RiverWare Output Device Groups

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This document outlines a high-level design for two related enhancements to RiverWare 5.1 for Output Device management:

• **Output Device Groups:** named collections of Output Device specifications.

• **Plot Dialog** integrated **Plot Page Output Device TreeView** to quickly switch between different plot configurations.

0.1 Document Status

11-6-2008: **Draft Ready For Review.** Beyond the overall review, a decision is required for the new Output Manager menu change approach -- two alternatives are presented in sections 3.1.1 and 3.1.2.
... Update: Added alternative development option, Section 4.1 (page 7) and Estimate Table 2 (page 8).

0.2 Contents

1.0 Motivation

Certain RiverWare models contain hundreds of "Output Device" specifications (including Plot Pages, RiverWare Data Files, Xmgr Plot Files and Excel Files). Especially when needing to view a number of Plot Pages, managing the set of Plot dialogs can be difficult for the user in terms of locating the desired plot page specifications and arranging those dialogs on the screen.

The following sorts of capabilities would be helpful:

• The ability to organize Plot Pages, and other Output Devices in named Groups.

• In each particular Plot Dialog, the ability to quickly switch between one of several Plot Pages, selected from a limited subset of Plot Pages defined in the model.
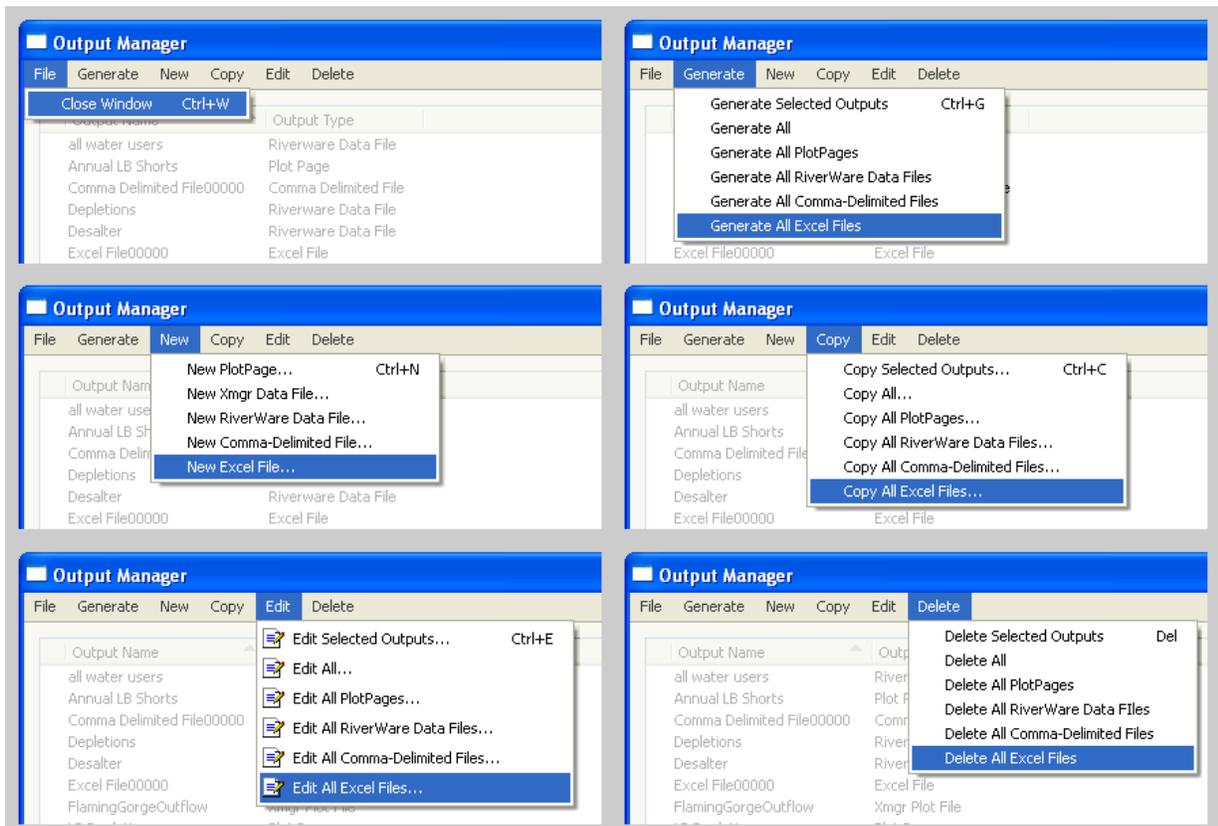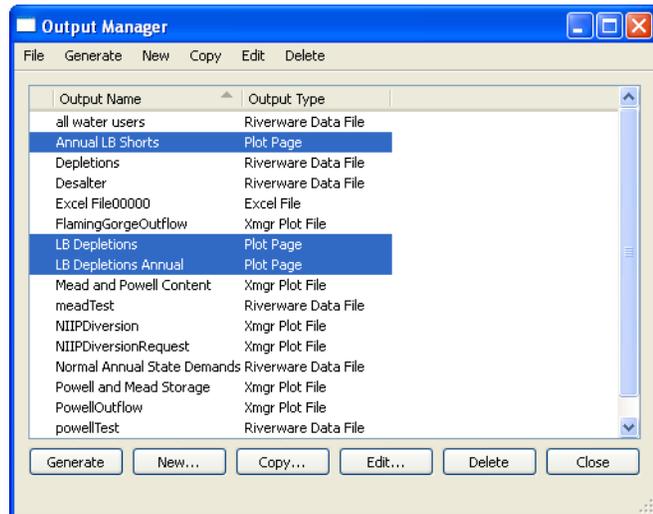
2.0   Current Capabilities

