

CHAPTER 5. STORMWATER QUALITY MONITORING PLAN

The United States Geological Survey (USGS) prepared a recommended stormwater monitoring plan for the Christina River Basin. The purpose of the monitoring plan is to characterize stormwater and nonpoint source pollutant loads from representative land uses in the Christina Basin. The sampling plan is designed to collect pollutant load data over a range of hydrologic conditions - including base flow and high flow. The pollutant data will be input to calibrate a watershed model (HSPF) which will be used to simulate nonpoint source loading for a Total Maximum Daily Load (TMDL) of the Christina Basin.

Appendix C includes the full stormwater monitoring plan prepared by the USGS. Stormwater sampling will be conducted for 6 storms over one year beginning in the Fall of 1997. Base flow sampling will be conducted for 4 seasons. High flow grab sampling will be conducted for 2 seasons. Sampling and laboratory analyses will include nutrients, sediment, oxygen-demand constituents, metals, and others. The USGS has installed stormwater sampling stations at the following locations in the Christina Basin:

Large basin sites

One water-quality site will be established at a downstream location in each of the four major drainages to represent cumulative loads to the Christina River estuary. These sites are at the gage furthest downstream on the free-flowing or non-tidal reaches of the streams. Data collected at these sites can be used to calculate both total loads and concentrations of selected constituents for the one-year study period in each of the streams.

Overall basin nonpoint source water quality sampling sites:

1. White Clay Creek near Newark, DE
USGS station 01479000 DA = 89.1 mi.²
2. Red Clay Creek near Wooddale, DE
USGS station 01480000 DA = 47.0 mi.²
3. Brandywine Creek at Chadds Ford, PA
USGS station 01481000 DA = 287 mi.²
4. Christina River at Cooch's Bridge, DE
USGS station 01478000 DA = 20.5 mi.²

Subbasins sites having a single, dominant land use

One water-quality site will be established for each land-use category. The four primary land-use categories are: urban, residential, agricultural, and forested. Residential and agricultural land uses are further subdivided for a total of 7 categories. Residential is subdivided into sewered and non-sewered uses. Agricultural is subdivided into row crop, livestock, and mushroom uses. Some

proposed sites are at existing USGS streamflow-measurement stations. At the other proposed sites, temporary gages will need to be installed to measure streamflow.

Urban nonpoint source water quality sampling site

5. Little Mill Creek near Newport, DE (USGS station 01480095).
DA = 5.24 mi.² and

Use stormwater data for commercial and industrial sites from NPDES study for New Castle County, DE.

Residential, nonpoint source water quality sampling site

6. Sewered - Unnamed tributary to Valley Creek at U. S. Rt. 30/Fairview Road near East Caln/West Whiteland township line. DA = 1.47 mi.² (need to install gage)
And

Use stormwater data from New Castle County study.

7. Non-sewered - Unnamed tributary to Broad Run north of Rt. 162 and 1.5 mile west of Marshallton. DA = 1.37 mi.² (need to install gage)

Agricultural nonpoint source water quality sampling site

8. Row crop - Doe Run at Rt. 841 near Springdell. DA = 11.7 mi.²
(need to install gage)
9. Livestock - West Branch Brandywine Creek near Honeybrook, PA (USGS station 01480300). DA = 18.7 mi.²
10. Mushroom - Trout Run at Rt. 41 at Toughkenamon. DA = 1.31 mi.²

Forested nonpoint source water quality sampling site

11. Marsh Creek near Glenmoore, PA (USGS station 01480675). DA = 8.57 mi.²