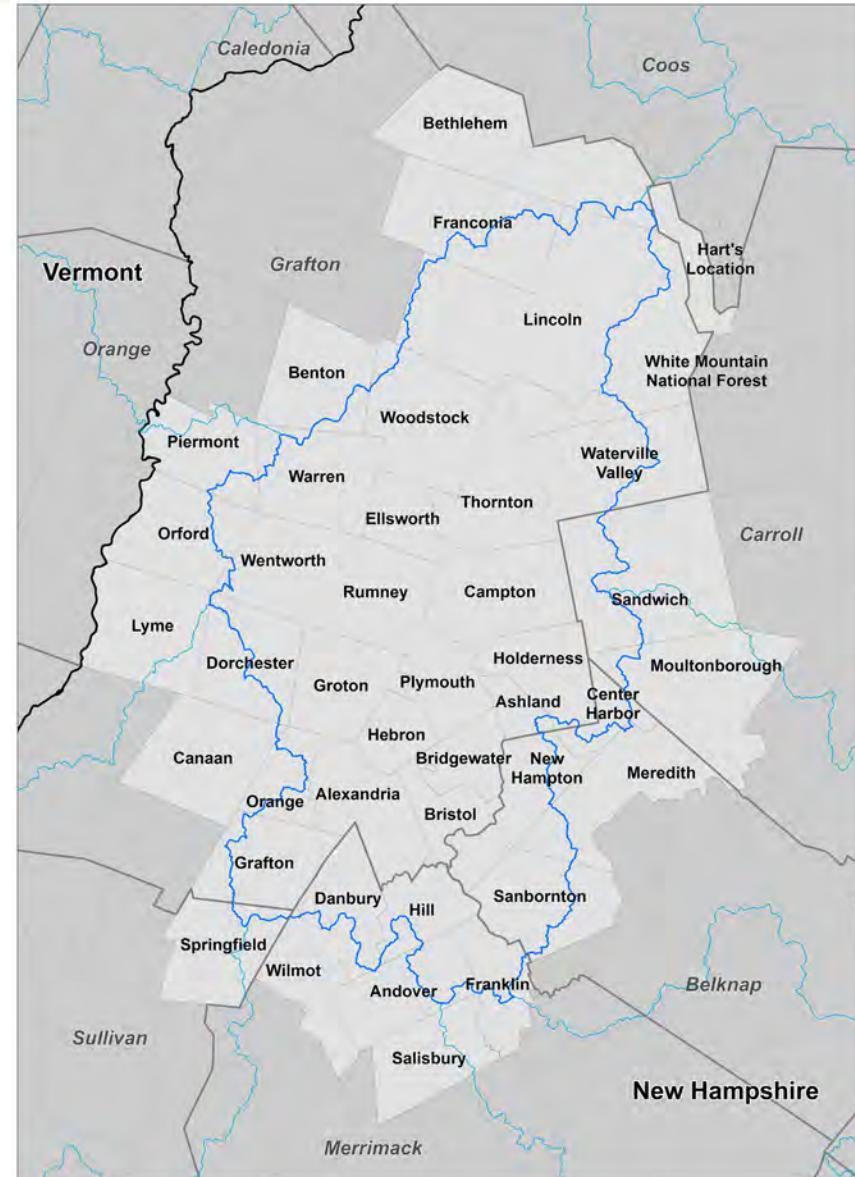
Watershed Snapshot & Prioritization



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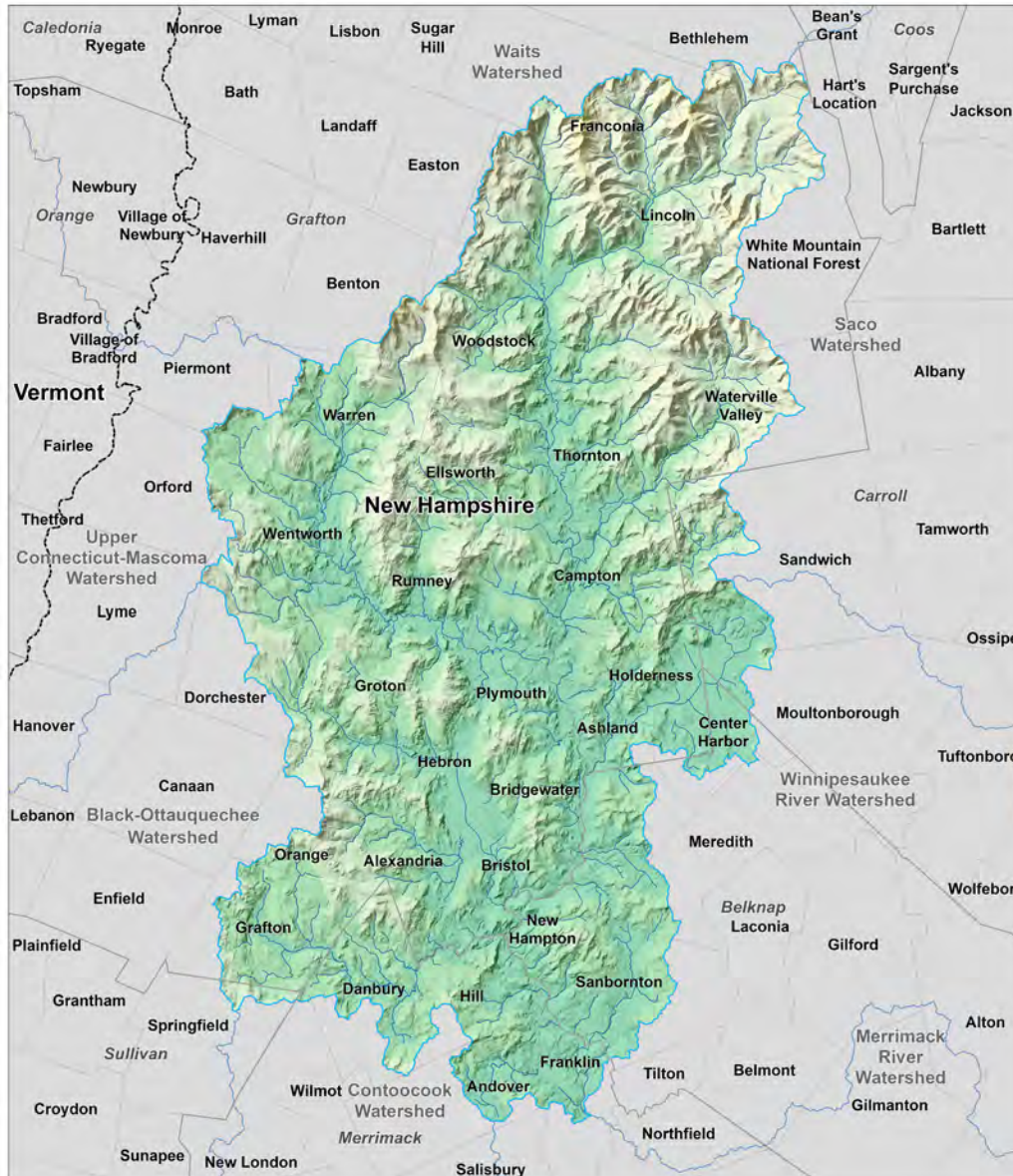
Pemigewasset Watershed Overview

- **The Pemigewasset Watershed contains or touches:**
 - 1 state
 - 5 counties
 - 39 communities
 - 38 towns & 1 city
 - 765 of total stream miles
 - Approximately 66,000 residents



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Pemigewasset Watershed



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Pemigewasset Watershed Rivers

- **Approximately 64 named streams**
- **25% of the mileage on 12 streams**
- **Pemigewasset River is the largest**

River Name	Miles in Watershed	% of Total Miles
Pemigewasset River	56.7	7.4 %
Baker River	29.5	3.9 %
Smith River	21.9	2.9 %
Beebe River	17.1	2.2 %
Mad River	14.4	1.9 %
Squam Lake	11.3	1.5 %
Bog Brook	8.3	1.1 %
Sucker Brook	7.4	1.0 %
Newfound Lake	7.0	0.9 %
West Branch Brook	6.2	0.8 %
Pond Brook	6.0	0.8 %
Squam River	5.7	0.7 %
Clay Brook	5.5	0.7 %
Taylor Brook	5.3	0.7 %
Salmon Brook	5.0	0.7 %
Owl Brook	5.0	0.6 %
Mill Brook	4.6	0.6 %
Wild Meadow Brook	4.5	0.6 %
Cockermouth River	4.4	0.6 %
Ryan Brook	3.9	0.5 %

Priority Stream Reaches

One goal of Discovery: Coordinate with all watershed stakeholders to select highest-priority reaches for redelineation and/or detailed study

Priority reaches will be selected based on analysis of available data

- **Coordinated Needs Management System (CNMS)**
- **Letters of Map Change (LOMCs)**
- **Average Annualized Loss (AAL)**
- **Risk Class Data - Population density and anticipated growth**
- **Study age**
- **Dams / Levees**

Last source required to finalize priority list - STAKEHOLDER INPUT NEEDED!

Please tell us your mapping needs.

