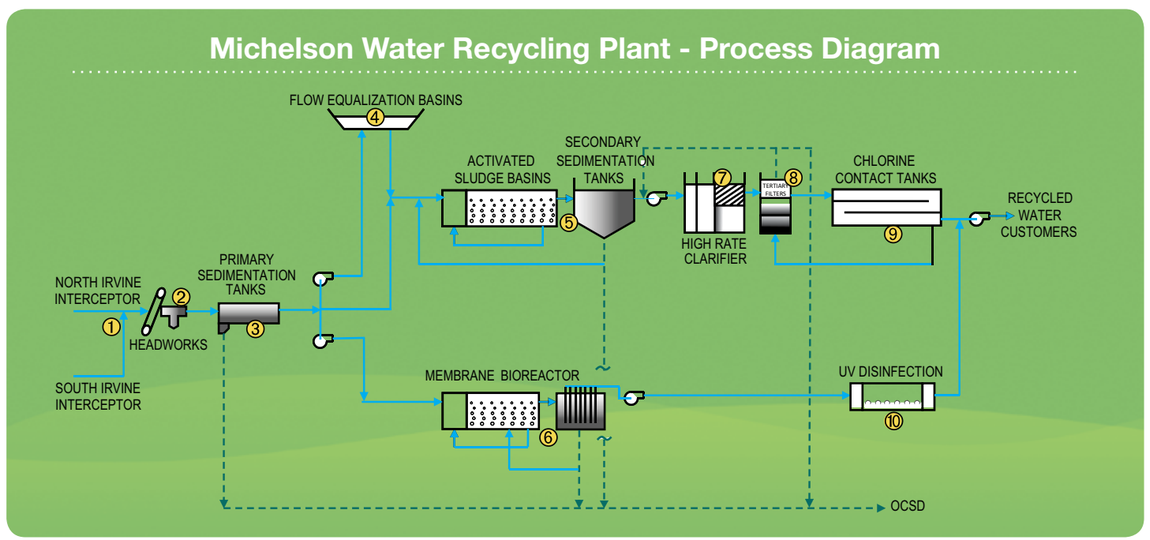
Michelson Water Recycling Plant.

Expanded MWRP Process:

- Sewage from inside homes and businesses travels through gravity sewer pipelines ① to the MWRP headworks facility,② which includes three automatically cleaned screens to remove debris and three grit chambers to remove sand, rocks, and grit.
- Four new primary treatment sedimentation tanks,③ which remove biosolids from the wastewater, will supplement five existing tanks. Wastewater flows slowly through the in-ground tanks, allowing suspended solids to settle to the bottom or float to the surface, where the solids are collected for disposal. A new primary pump station will direct flow to the existing secondary treatment process, the new membrane bioreactor,⑥ or the existing flow equalization basins④ (used for temporary storage to even out normal daily flow variations).
- The membrane bioreactor⑥ includes treatment basins similar to the typical secondary treatment process, but replaces the sedimentation tanks and dual-media filters with membrane filters. The result is high-quality water that can be disinfected without further treatment for reuse.
- High-rate clarifiers⑦ are used to condition secondary-treated water prior to filtration in order to maximize the effectiveness and capacity of the filters. The high rate clarifier uses coagulants and sand to bind suspended and dissolved matter into larger and heavier particles that can be settled and collected. The sand is then cleaned and recycled within the system.
- Conditioned secondary-treated water is further treated in the existing dual-media filters⑧ to remove the smallest solids particles and produce tertiary-treated water. The water passes by gravity through an anthracite coal layer followed by a sand layer. Following this filtration, the water is disinfected with a sodium hypochlorite (bleach) in the upgraded chlorine contact tanks.⑨
- The high-quality water produced by the new membrane bioreactor will be disinfected using ultraviolet light. ⑩ The water flows by gravity in concrete channels past specially designed ultraviolet lights.



For more information email: info@irwd.com or call (949) 453-5500.

Irvine Ranch Water District.
Michelson Water Recycling Plant.

IRWD. LEADING THE WAY IN WATER RECYCLING.

Spring 2014

Project Purpose:

Established in 1961, Irvine Ranch Water District provides drinking water, and sewage collection and treatment to produce recycled water. IRWD's tertiary treatment of wastewater at its Michelson Water Recycling Plant results in an excellent quality of recycled water that is used for landscape and agricultural irrigation, and for industrial and commercial needs. IRWD's proactive long-term planning identified the need to expand MWRP in order to meet the projected 56 percent increased recycled water demands by the year 2025.

Project Background:

In 1967 IRWD's Michelson Water Recycling Plant began delivering approximately two million gallons per day (mgd) of tertiary-treated recycled water to agricultural users. By 2008, MWRP's capacity had grown to 18 mgd. Planners estimate that when the IRWD service area reaches "final build out" in approximately 2025, a recycled water capacity of 33 mgd will be required to meet demands.

A master plan was prepared to ensure that the Michelson plant will meet these requirements.

Treatment basins for the cutting-edge membrane bio-reactor process at Michelson Water Recycling Plant, part of the recent Phase 2 expansion of this facility.

The current MWRP expansion construction began in the fall of 2009 and will be complete in spring of 2014.

Project Benefits:

- The Michelson Water Recycling Plant reduces the dependence on imported water
- Decreases the need for additional potable water supplies
- Helps to maintain long-term sustainability
- Provides a source of water that may be used for toilet flushing in commercial buildings; air conditioning cooling towers; irrigation of public areas and agriculture and some industrial uses
- Every gallon of recycled water used saves a gallon of potable water

Michelson Water Recycling Plant Overview.

Michelson Water Recycling Plant Legend

1. Influent Sewers
2. Headworks
3. Primary Sedimentation Tanks
4. Flow Equalization
5. Secondary Treatment
6. Membrane Bioreactor
7. High-Rate Clarifier
8. Dual-Media Filters
9. Chlorine Contact Chamber
10. Ultraviolet Disinfection
11. Recycled Water Pumping
12. Floodwall

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