Environmental Protection

Municipal Separate Storm Sewer System

Stormwater Management Program Updates

Stormwater Advisory Group

September 27, 2016

Meeting Agenda

- Introductions
- Municipal Separate Storm Sewer System (MS4) Permit Overview
- Stormwater Management Program (SWMP)
  - Pollution Prevention/Good Housekeeping (PPGH) for Municipal Operations and Facilities
    - Inventory of Municipal Facilities and Operations
    - Prioritization Protocol
    - Stormwater Control Measures (SCMs)
- Working Groups Breakout Session
- Questions

MS4 Permit Overview

Permit intent: the management of urban sources of stormwater runoff to protect overall water quality and improve water quality in impaired waters.

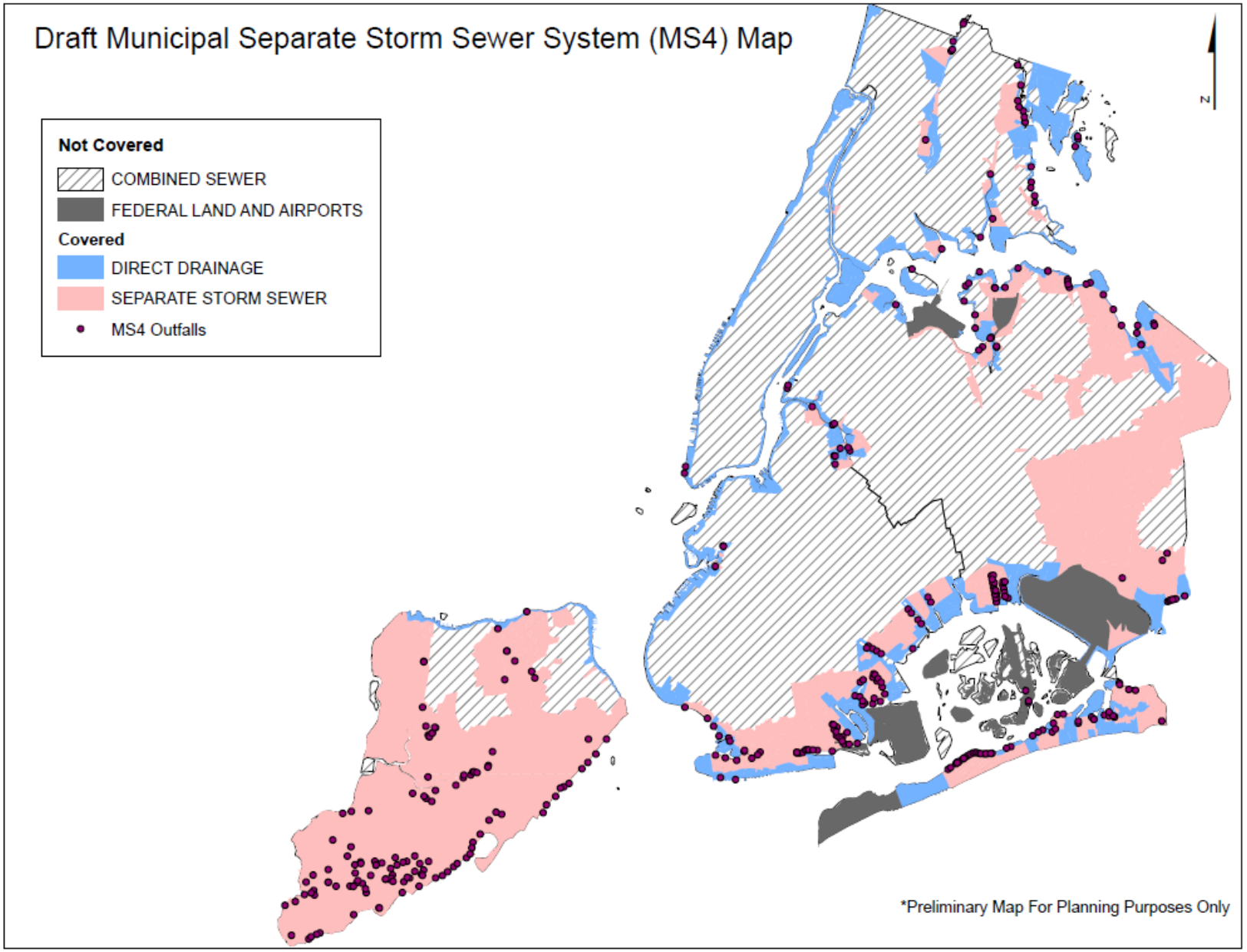
Permit requirements: the implementation of controls for stormwater discharges of “pollutants of concern” and illicit discharges of other pollutants to the “maximum extent practicable.”

Pollutants of Concern: a pollutant that may be expected to be present in stormwater, in quantities that may then cause or contribute to a water quality violation in waters of the State.

