

# RPL Set Management Usability Issues

## RiverWare 5.2

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This document describes some usability problems with the management of RPL Sets in RiverWare 5.1, and describes enhancements to address those problems in RiverWare 5.2.

#### 0.1 Document Status

- 10-30-2009: Proposed changes for the upcoming RiverWare 5.2 Release / Ready for review.
- 7-13-2009: Ready for review ... Put aside as “Preliminary Analysis” document.

#### 0.2 Contents

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## 1.0 Problems with the current design

This section describes some of the inconvenient or confusing aspects of the management of RPL Sets within a RiverWare session.

### 1.1 Association of the RPL Set life-cycle with its dialog is undesirable

For RPL Sets not saved within the RiverWare model, closing the RPL Set dialog also removes the RPL Set from the RiverWare session. The inconsistency of this effect -- i.e. not also applying to RPL Sets which are saved in the RiverWare model -- is confounding. But also, some users would rather close the dialog to get it out of the way, instead of minimizing it. Minimizing RPL Set dialogs adds to clutter in the Windows Taskbar (or, with certain X11 window managers, on the Desktop). It would be better to divorce the life-cycle of the RPL Set within the RiverWare session from the showing of the RPL Set's dialog -- similar to the relationship of Simulation Objects in the Workspace and their corresponding Open Object dialogs.

### 1.2 Reshowing an open RPL Set by "restoring" a minimized icon is undesirable

Related to the prior item, re-showing and raising the dialog for an open RPL Set via an icon in the Windows Taskbar (or Desktop) is undesirable. Some users would prefer re-showing and raising dialogs for open RPL Sets via GUI controls represented within the RiverWare GUI -- both in the RiverWare Workspace and in SCTs.

Note that this is already partially implemented in RiverWare 5.1 -- via the RiverWare Workspace's Policy menu's "Show" submenus for Rulesets, Optimization Policy Sets and Global Function Sets. See the section: Existing "5.1" Feature: Workspace Policy "Show" Menus.

### 1.3 Automatic Opening of a Model's "Optimization Policy Set" is undesirable

As a special feature, when a RiverWare model having an internally stored Optimization Policy Set is loaded, the dialog for that RPL Set is automatically shown. One particular sponsor anticipates that operators will invariably minimize (or attempt to close) that RPL Set dialog as a first step. It would be better to not automatically show that dialog, but instead provide convenient ways to show the dialog from both the RiverWare Workspace and from SCTs.

### 1.4 Association of the Loaded RPL Sets with the RiverWare Model is not retained

Other than the special RPL Sets actually stored within a RiverWare model, there is currently no recorded association between the model and the RPL Sets used with the model -- in particular, the external RPL Sets with which the model was last run. This is especially significant when loading a model containing model run results (outputs) for two reasons:

- The policy corresponding to the run results is not documented.
- Attempting to re-run a model with modified inputs is error prone since different RPL Sets may be inadvertently used.

It would be necessary to save RPL Set associations (file system "paths" to RPL Set files) for the following RPL Sets:

- The single "Loaded" Ruleset
- The single "Loaded" Optimization Policy Set -- if a RPL Set other than the internally saved Optimization Policy Set is being used.

