Ongoing Features and Enhancements
Open Microphone

2025 RiverWare User Group Meeting
Presenter: David

Topics

1. Review planned enhancements and future direction

2. Mention other topics that weren't covered, but still could be important to you.

3. Open Mic: Solicit comments, questions, and feedback

Future Plans (part 1)

- Windowing and Workspace
  - Continue improving the Multi-window, layouts, and viewers
  - Improve use with multiple monitors and changing displays
  - Improve use of expression slots in Slot Viewers
- Borg-RiverWare
  - Make the interface more user friendly
  - Create documentation and sample models
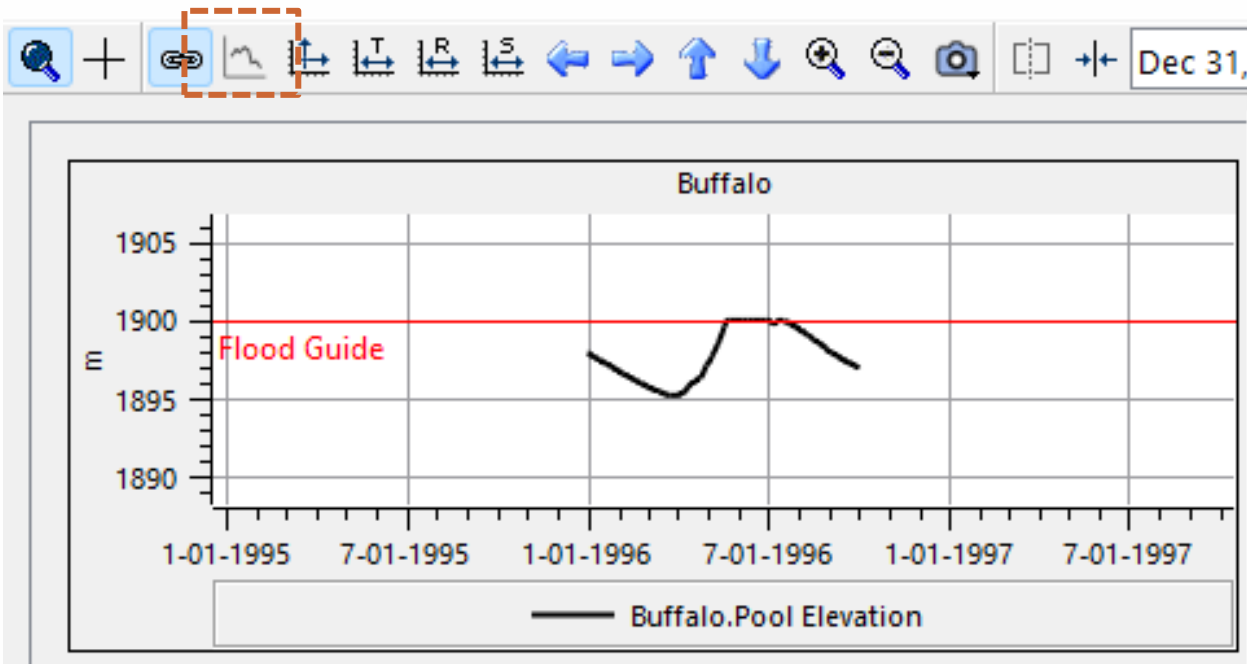 - First official release

Future Plans (part 2)

