

DSM2-SJR Modeled Travel Time

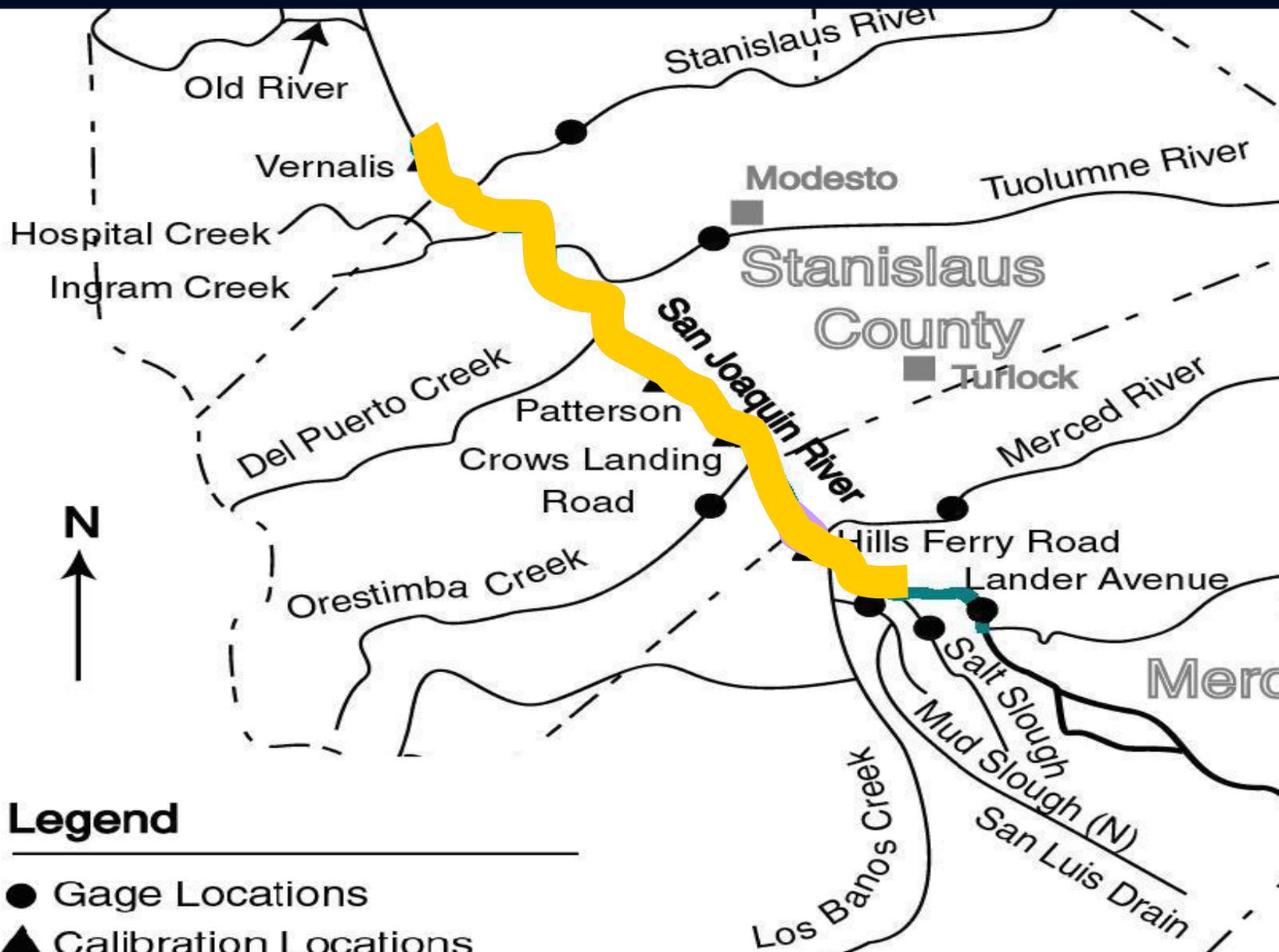


Jim Wilde
Dept. of Water Resources
Bay-Delta Office

Information presented is preliminary and subject to revision. 2/16/05

Travel Time Issue

- 1994 Dye-Tracer Studies in the 1997 report by Charles Kratzer.
- Travel time in DSM2-SJR is 50% longer than the field study.
- Possible issues with water quality modeling of non-conservative constituents such as DO and temperature.



Legend

- Gage Locations
- ▲ Calibration Locations

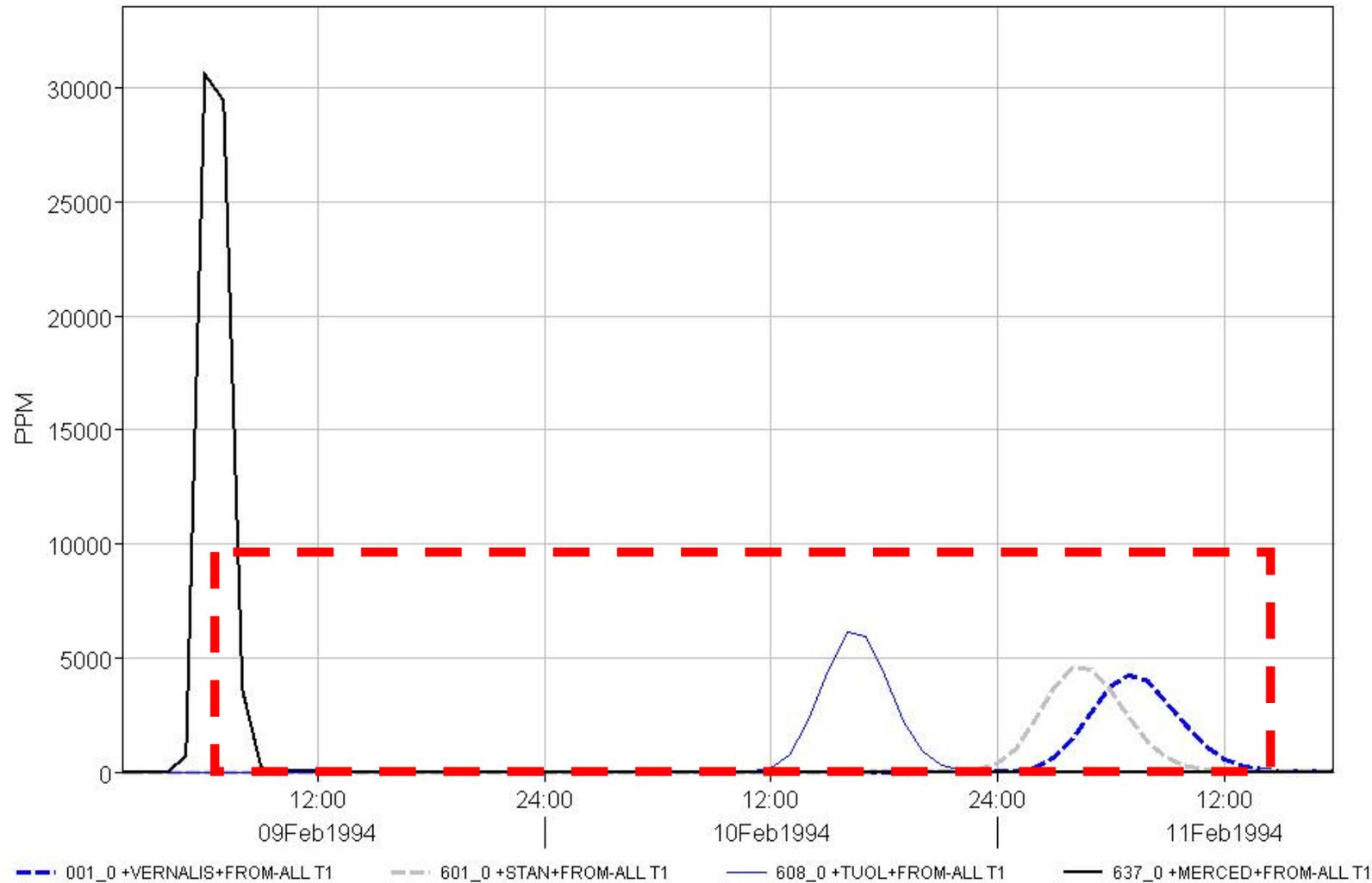
approx. scale 
0 5 10 mi

June 20, 1994

Original Cross Sections and Manning's n

/DSM2-QUAL-6.2+CHAN/001_0/T1/01 SEP 1993/1 HOUR/+VERNALIS+FROM-ALL/

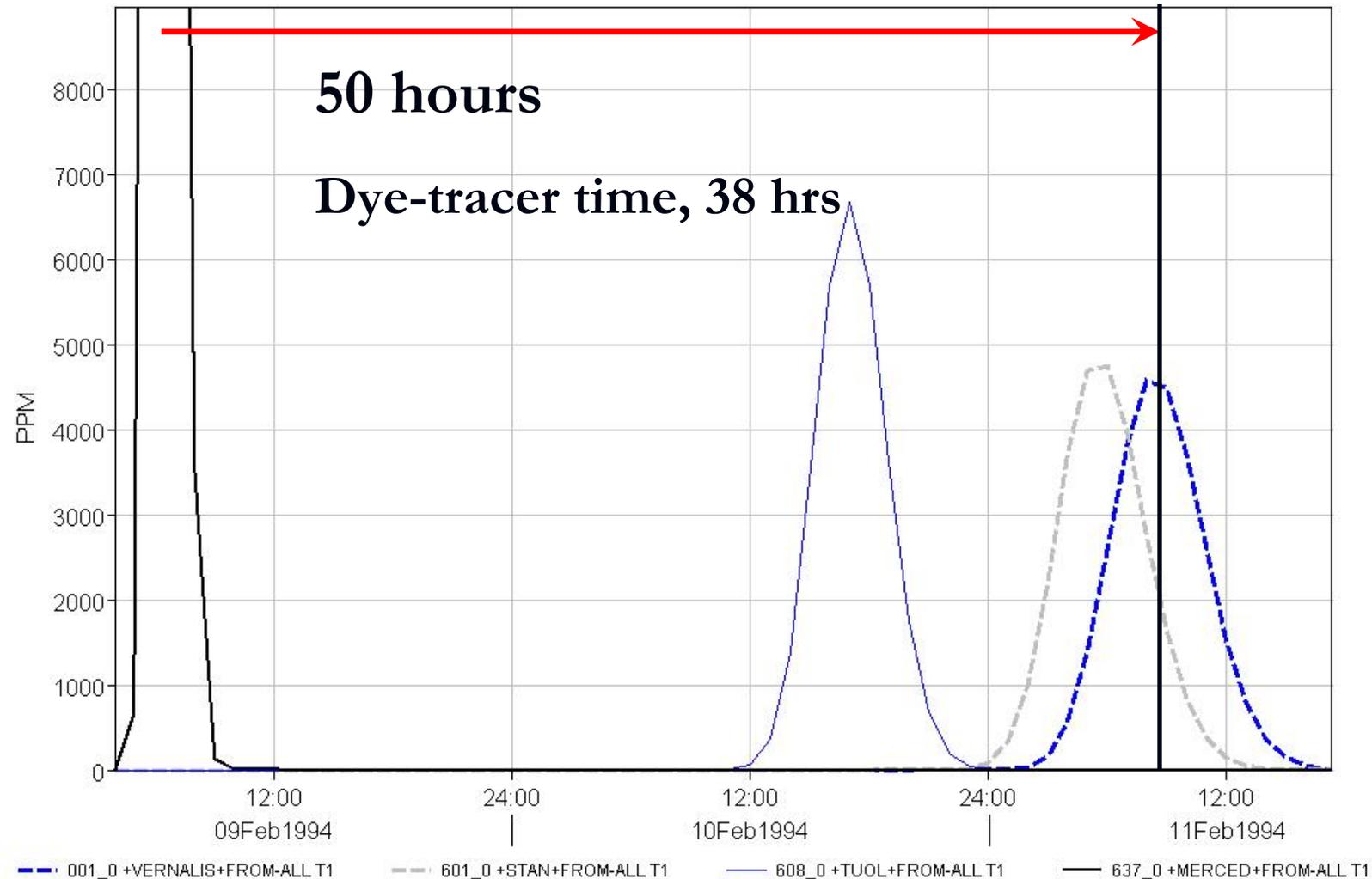
SJR Travel Time
(original grid)



