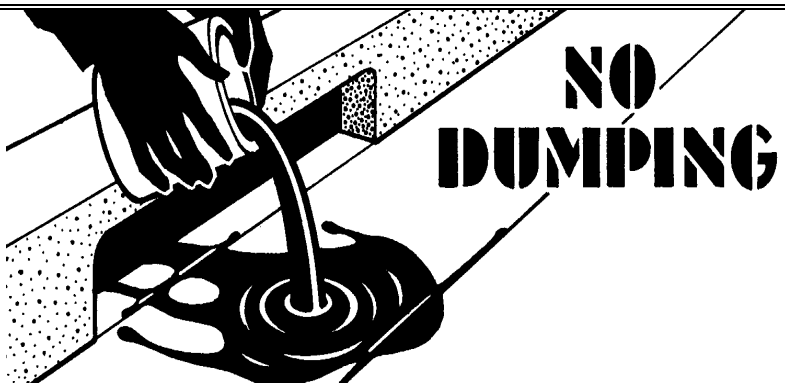
ACTIVITY: Non-Stormwater Discharges to Storm Drains	IC – 01



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 Eliminate non-stormwater discharges to the stormwater collection system. Non-stormwater discharges may include oils, paints, acids, solvents, process wastewaters, cooling waters, wash waters, and sanitary wastewater. This task will help eliminate all types of pollution such as nutrients, heavy metals, toxic materials, floatable debris, oil and grease, bacteria and viruses, and oxygen demanding substances.

Approach Non-stormwater discharges to the stormwater collection system may include any water used directly in the manufacturing process (process wastewater), non-contact cooling water, outdoor secondary containment water, vehicle and equipment washwater, sink and drinking fountain wastewater, sanitary wastes (including "gray water" discharged from washing machines or dishwashers), or other wastewaters.

In addition to mechanical discharges, employees or subcontractors could dump or pour materials directly into a storm drain or open channel. Common substances illegally dumped on the street or directly into the storm drain system and creeks include: paint, used oil, automotive fluids, construction debris, chemicals, fresh concrete, leaves or grass, mopwater, and pet wastes. All of these wastes can cause quality problems for stormwater and receiving waters as well as clog the storm drain system itself. Table AM-01-1 in the Employee Training BMP fact sheet has disposal alternatives for common types of waste. The principal goal is to eliminate all substances (liquid or solid) that do not belong in stormwater.

Many businesses, commercial facilities and industries are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit as part of their operations. Requirements to identify and eliminate non-stormwater discharges are integral to every NPDES permit. Keys to this activity are information and investigation.

Application The current stormwater ordinance specifically describes what is allowable to discharge into the stormwater; all other discharges are prohibited by ordinance. The following list of non-stormwater discharges are allowable:

1. Water line flushing;
2. Landscape irrigation;
3. Diversion of stream flows or rising groundwater;
4. Infiltration of uncontaminated groundwater [as defined at 40 CFR 35.2005(20)] to separate storm drains;

5. Pumping of uncontaminated groundwater;
6. Discharges from potable water sources, foundation drains, air conditioning condensate, irrigation waters, springs, water from crawl space pumps, or footing drains;
7. Lawn watering;
8. Individual noncommercial car washing on residential property; or car washing of less than two consecutive days in duration for a charity, nonprofit fund raising or similar noncommercial purpose;
9. Flows from riparian habitats and wetlands;
10. Dechlorinated swimming pool discharges;
11. Incidental street washing water by street cleaning equipment designed for cleaning paved surfaces and limiting waste discharges;
12. Street deicing for public safety;
13. Any activity authorized by a valid NPDES permit;
14. Any flows that result from firefighting.

The Engineering Director for the City of Knoxville, or his representative, has the authority to order the above listed activities to be stopped or modified if sewage, industrial wastes, or other objectionable wastes are being discharged to the stormwater system. Non-stormwater discharges, even if there are no pollutants present, may have different temperatures than the ambient stream temperature. Manmade temperature variations, whether continuous or intermittent, in a natural stream may cause loss of habitat to aquatic organisms and to vegetation.

<u>The following non-stormwater discharges are explicitly prohibited</u> by the Knoxville Stormwater and Street Ordinance. The list of prohibited discharges is not all-inclusive, as any type of discharge not specifically exempted (see list of 14 items above) is prohibited by law.

