4.4-f BAFFLED VAULT

Alternative Names: Oil and Water Separator, Oil/Grit Separator, Water Quality Inlet

BMP DESIGN APPROACH
☐ Pollutant Source Control
☐ Hydrologic Source Control
■ **Stormwater Treatment**
SCALE OF APPLICATION
☐ All SFR and MFR < 1 acre
■ **MFR 1-5 Acre and CICU < 5 acres**
■ **MFR and CICU > 5 acres and all WQIPs**
TYPE OF APPLICATION
☐ Temporary
■ **Permanent**

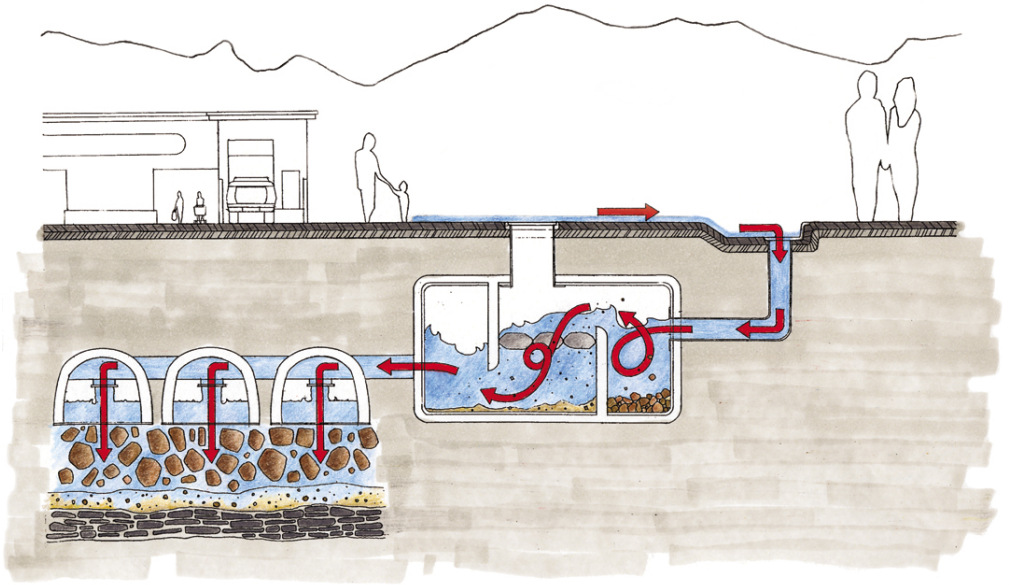
DESCRIPTION

Baffle vaults are used primarily to remove grease and oil from stormwater. Baffle vaults are typically constructed with two or three chambers. Stormwater entering the device passes through the first chamber to remove coarse particles and debris by settling or screening. A weir is typically used to pass stormwater from the first chamber to the second chamber. In the second chamber a special screen is used, such as a coalescing plate interceptor, where oil droplets accumulate on the screen surface, come in contact with other oil droplets, and form buoyant droplets that float. These droplets are then trapped at the surface of the water while the rest of the water flows into a third chamber where a specially designed outlet allows water to flow out without taking the grease and oil with it.

APPLICABILITY

- Targets removal of grease and oil from stormwater.
- Typically applied at industrial sites or high-use commercial sites where there is a high potential for leaks and spills of grease and oil.
- Typically not recommended as a stand-alone permanent BMP. However, baffle vaults can be used as a pretreatment device within a system of permanent BMPs.

Subsurface Infiltration System Using Baffle Vault for Pretreatment Figure



- Most effective when used for small drainage areas; typically less than 1 acre.

Advantages

- Useful for retrofit applications to provide additional stormwater treatment.
- Useful as a water quality protection device for properties that have a high risk for oil spills (e.g., gas stations).

Disadvantages

- Typically requires frequent maintenance to remove captured material to avoid re-suspension and transport during subsequent runoff events.
- Cannot remove pollutants of concern for lake clarity (i.e. fine sediment particles and species of nitrogen and phosphorus).
- Units with standing water potentially promote mosquito breeding.
- Oil and water separators cannot be used for the removal of dissolved or emulsified oils such as coolants, soluble lubricants, glycols, and alcohols.
- Confined space entry may be required for maintenance depending on the design.

DESIGN CONSIDERATIONS

The following guidelines are water quality design considerations. Refer to applicable drainage design manuals within the responsible jurisdiction for requirements associated with structural integrity, drainage design, public safety, and other factors.

- Size units based on manufacturer's design criteria and guidelines.
- Ensure that the depth of the sump is at least four times the diameter of the inflow pipe.

- Ensure that site conditions allow for sufficient hydraulic head from the inlet to the outlet. Most designs require that the outlet is a minimum of 4 feet below the inlet.
- Construct baffles from a noncorrosive material, such as concrete, stainless steel, or a fiberglass reinforced plastic.
- Most designs target a maximum allowable velocity of stormwater through the inlet of 0.5 cubic feet per second.

INSTALLATION CONSIDERATIONS

Refer to manufacturer's instructions for proper installation guidelines.

INSPECTION AND MAINTENANCE

- Where applicable, follow maintenance requirements specified for the proprietary system installed.
- Inspect at least twice per year and after significant runoff events.
- Use BMP Rapid Assessment Methodology (RAM) protocols pertaining to treatment vaults to establish benchmark and threshold standard criteria for maintenance and material removal.
- Use a stadia rod to measure the amount of accumulated sediment and material in the settling chamber.
- Most units are designed to be cleaned by a vactor truck or functionally equivalent equipment.
- Properly dispose of material and standing water.

EFFECTIVENESS CONSIDERATIONS

Baffle vaults can be effective at removing grease and oil when properly designed, constructed, and maintained. Baffle vaults are not considered effective for removal of pollutants of concern for lake clarity (i.e. fine sediment particles and species of nitrogen and phosphorus). Baffle vaults when properly maintained can be successful pretreatment devices that increase the effectiveness of downstream BMPs by reducing loads of coarse sediment and other gross pollutants to downstream BMPs.