Original Cross Sections and Manning's n

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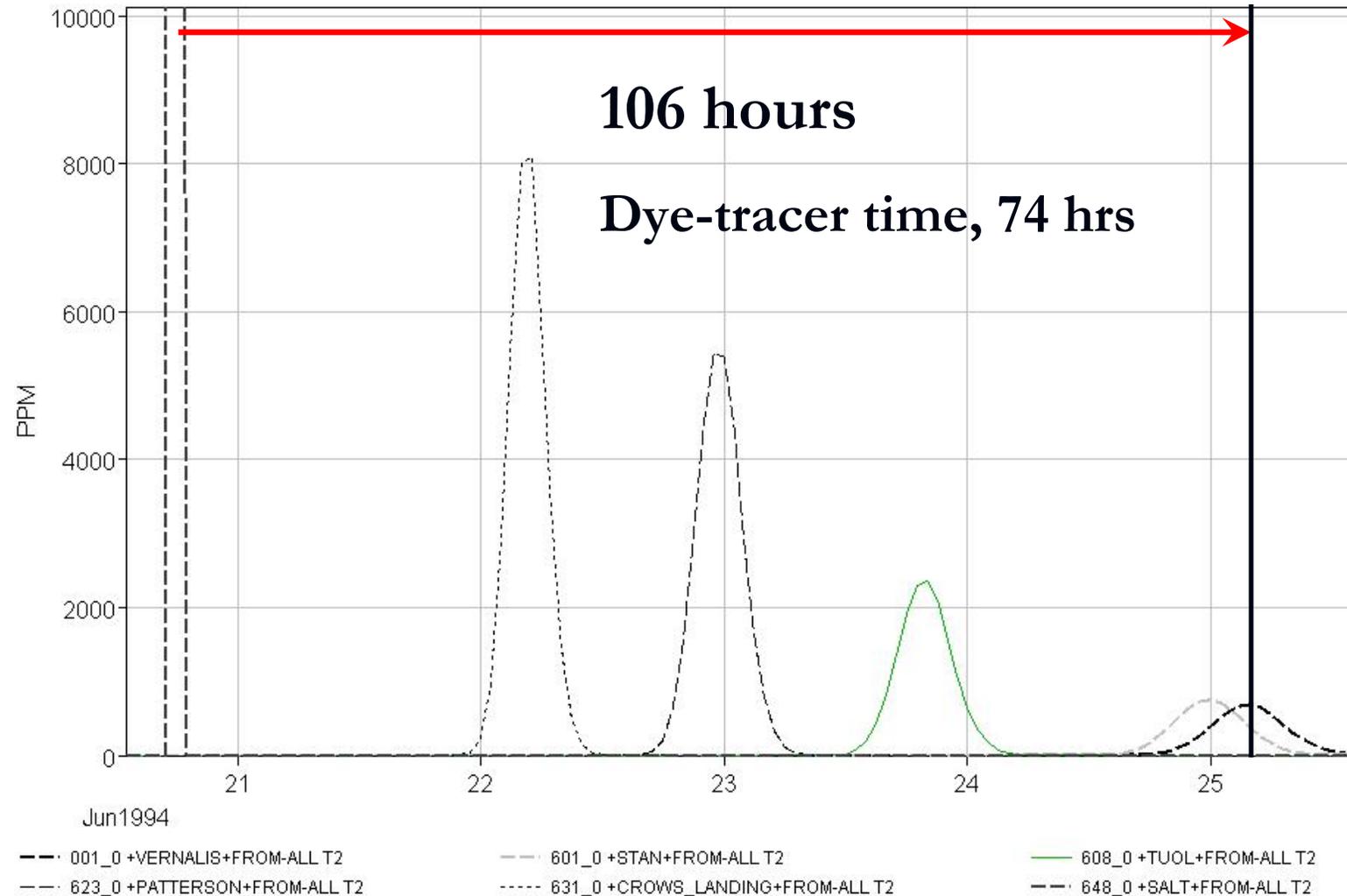
SJR Travel Time
(original grid)



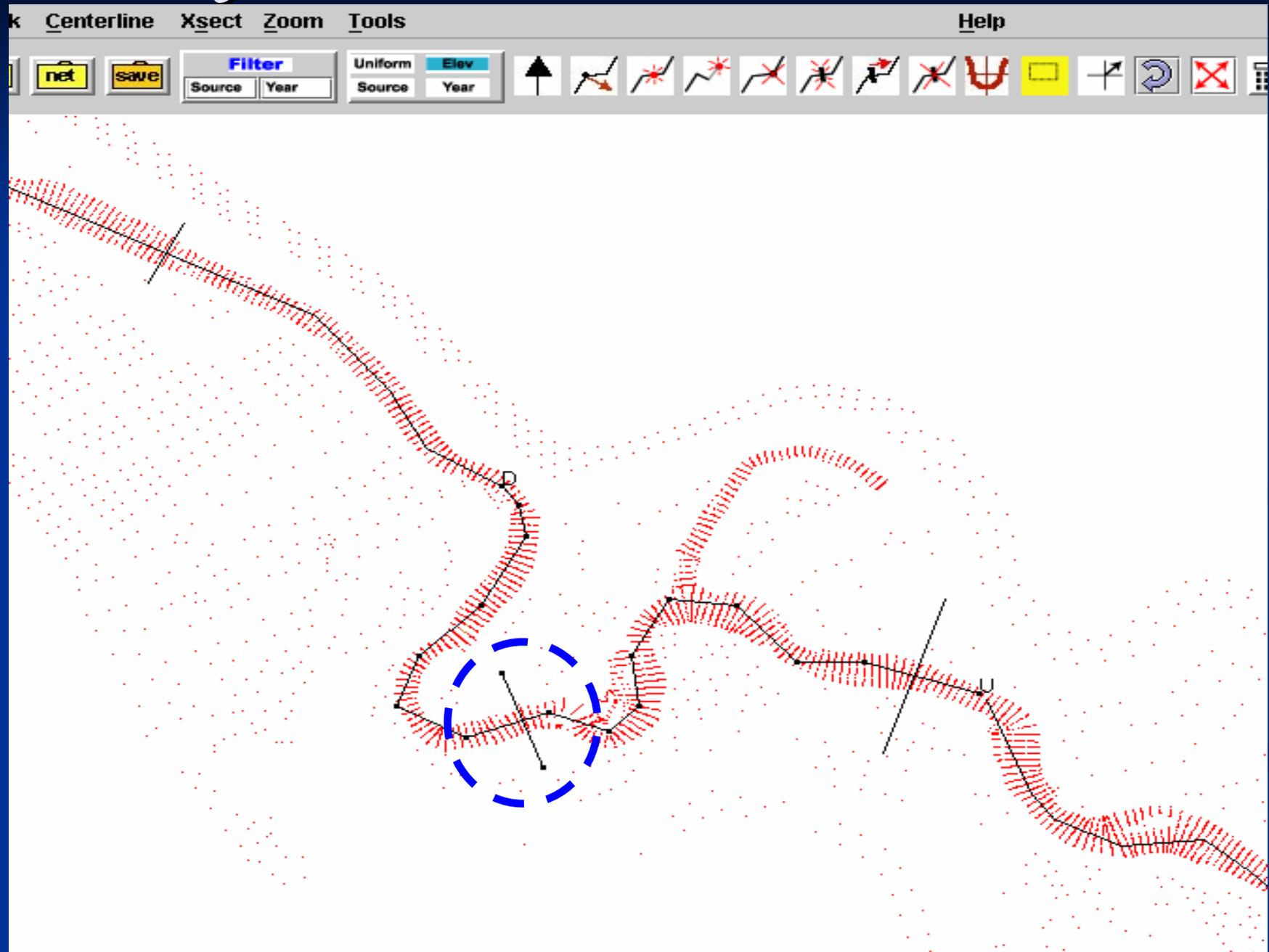
Original Cross Sections and Manning's n

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SJR Travel Time
(original grid)

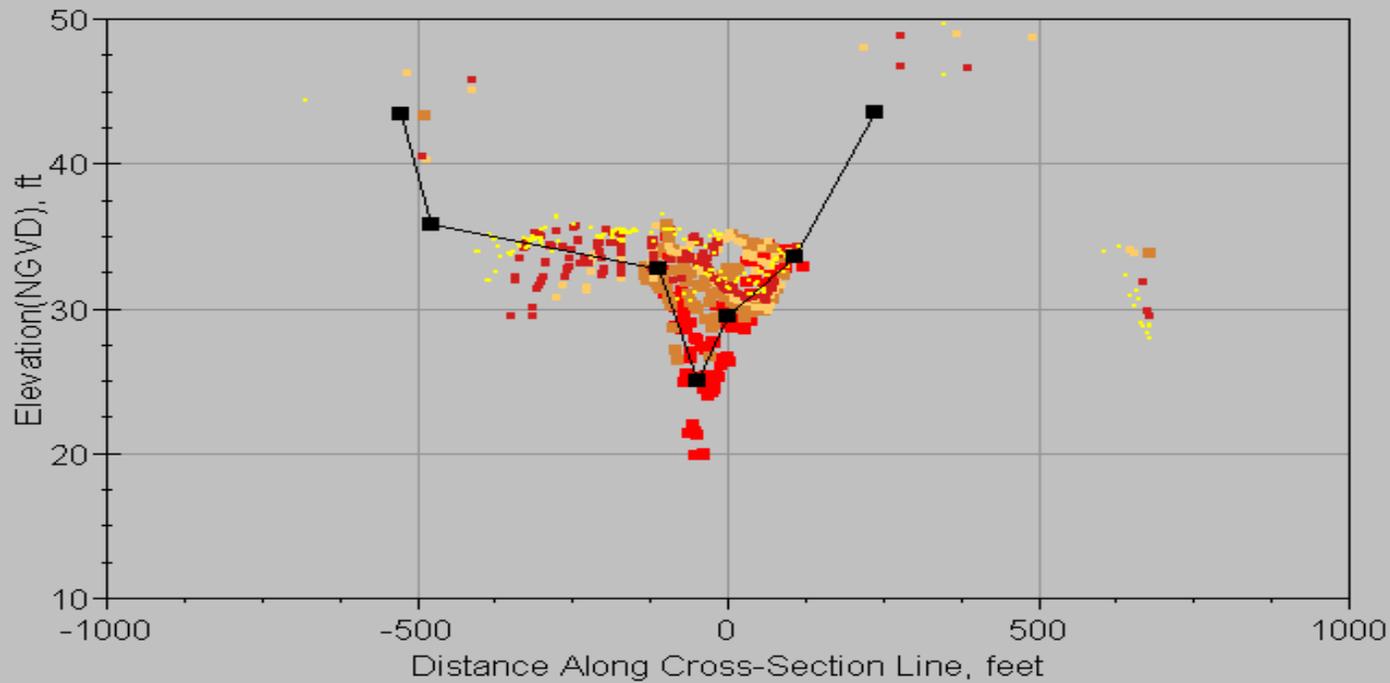


SJR Elevation Data in CSDP



Old Irregular Cross Section near Patterson

Cross-section 625_1, thickness=1000.0 ft.



