

Historical Background

In 1976 the City retained R.W. Beck and Associates to conduct a wastewater facilities planning study to develop a plan for providing secondary treatment to meet State and Federal requirements. It was determined that a new wastewater treatment facility be constructed to replace the old plants. New interceptors and a new Columbia River Outfall were also constructed during the construction of the wastewater plant.

The construction of the City of Richland's Wastewater Treatment Facility was completed and put into operation in the fall of 1985 replacing the system that was constructed by the Federal government in the 1940's.

The WWTF is a complete-mix activated sludge plant designed to treat an average flow of 8.9 million gallons a day. The plant is designed to permit ultimate expansion to approximately twice the design capacity.

The facility treats wastewater in a series of preliminary, primary and secondary treatment processes, including screening, clarification (settling), activated sludge treatment, chlorination, and solids handling. The purified effluent is released to the Columbia River while biosolids, the solids by-product of processes, is thickened, digested, filtered and used as a soil amendment.

Plant Influent



Bar Screen

Wastewater from the Richland collection system first enters the plant where it is screened to remove rags, sticks, and other oversized solids. After screening, the sewage is pumped to the grit chamber to remove grit (sand, gravel, corn, etc).



Aerated Grit Chamber

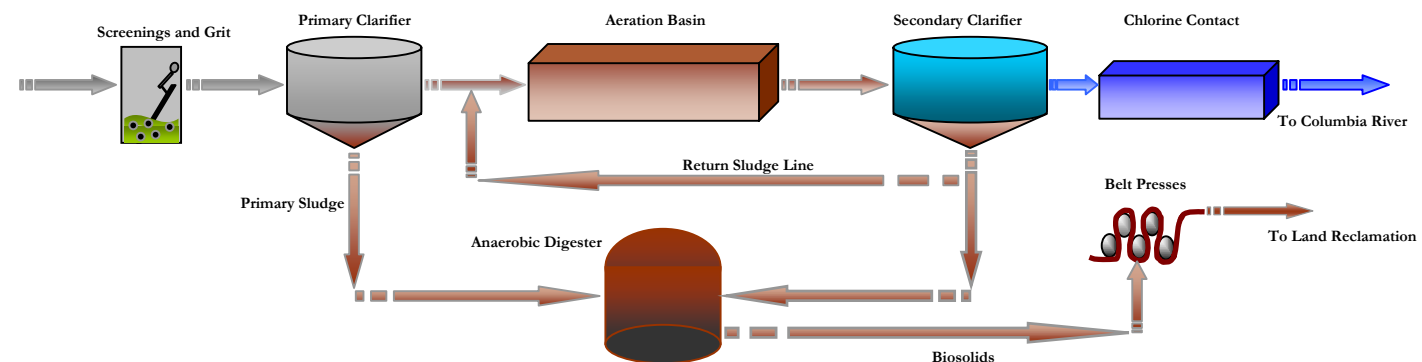
Primary Treatment

After the wastewater is degrittled the wastewater flows to the primary clarifier where much of the suspended solids settle out. These settled



Primary Clarifier

solids are then pumped to the anaerobic digesters for further treatment and the clarified wastewater flows to the secondary system.



Secondary Treatment



Aeration Basin

Wastewater flows from the primary clarifiers to the aeration basins where activated sludge organisms, kept constantly mixed and aerated, feed on and remove nutrients (pollutants) from the wastewater. The combined wastewater and activated sludge, or "mixed liquor", then flows into the secondary clarifiers, where the activated sludge settles out and is separated from the treated wastewater.



Secondary Clarifier

Plant Effluent



Chlorine Contact Chamber

The clarified wastewater then flows to the chlorine contact chamber for disinfection by gaseous chlorine. After chlorination the clean water flows by gravity through a 54" diameter line to the Columbia River

Solids Handling

Sewage sludge generated in the secondary activated sludge units and primary clarifiers are processed by anaerobically digestion for stabilization.



Anaerobic Digesters



Belt presses

The digested sludge (biosolids) is thickened to about 18% solids by a belt filter press. The biosolids are then transported to the City Landfill where it is land applied and disked into the soil for use as a soil amendment.

Plant Capacity

Flow

Average Day	8.9 MGD
Design Flow	11.4 MGD
Peak Flow	24.0 MGD

Organic Loading

Influent (avg. lbs BOD/day)	17,000
Concentrations (mg/l)	230
Effluent (lbs BOD/day)	2,230
Concentration (mg/l)	30
Removal Efficiency (percent)	87

Suspended Solids Loading

Influent (avg. lbs TSS/day)	14,800
Concentrations (mg/l)	200
Effluent (lbs BOD/day)	2,230
Concentration (mg/l)	30
Removal Efficiency (percent)	85



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