NWS Advanced Hydrologic Prediction Services: Enhancing Flood Risk Communication Utilizing FEMA’s National Flood Hazard Layers

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NWS Weather-Ready Nation Roadmap

Five Major Focus Areas

• Impact-based Decision Support Services,
• Communications/Outreach,
• Science & Technology Advances,
• Information Delivery,
• Innovative Partnerships

http://www.nws.noaa.gov/com/weatherreadynation/#
Case for Change

“Average” Year and Trends in the U.S.

Regardless of the cause, the trend shows an increasing number of extreme weather events at increasing cost to the nation.

Floods are Dangerous and Costly

Weather-Ready Nation

Be a Force of Nature

http://www.nws.noaa.gov/hic/index.shtml

2014 U.S. Flood Fatalities By Month

30 Year Flood Loss Averages $7.96 Billion damages/yr with 82 fatalities/yr*

*Annual Adjusted

http://www.nws.noaa.gov/hic/index.shtml
Flood Risk Communication to the public and state/local partners remains a significant challenge for Federal Agencies.

Challenge: How do you effectively communicate flood risks?

Desired Results: Improved Awareness, Action
Project Background

The National Weather Service Advanced Hydrologic Prediction Service (AHPS) is an authoritative source of flood forecast and warning information.
Project Background

FEMA is an authoritative source of flood risk information.

- Defines the regulatory floodplain for the US.
- 92% of the US population is covered.

In June 2013, FEMA Mapping Information Platform, came online with a National Flood Hazard Layer Web Mapping Service (WMS).

https://hazards.fema.gov/femaportal/wps/portal/NFHLWMS
Project Background

In 2013, NWS began working with FEMA HQ, FEMA Region 2, and IBM Global Business Services on
• testing Web Mapping Services bandwidth capacity,
• enhancing the capability, and
• prototyping the National Flood Hazard Layers on NWS AHPS.

In 2014, NWS began combining the FEMA NFHL and NWS AHPS where possible.
New Enhanced NWS AHPS River Services with FEMA NFHL as of May 2015

Available:
Over 5350/8000+ NWS River & Tidal Service Locations across USA

Not In:
- Alaska
- Hawaii
- Parts of CONUS

http://water.weather.gov
Enhanced NWS AHPS Services with FEMA NFHL in Southern New England

Available:
Over 51 of the 66 NWS River/Tidal Service Locations in Southern New England which is monitored by the Weather Forecast Office at Taunton, MA

Inclusion of the FEMA WMS into AHPS Gage Maps

- Local WFO Hydrologic Program Manager/Service Hydrologist turns on the service in the web page.
- The gage maps are centered appropriately for best viewing of the FEMA hazard information.
- AHPS Gage maps have zoom, roam/panning capabilities.

http://water.weather.gov/ahps2/hydrograph.php?wfo=box&gage=wstr1
http://water.weather.gov/ahps2/hydrograph.php?wfo=box&gage=wstr1
Ability to Pan to Upstream/Downstream Portions of the Floodplain

Pawtuxet River
Cranston/Warwick, RI
Flood of Record
March 31, 2010

AHPS and Tide Gages in Southern New England

Example: Fox Point/Providence

http://water.weather.gov/ahps2/hydrograph.php?wfo=box&gage=foxr1
Example: Wood River at Hope Valley, RI

Circled locations of interest relative to the FIS cross sections

Shown:
1) Maple Avenue: X, Y
2) Hope Valley stream gage: U, V
3) I-95: S, T

Not Shown:
4) Skunk Hill Rd: AL, AM
5) Switch Rd: Q
6) Woodville Rd: C
1% Annual exceedance - Highlighted
Maple Avenue

I-95 NB/SB
2% Annual exceedance - Highlighted

Skunk Hill Road
Improving AHPS impacts statements

Consistent wording for floodplain impacts:
8.7 Feet - FEMA flood insurance maps indicate that at 8.7 ft., if you are located in the 1% (100 year) floodplain, your property is at a high risk for flooding. A 1 percent annual chance flood is a flood that has a 1 percent chance of occurring in any year.

Consistent wording for transportation impacts:
8 Feet – At stages around 8 ft., flood waters begin to reach the bottom edge of the Skunk Hill Road Bridge.

AHPS Impacts will be coordinated with local EMs.
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Special Thanks !!!

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Be a Force of Nature by knowing your risk, taking action and being an example in your community.

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