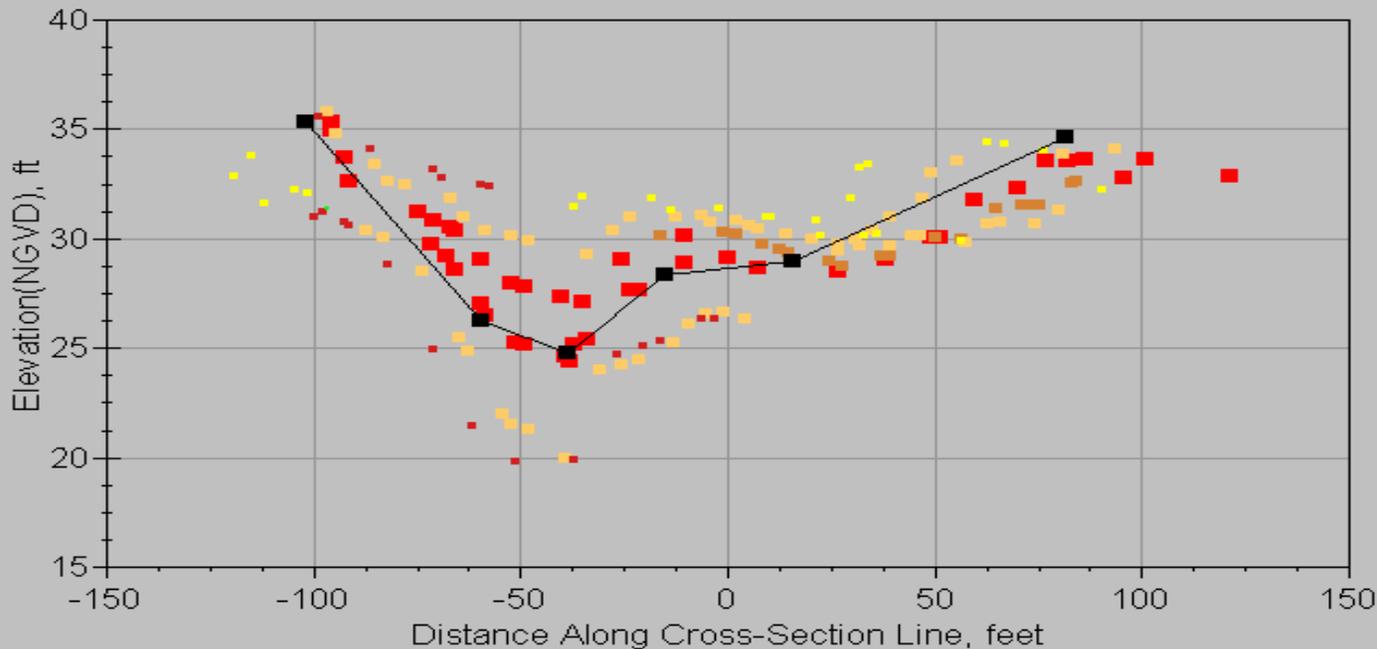
Elevation, ft(NGVD) = 0.0
Width, ft = 0.0
Wetted Perimeter, ft = 0.0
Area, square ft = 0.0
HydraulicDepth, ft = 0.0

METADATA

- 0.0 ft from Cross-section line
- 100.0 ft from Cross-section line
- 200.0 ft from Cross-section line
- 300.0 ft from Cross-section line
- 400.0 ft from Cross-section line
- cross-section points

New Irregular Cross Section near Patterson

Cross-section 625_1, thickness=300.0 ft.



Elevation, ft(NGVD) = 0.0
Width, ft = 0.0
Wetted Perimeter, ft = 0.0
Area, square ft = 0.0
HydraulicDepth, ft = 0.0

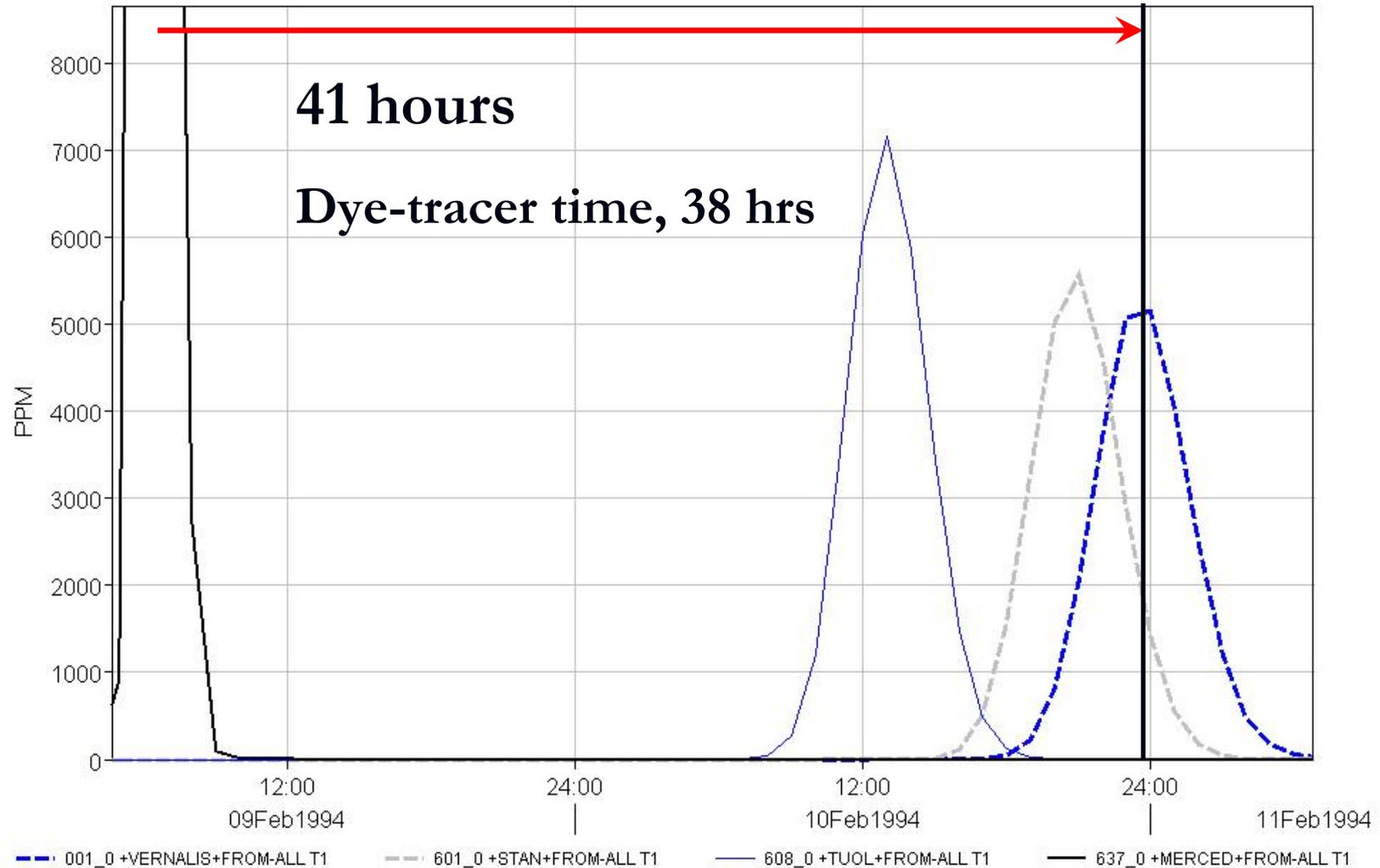
METADATA

- ■ ■ 0.0 ft from Cross-section line
- ■ ■ 30.0 ft from Cross-section line
- ■ ■ 60.0 ft from Cross-section line
- ■ ■ 90.0 ft from Cross-section line
- ■ ■ 120.0 ft from Cross-section line
- ■ ■ 150.0 ft from Cross-section line
- ■ ■ cross-section points

Irregular Cross Section Adjustments Only

/DSM2-QUAL-6.2+CHAN/001_0/T1/01 SEP1993/1 HOUR/+VERNALIS+FROM-ALL/

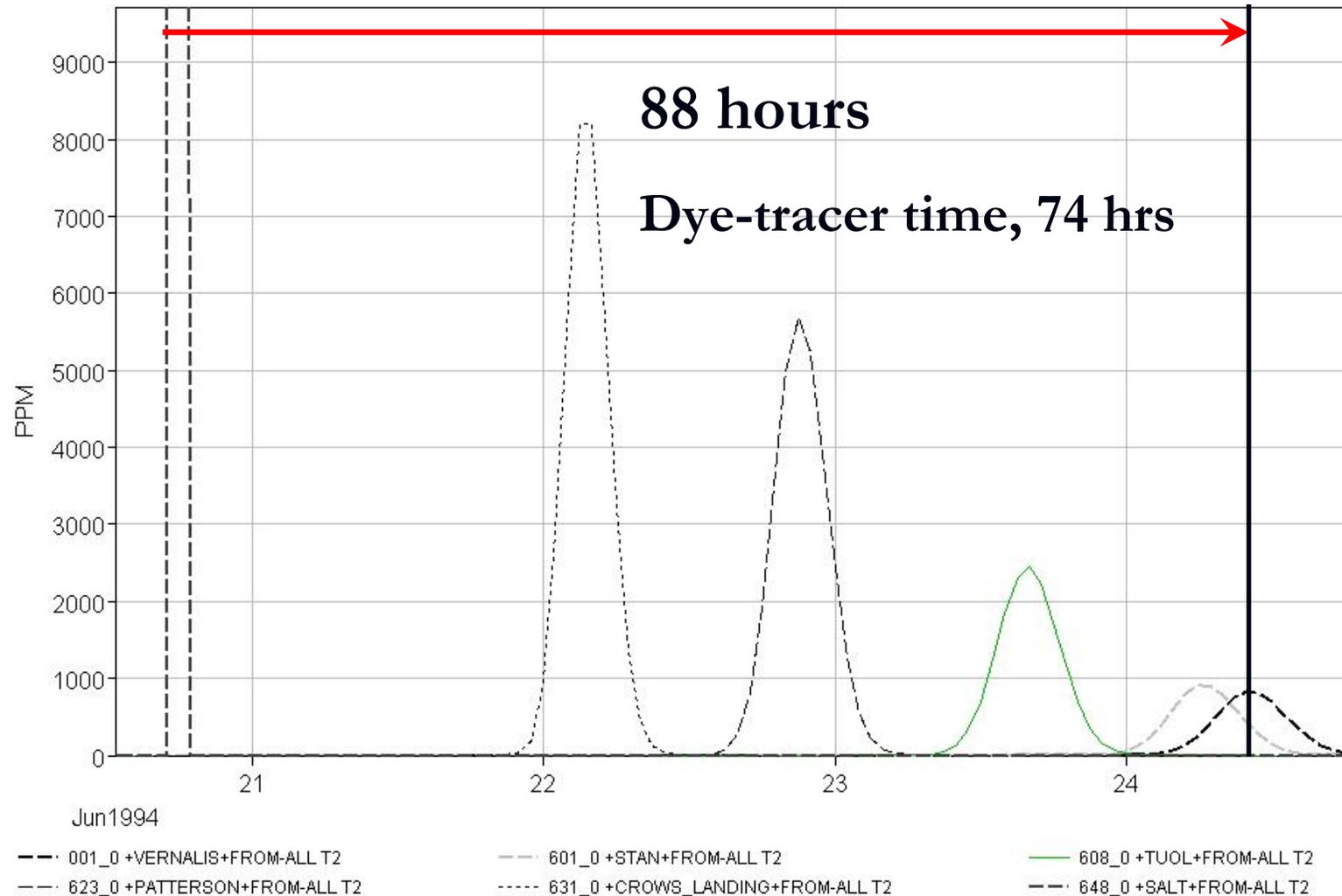
SJR Travel Time
(Grid Change Only)