- Settings Manager
  - Continue moving over settings
- Outputs and Data Analysis Tool (DAT)
  - Improve ensemble analysis and visualization
    - Add controls over colors, line widths, etc.
    - Allow shading on plot pages
    - Implement other statistical analyses and visualization types
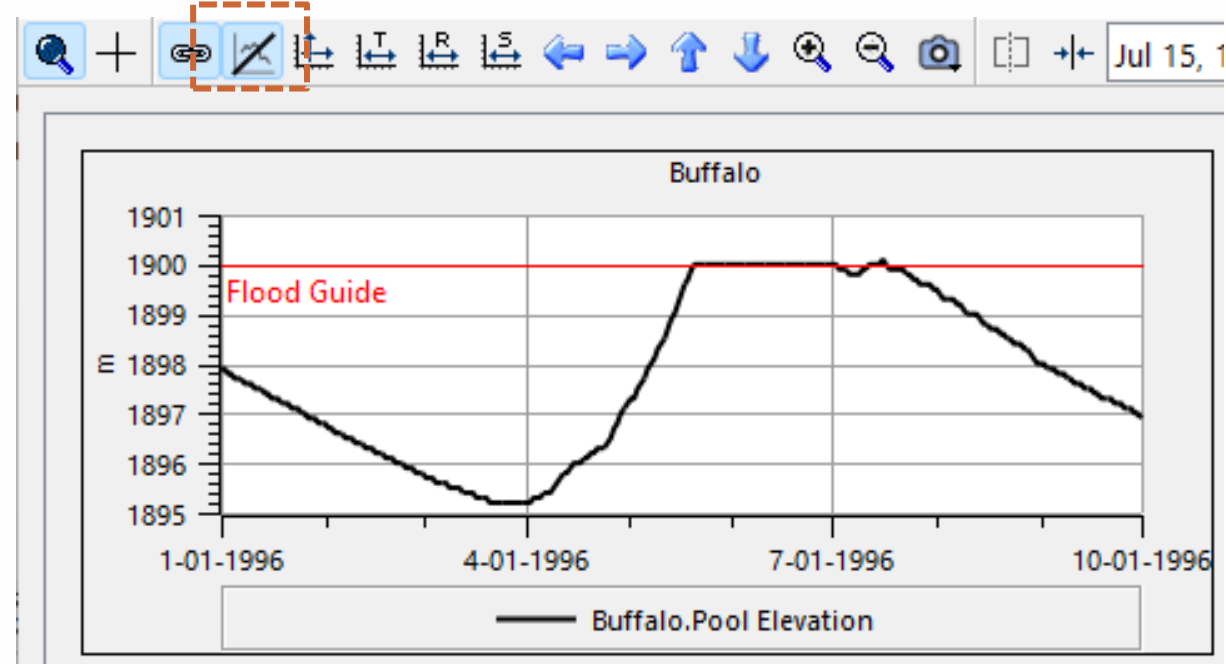
Upcoming Plotting Enhancement

- Plotting – Limit Extents to Data (9.5)

Not Limited – can zoom out very far

Limited to Data – Can't zoom out further than this

Future Plans (part 3)

- Optimization and Hydropower Modeling
    - Continue improving the modeling techniques
    - Support new models

Data Management Interface (DMI)

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Enhancements

Excel DMIs

- Specify Run Name at DMI Execution (9.3)

Maintenance:

- Removed option to "Open Excel in the background" and replaced with "Open and Save Workbook" (9.4)
- Control how many DMI invocation records are saved in the model (9.3)

Web Service DMIs

- Web Service DMIs: Import data to RiverWare from the web

- CDSS Surface Water - Daily
- CWMS Data API

- HDB Web Service
- Reclamation Hydromet
- USGS Daily Values

CDA Web Service DMIs

- Renamed: CWMS RADAR to CWMS Data API (CDA) (9.3)
- Updated the base URL (9.3)
- Performed maintenance after the webservice format was unexpectedly changed last fall (9.4)

- Possible Upcoming:
  - Implement design for CDA Site Map
  - Add time zone awareness - Design
  - Update to version 2 before version 1 is deprecated
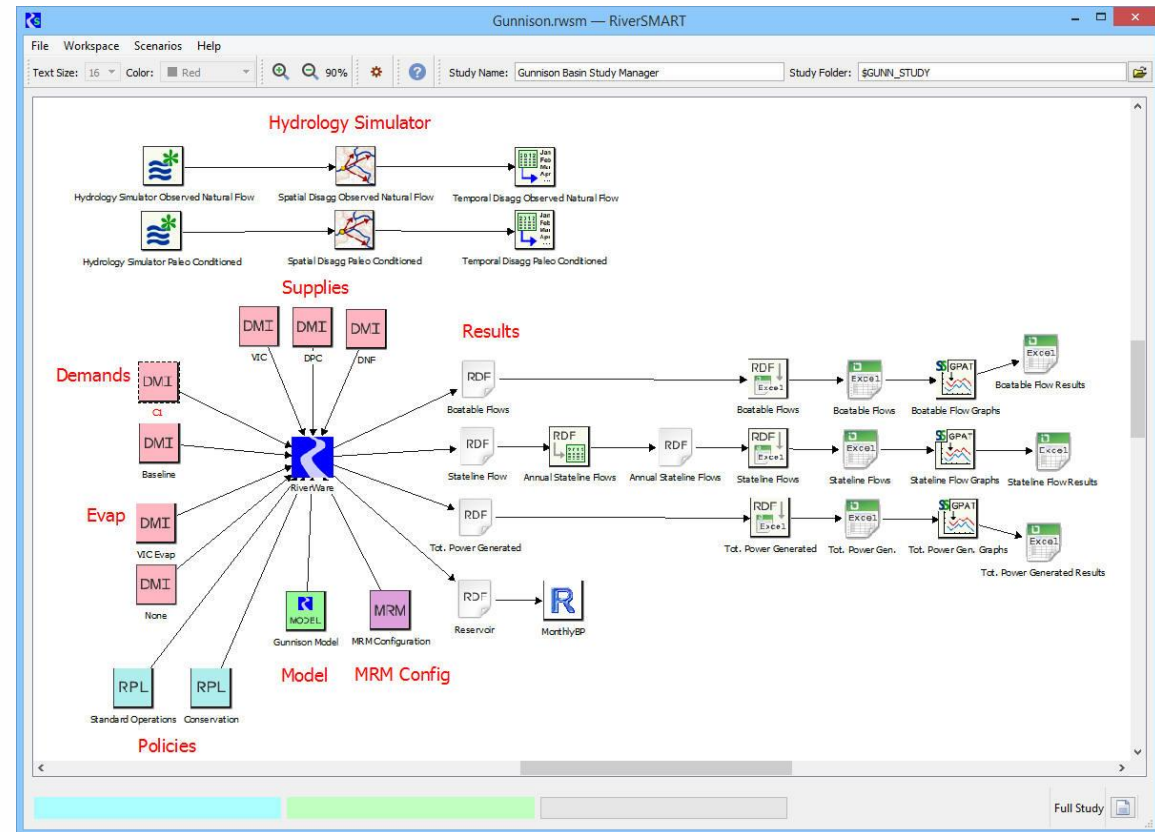
Connections to SQLite Databases

