

Built on Tradition



Highland Tank®



Rainwater Harvesting System

HT-1133

HighDRO®-Pure Rainwater Harvesting Systems collect, store and treat rainwater from a storm event for future reuse. They provide an alternative to using municipal water supplies. HighDRO®-Pure Rainwater Harvesting Systems (HD-P-RHS) are designed to process and treat rainwater that can be recycled into a building for many practical applications.

They produce a sustainable and reliable alternative water source and help reduce stormwater runoff. HighDRO®-Pure systems can be incorporated into water efficiency designs that help qualify for valuable LEED credits.

Additionally, our Rainwater Collection Tanks score high points for environmental sustainability. Our new steel products are made from recycled steel and can be recycled again at the end of their useful lives. The resulting non-potable water can be used for a wide range of applications.

Designers, engineers and builders have long recognized Highland Tank's protected steel water tanks for their strength, durability and functionality.

With the addition of our new HighDRO®-Pure systems, we are continuing our commitment to protect the environment and conserve our precious natural resources to benefit our world today and tomorrow.

HighDRO®-Pure
Rainwater Harvesting Systems

Water Harvesting Solutions



Installing a HighDRO® system can help users reduce water supply costs. As in most large capital projects, initial start-up costs are expected and budgeted.

Highland's HighDRO®-Pure systems ultimately pay for themselves within a few years, depending on the system and local water prices. Not only does the user save on water consumption costs, but stormwater runoff is reduced at the site.

HighDRO®-Pure systems are suitable for many residential, commercial and industrial buildings and can be retrofitted to existing buildings or integrated into new building designs. They are engineered for these site-specific applications and, as a result, consist of technologically advanced components.

They are highly efficient at collecting rooftop runoff. The collected water can be used for non-potable (non-drinking water) and potable (drinking water) demands. Additional water treatment components must be installed to treat potable water for drinking water use.

In some areas, rainwater may represent the primary source of water. Collected rainwater can augment primary water sources, and it is a good standby in times of emergency, such as during power outages, droughts or when the well goes dry.

General Applications:

- Industrial
- Commercial
- Agricultural
- Fire Suppression
- Residential

Specific Applications:

- Toilet flushing
- Lawn and landscape irrigation
- Laundry washing
- Cooling towers
- Fire water supply
- Power washing
- Industrial processing
- Pool/pond filling

Features

- Unlimited storage capabilities
- Efficient, streamlined treatment process
- Low energy consumption per gallon treated
- Measurement and verification
- Influent flow rates to 6,000 gpm
- Distribution flow rates from 5 to 300 gpm

Benefits:

- Saves water consumption costs
- Reduces demands on municipal, surface or ground water supplies
- Protects the integrity of local waterways by reducing nonpoint source pollution
- Beneficial for cleaning purposes as less water is needed
- Good for irrigation as water is free of salts and man-made pollutants
- Reduces flooding and erosion
- Helps you achieve LEED Green Building points



Highland Tank

Complete Turnkey Systems

Highland Tank engineers complete turnkey systems that consist of:

- Flush Filter (HD-FF)
- Rainwater Collection Tank (HD-RCT)
- Duplex Submersible Feed Pumps with Floating Suction
- Advanced Water Filtration System (HD-AWFS)
- Control System (HD-CS)
- Day Tank (HD-DT)
- Booster Pumps (HD-BP) with Controls

Rainwater that may have dirt, leaves, twigs, bird droppings and other organic matter in it is collected by the gutters and routed to the downspouts.

To remove these contaminants, rainwater is first routed to the Flush Filter (HD-FF). The HD-FF, with its inlet strainer basket, internal baffling and gravel pack filter, is designed to remove debris, settleable material and suspended solids to improve the water quality.

The HD-FF is fitted with an access manway to allow for easy inspection, cleaning of the debris collection area and flushing the gravel pack filter. Any reject water is automatically discharged from the HD-FF to the drain field, and the cleanest water flows to the HighDRO® Rainwater Collection Tank (HD-RCT).

The HD-RCT is a protected steel storage tank installed below ground to maintain a cool temperature and reduce the chances of bacterial growth. HD-RCT's range in size from 185 to 60,000 gallons depending on usage demand, collection area and available on-site space. The inlet flow is directed against the Velocity Head Diffusion Baffle (VHDB) to reduce inflow speed and turbulence.

The VHDB limits the disturbance and re-suspension of any fine sediment that accumulates on the bottom of the tank. It also distributes the pre-treated water, oxygenating it to further ensure cleaner stored water. An emergency overflow outlet is installed near the top of the tank to provide for high water levels during heavy stormwater flows. A manway with a quick-opening cover is provided for access to the tank for inspection and maintenance.

Water is drawn from the tank via duplex submersible feed pumps and floating suction when called for by pressure-regulated conditions. The filter and suction intake floats just beneath the surface at the end of the pump's suction. Floating filters protect the pump from particle intake before the water is pumped for use.



