

**Targeted Constituents**

● Significant Benefit      ◐ Partial Benefit      ○ Low or Unknown Benefit

◐ Sediment	◐ Heavy Metals	○ Floatable Materials	◐ Oxygen Demanding Substances
◐ Nutrients	◐ Toxic Materials	◐ Oil & Grease	○ Bacteria & Viruses
		○ Bacteria & Viruses	○ Construction Wastes

**Description**

Prevent or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning by using offsite facilities, washing in designated areas only, eliminating discharges to the storm drain by infiltrating or recycling the wash water, and training employees and subcontractors. This management practice is likely to cause a significant reduction in oil, grease, and nutrients. It will cause a partial reduction in heavy metals, toxic materials, sediment, nutrients, and oxygen demanding substances.

**Approach**

Many businesses, industries and commercial facilities need to clean and wash vehicles on a regular basis. Vehicles on construction sites may need to be washed frequently. Washing vehicles and equipment outdoors can pollute stormwater runoff, particularly when performed on paved surfaces or in drainage pathways. The washwater may flow onto the ground or enter directly into the storm drainage system or natural channel.

Pollution may be generated by the vehicle being washed (sediment, automotive fluids, dust, food particles, toxic materials, etc) or by the cleaning method involved (detergents, solvents, disinfectants, etc). Due to the wide range of potential pollutants, there is no single solution for how to clean vehicles and equipment.

It is necessary to detain vehicle washwater until it is determined that no pollutants exist other than sediment. Small amounts of washwater may be discharged into vegetated areas for infiltration and use by plants (except for environmentally sensitive areas such as natural streams and wetlands), provided that all of the washwater infiltrates into the ground.

**General Guidelines**

Consider the following methods for washing and cleaning vehicles and equipment:

- Use offsite commercial washing businesses as much as possible, except for removing mud and dirt prior to leaving the site. Offsite commercial businesses must be permitted and are usually better equipped to handle and dispose of washwater properly. Performing this work offsite can also be economical by eliminating the need for substantial space and washing equipment.

- If washing must occur onsite, use designated and bermed wash areas to prevent washwater from entering stormwater infrastructure, creeks, rivers, and other water bodies. The wash area should be sloped for washwater collection into a sump with adequate capacity.
- Use phosphate-free, biodegradable soaps in small amounts. Avoid the use of solvents to clean vehicles.
- Educate employees and subcontractors on pollution prevention measures about the importance of this practice.
- Steam cleaning and pressure washing are two procedures which generate significant pollutant concentrations. Do not allow these practices unless washwater containment and capture methods are in place. Washwater generated by steam cleaning and pressure washing shall not be discharged but must be disposed to the municipal wastewater treatment plant via the sanitary sewer with written permission from Knoxville Utilities Board (KUB). KUB must be consulted prior to considering sanitary sewer as a disposal option.
- When cleaning vehicles and equipment, use as little water as possible. Initially spray vehicle or equipment, and then scrub with cloth rags or squeegees. Use a positive shutoff valve to minimize water usage. High-pressure sprayers may use less water than a hose.

#### ***Residential Cleaning and Carwash Fundraisers***

- Personal vehicles and equipment may be cleaned on residential properties provided that such cleaning is not conducted as a business. A carwash fundraising event for a charity or nonprofit organization is also allowed if it is not conducted for more than 2 days.
- Minimize the use of detergents and preferably use biodegradable phosphate-free soap. Do not use solvents and minimize the use of water. Discharge to a vegetated or grassed area when possible by parking on the lawn. Avoid washing in paved areas such as driveways, parking lots, or city streets.

#### ***Temporary Facility for Vehicle and Equipment Cleaning***

- A typical temporary installation for construction vehicle and equipment cleaning is shown on Figure AM-14-1.
- A temporary setup may also be used for industrial and commercial facilities. Similarities include the need for an impervious floor, containment berms of a minimum height, and a controlled entrance and exit. Commercial vendors make several configurations for different size vehicles (even railcars) over a variety of ground surfaces. Typically, some type of plastic abrasion-resistant sheeting is used. Sheeting should be inert to anticipated types of chemicals and also resistant to weathering. Containment berms can be formed from cinder blocks, telephone poles or other material beneath the sheeting. It is highly recommended that a water treatment system should be included for a temporary setup at industrial and commercial facilities.

- When vehicle and equipment cleaning must occur onsite, and the operation cannot be located within a structure or building equipped with sanitary sewer facilities, the outside cleaning area shall have the following characteristics:
  - Located away from storm drainage system or watercourses
  - Impervious floor which is resistant to traffic, chemicals, weathering
  - Containment berm shall be at least 6 inches high, preferably more
  - Sloped to a sump to allow collection and disposal of washwater

***Permanent Facility for Vehicle and Equipment Cleaning***

- Large businesses and industries may consider a complete vehicle washing facility that filters and recycles washwater.
- When vehicle and equipment cleaning must occur onsite, and the operation cannot be located within a structure or building equipped with sanitary sewer facilities, the outside cleaning area shall have the following characteristics:
  - Located away from storm drainage system or watercourses
  - Paved with concrete or asphalt, or stabilized with aggregate base
  - Sump to allow collection and disposal of washwater
  - Bermed to contain washwater and to prevent stormwater runoff
  - Discharge pipe with a positive control valve that allows switching from stormwater runoff (when not in use) to a sanitary sewer or process sewer or a separate dead-end sump (during vehicle cleaning)
  - Clearly designated as a vehicle and equipment cleaning area to prevent other uses such as vehicle maintenance and repair
  - Equipped with media infiltration devices (see ST-06) or oil/water separators (see ST-07).
- There must be written procedures for how to operate a permanent facility for vehicle and equipment cleaning. Employees must be trained on these procedures. Important information should be posted at the facility, such as proper settings for the discharge pipe control valve.

