

# Flood Inundation Mapping (FIM) & National Water Prediction Service (NWPS): *NWS Training & Outreach*

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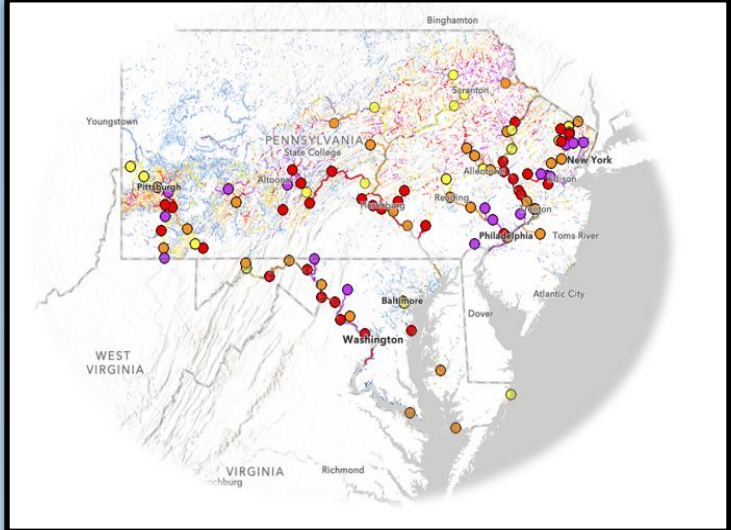


*NROW 2024  
Albany, NY*

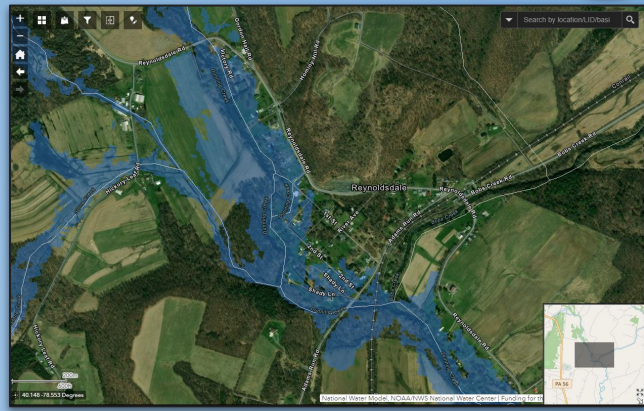




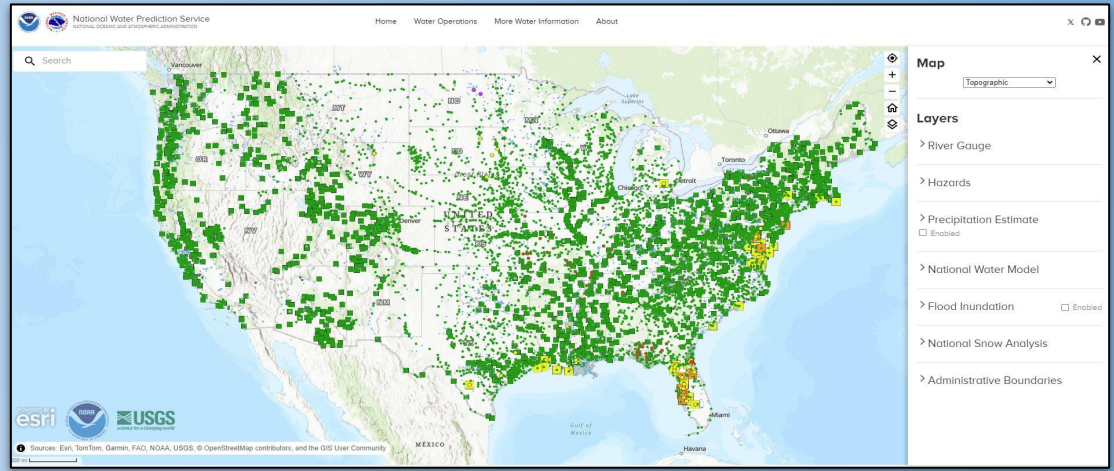
# FIM & NWPS: An Exciting Year for NWS Hydro Ops



