



## GSF, Gravity Sand Filter™

Municipal Wastewater Treatment is experiencing tremendous change with effluent discharge permits requiring higher levels of advanced treatment. The Headworks Bio GSF, Gravity Sand Filter, is an upflow, continuous backwash, granular media filter that efficiently removes suspended and colloidal solids while providing a continuous supply of filtered water. The GSF is available in various circular and rectangular models for different flows and applications.

### Applications

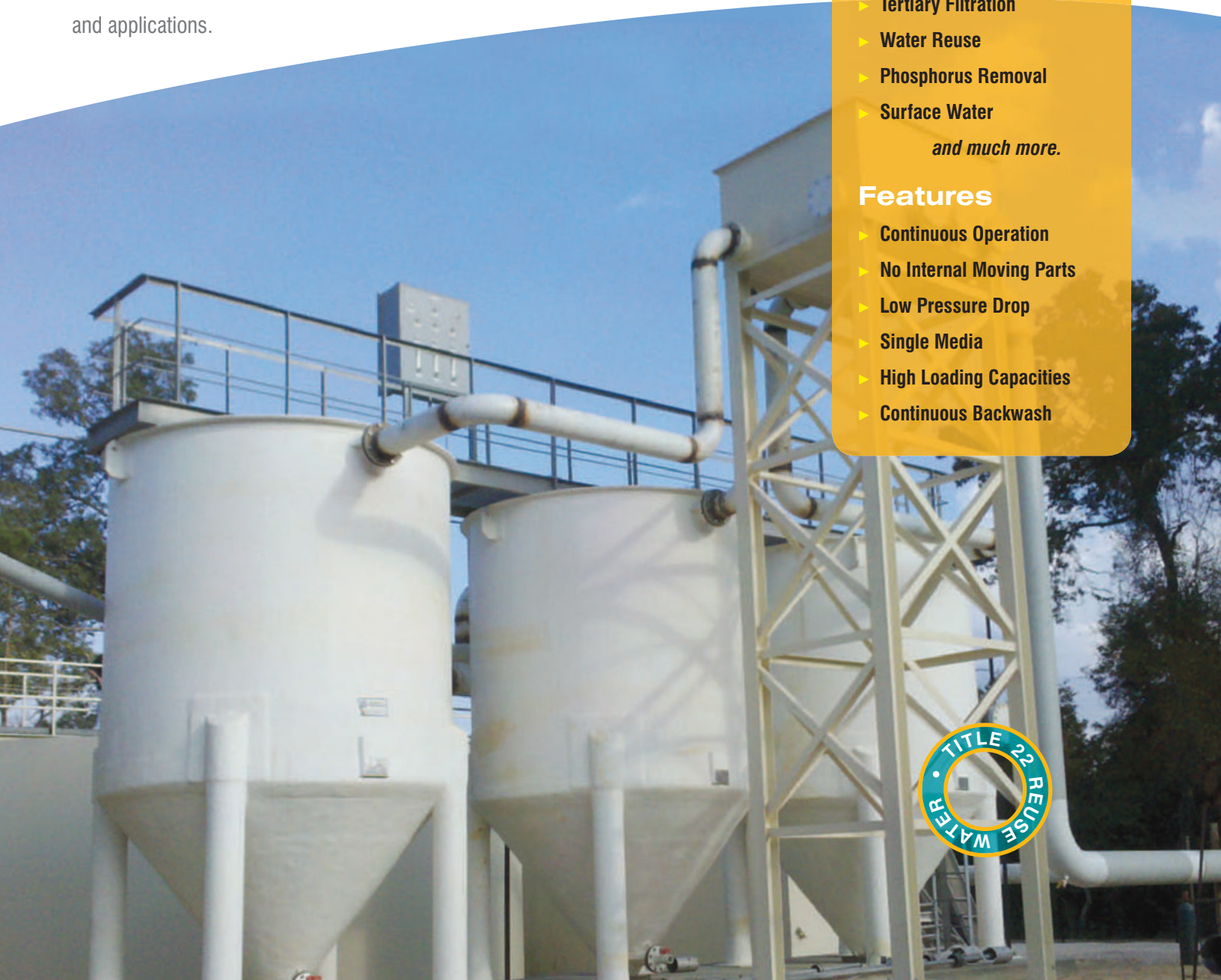
The Headworks Bio GSF can be installed in both municipal and industrial applications, such as:

