

Featured Project

Sacramento River Flowmeter

Sacramento, California

The Sacramento Regional Wastewater Treatment Plant operates dual sideward-looking acoustic Doppler velocity meters (ADVM) to monitor the flow of the Sacramento River at Freeport; a 620-foot-wide tidally affected channel at the northern boundary of the Sacramento/San Joaquin River Delta. The telemetry from these meters is used to modulate effluent flow discharge into the river.

ArcSine Engineering performed field investigations, radio path surveys, communications troubleshooting, and prepared design and construction documents to replace the existing telemetry and communications system for this installation. ArcSine's work included developing unique mechanical installation details to ensure instrument accessibility.

ArcSine was instrumental in troubleshooting the communication between the system data loggers via a spread-spectrum radio telemetry system, allowing it to work in tandem with GOES satellite communications and two CDMA-based cellular links. The project required a high degree of interdisciplinary and interagency coordination between the Sacramento Regional WWTP, USGS, California Department of Water Resources (CDWR), Sacramento Municipal Utilities District (SMUD), California Department of Transportation, Pacific Gas and Electric (PG&E), and Southern Pacific Railroad.

ArcSine's design effort followed a criteria-based approach which ultimately led to a successful design and implementation, balancing competing requirements including:

- Multiple program execution speeds
- Data collection and communication redundancy
- Mixed communication protocols:
 - ◆ Process measurement: SDI-12 Format
 - ◆ Radio communication: SDI-12 Format
 - ◆ CDWR: GOES Satellite communication
 - ◆ USGS: CDMA-based cellular
 - ◆ SRWTP: Modbus TCP/IP (Ovation DCS)

Design Completion Date

October 2005

Construction Completion Date

April 2006

Electrical
Mechanical
Programming

Lighting

Power Distribution

Construction Services

Water/Wastewater

Controls

