Northern California Project (January, 2001):

Plant Capacity: 20 mgd

No. of Clarifiers: 5 @ 115' diam; 40' centerwells;

F.C. #4 and #5: 17' SWD / 22' center depth

F.C. #4 EDI: 18' diameter F.C. #5 EDI: 15' diameter

F.C #4 has a horizontal perimeter baffle; F.C. #5 has a sloped perimeter baffle.

Project Objective: to determine why Clarifier #5 generally fails before Clarifier #4.

Project Approach: Stress test clarifiers #4 and #5 to failure; observe hydraulic characteristics.

Observations: The two clarifiers were tested side by side at 9 mgd (870g/sf/d), 12 mgd (1160 g/sf/d), and 15 mgd (1450 g/sf/d). At 15 mgd, the sludge blanket level in #5 increased significantly and the effluent TSS increased from 8 mg/l to 15 mg/l. Both the sludge blanket and the ETSS in #5 were trending upward when the test ended. The conditions in #4 were stable.

During the last test, it was discovered that the 18' diameter energy-dissipating inlet (EDI) in #4 had no bottom! This is contrary to normal design practice. The EDI is supposed to be a "tub" which forces the flow out tangentially into the centerwell.

Conclusion: The EDI with no bottom created better hydraulic conditions in Clarifier #4 than did the standard, scooped EDI in Clarifier #5