[RiverWare 5.0.x, October 2008]

2.1   Output Manager

The RiverWare Output Manager is used to organize all user-defined Output Devices within the RiverWare model.

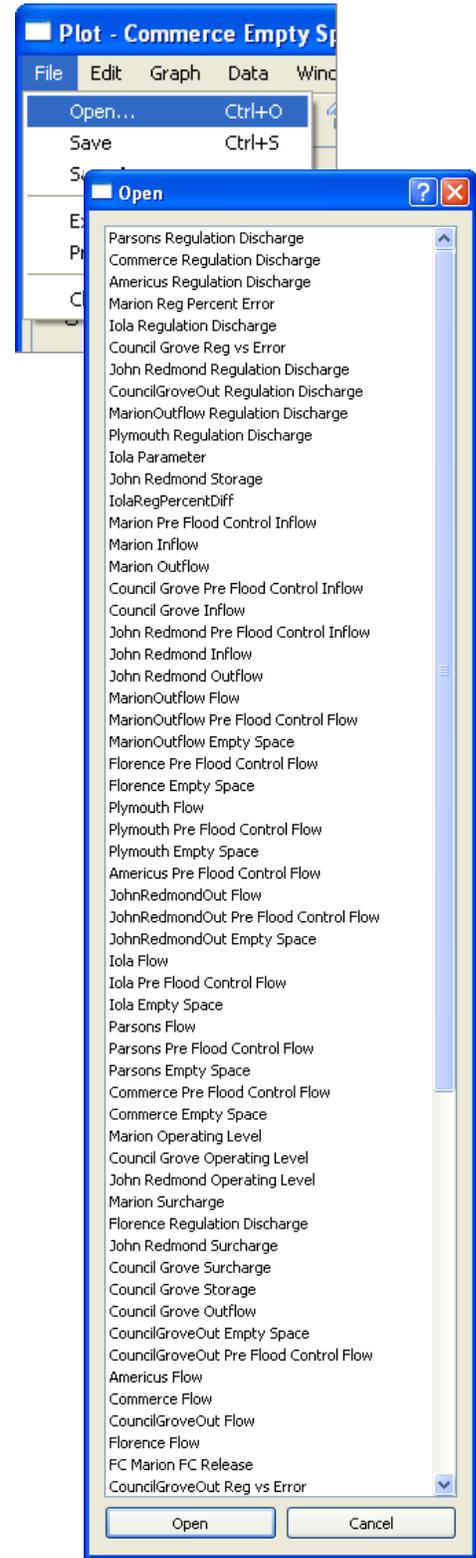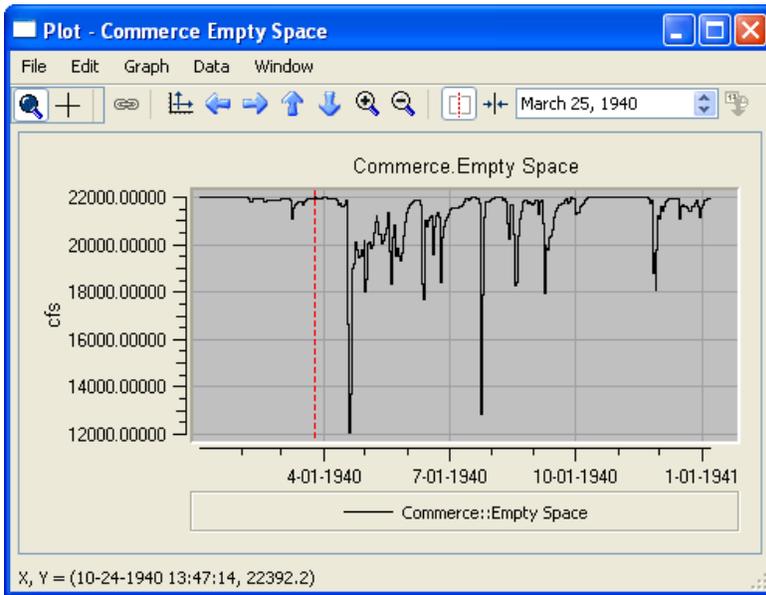The list of Output Devices can be sorted by Name and by Type (by clicking on listview column headers).

