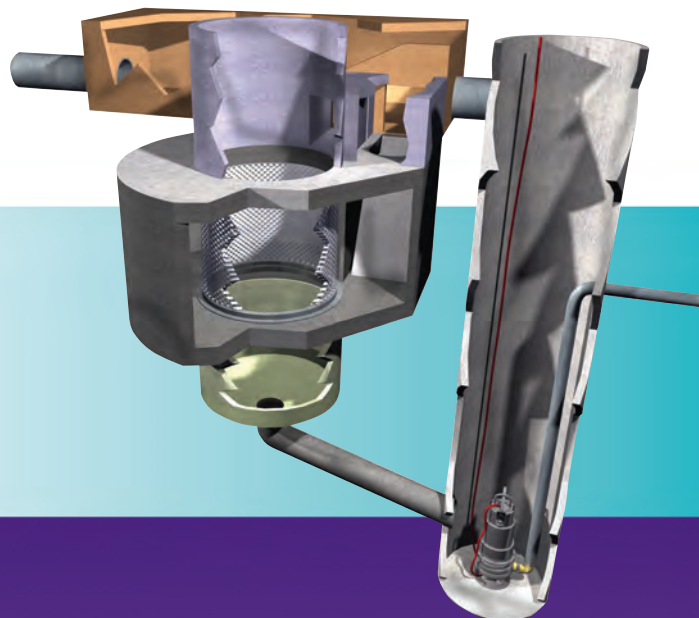


SanSep

Highly effective, primary treatment system for
wet-weather excess sanitary flows



SanSep

The SanSep provides a much more efficient level of solids removal than other mechanical and static screening devices that are typically used in wet-weather excess sanitary flow treatment. It greatly reduces the impact of excess wet-weather sanitary flows by removing all visible solids and associated pollutants and returning them directly to the sewer.

PROCESS DESCRIPTION

1. Excess flow from the sewer enters the SanSep.
2. Using patented continuous deflective separation fine-screening technology, all gross solids larger than 1 mm and finer sediments down to below 0.1 mm are captured and retained inside the unit.
3. The settleable solid pollutants settle into the lower catchment chamber (sump), while the “floatables” are retained at the surface of the upper chamber (separation chamber).
4. The innovative continuous deflective separation technology allows screening of the solids without blocking. A strong flow of fluid is maintained across the face of the screen, producing a “washing” effect that keeps solids moving while the fluid passes through the screen.
5. The SanSep is typically automated with an underflow pump, which periodically removes the solids and returns them to the interceptor sewer, downstream of the overflow point.
6. A process logic controller with a level sensor within the unit controls this entire process and returns the unit to standby condition between wet-weather sanitary flow events. Thus, operator attendance at sites is not required.

ADVANTAGES

- Non-blocking screen—operates continuously at its maximum design flow
- Large flow range—0.3 to 40 cfs with single units; multiple units for larger flows
- Small footprint—typical loading rates across the whole unit of 150 gpm/ft²
- Unobtrusive components—no above-ground facilities required
- High-separation efficiency—continuous deflective separation technology allows capture of solids that are much finer than the screen
- Low maintenance—screening process has no moving parts
- Effluent can be UV disinfected

PERFORMANCE

During a typical wet-weather sanitary flow event, all visible debris is removed from the overflow and prevented from being discharged to the receiving body of water, stream, or river. The SanSep effectively captures:

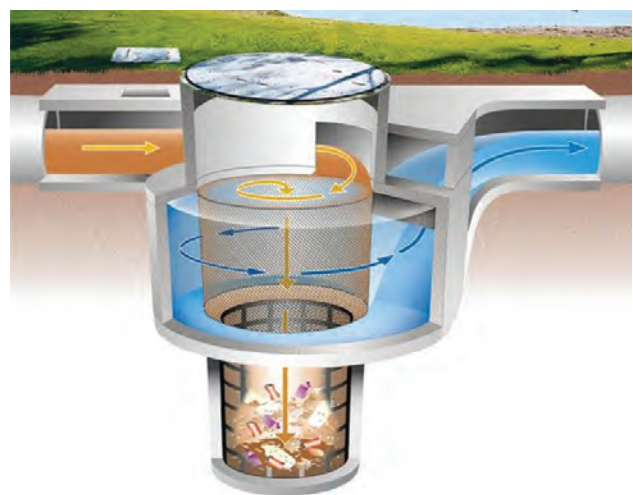
- All solids larger than 1 mm such as industrial, commercial, and domestic litter
- Organic debris, such as vegetation and coarse sediments
- Fine organic and inorganic sediments
- Significant amounts of BOD and phosphorus associated with the organic material and fine sediments captured

CONTINUOUS DEFLECTIVE SEPARATION FINE-SCREENING TECHNOLOGY

Description

The heart of SanSep is continuous deflective separation fine-screening technology, a passive screening process with no moving parts that converts a small portion of the hydraulic gradient in a sewer into velocity energy that continually cleans the screen.

