



Cross Section Viewer Cross Section Analysis Tool

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The Cross Section Viewer was developed by [North Arrow Research Ltd.](#) in collaboration with the [Kansas City District of the U.S. Army Corps of Engineers \(USACE\)](#). [Dr. Philip Bailey](#) of North Arrow Research Ltd. developed the database architecture, visual displays, and software code. [Dr. John Shelley](#) of USACE provided technical scoping, conceptual design, and testing of program features.

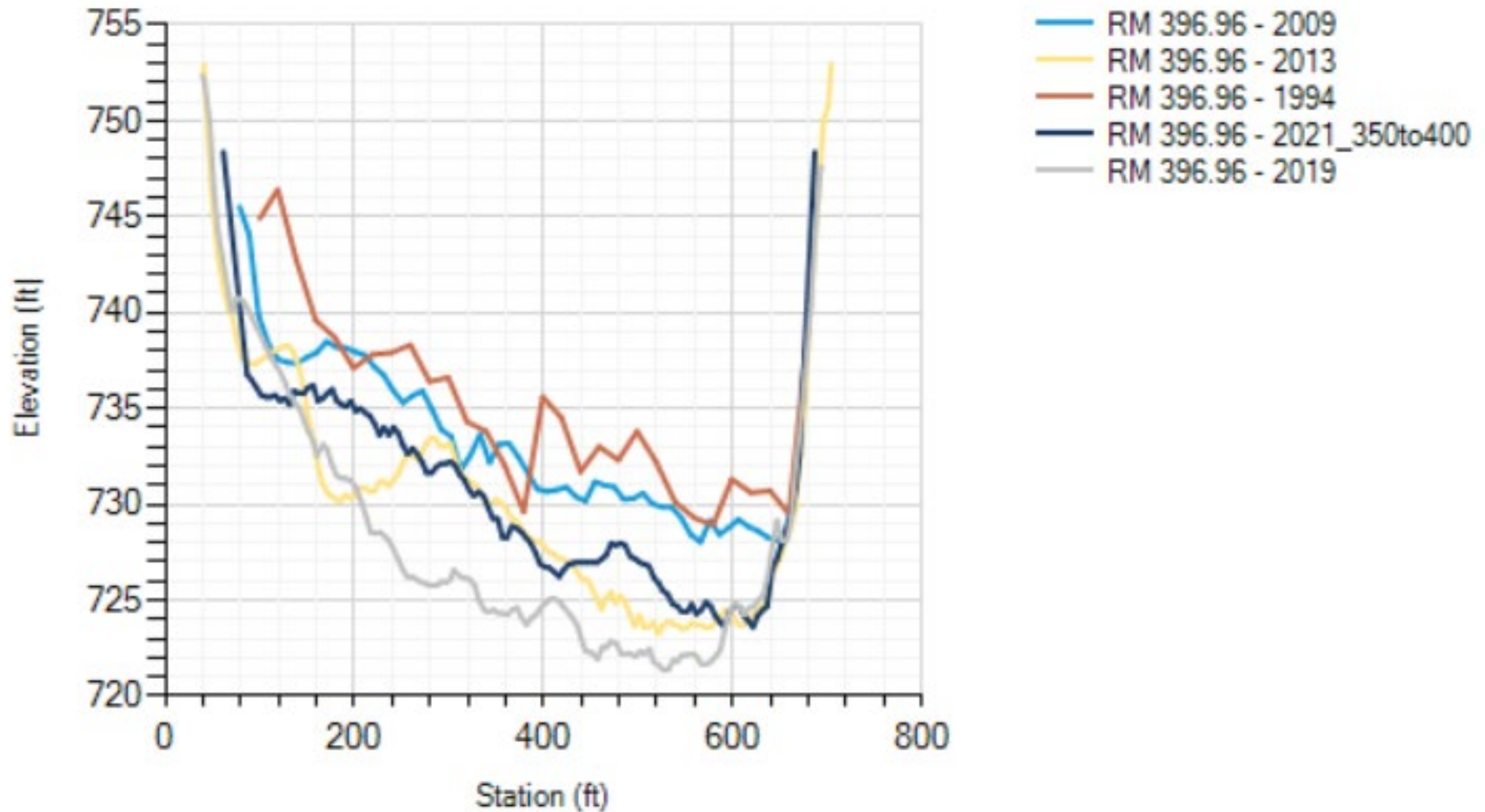
This software was originally conceived and built for a pre-existing database of survey cross sections for the Missouri River, but has since been made flexible for use on other rivers. The Kansas City District of the USACE has funded this development through the Bank Stabilization and Navigation Project, Missouri River Recovery Program, Section 204 CAP Authority, and the Regional Sediment Management program.



**NORTH
ARROW**
RESEARCH



Cross Section Viewer (Desktop Tool)

