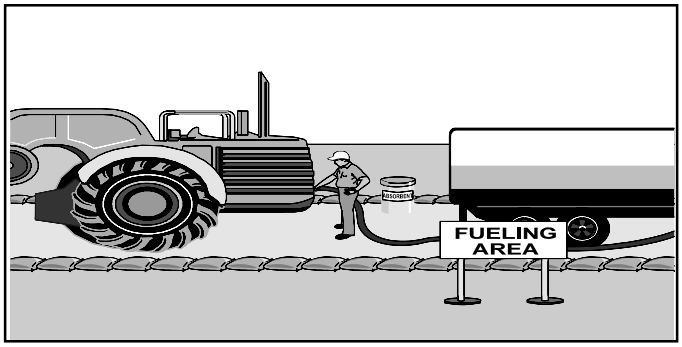
ACTIVITY: Vehicle and Equipment Fueling | AM – 15



CITY OF KNOXVILLE

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	○ Construction Wastes

Description

The purpose of this BMP is to reduce or prevent the impact of fueling operations to the stormwater system and natural streams. A combination of proper structural controls, alert and trained employees, good habits, and adequate supply of spill response materials will prevent environmental impacts to streams and natural channels. Even a small amount of spilled gasoline, oil, or other petroleum product will kill fish and other aquatic wildlife in ditches, streams, wetlands, or other natural bodies of water. This practice will create a significant reduction in VOCs, heavy metals, toxic materials, and oil and grease.

Suitable Applications

- Temporary fueling facilities at construction sites, such as fuel trucks and diesel tanks.
- Permanent fueling facilities, such as retail gasoline stations or private refueling stations on industrial or commercial property.

Approach

Spills from fueling vehicles and equipment, or from the transfer of fuels to a storage tank, can be a significant source of pollution. Fuels carry contaminants of particular concern to humans and wildlife, such as heavy metals, toxic materials, and oil and grease; these contaminants are not easily removed by most stormwater treatment devices. In addition, many people do not realize that storm drains, curb inlets, grate inlets, and drainage culverts discharge directly into natural streams, rivers and lakes.

Consequently, pollution control at the source is particularly important. Adequate control can be achieved with careful design of the initial installation, retrofitting of existing installations, and proper spill control and cleanup procedures described below.

General Guidelines

- Maintain fueling equipment in good condition. Comply with all federal and state requirements regarding the installation of aboveground and underground storage tanks, including requirements for secondary containment.
- The Spill Prevention Control and Countermeasure (SPCC) Plan, which is required by law for permanent fueling facilities such as retail gasoline stations, is an effective program to reduce the number of accidental spills and releases. Keep the SPCC Plan (discussed in AM-07, Spill Prevention and Control) up-to-date by regular inventory of fuel tanks, cleanup equipment and cleanup supplies.
- Train employees in proper fueling and cleanup procedures, including periodic review of the SPCC Plan and locations of absorbent spill materials. Use absorbent materials

on small spills rather than hosing down the spill; remove absorbent materials promptly and dispose properly. Maintain an adequate supply of clean absorbent materials in an easily accessible location per SPCC Plan.

- Discourage "topping-off" of fuel tanks. Use vapor recovery nozzles to help control drips as well as prevent air pollution. The vehicle operator should remain with the vehicle during fuel operations.
- When filling storage tanks, the fuel delivery truck operator must remain with the vehicle during fuel transfer operations. Place secondary containment around potential locations of accidental spills or releases, such as at the hose connections or valves. Temporarily cover or otherwise block nearby catch basins or storm drains so that a spill or leak will be controlled. Always notify emergency responders, hazmat contractors and the Water Quality Hotline (215-4147) immediately in the event of a large spill or leak.
- Although not specifically involved with stormwater quality, a fire or explosion would constitute a potential stormwater quality disaster. Follow recommendations and requirements by the National Fire Protection Association (NFPA) including:
  - NFPA 30, Flammable and Combustible Liquids Code
  - NFPA 30A, Automotive and Marine Service Station Code

Temporary Facility for Fueling *(*Construction Activities)