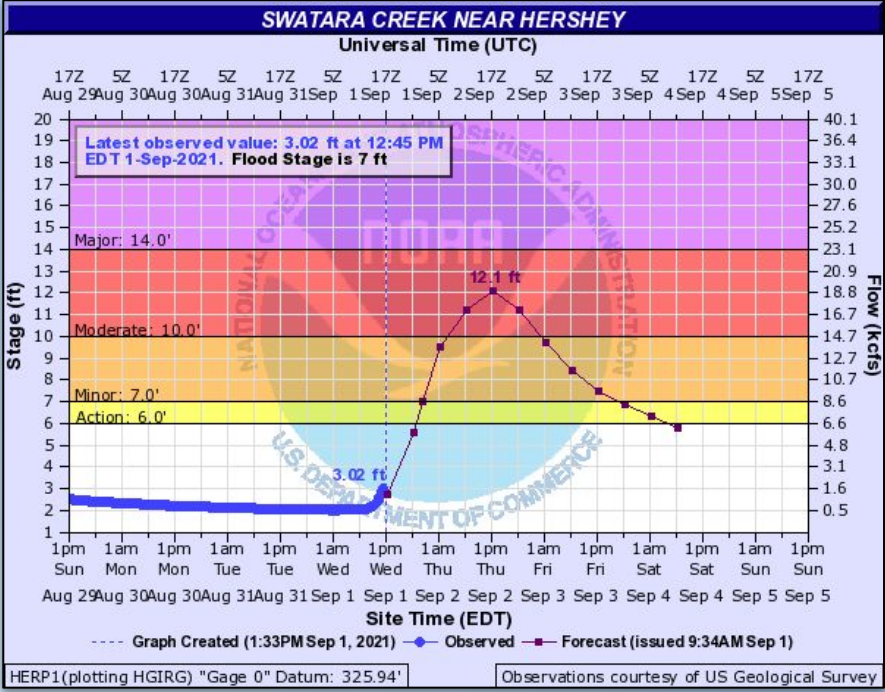
In the fall of 2023, NWS Flood Inundation Mapping (FIM) was made publicly available



In the spring of 2024, the new National Water Prediction Service (NWPS) website was rolled out to the public.



# Flood Inundation Mapping: Putting Water on the Map



Traditional Hydrograph

FIM

*“A picture is worth a thousand words.”*

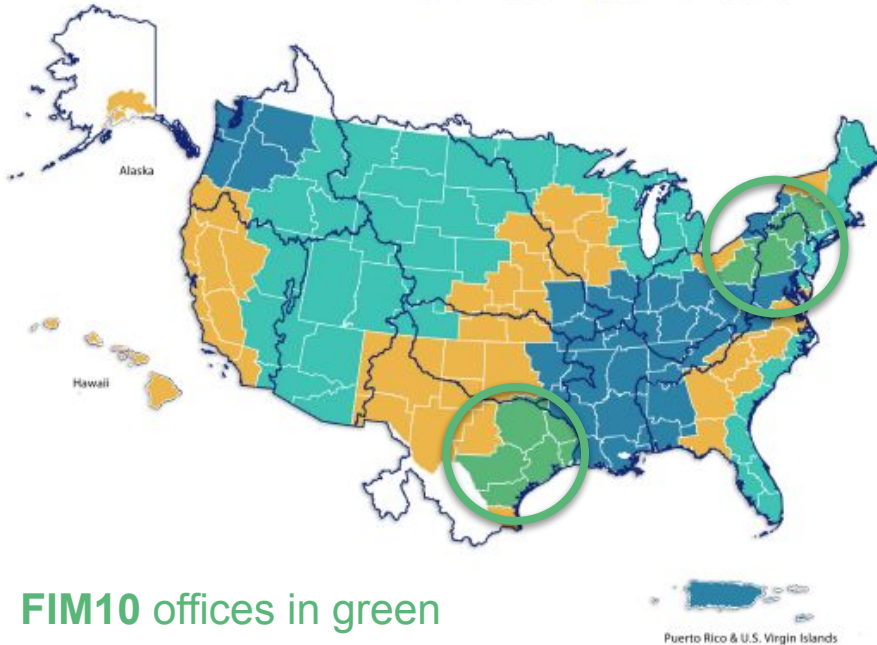
# Timetable: NWS WFOs Roll Out FIM Publicly



NWS WFOs included in the FIM 10% group:

- PA & NY:
  - *State College, PA*
  - *Pittsburgh, PA*
  - *Binghamton, NY*
  - *Albany, NY*
- East TX & Western LA:
  - *Dallas*
  - *San Antonio*
  - *Corpus Christi*
  - *Houston*
  - *Shreveport, LA*
  - *Lake Charles, LA*

## NWS Flood Inundation Mapping Services Implementation



FIM10 offices in green

### Map Legend



\*100% is approximate. Does not include all parts of Alaska, American Samoa, and Guam  
Implementation areas are subject to change