The screen is typically an expanded metal with openings of 1 to 5 mm (.04 to .20 inches). A solid inlet section sits above the screen and contains the inlet that is usually at the invert elevation of the sewer. The screen cylinder sits on a floor that has an opening into the sump, which is separated outside of the screen cylinder from the screening chamber. Water that flows through the screen travels through the annulus of the screening chamber to the outlet, where it goes back into the conveyance pipe.



How It Works

Flow is channeled into the interior of the screen where it forms a circulating flow that sweeps the screen clean. The raised surface of the screen provides deflection of the solids in the flow away from the openings, allowing the screen to “reject” solids that are much smaller than the aperture in the screen.

Captured solids concentrate inside of the screen, with heavier materials falling into the sump and lighter materials floating inside of the upper screen area and inlet cylinder. When the build-up of solids begins to interfere with the hydraulic operation and screen cleaning, it becomes necessary to clean them out. This is done with mechanical cleaning (vector trucks, clam shells, etc) or with a sump pump.

MAINTENANCE

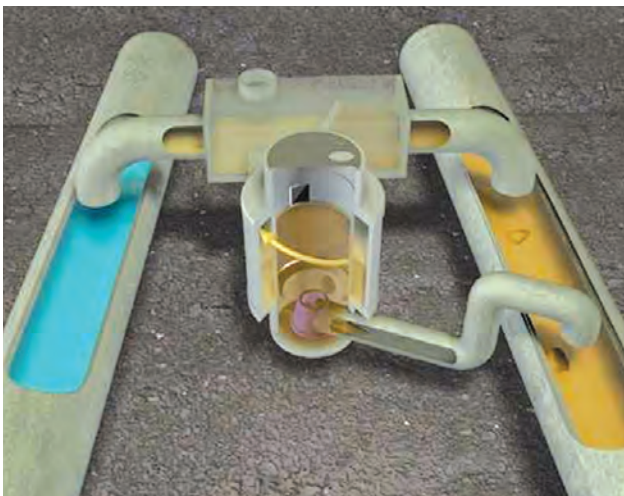
The screening component of the SanSep is completely non-mechanical and has no moving parts, minimizing maintenance and maximizing service life. Periodic inspection and occasional vector truck cleanouts are required to remove large solids not handled by the underflow pump. Additional inspection and periodic maintenance for the underflow pump are also required.

APPLICATIONS

Combined Sewer Overflow Screening

SanSep provides floatables control outlined in the EPA Guidance for Nine Minimum Controls for CSO overflows. It provides the highest level of treatment short of high-rate, chemically enhanced clarification, giving an effluent that can be disinfected with chemicals or UV (see Pretreatment for disinfection or Higher Treatment, below).

The illustration below shows a SanSep installation with an underflow pump that automatically monitors the solids inventory in the unit and periodically pumps the captured solids back into the interceptor, downstream of the overflow regulator.

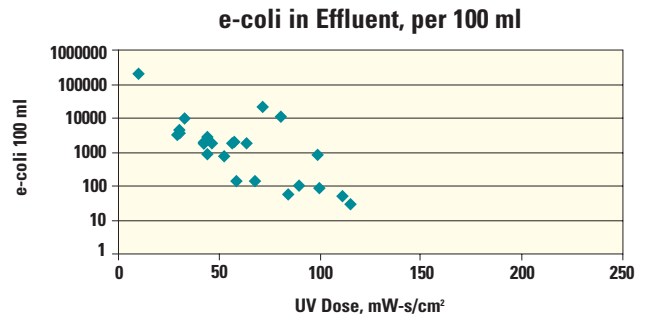


The underflow is pumped at 10% to 20% of the design capacity of the SanSep installation, and runs for 1 to 2 minutes to transport captured solids as needed. The underflow is typically %1 to 2% of the treated flow.

Pretreatment for Disinfection or Higher Treatment

SanSep removes nearly all solids, regardless of specific gravity, that are 100 microns or larger. It thus achieves a 1- to 2-log reduction in bacteria and other microbiological pathogens. It also removes the solids that “shadow” individual and small colonies of biota in CSO and SSO flows. Tests run with a mobile UV pilot plant to determine effectiveness in disinfecting (shown below) demonstrated that a secondary effluent level of 200 counts per 100 ml can be achieved with a UV dose of 80 mW-s/cm², 95% of the time

SanSep is also the optimum pre-treatment for ballasted flocculation, keeping out coarse sediment and irregular-shaped, neutrally buoyant solids that can plug up the recirculation pumps and piping



High-Rate Primary Clarification

Mass balances show that as much as 85% of the solids in CSO flows are captured by the SanSep screen. The equivalent overflow rate can be in excess of 150 gpm/ft² of footprint. SanSep out-performs conventional high-rate primary clarification, has a smaller footprint, lower installed costs, and lower comparable operating costs.



Available in your area from:



410-238-7977 • sansep@PWTech.us • www.PWTech.us