- Prior to establishing a temporary facility or using a portable fuel truck, consider using offsite fueling stations as much as possible. Retail gasoline stations must be permitted, are usually better equipped to fuel vehicles and equipment, and generally have oil-water separators and other structural controls to protect the environment.
- Do not use mobile fueling of vehicles and equipment when it is feasible to transport to a designated temporary fueling area. Plan work so that vehicles and equipment can be fueled at the beginning or end of a shift. Establish a designated area for fueling with adequate room for spill control, which is not in the center of activity. Most vehicles, except for tracked equipment such as bulldozers, should be able to travel to a designated area with little lost time.
- Place a stockpile of spill cleanup materials where it will be readily accessible. Use absorbent materials on small spills and for general cleaning rather than hosing down the area. Remove the absorbent materials promptly and dispose properly.

Permanent Facility for Fueling *(*Retail Gasoline Stations or Private Fuel Pumps)

- Design the fueling area to prevent spills and leaks and to prevent stormwater runoff in the immediate fueling area. Cover fueling area if possible. Prevent stormwater runoff from flowing into area by proper grading and contours.
- Route all stormwater runoff from fueling areas to an oil/water separator. For permanent fueling areas, generally use a coalescent plate oil/water separator as shown in ST-07. Minimize the amount of clean stormwater runoff that drains to an oil/water separator by efficient design of project site.
- Control stormwater runoff by using a perimeter trench drain or by sloping pavement inward to drain to a sump. Curbs, berms, swales or speed bumps can be used to prevent stormwater runoff from leaving the fueling area or to contain possible leaks and spills. See Figure AM-15-1 for a typical design layout for a retail gasoline station.

- Pave fueling area with Portland cement concrete rather than asphalt, which can be damaged by gasoline and other petroleum products. Apply suitable sealants to asphalt when necessary, including at joints and along fueling islands.
- If fueling occurs infrequently (such as at private fuel pumps), the storm drain can be fitted with a valve to accept or reject runoff from fueling areas. Do not discharge any spills, leaks, washwater or rinsewater to the storm drain. Verify that any stormwater runoff from the fueling area does not have a sheen or odor.
- Use dry methods to clean the fueling area whenever possible. If the fueling area is periodically cleaned by water (such as power washing or steam cleaning), place a temporary plug on top of or within downstream drain and pump out accumulated washwater. Typical plugs may include reusable water-filled dikes or water-filled storm inlet covers, which tend to conform to the surface and provide a good seal.
- Properly dispose of any washwater or rinsewater, including such water used for power washing and for steam cleaning. Consult with Knoxville Utilities Board (KUB) prior to considering sanitary sewer as disposal option. Written permission must be obtained from KUB before discharging to the sanitary sewer system.

