

Channel Stabilization and Sediment

Sisquoc River Channel Management and Sediment Study, Santa Barbara, California



Background

Balance Hydrologics developed a comprehensive hydrologic, geomorphic, and hydrogeologic assessment of the Sisquoc Plain area of northern Santa Barbara County, California. The assessment was used to evaluate alternatives for producing sand and gravel from this designated regionally-significant source of PCC-grade aggregates. Much of the work was conducted in a 15-year collaboration with the project's civil engineer.

Channel

- Calibrated simulations with measured changes in channel geometry using sequential aerial photographs and other archival information
- Assessed flood-protection measures, channel stabilization efforts, and revision of flood hydrology and floodplain designations
- Simulated design flows and the associated inundation levels to evaluate effects on flooding of certain habitat areas resulting in bank stabilizations design measures.
- Evaluated scour and designed bank-protection and engineered re-compaction of previously-disturbed banks.



Sediment

- Developed a 61-year daily sediment-transport model to estimate mean annual delivery of coarse sediment, year-to-year variability of delivery, and the role of wildfires in delivery of coarse sediment to the Sisquoc Plain.
- Developed a comprehensive River Mining Plan for the next 25 years to meet county permitting requirements emphasize native vegetation enhancement and accommodation of natural flow regimes and attendant channel adjustments.