#### USACE SWD 9: Editing Multiple Curves and Plots / RW 7.1 / Feature

Document Home: R:\doc\plotting\2017\CoeSwd9-EditMultiPlotsCurves-Feature.docx Phil Weinstein, David Neumann, Edie Zagona, CADSWES -- 3-14-2017, minor edits: 3-15-2017.

### Overview

RiverWare 7.1 provides an enhancement to plot page configuration which centralizes editing controls from various single-item editor dialogs into a unified multiple-item editor. Most settings for a plot page's supported nine separate plots are editable within the new **Configure Multiple Plots and Curves** dialog. The user can select multiple items in a plot page, e.g. curves and markers, and apply selected settings to those items in a single operation.

The Configure Multiple Plots and Curves Dialog supports three editing modes.

- 1. Curves (and Markers)
- 2. Axes
- 3. Background (including Grid)

The choice of editing mode determines:

- 1. The editing controls presented in a vertically scrollable panel.
- 2. The active items -- Plots or Curves and Markers -- presented within a table of plot items.

R	Con	figure Mu	ultiple	Plots and Curve	s	-	□ ×
Edit:   Curves   Axes   Background		Plot (row,col)	Type*	Label / Title	X axis	Y axis	Show in Legend
<ul> <li>✓ Line Style: Solid</li> <li>✓ Line Width: 0 ÷</li> <li>✓ Line Color: </li> </ul>	^	1,1)	Plot Curve Curve Curve Curve	Mead Mass Balance Mead.Inflow Mead.Outflow Mead.Storage Diversion Capacity	] Time ] Time ] Time	Mead.Inflow Mead.Outflow Mead.Storage Mead.Diversion Capacity	Yes Yes Yes Yes
Symbol Style:     None       Symbol Size:     0 ♀       Symbol Color:     ■		(2, 1)	Plot Curve Curve Curve Marker	Powel Mass Balance Powell.Inflow Powell.Outflow Powell.Storage High Flow	] Time ] Time ] Time ] Time	M Powell.Inflow M Powell.Outflow M Powell.Storage 3900 1000 acre-ft/month	Yes Yes Yes No
Curve Style: Step Curve 🔻	~						
Apply to All Apply to Selected		*Note: Dou	ble-click ir	"Type" column to co	py item :	settings to edit controls.	Close

Groups of related settings -- or, in some cases, individual settings (*as for the "Curves" settings illustrated above*) within the vertically scrollable editing controls panel can be individually enabled for application to the selected (or all relevant) items within the plot item table.

Apart from the setting operations supported in the editing controls panel, operations within the plot item list include:

- 1. Direct editing of plot titles, and curve and marker labels.
- 2. Direct editing of a markers' horizontal and vertical values.
- 3. Replacement of a curve's slots with a slot picked using the general slot selector.
- 4. Copying the selected curves' or plots' slots to the slot clipboard.
- 5. Showing the Slot Dialog for a slot in a slot curve.
- 6. Copying the setting values of a particular plot, curve, or marker to the editing controls panel.

# **Not Implemented**

This initial implementation of the Configure Multiple Plots and Curves Dialog **does** <u>not</u> support the following capabilities:

- 1. Addition or deletion of curves and markers.
- 2. Editing of marker attributes which are not also common to curves.
- 3. Reordering curves and markers within a plot (to determine legend and drawing order).
- 4. Reconfiguring the number of, and arrangement of plots within the plot page.
- 5. Enhancement to allow individual curves and markers to be conditionally included in their containing plot's legend.
- 6. A "Sample" column in the plot item table to show the result of display attributes (e.g. for lines and symbols).
- 7. Slot *column* support for the curve slot replacement function.

### **Configure Multiple Plots and Curves Dialog**

The new Configure Multiple Plots and Curves Dialog is accessible from the Plot Page Editor dialog via an "Edit" menu operation, and via a new "Multiple" configuration button. *See the following screenshots*.