# FIM Outreach Prior to FIM Going Public

- Prior to the public release of FIM, WFO CTP took “mapbooks” with paper copies of FIM to share with county EMs
- CTP’s Service Hydrologist (SSH) and Warning Coordination Meteorologist (WCM) sat down with county EMs to share FIM examples and discuss potential uses and benefits





# Continued Outreach Following FIM Public Release



- Following the public release of FIM, CTP revisited counties to reiterate the benefits of FIM
- Easier now that FIM is available online via NWPS
- Encouraged EMs to report what they're seeing on the ground versus what FIM is suggesting

# One-on-One FIM Training for NWS Staff



## NWS CTP FIM Training

michael.jurewicz@noaa.gov [Switch account](#)



\* Indicates required question

Email \*

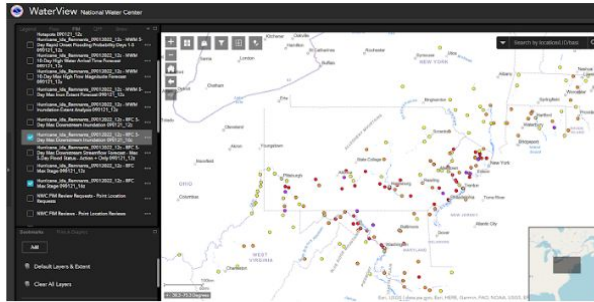
Record michael.jurewicz@noaa.gov as the email to be included with my response

If this is your first time every using the WaterView application, follow [these](#) instructions before returning to this training.

Open up the [WaterView](#) application and login using NOAA credentials (It may require 2 logins).

Your answer

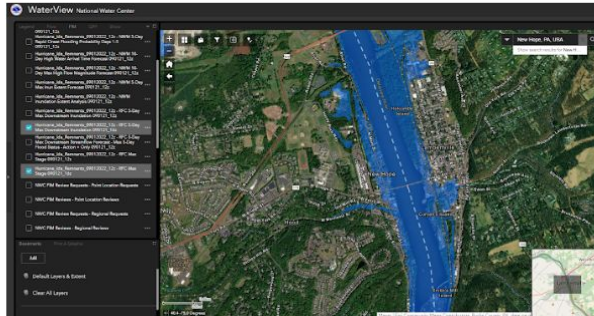
Click the "Add Data" button highlighted in yellow below:



Your answer

Using the Search location feature, type in New Hope, PA (NHPP1)

Change your map background to imagery hybrid

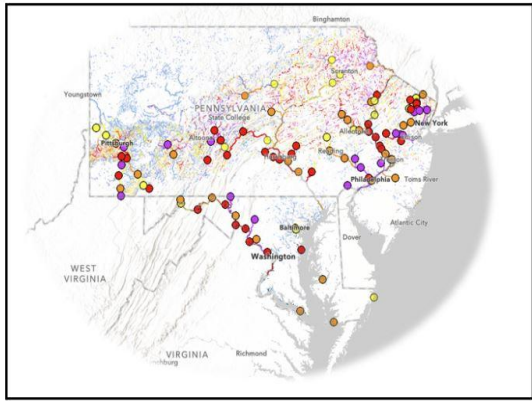


- A one-on-one FIM training exercise for NWS staff was created using Google Forms
- A FIM subject matter expert (SME) sat down with each forecaster and worked through this exercise

# FIM Refresher Training for NWS Staff



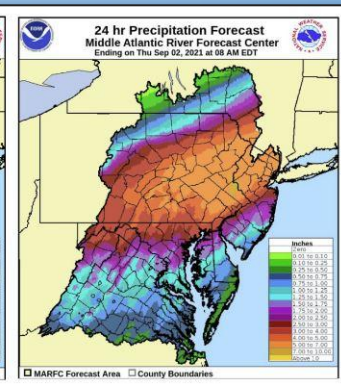
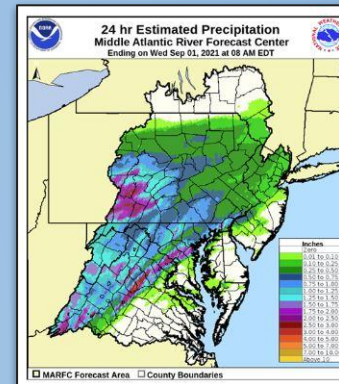
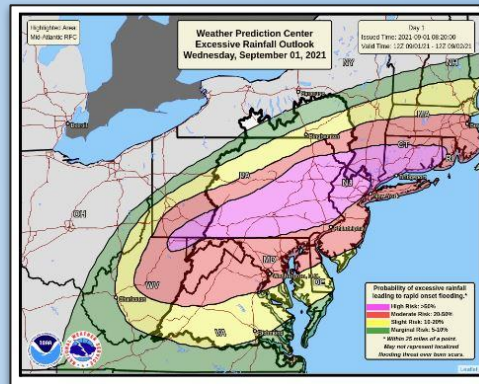
- Refresher training was held for NWS staff approximately one year after the initial one-on-one training.
- Staff broke into small groups of 3 to work through an exercise based on flooding from Hurricane Ida in September 2021.
- Forecasters used FIM to answer a series of theoretical questions from NWS partners.