- **Breakout session today**
- **Up to 30 days after the Discovery Meeting**



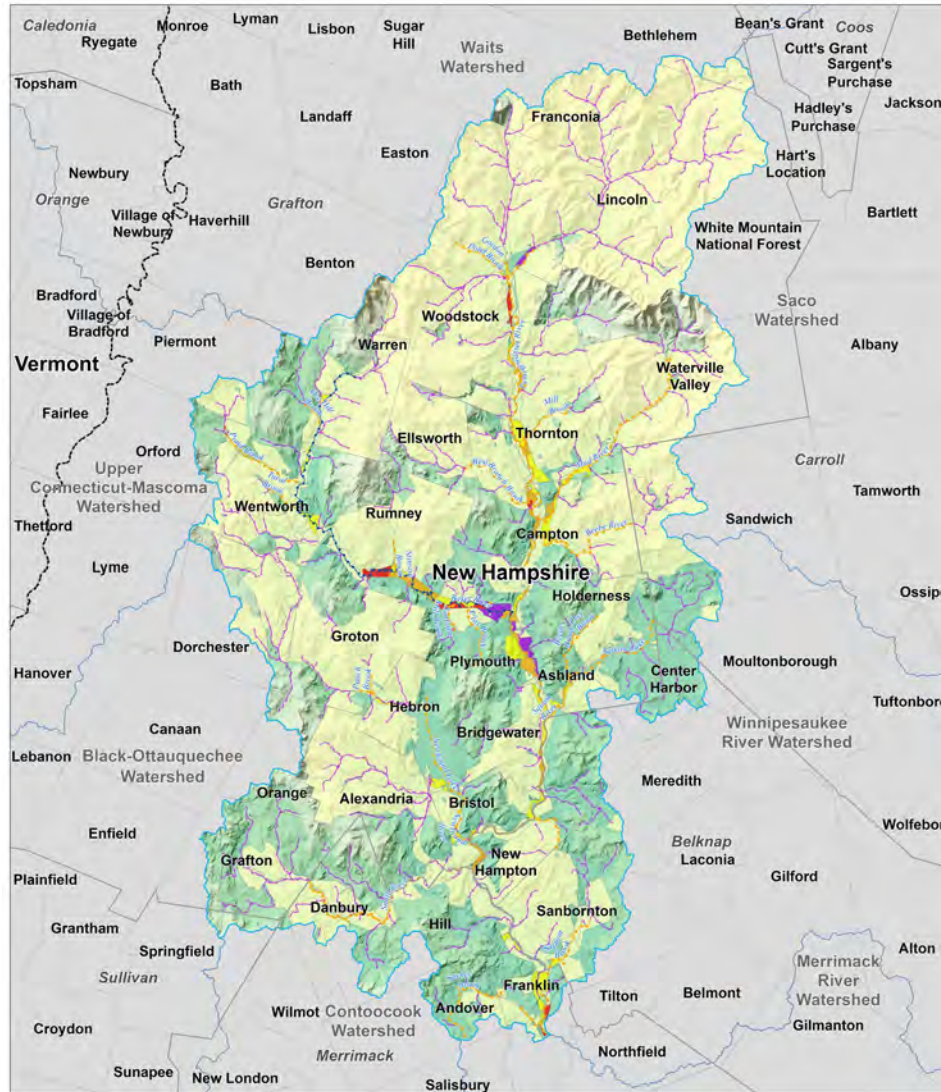
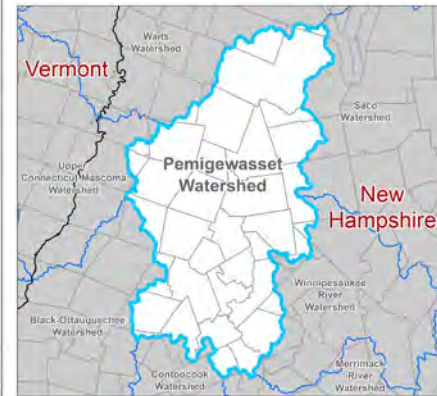
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Pemigewasset Watershed Overview

MAP SYMBOLOGY

- Watershed Boundary
 - Neighboring Watersheds
 - Communities
 - State Boundary
 - County Boundary
 - High Priority Detailed Study
 - Medium Priority Detailed Study
 - Draft Approximate Study
-
- Average Annualized Loss**
- Very Low
 - Low
 - Medium
 - High
 - Very High

WATERSHED LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM Discovery Map

PEMIGEWASSET WATERSHED

Total Stream Miles: 765 Miles

AE Valid: 42 Miles
 AE Unverified: 50 Miles
 A Unverified: 286 Miles
 Unmapped: 387 Miles

High Priority Detailed Study: 30 Miles
 Medium Priority Detailed Study: 168 Miles
 Draft Approximate Study: 567 Miles



HUC-8 Code
 01070001
 Release Date
 12/11/2018



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RiskMAP
 Increasing Resilience Together