These pollutants include but are not limited to the following:

- nitrogen, phosphorus, pathogens, floatables
- silt and sediment
- petroleum hydrocarbons
- heavy metals
- polycyclic aromatic hydrocarbons (PAHs)

MS4 Drainage Areas and Outfalls



SWMP Chapters

1. Introduction
2. Program Overview
3. Public Education and Outreach
4. Public Involvement / Participation
5. Mapping
6. Illicit Discharge Detection and Elimination (IDDE)
7. Construction Site Stormwater Run-off Control
8. Post-Construction Stormwater Management
9. **Pollution Prevention / Good Housekeeping for Municipal Operations and Facilities**
10. Industrial and Commercial Stormwater Sources
11. Control of Floatable and Settable Trash and Debris
12. Monitoring and Assessment of Controls
13. Reliance on Third Parties
14. Recordkeeping
15. Annual Reporting and Certification

Pollution Prevention/Good Housekeeping Program Outline

DRAFT CHAPTER 9 – Pollution Prevention/Good Housekeeping (PPGH) for Municipal Operations and Facilities:

9.1 Municipal Facilities and Operations Inventory

9.2 Municipal Facility Prioritization Protocol

9.3 Stormwater Control Measures for PPGH

9.4 Municipal self-assessment procedures and initial assessments

9.5 Employee Training Program

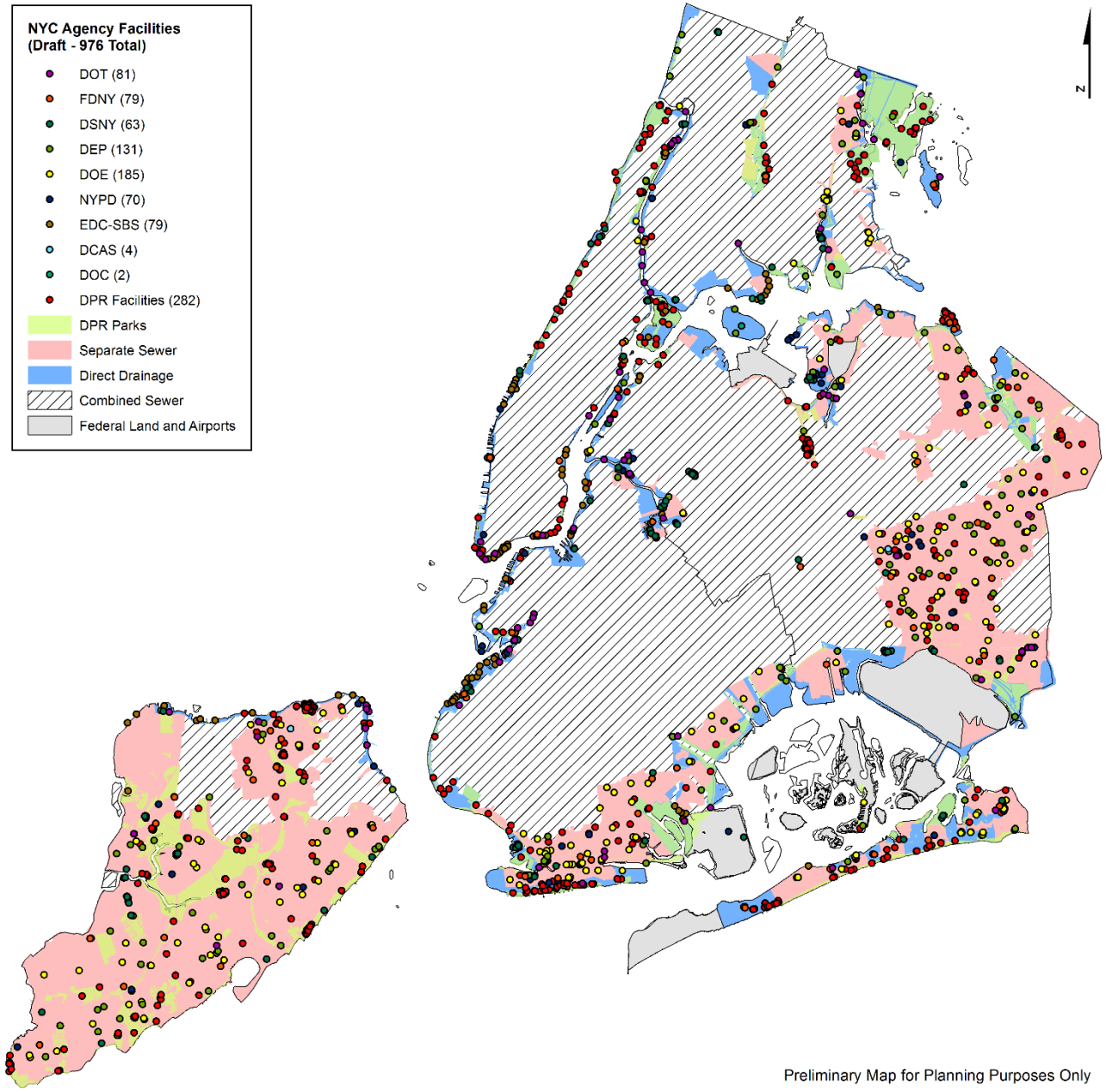
9.6 Third Party Contracted Services Requirements