## Flood Inundation Mapping Training Exercise

**Event:** Hurricane Ida

**Date:** September 1-2, 2021

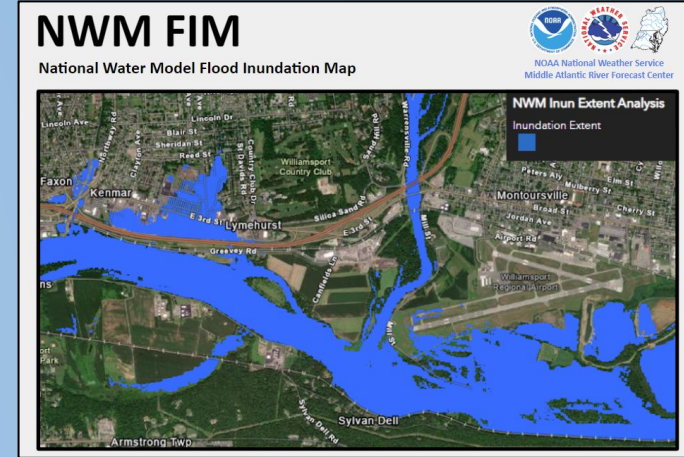
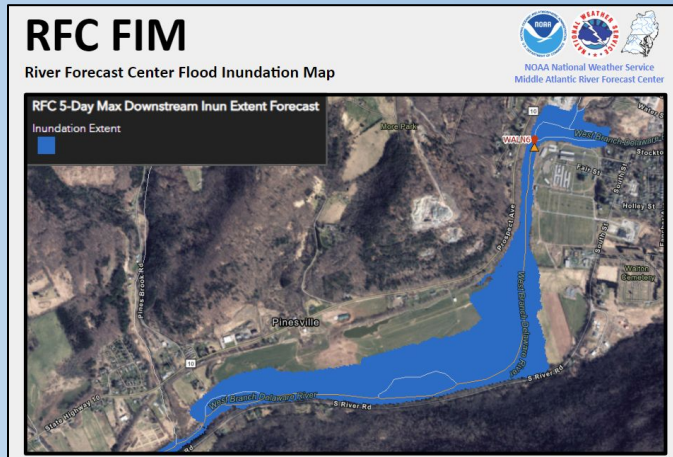
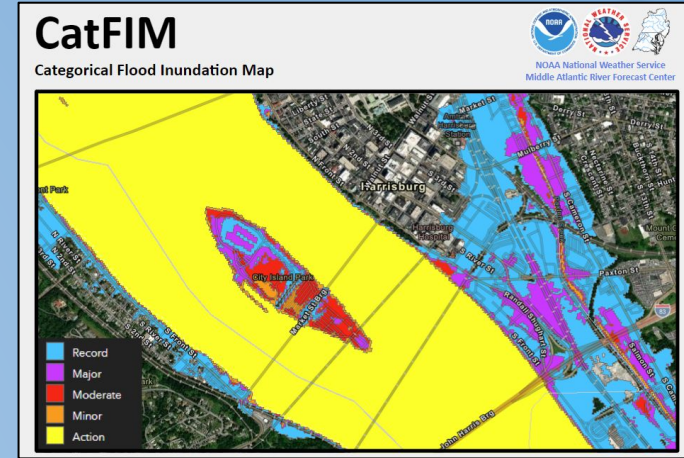
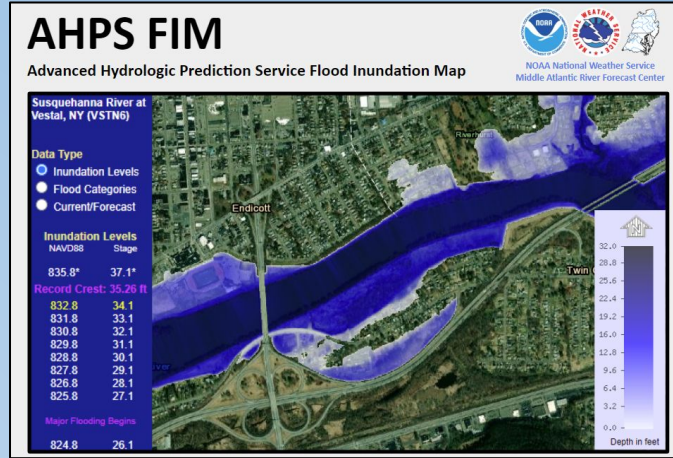




