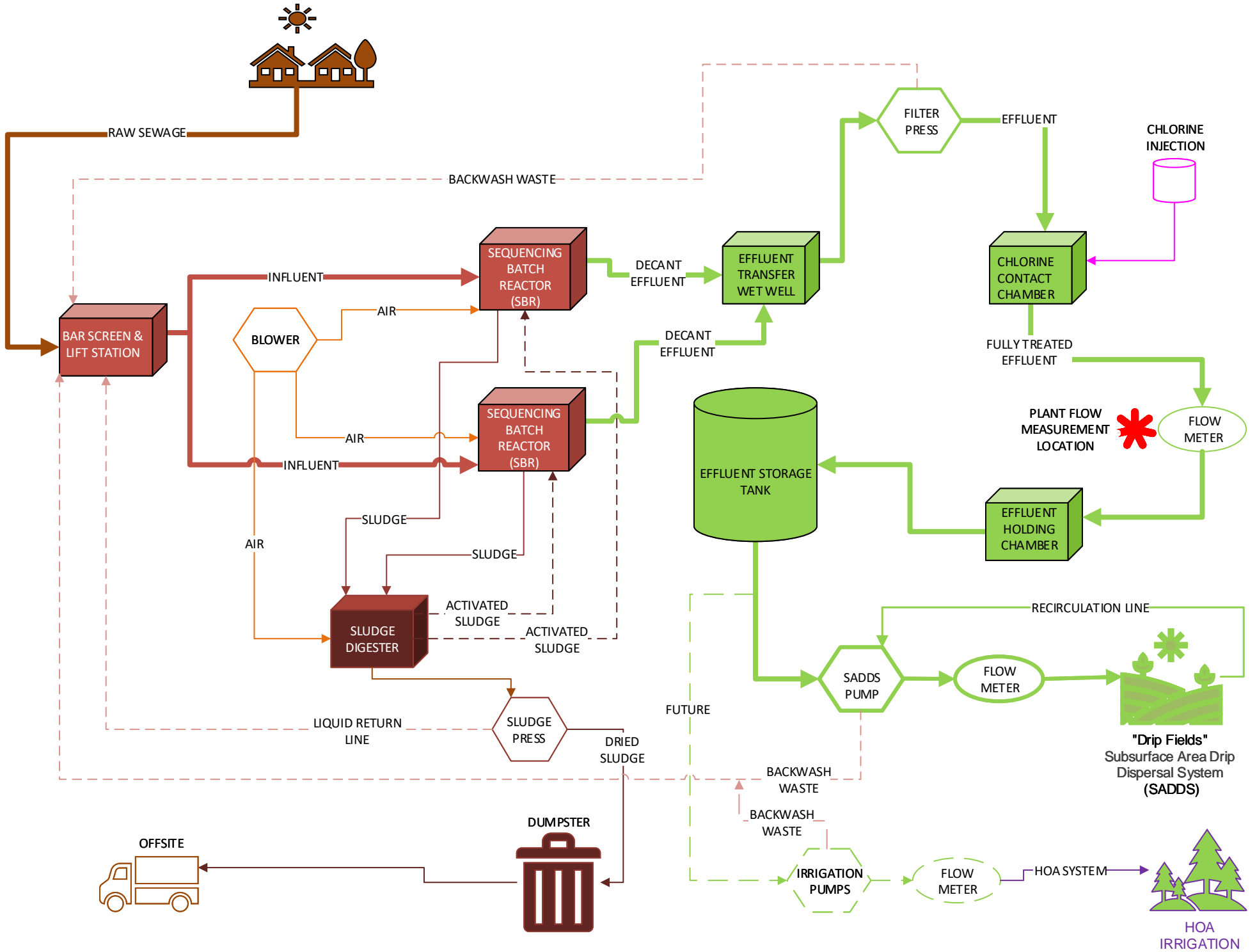


REUNION RANCH WWTP



Wastewater

Wastewater Treatment Plant

Based on Sequencing Batch Reactor (SBR) Initially built in 2012 and Expanded in 2021

Process Description

Wastewater generated by all homes and the HOA Amenity Center (535 connections) is treated by an activated sludge process using two sequencing batch reactors (SBR), one in the fill phase and one in the operation phase. Both SBRs are rated for 40,000 gallons per day (gpd) each, for a total of 80,000 gpd average and 120,000 gpd peak flow.