Feed pumps and controls are used to transfer the water to the Advanced Water Filtration System (HD-AWFS). Water is pumped through the tertiary filters for sediment removal and UV disinfection to control clarity, odor and microbial contamination. Optional chlorine disinfection provides residual .5 ppm of chlorine.

Water is stored temporarily in the Day Tank (HD-DT) - the source of water for the Non-Potable Water Booster Pump(s) with controls. The Day Tank control stages are predetermined to enable and disable the non-potable water system equipment including pumps, filtration, disinfection system and domestic water valve.

A circulating pump is provided to prevent stagnation during off-peak hours. The harvested rainwater is then either pumped through the building system or outdoors under pressure for non-potable usage - toilet flushing, linen washing, facility cleaning, and/or irrigation.



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HD-RHS Overview

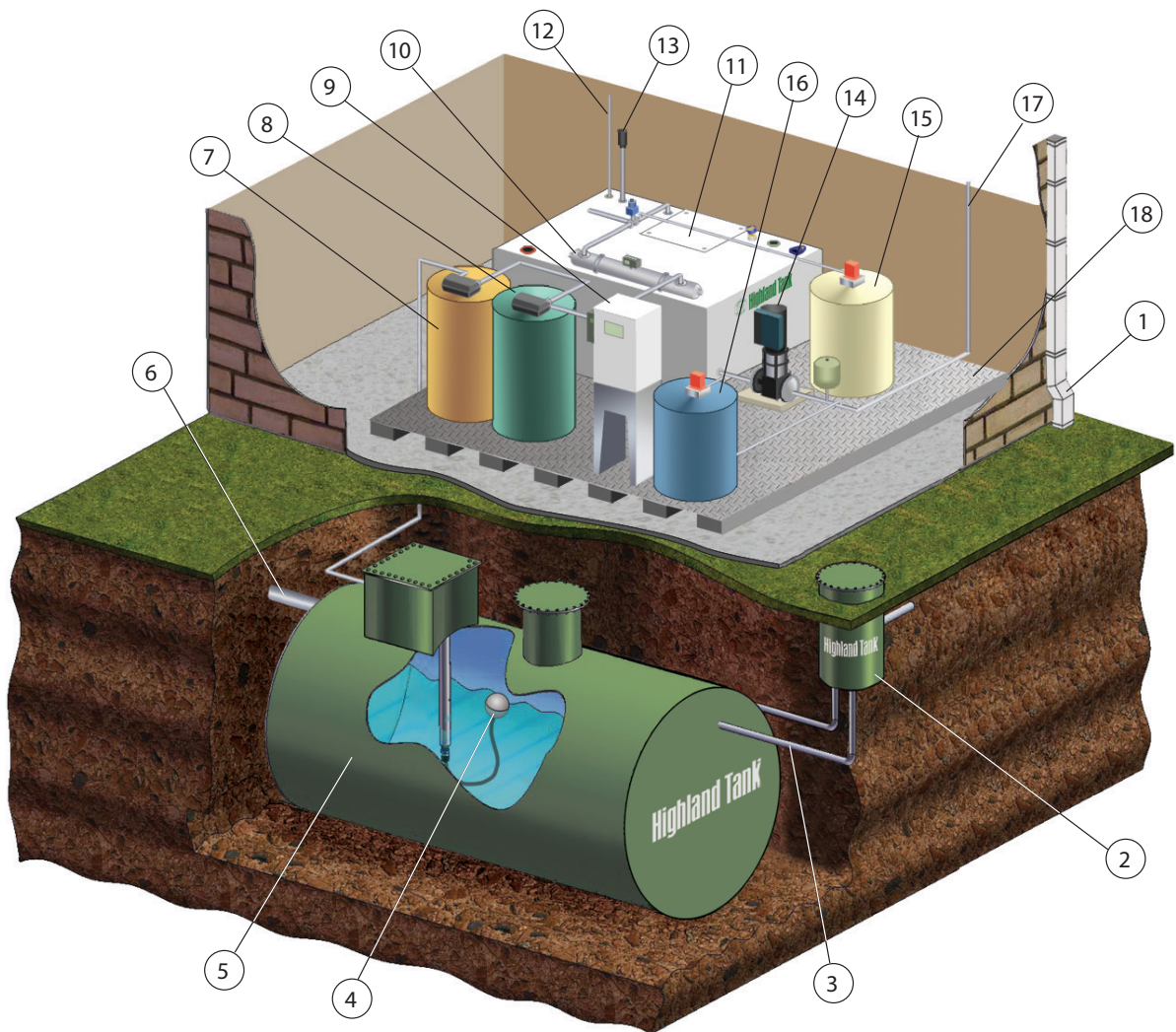
When rainwater is collected from a building's rooftop, the roof serves as the collection point. The Flush Filter (HD-FF) removes dirt, leaves and debris from the roof to ensure clean water.