# FIM Instructional Pamphlets



- Informational [factsheets](#) were created for both partner outreach & staff training
- Focus on publicly available FIM:
  - *AHPS*
  - *(Partner) FIM*
  - *CatFIM*
  - *RFC FIM*
  - *NWM FIM*



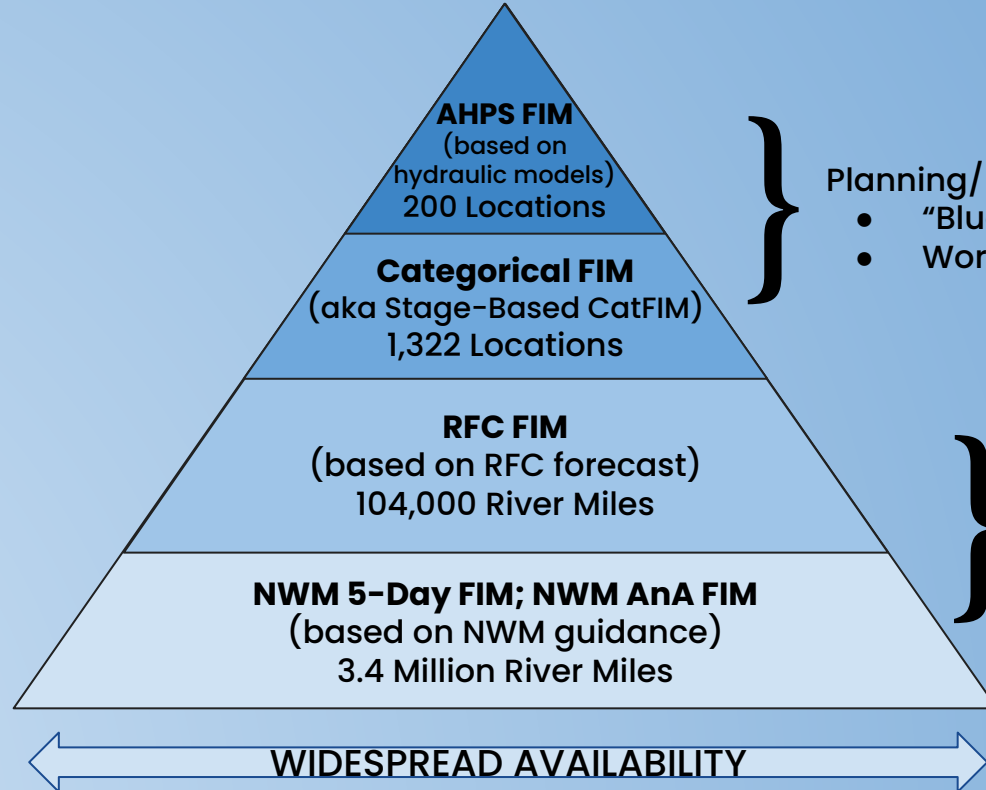
# FIM Pyramid: FIM Types and Confidence Levels



More Verification  
Higher Confidence  
Lower Availability



Less Verification  
Lower Confidence  
Greater Availability



**AHPS FIM**  
(based on hydraulic models)  
200 Locations

**Categorical FIM**  
(aka Stage-Based CatFIM)  
1,322 Locations

**RFC FIM**  
(based on RFC forecast)  
104,000 River Miles

**NWM 5-Day FIM; NWM AnA FIM**  
(based on NWM guidance)  
3.4 Million River Miles



Planning/Reference FIM

- "Blue-Sky" Days
- Worst Case Scenario



Event-Driven FIM

WIDESPREAD AVAILABILITY

# FIM: A Real Life Example of Critical IDSS

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## *Centre County, PA IDSS Request*

- The Centre County Deputy Director of Emergency Services contacted NWS State College.
- There was growing concern about water levels on the Bald Eagle Creek in the town of Milesburg. The following information was needed:
  - Would Front Street inundate and how would this impact the flow of traffic?
  - Would a nearby nursing home take on water?
    - Would an evacuation of residents become necessary?
    - Would costly medical equipment need to be relocated?



