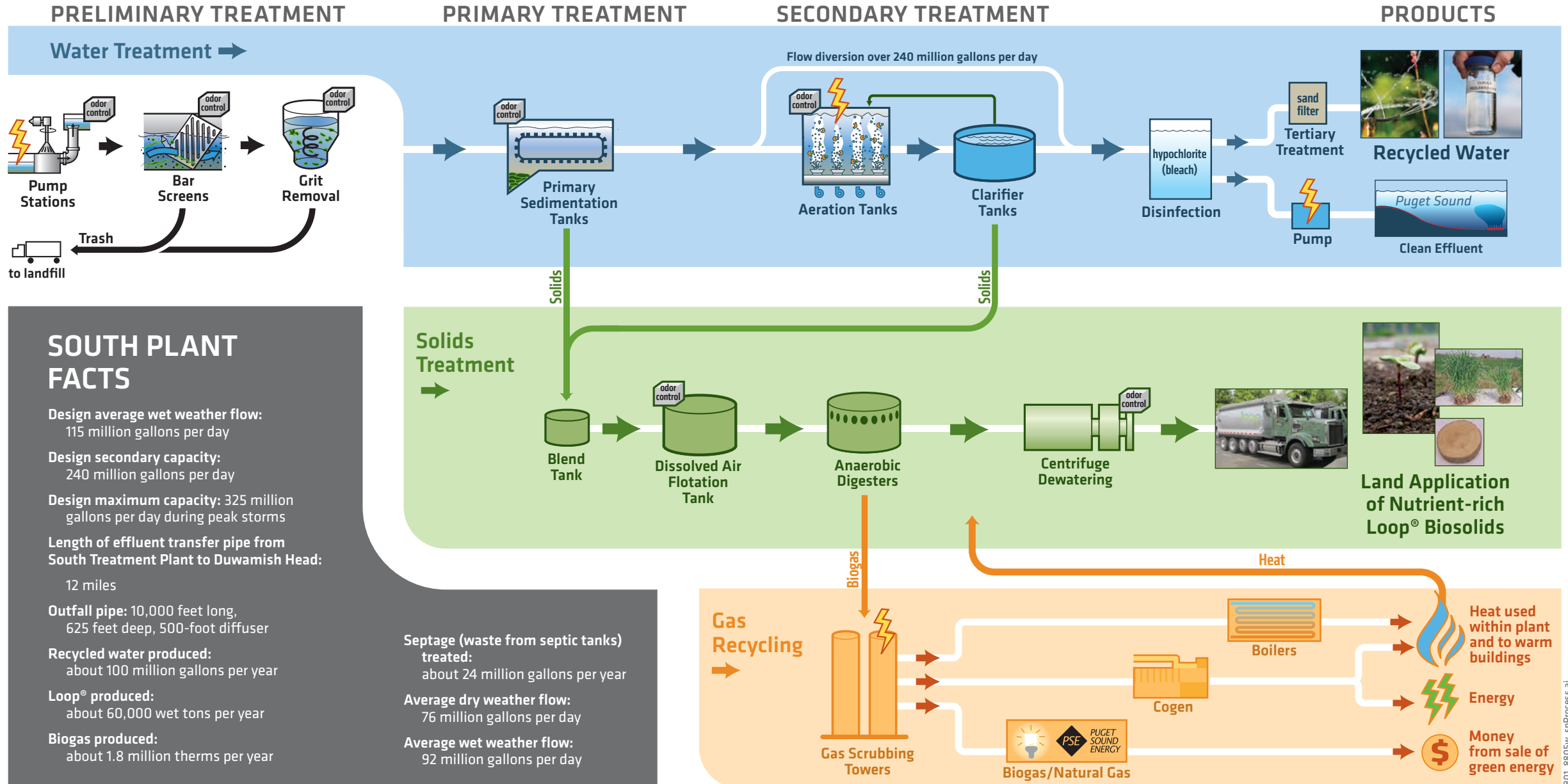
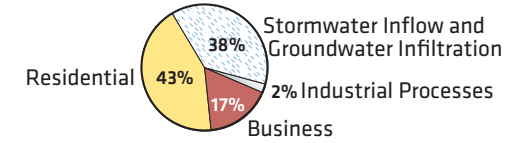


South Plant Treatment Process

WHAT'S COMES INTO SOUTH PLANT?

Typical Flows by Source During Winter Months



SOUTH PLANT FACTS

- Design average wet weather flow: 115 million gallons per day
- Design secondary capacity: 240 million gallons per day
- Design maximum capacity: 325 million gallons per day during peak storms
- Length of effluent transfer pipe from South Treatment Plant to Duwamish Head: 12 miles
- Outfall pipe: 10,000 feet long, 625 feet deep, 500-foot diffuser
- Recycled water produced: about 100 million gallons per year
- Loop[®] produced: about 60,000 wet tons per year
- Biogas produced: about 1.8 million therms per year

Septage (waste from septic tanks) treated: about 24 million gallons per year

Average dry weather flow: 76 million gallons per day

Average wet weather flow: 92 million gallons per day

At South Treatment Plant

About 70 million gallons of wastewater (sewage) come through South Plant every day from homes and businesses on the south and east sides of Lake Washington. This 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 at Work

- The wastewater then flows into 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 enters a large separation tank called a clarifier. In the clarifiers, the bacteria will settle to the bottom of the tank and most (90 percent) will be returned to the aeration tanks to be used again to breakdown the organic waste. The remaining 10 percent will be reused and sent to solids treatment.

Disinfection: 'Zapping Pathogens'

- The wastewater is disinfected with a small amount of bleach (sodium hypochlorite) before being piped to Puget Sound. The water will naturally dechlorinate by the time it enters Puget Sound.

SOLIDS TREATMENT

Biological treatment and dewatering

- The organic solid waste that is removed during primary and secondary treatment is combined and put in 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 RECOVERY

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 parks, 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 converted into electricity and used on the treatment plant for heating tanks and buildings. Some of the gas is also scrubbed, removing impurities, and sold to local utility companies for use as a natural gas in local homes and businesses. The availability, use, and sale of biogas not only reduced the amount of energy WTD need to purchase but also reduces WTD's carbon footprint.

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