Pemigewasset Watershed Overview

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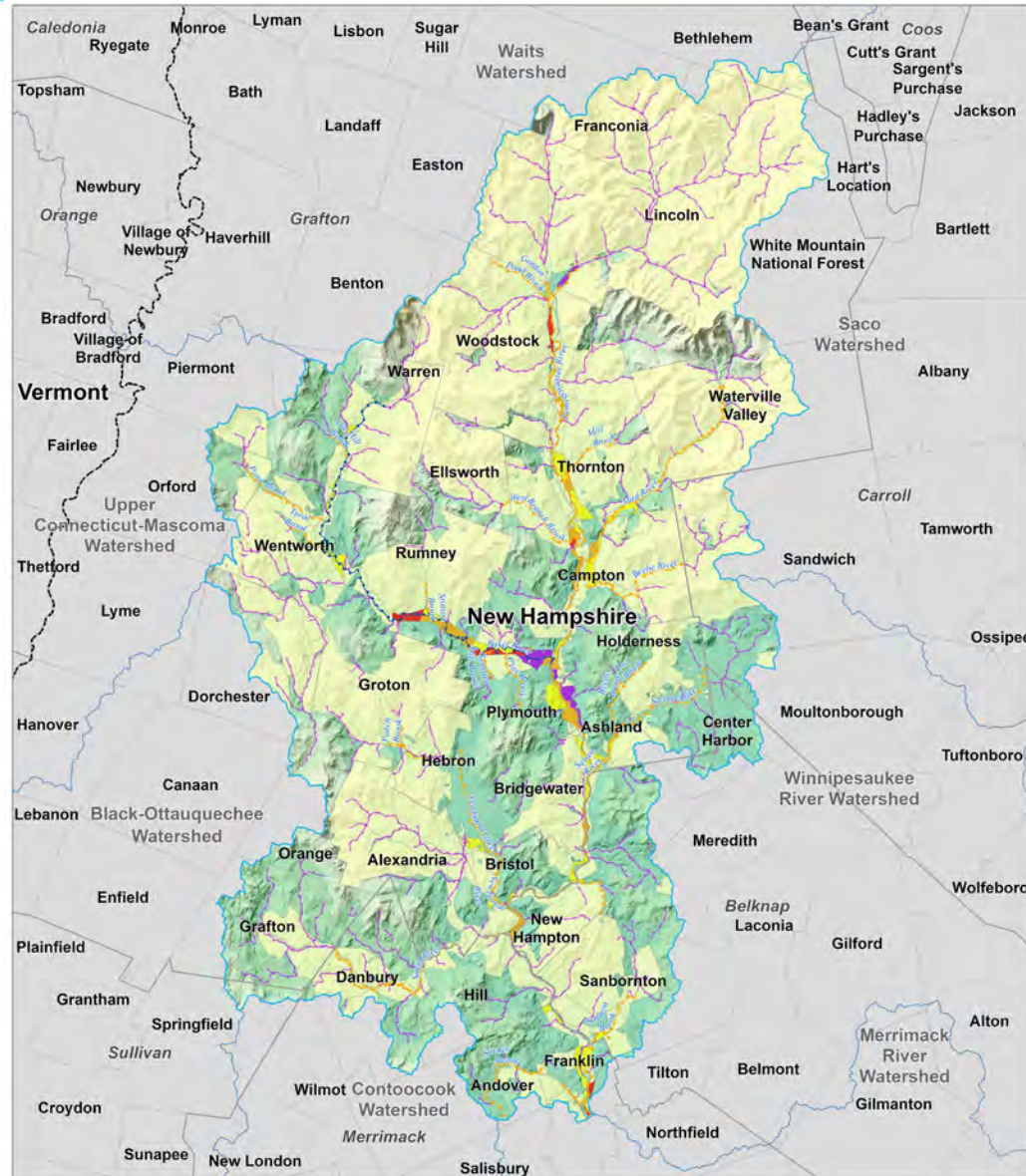
A Unverified: 286 Miles

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Draft Approximate Study: 567 Miles



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Stakeholder Input Needed!

Consider these areas...

Claims & repetitive loss areas



Land use changes



Levees



Dams



Stream flow pinch points



Other known but unmapped areas of flooding



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Looking Forward – Engineering Analysis



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The Level of Study Based on Prioritization within the Watershed

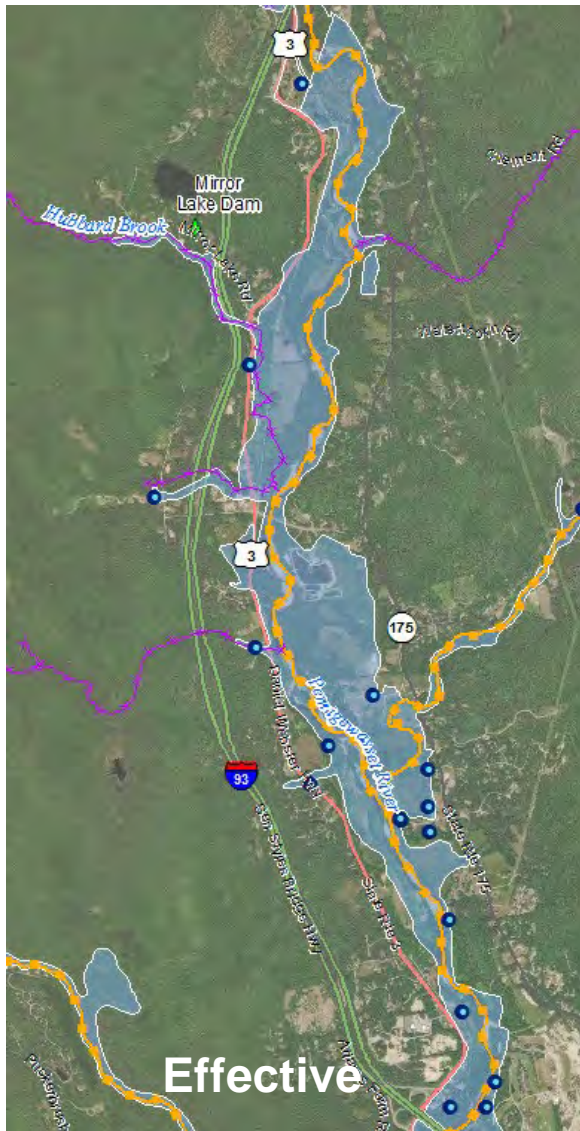
- ▶ **Zone A: Approximate Study/Base Level Engineering**
- ▶ **Zone AE: Redelineation**
- ▶ **Zone AE: Detail Study**