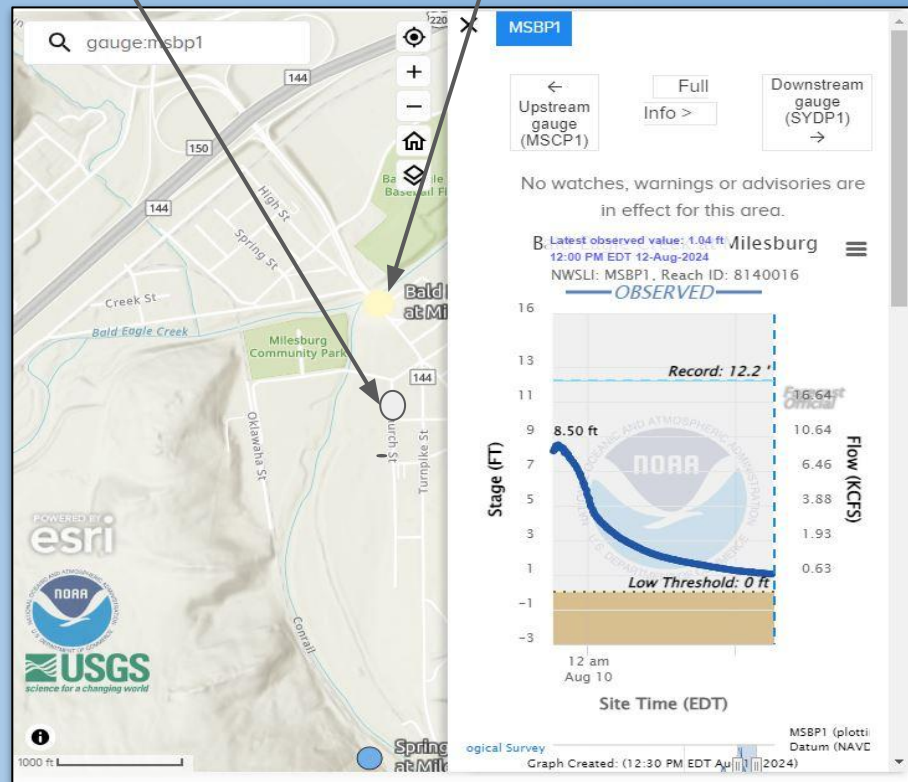
# FIM: A Real Life Example of Critical IDSS

## What datasets could we access to help provide needed information?

- There is a downstream gauge - but would it give us what we needed, where we needed it?
- Water levels were still rising, but were slowing with time.
- Additional rainfall was projected to be lighter.

Nursing home location

Stream gauge location



# FIM: A Real Life Example of Critical IDSS

## What about FIM?

- How is the analysis FIM performing now near the nursing home?
- How could we verify?
  - **Centre County officials onsite said the model was too wet.**

Nursing home facility



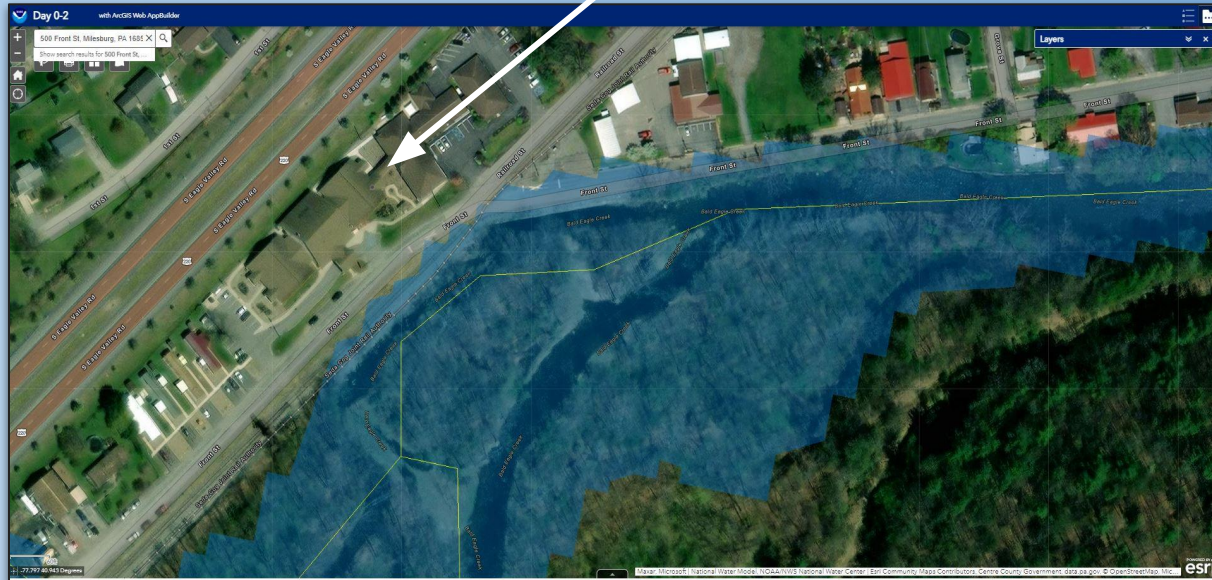
# FIM: A Real Life Example of Critical IDSS

## How could we project based on the FIM analysis?

- We know the following:
  - FIM analysis data was over-inundating.
  - Water already on the ground.