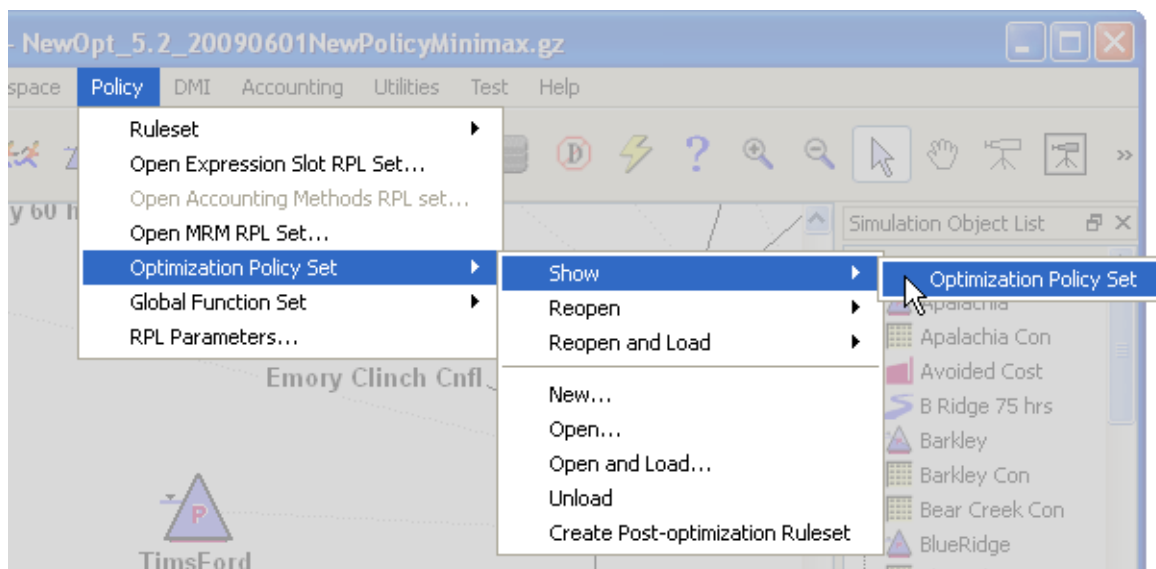
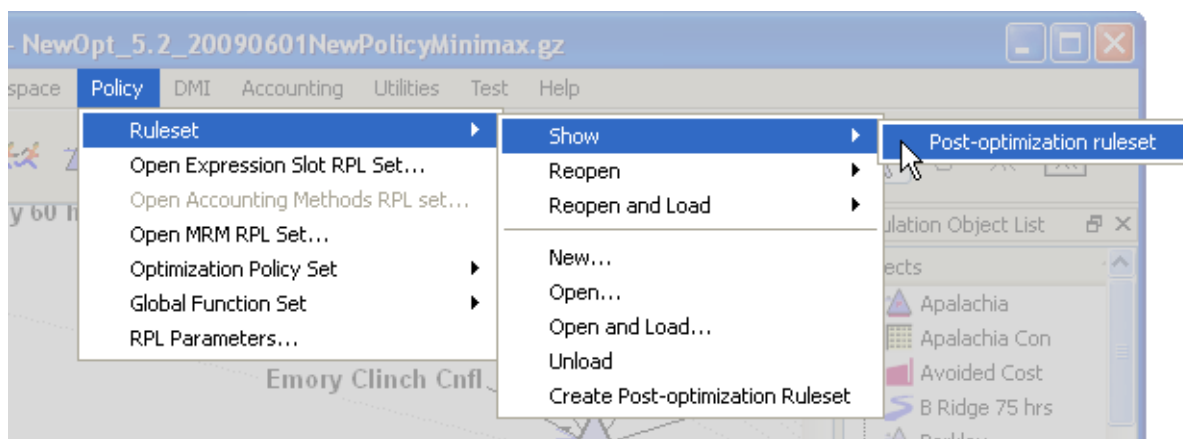
- Each of the open Global Function Sets

## 2.0 Existing “5.1” Feature: Workspace Policy “Show” Menus

RiverWare 5.1 supports menus to “restore” (show and raise to the top) minimized open RPL Set dialogs.

Note: a fix was applied to RiverWare 5.1.2 to have these submenus include also the RPL Sets not saved as a RPL Set File, e.g. the special RPL Sets associated with the new RiverWare Optimization architecture.

See the following two images. Not represented below is a similar “Show” menu for the open Global Function Sets.



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## 3.0 Proposed Changes

The following changes are proposed to address the problems described in section 1.

### 3.1 Separate external RPL Set life-cycle from the corresponding RPL Set dialogs

As suggested in section 1.1 (“Association of the RPL Set life-cycle with its dialog is undesirable”), closing a RPL Set dialog should not remove the RPL Set from the RiverWare session. Users could still have the option of “minimizing” a RPL Set dialog (so that it is represented as an icon in the Windows Taskbar or Desktop).