Gutters or downspouts still carry the water away, but instead of depositing water to the ground, the gutters carry the rainwater to the Rainwater Collection Tank (HD-RCT).

Filtering, ultraviolet treatment, chlorination or other accepted sanitation of the rainwater by the Advanced Water Filtration System (HD-AWFS) produces the cleanest water possible for non-potable water use.

Typical system installation

1. Rainwater Source
2. Flush Filter (HD-FF)
3. Flush Filter Overflow to Storm Drain
4. Floating Suction & Submersible Feed Pumps
5. Rainwater Collection Tank (HD-RCT)
6. Collection Tank Overflow to Storm Drain
7. Carbon Filtration
8. Multimedia Filter
9. Control System (HD-CS)
10. UV Filter
11. Day Tank (HD-DT)
12. Make-up Water Connection
13. Carbon Vent
14. Booster Pump (HD-BP)
15. Chlorine Injection
16. Dye Injection
17. Water Supply to Building
18. Filtration Skid (50-60 ft2)



HD-RHS Components

Highland's HighDRO®-Pure Rainwater Harvesting System's unique design incorporates state-of-the-art components to provide clean, sustainable water to promote environmental stewardship. Benefits such as innovative design, measurement and verification, and energy efficient components provide the LEED engineer and owner strategic points toward building qualification.

HighDRO® Flush Filter (HD-FF)

HD-FFs are designed to filter out debris and control flow. The HD-FF removes dirt, leaves, dust and organic matter from the captured rainwater. They divert this harmful material away from the collection tank and safely discharge it to the storm sewer. HD-FF are fabricated in either a vertical or horizontal configuration with a 3", 4", 6", 8", 10" or 12" diameter inlet/outlet to match typical roof conveyance components like downspouts, roof drains or piping.



HighDRO® Rainwater Collection Tanks (HD-RCT)

HD-RCTs provide safe and reliable water storage of harvested rainwater for reuse from multiple catchment areas such as rooftops or paved areas. HD-RCTs are available for underground or aboveground (horizontal or vertical) installations. Capacities range from 185 to 60,000 gallons. Our inherently strong factory-welded stainless steel or factory-coated carbon steel tanks meet NSF and AWWA codes and come complete with internal diffusion baffles, manways, ladder, submersible feed pumps with floating suction and all the necessary fittings for use with the system.



HighDRO® Day Tank (HD-DT) HD-DTs

Day Tanks provide safe storage of treated water for daily usage. Available for aboveground or underground installations, HD-DTs are sized based on water requirements. Standard sizes are 300, 500, 750, 1,000 and 1,500 gallons with custom capacities available to fit your needs.



Water quality is maintained by the six critical components of the HighDRO®-Pure Rainwater Harvesting System.

HD-RHS Components

HighDRO® Advanced Water Filtration System (HD-AWFS)

The HD-AWFS is a modular filtration skid system that can be customized to meet specific health codes and standards for filtration and disinfection. The basic system is equipped with multi-media particulate filtration and ultraviolet primary disinfection, which are critical components for the reduction of contaminants and microbiological pathogens that may be present in the water supply. Optional treatment components include chlorine injection for secondary disinfection and dyeing for proper identification. Additional filtration and treatment options are also available depending on local regulations.

HighDRO® Control System (HD-CS)

The HD-CS is a PLC based controller that monitors all aspects of the HighDRO®-Pure system. The HD-CS comes complete with touch screen display to monitor water levels in day tank, multimedia back-wash function, UV bulb intensity, meter pump on/off function and collection tank/booster pumps program that is fully integrated to the design conditions of the project with a calendar and real time clock for automatic operations. The HD-CS controller is a "smart" device allowing Building Management System integration as well as the ability to adjust the system parameters as site conditions change. The HD-CS is available in either single phase or three-phase voltage.

HighDRO® Booster Pumps (HD-BP)

Highland Tank HD-BP utilize the latest in constant pressure, variable speed pump technology to provide continuous water to fixtures under any condition. All pumps are bronze or stainless steel bodied multistage with external or internal variable speed drives. Pumps are available in simplex, duplex or triplex configurations from 1-1,000 gpm at any pressure or voltage. NEMA enclosures and UL 508A listed.

Highland Tank Redefines Service

Rural, domestic, commercial and industrial consumers throughout the country are choosing rainwater recycling systems for economic reasons as well as environmental concerns. When relying on rainwater to augment your water supply, the system to collect, treat and put the rainwater into service is a reliable HighDRO®-Pure RHS. At Highland Tank you will find an experienced staff who will assist with the design and sizing of your HighDRO®-Pure RHS and prepare drawings and specifications of the system tailored for your specific application.



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