Nursing home facility

**Using what we already knew, the maximum inundation FIM bolstered confidence that an evacuation would not be needed.**



# Sample FIM IDSS Briefing Template



## Most Likely Scenario - Lancaster, PA

### Conestoga River at Lancaster, PA

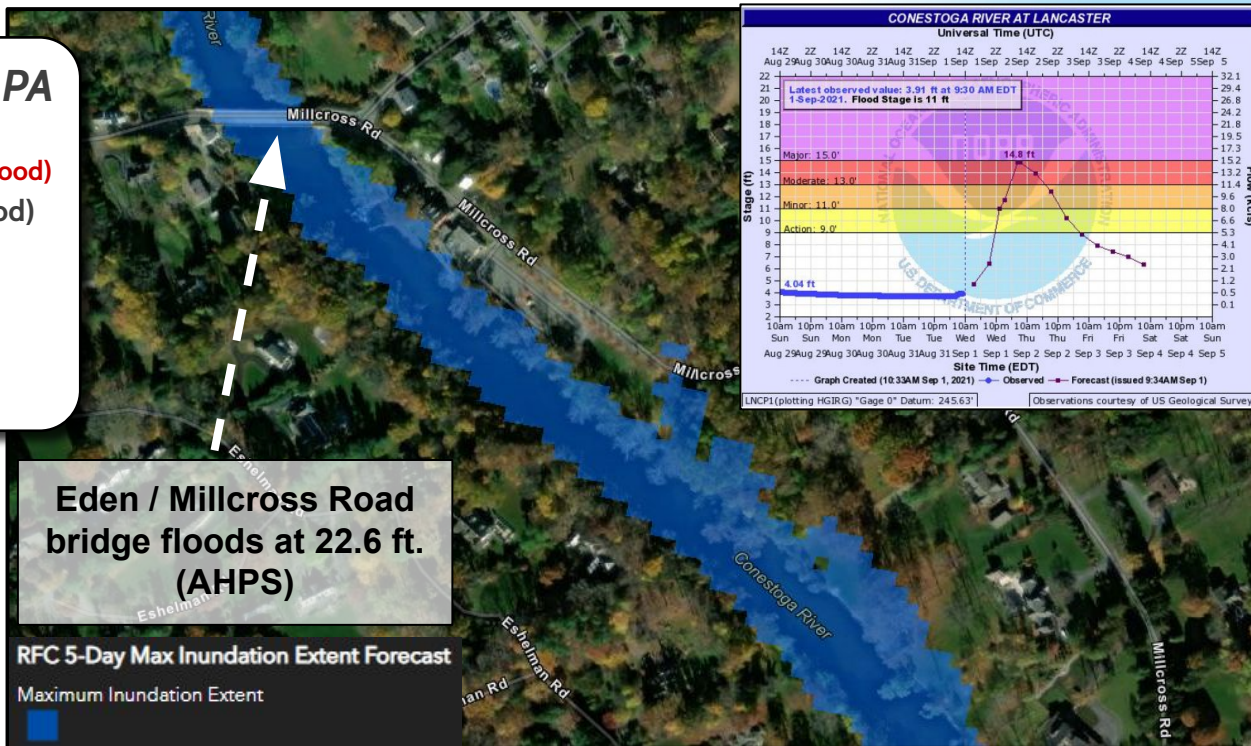
Inundation Level Shown: **14.8 Feet (Moderate Flood)**

