Information on the Drainage Network Map (Metadata)

Tags: Municipal Stormwater System Asset Data

Summary: Municipal Stormwater Assets

Description: Stormwater asset data. Contains points, polylines and polygons displaying infrastructure that collects, conveys and/or manages stormwater runoff and/or conveys watercourses. The sources of the data displayed include digitization of construction plans, field collection of assets and/or CAD (computer aided drafting) data being directly converted into GIS data. Inspection forms enable condition ratings and field evaluation of feature classes. Inspection forms were constructed as related tables to enable a running history of inspections.

Credits: The schema for this map was developed by the Connecticut Department of Transportation in collaboration with the CT GIS Network Stormwater Standards Working Group.

Use Limitations: The data presented here is for planning purposes only. The data is not to be used to prepare engineering level plans or construction documents. The data should not be used in legal documents or proceedings.

Extent: There is no extent for this item

Scale Range: There is no scale range for this item

General Notes on Schema: A primary intent of the Drainage Network Map schema was to create a standardized GIS format for the collection and depiction of stormwater-related information required by the CT DEEP MS4 General Permits[1]. The schema consists of the following 14 feature classes:

1. Catchment Areas (Abbreviated as CA)
   - The drainage area from which rainfall flows to a stormwater outfall point (aka, an endwall) and/or a surface water body
2. Screening / Sampling Locations (Abbreviated as SS)
   - Discharge locations to be screened or sampled per MS4 Permit requirements
   - Includes inspection forms tailored for screening / sampling activities
3. Interconnections (IC)
   - Where one MS4 system connects to another
4. Headwall / Endwall (HE)
   - Examples include Headwall, Endwall, Pipe End, Wingwall, Flared End, Other
   - Includes inspection forms for condition assessments
5. Inlets (IN)
   - Where surface runoff is collected and discharged to a conveyance (open or closed)

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[1] *General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems,* issued January 20, 2016 or *General Permit for the Discharge of Stormwater from Department of Transportation Separate Storm Sewer Systems,* issued May 24, 2018

- Examples include catch basins (type C, CL, etc.,) Drop Inlet, Gutter Inlet, Yard Drain, Circle Grate, Other
- Includes inspection forms for condition assessments and sediment level

6. Manhole (MH)
    - Examples include Manhole, Junction Box, Hydro Dynamic Separator, Other
    - Includes inspection forms for condition assessments

7. Blind Ties (BT)
    - Where a closed conveyance is connected to another closed conveyance without a structure, i.e., one pipe discharges directly into another pipe with no indication of the connection at the surface

8. Other Drainage (OD)
    - Miscellaneous
    - Examples include Gabions, Level Spreader, Emergency Over Flow, Tide Gate, Weir, Orifice

9. BMP's (BP)
    - Water Quality Best Management Practices that improve, retain or otherwise manage stormwater
    - Examples include Detention Basin, Rain Garden, Stormwater Wetland, Wet Basin, Infiltration System, Permeable Pavement, Dry Well, Sand Filter, Vegetative Filter Strip, Other
    - Includes inspection forms for condition assessments

10. Potential BMPs (PB)
    - Water Quality Best Management Practices that are in the planning, design or construction phase but are not yet built and operational.

11. Culverts (CV)
    - Primarily (although not exclusively) conveys watercourses under roadways
    - A conveyance structure that daylights (i.e., has a endwall and/or headwall) on either side of a roadway
    - Includes inspection forms for condition assessments

12. Closed Conveyance (CC)
    - Underground piping system to convey stormwater runoff
    - Includes inspection forms for condition assessments

13. Open Conveyance (OC)
    - At grade conveyance of stormwater runoff
    - Examples include ditches and channels
    - Includes inspection forms for condition assessments

14. Virtual Drain Lines (VD)
    - A polyline used to connect features within the GIS map and track flow

Unique Identification Number for Individual Stormwater Assets: In lieu of using the identification numbers automatically generated by ESRI (aka, Global ID or Object ID) the Connecticut Department of

Transportation has created a stormwater asset identification format to more easily identify ownership, particularly assets that are also MS4 interconnections, within each feature class. However, this identification number does not auto-create upon placement of a new asset on the map and must be created separately by the user. Users can use ESRI's auto generated Object ID or the Global ID if developing a separate process to generate the unique ID cannot be accomplished.

The format is: Three Digit Town Number – Two Digit Feature Class Abbreviation – Asset Number

Three Digit Town Number: Please note that the Town Number is based on the DOT's unique municipal numbering system. The "town number" used to represent DOT-ownership of an asset is "170". Use the following link to view town numbers per DOT's list.

https://www.ct.gov/dot/LIB/dot/Documents/dpolicy/policymaps/ref/TRUNumbersbyTown.pdf#40761

Two Digit Feature Class Abbreviations: Abbreviations included above

Asset Number: one to ######.

For example, the four hundred and twenty-second DOT-owned inlet created in the map would have "170-IN-422" as its unique identifier.

Attribution for Department of Transportation: This schema was built to be used by the Connecticut Department of Transportation. As such, some of the attribution under the different feature classes will not be needed by other users. Examples of this include the linear reference system (LRS), the Maintenance Garage and the Maintenance District attribution within each feature class. These attributes and any others specific to DOT use could be ignored or hidden.

Information on Individual Feature Classes

Information on *Sampling/Screening Locations* Feature Class (Point)

Description: This is a point feature class that identifies locations where discharges from the MS4 need to be screened and/or sampled to meet MS4 permit requirements. The schema was primarily developed to meet illicit discharge detection and elimination requirements but it can also be used to document information on impaired waters inspections and sampling data.