Level of Study

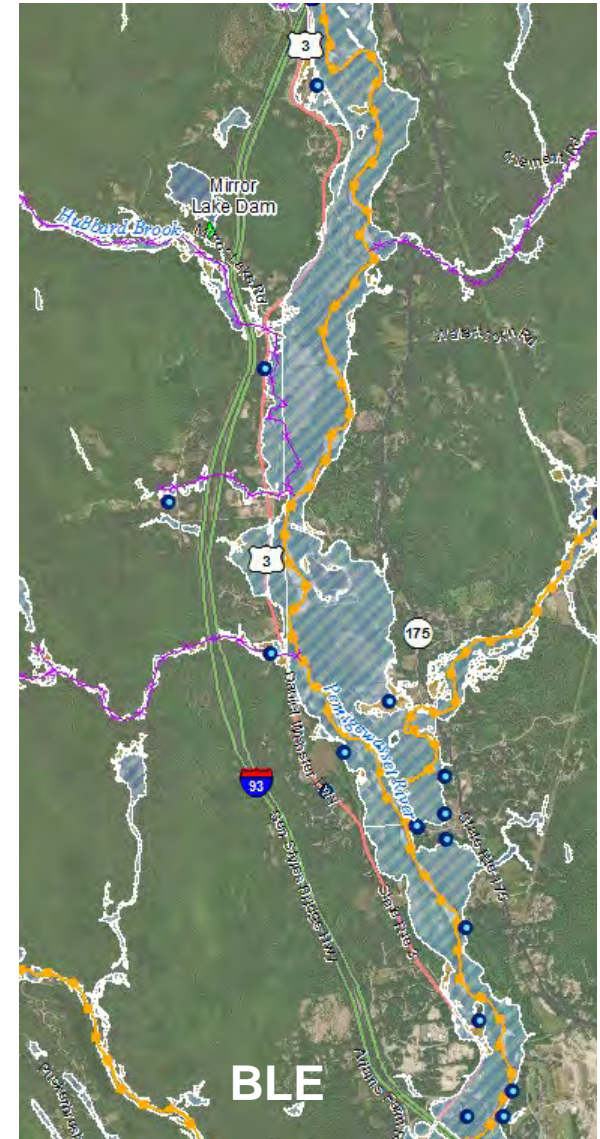
ZONE A: Approximate Study

- 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
- Provides an approximate delineation for the 1% annual exceedance probability (100-yr flood) event.
- No BFEs are provided – Appeal Eligible

Base Level Engineering (BLE) Results



BLE Results
Compared to Effective:



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 AE: Detailed Study

- Most detailed and most expensive study
- Structures and cross-sections are field surveyed
- Streamgauge 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

Best Available Data

- ▶ **LiDAR (Light Detection And Ranging) elevation data – 2011/2012/2014/2016 NH GRANIT**
- ▶ **U.S. Geological Survey (USGS) regional regression equations for estimating peakflows for selected annual exceedance probabilities – 2008 NH (USGS)**
- ▶ **Orthophotography - 2015 NH GRANIT**
- ▶ **Natural Resources Conservation Service (NRCS) Dam Rehabilitation Program**
- ▶ **USGS Streamgauge data**
- ▶ **Existing Digital Flood Insurance Rate Maps (DFIRMs) for counties:**
 - **Belknap, NH effective 1979 - 1988**
 - **Carroll, NH effective in 2013**
 - **Grafton, NH effective in 2008**
 - **Merrimack, NH effective in 2010**
 - **Sullivan, NH effective in 2006**



Data Request

- **Disaster high water marks (HWMs)**
- **Existing / new dams or levees**
- **New construction of culverts and bridges**
- **Land use changes (i.e., residential development)**
- **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**

Regulatory and Non-Regulatory Products



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Digital Flood Insurance Rate Maps / Flood Insurance Study