The Output Manager menus are shown below.

2.2 Plot Dialog and Open (Plot Page) Dialog

The Plot Dialog shows plots for a single Plot Page (Output Device) -- see image, below. This has the capability of showing up to nine plot panels, arranged in a 3x3 grid.

The Plot dialog File Menu includes an "Open..." operation which presents a list of all Plot Pages defined in the RiverWare model. Selecting an item loads that Plot Page into the Plot Dialog, replacing the prior Plot Page.

The (Plot Page) "Open" Dialog (shown to the right) differs from the list in the Output Manager dialog (prior page) in the following ways:

- Only Plot Pages (and not all Output Devices) are listed.
- The order of the Plot Page items is arbitrary, and cannot be changed.
- Double-clicking on an item:
    - "Open" Dialog: Loads the selected Plot Page into the Plot Dialog *and closes the "Open" Dialog.*
    - Output Manager: Opens a configuration dialog for the Output Device.
- Only the Output Manager list supports a context menu.

3.0 Output Device Groups

Output Device Groups are named, persistent collections of Output Devices (configuration specifications) saved as part of a RiverWare model. The following conventions are recommended:

- Every Output Device is a member of exactly one Output Device Group.
- A "Default" Output Device Group is implicitly defined. This contains all Output Devices which are not explicitly placed within particular user-created Output Device Group.

3.1 Output Manager Support for Output Device Groups

Output Device Groups are maintained by the user in the **Output Manager Dialog** (see image on a prior page).
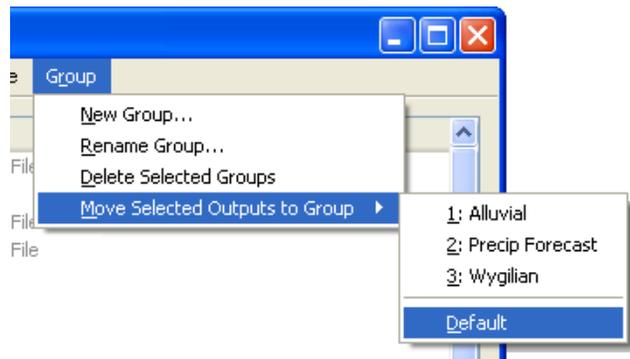
The Output Manager list will have support the following display modes:

1. Output Devices Only (the current list display).
2. Output Groups. Output Devices are presented in a TreeView, with Output Device Groups as the root items and Output Devices shown as second-level items under the Output Device Group root items.

