



Storm Water O&M Fact Sheet Catch Basin Cleaning

DESCRIPTION

Catch basins are chambers or sumps, usually built at the curb line, which allow surface water runoff to enter the storm water conveyance system. Many catch basins have a low area below the invert of the outlet pipe intended to retain coarse sediment. By trapping sediment, the catch basin prevents solids from clogging the storm sewer and being washed into receiving waters. Catch basins must be cleaned periodically to maintain their ability to trap sediment, and consequently their ability to prevent flooding. The removal of sediment, decaying debris, and highly polluted water from catch basins has aesthetic and water quality benefits, including reducing foul odors, reducing suspended solids, and reducing the load of oxygen-demanding substances that reach receiving waters.

APPLICABILITY

Catch basin cleaning should be performed at any facility that has an on-site storm sewer system that includes catch basins and manholes.

Although catch basin cleaning is easily implemented, it is often overlooked in an overall storm water management plan. In addition, many of the catch basin cleaning programs that have been implemented focus only on removal of debris from grate openings; full implementation of the catch basin cleaning BMP should also include removal of debris from the catch basin itself.

ADVANTAGES AND DISADVANTAGES

Catch basin cleaning is an efficient and cost-effective method for preventing the transport of

sediment and pollutants to receiving water bodies. This improves both the aesthetics and the quality of the receiving water body.

Limitations associated with cleaning catch basins include:

- Catch basin debris usually contains appreciable amounts of water and offensive organic material which must be properly disposed.
- Catch basins may be difficult to clean in areas with poor accessibility and in areas with traffic congestion and parking problems.
- Cleaning is difficult during the winter when snow and ice are present.

Sediment and debris removed from catch basins can potentially be classified as hazardous waste. As a result, the materials must be disposed in a proper manner to avoid negative environmental impacts.

PERFORMANCE

Based on current data, it is not possible to quantify the water quality benefits to receiving waters resulting from catch basin cleaning. The rate at which catch basins fill with debris, as well as the total amount of material which can be removed by different frequencies of cleaning, are highly variable and cannot be readily predicted. Past studies have estimated that typical catch basins retain up to 57 percent of coarse solids and 17 percent of equivalent biological oxygen demand (BOD).

In addition, data collected as part of a Nationwide Urban Runoff Program (NURP) project in Castro Valley Creek, California, indicated that catch basins, cleaned on an average of once every year and a half, contained approximately 60 pounds of material each at the time of the cleaning.

OPERATION AND MAINTENANCE

Catch basins should be inspected at least annually to determine if they need to be cleaned. Typically, a catch basin should be cleaned if the depth of deposits is greater than or equal to one-third the depth from the basin to the invert of the lowest pipe or opening into or out of the basin. If a catch basin significantly exceeds the one-third depth standard during the annual inspection, then it should be cleaned more frequently. If woody debris or trash accumulates in a catch basin, then it should be cleaned on at least a weekly basis.

Catch basins can be cleaned either manually or by specially designed equipment. This equipment may include bucket loaders and vacuum pumps. Material removed from catch basins is usually disposed in conventional landfills. Before any materials can be disposed, it is necessary to perform a detailed chemical analysis to determine if the materials meet the EPA criteria for hazardous waste. This will help determine how the materials should be stored, treated, and disposed.

COSTS

Catch basin cleaning costs will vary depending upon the method used, the required cleaning frequency, the amount of debris removed, and debris disposal costs.

Cleaning costs for catch basins were estimated in three NURP program studies (Midwest Research Institute, 1982). These estimates are summarized in Table 1.

In communities equipped with vacuum street sweepers, a cleaning cost of \$8 per basin cleaned is recommended for budgetary purposes (Southeastern Wisconsin Regional Planning Commission, 1991.) Cleaning catch basins manually costs

TABLE 1 CLEANING COST PER CATCH BASIN

| Location | Method | Cost |
|----------------------|-----------------------------------|---------|
| Castro Valley, CA | Vacuum attached to street sweeper | \$7.70 |
| Salt Lake County, UT | Vacuum attached to street sweeper | \$10.30 |
| Winston-Salem, NC | Vacuum attached to street sweeper | \$6.30 |

Source: MRI, 1982.

approximately twice as much as cleaning the basins with a vacuum attached to a sweeper. Therefore, a cost estimate of \$16 per catch basin cleaned may be used for manual cleaning. It should be noted that costs vary depending on local market conditions.

REFERENCES

1. Midwest Research Institute, 1982. *Collection of Economic Data from Nationwide Urban Runoff Program Projects-Final Report*. Report to U.S. Environmental Protection Agency.
2. Minnesota Pollution Control Agency, 1989. *Protecting Water Quality in Urban Areas*.
3. Southeastern Wisconsin Regional Planning Commission, 1991. *Cost of Urban Nonpoint Source Water Pollution Control Measures*, Technical Report No. 31.
4. U.S. EPA, 1983. *Final Report of the Nationwide Urban Runoff Program*. EPA 841/583109.
5. U.S. EPA, 1977. *Catch Basin Technology Overview and Assessment*. EPA-600/2-77-051.
6. Washington State Department of Ecology, 1992. *Storm Water Management Manual for Puget Sound*.

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