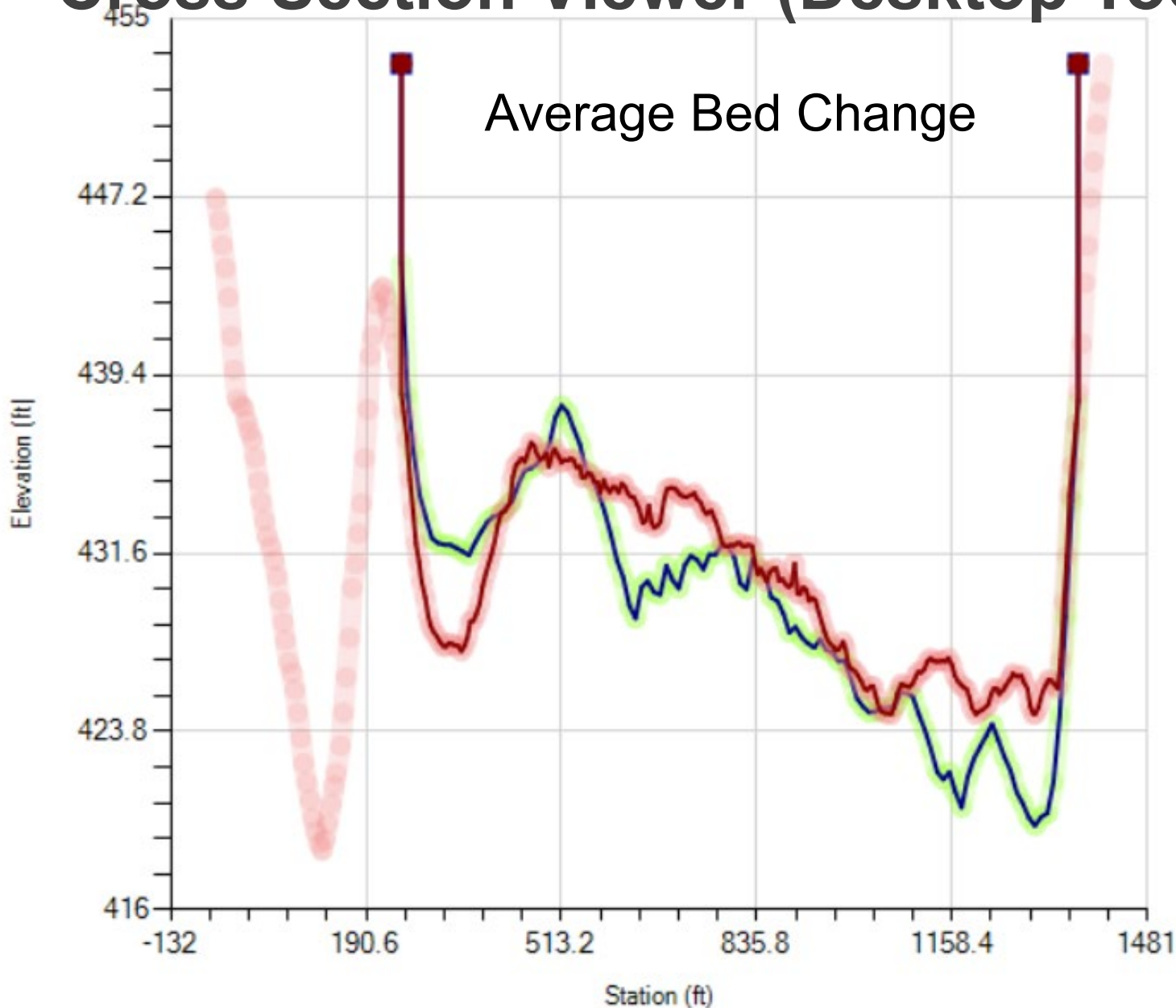




Cross Section Viewer (Desktop Tool)