Two alternatives are proposed here for adding menu operations to the Output Manager menu bar:

3.1.1 Output Manager Menus -- Option 1: Distinct "Group" Menu

Output Device Group operations might be most easily understood if they are "grouped" together under one top-level menu. (The specifics of these operations are documented in the following section).
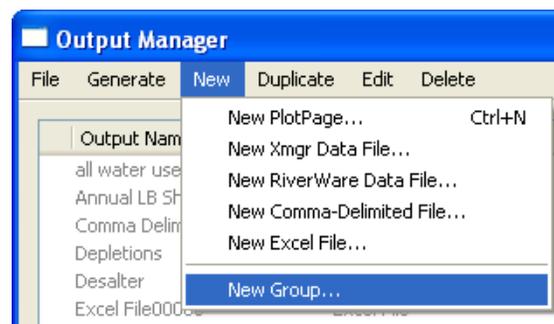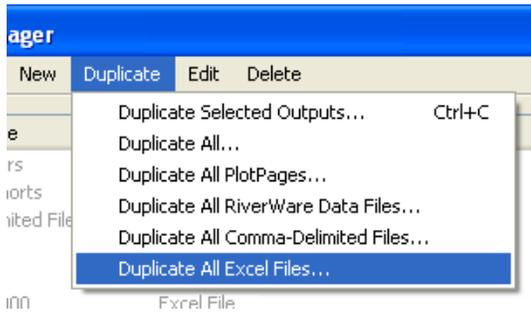
3.1.2 Output Manager Menus -- Option 2: Add "Group" Operations to Existing Menus

Given the current Output Manager menu organization, including menus for "New" and "Delete", it would be more consistent to add the new Group operations to the obvious menus.

The following additions and changes to support Output Device Groups are proposed. (Compare these menus with the original Output Manager menus shown in Section 2.1).

"New" menu: add **"New Group"** item. This shows a small entry dialog to allow the user to enter a name for the new Group. The name must be unique among the Output Device Groups in the RiverWare model.
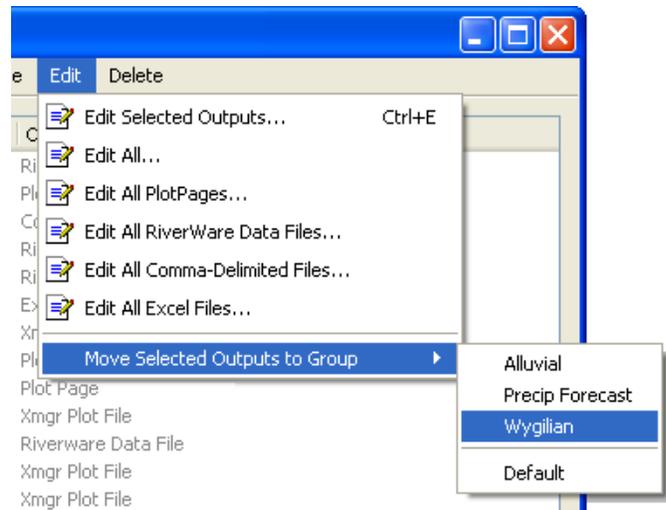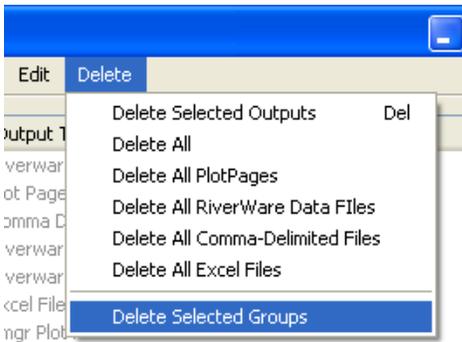
"Duplicate" menu (formerly "Copy" menu). No additional menu items are proposed. The names of the operations will be changed to "Duplicate" for two reasons:

1.The old "Copy" operations are parallel to the "New" operations -- they create duplicates of the respective Output Devices, and open up configuration dialog boxes for those new devices. "Duplicate" more accurately describes these operations.

2.Even though "Copy" and "Paste" are not being proposed here for moving Output Devices between Groups, "Copy" operations could easily be confused with such operations.

