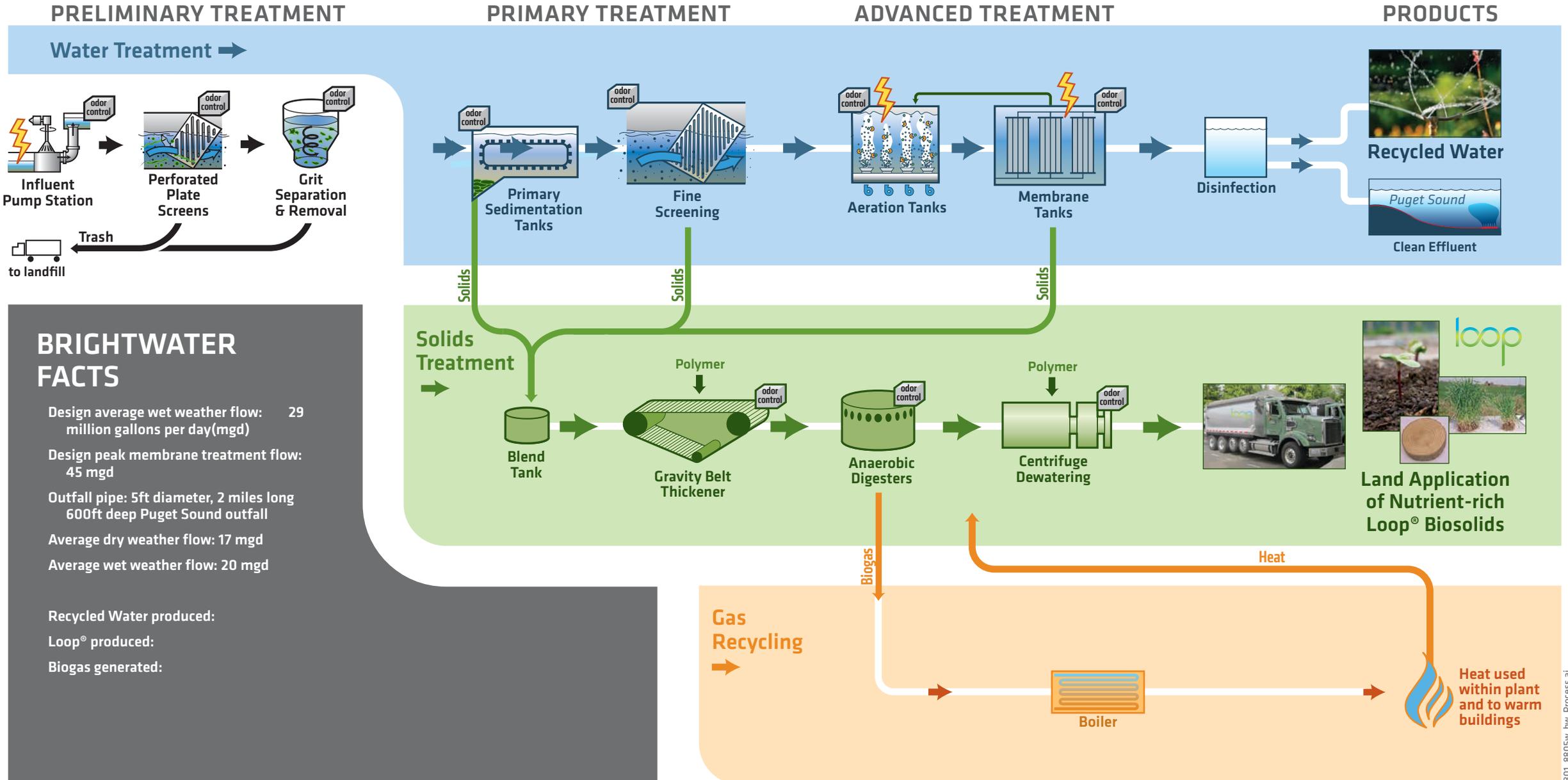
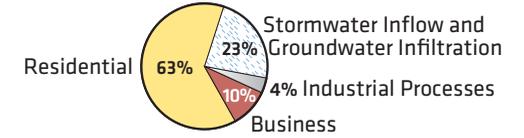


Brightwater Treatment Process

WHAT'S COMES INTO BRIGHTWATER?