- Demand Input Tool (DIT)
    - Reclamation database with demand data
    - RiverWare's DIT Dataset imports data from DIT to RiverWare

- Reclamation Consumptive Use and Loss (CUL) Database
    - We are creating a tool to convert data from various formats to SQLite
    - No RiverWare connections planned

- Should we develop a more general schema and connections to RiverWare?

RiverWare Study Manager and Research Tools (RiverSMART)

Facilitates large studies with many combinations of inputs by organizing and executing scenarios
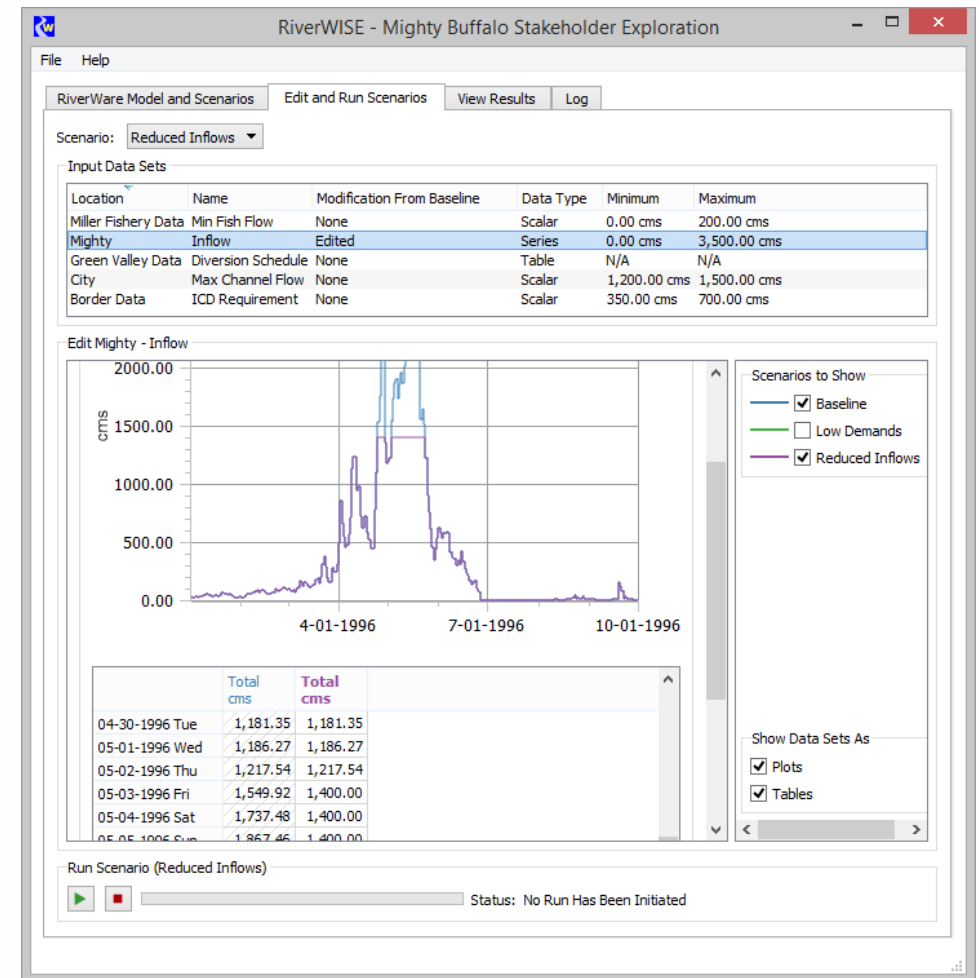
- Develop Scenarios that consist of combinations of alternative
  - Ensembles of Hydrologies
  - Demands
  - Operating Policies
  - Infrastructure