K		Plot Pag	e Editor - N	Meac	R		I	Plot Pa	ge Editor -
File Edit	Plot Da	ta Window			File Ec	dit Plot	Data	Window	
	Configure M	lultiple Plots and	l Curves	•	•+	@ il	Li Li		🍋 🧼 🏠
Name:	Curve Conf Marker Man	guration ager		Name: M	flead and Po	owell Mas	s Balance	2	
Add Con 4	Set Plot Title Set Backgro Grid Configu Axis Configu Preferences Reorder Leg	2 und Color uration uration 		M€ Configure: Curves Axes Grid Markers			00 acre-ft/	1400 1200 1000 800	
Backgro.	Background 1- Legend — Mead.Infle				Backg	round	10	600 400	
Multiple		Di	version Capa	acity	Cont	ti <b>ple</b> figure multir	ole plots a	and curve	<b>1-01</b> — Mead.Infk s
			4	Po		-			

This dialog has three major panels:

- 1. Edit Modes radio buttons: Curves, Axes, and Background
- 2. Setting Edit Controls: vertically scrollable panel
- 3. Plot Item Table, with items for plots, curves and markers.

Edit Modes	Configure M	ultiple	Plots and Curve	s	-	
Edit:    Curves    Axes    Background	Plot (row,col)	Type*	Label / Title	X axis	Y axis	Show in Legend
<ul> <li>✓ Line Style: Solid</li> <li>✓ Line Width: 0 ♀</li> <li>✓ Line Color: </li> </ul>	▲ (1,1)	Plot Curve Curve Curve Curve	Mead Mass Balance Mead.Inflow Mead.Outflow Mead.Storage Diversion Capacity	] Time ] Time ] Time	Mead.Inflow Mead.Outflow Mead.Storage W Mead.Diversion Capacity	Yes Yes Yes Yes
Symbol Style:     None       Symbol Size:     0       Symbol Color:     ■	. 🔠 (2,1)	Plot Curve Curve Curve Marker	Powel Mass Balance Powell.Inflow Powell.Outflow Powell.Storage High Flow	] Time ] Time ] Time ]	Powell.Inflow Powell.Outflow Powell.Storage 3900 1000 acre-ft/month	Yes Yes Yes No
Curve Style: Step Curve	<b>.</b>				Plot Item T	able
Apply to All Apply to Selected	*Note: Dou	ble-click i	n "Type" column to co	py item	settings to edit controls.	Close

Directly editable cells within the plot item table are indicated with a green border. Double clicking on such cells starts an in-cell edit:

Plot	Powel Mass Balance		
Curve	Powell.Inflow	Time	M Powell.Inflow
Curve	Powell.Outflow	Time	M Powell.Outflow
Curve	Powell.Storage	Time	M Powell.Storage
Marker	High Flow	]	3900 1000 acre-ft/month

Edit operations -- either direct edits within the Plot Item Table OR setting changes applied when clicking the "Apply to All" or "Apply to Selected" buttons in the Setting Edit Controls panel -- are applied to the plot page being edited in the **Plot Editor Dialog**. In that dialog, the user can either accept ("OK" or "Apply") those changes, or can discard ("Cancel") those changes.

Clicking the "Apply to All" button shows a confirmation dialog; see the following example.

K	Apply to All Slot Curves and Markers?				
?	Apply settings to all 8 slot curves and markers in this plot page?				
	Yes No				

#### **Curve and Marker Editing**

In "Curves" edit mode, the curve and marker items within the plot item table are active. Double clicking on an item either starts an in-cell edit within the clicked cell or copies that curve's or marker's setting values to the edit controls panel. Curves' and markers' label text and markers' values can be directly edited.

R	Con	figure M	ultiple	Plots and Curve	S	-	□ ×
Edit:   Curves   Axes   Background		Plot (row,col)	Type*	Label / Title	X axis	Y axis	Show in Legend
<ul> <li>✓ Line Style: Solid</li> <li>✓ Line Width: 0 ♀</li> <li>✓ Line Color: </li> </ul>	*	1,1)	Plot Curve Curve Curve Curve	Mead Mass Balance Mead.Inflow Mead.Outflow Mead.Storage Diversion Capacity	] Time ] Time ] Time ]	Mead.Inflow Mead.Outflow Mead.Storage Wead.Diversion Capacity	Yes Yes Yes Yes
Symbol Style:     None       Symbol Size:     0       Symbol Color:     ■		₩ (2,1)	Plot Curve Curve Curve Marker	Powel Mass Balance Powell.Inflow Powell.Outflow Powell.Storage High Flow	] Time ] Time ] Time ]	Powell.Inflow Powell.Outflow Powell.Storage 3900 1000 acre-ft/month	Yes Yes Yes No
Curve Style: Step Curve	*	*Note: Dou	bla click i	a "Turse" column to co	ov item	sattings to adit controls	

