

## Stream Restoration

### *Sheehy Creek Restoration, Napa County, California*

Balance developed a geomorphic stream restoration plan for a one-mile reach of Sheehy Creek, integrated with the Napa Gateway Industrial Park. We first conducted a full water year of stream gaging, including flood events, to better understand flow characteristics of the incised creek channel. We combined geomorphic measurements of incipient bankfull width with the measured flow information to design overbank areas that would once again allow flow in the creek to interact with its floodplain and backwater channels. We modeled the flood hydrology with HEC-RAS to predict flood levels, using roughness values calibrated from our flow measurements and high water marks. The functions and values sought have returned to this once-disturbed area. The channel was tested by the flood of December 31, 2005 without bank failures or incision.



Restoration extends upstream and downstream from this central section of Sheehy Creek.

— On the upper section of Sheehy Creek, Balance's design called for removal of the upper portions of steep, incised stream banks to create broad floodplains on both sides of the creek, while leaving the central channel intact. Several years of post-project monitoring have confirmed that the central channel just overflows onto the floodplain during 1.5 to 2-year floods.

— On the lower section of Sheehy Creek, we relocated the channel from its previous incised location into a multi-stage meandering channel, including a wetland "delta" complex at the creek's mouth, where the stream flows onto the Napa River floodplain.