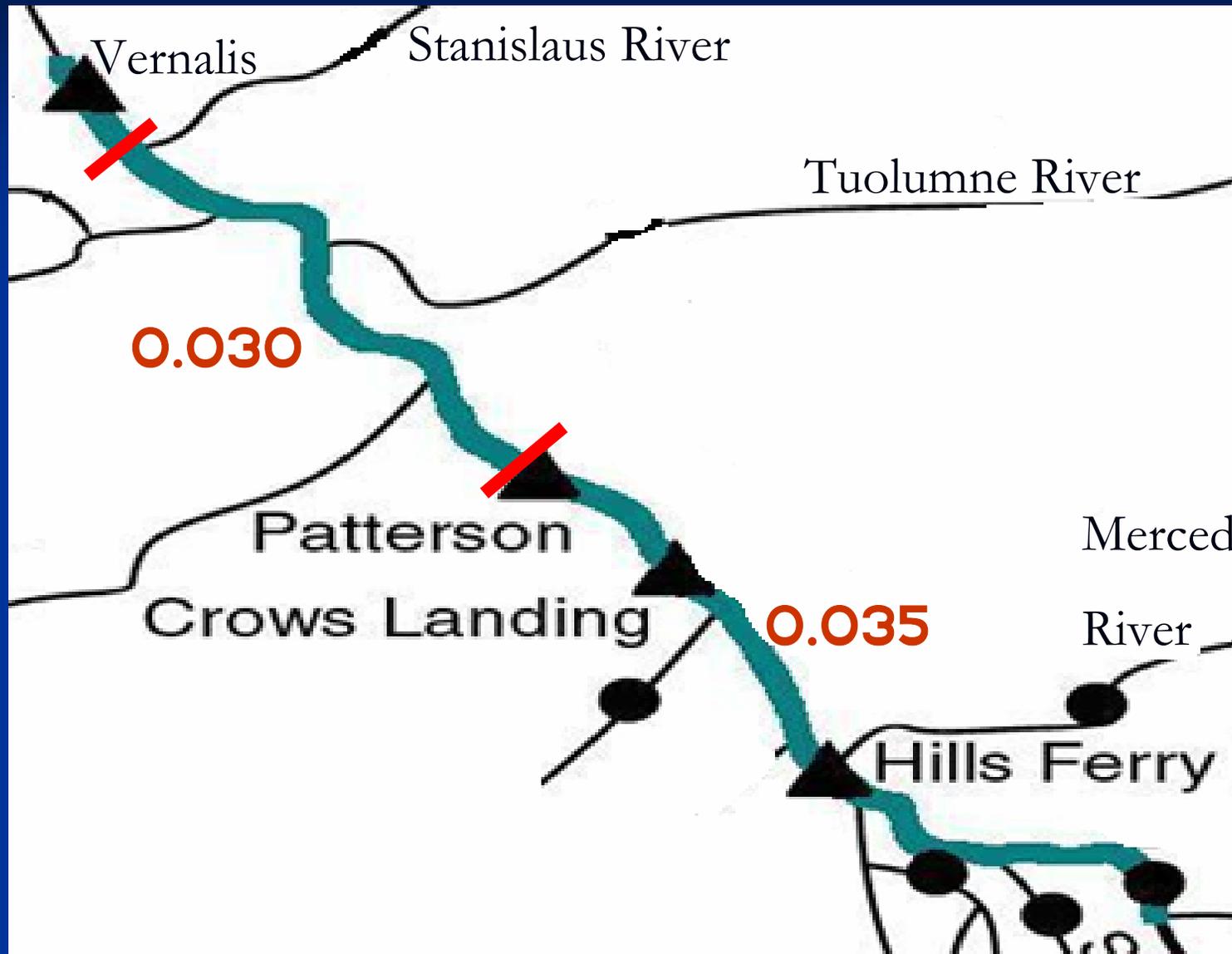
Irregular Cross Section Adjustments Only

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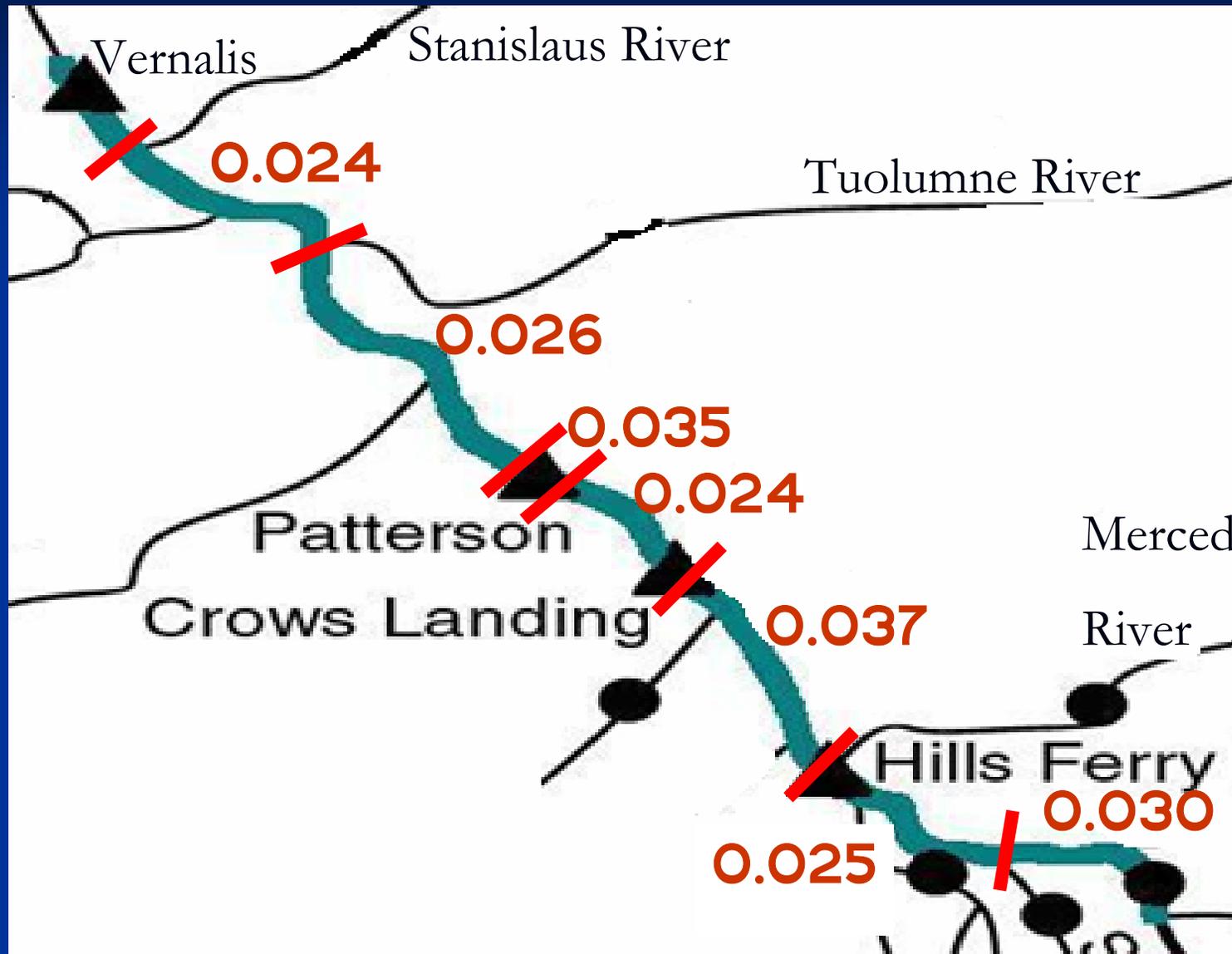
SJR Travel Time
(New Grid Only)