All of the setting operations provided in the old **Curve Configuration** 

**dialog** (*shown to the right*) are supported in the new Configure Multiple Plots and Curves Dialog.

Various operations on curves and markers are supported with a context (right-click) menu:



- Edit Label -- initiates an in-cell edit in the "Label / Title" column. Same as double-clicking in that column.
- Copy Setting to Edit Controls -copies the values of the clicked item to the Cetting Edit Controls

Curve Configuration						
Powell.Inflow		•				
Label: Powell.Inflow						
Slots						
X Axis: Time						
Y Axis: Powell.Inflow		Select Series Slot				
Line Style	Symbol Style	Curve Style				
O None	None	O Linear Interpolation				
Solid		O Spline Interpolation				
🔘 Dashed	<ul> <li>Diamond</li> </ul>	O Points				
O Dotted	○ Triangle	Step Curve				
🔘 Dash-Dot	O Cross					
O Dash-Dot-Dot	O X-Cross					
Line Width 0	Symbol Size 0					
Set Line Color	Set Symbol Color					
Ok	Apply	Cancel				

item to the Setting Edit Controls panel. Same as double-clicking in a non-editable cell.

- **Copy Slots** -- copies the selected plot items' slots to the RiverWare slot clipboard. The full names of those slots are also copied to the system clipboard.
- **Open Slot...** -- shows the Open Slot Dialog for the clicked slot.
- Select ... Slot -- shows the general slot selector to replace a curve's slot with a different slot. Only a slot of the same type (e.g. "Series Slot") and unit type (e.g. "Flow") can be used.

Current support for **marker editing** is limited to the settings which are also available for curves. This includes all setting operations provided by the old **Marker Configuration dialog** (*shown to the right*) and the Plot Marker Manager *except* for the following:

- Marker Type: Horizontal / Vertical / Cross
- Label Alignment: Left, Center, Right / Top, Center, Bottom
- Axis Assignment: Lower/Upper X Axis, Left/Right Y Axis.
- "Display legend items for markers" checkbox.

<		N	Marker Configuration ×						
Marker Tr Horizo Vertica Cross	ype ontal al	Marker Marker Label Horiz	# 1 Label ( Alignme contal: ertical:	High F ent Le To	flow eft O Cent	er () er ()	Right Bottom		
X-Position	1/1/1	998 12:0	MA 00			•	Lower X Axi	s 🔻	
Y-Position Line Style None Solid Dash Dott Dash	3900 e ned ed n-Dot	Dot			1000 acre-f Symbol St None Ellips Rect Diam Trian Cross X-Cro	t/month tyle e angle ond gle s s	Left Y Axis	•	
Line Width	Line C	l		×	Symbol Size	mbol Co	0 blor	<b>•</b>	
	Ok			Ap	ply		Cancel		

# **Axis Editing**

In the "Axes" edit mode, the plot items (*not curve and marker items*) within the Plot Item Table are enabled for selection.

The user also selects which of the four axes is to be modified among the selected plots (or all plots in the plot page) -- see the combo box at the top of the Setting Edit Controls panel.

Only those settings appropriate for the selected axis are presented. (DateTime axes support different settings).

All setting operations supported in the old Axis Configuration dialog (*not shown*) are supported in the new Configure Multiple Plots and Curves dialog.

Note that *the first image to the right* presents the recently developed capability (for RiverWare 7.1) for

