Developing Flood Inundation Maps for Johnson Creek

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Photo by Ryan Cahill, US Army Corp of Engineers, Dec 9, 2015

Outline of Presentation

- Flood Inundation Mapping (FIM)
- USGS FIM webpage
- Application in Johnson Creek

USGS

Disclaimer

- This information is preliminary and subject to revision. It is being provided to meet the need for timely best science. Do not cite or release. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of this information

USGS

What is Flood Inundation Mapping?

Hydraulic model

+

Hydrology data

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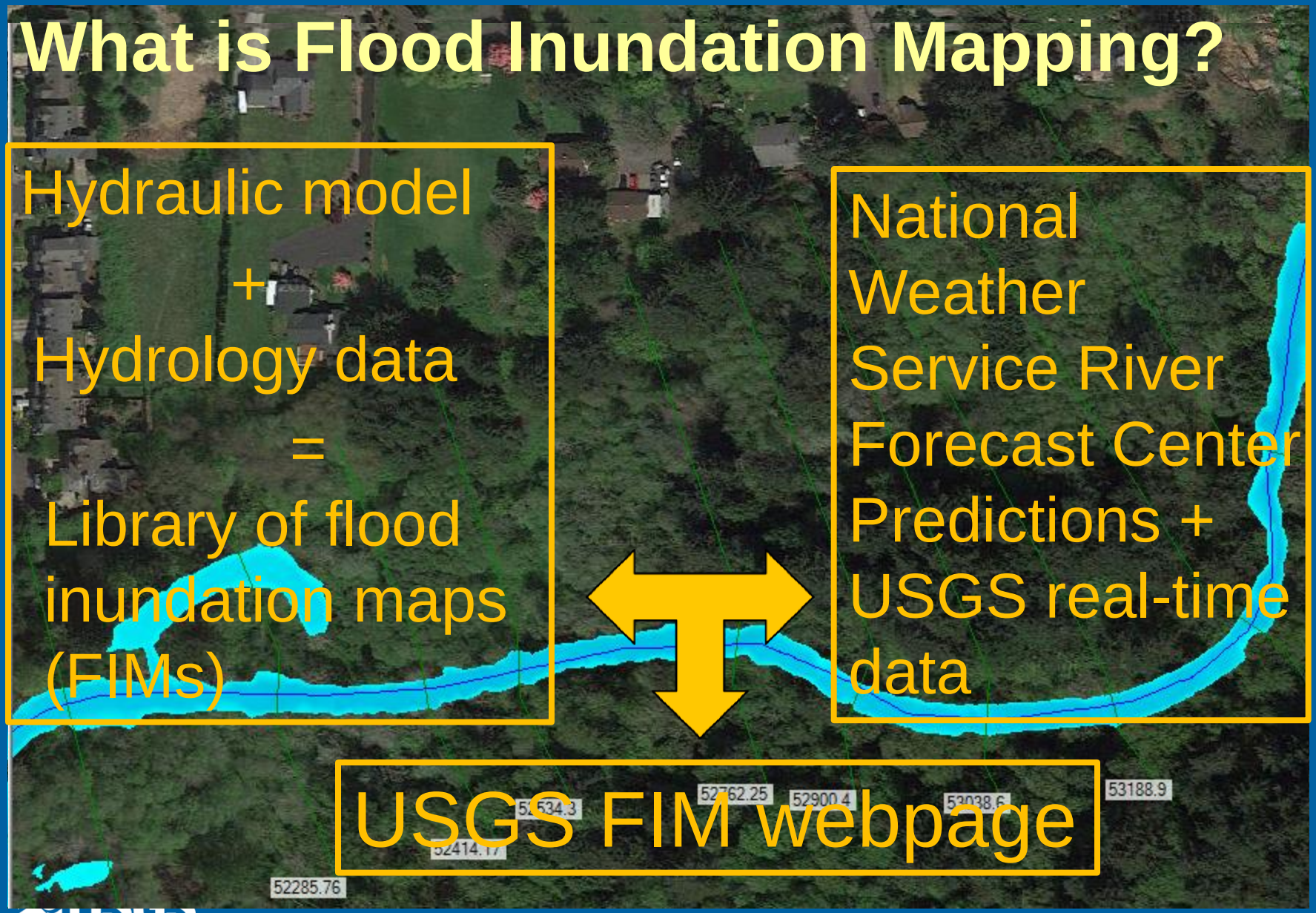
Library of flood inundation maps (FIMs)

National Weather Service River Forecast Center Predictions + USGS real-time data

USGS FIM webpage



FIM Uses

- Can be used by emergency responders to predict severity of flooding at specific locations (roads and buildings)
- Tool for constructing notification or evacuation plans
- Visual approximation of flooding extent
- Communication tool
- Disaster assistance
- Environmental and Ecological Assessments - wetlands identification, hazardous spill cleanup

