Frequently Asked Questions/Troubleshooting Guide

This section provides guidance on how to use the HI-RUN model given some common project conditions and challenges. The guidance is provided in the form of questions and answers. If the user is unsure how to apply HI-RUN to a specific project and this section does not answer the user's questions, contact Marion Carey at (360) 705-7404 or careym@wsdot.wa.gov.

Technical Issues

Question:

HI-RUN is not allowing me to select from lists or fill in text boxes on the input pages. How can I do that?

Answer:

The macro security setting in Excel may be too high for HI-RUN to function. Temporarily change the setting to **Medium** using the following guidelines.

Allowing Macros to Run on Excel 2003

In Microsoft Excel 2003, the appropriate security setting can be selected by navigating to the **Tools/Macros/Security** window and selecting a **Medium** security level. At the medium security level, the program will prompt the user for permission to run any macros. Simply select **Enable macros** when prompted, and HI-RUN will function correctly.

Allowing Macros to Run on Excel 2007/2010

In Microsoft Excel 2007, the user will be prompted with a **Security Warning** banner at the top of the window (see Figure 3). Click the **Options...** button and select **Enable this content** in the Microsoft Office Security Options window. In Microsoft Excel 2010, the user will be prompted with a banner at the top of the window that is similar to that in Excel 2007; click the **Enable Content** button to begin using the model.

Alternatively, the user can navigate to the Microsoft Excel Trust Center to enable macros using these steps:

- Select the Microsoft button in the upper left hand corner of the Excel window (the button is round with a 4-color symbol).

- Select the **Excel Options** button at the bottom of the drop-down menu.

- Select **Trust Center** on the left side of the Excel Options window.

- Select **Macro Settings** on the left side of the Trust Center window.

- Select **Enable all macros** temporarily while running HI-RUN. If you choose to select this, be sure that you reset the previous macro setting once you have finished running HI-RUN to protect your computer.

Question:

Macros are enabled, but I still cannot select water quality parameters or months from the lists. What should I do?

Answer:

Try switching to the **Dilution** sheet, then back to the **Loading** sheet by selecting the tabs at the bottom of the screen. This is an infrequent issue with Excel macro controls and could not be corrected in the HI-RUN program code.

Input Issues

Question:

My project adds two new lanes of roadway adjacent to the existing highway. How do I delineate the threshold discharge areas (TDAs) for the project so that I can complete the Endangered Species Act Stormwater Design Checklist?

Answer:

There are number of possible situations that you may encounter while delineating your TDAs. Diagrams and completed Endangered Species Act Stormwater Design Checklist tables are provided on the *Biological Assessment Guidance – Stormwater Guidance* web page (http://www.wsdot.wa.gov/Environment/Biology/BA/BAguidance.htm#Stormwater) for an example that includes these four situations:

- TDA A: Existing roadway retains drainage pathway.

- TDA B: Some new impervious area is added to the existing roadway, but drainage pathway is maintained.

- TDA C: Drainage from half of the existing roadway is rerouted along with the new roadway areas, effectively reducing discharge to the existing outfall.

- TDA D (new): The new roadway that drains to a new discharge point is treated as a separate, new TDA.

Question:

How do I analyze a new TDA into HI-RUN (one where there is no impervious area in the existing condition)?

Answer:

If you enter zeros in the existing conditions table, the model will not be able to calculate a P (exceed) value and will not run. In order to do the analysis, you will need to enter a very small number (such as 0.01 acre) in the existing conditions table in the **No Treatment** row. This will allow the model to run as needed for the proposed condition.

Question:

I can't find my saved inputs. Where are the input files?

Answer:

HI-RUN saves input values in hidden sheets within the spreadsheet, not as separate files. If you have saved input settings in a previous session, you must open the same HI-RUN file to find and load those settings. You can save and load input settings using the buttons on the **Loading** and **Dilution** sheets.

Question:

My TDA has a detention pond in the existing condition. How do I account for that in HI-RUN?

Answer:

This condition cannot be explicitly accounted for in HI-RUN. If there is a detention pond in the existing condition, run HI-RUN as normal. If you are prompted regarding detention upon running the model ("The proposed TDA area exceeds the baseline TDA area by ## acres (not including infiltration BMP area). Do you wish to apply detention to the area difference?"), select **No**. After completing the HI-RUN analysis, you will need to provide a qualitative discussion of how the existing detention facility would affect the model results in the project biological assessment. Generally speaking, the effects would be:

- End-of-pipe loading and concentration results are not affected.

- Downstream distance results in existing conditions from receiving water dilution results are likely **overestimated** due to lower peak flows than modeled.

See the stormwater chapter of WSDOT's *Advanced Training Manual: Biological Assessment Preparation for Transportation Projects* for more guidance on the qualitative analysis.

Output Interpretation Issues

Question:

What does it mean when the receiving water dilution subroutine for the HI-RUN model shows ">1000" for the distance downstream of an outfall where biological thresholds will be met?

Answer:

This result means that HI-RUN predicted insufficient dilution to meet the biological effects threshold for the outfall and receiving water analyzed. HI-RUN uses 1,000 feet as a somewhat arbitrary maximum value for distance downstream.

The receiving water dilution subroutine uses a hydraulic mixing model (RIVPLUM6) to estimate dilution factors for a project's stormwater at distances downstream of the associated outfall based on a project's drainage basin characteristics and the flow in the receiving water. Some drainage basin and receiving water combinations result in a situation where pollutant concentrations in the stormwater discharge cannot be reduced to levels that are below the biological effects thresholds. In other words, there is so little flow in the receiving water relative to the stormwater discharge from the outfall that you don't receive enough dilution to get below the biological effects threshold, even if there is complete mixing between the waters. In this situation, RIVPLUM6 would predict unreasonably long dilution distances (farther than would be reasonably necessary to get full mixing). Predicted dilution distances that are greater than 1,000 feet likely indicate this situation is occurring. As a general rule, this situation will be encountered most frequently when using the HI-RUN model to predict effluent mixing in ditches and small streams with discharge rates of less than 2 cubic feet per second (cfs). This situation will likely never be encountered on larger river (e.g., stream order > 3; discharge > 20 cfs).

Where this screening-level assessment indicates there is a potential risk of exceeding the biological thresholds, a more detailed assessment of the project should be performed to determine whether there are mitigating factors that are not reflected in the output of the HI-RUN model. The drainage network for the receiving water should be examined in more detail to determine if there are additional water inputs downstream of the project's outfall (via tributaries, ditches, other stormwater pipes, etc.) that would provide additional dilution capacity for reducing pollutant concentrations from the project's stormwater. Such inputs should be documented in the biological assessment to provide some basis for establishing the maximum area of potential exposure to a level that exceeds the biological thresholds.

Question:

How do I do a more detailed assessment of the project's mitigating factors?

Answer:

The stormwater chapter of the *Advanced Training Manual: Biological Assessment Preparation for Transportation Projects* provides detailed information on what to consider in the qualitative part of the analysis.