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# Managing MS4 Monitoring & Other Tasks for Large Municipalities

June 20, 2019



# Outline

- Part I: Monitoring
  - Impaired Waters Outfall Monitoring (IWM)
  - Illicit Discharge Detection and Elimination (IDDE)  
Dry Weather Screening & Sampling
- Part II: Other MS4 Permit Related Tasks & Requirements



# **PART I: MONITORING - IMPAIRED WATERS MONITORING (IWM)**

# Part I: IWM Steps

## Steps

- Identify impaired waterbodies
- Identify the outfalls that discharge to these
- Identify the impairments
- Weather Monitoring
- Field Preparation
- During Sampling



# Part I: IWM - Identify the Impaired Waterbodies & the Outfalls

- Using mapping tool on UConn Clear NEMO website  
<https://nemo.uconn.edu/ms4/tools/ms4map.html>
- What constitutes a direct discharge?
- Don't duplicate data
  - Sample data from previous MS4 permit sampling
  - Sample data from other sources



# Part I: IWM - Identify Impairments & Sampling Requirements

- Use NEMO mapping tool – SW impairments only
- Challenges & Findings
  - Parameters - Bacteria, TN, TP, Turbidity (Other POC)
  - Receiving water
  - 40 CFR 136 Sampling methods
  - Finding a lab that has correct method for Total Coliform
  - Correct jars
  - Recommend using laboratory for TN and TP
  - Recording discharge temperature

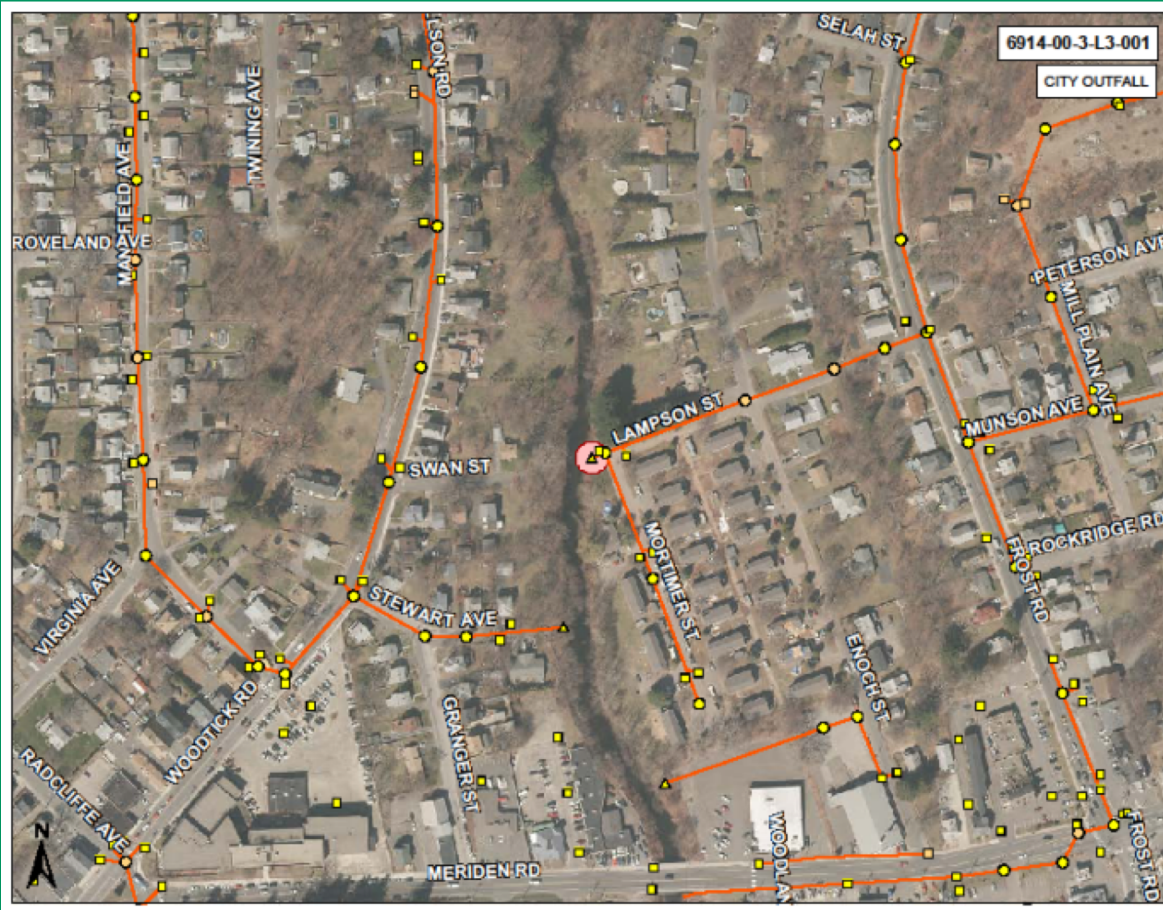
# Part I: IWM - Weather Monitoring & Timing Challenges