In RiverWare 5.1, RPL Set dialogs for Rulesets and Optimization Policy Sets have the following operation under the File menu:

- Close (and Unload) Set ... .. [Ctrl+W]

In the revised design, the File menu would instead have these two operations:

- Remove Set and Close
- Close Dialog ... .. [Ctrl+W]

### 3.2 Revised and Additional Controls to Show RPL Sets

As described in section 2, RiverWare 5.1 already provides a way of showing (and raising to the top) -- from the RiverWare Workspace -- dialogs for RPL Sets which are already part of the RiverWare session -- both those RPL Sets saved in the model and RPL Sets loaded from an external RPL Set file.

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### 3.2.1 Revision of the Workspace “Policy” menu, and adding that menu to the SCT

The menu operations to Show the RPL Set Dialog for the various types of RPL Sets associated with the loaded RiverWare model (in RiverWare 5.1) are distributed across different levels of the Workspace “Policy” menu. (See images in section 2.0).

The Workspace Policy menu (in RiverWare 5.1) includes these “show” operations:

- Ruleset >> Show >> (RBS Rule Set name) [*for each open or loaded RBS Rule Set*]
- Open Expression Slot RPL Set ...
- Open Accounting Methods RPL Set ... [*enabled only when “Accounting” is enabled*]
- Open MRM RPL Set ...
- Optimization Policy Set >> Show >> (Optimization RPL Set name) [*for each open or loaded Opt Set*]
- Global Function Set >> Show >> (Global RPL Set name) [*for each open Global Function Set*]

In RiverWare 5.2, these operations are grouped together at the bottom of the “Policy” menu as “top level” menu items (i.e. not in submenus) -- following the horizontal divider (shown in this list):

- Ruleset >> ... Reopen / and Load / New / Open / and Load / Unload / Create Post-Opt...
- Optimization Policy Set >> ... Reopen / and Load / New / Open / and Load / Unload / Create Post-Opt...
- Global Function Set >> ... Reopen / New / Open
- RPL Parameters ...
- RPL Debugger ... (*NEW in RiverWare 5.2*)
- -----
- (RBS Rule Set name) [*one for each open or loaded RBS Rule Set*]
- (Optimization RPL Set name) [*one for each open or loaded Opt Set*]
- (Global RPL Set name) [*one for each open Global Function Set*]
- Open Expression Slot RPL Set ...
- Open Accounting Methods RPL Set ... [*shown only when “Accounting” is enabled*]
- Open MRM RPL Set ...

Only the “name” part is shown in the menu -- and not the full saved file path. However, when hovering over a RPL Set having an associated file path, the file path will either be shown as a Tooltip or as text on the Workspace or SCT status line (depending on what can be done with our current version of Qt).

This Workspace “Policy” menu will also be added to the SCT.

Since such RPL Sets -- of all types -- can now be part of the RiverWare session without having an associated open dialog box (as a result of the change describe above in section 3.1) -- the “show” operations will have the same result -- showing the RPL Set dialog as the topmost dialog -- in each of these scenarios:

- Restoring and Raising an open RPL Set dialog which has been *minimized*.
- Raising an open RPL Set dialog which is *obscured* by other dialogs.
- Showing the dialog for an *open* RPL Set for which a dialog does not yet exist.

