



STORM BULLETIN 1

EPA PHASE II STORMWATER PRETREATMENT CHAMBERS

The **EPA Phase II regulations** have brought about increased awareness of the need to treat stormwater. Stormwater Pretreatment Chambers are used to trap sand, grit, floating debris, hydrocarbons, and Total Suspended Solids (TSS). Typical applications are listed below:

- **Pretreatment upstream of surface detention treatment ponds** -- Stormwater Management ponds, basins and pond sand filters require a pretreatment system that is located next to a maintenance access road. Some design manuals suggest using a sediment fore bay, for pretreatment, located next to the stormwater pond. However, most owners prefer a pretreatment chamber for two reasons:
 - improved aesthetics
 - ease of maintenance with a pretreatment chamber that is located next to a paved street or parking lot.
- **Pretreatment upstream of subsurface detention/infiltration treatment chambers.**
- **“Stand-alone treatment” when downstream detention treatment is not required**
 - Urban parking lots
 - Retrofit existing storm sewers.

Proprietary chamber model testing – a Pretreatment Chamber configuration is considered proprietary when the vendor has developed its own internal components and hydraulics to improve performance relative to an off-the-shelf chamber. Vendors of proprietary Pretreatment Chambers perform flow tests of models to:

- Evaluate the sedimentation removal process
- Evaluate internal hydraulics and sediment storage during design storm events.
- Relate test results to basic science for sedimentation and hydraulics
- Validate the methodology used to design full-size chambers.
- **Design of full-size chambers** -- design of full-size pretreatment chambers requires preparation of documents, which should be provided to the Site Engineer by the vendor, that evaluate the following:
 - Optimum location of the pretreatment chambers on the Site Plan.
 - Technical Analysis of site hydrology and sizing methodology for treatment
 - Technical analysis of flow splitter hydraulics when providing flow bypassing.
 - Estimate of sediment accumulation rate, storage capacity, and pump out interval.
 - Backwater Analysis for the Design Storm Event.
 - Preparation of an AutoCAD Detail Drawing with elevations and sizing consistent with the Site Plan and Technical Analysis.