- No prior storm in magnitude  $>0.1$  inch within 48 hours
- Strong enough storm to produce a discharge
- Must be collected within first 6 hours
- Events need to occur during the day
- Some labs not open on weekends

# Part I: IWM & IDDE Screening/Sampling – Field Preparation

- Maps
- Outfall list
- Appropriate sample jars
- Tools for accessing and sampling at difficult outfall locations
- Making sure staff understands weather and sampling requirements
- Lab coordination/Notice ahead of time (if bacteria samples)
  - Latest weekday drop off time
  - Open weekends?
- Ice
- Equipment calibration

# Part I: Mapping Used in the Field





# Part I: IWM & IDDE Screening/Sampling- During Sampling

- Bacteria short holding time of 6 hours
  - Timing of getting bacteria samples to the lab
  - Mid day pickup/drop-off
- Accessing Outfalls
  - Private properties
  - Fences, steep embankments/retaining walls, overgrown brush/vegetation, difficult to locate
  - Additional or re-located outfalls

# Part I: Outfalls Difficult to Access





# **PART I: MONITORING - IDDE DRY WEATHER SCREENING & SAMPLING**



# Part I: IDDE Screening & Sampling

## Priority Areas:

- Outfalls in local drainage basins to impaired waterbodies, assuming no Excluded or Problem outfalls. Entire Cities are urbanized and most DBs > 11% DCIA (priority areas)
- Ranking had not been completed
- Field reconnaissance-locating outfalls, some without coordinates
- Training-staff understood intent, methods and goals of IDDE screening and sampling

# Part I: IDDE Screening & Sampling – Dry Weather Flow



# Part I: IDDE Screening & Sampling

## Field Kits vs. Lab Analysis:

- Field Kits – Temp, conductivity, salinity & chlorine (we had YSIs in house, temp. and chlorine analyzed immediately)
- Lab Analysis – Bacteria, surfactants & ammonia (more expensive meter costs to buy/rent)

# Part I: IDDE Screening & Sampling

## Lab Analysis

- Checked for detection limits and 40 CFR 136 methods
  - Ammonia EPA Method 350.1 or 350.2
- Short holding time for bacteria
- Preservative for bacteria jars
- POC = Nitrogen or Phosphorus


# Part I: IDDE Screening & Sampling

- Watching the weather (24 hours  $<0.1$  inch)
- Use of Epicollect5 Phone App. in the field
- Understanding “allowable non-stormwater discharges”
- Culverts – understanding when it is “simply conveying waters of the state”

# Part I: IDDE Screening & Sampling

## Inaccessible or Submerged Outfalls:

- First accessible upstream MH or CB for observation and sampling, if required
- Record information in Epicollect5 App. and label as the outfall's ID with MH or CB at end



# **PART II: OTHER MS4 PERMIT TASKS & REQUIREMENTS**

# Part II: Other MS4 Permit Tasks & Requirements

- IDDE Outfall Inventory
- IDDE Outfall Ranking
- IDDE Plan & Mapping
- Formal Employee Training
- Standard Operating Procedures Research
- Annual Reports
- Permit Timelines & Due Dates



## Part II: IDDE Outfall Inventory

- Large lists of outfalls (>300 & >500) from the cities
- True “outfalls” discharge to “waters of the state”
- Wetlands vs. Wooded Areas
- City vs. State & Private
- When to include culverts
- Outfalls to detention basins

## Part II: IDDE Outfall Ranking

- Challenge getting information for all categories. Made and documented some assumptions during the ranking.
- Consultation with HD for failing septic systems=Problem outfalls
- Ranking entire local drainage basins as the same category

## Part II: IDDE Plan & Mapping

- Template on NEMO website
- Updated IDDE Plan after screening & sampling started
- Revised maps once outfall status/ownership determined
- Generated IDDE tracking sheet for City use

## Part II: Other Tasks & Requirements

- MCM-6
  - Formal Employee Training for City staff
  - Standard Operating Procedures
- Annual Reports
- Permit Timelines & Due Dates

# Questions??

# THANK YOU.

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