- Graphical Representation
- Manage Execution – distribute to cloud nodes
- Post-process
- Archive the study

For Stakeholders: RiverWare Interactive Scenario Explorer (RiverWISE)

- Stakeholders run scenarios without RiverWare experience

- Modelers prepare a scenario file with baseline run and changeable inputs

- Stakeholders load scenario file and change inputs, make runs, compare output

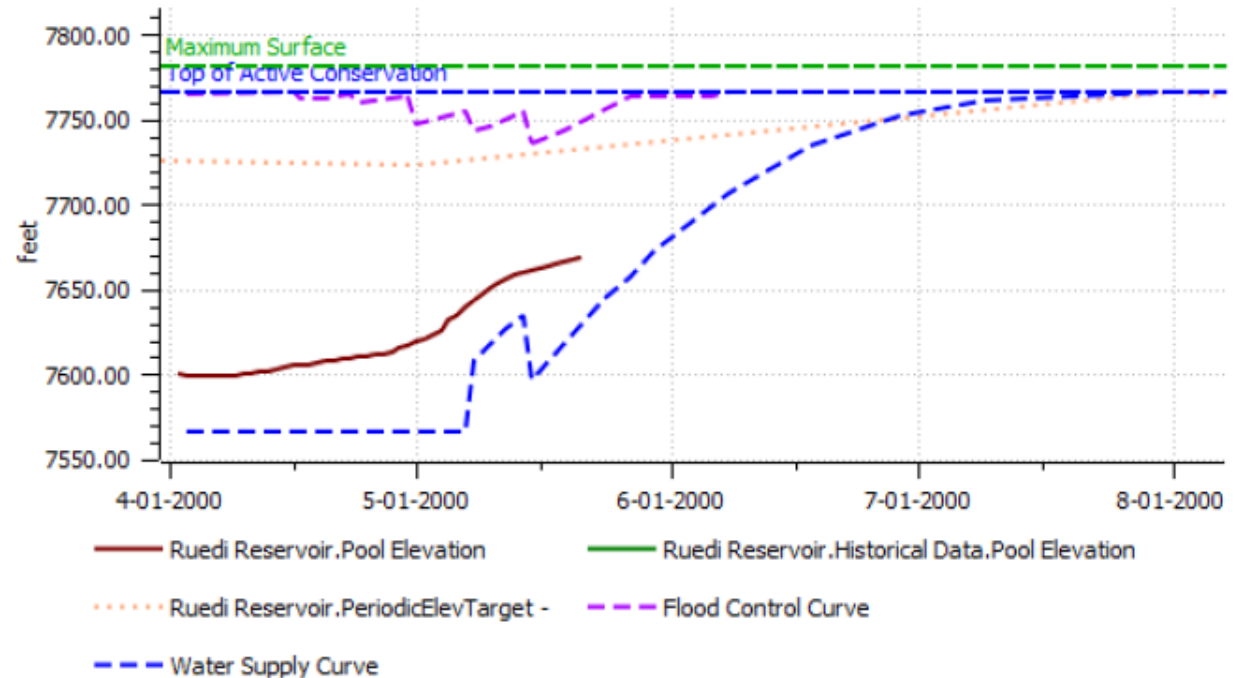- Stakeholders can save runs and share with others

FIRO / RIDM Update

- Forecast Informed Reservoir Operations (FIRO)
- Risk Informed Decision Making (RIDM)

- Implemented 2-stage stochastic programming methodology:
  - MRM runs with ensemble analysis
  - RCL batch script
  - RiverWare scripts in the model
  - Initialization rules
- Tested on Buffalo Bill Reservoir (see 2023 meeting presentations)
- Issues with the forecast ensembles prevented meaningful analysis of the methodology's performance

FIRO / RIDM Upcoming

- Generalize RiverWare FIRO functionality
  - Easier to implement in other models
  - Apply for two scales:
    - Seasonal forecasts
    - Operations / Short-term forecasts
- Complete study on Ruedi Reservoir
  - Both short-term and seasonal forecasting
  - Dynamic envelopes

Feedback and Open Mic

- Tell us about other applications or new projects
- Questions on any topic presented early
- Unmet modeling or processing needs
- Usability issues
- Requests for enhancements
- Anything else you would like to share