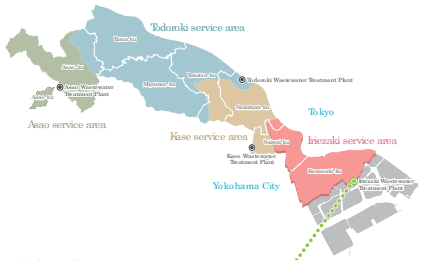
Effective use of renewable energy

Effective use of resources

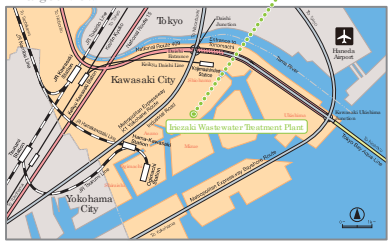
Facility Data

Site area	194,000m²
Planned service area	2,009ha
Planned service population	322,700
Type of system	Collection System
Planned treatment capacity	318,600 m³/day (West Line: 129,000 m³/ day; East Line: 189,600 m³/day)
Sludge treatment	Treated at the Iriezaki Sludge Treatment Plant
Water treatment method	Anaerobic-Anoxic-Aerobic Process with Carrier Media (1 of 8 tanks in the West Line and East Line systems)
	Standard Activated Sludge Treatment (7 of 8 tanks in East Line system)

Access Map



Enlarged view



Colors, Future! いろいろって、未来。川崎市

Waterworks Bureau, City of Kawasaki **Iriezaki Wastewater Treatment Plant**

3-17-1 Shiohama, Kawasaki-ku, Kawasaki-shi 210-0826 Tel: 044-287-5202 Fax: 044-287-5311

Iriezaki Wastewater Treatment Plant

Advanced Wastewater Treatment Plant

Colors, Future! いろいろって、未来。川崎市

Waterworks Bureau
City of Kawasaki

Advanced wastewater treatment

Energy-efficiency measures

The Iriezaki Wastewater Treatment Plant is the oldest sewage treatment facility in Kanagawa prefecture. Comprising two sections – the East Line and West Line – it provides sewage treatment to a 2,009-hectare area encompassing all of Kawasaki-ku and part of Saiwai-ku and Nakahara-ku, excluding the coastal area.

The West Line Wastewater Treatment Plant – which began operation in 1961 and began to undergo reconstruction in FY 2003 to replace aging infrastructure – provides advanced processing with the goal of improving the Tokyo Bay environment. The renovated facilities started operation in FY 2019 with improved energy efficiency and various updated environmental technologies ensuring effective use of renewable energy and conservation of resources.

In addition, the entrance to the Iriezaki Wastewater Treatment Plant was constructed near the Daishigawara Storage Tunnel Pumping Station, which is the end point of Daishigawara Storage Tunnel.

Outline of Advanced Wastewater Treatment Plant

Water conduit

Sends wastewater to wastewater treatment plant.

Primary Sedimentation Tank

Lightweight chain contributes to energy efficiency.

Anaerobic tank, anoxic tank

Stirs the water in the tank for greater energy efficiency.

Aerobic tank

Blows fine air into the tank efficiently.

Final Sedimentation Tank

Stirs the settled sludge.

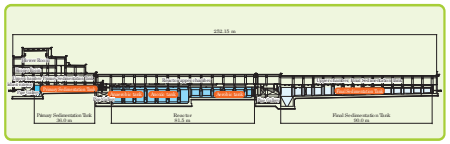
Deodorization equipment

Microorganisms remove odors from sewage.

Main Equipment

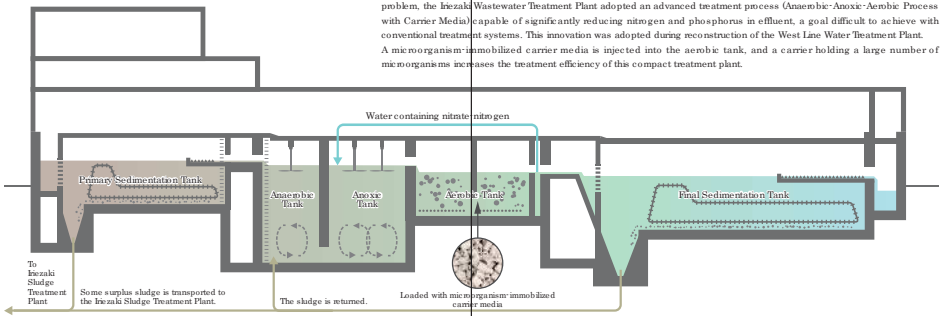
Main pumps	Vertical shaft spiral mixed-flow pump 500 mm × 55 m³/min × 5 units	
Primary Sedimentation Tank	W 9.0 m × L 36.0 m × H 3.0 m × 8 tanks	(Precipitation time) 1.45 hours
Reactor	(Advanced wastewater treatment) Anaerobic-Anoxic-Aerobic Process with Carrier Media	
	Anaerobic tank W 9.3 m × L 7.0 m × H 10.0 m × 8 tanks	(Reaction time) 1.0 hours
	Anoxic tank W 9.5 m × L 38.1 m × H 10.0 m × 8 tanks	(Reaction time) 5.5 hours
	Aerobic tank W 9.5 m × L 36.4 m × H 6.0 m × 8 tanks	(Reaction time) 3.0 hours
Final Sedimentation Tank	W 9.0 m × L 90.0 m × H 3.5 m × 8 tanks	(Precipitation time) 4.2 hours
Blowers	Floating-shaft turbo blowers Blowing capacity: 165 m³/min (output 250 kW) × 5 units	
Deodorization equipment	Biological deodorizing device 220 m³/min × 4 units	
Small-scale hydroelectric generator	Micro tubular water turbine Effective head: 1.4 m Generator output: 14 kW	
Solar power generation	Generator output: 90 kW	

