CSO
LONG-TERM
CONTROL
FACTSHEET
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FECAL COLIFORM & WATER QUALITY IN ONONDAGA LAKE WATERSHED

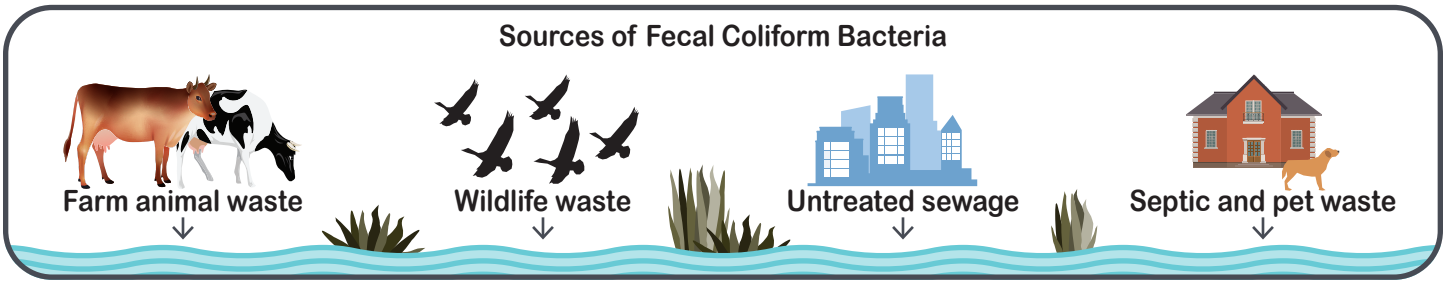
WHAT ARE FECAL COLIFORMS?

Coliforms are bacteria that are always present in the digestive tracts of animals, including humans, and are found in their wastes. They are also found in plant and soil material. Fecal coliform bacteria are a subgroup of coliform bacteria that are passed through the fecal excrement of humans and other warm-blooded animals. They aid in the digestion of food.

Fecal coliforms are usually not pathogenic, but the presence of fecal coliform bacteria in aquatic environments indicates the fecal contamination of the water by human or other animals' waste, which may contain pathogens or disease-producing bacteria or viruses. This is why the fecal coliform count has long been one of the key water quality criteria for a waterbody concerning public health. In NY, the water quality criteria for fecal coliform for all fresh surface water classes is not to exceed 200 counts per 100 ml.

Fecal coliform bacteria can enter streams/rivers through direct discharge of waste from wildlife, from agricultural and storm runoff, or from untreated sewage which can be caused by illegal or leaky sanitary sewer connections, poorly functioning septic systems or overwhelmed wastewater treatment plant

In general, agricultural lands have a higher concentration of fecal coliforms than urban areas, largely because of the source of animal waste and less strict requirements for rural stormwater runoff. For instance, currently only point discharges of runoff from Concentrated Animal Feeding Operations (CAFOs) in NY are regulated by the State Pollution Discharge Elimination System (SPDES), and the runoff from non-CAFO farms is not subject to SPDES, making agricultural runoff one of the major contributors to aquatic fecal contamination.



FECAL COLIFORM AND CSO MANAGEMENT OF ONONDAGA COUNTY

Untreated raw sewage in combined sewer overflows (CSOs, Factsheet 1) in Syracuse area causes elevated fecal coliform levels in Onondaga Lake's CSO-receiving tributaries. After over 30 years of CSO abatement efforts by Onondaga County, nearly 98% of total CSOs are now captured and treated, but the fecal coliform counts still frequently exceed the water quality standards. Findings from decades of close monitoring of the water quality indicate that CSO discharges are not solely responsible for bacteria release to these waterways. Dry weather sources of fecal coliform exist along Harbor Brook, Ley Creek, and Onondaga Creek upstream of the CSOs and within urban area, causing the background fecal coliform concentrations to exceed water quality standards, irrespective of wet weather or CSOs.

These upstream fecal coliform sources are assumed to be mainly due to unregulated discharges such as agricultural runoff and private septic systems. According to 2012 data, nearly two-thirds of the total 30,000 acres of farmland in Onondaga Lake Watershed are non-CAFO farms, making them understandably one of the main potential contributors to aquatic fecal contamination. This is not to say that fecal contamination is less of a problem in urban areas. Instead, urbanization generates new sources of fecal bacteria such as domestic pet waste, leaking sanitary sewers, illicit discharges and cross connections, in addition to CSOs.

Existence of the impairment from these outside sources of fecal coliform makes it a real challenge to meet the current water quality standards for fecal coliform in the CSO tributaries. In fact, even if 100 percent CSO removal or treatment is achieved, coliforms will still be present because of these outside sources. A watershed-wide management approach, backed by inter-municipal collaboration, active stakeholder engagement and public outreach and education, is needed to identify and review the bacteria sources, and develop and implement management measures accordingly. Meanwhile, a Use Attainment Analysis (UAA, Factsheet 3) is being undertaken by Onondaga County and NYS DEC to evaluate if the current water quality standards for fecal coliform bacteria are attainable for these CSO tributaries.