A. Raw sewage discharges or overflows, including sanitary sewer overflows (SSOs);

B. Discharges of wash water resulting from the hosing or cleaning of gasoline stations, auto repair garages, or other types of automotive service facilities;

C. Discharges resulting from the cleaning, repair, or maintenance of any type of equipment, machinery, or facility (includes motor vehicles, cement-related construction equipment, port-a-potty servicing, etc.);

D. Discharges of wash water from mobile operations such as steam cleaning, power washing, pressure washing, carpet cleaning, and mobile carwash facilities;

E. Discharges of wash water from the cleaning or hosing of impervious surfaces in industrial and commercial areas including parking lots, streets, sidewalks, driveways, patios, plazas, work yards, and outdoor eating or drinking areas;

F. Discharges of runoff from material storage areas containing chemicals, fuels, grease, oil or hazardous materials;

G. Discharges of pool or fountain water containing chlorine, biocides or other chemicals, and also discharges of pool or fountain filter backwash water;

H. Discharges of water containing sediment or construction-related wastes;

I. Discharges of food-related wastes such as grease, oil, fish processing water, kitchen mat wash water, trash bin wash water, pouring liquids into dumpsters, etc.

This includes disposing unwanted food or liquid into ditches, creeks or streams to feed the "little critters".

General Guidelines

To ensure that the stormwater system discharge contains only stormwater, commercial and industrial facilities should:

- Locate all discharge points from the property. Identify where discharges lead into the municipal storm drain system or into "Waters of the State" (as defined by the blue-line streams and lakes from the USGS quadrangle map). At a minimum, use construction drawings, as-built drawings, pipeline schematics, visual observation by walking the property boundary and by examining all indoor pipes.
- Use additional methods as appropriate for locating discharge points.
  - Dye tracing
  - Inserting TV camera
  - Chemical field test kits
  - Smoke tests
  - Surface water sampling
  - Groundwater sampling
  - Isolate discharges one at a time to verify source
- Develop a plan to eliminate illicit connections.
  - Plug illicit discharge points.
  - Repair or replace discharge lines as necessary. Examine types of disposal options. Use alternative products or methods to reduce the amount of pollution.
  - Repair sewer lines or connect to sanitary sewer system. Coordinate with the sanitary sewer system operator (in most case, Knoxville Utilities Board) for permission to connect to sanitary system.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and onsite drainage points observed.

Investigation

The following lists include further information on investigation activities.

- A piping schematic or sketch will show pipes and stormwater systems used to carry wastewater, cooling water, sanitary wastes, etc. Look carefully at the drawing to determine date, accuracy, and level of information. Sometimes it may be necessary to interview the field engineer or a construction worker to determine what was built.
- Visual observation of the property boundary should be conducted during daylight hours in both dry weather and wet weather. Ideally, visual observation should also include different times of the year that may affect the groundwater level and the amount of heavy vegetation.
- Visual observation of indoor pipes includes inspecting the path of floor drains in older buildings, where it is not uncommon to find cross-connections. Examine materials, condition and repairs for each pipe as a clue to what it may carry.
- A dye test can be performed by simply releasing a non-harmful tracing dye into a sanitary or process wastewater system and examining potential discharge points into

the stormwater collection system for discoloration.

- TV and visual inspections can identify illicit connections to the storm drain, but further testing is usually required (dye, smoke, isolation) to identify sources.
- Smoke testing of wastewater and stormwater collection systems is commonly used to detect connections between the two systems. During dry weather a stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke in a waste vent pipe, sewer manhole, or even the base of a toilet indicates that there may be a connection between the sanitary and stormwater systems.

Limitations

- Many facilities do not have accurate, up-to-date schematic drawings. Mistakes in construction may not be reflected in the schematics. It can be difficult to locate illicit connections especially if there is groundwater infiltration.
- The easiest method is to inspect each discharge point during dry weather. Keep in mind that flow from a storm event can continue for three days or more, and that groundwater often infiltrates the underground stormwater collection system.

Related BMPs The following BMPs are closely related to this BMP:

AM-01	Employee Training
AM-01-01	(Table) Quick Reference for Disposal Alternatives
RH-01	Non-Stormwater Discharges to Storm Drains (Residential/homeowner)

References **27, 31, 33, 34, 35, 94, 138** (see BMP Manual Chapter 10 for list)