Average Bed Change

- New Original
- New Adjusted
- Old Original
- Old Adjusted



Cross Sections

Selection: 1994

New survey: 2019

Old survey: 1994

Coincident Either survey

Station Filtering

Original cross section extents

Common cross section extents

Constrain Within Reference Stations

Rectified Channel Line

Inside Outside

Vertical Filtering

Max cross section elevation at river mile

Reference Plane

1994 Ave Bed Within RCL

Vertical offset (ft) 0.00

Plot

Variable

Volume Change Bed Elevation Change

Upstream: 497.0 Downstream: 5.0

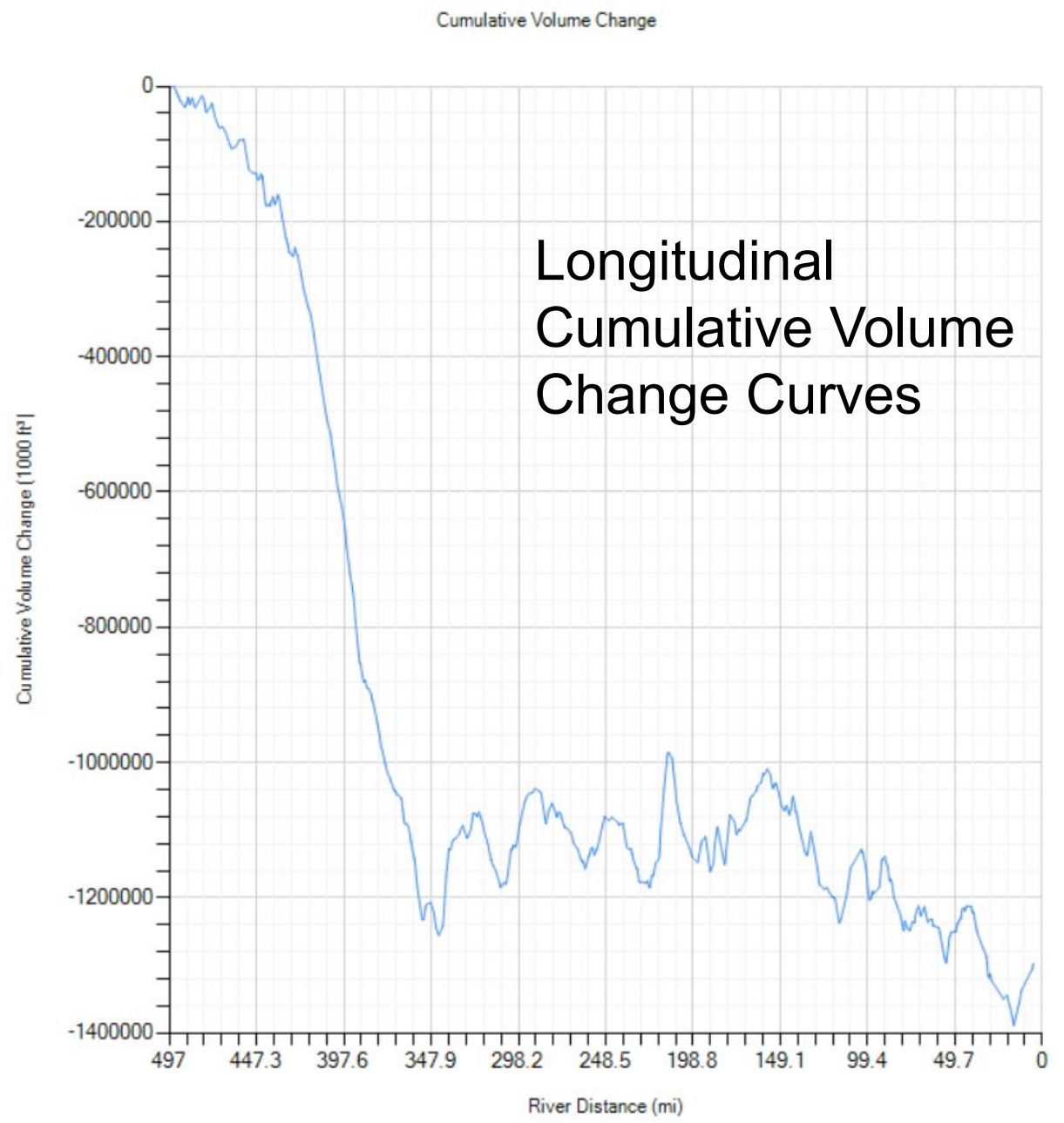
Y axis represents upstream

Cumulative change curve

Changes over bins

Bin size (mi) 1

Help Update Plot



Cross Section Viewer (Desktop Tool)



Depth Distributions

Source Data

Survey
2019

Selection
1994

Water surface
2017 CRP

Analysis Parameters

Depth increment: 10.00

Upstream river distance: 10.45

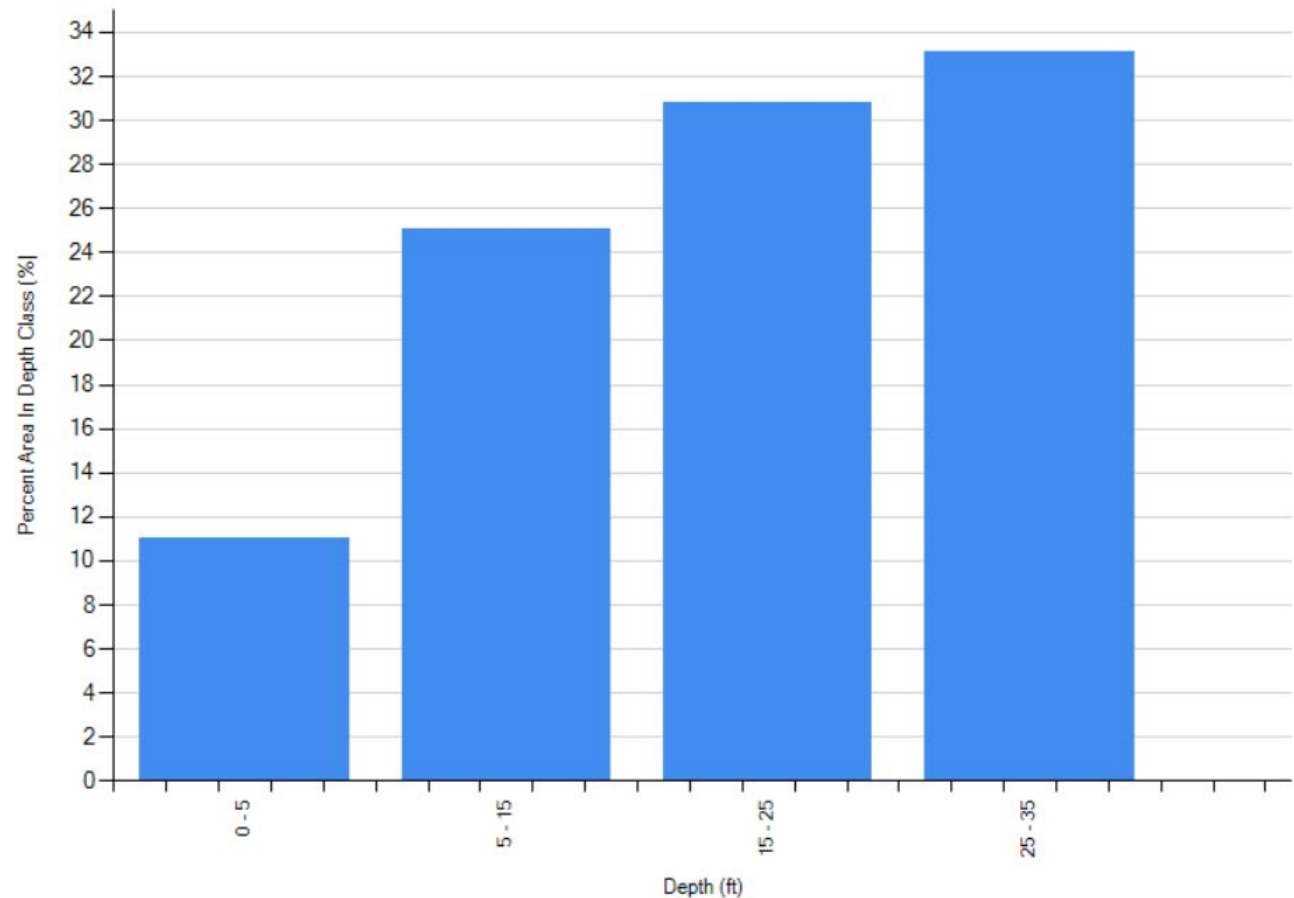
Downstream river distance: 0.50

Compute

Plot Type

- Area of depth class (ac)
- Area of depth class (%)
- Cumulative area with depths less than (ac)
- Cumulative area with depths less than (%)
- Cumulative area with depths greater than (ac)
- Cumulative area with depths greater than (%)