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 4



**CUMBERLAND
COUNTY, MAINE
(ALL JURISDICTIONS)**

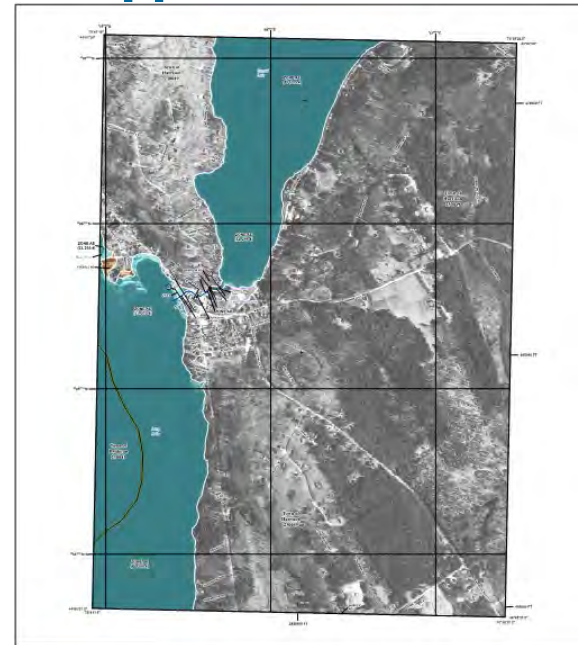
COMMUNITY NAME	NUMBER	COMMUNITY NAME	NUMBER
BALDWIN, TOWN OF	230200	POWNAI, TOWN OF	230204
BRIDGTON, TOWN OF	230041	RAYMOND, TOWN OF	230205
BRUNSWICK, TOWN OF	230042	SCARBOROUGH, TOWN OF	230062
CAPE ELIZABETH, TOWN OF	230043	SEBAGO, TOWN OF	230206
CASCO, TOWN OF	230044	SOUTH PORTLAND, CITY OF	230053
CHEBEAGUE ISLAND, TOWN OF	231037	STANDISH, TOWN OF	230207
CUMBERLAND, TOWN OF	230162	WESTBROOK, CITY OF	230054
FALMGUTH, TOWN OF	230045	WINDHAM, TOWN OF	230189
FREEPORT, TOWN OF	230046	YARMOUTH, TOWN OF	230055
FRYE ISLAND, TOWN OF	231036		
GORHAM, TOWN OF	230047		
GRAY, TOWN OF	230048		
HARPSWELL, TOWN OF	230169		
HARRISON, TOWN OF	230049		
LONG ISLAND, TOWN OF	231035		
NAPLES, TOWN OF	230050		
NEW GLOUCESTER, TOWN OF	230201		
NORTH YARMOUTH, TOWN OF	230202		
PORTLAND, CITY OF	230051		

EFFECTIVE: [TBD]

FLOOD INSURANCE STUDY NUMBER
23005CV001A
Version Number 2.3.2.1



REVISED
PRELIMINARY
3/28/2018
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FLOOD HAZARD INFORMATION

NOTES TO USERS

SCALE

PANEL LOCATOR

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National Flood Insurance Program

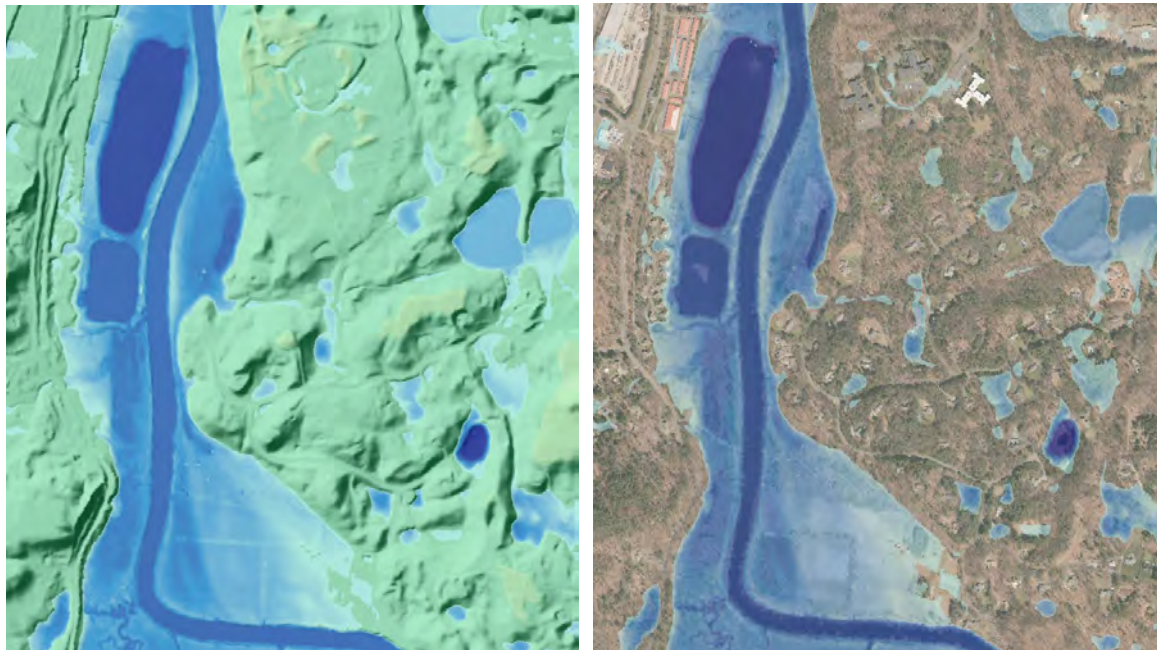
REVISED
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3/28/2018