Bar Screen

The influent enters the plant through the vertical bar screen located at the discharge of the gravity sewer main in the influent lift station wet well. The influent passes through this automatic vertical bar screen removing objectional material and discharging this material by screw conveyor into a disposal bag at grade. The influent from the bar screen passes through the screen into the wet well of the influent pump station

Influent Pump Station

The influent in the wet well is pumped by two submersible pumps through motorized valves directing it into the SBR reaction chamber that is in its fill phase. The Influent lift station is equipped with odor control utilizing duplex filter canisters.

SBR Chamber

Within the chamber, a blower-driven fine bubble diffuser system is used for aeration and a mixer and decanter are used to treat wastewater and then pump it to the effluent transfer pump wet well.

Effluent Transfer Wet Well/Disk Filter

Effluent in the effluent transfer wet well is pumped by dual submersible pumps to a disk filter unit which is used for polishing the quality of effluent. The discharge from this filter is sent to the chlorine contact chamber. Backwash from this process is transmitted to the influent pump station to be re-processed at the plant.

Chlorine Contact Chamber

The effluent flows through the chlorine contact chamber where chlorine disinfection takes place. A dosing pump discharges sodium hypochlorite into the chlorine contact chamber at the filter discharge. Effluent discharges from the chlorine contact chamber through a weir box located at the far end of the chamber from the filter discharge and provides flow measurement and a location for sample collection. The weir box discharge is transmitted by gravity to the effluent storage basin.

Effluent Storage Basin

The effluent storage basin is equipped with two submersible pumps to transfer the treated effluent to an above ground 220,000 gal ground storage tank (GST).

Ground Storage Tank

Effluent in the ground storage tank is gravity fed to the effluent SADDs pump skid, which conveys effluent to alternating zones in the subsurface drip fields via drip irrigation lines.

Sludge

Sludge is pumped from the SBR units to a sludge storage tank/digester and is ultimately pumped by dual submersible pumps into a sludge dewatering press and moved via conveyor to an on-site dumpster for disposal off site. Sludge is disposed of at the Walnut Creek WWTP (WQ0012900001).

Redundancies

The combination of the influent lift station wet well, two SBR trains, chlorine contact basin, effluent storage basin, and ground storage tank designed with emergency capacity has adequate capacity to contain the wastewater and effluent during high flow periods and the effects of daily peaks.

The plant's treatment systems and the effluent drip field pump systems are designed with firm capacity pumps so that influent can be pumped through the treatment trains and effluent can be pumped out to the drain fields, even in the case of an equipment failure. A permanent pad mounted emergency generator is on site to provide electricity to the plant in the event of power failure in the electric utility's facilities.

Equipment

Influent lift station with in-line perforated basket screen and two 510 gpm, 5 hp, solids handling pumps

Parallel SBR trains with aeration, mixing, decanting, and sludge removal equipment

Effluent lift station with two 188 gpm, 3 hp pumps

Rotating disc filters in above-ground steel tank with automated backwash

Chlorine dosing equipment and bulk storage tank, chlorine injection

Chlorine contact channel with chlorine residual analyzer and sampling pump

Effluent flow weir with flow measurement device

Effluent storage basin and 250 gpm, 10 hp, transfer pumps

Effluent storage tank

Drip field skid

Aerated sludge storage basin and transfer pumps

Volute dewatering press and conveyor

Electrical and controls building

Future Equipment

Irrigation Skid

Collection system description

Lift stations

Lift station 1

Two Pumps each 25 HP

Operating point: 255 gpm 98 ft (42 psi)

Lift station 2 (phase 2 Section 2)

Two pumps Each 5 HP

Operating point: 30 gpm 80 ft (35 psi)

Grinder Station

26 Individual Units

Typical equipment is E/One Gator Grinder with Sentry Control and Alarm panel

Owned and maintained by the District

Collection system

Piping

Gravity lines: 35,087.26 LF (6.6 Miles)

Force mains: 6,675.47 LF (1.2 miles)

Manholes

162 total wastewater manholes

Subsurface Area Drip Dispersal system

Two areas in the subdivision have drip fields

At the entrance – 19 zones; 17 East of Reunion Blvd. and 2 West, approx. 6.95 acres

Adjacent to the WWTP – 12 zones: 9 East of Reunion Blvd. and 3 West, approx. 4.52 acres