### 3.2.2 Loaded RPL Set Buttons added to the Workspace and SCT

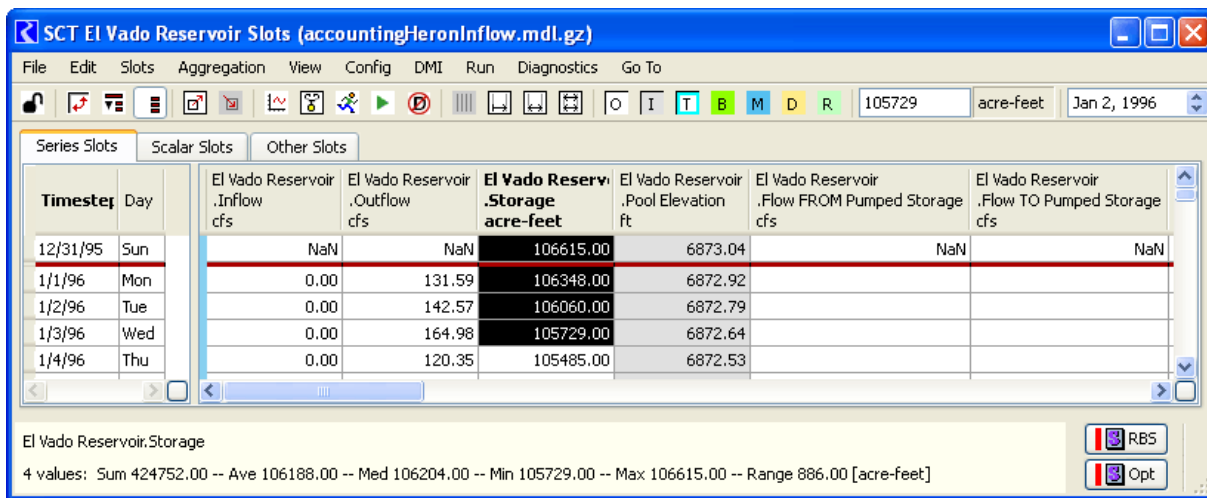
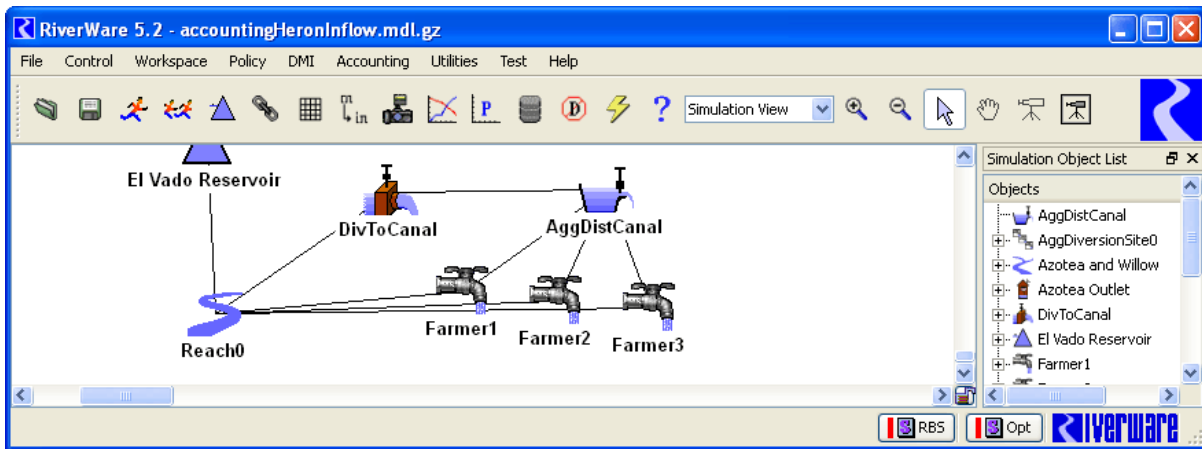
In RiverWare 5.2, two buttons are shown in the status bars of the Workspace and each SCT for the *loaded RBS (Rule-Based Simulation) Ruleset* and the *loaded Optimization Policy Set*.



The buttons are disabled (having a grey appearance) if no RPL Set of the respective type is loaded. When such a RPL Set *is* loaded, the button will be enabled, and pressing the button will show the RPL Set dialog for that RPL Set.

Note: The *vertical red bar* in the active button images is intended to suggest the “loaded” state -- the same as the horizontal red bar at the top of *loaded* RPL Set dialogs.

In the following Workspace and SCT images, see these buttons in the bottom right area -- in the status bar.