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Flood Risk Products

Depth Grids & Water Surface Grids



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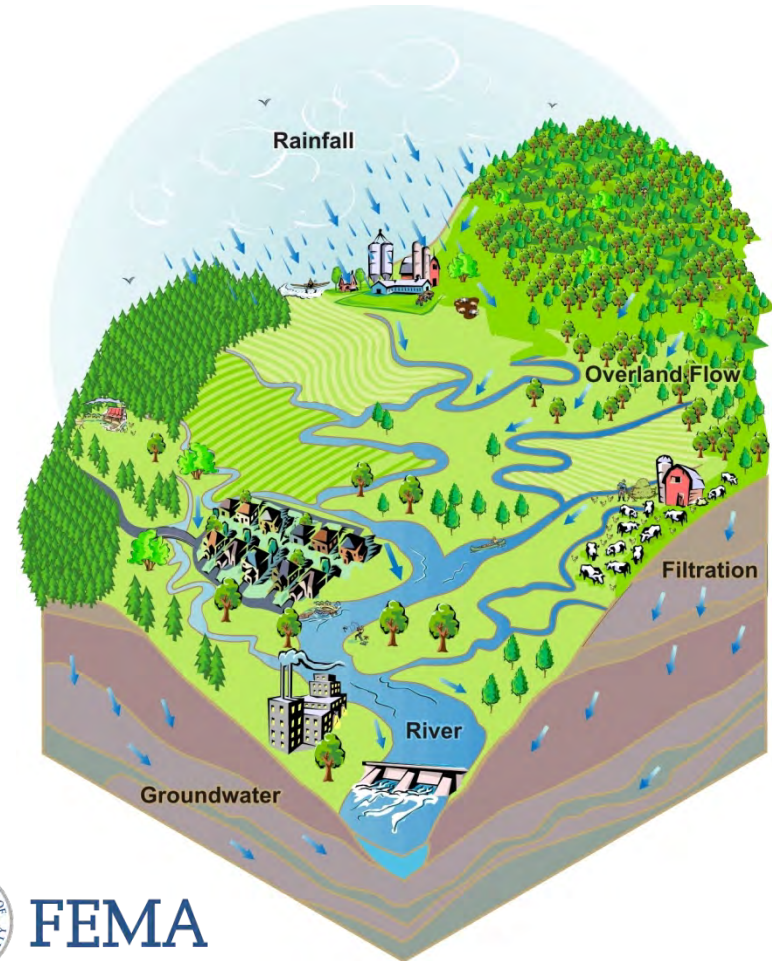
Watershed Flood Risk Report

- Depth Grids



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Pemigewasset Watershed Flood Risk Report



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Pemigewasset Watershed Communities Hazard Mitigation Plan Status

Maintaining Your Hazard Mitigation Plan

Community	Status	Expires
Center Harbor, NH	Approved	8/20/2019
Meredith, NH	Approved	9/2/2020
Sanbornton, NH	Approved	12/3/2019
Hart's Location, NH	Approved	7/24/2023
Moultonborough, NH	Expired	8/22/2018
Sandwich, NH	Approved	11/17/2018
Andover, NH	Expired	12/3/2017
Alexandria, NH	Approved	4/19/2023
Ashland, NH	Approved	12/18/2018
Benton, NH	Expired	6/9/2016
Bethlehem, NH	Approved	8/19/2019
Bridgewater, NH	Approved	2/1/2020
Bristol, NH	Approved	6/23/2021
Campton, NH	Approved	12/3/2019
Canaan, NH	Approved	7/25/2022
Dorchester, NH	Approved	2/11/2021
Ellsworth, NH	Approved	1/11/2022
Franconia, NH	Approved	11/17/2018
Grafton, NH	Approved	10/8/2023
Groton, NH	Approved	6/16/2019
Hebron, NH	Approved	2/1/2021
Holderness, NH	Approved	1/25/2020

Community	Status	Expires
Lincoln, NH	Approved	8/25/2021
Lyme, NH	Approved	4/17/2022
Orange, NH	Approved	12/20/2021
Orford, NH	Approved	4/5/2021
Piermont, NH	Approved	8/8/2022
Plymouth, NH	Approved	10/3/2021
Rumney, NH	Approved	9/28/2021
Thornton, NH	Approved	8/25/2021
Warren, NH	Approved	10/30/2021
Waterville Valley, NH	Approved	8/20/2019
Wentworth, NH	Approved	1/13/2020
Woodstock, NH	Approved	10/5/2019
Danbury, NH	Approved	6/15/2019
Hill, NH	Approved	9/21/2019
Franklin, NH	Approved	12/22/2018
New Hampton, NH	Approved	3/11/2020
Springfield, NH	Approved	9/18/2023



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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

