

Ultrafilter Drain/Flush Testing

MCE was contracted by *EnergySolutions* under their contract to Bechtel National, Inc. (BNI) to perform functional testing to demonstrate the effectiveness of draining ultrafiltration modules by gravity only, and by both the plant wash and the air purging methods.

Tests were performed with full-scale ultrafilter modules initially oriented vertically and at a slope of 1:25 from horizontal. The effectiveness of draining was determined by visual examination of the tubes to estimate the distribution of residual waste across the module cross-section.

For flushing via the plant wash method, testing was performed at conditions comparable to those of the full-scale Waste Treatment Plant configuration.

The primary objective of this test program was to evaluate the amount of residual sludge that remains inside the tubes of the ultrafilter assemblies after gravity draining, and flushing with both water and/or air. The workscope included the following activities:

- Test setup design
- Equipment procurement
- Fabrication and installation
- Test procedure preparation
- Test execution
- Analysis (as required)
- Waste disposal
- Demobilization and test closeout

Interim and final reporting.

Full-scale ultrafilter modules, 100-in. porous tube length, containing 241 tubular membranes were provided from BNI plant inventory for unrestricted use in the tests. Modifications to the modules were made as required to perform testing.



**Client: EnergySolutions
Richland, Washington**