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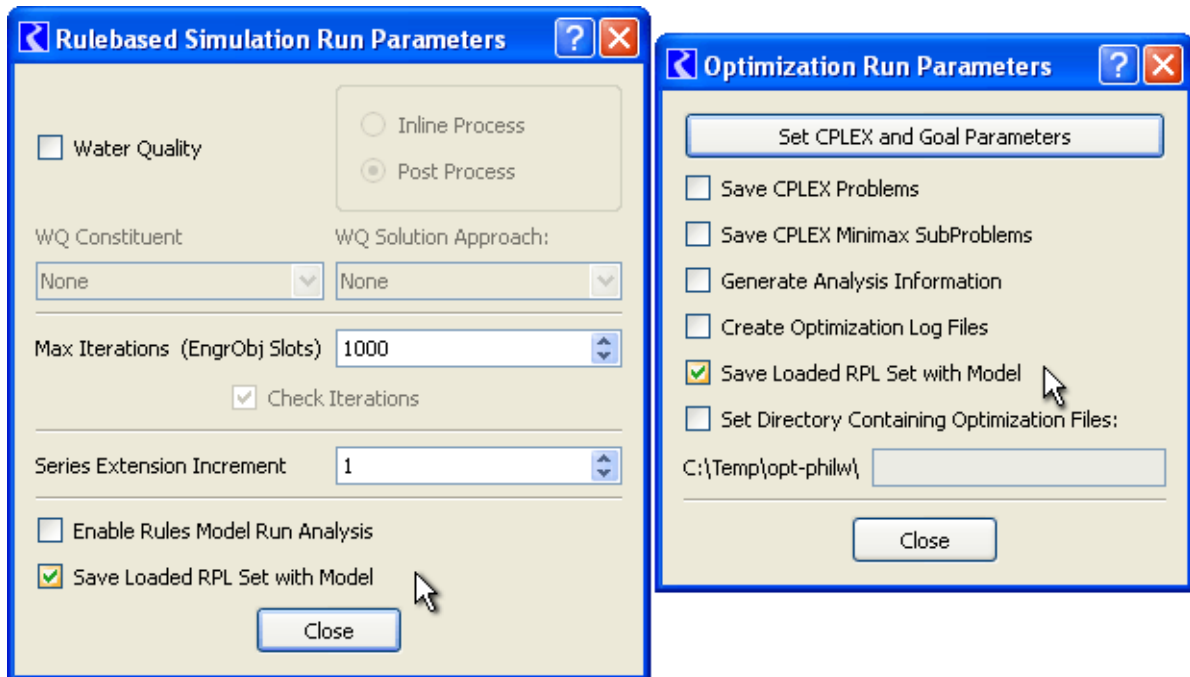
### 3.3 Refrain from Automatically Showing a model's internal Optimization Policy Set

With the additional controls to more easily show the model's Optimization Policy Set, it would be very reasonable to refrain from automatically showing that RPL Set upon loading the model.

### 3.4 Options to save the Loaded RBS and Optimization RPL Sets in the RiverWare model file

To partially address the problem of not having the RplSets which were used (loaded) in the last run associated with the results of the last run (see section 1.4), users will now have the option of saving the loaded RBS and Optimization RPL Sets in the model file. This behavior is enabled by checking the "Save Loaded RPL Set with Model" toggle in these two dialog boxes (see also images below).

- Rulebased Simulation Run Parameters dialog
- Optimization Run Parameters dialog



These dialogs are accessible from the Run Control dialog, under the View menu. (The particular Run Parameters dialog specific to the currently selected controller is shown).

Note that this solution does not provide a way to associate the Global Function RPL Sets used in the last model run with the RiverWare model file.

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## 4.0 Development Estimates

Revision: 10-30-2009 (Phil)

Task	Estimate (Days)	Done as of 10-30-2009	Description / Notes
3.1			Separate external RPL Set life-cycle from the corresponding RPL Set dialogs
3.1 (a)	1.0		RplDlgMgr changes. See esp. RplDlgMgr::closeRPL Set (RplObj*).
3.1 (b)	0.25		RPL Set dialog menu changes
3.2			Revised and Additional Controls to Show RPL Sets
3.2.1	1.0		Revision of the Workspace Policy menu, and adding that menu to the SCT
3.2.2	1.5	1.25	Loaded RPL Set Buttons added to the Workspace and SCT
3.3	negl.		Refrain from Automatically Showing a model's internal Optimization Policy Set.
3.4	0.5	0.5	Options to save the Loaded RBS and Optimization RPL Sets in the RiverWare model file
TOTAL	4.25	1.75	[Days]

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