**Maintenance**

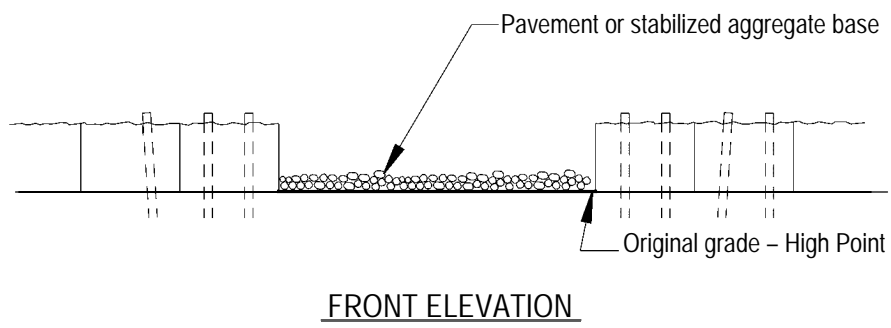
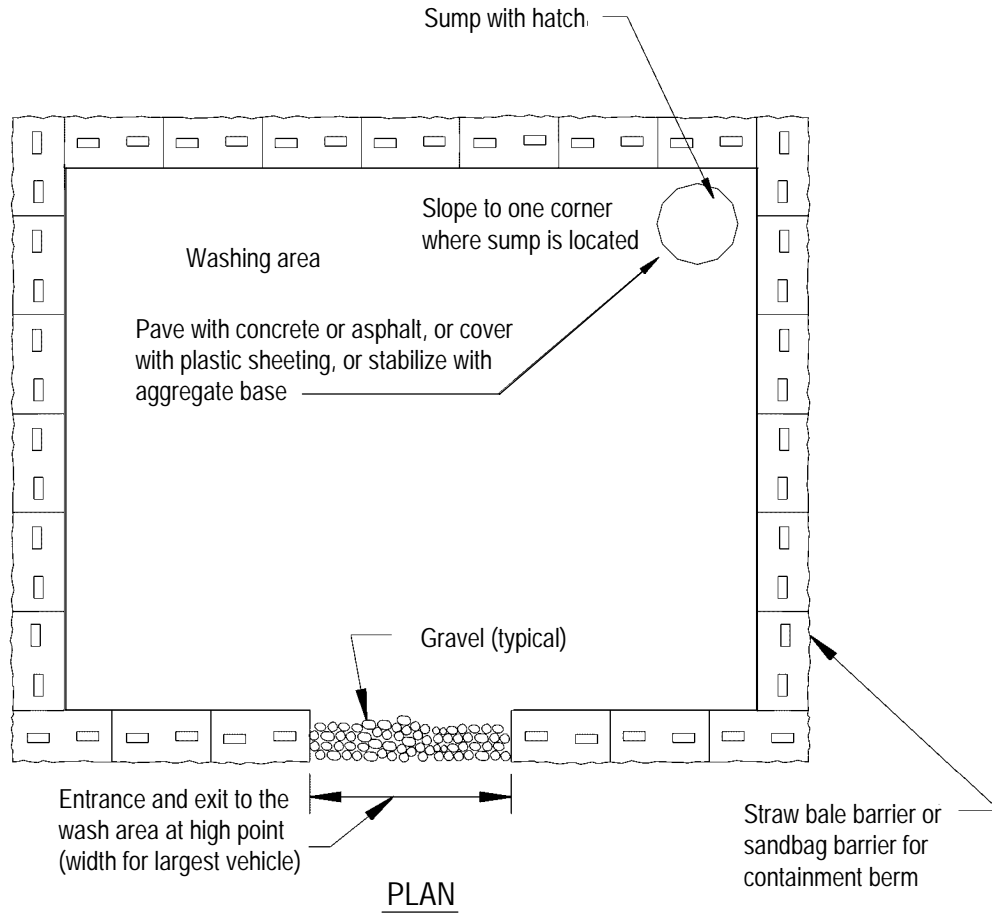
- Install and inspect system prior to use. Repair as necessary. Inspect sump and washwater treatment equipment regularly and empty as needed.

**Limitations**

- Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades.
- Sending vehicles and equipment offsite to be cleaned should be done in conjunction with a stabilized construction entrance and mud tracking removal.
- KUB may require pretreatment and monitoring of washwater discharges to the sanitary sewer and should be consulted first.

**References**

**30, 31, 33, 34, 35, 98, 99, 103, 113, 138** (see BMP Manual Chapter 10 for list)



NOT TO SCALE

**Figure AM-14-1**  
**Construction Vehicle & Equipment Cleaning Area**