"Edit" menu: add a dynamically built **"Move Selected Outputs to Group"** cascading sub-menu. This menu will always have at least the implicit "Default" Group. It will also contain items for all of the Output Device Groups defined by the user.

"Delete" menu: add a **"Delete Selected Groups"** menu item. A confirmation dialog box will be shown to allow the user to abort the Group deletion operation.

Question: Should we require that a Group be empty before allowing it to be deleted?
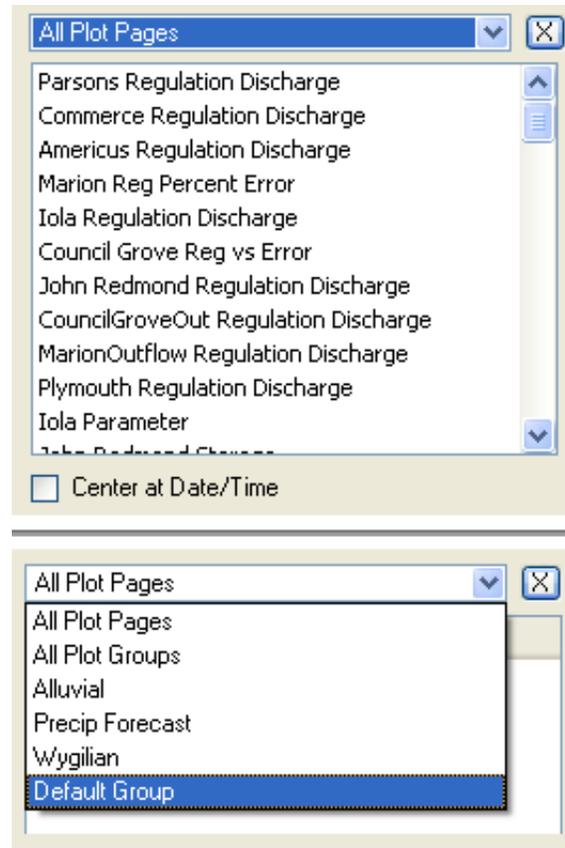
4.0   Plot Dialog Plot Page Selection Panel

An enhanced "Open" Plot Page List will be integrated within the Plot Dialog -- optionally shown along the right side. This is similar to the Object/Account List-View in the RiverWare Workspace.

The Plot Page Selection List will support several filter modes, picked with a Plot Page List Mode ComboBox above the list.

- **"All Plot Pages"** will show a "flat" list of Plot Pages, similar to the list previously implemented in the "Open" (-Plot Page) dialog box. (Unlike the mock-up image to the right, the Plot Pages will be shown in alphabetical order).

- **"All Plot Groups"** will show a hierarchical tree-view display, with Output Device Groups as the root, and their contained Plot Pages as second-level items. Output Device Groups not containing Plot Pages (but possibly containing other types of Output Devices) will be excluded from this list. Also, under those Output Device Groups which are shown, only Plot Page children will be listed.

- The Plot Page List Mode ComboBox will also include an item for **each Output Device Group which contains at least one Plot Page.** Those modes will display the child Plot Pages of the selected Output Device Group in a flat list, sorted alphabetically.

The **Plot Page Selection Panel** can be shown within the Plot Page by operating the "File >> Open" menu item; this is instead of showing the separate "Open" dialog illustrated in Section 2.2. The panel can be hidden by clicking the "[X]" button in the top-right corner (see above). When the Plot Dialog is shown with no Plot Page (configuration), e.g. opened from the Workspace toolbar, the Plot Page Selection Panel is initially shown.

A new Plot Page is loaded into the Plot Dialog just by *selecting* a new within the Plot Page Selection List. This includes the following operations:

1. **Clicking on a Plot Page item.** (Double-Click is not necessary).
2. **Pressing the Up or Down Keys** (or the Page Up or Page Down keys) when keyboard input "focus" is within the list.
3. **Clicking new Plot Dialog Toolbar icon buttons** for stepping to the Previous or Next Plot Pages. These buttons will function whether or not the Plot Page Selection Panel is shown. The "scope" of plot page stepping is defined by the current Plot Page List Mode (e.g. limited to a single Group if a Group is selected within the ComboBox) -- even when the Plot Page Selection Panel is not shown.

