

RapiSand™

Ballasted Flocculation System



WestTech

RapiSand™ Ballasted Flocculation

Why Choose RapiSand™?

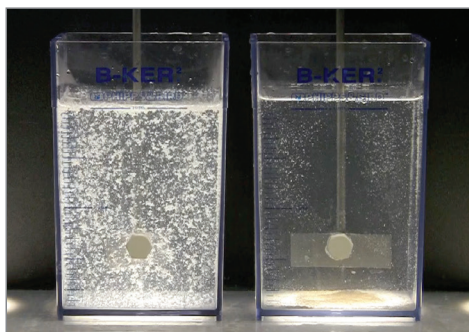
The WesTech RapiSand™ ballasted flocculation system is a high-rate clarification process combining rapid mixing and multi-stage flocculation, followed by sedimentation. RapiSand™ sedimentation is extremely fast and can be applied in a wide variety of suspended solids removal applications. Typical advantages of the RapiSand™ include expanding plant capacity, minimizing plant footprint, providing fast start-up capabilities, and providing great performance characteristics. RapiSand™ may be the answer to your suspended solids process needs.

Applications

- NTU/TSS Removal
- Tertiary Phosphorus Removal
- TOC Removal
- Color Removal
- CSO Treatment
- Algae Removal
- RO Pretreatment
- Bioler Feed Makeup
- Cooling Tower Makeup
- Industrial Process Water
- Chemical Feed Makedown
- Pump Seal Water

Settling with Sand

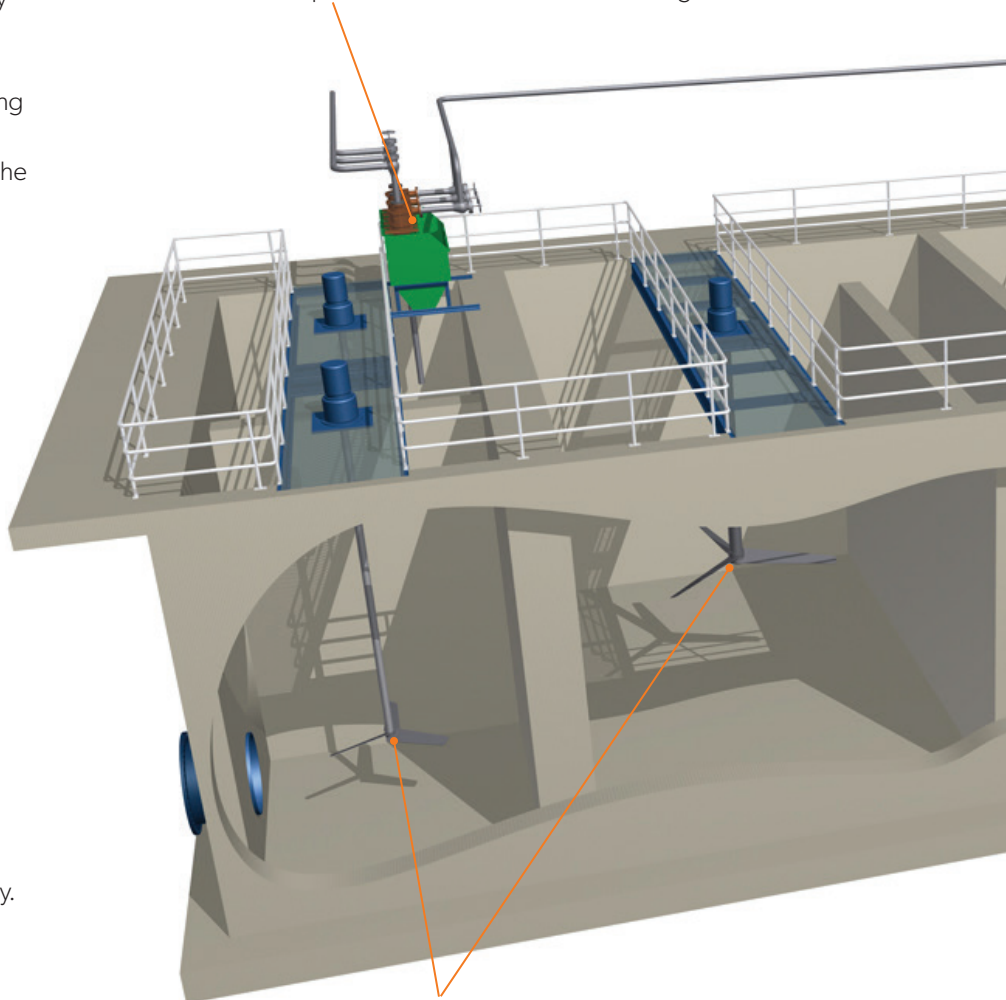
The picture below shows two identical jar test samples containing raw water of 150 NTU turbidity. Both samples were treated with the same dose of chemical coagulant and polymer, then a dose of fine silica sand was added to the jar on the right. After mixing, the RapiSand™ floc settled much faster. This is the essence of the RapiSand™ ballasted flocculation system.



