



Pilot Travel Center Wastewater Treatment and Reuse

Compact advanced treatment designed for a high-demand transportation facility



Containerized Fluence Aspiral MABR treatment system installed at Pilot Travel Center 1140

THE CLIENT

Pilot Travel Center 1140 needed a wastewater strategy capable of supporting increased site demand while incorporating collected roof and site stormwater. The existing onsite sewage facility permit was limited to flows below 5,000 gallons per day, and no permitted wastewater treatment facility or collection system was available within three miles.

THE CHALLENGE

The design had to manage variable hydraulic and organic loads typical of a busy travel center, protect a compact biological treatment process from grease and solids, and create a compliant pathway for beneficial reuse through landscape irrigation.

- Design flow of 6,000 gpd with a 12,000-gpd peak-flow basis
- Wastewater from restrooms, showers, laundry, restaurant, and service-station uses
- Stormwater contribution incorporated into the treatment and reuse strategy
- TCEQ 210E industrial reclaimed-water permitting framework

TREATMENT AND REUSE

Source control. A 4,000-gallon grease interceptor and primary solids separation protect downstream equipment.

Primary treatment. Three 4,000-gallon tanks provide approximately two days of settling, solids storage, and digestion.

Flow equalization. Duplex pumping moderates surge flows before fine screening and biological treatment.

Advanced treatment. A containerized Fluence Aspiral S1 membrane-aerated biofilm reactor provides oxidation, nitrification, denitrification, clarification, and solids separation.

Disinfection. The design combines UV disinfection with sodium-hypochlorite supplementation and contact detention at peak flow.

Irrigation reuse. Treated water is stored and pumped to an expanded spray-irrigation field.

DESIGN BASIS	PROJECT VALUE
AVERAGE FLOW	6,000 GPD
PEAK FLOW	12,000 GPD
TREATMENT SYSTEM	Grease interceptor, primary treatment, flow equalization, fine screening, MABR secondary treatment, and UV/chlorine disinfection
REUSE	Onsite irrigation

THE SOLUTION

REGEN prepared the engineering design and permit application for an integrated collection, treatment, disinfection, and land-application system. The design uses staged treatment to absorb flow variation, reduce fouling risk, remove nutrients, and produce reclaimed water suitable for controlled irrigation.

Operational resilience. Automated controls monitor pumps, blowers, valves, levels, and alarms. During power or equipment failure, wastewater can be hauled to an approved receiving facility.

DESIGN PERFORMANCE

The MABR process was selected as a compact, low-energy biological treatment platform for a variable-flow commercial site. The design basis anticipates greater than 90 percent removal of BOD and suspended solids and greater than 80 percent total-nitrogen removal, while targeting reclaimed-water quality under the proposed Level II permit framework.

THE OUTCOME

REGEN's design gives Pilot Travel Center 1140 a practical decentralized wastewater and reuse framework tailored to the site's flow, land, and regulatory constraints. The project demonstrates how advanced treatment can support essential commercial infrastructure where centralized sewer service is not readily available.

RESULTS

- ✓ Creates an onsite path beyond the existing flow limitation.
- ✓ Integrates wastewater, stormwater, treatment, and beneficial reuse into one operating strategy.
- ✓ Packages advanced nutrient removal within a compact containerized footprint.
- ✓ Turns treated water into a landscape-irrigation resource rather than a waste stream.
- ✓ Provides a scalable technical basis for permitting, operation, monitoring, and long-term asset management.