

HEC-ResSim 3.3 Release Notes

February 2021

Version 3.3 (February 2021) of the Reservoir System Simulation program (HEC-ResSim) is now available. This version supersedes Version 3.1 which was released to the general public in May 2013. Several new features, as well as enhancements to existing features, have been added to the program since that time. The new features to look for are listed below along with the reference to the User's Manual [*Section in the ResSim 3.3 User's Manual*]:

- **Computation Point Import** [*5.1.2*]
- **Forebay Headloss** [*9.4.8*]
- **Prescribed Release** Operating Rule [*11.5.12*]
- **Alternative Editor—DSS Output** [*14.12*]
- **Reports—Alternative Input** [*15.6.3*]
- **Yield Analysis** [*Appendix F*]
- **Ensemble Computing** [*Appendix G*]
- **Monte Carlo** [*Appendix H*]
- **Operation Support Interface** [*Appendix I*]

Other **Enhancements** and **Improvements** include:

- **Junction Rating Function** [*7.1.3*]
- **Tailwater Rating Function** [*9.4.7*]
- **Operating Rule—Prescribed Release** [*11.10*]
- **Reports—Refresh All Plots** [*15.1.1*]
- **Rerun Extract** [*15.3.2*]
- **State Variables & Scripted Rules—Expanded API Tree** [*12.2, 12.3*]
- **Plots—Refresh / Live Display** [*16.1.1*]




We strongly recommend that **before** you start using **HEC-ResSim 3.3**:

- [make backup copies](#) of your existing watersheds (and consider using separate modeling locations (folders) for your v3.1 and v3.3 watersheds)

As you **use HEC-ResSim 3.3**:

- check the data in all elements of your model, being especially vigilant in reviewing your operation rules
- *verify the operation of your current models with ResSim 3.3, and*
- *once satisfied with the results produced by the new version for each of your current models, make another set of backup copies. This second backup copy is suggested because when you open a watershed in ResSim 3.3, the format of key model files is changed, thus making the watershed unable to be opened with older versions of ResSim.*

Please refer to the HEC-ResSim User's Manual for details regarding the new features, enhancements, and improvements. The Table of Contents includes  markers to help you quickly identify and find descriptions for the new features.

A brief overview for each of the **New Features, Enhancements, and Improvements** is provided below:

1. **Computation Point Import** [\[5.1.2\]](#)

Computation Points can be imported using the Import Computation Points importer located in the Watershed Setup Module.

2. **Forebay Head Loss** [\[9.4.8\]](#)

Forebay Head Loss can be added to Dams, Diverted Outlets, and Outlet Groups in the Physical tab of the Reservoir Editor.

3. **Alternative Editor—DSS Output** [\[14.12\]](#)

This feature allows the user to optimize write time to the simulation.dss output file by specifying which elements and variables should be written to the file during the compute.

4. **Alternative Input Report** [\[15.6.3\]](#)

This report provides a complete report of the data used by the selected alternative.

5. **Yield Analysis** [\[Appendix F\]](#)

Yield Analysis is another new alternative type that enables you to determine the largest minimum release or hydropower requirement that can be sustained through the critical period your system has experienced.

6. **Ensemble Computing** [\[Appendix G\]](#)

Ensemble Computing supports reservoir operations modeling using ensemble streamflow forecasts. An ensemble streamflow forecast for a single location represents a set of possible streamflow hydrographs that could occur over the forecast period. A new alternative type, Ensemble, is now available to enable you to define one alternative that will iterate through a set of ensemble input data and produce an ensemble of output results.

7. **Monte Carlo** [\[Appendix H\]](#)

Monte Carlo Analysis provides you the ability to evaluate the impacts of uncertainty of the input data on your reservoir operations through the use of a new Monte Carlo alternative type.

8. **Operation Support Interface** [\[Appendix I\]](#)

The Operation Support Interface (OSI) allows you to edit the time series boundary conditions and release overrides of HEC-ResSim models. Designed for use in real-time release decision modeling, this tool facilitates the fast development of a release plan for the current forecast period.

9. **Enhancements to Existing Features**

Rating Function – Rating tables at Junctions and Reservoir Tailwater nodes can now be defined as a function of two independent variables, such as flow and downstream reservoir pool elevation. [\[7.1.3 and 9.4.7\]](#)

System Hydropower – improved handling of routing in system hydropower computations in both parallel and tandem configurations.

Rate-of-Change constraints – improved logic for handling rate-of-change constraints while operating for guide curve and downstream control.

State Variables and Scripted Rules - Expanded API tree in the editors including the classes and methods needed adding lookup tables to your script, tracking the ResSim compute loops, and reducing compute time. In addition, it is now possible to replace a State Variable or Scripted Rule script with a Java class. [\[12.2.1\]](#)

Rerun Extract – a new command was added to the Simulation menu to recopy the time series input data for the alternatives in your simulation from their source DSS files into the simulation.dss file. [\[15.3.2\]](#)

Refresh/Live Display – if you have ResSim plots open and then recompute an alternative, you can now have three options to refresh those plots to reflect the new results.

1. From the ResSim **Reports** menu, select **Refresh All Plots** [\[15.1.1\]](#)
2. From each plot's **View** menu, select **Refresh** [\[15.1.1\]](#)
3. From a plot's **View** menu, select **Live Display**. This will cause the plot to refresh on its own, each time the data being displayed changes. [\[16.1.1\]](#)