Unlike the operation of the old "Open" (Plot Page) dialog, selecting a Plot Page item does not dismiss the Plot Page Selection Panel.

When selecting a new Plot Page to load the page into the Plot Dialog, if the **"[X] Center at Date/Time"** checkbox is checked, all the Plots (up to nine of them) within the Plot Page is centered on the Date/Time shown in the Plot Dialog's Date/Time spinner (for Plots showing time in the horizontal axis).

During the Plot Dialog's life, **zoom scales will be retained when switching between Plot Pages.** This zoom information would just be retained within the GUI. Zoom information for all nine potential plots within a Plot Page would need to be cached. This information really needs to be associated with the Plot Dialog rather than the Plot Page Info structures because several Plot Dialogs can simultaneously be viewing the same Plot Page, but with independent Zoom scales specific to the Plot Dialog.
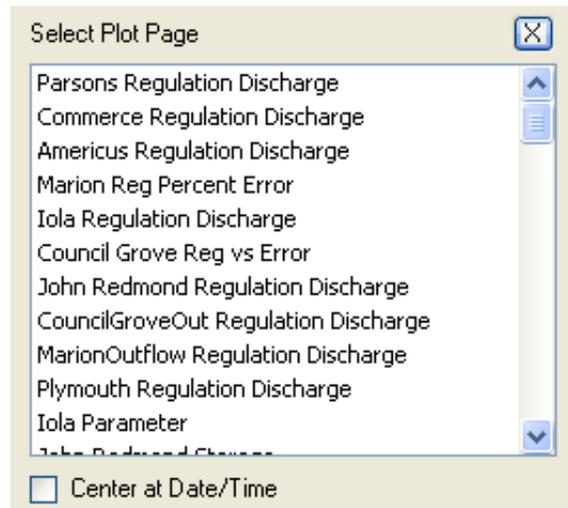
Issue: The current Plot Dialog has no provisions for warning the user that **unsaved Plot configuration properties exist** when closing the Plot Dialog. The user must remember to operate **"File >> Save"** if any configuration changes have been made. No additional configuration-change detection and indication capabilities are being proposed with this project. Un-saved changes to the displayed Plot Page's configuration will be lost when switching to a new Plot Page.

4.1 Alternative: Plot Dialog Plot Selection Panel *without* Output Device Groups

An alternative is to implement the Plot Selection Panel, optionally shown in the Plot Dialog, *without* the implementation of Output Device Groups.

This greatly simplifies the implementation of the panel. Only the "flat" Plot Page list would be implemented, rather than a two-level treeview. And there would not be alternative "Plot List Modes" -- the QComboBox would simply be replaced with a static (fixed) label.

The image to the right represents this panel display, except for the fact that the Plot Pages would be shown in alphabetical order.

5.0 Development Tasks and Estimates

TABLE 1. Full Development: RiverWare Output Device Groups AND Plot Page Selection Panel

Estimate (Days)	Task Description
2.0	Output Device Group data model maintenance, saving in model, Tcl loading.
	Output Manager Dialog enhancements to support Output Device Groups ...
1.0	List widget re-implementation (to support a 2-level Tree-View presentation).
2.0	Group management operations, including dynamic Group cascaded menu.
	Plot Dialog Enhancements
2.0	Plot Page Selection Panel implementation / Plot Selection Operations
1.0	Plot Page Selection Panel maintenance / geometry adjustments.
0.75	Temporary persistence of Zoom Scales when switching between Plot Pages
0.25	Create Icons for Toolbar Buttons: Step to Previous / Next Plot Page
1.0	Additional Testing and Documentation
10.0	**TOTAL (Days)**

TABLE 2. Plot Page Selection Panel ONLY -- without Output Device Groups (See Section 4.1)

Estimate (Days)	Task Description
	Plot Dialog Enhancements
0.5	Plot Page Selection Panel implementation / Plot Selection Operations
1.0	Plot Page Selection Panel maintenance / geometry adjustments.
0.75	Temporary persistence of Zoom Scales when switching between Plot Pages
0.25	Create Icons for Toolbar Buttons: Step to Previous / Next Plot Page
0.5	Additional Testing and Documentation
3.0	**TOTAL (Days)**