

**Description of historical DSM2 Particle Tracking Animation
With Temporary Barriers Installed in South Delta
October 13, 2005**

Results from Particle Tracking Model simulations over historical periods were animated to visually demonstrate the movement of Sacramento River water into the south Delta into the vicinity of Old River at Tracy Road, Middle River at Union Point, and San Joaquin River at Brandt Bridge when the temporary barriers were in place. The two animations inject 10,000 particles on September 1, 2002 and on June 15, 2003, immediately upstream of the Delta Cross Channel and follow the movement of the particles for 90 days. These two periods were compared because the San Joaquin flows and the SWP and CVP exports were comparable. The Particle Tracking Model simulations are shown graphically in Figures 1 and 2, as well in the accompanying animated video.

As shown below in Figure 1, the DSM2 volumetric fingerprint of historical 2002 conditions indicates that at San Joaquin River at Brand Bridge and Middle River at Union Point, the source of water remain predominantly the San Joaquin River over the period from September through November. In contrast, while much of the water at Old River at Tracy Road originates from the San Joaquin River for much of July and August, by mid September the Sacramento River starts to become a significant source, quickly replacing the San Joaquin River. This transition occurs during a time of sustained SWP and CVP exports of approximately 5,000 and 4,000 cfs respectively and San Joaquin River inflow at Vernalis of approximately 1,100 cfs and before the barrier at the Head of Old River is installed. The corresponding Particle Tracking 90-day animation for the September 1, 2002 injection shows particles moving from the injection site towards the south Delta. The particles never pass near the San Joaquin River at Brandt Bridge or the Middle River at Union Point sites and only reach the Old River at Tracy Road Bridge site by mid September.

Figure 2, below, shows the DSM2 volumetric fingerprinting of historical 2003 conditions and indicates that for the period of June through September of 2003, the San Joaquin River remained the predominant source of water at the Old River at Tracy Road site, as at the San Joaquin River at Brandt Bridge and Middle River at Union Point sites. The corresponding 90-day Particle Tracking animation for the June 15, 2003 injection shows particles again moving to the south Delta, but this time none reach the Old River at Tracy Road site by the end of September, consistent with Figure 2 that shows no Sacramento River water reaching here by this time. This is despite flows and exports being somewhat similar to 2002 with San Joaquin flows ranging from 1,000 cfs to 2,000 cfs, SWP exports ranging from 4,000-7,000 and CVP exports about 4,300 cfs; however, Figure 1 and 2 show from early October to mid-November that the Sacramento River water was the predominant source of water at Old River at Tracy Road site. This can be attributed to the installation of the Head of Old River barrier. When this barrier is installed, the circulation patterns change and the Sacramento River water usually reaches into Old River at Tracy Road.