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FIM Tour

- http://water.usgs.gov/osw/flood_inundation/
- (or use search engine for “USGS flood inundation”)

USGS

Application in Johnson Creek

Photo by Ryan Cahill, US Army Corp of Engineers, Dec 9, 2015

Largest Floods

Johnson Creek at Sycamore, OR Station 14211500

Top 10 floods from Water Year 1941-2016:

sorted by streamflow

Date	Water Year	Streamflow (cfs)	Stream level (ft)
December 22, 1964	1965	2620	14.68
November 19, 1996	1997	2550	15.30
January 2, 2009	2009	2430	14.69
February 7, 1996	1996	2350	14.28
December 13, 1977	1978	2250	13.89
January 7, 1969	1969	2220	12.29
January 12, 1980	1980	2210	14.03
November 24, 1960	1961	2180	13.78
February 10, 1949	1949	2110	13.77

P: Provisional data subject to revision.

Photo by Ryan Cahill, US Army Corp of Engineers, Dec 9, 2015

Available data

- 3 USGS stream gages
- 4 USACE crest-stage gages
- Collected 16 high water marks

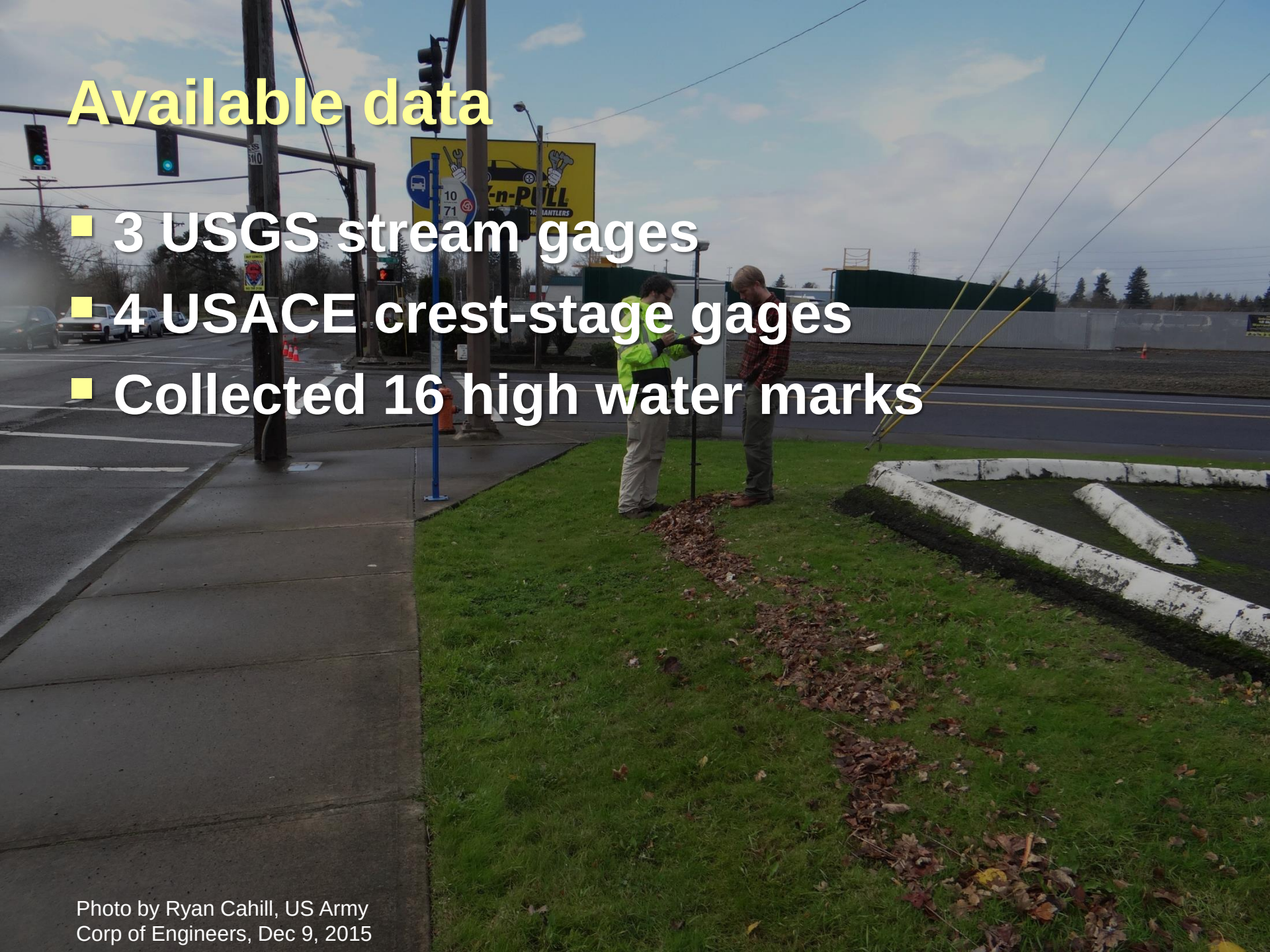
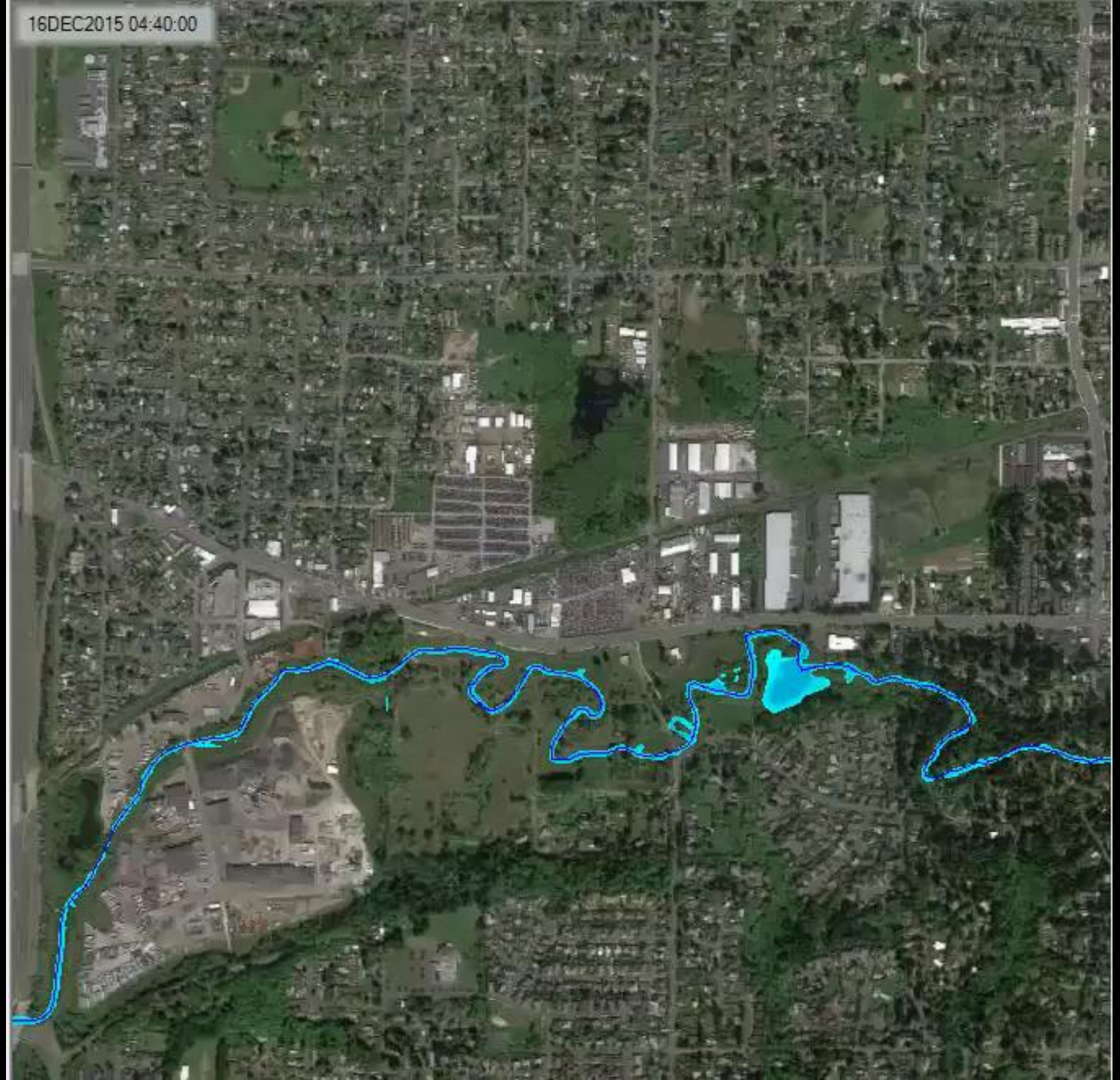


Photo by Ryan Cahill, US Army Corp of Engineers, Dec 9, 2015

Model specifications

- HEC-RAS model (version 5.0)
- Coupled 1D-2D model
- About 13 river miles in length
- 42 bridges and culverts
- 768 cross-sections
- Release date this fall

Photo by Ryan Cahill, US Army Corp of Engineers, Dec 9, 2015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Questions?

Photo by Jeff Boys, Dec 7, 2015