



Outline

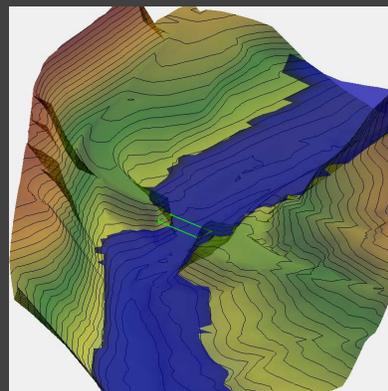
- CFL Hydraulics Team
- 2D Modeling Resources and Guidance
- PDDM/TGM Status Updates
- Milestone Expectations
- Q/A – Open Discussion

CFL Hydraulics Team

- Megan Frye PE – Hydraulics Team Lead
- Luis Calderón PE
- Cassidy Cote EI
- Aaron Estep PE

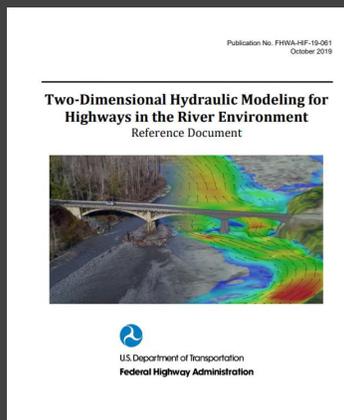
FHWA 2D Modeling Resources

- 2D Hydraulic Modeling for Highways in the River Environment – FHWA HIF-19-061
- Tech Brief: Overview on Practices on 2D Models – FHWA HIF-19-058
- 2D Model Review Spreadsheet
- 2D Users Forum



FHWA 2D Modeling Resources

- 2D Hydraulic Modeling for Highways in the River Environment
- 2D Modeling Fundamentals
- Data and Model Development
- Review and Calibration
- Model Results



2D Hydraulic Modeling for Highways in the River Environment

Table 2.1. 1D versus 2D modeling

Hydraulic Variables	1D Modeling	2D Modeling
Flow direction	Assumed by user	Computed
Flow paths	Assumed by user	Computed
Channel roughness	Assumed constant between cross sections	Roughness values at individual elements used in computations.
Ineffective flow areas	Assumed by user	Computed
Flow contraction and expansion through bridges	Assumed by user	Computed
Flow velocity	Averaged at each cross section	Computed at each element
Flow distribution	Approximated based on conveyance	Computed based on continuity and momentum
Water Surface Elevation	Assumed constant across entire cross section	Computed at each element

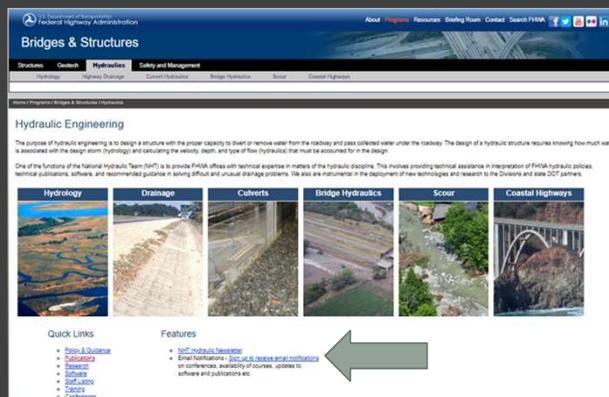
FHWA 2D Modeling Resources

- Model Review Spreadsheet

2-D Hydraulic Model Review Checklist						
Project:		Reviewer:				
River:		Date:				
Project Purpose:		Modeler:				
Project File Name:						
Additional Information:						
Item	Comment	Action Needed (blank/none)	Response to Comment/Resolution	Screen Shot	Link	
Model Background Data						
Software and version used?				<input type="checkbox"/>		
Project vertical datum?				<input type="checkbox"/>		
Project horizontal datum?				<input type="checkbox"/>		
Documentation of techniques and procedures?				<input type="checkbox"/>		
Meta data included in model files?				<input type="checkbox"/>		
Terrain Data						
Source/Date?				<input type="checkbox"/>		
Stated Accuracy?				<input type="checkbox"/>		
Datums verified?				<input type="checkbox"/>		
Data type (Scatter set or 3D Raster image)				<input type="checkbox"/>		
Number of points / average spacing				<input type="checkbox"/>		
Bathymetry						
Source/Date				<input type="checkbox"/>		
Datums verified				<input type="checkbox"/>		

FHWA Hydraulics Website

- Sign up to receive notifications



CFL Guidance Documents

- PDDM Update – Chapter 7
 - In progress – delivery date TBD
 - Focus areas:
 - References
 - 2D modeling
 - Pedestrian/non-motorized bridges
 - Low water crossings

Upcoming Tech Briefs

- Limit States and Scour Depth in Deep Foundation Design
- Hydraulic Considerations for Deep Abutment Foundations
- Schedule TBD

Hydraulics Milestones Proposed Changes

- H1 – Preliminary Hydraulics
 - Majority during project scoping
- H2 – Draft Hydraulics
 - 20% – required to develop 30% deliverable
- H3 – Final Hydraulics
 - 60% - required to develop 70% deliverable
- Informal check-ins as needed

Questions?

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