QUARTERLY PROGRESS REPORT

July 1, 2017 to September 30, 2017

The efforts initiated in January 2017 to integrate several new features and improvements in the SRH-2D/SMS user interface are in process. Funds from multiple sources were pooled to support these changes, which are summarized as follows:

1. Ability to read and display SRH-2D cell centered solutions – Currently the results from SRH-2D are interpolated to element nodes. This has presented a few problems with accurate floodplain boundary delineation. This new approach will use the original cell centered solution to delineate the floodplain to the original terrain surface.
2. Improve the current HY-8 culvert interface with SRH-2D to utilize a precomputed rating curve – The HY-8 boundary condition works, but improvements are needed. This task will change the computational approach to use a precomputed rating curve for each culvert, rather than running HY-8 each iteration during the 2D simulation.
3. SMS/SRH-2D Simulation Dashboard – The DOS windows in SMS for SRH-2D will be replaced with user defined plots for real-time profiles, cross section, etc.
4. Additional development of automation of 2D floodway computation – The development of a floodway delineation tool continues.
5. Integrate the bridge scour calculations from the Hydraulic Toolbox into SMS – A new map coverage will be added to SMS that will enable users to efficiently and accurately extract hydraulic parameters from SRH-2D results and paste them into the Hydraulic Toolbox Scour Calculators.
6. Enhancements to default contour range computation – This task will add an option for the user to eliminate the results from the dry startup results from the output.
7. SRH-2D Hydraulic Material Table – A summary tables for material values will be generated.
8. Add transparency to SRH-2D material polygons display
9. SMS SRH-2D Interface for Monitoring Lines – Monitoring Lines will be added to the Monitoring Points coverage.
10. SMS SRH-2D Interface Plot Features – Additional plot capabilities will be added (i.e. line types, structural features, etc.)
11. Project metadata summary file generation – New metadata features will be added
12. SMS SRH-2D File Packaging – Users will be able to easily clean up all project files and save them to a zip file for either transfer to another for review, or archive storage.

In addition to these improvements, FHWA has renewed the Interagency Agreement (IAA) with the US Bureau of Reclamation. Through this agreement, Reclamation will continue to improve the hydraulic structure features within SRH-2D.

The FHWA Every Day Counts program adopted the 2D hydraulic modeling initiative CHANGE (Collaborative Hydraulics: Advancing to the Next Generation of Engineering). Through this initiative, more than 40 states are participating and helping to advance hydraulic engineering through the use of 2D modeling. Many new resources are being developed through this program, including: training (both introductory and advanced), guidance documents, case study examples, informational web meetings, sample scopes of work and policy verbiage for 2D modeling, and much more.