The Water Quality Improvement Center is a National Center for Water Treatment Technology, operated by the U.S. Bureau of Reclamation. It’s located in Yuma, AZ, at the site of the 73 million-gallon-a-day Yuma Desalting Plant.

Anyone with an idea to explore or a piece of equipment to test may access the WQIC test facilities. Work can be conducted on a cost-reimbursable basis, or cost-sharing may also be available if a project benefits the government.

The WQIC has on-site engineering, operations and maintenance staff, is fully permitted to conduct test operations, has its own advanced water treatment equipment for use, and space for testing partner-supplied equipment.

Yuma Area Office

Water Quality Improvement Center

Test Equipment

Demonstration Scale System (Ps1)

1 million gallons per day

**General information**

600 gpm system, conventional pretreatment (grit basin, intake pumping system, solids contact reactor, dual media gravity filters, clearwell), 8-inch and 12-inch production reverse osmosis systems.

**Pretreatment System**

**Grit Sedimentation Basin**

Water velocity 600 gallons per minute; Basins 8 foot by 8 foot.

**Solids Contact Reactor/Clarifier**

32-foot diameter, rapid-mix, precipitation, flocculation, clarification.

**Gravity Filters**

Filters solids 25+ microns; 20 inches of coarse anthracite coal, 10-inch bed of fine sand. 4 cells, 64 ft² area each.

**RO Units**

**Hydranautics System**

6 pressure vessels, 7 8.5-inch membrane elements per vessel. 2:1 array.

**Fluid Systems**

6 pressure vessels, 4 12-inch CA membrane elements per vessel. 2:1 array.
Water Quality Improvement Center
Test Equipment

Pilot Scale Systems (PS2, PS3)
30-50 gallons per minute

General Information
2 individual, pilot-scale process trains; 30-50 gallons per minute; 12-24 gpm treated water supplied to 2 membrane evaluation research units per train; MERUs are 2:1 arrays, 2.5-inch spiral-wound NF, RO elements.

Series Continuous Stirred Tank Reactor
Rapid mix, precipitation, flocculation. Eight cells, liquid volume of 400 gallons.

Gravity Filters
6 individual filter columns, 30 inches in diameter. Effluent discharges to 2 filter effluent tanks.

Chemical Feed Systems
Injexts chemicals; includes sodium hypochlorite, lime, sulfuric acid, polymer, ferric sulfate, SHMP, ammonium hydroxide.

MERUs 1 & 2 (on PS2) and MERUs 3 & 4 (on PS3)
4 individual NF/RO systems. 85% recovery; 21 spiral-wound, 2.5” x 40” elements; Operation flows from 3-12 gpm, pressure range from 60 to 500 lb/in².

Membrane Pretreatment Units

Memcor Microfiltration
3 filtration modules. Feed flow 18-20 gpm. 15 m² of .2 micron hollow fiber membranes. Flow is outside-in.

YDP Zenon Ultrafiltration
One 42.7 m² chlorine tolerant high pressure membrane with .1 micron nominal size. Flow rate of 18-20 gpm.
Water Quality Improvement Center
Test Equipment

Membrane Process Research Units
(Bench Scale, Screening, Full Recovery, and Mobile Units)

**Swatch Units 1 & 2**
2 independent systems; 3 test cells per system with 3 in² of membrane area. Flow range is 1-2 gpm; pressure range is 60-500 lb/in².

**Membrane Element Apparatus (MEA)**
Skid mounted, simultaneously operates 8 membrane vessels; flows to 2 separate water sources for each set of 4 membranes.

**Membrane Test Apparatus (MTA)**
Skid mounted, 1 2.5 by 40-inch long vessel. Includes chiller and interface to SCADA.

**Element Test Apparatus 1, 2, & 3 (ETA)**
Skid mounted, 2 2.5-inch-diameter by 40-inch long vessels, and 2 4-inch-diameter by 40-inch-long vessels.

**Element Screening Unit (ESU)**
Skid mounted, 3 2.5-inch-diameter by 40-inch long vessels. Variable flow rates and pressures.

**Membrane Evaluation Research Unit (MU5)**
Skid mounted, 2 or 3 stage (for full or high recovery) unit. 4 first-stage, 4 x 40 inch elements; 1 second stage, 4 x 40 inch element; 1 third stage, 2.5 x 40 inch element. Variable flow rates and pressures. SCADA interface on-board.

**Element Drying Apparatus (EDA)**
3 units, sized for 12”x60”, 8 to 8.5”x40”, and 2.5”x40” elements.

**Mobile Research Facility**
Conventional and membrane water pretreatment and treatment. Ancillary chemical systems. Fully portable.
Water Quality Improvement Center
Test Equipment

Chemistry Research Units

**Corrosion Test Units**
3 independent units. High velocity, variable speed motor control, flow capacity .5 to 1 gpm.

**Clor-Tec Electrochlorinator**
12 lbs/day at .8% concentration. Auto-batching, uses potable water at 30-80 psi.

**MIOX Electrochlorinator**
4 lbs/day free available chlorine at 06%; complete system.

**Lamella Clarifier**
Integrated flash/flocculation tank; flash section mix volume - 50 gallons; floc tank mix volume - 115 gallons. Design flow - 25 gpm; design rise rate - 0.54 gpm ft².

**Portable Multi-Media Pressure Filter**
36”-diameter, 7’-5” tall, designed for maximum 30 gpm. Can use multiple media or green sand media. Manually operated.

**Element Check Apparatus (ECA)**
Manual operation system; 5 8.5” elements or 4 12-inch elements. Pump range 60-500 lb/in².
Water Quality Improvement Center
Partner-Supplied Test Equipment

Conventional and membrane systems, equipment, instrumentation

**Partner-Supplied Technology**
Technology Transfer enables Reclamation to partner with you on your research or testing projects. If we don’t have equipment that is suitable for your project, you can either supply your own prototype unit, purchase commercially available technology and site it here for your testing, or partner with us to build the equipment you need. We will work with you on a location for the equipment within the WQIC test bays.

Unless other arrangements are negotiated as part of the research agreement, your equipment is removed from the WQIC when the test is done.

**Arranging Equipment Use**
WQIC equipment is available for use either on a cost-reimbursable basis or on a cost-shared basis, depending on the nature of the proposed project. Portable equipment may be transported or shipped to your location and used at your site. Equipment may not be immediately available if it’s currently being used for tests.

To check on the availability of this equipment, please contact:
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