Temporal Data: The *Screening/Sampling Date* and *Screening/Sampling Phase* attribution fields are intended to document the most recent field/inspection date and if screening the outfall for potential illicit discharges, the status of the outfall within the dry weather and/or wet weather program. The status / flag colors within the *Screening Sampling Locations* feature class are intended to provide a quick visual reference as to the IDDE status of individual outfalls. All other temporal (snap shot in time) data is intended to be place in the accompanying related table (*Screening/Sampling Inspection Form*).

Information on *Interconnections* Feature Class (Point)

Description: This is a point feature class that identifies locations where one MS4 system discharges into another. Attribution allows for the user to select who stormwater is discharging from, who is receiving the stormwater and the structure where the interconnection occurs.

Information on _Headwalls/Endwalls_ Feature Class (Point)

Description: This is a point feature class that identifies the transition between a closed conveyance and an open conveyance, surface water, or BMP. _Headwalls/Endwalls_ are locations where watercourses or stormwater enter or exit stormwater assets. These points are typically found at the end of closed conveyances and on both the upstream and downstream sides of culverts.

Attribution choices allows the user to select the type of asset (aka, headwall, endwall, flared end, etc.) and whether an asset should be considered an "MS4 System Outfall" under the MS4 permit.

Information on _Inlets_ Feature Class (Point)

Description: This is a point feature class that identifies locations where stormwater runoff enters a stormwater conveyance system. Attribution choices allows the user to select the type of inlet, the material and any vertical information needed to define the depth of sump (if present).

Information on _Manholes_ Feature Class (Point)

Description: This is a point feature class that identifies the structure at the beginning or end of a closed conveyance segment, typically where a closed conveyance transitions to another closed conveyance, and that has a solid cover (e.g., not grated). Attribution choices allow the user to select the type of manhole including a general manhole or a more specific type including a diversion manhole, a BMP access manhole or a junction box.

Information on _Blind Ties_ Feature Class (Point)

Description: This is a point feature class that identifies locations where a closed conveyance is connected to another closed conveyance, without a manhole or inlet structure. Blind ties are not good engineering practice and are typically prohibited in the design of new systems. However, since the presence of blind ties in a MS4 system cannot be ruled out, especially in older systems, the blind tie feature class has been included in the CT DOT schema.

Information on _Other Drainage_ Feature Class (Point)

Description: This is a point feature class that identifies miscellaneous stormwater assets that otherwise are difficult to categorize within the other feature classes. Examples include gabions, level spreader, emergency over flow, tide gate, weir, orifice, etc.

Information on _Best Management Practices_ Feature Class (Polygon)

Description: This is a polygon feature class that identifies any practice or facility that improves, retains or otherwise manages stormwater. Examples include detention basin, rain garden, stormwater wetland, wet basin, infiltration system, permeable pavement, dry well, sand filter, vegetative filter strip, other, etc.

Information on _Culverts_ Feature Class (Polyline)

Description: This is a polyline feature class that generally identifies the conveyance of watercourses under roadways or other surface improvements. A culvert is a special case of closed conveyance that

daylights on both sides of a roadway. Attribution choices include the material, the size of the asset and if the asset conveys stormwater, a watercourse or both.

Information on *Closed Conveyance* Feature Class (Polyline)

Description: This is a polyline feature class that generally identifies the underground conveyance of stormwater in pipes. Typically connecting inlets, manholes and endwalls. Attribution choices include the material, the size of the asset and if the asset conveys stormwater, a watercourse or both.

Information on *Open Conveyance* Feature Class (Polyline)

Description: This is a polyline feature class that identifies the above ground conveyance of stormwater generally in ditches or channels. Attribution choices include the cover type, the size of the asset and if the asset conveys stormwater, a watercourse or both. Note that any open conveyance that is designed to provide a water quality benefit (aka, a water quality swale) is intended to be placed under the BMP feature class.

Information on *Virtual Drain Lines* Feature Class (Polyline)

Description: This is a polyline feature class that allows the GIS application to "connect" the flow of stormwater through different feature class or watercourses. An example would be connecting an endwall to a waterbody.

Information on Inspection Forms to Document Asset Conditions and Maintenance Activities

Description: Inspection forms (or inspection "templates") have been developed and attached to feature classes that represent stormwater system assets in the GIS map. The inspections forms are intended to document the general condition of stormwater system assets as observed during a field inspection. The inspection forms can also be used to document maintenance activities at stormwater assets such as repairing a concrete headwall, addressing an erosion issue at an stormwater outfall (endwall), or removing a blockage from an stormwater outfall. The feature classes with these inspection forms are Headwall/Endwalls, Inlets, Manholes, Other Drainage, BMPs, Culverts, Closed Conveyance and Open Conveyance. The choices for the condition of an asset are listed below. These choices are generalized and should be supplemented with a picture.

- Excellent – No defects
- Good – Some minor defects which do not yet require repair
- Fair – Areas of minor deterioration
- Poor – Areas of significant deterioration
- Failed – No longer functioning as intended
- Obstructed – Unable to rate due to blockage
- Inaccessible – Cannot get close enough to rate
- Submerged – Asset is underwater
- Not Found – Asset on map not found in field

Information on Inspection Forms to Screening, Sampling and/or Illicit Discharge Activities

Description: An inspection form (or inspection "template") has been developed and attached to the Screening/Sampling feature class to document screening, sampling and/or illicit discharge detection and elimination activities. Beyond documenting illicit discharge screening activities, the inspection form provides a location where field sampling results or laboratory data can be added.