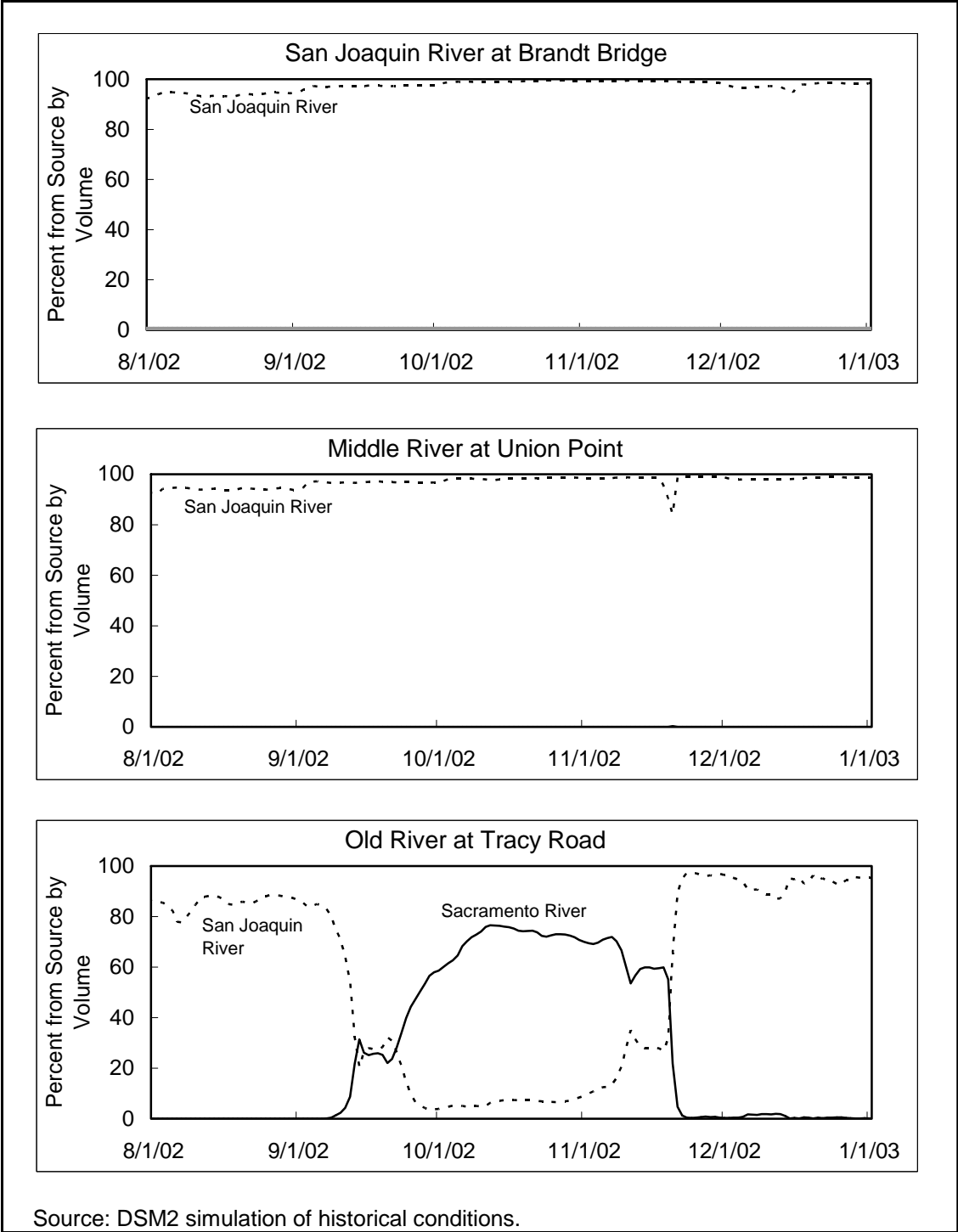


Figure 1. DSM2 Fingerprint of Historical 2002 Conditions Showing Relative Contribution of Sacramento and San Joaquin Rivers in the South Delta.

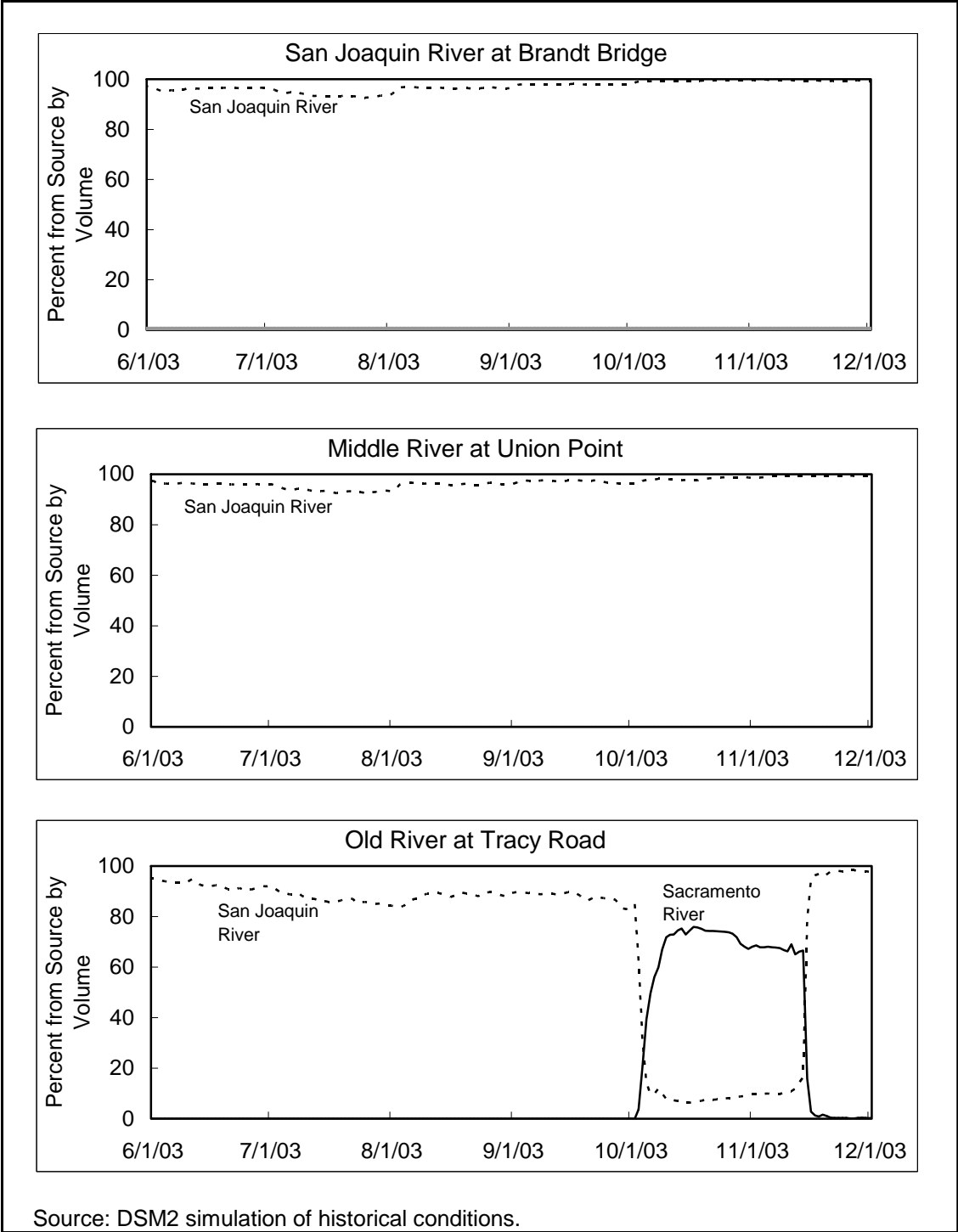


Figure 2. DSM2 Fingerprint of Historical 2003 Conditions Showing Relative Contribution of Sacramento and San Joaquin Rivers in the South Delta.