Forecast Crest Height: **14.8 Feet (Moderate Flood)**

FIM Source: NWS - RFC FIM

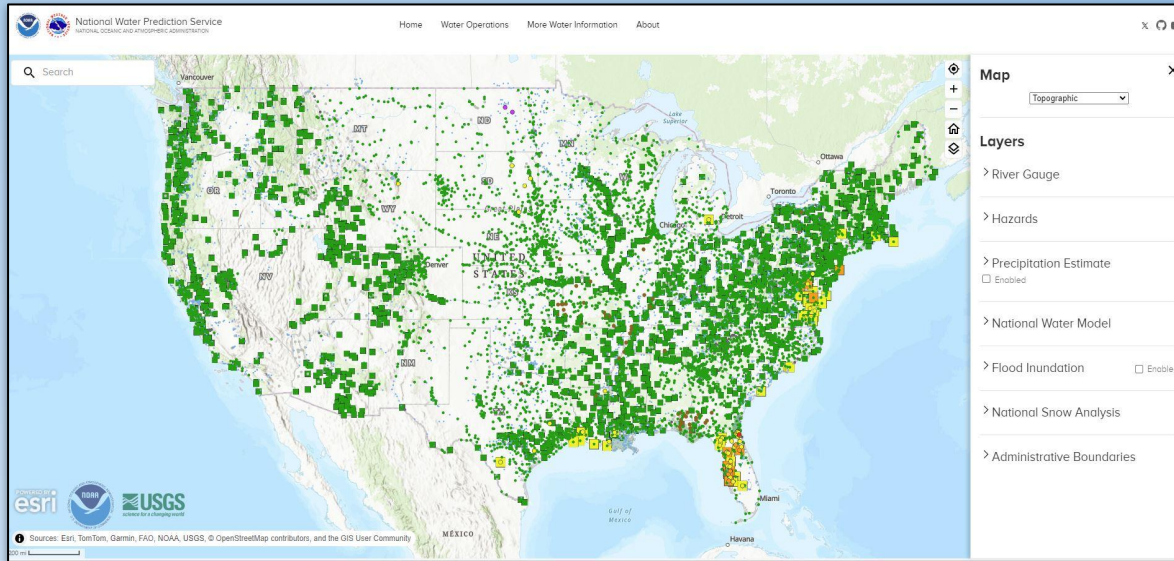
FIM Creation Time: 12:15 PM Sep 1, 2021

➤ View [NWS Flood Maps Online](#)



**\*\*For Demonstration Only - Not An Active Forecast\*\***

# National Water Prediction Service (NWPS)



<https://water.noaa.gov>

Items on NWPS include:

- River Gauge Info
- Hydro & Weather Hazards
- Precipitation Data
- Flood Inundation Mapping

In early 2024, NWPS replaced the AHPS website as the Gateway to NWS Hydro info.

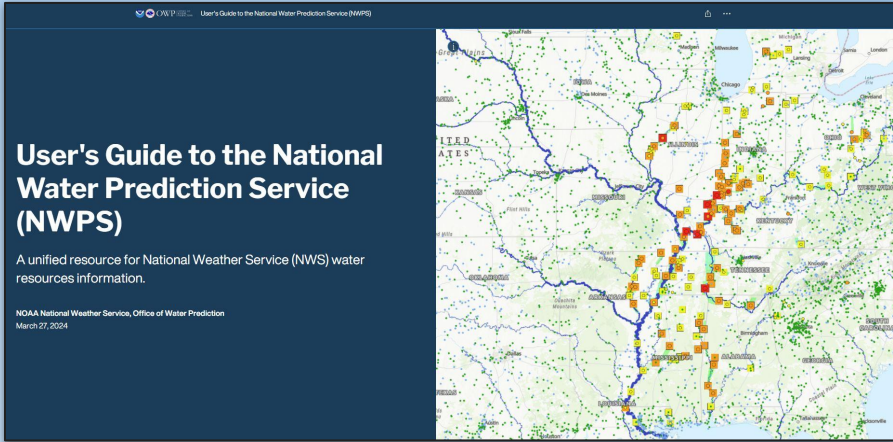
NWPS makes geospatial water data more readily available to NWS partners and the public via it's Application Programming Interface (API).



# NWPS Public Rollout: Outreach & Training



NWS Office of Water Prediction (OWP) created a public [NWS StoryMap](#) with info about the features of NWPS, along with numerous pamphlets that are publicly available on the [OWP Products & Services Webpage](#)



Additionally, informative live webinars were held (and recorded) to provide both [NWS partners](#) and NWS staff with information about the new NWPS website.

A screenshot of a presentation slide titled "NWS National Water Prediction Service (NWPS) Website Webinar Speakers - November 28 &amp; 29, 2023". The slide features the NOAA logo and the text "NATIONAL WEATHER SERVICE". Below the title, there are five speaker portraits with their names and titles: Tom Graziano (Director, Office of Water Prediction), Ed Clark (Director, National Water Center), Laurie Hogan (Hydrologic Services Division Chief, Eastern Region), Craig Schmidt (Senior Service Hydrologist, WFO Twin Cities, MN), and Mark Fuchs (Senior Service Hydrologist, WFO St. Louis, MO). At the bottom, there is a video player interface with the text "NATIONAL WEATHER SERVICE" and "Department of Commerce // National Oceanic and Atmospheric Administration".