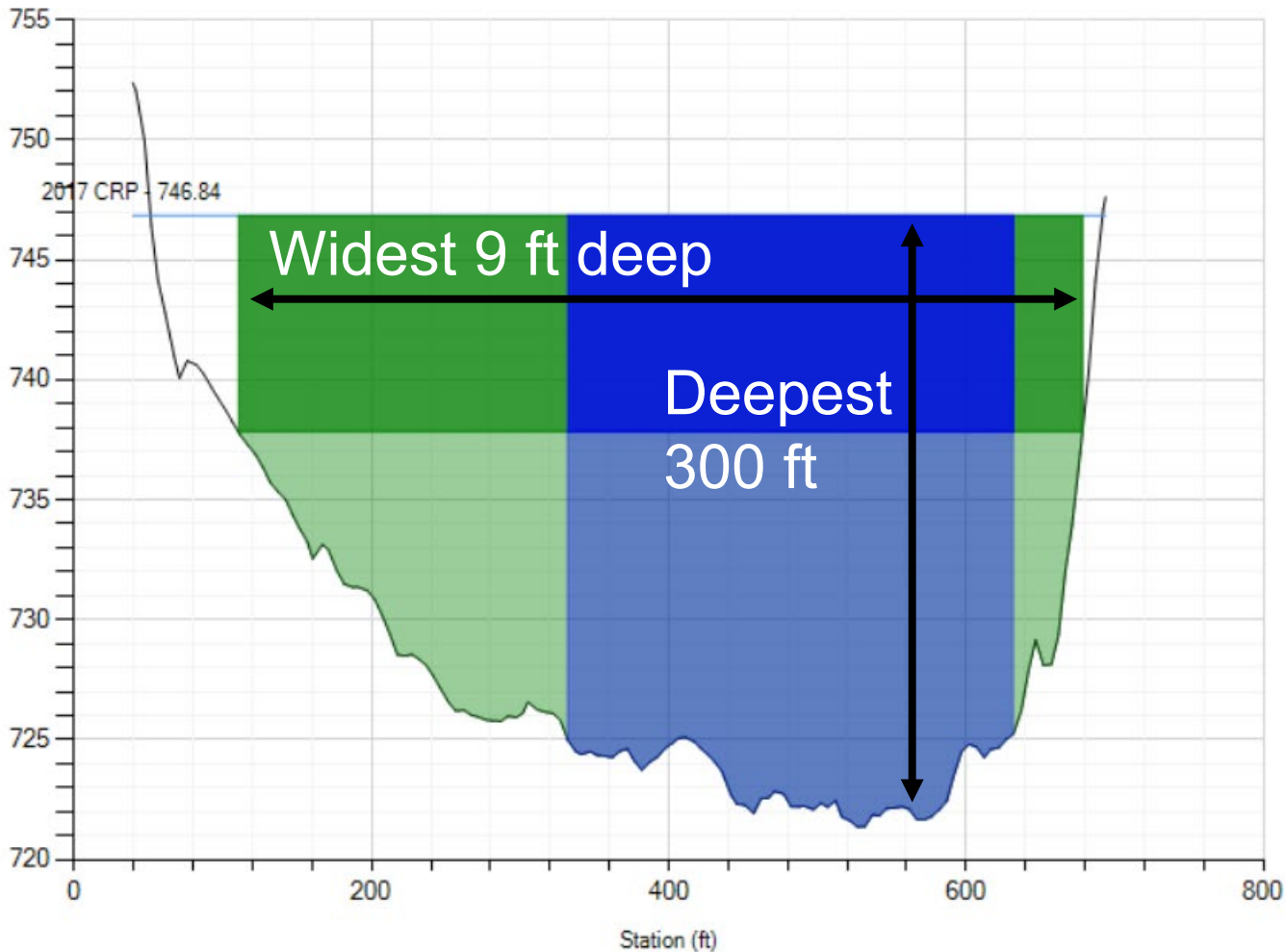
Help





Navigation Channel Tool

Where is the 9 ft deep, 300 ft wide navigation channel?



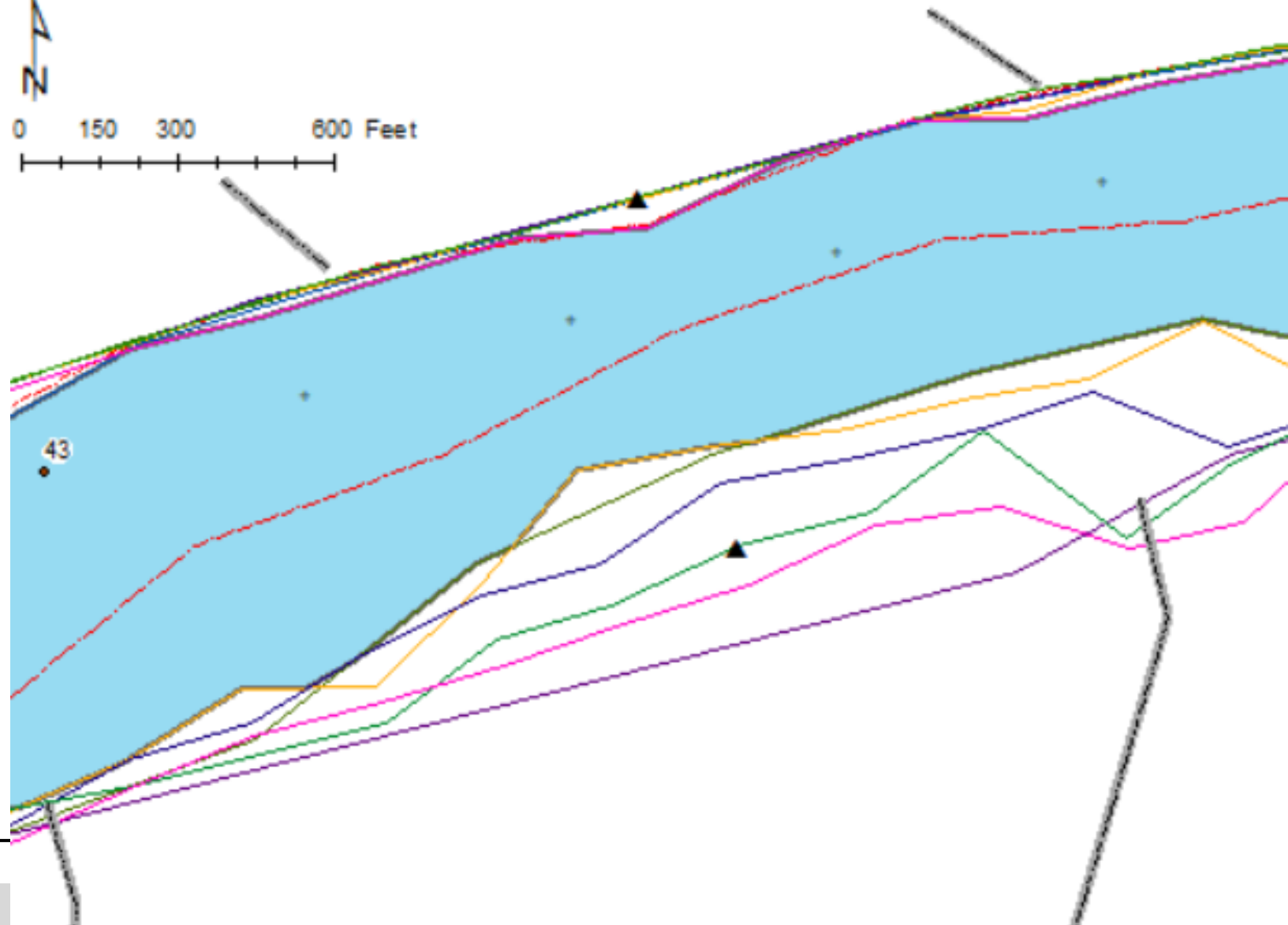
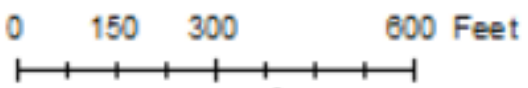
- RM 396.96 - 2019
- Widest Qualifying Channel
- Deepest Qualifying Channel