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

Pemigewasset Watershed Points of Contact

▶ NH State Contacts

- Jennifer Gilbert
Floodplain Management Program
Coordinator, NH OSI
jennifer.gilbert@osi.nh.gov
(603) 271-2155
- Samara Ebinger
Principal Planner, NH OSI
Samara.Ebinger@osi.nh.gov
(603) 271-1755

▶ FEMA Contacts

- Kerry Bogdan
Chief, Risk Analysis Branch, FEMA Region I
Kerry.Bogdan@fema.dhs.gov
(617) 956-7576
- Chris Markesich
Senior Program Specialist, FEMA Region I
Christopher.Markesich@fema.dhs.gov
(617) 832-4712

▶ Compass Contact

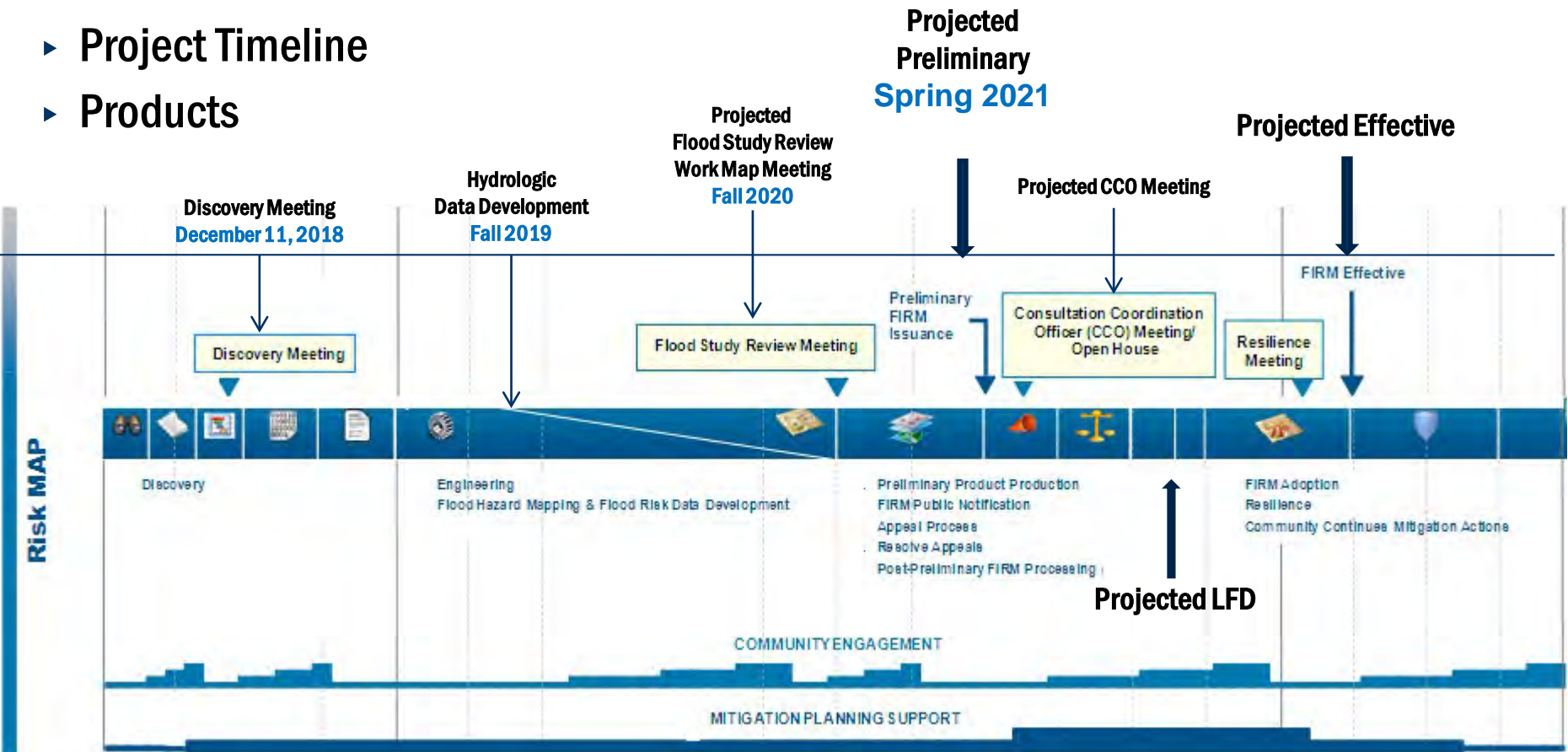
- Debra Beck, Project Manager
BeckDF@cdmsmith.com
(617) 452-6277

▶ FEMA Regional Service Center

- Alex Sirotek, RSC Lead
sirotekar@cdmsmith.com
(617) 452-6345

What are the Risk MAP activities, timeline, and products?

- ▶ Activities
- ▶ Project Timeline
- ▶ Products



Breakout Session

► Stakeholder Input! Please tell us your mapping needs

- Name of flooding source
- Extents needing update
- River miles on this reach needing update
- Level of study requested
- Reason for needed update



Please submit the questionnaire and data by **January 25, 2019.**

QUESTIONS??