Westchester’s MS4 Communities on Long Island Sound Upgrade Stormwater Infrastructure to Comply with the Clean Water Act

by Jerry Ciotola and Robert Ferri of EPA Region 2 Water Compliance Branch
Abstract

Since 2007 EPA initiated, working with NYSDEC and Westchester County DOH MS4 field assessments of every municipality in Westchester County discharging stormwater to the Long Island Sound. EPA’s CWA and SDWA inspectors conducted administrative reviews of each municipality’s MS4 Permit, inspected all municipal facilities, visited all outfalls, including a good number of catch basins and issued enforcement actions for compliance scheduling. Suspect outfalls were sampled, and EPA established a baseline for significant reduction in pathogens at suspected discharge points.
Regulatory Framework

Section 402 of the Clean Water Act

SPDES General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s)

Safe Drinking Water Act

Class V Stormwater Wells

The current MS4 Permit runs through April 30, 2015
All Class V wells need to be authorized by the Underground Injection Control Program
Goal

Reduce the level of pathogens/floatables to Long Island Sound
- Westchester MS4 Communities on LIS
- North Shore of LI MS4 Communities on LIS

Method

Complete on-site inspections and inventory of all municipal facilities, all outfall structures and a representative sample of catch basins in each MS4 community

Field inspections conducted within the storm system to determine areas where problems are apparent through EPA sampling (including DNA) and dye testing

Set an enforceable schedule to correct problems found
EPA Inspection

At a minimum, teams of two inspectors review the municipalities Storm Water Management Program (SWMP), Illicit Discharge Detection and Elimination Plan (IDDE), to identify storm sewer discharge locations as candidates for sampling for sewage.

The inspection was completed for each outfall within the MS4 stormwater shed and a random sampling of catch basins (generally within the light commercial part of town).

We prepared a detailed inspection report which included the all storm system operations that were inspected and surveyed (the idea being to eliminate illicit discharges).

The obvious and not so obvious findings were further investigated by EPA’s Monitoring and Assessment Branch who then followed up with sampling (in some cases DNA sampling was necessary).
Sources of Illicit Discharges

Illegal dumping
Floor drain connection to storm sewer
Channeled industrial discharges
Broken sanitary sewer line
Cross-connections
Sanitary sewer overflows
Inflow/infiltration
Straight pipe sewer discharge
Failing onsite sanitary systems
Improper RV waste disposal
Pump station failure
Wildlife (animals in storm lines)
Outfall Inspection Sheets

Town _____________, NY - MS4 Field Inspection                                Date: ____________, 2012  time: __________ or page #: ______________

inspector(s): Jerry Ciotola, Robert Ferri, __________________________________________________________

weather conditions: previous day ________________________  today _______________________________

location (street #/cross streets/site name): ________________________________________________________  GPS coordinates:   +__________________   -0  ___________________

open channel (ditch/swale) description:
flow from/to a piped outfall  □     discharges to: ________________________________
Vegetation: □ bare soil    riprap    erosion: none mild severe □

notes: __________________________________________________________________________________________

piped outfall description
shape: circular □  elliptical □  box □  other _____________ □
pipe material: concrete □  PVC □  steel □  CMP □  HDPE □
height/diameter ________    width ________
water in pipe: none □  trickle □  partial □  full □  submerged
sediment: none □  partial □  full □
discharges to: _______________________

notes: __________________________________________________________________________________________

visual observations
debris around outfall: none □  sediment □  trash □  toilet paper □
debris in pipe: none □  sediment □  trash □
flow volume: none □  low □  moderate □  heavy □
floatable: none □  oily □  foam □  trash □  organic □
flow staining: none □  red/orange □  white □  green algae □  oily scum
flow color: clear □  muddy □  milky □  sheen □  soapy □
flow odor: none □  petroleum □  sewage □  sulfur □  chemical □  other _____________ □

notes: __________________________________________________________________________________________

observations ______________________________________________________________   action required
potential sampling location          photo ID # & description

______________________________________________________________   no action
structural (o & m)   □
illicit discharge □
other □

______________________________________________________________
**EPA Sampling**

Sampling conducted was both dry and wet weather

Innovative DNA Sampling and Analysis was conducted thru EPA ORD Cincinnati

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**Dye Testing**

County DOH was instrumental in pinpointing direct discharges to the Byram River
# Enforceable Schedule

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Inspected</th>
<th>Schedule</th>
<th>Closed Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larchmont</td>
<td>3Q07</td>
<td>1Q08</td>
<td>1QFY13</td>
</tr>
<tr>
<td>New Rochelle</td>
<td>3Q07</td>
<td>1Q08</td>
<td>ongoing</td>
</tr>
<tr>
<td>Port Chester</td>
<td>3Q07</td>
<td>4Q08</td>
<td>ongoing</td>
</tr>
<tr>
<td>Mamaroneck (T)</td>
<td>4Q07</td>
<td>1Q11</td>
<td>ongoing</td>
</tr>
<tr>
<td>Mamaroneck (V)</td>
<td>4Q07</td>
<td>2Q11</td>
<td>ongoing</td>
</tr>
<tr>
<td>Harrison</td>
<td>3Q08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rye</td>
<td>3Q08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rye Brook</td>
<td>4Q09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastchester</td>
<td>1Q11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pelham</td>
<td>2Q12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pelham Manor</td>
<td>2Q12</td>
<td></td>
<td></td>
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</tbody>
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Cost Estimates

Average (pop. 30,000, 2.5 sq. mi., old infrastructure)
$1.7 M expended for the first 4 years of an 9 year project

MS4 Phase I
IDDE conducted DRE inspection, sampling and engineering 15%
TV inspection 25%

Phase II
Sanitary Sewer Repairs 23%
Sewer Replacement 20%
Sewer Lining 17%
# Infrastructure Emergency Repair for 3 MS4s

**Phase I Work**

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larchmont</td>
<td>75 Lf sanitary</td>
</tr>
<tr>
<td>New Rochelle</td>
<td>280 Lf of 12” storm sewer and 2100 Lf of sanitary pipe</td>
</tr>
<tr>
<td>Port Chester</td>
<td>combination of storm/sanitary repair/lining 31,816 Lf pipe</td>
</tr>
</tbody>
</table>
MS4 Funding Sources

Competitive Grants (improvements and Green Infrastructure though the state)

Clean Water State Revolving Fund Grants

Water Quality Improvement Projects (Statewide Grant Program)

Clean Waters (EPA Grant Program)
Example of Success/Port Chester

- Created a Village wide Sanitary Sewer District
- Changed water fees based on water use percentage for sanitary sewer (all properties included)
- Estimated 15 million budget over a five year period
- Experimenting with bacteria in manholes
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