Original Manning's n Values



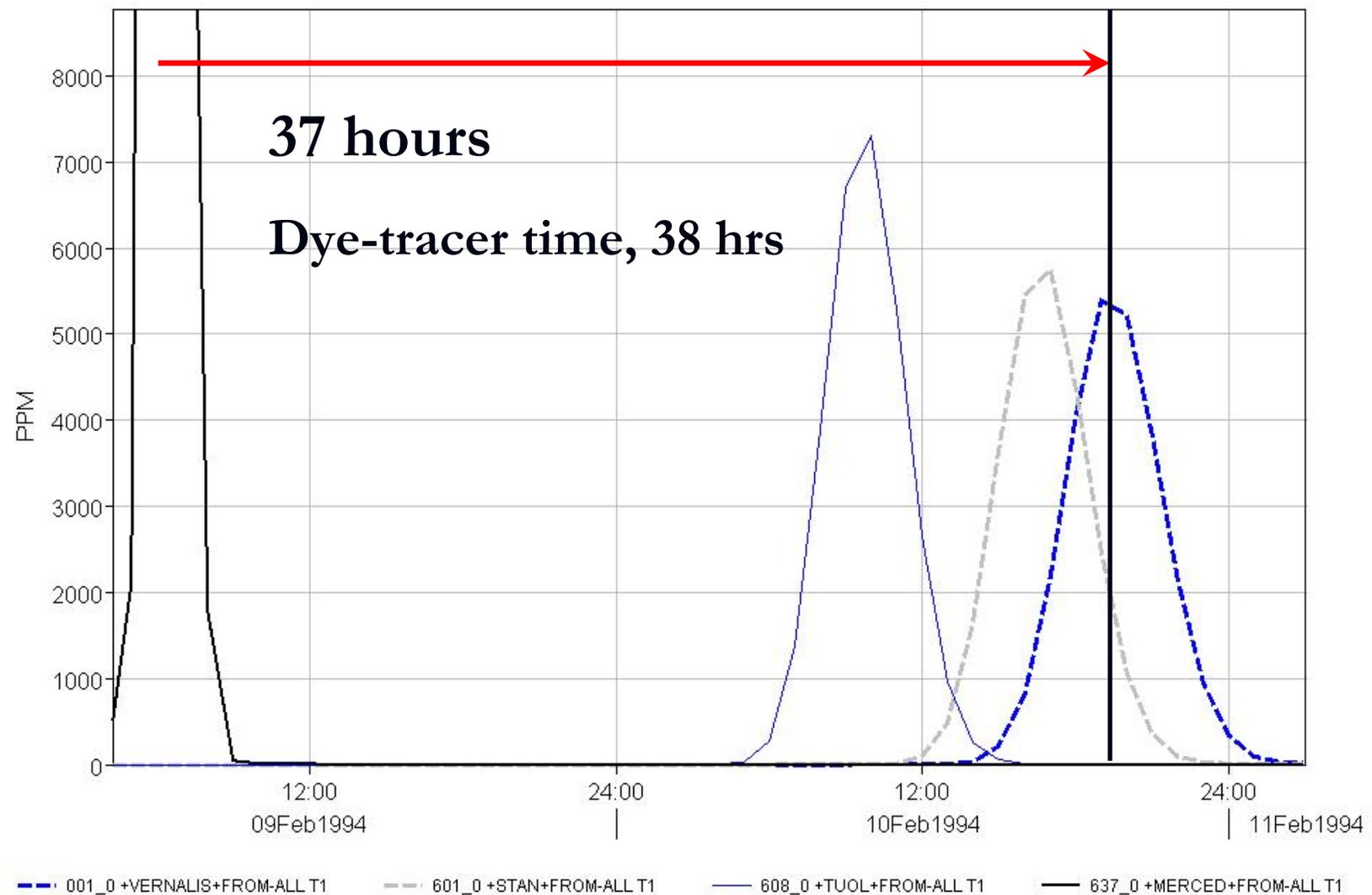
Manning's n Adjustments



Final Grid and Manning's n Adjustments

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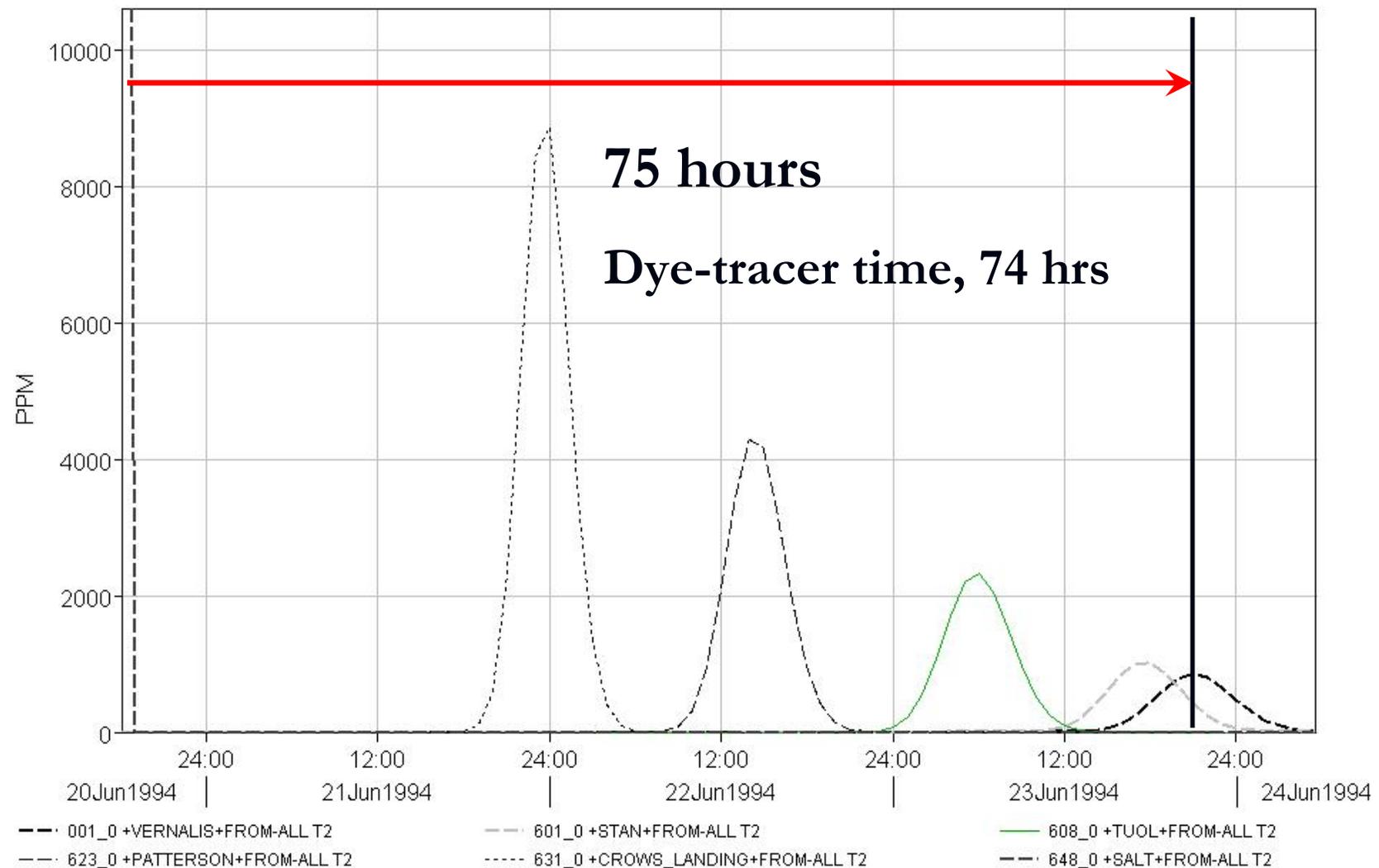
SJR Travel Time



Final Grid and Manning's n Adjustments

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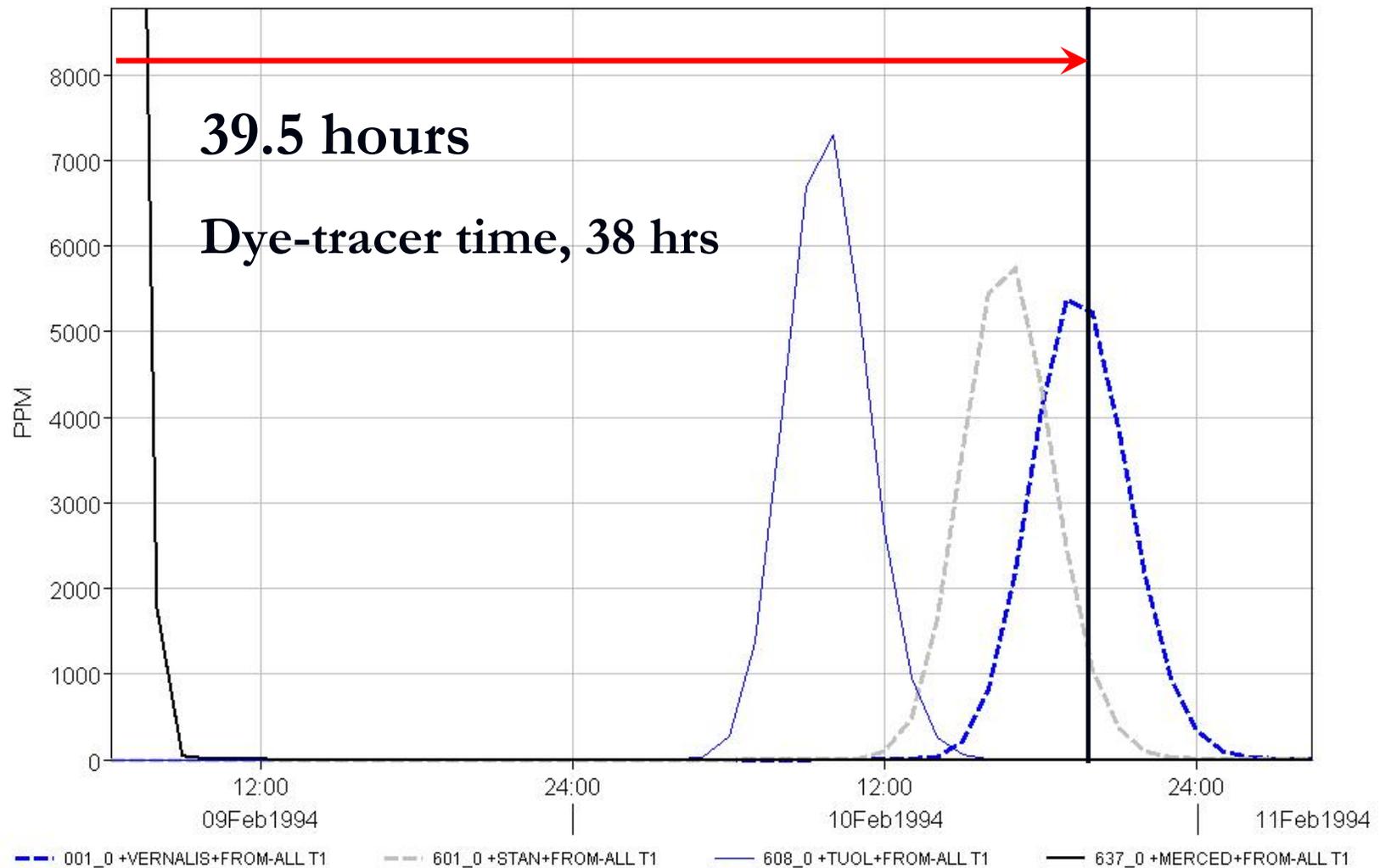
SJR Travel Time
(with add-water)



SJR without Add-water

/DSM2-QUAL-6.2+CHAN/001_0/T1/01 SEP 1993/1 HOUR/+VERNALIS+FROM-ALL/

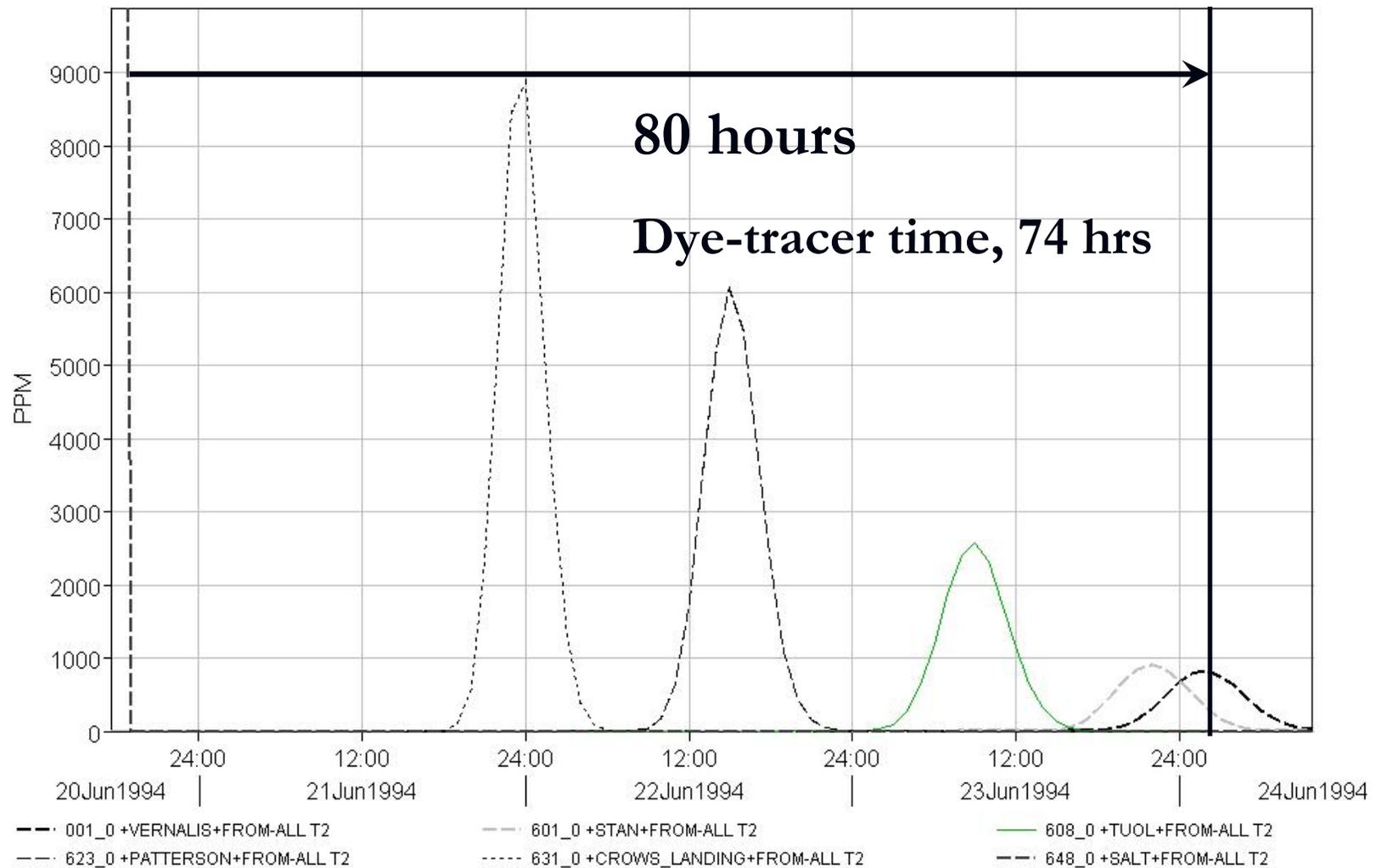
SJR Travel Time
(without addwater)