	Axis	-	Axis: Lower X Axis
Axis Title			🖌 Axis Title
Label			Label
Unit Nar	me		✓ Unit Name
Axis Type			Axis Time Scaling
Linear			Apply each time plot is shown
O Logarit	hmic		Time Range Start:
O Probab	ility		Series Data Start 🔍 ?
			24:00 December 31, 1992
<ul> <li>Axis Bound</li> </ul>	ds		Time Range End:
Minimum:	400	1000 acre-ft/month	Series Data End 🔍 ?
Maximum:	1400	1000 acre-ft/month	24:00 January 31, 2003
	ISTORE SPELL	DOC!	
Use Cu Scale:	1000	rngs: ▼	Varied: Beginning of Every: Day
Use Cu Scale: Units:	1000 acre-ft/m	onth	Varied: Beginning of Every: Day • 1-21-2009 •
<ul> <li>Use Cu Scale: Units:</li> <li>Precision:</li> </ul>	1000 acre-ft/m 0	ings: vonth	O Varied: Beginning of Every: Day 1-21-2009 Other Times: 18:00
<ul> <li>Use Cuscale:</li> <li>Units:</li> <li>Precision:</li> <li>Format:</li> </ul>	1000 acre-ft/m 0 Float	ings: vonth	O Varied: Beginning of Every: Day ▼ 1-21-2009 ▼ Other Times: 18:00 ▼
<ul> <li>Use Cuscale:</li> <li>Units:</li> <li>Precision:</li> <li>Format:</li> <li>Axis Label</li> </ul>	1000 acre-ft/m 0 Float Angle	ings:	Varied: Beginning of Every: Day 1-21-2009 Other Times: 18:00 Axis Label Angle
<ul> <li>Use Cuscale:</li> <li>Units:</li> <li>Precision:</li> <li>Format:</li> <li>Axis Label</li> <li>No rotation</li> </ul>	1000 acre-ft/m 0 Float Angle	ings: ionth	Varied: Beginning of Every: Day 1-21-2009 Other Times: 18:00 Axis Label Angle No rotation
<ul> <li>Use Cuscale:</li> <li>Units:</li> <li>Precision:</li> <li>Format:</li> <li>Axis Label</li> <li>No rotation</li> <li>Axis Tick M</li> </ul>	1000 acre-ft/m 0 Float Angle	ings:	Varied: Beginning of Every: Day 1-21-2009 Other Times: 18:00 Axis Label Angle No rotation Axis Tick Marks
<ul> <li>Use Cuscale: Units: Precision: Format:</li> <li>Axis Label</li> <li>No rotation</li> <li>Axis Tick M</li> </ul>	1000 acre-ft/m 0 Float Angle	ings:	Varied: Beginning of Every: Day 1-21-2009 Other Times: 18:00 Axis Label Angle No rotation Axis Tick Marks Max Major Ticks: 8
<ul> <li>Use Cuscale:</li> <li>Units:</li> <li>Precision:</li> <li>Format:</li> <li>Axis Label</li> <li>No rotation</li> <li>Axis Tick M</li> <li>Max Major T</li> </ul>	1000 acre-ft/m 0 Float Angle n Marks Ticks: 8	ings:	✓ Varied:         Beginning of Every:         Day         1-21-2009         Other Times:         18:00         ✓ Axis Label Angle         No rotation         ✓ Axis Tick Marks         Max Major Ticks:       8         ▲ Max Minor Ticks:       5

support of user specified scale and units for a numeric axis. See the "Axis Numeric Display" setting group.

# **Background Editing** -- **Background Color and Plot Grid**

As with the "Axes" edit mode (*see above*), in the "Background" edit mode, the plot items (*not curve and marker items*) within the Plot Item Table are enabled for selection. Changes to plot background color and grid configuration can be applied to the selected plots -- or to *all plots* in the plot page.

All setting operations supported in the old Grid Configuration dialog (*see below*) are supported in the new Configure Multiple Plots and Curves dialog.

K	Grid Configuration ×					
X Grid						
Lower X As Upper X As	cis Major cis O cis O	Tick Grid n ff	Minor Tick Grid On Off			
Y Grid						
<ul> <li>Left Y Axis</li> <li>Right Y Axis</li> </ul>	Major On Of	Tick Grid I f	Minor Tick Grid On Off			
Major Grid Style		Minor G	Grid Style			
<ul> <li>None</li> <li>Solid</li> <li>Dashed</li> <li>Dotted</li> <li>Dash-Dot</li> <li>Dash-Dot-Dot</li> </ul>	ot		lone Golid Dashed Dotted Dash-Dot Dash-Dot-Dot			
Major Grid Width 0 Set Major Grid Colo	÷	Minor Gri	d Width 0			
Ok	Ap	ply	Cancel			

Edit: 🔿 Curves 🔿 Axes 🖲 Background
Background Color
Set Background Color
X Grid
Lower X Axis      Upper X Axis
Major Tick Grid Shown
Minor Tick Grid Shown
Y Grid
Left Y Axis Right Y Axis
Major Tick Grid Shown
Minor Tick Grid Shown
✓ Major Grid
Line Style: Solid 🔻
Line Width: 0
Line Color:
Minor Grid
Line Style: None 🔻
Line Width: 0
Line Color:
Apply to All Apply to Selected

Note: During this development, a previously existing defect was discovered which prevented the grid from being aligned with the "other" axis in each dimension (i.e. the Right Y Axis or the Upper X Axis). This has been fixed for RiverWare 7.0.6 and 7.1 development. See Gnats 5923, "Alignment of plot grid with right axis is not working."

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