River Distance: 396.96 mi
Max Width: 568.17 ft
Deepest Segment Left Station: 331.77 ft
Deepest Segment Right Station: 631.77 ft
Deepest Segment Max Depth: 25.49 ft
Deepest Segment Average Bed Depth: 23.56 ft
Deepest Segment Min Depth: 21.60 ft
Widest Segment Left Station: 110.14 ft
Widest Segment Right Station: 678.31 ft

Legend

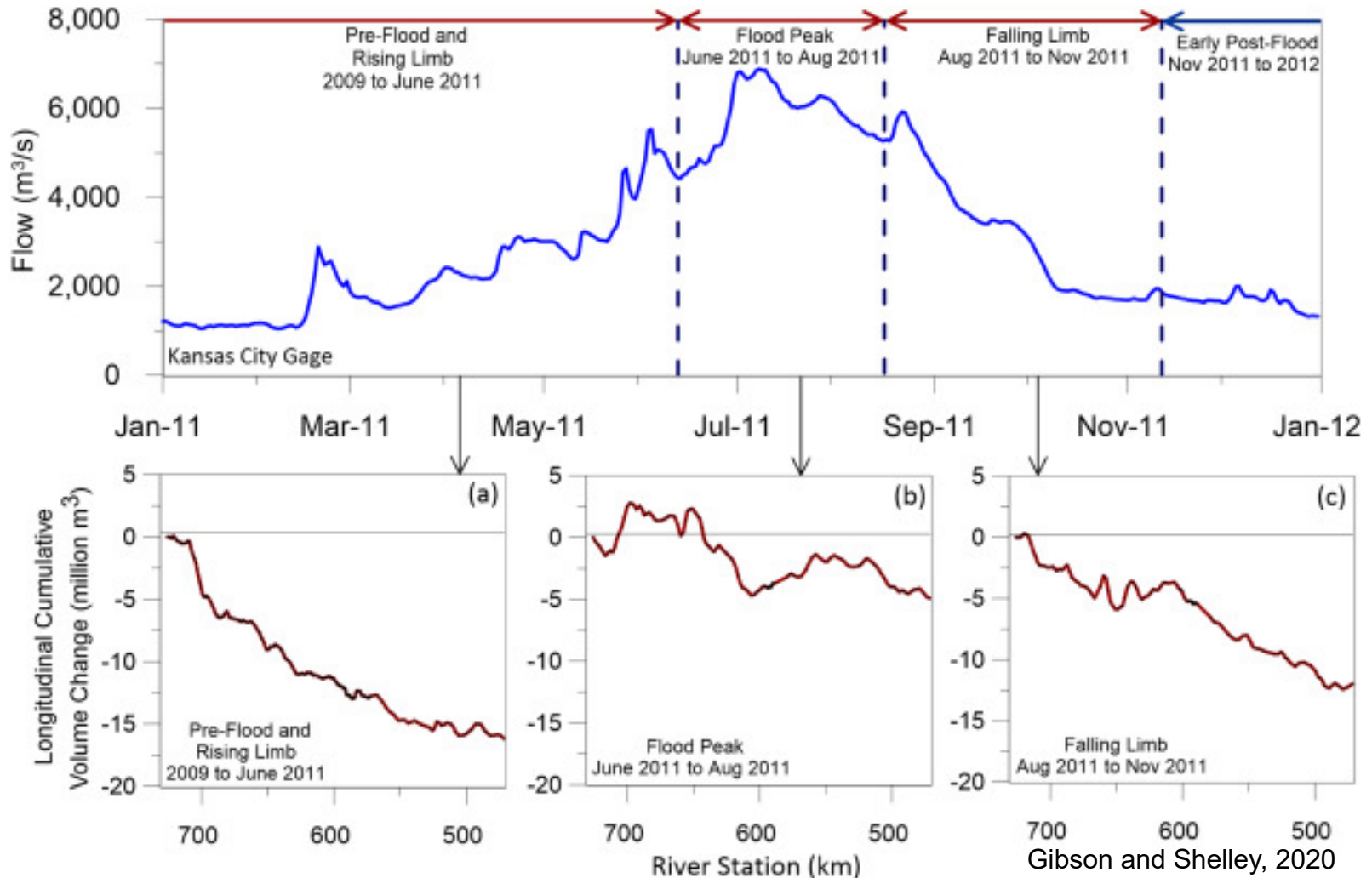
----- Dikes

Channel with > 9 ft Depth Compared to CRP in All Non-flood Years

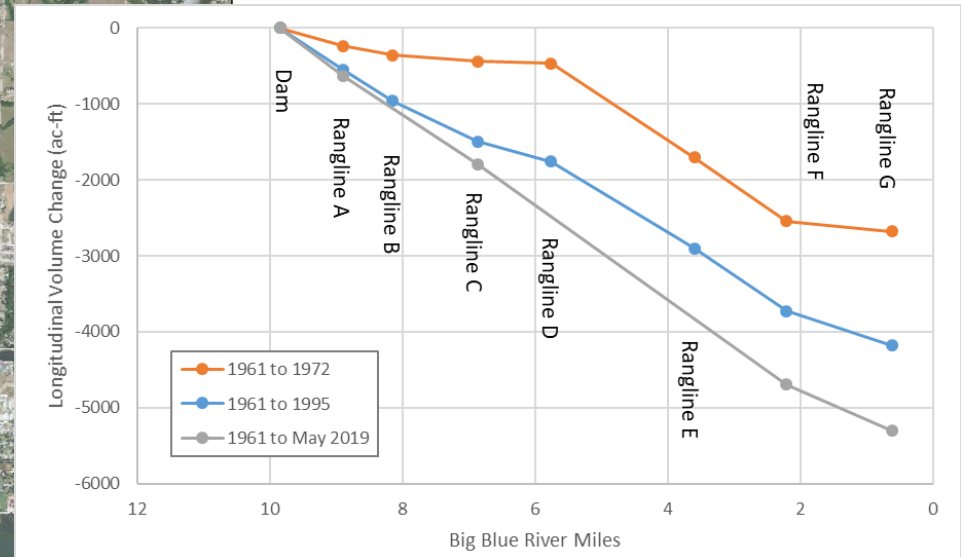
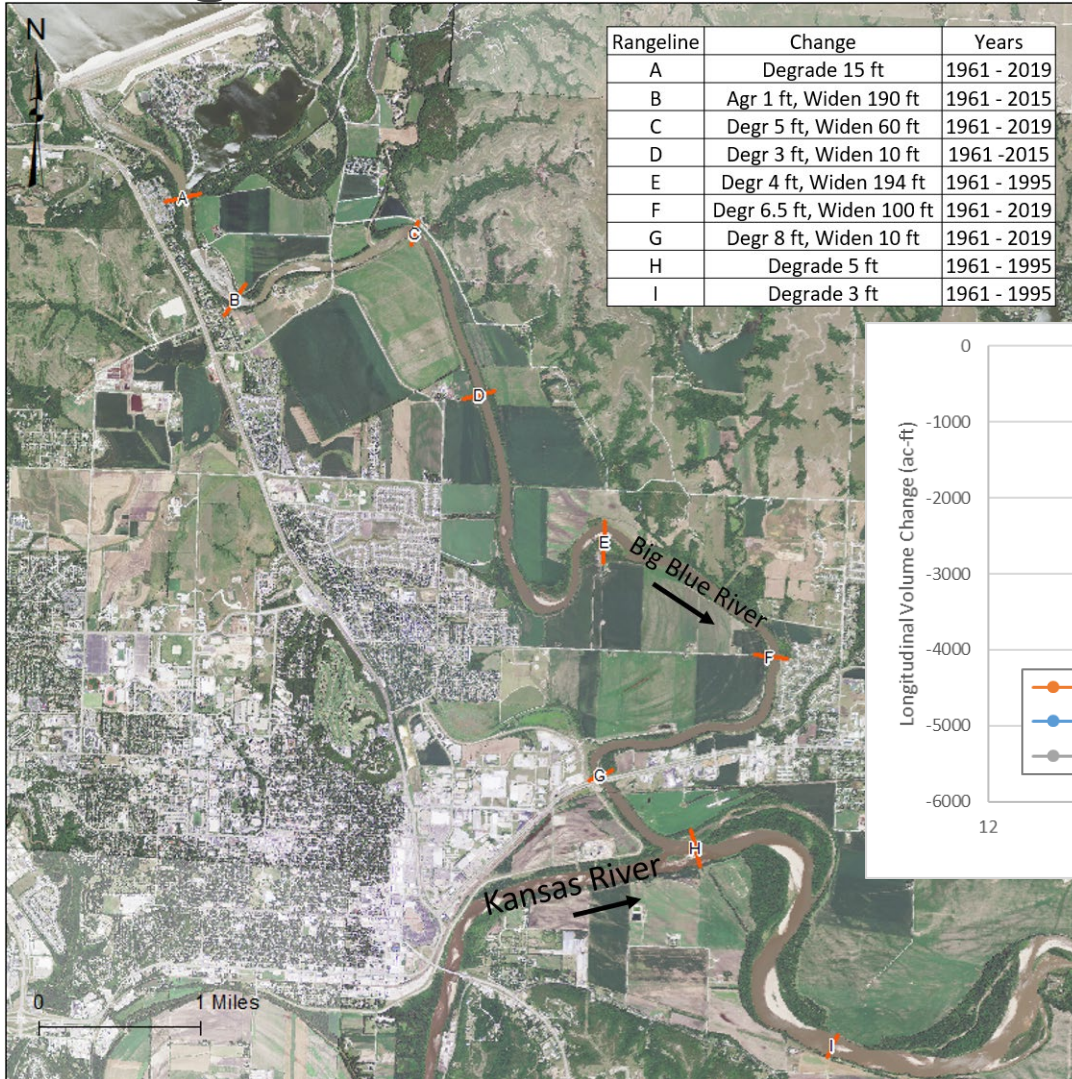