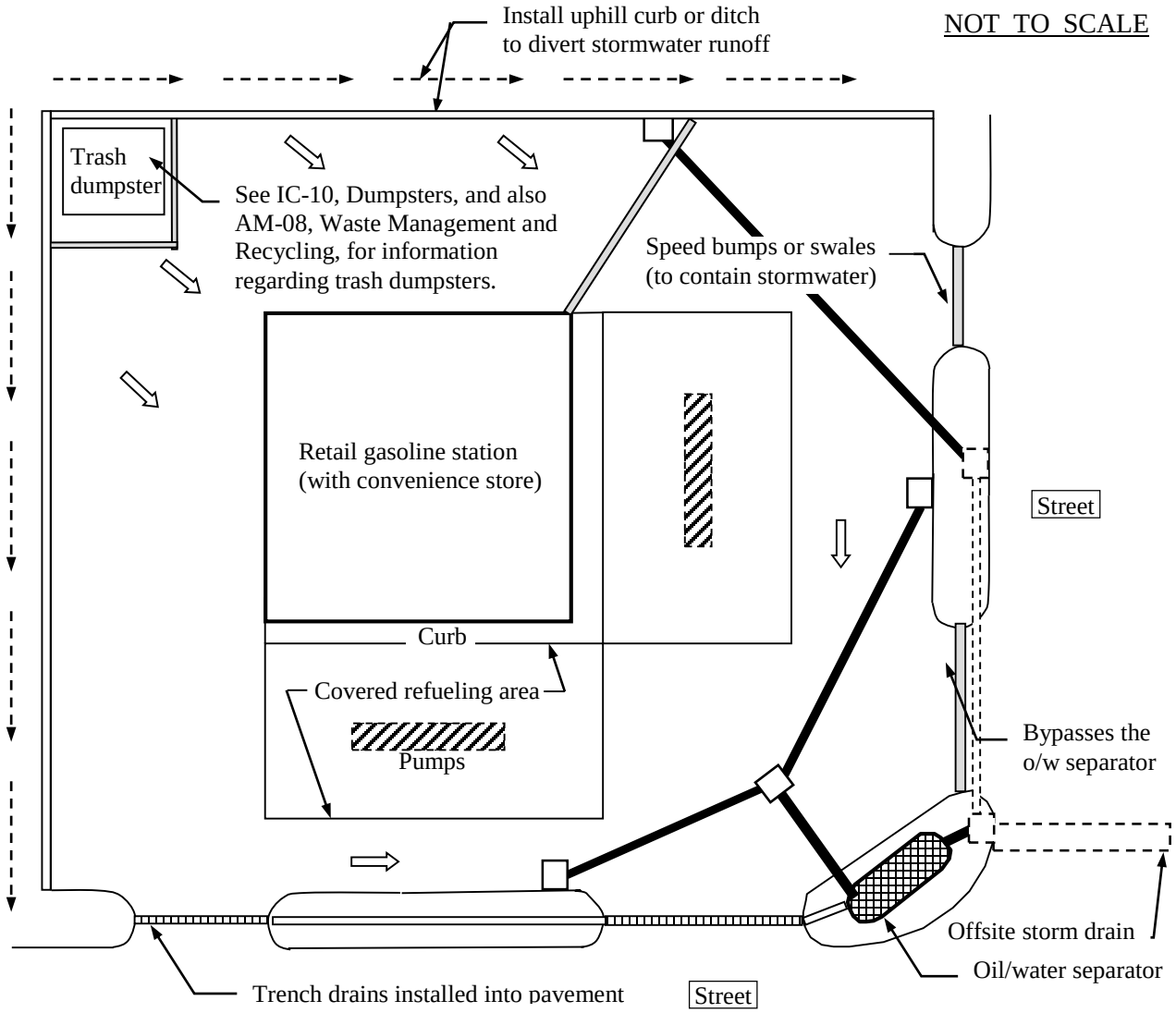
Maintenance

- Clean and empty oil/water separators at the appropriate intervals as recommended by the manufacturer. Inspect oil/water separators at least monthly.
- Keep ample supplies of spill cleanup materials nearby. Dispose of used cleanup materials in an environmentally safe way.
- Inspect fueling areas and storage tanks on a daily basis. Maintain good records concerning fuel storage volumes, fuel usage, fuel delivery schedules, etc. Special attention should be given to detecting leaks from any underground storage tanks.

Limitations

- Oil/water separators are essential in the effort to contain fuel, oil, and grease. However, oil/water separators must be properly sized and installed to function effectively, and they must be maintained and cleaned on a regular basis. See guidelines in ST-07 for additional information.
- The retrofitting of existing fueling areas to minimize stormwater exposure or spill runoff can be expensive. It is preferable to incorporate good design during the initial installation and construction.
- Installing extruded curb uphill from the fueling area is a modest cost and will greatly reduce the volume of stormwater runoff that encroaches upon the fueling area.

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



Notes:

1. This typical layout (at the intersection of two streets) only shows a typical design layout for a retail gas station, and is meant to illustrate the following points:
   - Need an oil/water separator (see ST-07, Oil/Water Separator)
   - Segregate clean offsite water
   - Control areas with potential leaks or spills (see AM-07, Spill Prevention and Control)
   - Control areas which may be pressure washed or steam cleaned (see IC-08, Power or Pressure Washing)
2. Retail gasoline stations must apply to the City of Knoxville for a Special Pollution Abatement Permit. See Chapter 7 of the BMP Manual for more information.
3. Roof drains should also generally bypass the oil/water separator. This layout does not provide any required detention for stormwater. Designed facilities must contain structural measures rather than solely relying on personnel to implement necessary BMP procedures.

Figure AM-15-1
Typical Layout – Retail Gasoline Stations