SJR without Add-water

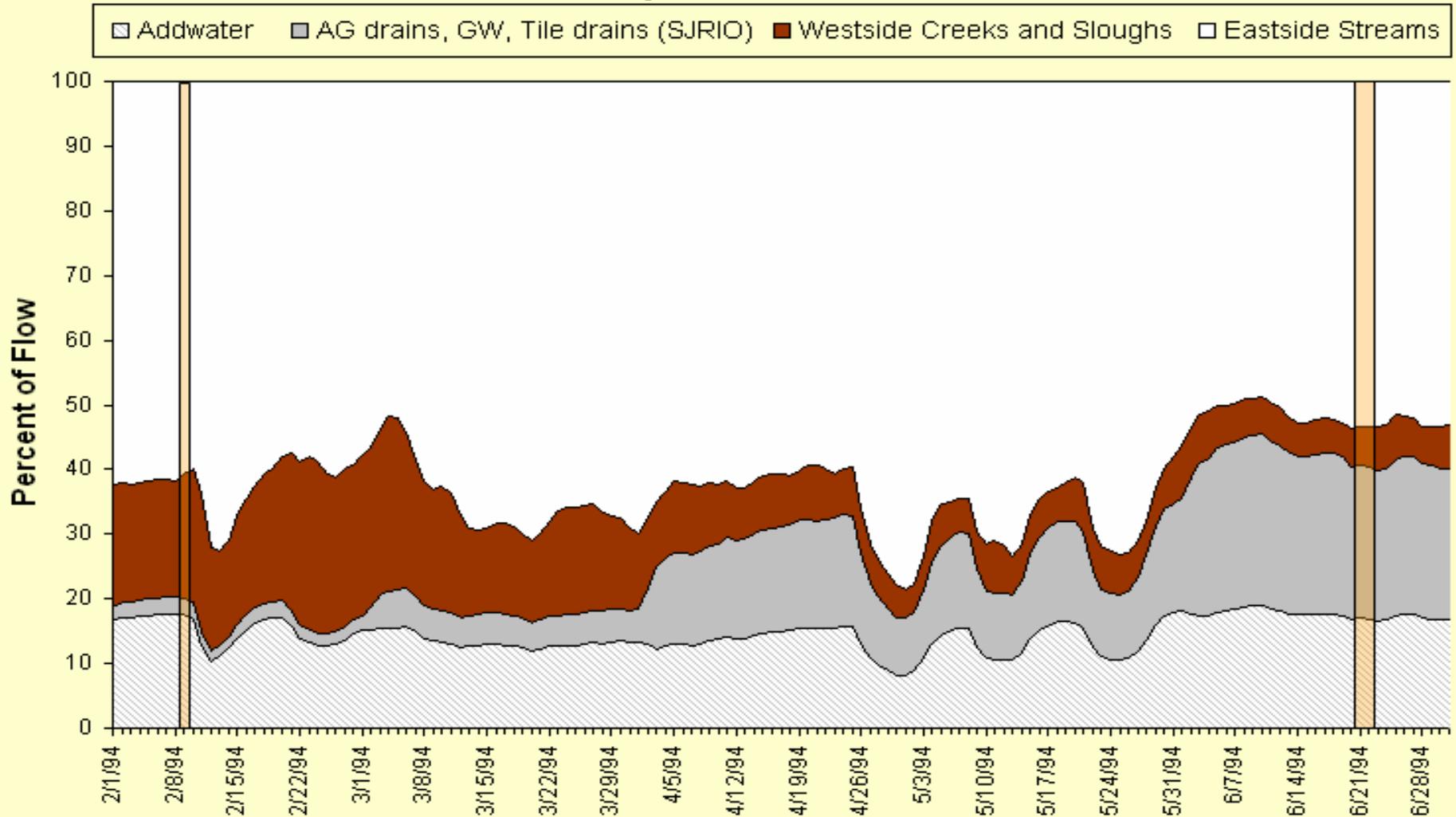
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New SJR Travel Time
(without add-water)



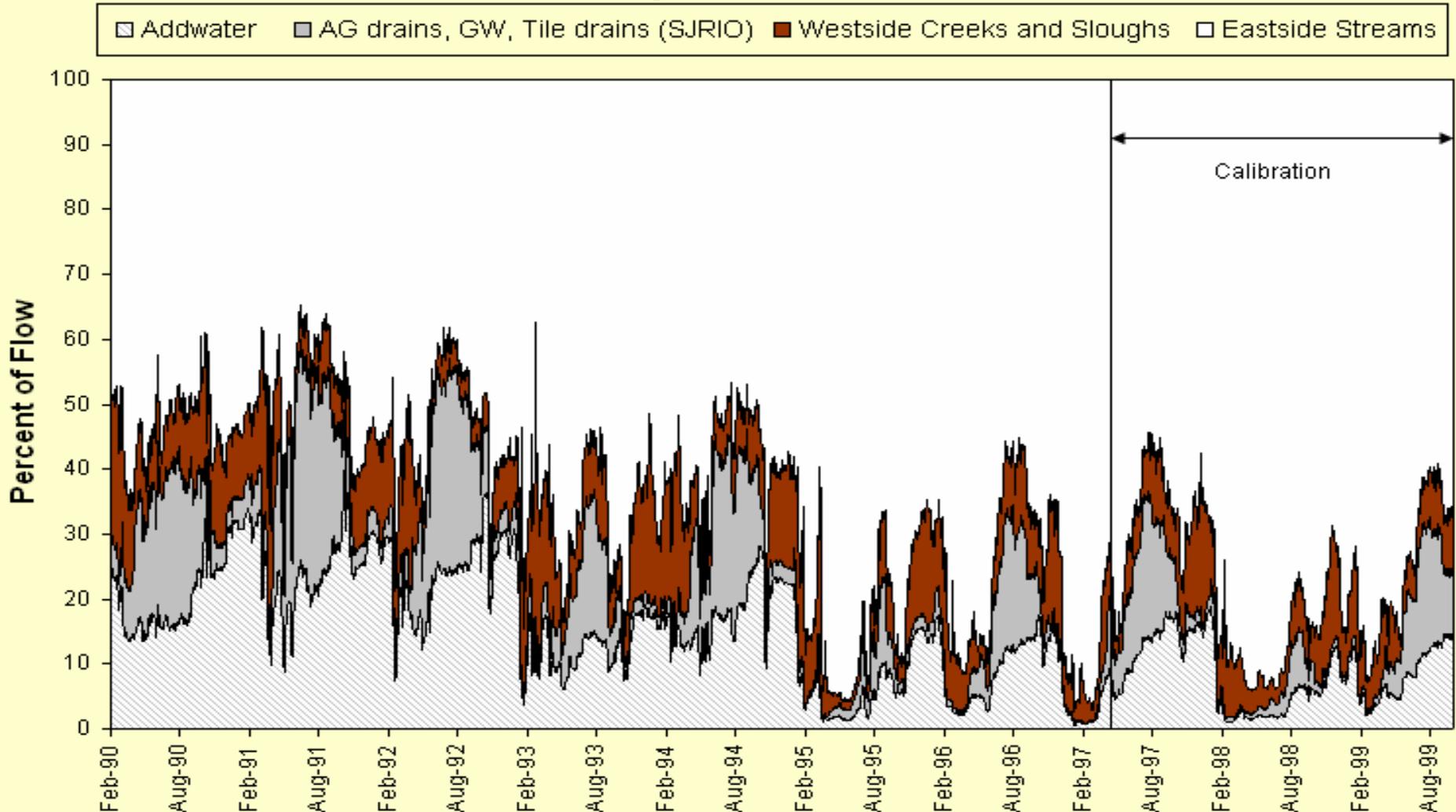
Volumetric Fingerprint of SJR at Vernalis

Volumetric Source Fingerprint of DSM2 Historic San Joaquin River Flow near Vernalis



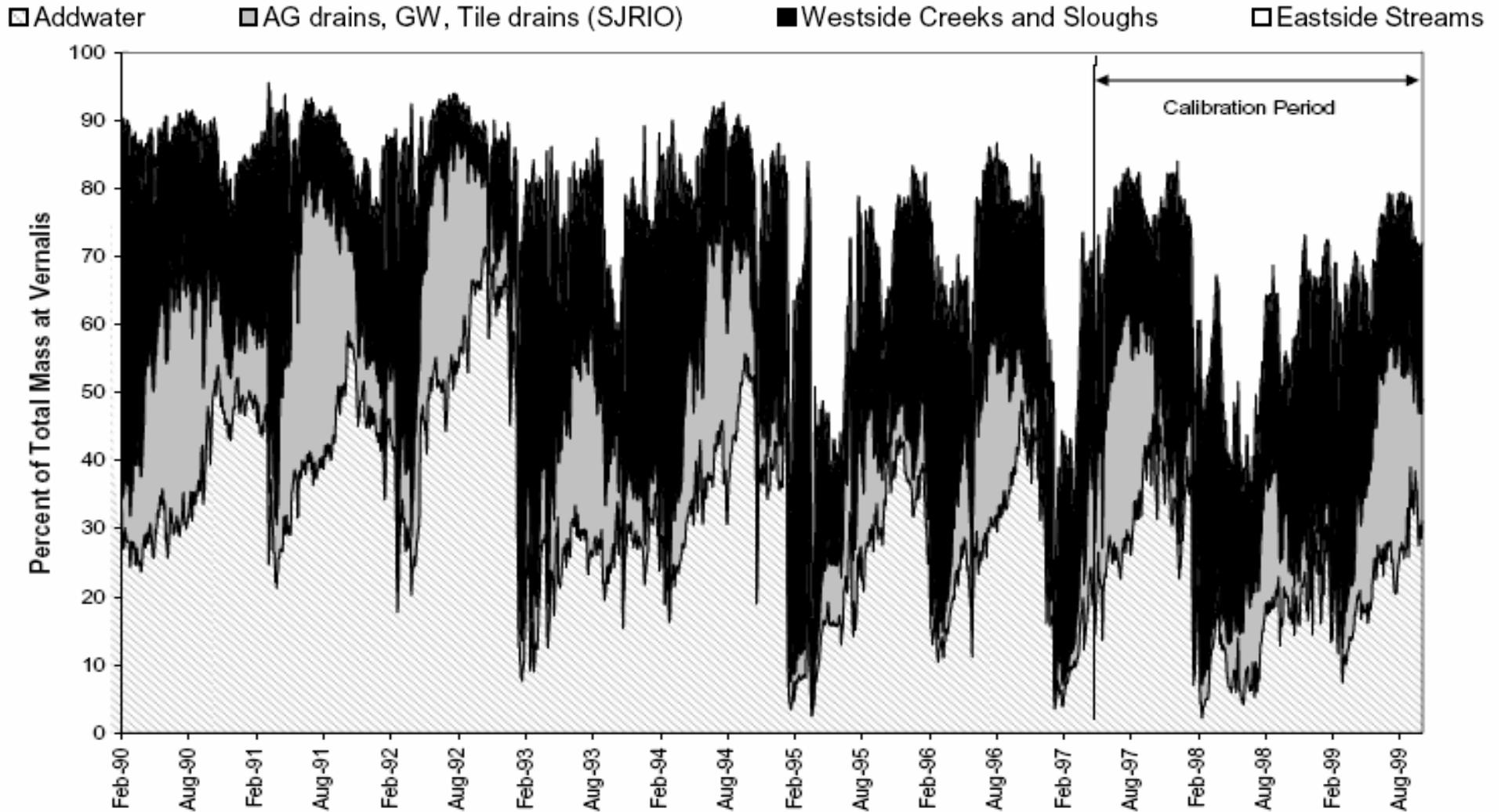
Volumetric Fingerprint of SJR at Vernalis