2019*

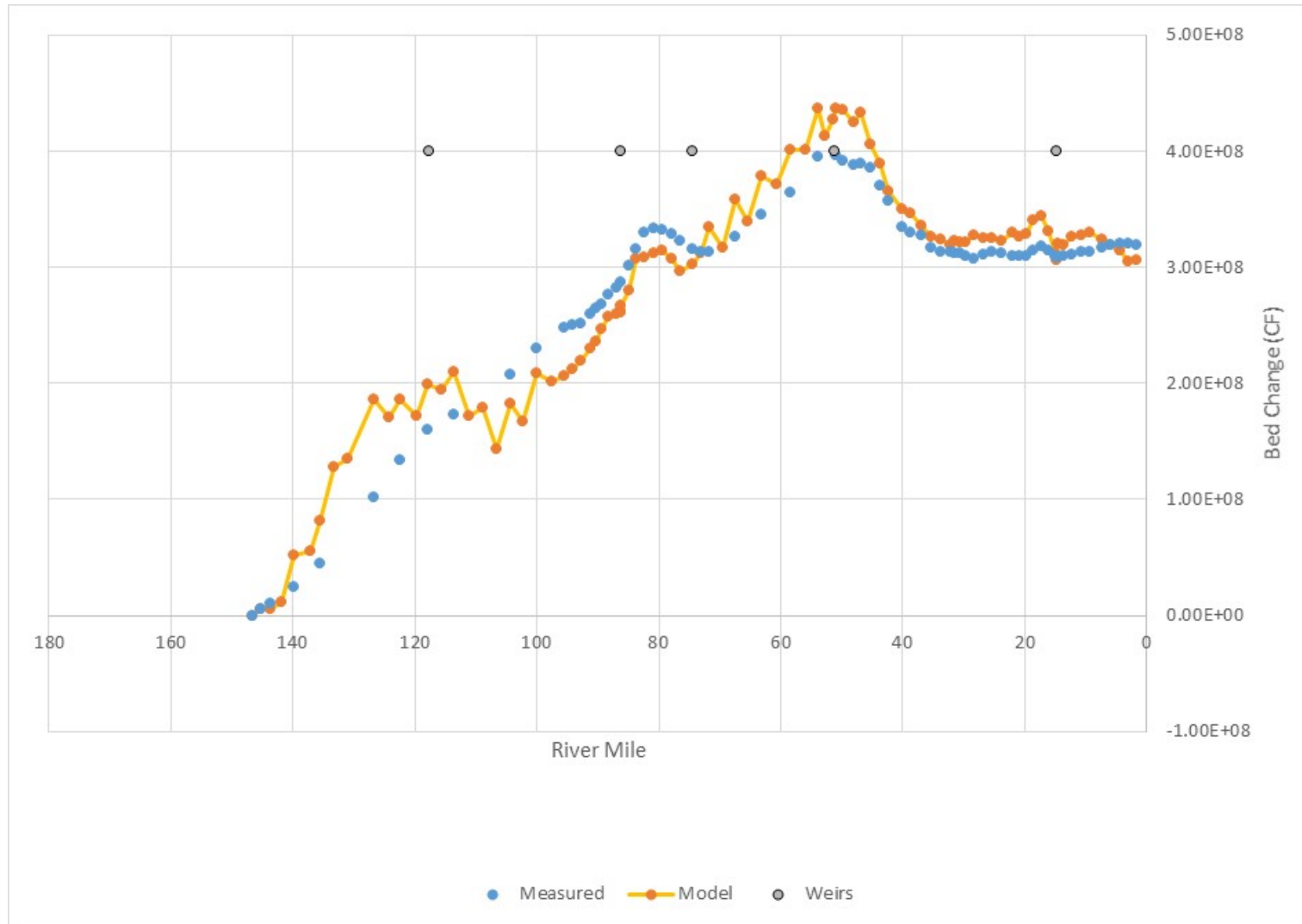
Example Application: Bed Change During a Major Flood



Example Application: Degradation Rangelines



Example Application: Calibrating a 1D Model





Desktop Tool FAQ

Q- Is it ACEIT approved and installable?

Q- How can I get a copy?

Q- Is there any help documentation available?

Q- Is there a sample dataset I can play around with?

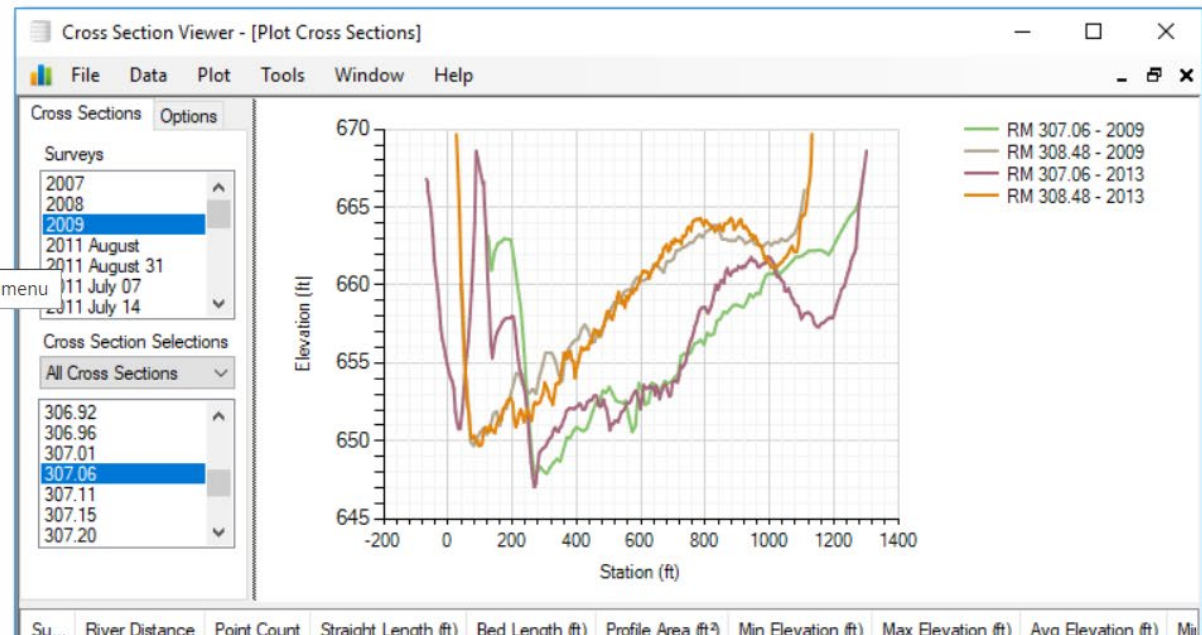
Q- Can I get someone to help me set up my river?