Conventional Floc vs. RapiSand Floc
After 10 sec. of settling time on bench-scale test.

Hydrocyclone

Provides separation of the microsand and coagulated solids.



Hydrofoil Mixers

Ensure uniform mixing in all three mixing chambers.

Process Benefits

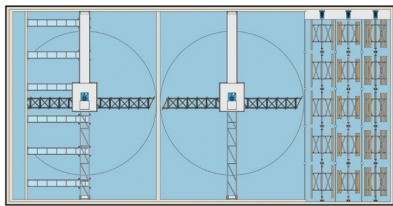
Small Footprint: RapiSand™ can decrease the footprint of the sedimentation system by as much as 90%.

Quick Start-up: Plants can be operational in as little as 15 minutes from start-up time.

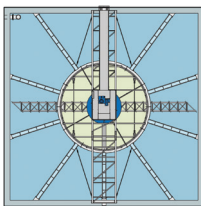
Stable Process: Will handle large spikes in raw water turbidity.

Performance: Typical outlet turbidity is <2 NTU.

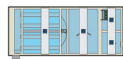
RapiSand™ offers the benefits of conventional treatment, at 1/20 the size.



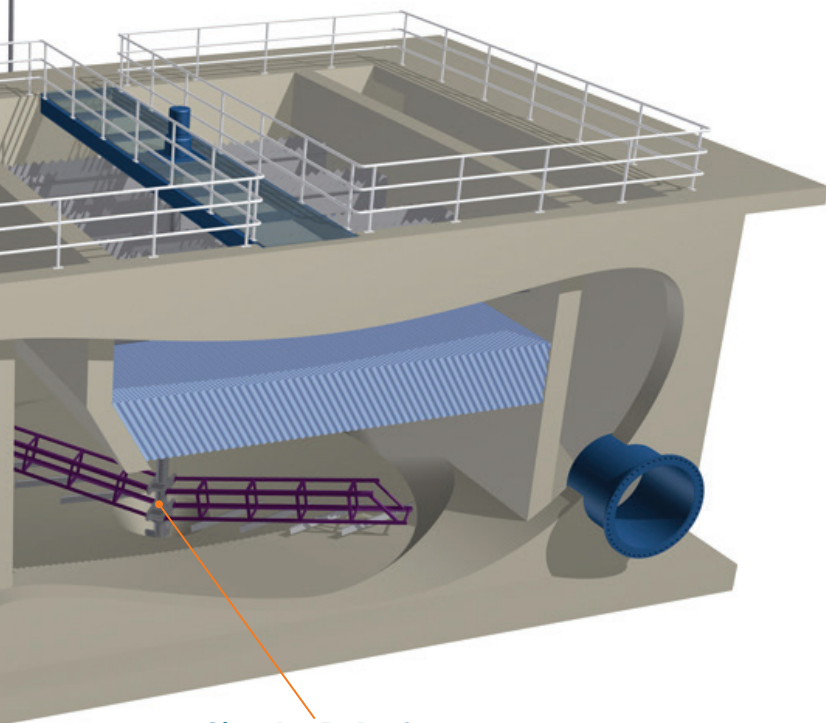
20 MGD Conventional Treatment



20 MGD Solids Contact Clarifier



20 MGD RapiSand™



Circular Rake System

Guarantees rapid transport of settled sand/solids to a centrally located hopper, allowing for rapid process startup.

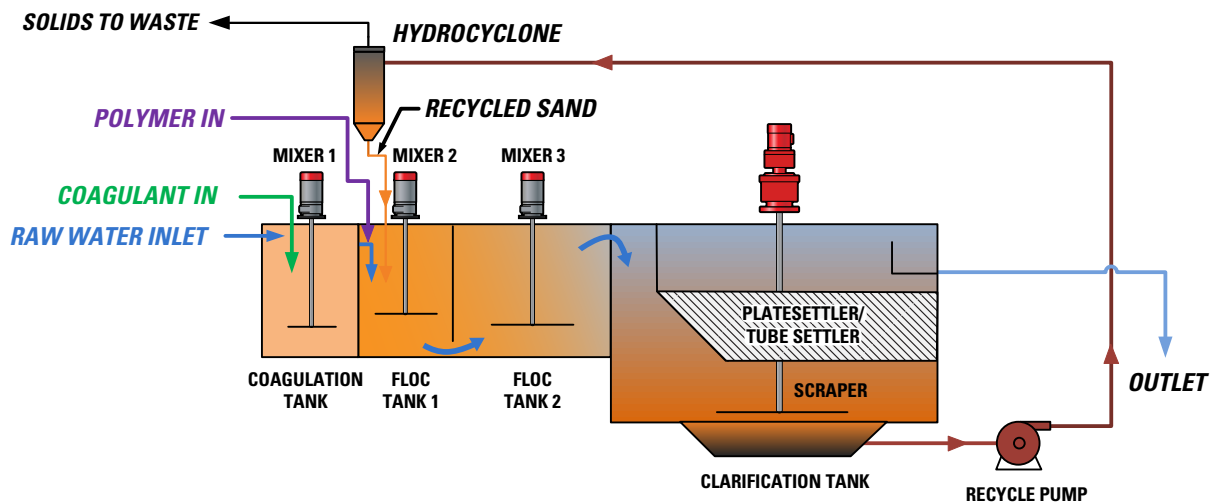
Process Description

RapiSand™ Ballasted Flocculation is a Four-Step Process:

- 1. Coagulation:** Raw water is mixed with coagulant in the first tank.
- 2. Flocculation:** Coagulated water is mixed with polymer and recycled microsand in each of two flocculation tanks.
- 3. Clarification:** The flocculated water flows into the clarification tank where the floc settles and the clarified water passes up through tube settlers. Clarified water exits the system by way of a peripheral outlet launder.
- 4. Separation:** Settled floc and sand are collected and pumped to the hydrocyclone where the sand is separated from the solids. The solids are sent to waste and the recovered sand is returned to the first flocculation tank.

The microsand has a specific gravity of 2.6 and is mixed with the polymer and coagulated solids to form a dense ballasted floc. Total flocculation time is typically eight minutes, which is a fraction of the time required in a conventional flocculation system. In the clarification step, ballasted floc settles at rates that are 15 to 35 times faster than conventional sedimentation. Total detention time in the RapiSand™ system is typically 20 minutes from start to finish.

Rapid flocculation and rapid settling combine to reduce the space requirement by up to 90% for a RapiSand system vs. a conventional clarification system.





Trailer-mounted pilot unit available for lease.

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