



**Targeted Constituents**

|  |                                       |   |  |  |  |
|--|---------------------------------------|---|--|--|--|
| <input checked="" type="radio"/> Significant Benefit |                                       | <input type="radio"/> Partial Benefit     |  | <input type="radio"/> Low or Unknown Benefit |  |
| <input type="radio"/> Sediment                       | <input type="radio"/> Heavy Metals    | <input type="radio"/> Floatable Materials | <input checked="" type="radio"/> Oxygen Demanding Substances |  |  |
| <input checked="" type="radio"/> Nutrients           | <input type="radio"/> Toxic Materials | <input type="radio"/> Oil & Grease        | <input checked="" type="radio"/> Bacteria & Viruses          | <input type="radio"/> Construction Wastes    |  |

**Description** Prevent animal and pet wastes in or near natural streams and creeks, storm drains, ditches, swales or other types of stormwater conveyance systems. This will reduce the amount of bacteria (particularly fecal coliforms), which has been cited as the most serious contaminant for several creeks within the City of Knoxville.

**Approach** The Tennessee Department of Environment and Conversation (TDEC) has issued two reports for several creeks within the City of Knoxville, which states that the level of fecal coliforms exceeds the computed Total Maximum Daily Loads (TMDLs).

- First Creek
- Third Creek
- Baker Creek
- Williams Creek
- Second Creek
- Fourth Creek
- Goose Creek

Total Maximum Daily Load (TMDL) Report for Fecal Coliform on First Creek, Second Creek, Third Creek and Goose Creek - (effective February 11, 2003)

Total Maximum Daily Load (TMDL) Report for Fecal Coliform on Baker Creek, Fourth Creek and Williams Creek - (effective February 11, 2003)

Sources of fecal coliforms include animals (such as pets, cattle, wild birds) and humans (failing sewers, improper disposal of food products). This BMP addresses animal wastes (domestic and wild) which are a significant source of water pollution. Due to fecal coliforms, some Knoxville creeks are posted as unsafe for human contact. Animal waste may also contain other types of bacteria, viruses and parasites.

When animal waste enters a natural creek, it uses the available dissolved oxygen to create ammonia. The combination of low oxygen, ammonia and warm temperatures is detrimental to the fish and other aquatic life. Animal waste contains nutrients that promote excessive weed and algae growth (eutrophication). Nutrients can make water cloudy and green, which further inhibits aquatic life and decreases the available dissolved oxygen.

Due to federal mandates, the City of Knoxville adopted the Stormwater and Street Ordinance in 1997 to prohibit and reduce pollution (see IC-01, Non-Stormwater Discharges to Storm Drains, for a complete list) into streets, ditches, storm drains, and natural streams. This prohibition specifically includes animal wastes; see the following sections of the Stormwater and Street Ordinance for more details.

- Definition of --- Wastes, Other Section 22.5-4
- Prohibited discharges Section 22.5-52
- Illegal to discharge sewage or other wastes Section 22.5-52(a)

**Guidelines**     *Pets*

Pets can be a very significant source of fecal coliform. A 1982 study of urban watersheds in Baltimore MD found that dog feces were the single greatest contributor of fecal coliform and fecal strep bacteria (reference 190). A single gram of dog feces can contain 23 million fecal coliform bacteria (reference 199). Dogs can also be hosts for Giardia and Salmonella, two common types of harmful bacteria (reference 191).

- Provide a buffer zone and/or a fence to prevent animals from urinating or defecating into a creek, stream, or other stormwater drainage feature. Do not keep pets immediately adjacent to ditches, swales, storm drains, pipes or culverts.
- Clean up yards or fields that contain pet wastes on a regular basis. Animal waste can be sent to the sanitary landfill as part of the regular weekly garbage pickup. Burying animal waste in the ground is also an acceptable option, away from ditches or stormwater channels.
- Cat litter can be sent to the sanitary landfill as part of the regular weekly garbage pickup. Burying cat litter in the ground is also an acceptable option, away from ditches or stormwater channels. Dumping used cat litter in piles on the ground surface is not an environmentally approved practice.
- When walking dogs, properly dispose of dog feces. Walk dogs in vegetated areas away from streams, creeks, ditches and drainage channels. Disposal options are:
  - Scoop up pet waste and flush down the toilet.
  - Seal pet waste in a plastic bag and throw it in the garbage.
  - Bury pet waste in the yard (at least 6 inches deep) so it decomposes.
  - Add small quantities of pet waste to a compost pile; mix well. Make sure that pet waste is completely decomposed before using compost for gardens.
- It is mandatory for the owner or custodian of any pet to remove solid pet waste from all areas within the Central Business District (city ordinance O-98-03 passed March 2003).

*Pastures / Farm Animals / Wildlife*

- Provide a buffer zone and/or a fence to prevent livestock from urinating or defecating into a creek, stream, or other stormwater drainage feature. Do not keep animals immediately adjacent to ditches, swales, storm drains, pipes or culverts.
- If it is necessary for pasture animals to cross a stream or creek, limit the access as much as possible. Discourage livestock from standing in a stream or creek by limiting shade.
- Clean up pastures, fields, yards and other open areas that contain animal wastes on a regular basis. Keep compost piles and manure piles as far away from ditches or stormwater channels as possible. Burying animal waste in the ground is an acceptable alternative.
- Do not encourage ducks, geese and other wild birds by feeding birds next to creeks, streams and ponds. Duck and geese waste products are particularly harmful to water quality for creeks and streams. Ponds with regular populations of ducks and geese may need additional water quality treatment, such as sand filtration units.

**References**

**32, 103, 190, 191, 199** (see BMP Manual Chapter 10 for list)

**Final TMDL reports issued by TDEC**

<http://www.epa.gov/owow/tmdl/>