CROSS SECTION VIEWER

Site Contents

- Home
- Acknowledgements
- Download
- Glossary
- Release Notes
- Support
- Online Help
- Technical Reference
 - Database Schema
 - Missouri River Database
 - Working With SQLite Databases
- Calculations
- Data Processing
- Tutorials

The Cross Section Viewer is an interactive software application for managing and visualizing river transect data. The software uses a simple data model that allows most types of transect data to be stored and viewed. A series of interactive tools include areal, profile and longitudinal plots as well as several geomorphic calculations that would typically take a user a considerable amount of time to produce.





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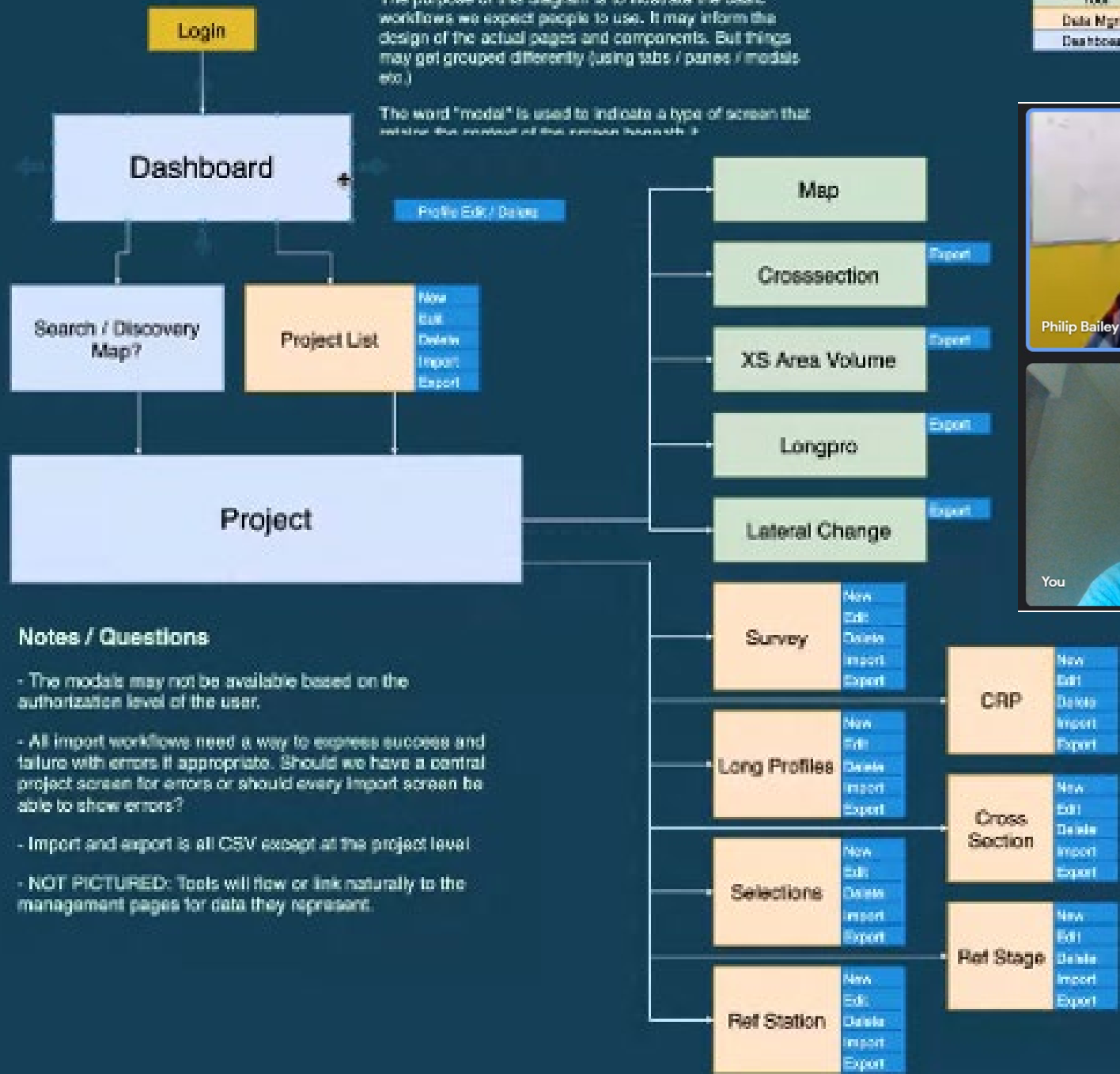


XSViewer (desktop) → XSAnalysisTool (online)

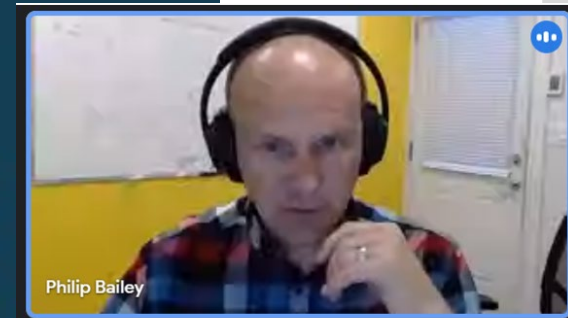
Workflow Diagram

The purpose of this diagram is to illustrate the basic workflows we expect people to use. It may inform the design of the actual pages and components. But things may get grouped differently (using tabs / panes / modals etc.)

The word "modal" is used to indicate a type of screen that renders the content of the current browser tab



LEGEND
Modal
Tool
Data Mgmt
Dashboard



Notes / Questions

- The modals may not be available based on the authorization level of the user.
- All import workflows need a way to express success and failure with errors if appropriate. Should we have a central project screen for errors or should every import screen be able to show errors?
- Import and export is all CSV except at the project level
- NOT PICTURED: Tools will flow or link naturally to the management pages for data they represent.

Working on Some Fundamental Issues



Working on Some Fundamental Issues



Working on Some Fundamental Issues



Working on Some Fundamental Issues





Within the Current Contract

- Import from eHydro
- Import from HEC-RAS
- Import from .csv

- Replicate analyses from the desktop version

- Stand alone GUI
- API for call by other portals



Questions?