Volumetric Source Fingerprint of DSM2 Historic San Joaquin River Flow near Vernalis



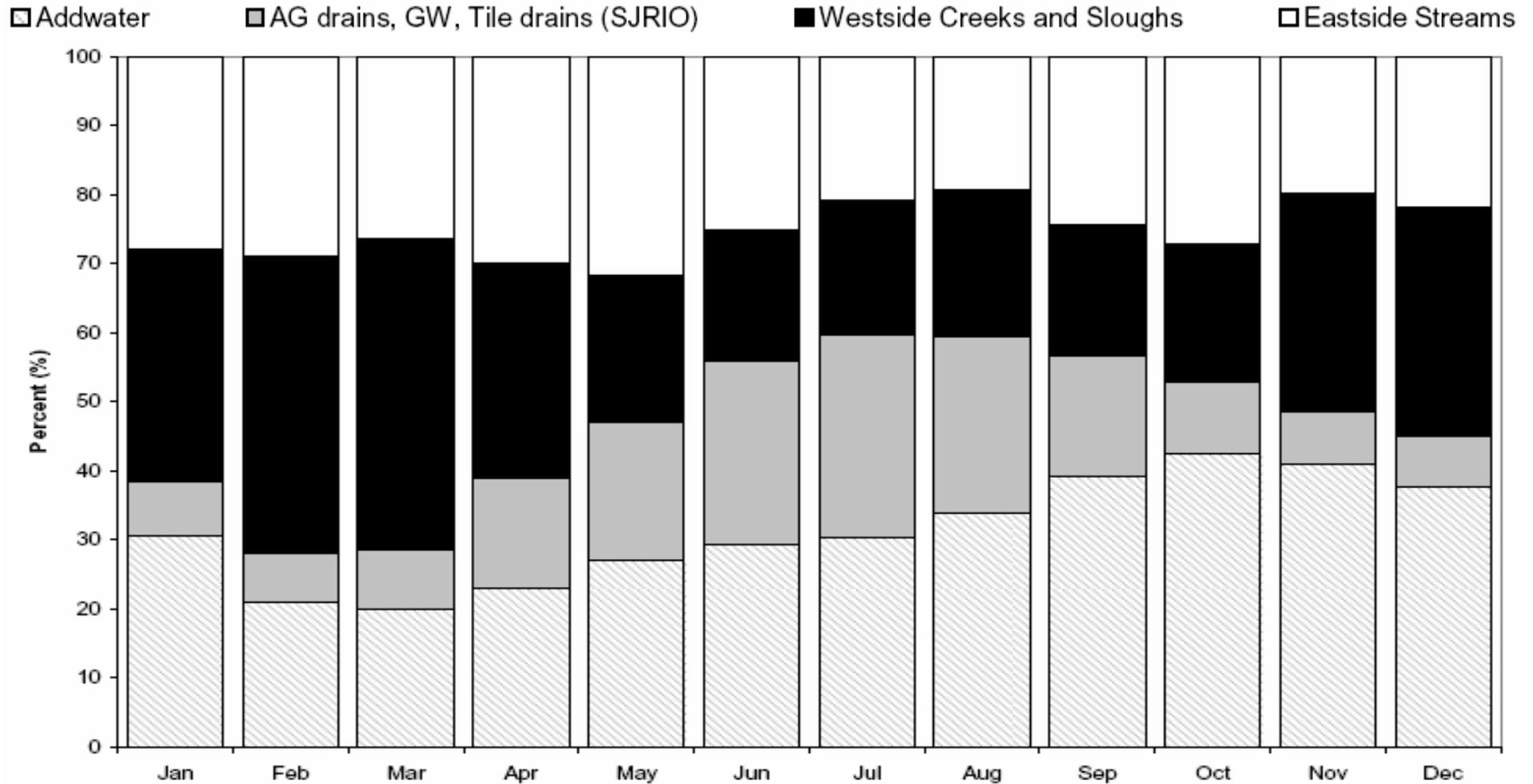
Sources of EC Mass Loads

Mass Fingerprint of the Salinity at Vernalis



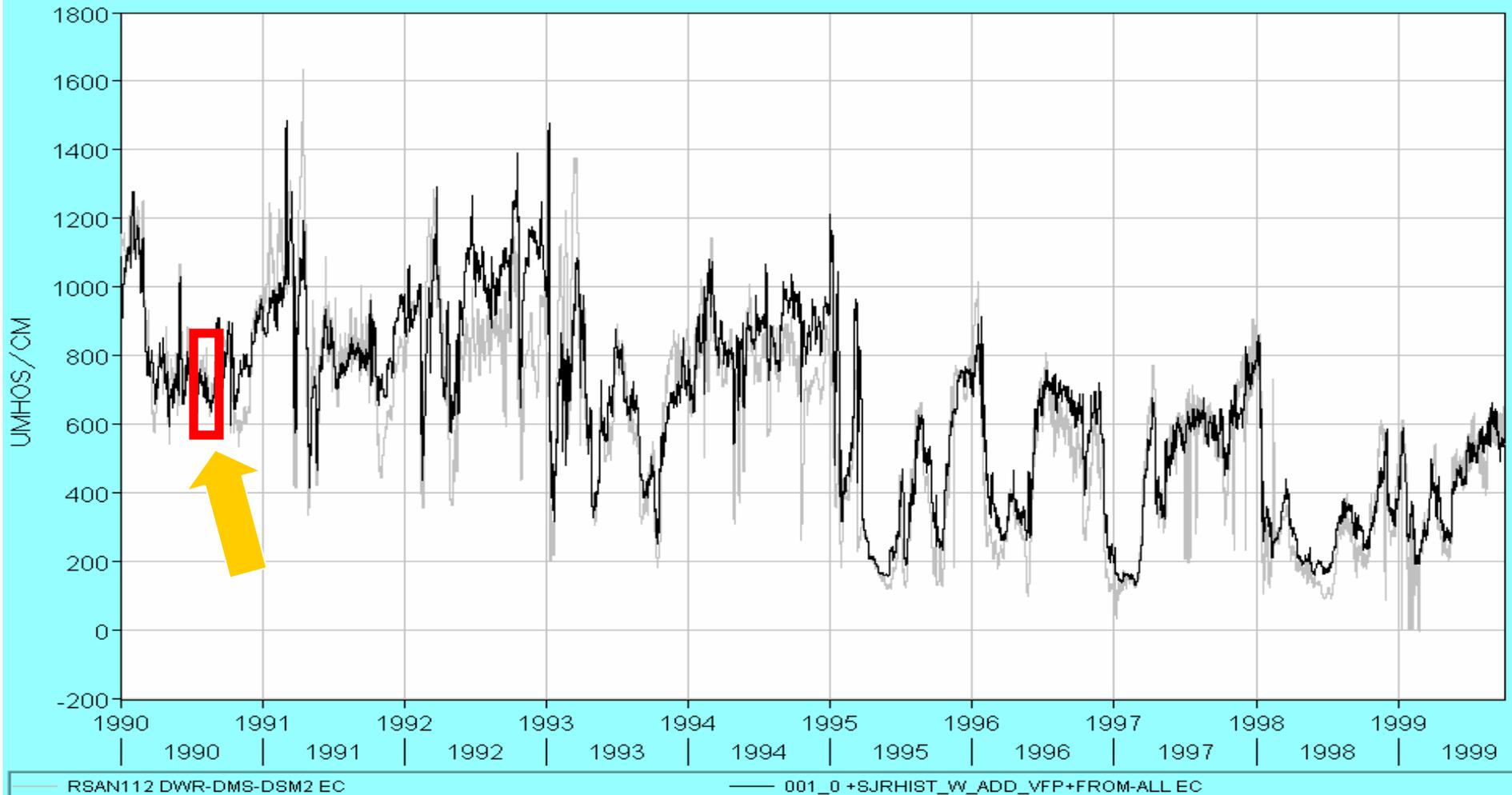
EC at Vernalis

Average Monthly Source of Mass at Vernalis



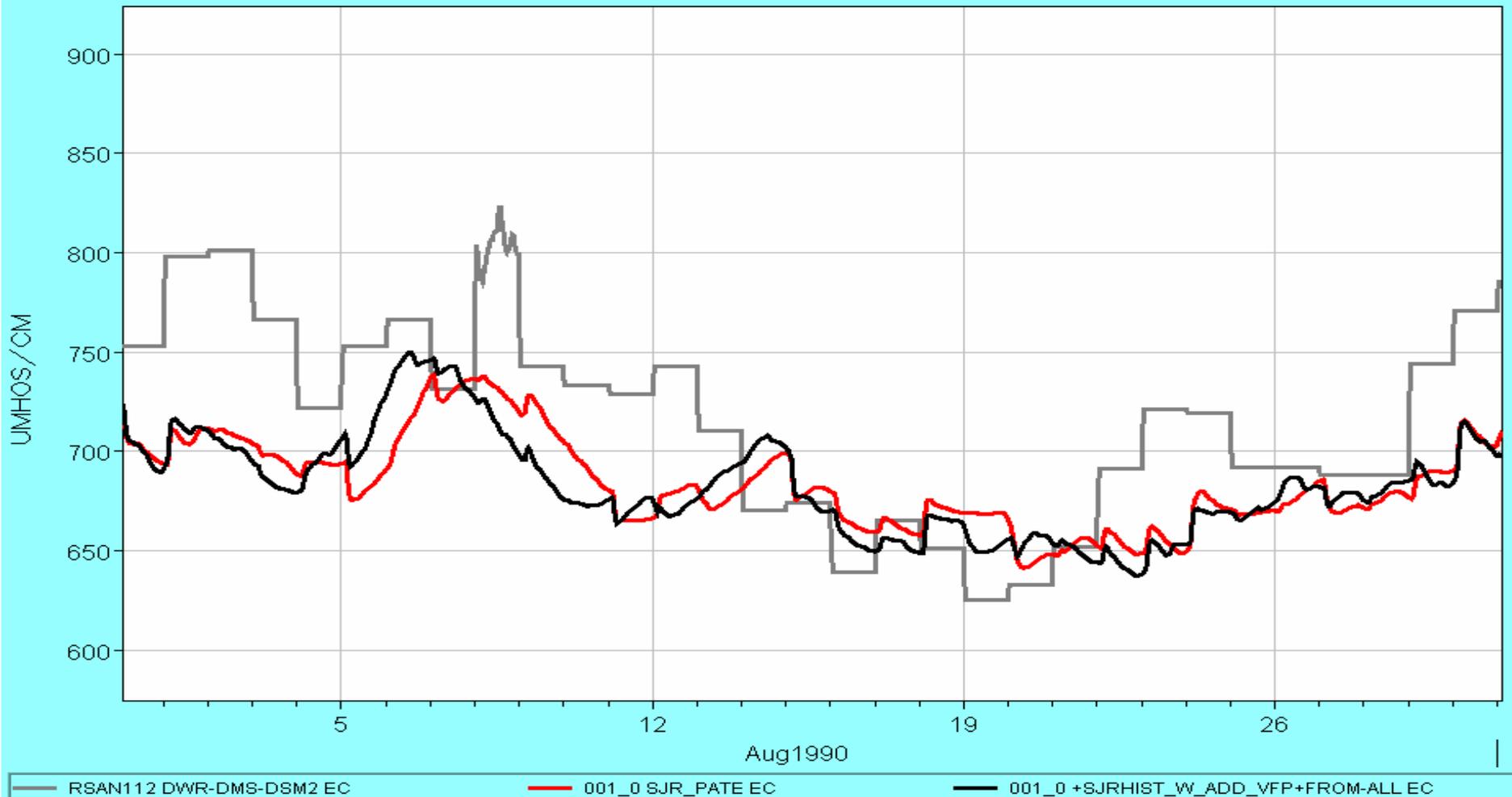
EC at Vernalis

Model vs. Historic SJR EC at Vernalis



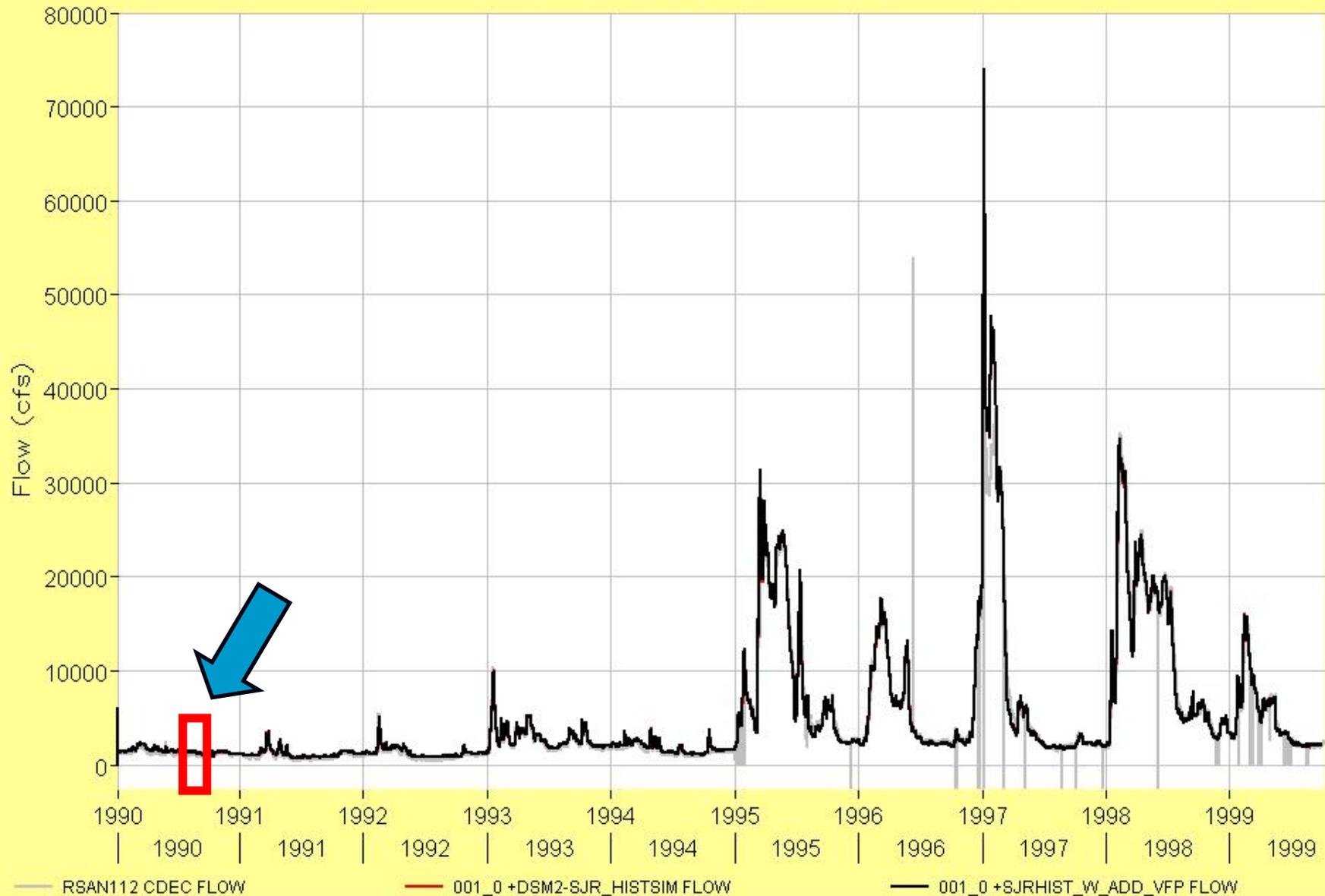
EC at Vernalis

Model vs. Historic SJR EC at Vernalis



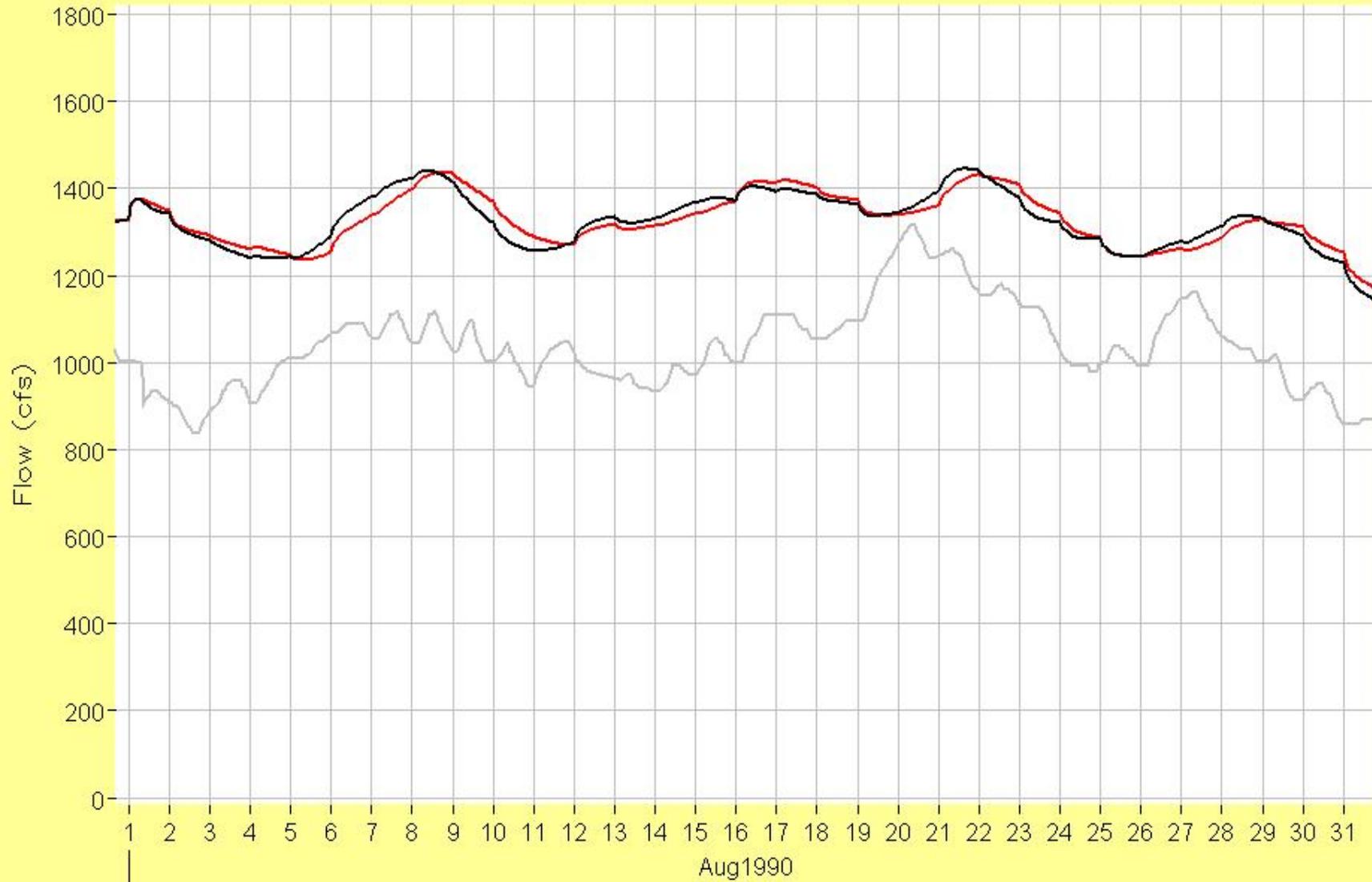
SJR Flow at Vernalis

Model vs. Historic SJR Flow at Vernalis



SJR Flow at Vernalis

Model vs. Historic SJR Flow at Vernalis



RSAN112 CDEC FLOW

001_0 +DSM2-SJR_HISTSIM FLOW

001_0 +SJRHIST_W_ADD_VFP FLOW

References

Brown R. and Huber A, Initial Simulations of 2000–2003 Flows and Water Quality in the San Joaquin River Using the DSM2-SJR Model, Jones and Stokes 04118, November 2004

Kratzer C.R. and R.N. Biagtan. 1997. Determination of Traveltimes in the Lower San Joaquin River Basin, California, from Dye-Tracer Studies During 1994-1995. USGS Water-Resources Investigations Report 97-4018 National Water Quality Assessment Program, Sacramento Ca.

Pate T. 2001 Chapter 5: DSM2 San Joaquin boundary extension in Methodology for flow and salinity estimates in the Sacramento-San Joaquin Delta and Suisun Marsh. Twenty-second annual progress report from the California Department of Water Resources to the State Water Resources Control Board.

Wilde J. and Suits B., DSM2-San Joaquin River Extension simulation over the 1990-1999 period, CADWR, Bay-Delta Office, Modeling Support, September 2004
<http://baydeltaoffice.water.ca.gov/modeling/deltamodeling/dsm2sjrextension.cfm>