Profile view



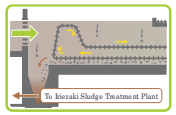
Advanced wastewater treatment works

Tokyo Bay continues to be affected by red tides and other forms of environmental damage caused by eutrophication, which is exacerbated by the nitrogen and phosphorus contained in water discharged from sewage treatment plants. To address this problem, the Iriezaki Wastewater Treatment Plant adopted an advanced treatment process (Anaerobic-Anoxic-Aerobic Process with Carrier Media) capable of significantly reducing nitrogen and phosphorus in effluent, a goal difficult to achieve with conventional treatment systems. This innovation was adopted during reconstruction of the West Line Water Treatment Plant. A microorganism-immobilized carrier media is injected into the aerobic tank, and a carrier holding a large number of microorganisms increases the treatment efficiency of this compact treatment plant.



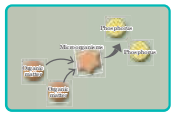
Primary Sedimentation Tank

Larger debris is removed from sewage at the Grit Chamber and Control Building before it is pumped to this Primary Sedimentation Tank. The water flows slowly here to allow smaller sediments to settle out. The settled sludge here is collected with a scraper and is transported to the Iriezaki Sludge Treatment Plant.



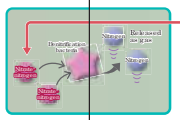
Anaerobic Tank

In this oxygen-free tank, phosphorus-storing microorganisms eject the phosphorus they contain. In addition, using the energy generated in this process, they ingest organic matter (contaminants) in the sewage.



Anoxic Tank

Water containing nitrate-nitrogen produced in the next aerobic tank is returned to this tank. In this tank, which contains no dissolved oxygen, denitrification bacteria break down organic matter using the oxygen in nitrate-nitrogen. At this time, nitrogen from the nitrate-nitrogen is released into the atmosphere as a gas and is thus removed from the sewage.



Aerobic Tank

The microorganisms that release air in water are active here. The active microorganisms include those that incorporate organic matter, that turn ammonia nitrogen in water into nitrate-nitrogen, and that incorporate more phosphorus than was rejected in anaerobic tanks.

Final Sedimentation Tank

Activated sludge containing many microorganisms that have finished their work in the reactor settles out. This sludge is returned to the anaerobic tank, with some of the surplus being sent to the Iriezaki Sludge Treatment Plant. Clean supernatant water is disinfected with chlorine and discharged into Tokyo Bay.

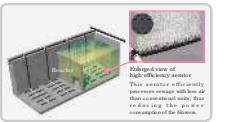
Energy-efficiency measures

Floating-shaft turbo blowers

The blower that sends air to the reactor is a floating-shaft turbo blower that generates little heat and requires no cooling water.

High-efficiency aerator

The aerobic tank adopts a high-efficiency aerator that supplies air efficiently with air bubbles finer than a conventional device produces. It is designed to consume less electric power than a blower.



Effective use of renewable energy

Small-scale hydroelectric generation & Solar power generation

A small-scale hydroelectric generator uses the available head of treated water as it flows in the effluent water way from the Final Sedimentation Tank. In addition, the roof of the Grit Chamber and Control Building holds a solar power generation system. Some of the electric power generated by these systems is consumed within the Iriezaki Wastewater Treatment Plant.

Effective use of resources

Regenerated water cleaned with this advanced treatment system is used for toilets at the center. It is also used efficiently at Kawasaki Zero Emissions Industrial Park and bus depot.

"WAKU WAKU AQUA" Waterworks Public Relations

We have established a public relations feature at the Iriezaki Wastewater Treatment Plant to enable visitors to explore a tour route through our seldom-seen sewerage system. Video, sound, and virtual as well as real-life experiences are available.