Typical Flows by Source During Winter Months



BRIGHTWATER FACTS

Design average wet weather flow: 29 million gallons per day(mgd)
 Design peak membrane treatment flow: 45 mgd
 Outfall pipe: 5ft diameter, 2 miles long
 600ft deep Puget Sound outfall
 Average dry weather flow: 17 mgd
 Average wet weather flow: 20 mgd

Recycled Water produced:
 Loop[®] produced:
 Biogas generated:

At Brightwater Treatment Plant

About 18 million gallons of wastewater (sewage) come through Brightwater every day from homes and businesses in northeast King County and south Snohomish County. The wastewater carries trash, dirt, organic waste, bacteria, pathogens, and small amounts of chemicals.

STEPS OF WASTEWATER TREATMENT

Preliminary Treatment: Taking Out the Trash and Grit

- Metal screens filter out trash items, such as cleaning wipes, feminine products and paper towels.
- The wastewater then enters a tank that has air added to help separate the grit (dirt, sand and gravel) out of the water.
- The trash and grit collected during preliminary treatment are trucked to a landfill.

Primary Treatment : Organic Waste Removal

- Next the wastewater enters large tanks where it sits for about six hours. During this time, cooking oils, grease, soaps and hair naturally float to the surface. Heavier organics, such as human waste and food waste, settle to the bottom.
- Scrapers remove the organic solids from the top and bottom of the tank. Those materials are piped to the solids treatment area where they will be recycled (see Solids Treatment).
- This process removes about 50 percent of the organic solid waste.

Secondary Treatment: Helpful Bacteria & Membrane Filters

- The wastewater then flows into the aeration tanks, where warm air is continuously added.
- The warm, oxygen-rich environment in these tanks activates naturally occurring bacteria. These bacteria consume the remaining organic material in the wastewater.

- After four hours in the aeration tanks, the wastewater is pumped into basins where tiny membrane filters trap bacteria and any organic material still in the water. The filters are so small that they only allow water molecules to pass through.
- The bacteria that get trapped will be returned to the aeration tanks and go back to consuming organic material.

Disinfection: 'Zapping Pathogens'

- The wastewater is disinfected with a small amount of bleach (sodium hypochlorite) before it is sent to Puget Sound. The water will naturally dechlorinate by the time it enters Puget Sound.
- All cleaned wastewater is treated to a recycled water standard, so that it can be used for non-drinking use, such as irrigation.

SOLIDS TREATMENT

Biological Treatment and Dewatering

- The organic solid waste that is removed during primary and secondary treatment is combined and put into large tanks called digesters. These big tanks use bacteria and heat to help digest, or break down, the organic solid waste.
- After about 30 days in the digester, excess water is removed using a centrifuge (high-powered spinning machine), and the material is now called biosolids.
- Biosolids are used as a nutrient-rich soil amendment for crops and forests in Washington state.

RESOURCE RECYCLING

Recycled Water

After disinfection, water is 99 percent cleaner than when it came into the treatment plant. The water can now be reused on golf courses, soccer fields and farms, instead of using valuable drinking water for irrigation.

Nutrients: Loop® Biosolids

Solids treatment produces a nutrient-rich biosolids product called Loop® that is sold to farms and forests as an alternative to chemical fertilizers. Loop® can be composted further to create GroCo®, a retail product for home gardens and landscapes.

Energy

Biogas from the solids treatment process is turned into heat and used in various processes at the treatment plants. Our Education and Community Center is also heated with biogas from the digesters to keep our energy footprint low.

ODOR CONTROL

Brightwater has extensive odor control equipment to ensure that there are no odors beyond the treatment plant fence line. Stinky air is cleaned and scrubbed with carbon pellets that absorb odors and purify it before the air is released.

YOU CAN HELP

- Flush only human waste and toilet paper down the toilet. Other "flushable" products are NOT good for pipes and sewer systems.
- Use simple, biodegradable ("green") personal care and cleaning products. Find recipes to make your own!
<http://www.kingcounty.gov/depts/health/chronic-diseases/asthma/patients/green-cleaning.aspx>
- Control rainwater by installing a rain garden or rain barrel at your home. You can also prevent runoff pollution by cleaning your car at a car wash, scooping your dog's waste, and picking up litter. These actions all help protect our local water quality.



King County

Department of Natural Resources and Parks
Wastewater Treatment Division