- ▶ Tertiary Filtration
- ▶ Water Reuse
- ▶ Phosphorus Removal
- ▶ Surface Water

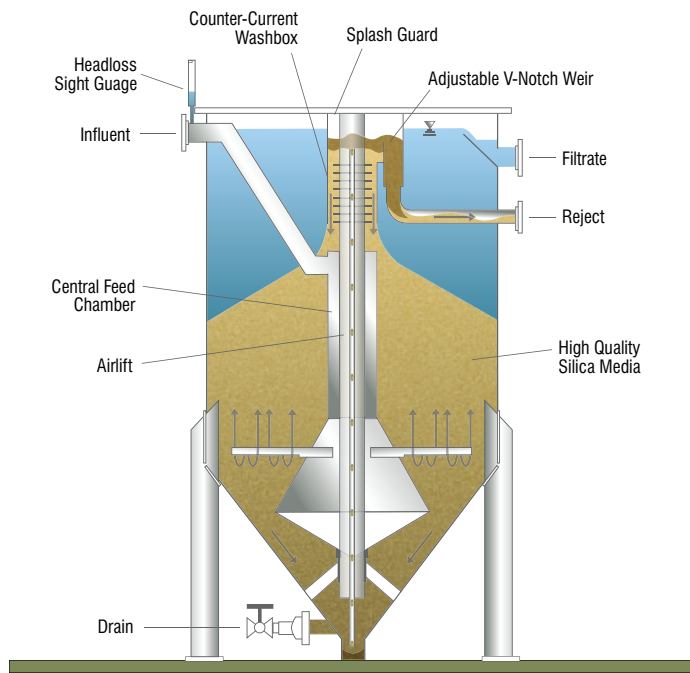
*and much more.*

### Features

- ▶ Continuous Operation
- ▶ No Internal Moving Parts
- ▶ Low Pressure Drop
- ▶ Single Media
- ▶ High Loading Capacities
- ▶ Continuous Backwash



# Headworks Bio GSF Gravity Sand Filter



## How it Works

Influent enters the center of the GSF unit through the central feed chamber. Once in the central feed chamber, radial distribution arms evenly direct the influent into the media bed closest to the bottom of the filter. Water then flows upward through the media where colloidal and suspended solids are removed. Filtrate then exits the GSF near the top of the unit cascading over a Weir that maintains a constant level within the GSF. The colloidal and suspended solids that are captured by the media are drawn to the bottom of the GSF into a chamber by an airlift pump. The sand, colloidal and suspended solids are then transported by a turbulent upward flow inside the airlift that provides a scrubbing/washing action that separates the sand and captured solids before they are discharged into the washbox, located at the top of the filter. The washbox is a baffled chamber with a tortuous path that allows for counter-current washing and separation through gravity of the media and the captured solids prior to discharge. The media is cleaned using filtered water from the upper end of the GSF. Cleaned media is then returned to the top of the filter bed as it settles from the washbox. The adjustable V-Notch Weir then directs the rejected flow out of the filter, carrying the concentrated captured solids for disposal.

### Circular Package Model Specs

Area ft <sup>2</sup>	7 to 113
Diameter (ft.)	3 to 12
Height 40" 80"	10'-1" - 13'-1" up to 17'-4" - 20'-8"
Throughput GPM	10-35 up to 150-500
Reject Rate (GPM)	3-4 to 8-10
Pressure Drop (in.)	6-24
Air Flow (SCFM)	1-2 up to 2-4

### Concrete Rectangular Model Specs

Area ft <sup>2</sup>	100 to 200
WxL (ft.)	10x10 to 14.2x14.2
Height	14'-6" to 17'-6"
Modules	4 to 8
Throughput (GPM)	150-500 to 800-1000
Reject Rate (GPM)	20-24 to 40-48
Pressure Drop (in.)	6-24
Bed Depth (in.)	40-80
Air Flow (SCFM)	2-4

**Note:** Contact Headworks Bio at [hw@headworksusa.com](mailto:hw@headworksusa.com) for model numbers or additional information.

## Quality That Never Quits™

The Headworks Bio Gravity Sand Filter leads the industry by meeting the strictest construction requirements. The standard vessel materials are FRP (fiberglass reinforced plastic). Upon request, Carbon Steel with protective industrial coatings or Stainless Steel (304, 304L, 316 and 316L) are available. For cold weather applications, the vessels can be heat traced and insulated. Concrete basin designs are also available for high flow rate application.

### Low Operation and Maintenance Costs

With no moving parts, no screens, no level controllers or valves, the GSF offers a low operation and maintenance costs. Only air is required to operate the airlift pump. Typical air consumption ranges from one (1) to four (4) SCFM at forty (40) PSI per airlift. Recommended Operator attention and service is all that is necessary.



Continuous Back Flushing Washbox

### Municipal

- ▶ Water Reclamation (CA Title 22 Approved)
- ▶ Tertiary Filtration
- ▶ Phosphorus Removal
- ▶ Denitrification
- ▶ Potable Water Filtration
- ▶ Algae Removal, Lagoons

### Industrial

- ▶ Brine Waste
- ▶ Cooling Towers
- ▶ Incinerator Blowdown
- ▶ Laundry Waste
- ▶ Metal Hydroxides
- ▶ Mill Scale
- ▶ Mining
- ▶ Emulsified Oil Waste
- ▶ Pre-RO Direct Filtration
- ▶ Pulp and Paper Process Water



For detailed performance capabilities, contact Headworks Bio [hw@headworksusa.com](mailto:hw@headworksusa.com).