

# Clarifying Castaic Lake

## SuperSettler™ Lamella Plate Clarifiers



CASE STUDY

**Location:** Castaic Lake, California  
**Owner:** Castaic Lake Water Agency  
**Engineer:** Black & Veatch  
**Contractor:** Kiewit Pacific Co.

### Increasing Capacity

The Castaic Lake Water Agency (CLWA) treats water from Castaic Lake using two water treatment facilities. These facilities provide clean water for 25% of the Santa Clarita Valley. One of the facilities, the Earle Schmidt Filtration Plant (ESFP), was built in 1980 with a capacity to treat 28 MGD. After years of population growth, the plant

struggled to meet increasing demands. In 2003, the CLWA began making plans for plant expansion.

### Equipment Selection

CLWA's plans for expansion included installing new flocculation chambers and sedimentation basins. Due to space limitations, engineers required equipment which would efficiently clarify, but could be contained in a small footprint. They decided that plate settlers were the best solution to meet their sedimentation needs.

WesTech was selected to provide two SuperSettler™ lamella plate clarifiers combined with two flocculation chambers to enhance sedimentation. For this project, WesTech worked with Meurer Research Inc. to provide the inclined plate packs.

SuperSettler plate clarifiers are designed for uninterrupted settling in a footprint one-tenth the size of a traditional settling basin. WesTech provides plates made of stainless steel, PVC and FRP.

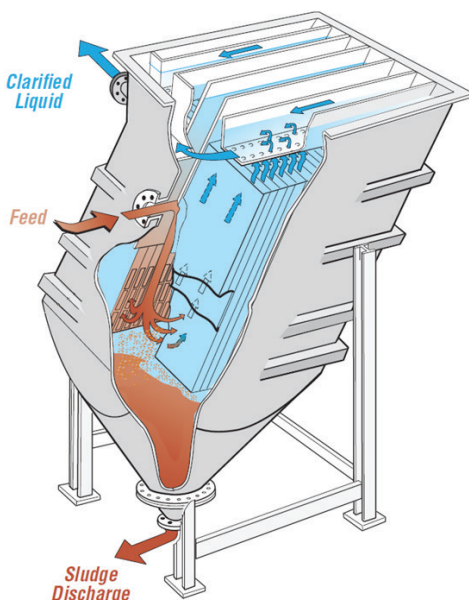
At the ESFP, anionic polymer is added to raw water in a rapid mixing chamber. The chemically treated water then enters the flocculation tanks, which promote particle interaction. WesTech configured its flocculation chambers for ideal floc formation.

### Plate Settlers

Quantity	2 trains
Design Flow	750 gpm
Max Hydraulic Loading Rate	0.40 gpm/ft <sup>2</sup>
Effective Plate Surface Area	1875 ft <sup>2</sup>
Spacing Between Plates	2.4 in
Inclined Plate Angle	55 degrees
Size (per train)	28 ft x 11 ft x 26 ft high

Water then enters the SuperSettler through the side of the tank, minimizing the disturbance of the settled material and preventing contamination of the clarified effluent. The openings at the top of the plate assembly are designed to create a pressure drop across the collection channel, ensuring that flow is uniformly distributed between the plates. This patented flow control feature enhances separation performance by utilizing the full area of the plates. Settled material collects in a bottom hopper, where it is discharged.

Clarified effluent is then pumped for further filtration and disinfection. A portion of filter backwash water is recycled to aid in flocculation and sedimentation.



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## Chemical Dosing

Coagulant Dose	0.47 mg/L
Backwash Recycle	0.37 mg/L
Filter Run Time	59-85 hours

WesTech specifically designed and configured the flocculation basins and plate settlers to consistently produce water with effluent turbidity under 2 NTU.

## Customer Satisfaction

Plant operators are pleased with the performance of the plate settlers. With the help of WesTech's SuperSettler lamella plate clarifiers, CLWA was able to increase total plant capacity, in a small footprint, to 56 MGD while consistently meeting turbidity requirements.



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