9.7 PPGH Measurable Goals

9.1. Municipal Facilities and Operations Inventory

- Currently 976 facilities
- Includes the following types:
  - Transfer stations
  - Fire stations
  - NYPD precinct station houses
  - Firing ranges
  - Vehicle impound lots
  - Correction centers
  - Parking lots
  - Municipal buildings
  - Vehicle maintenance yards
  - Pumping stations
  - Asphalt plants
  - Wastewater
  - Marinas
  - Animal facilities
  - others

NYC MS4 Municipal Facilities



Preliminary Map for Planning Purposes Only

Municipal Facilities & Ops/Affected Agencies

Facility/Operation in MS4 Area	Pollutant Generating Activities/Areas	Potentially Affected Agency/Agencies
Vehicle/Fleet/Equipment Operations	1. Fleet repair 2. Tow pounds 3. Vehicle washing 4. Maintenance Yards 5. Parking Lots	All agencies
Waste/Stormwater Infrastructure	6. WWTPs 7. CSO Facilities 8. Pumping Stations	DEP
Storage facilities	9. Equipment (e.g., vehicles) 10. Materials (e.g., cleaning, oils, solvents, etc.)	All agencies
New construction and land disturbances	11. Erosion and sediment transport 12. Construction materials and handling	All agencies
Marine operations	13. Marinas 14. Repair yards 15. Boat pumping stations 16. Piers and loading docks 17. Ferry facilities 18. Fueling Stations 19. Hydrologic habitat modification	DEP, DOT, DPR, EDC/SBS, FDNY, NYPD, DOC

Municipal Facilities & Ops/Affected Agencies (cont.)

Facility/Operation in MS4 Area	Pollutant Generating Activities/Areas	Potentially Affected Agency/Agencies
Solid waste facilities	20. Landfills 21. Transfer stations 22. Storage and disposal facilities 23. Compost piles	DPR, DSNY, DEP, DOC
Right of Way	24. Bridge maintenance 25. Roadside garbage pickup 26. Winter road maintenance (e.g., de-icing activities/materials, and street paints) 27. Catch basins 28. Street sweeping 29. Road and sidewalk maintenance 30. Arterial sweeping	DOT, DEP, DSNY, DPR, DOC
Parks and open space	31. Grounds maintenance (e.g., pesticides, herbicides, and fertilizers) 32. Golf courses 33. Hydrologic habitat modification	All agencies
Municipal building maintenance	34. Septic system maintenance 35. Grounds maintenance 36. Waste disposal/recycling	All agencies

Pollution Generating Activities Examples

Table 4: Pollution Generating Activities and Stormwater Pollutants Associated with Municipal Operations

Pollution Generating Activity	Stormwater Pollutants					
	Sediment	Nutrients	Metals	Hydro-carbons	Toxins	Others
Hotspot Facility Management						
Vehicle Repair	○	○	●	●	●	
Vehicle Fueling	×	○	●	●	●	
Vehicle Washing	●	●	◉	◉	●	
Vehicle Storage	○	×	◉	●	○	Trash
Outdoor Loading	●	◉	◉	○	○	Organic Matter
Outdoor Storage	●	◉	◉	◉	◉	
Waste Management	○	◉	◉	◉	●	Trash
Building Repair	●	○	◉	◉	◉	
Building Maintenance	●	×	●	○	◉	
Parking Lot Maintenance	●	○	◉	●	◉	
Turf Management	◉	●	×	×	●	Pesticides
Landscaping	○	●	×	×	●	Pesticides
Swimming Pool Discharges	×	×	×	×	×	Chlorine

Key

× = not associated with operation

● = frequently associated with operation

◉ = infrequently associated with operation

○ = rarely associated with operation

Urban Subwatershed Restoration Manual Series: Municipal Pollution Prevention/ Good Housekeeping Practices. Manual 9
September 2008

9.2. Municipal Facilities Prioritization Protocol

Why do we need to prioritize municipal facilities/operations?

- To identify facilities and operations with the greatest potential to discharge POCs to the MS4 and to the waters of the state through direct drainage
- To identify facilities and operations with the greatest potential to impact water quality of receiving waterbodies
- To determine the frequency of inspections

Progress to date:

- Initiated PPGH sub-team (DOT, DPR, DSNY, FDNY, NYPD, DCAS, DDC, EDC, SBS, DOC, DOE, City Law, DEP)
- Drafted Prioritization Protocol
  - Currently revising protocol based on PPGH sub-team comments
  - Same protocol will be used to prioritize municipal operations

PPGH Program: Prioritization Protocol

Prioritization Approach

1. Initial Prioritization
   - Will be based on currently available site data and best professional judgment
   - Will provide initial ranking for all municipal facilities and operations
   - Initial assessments will be scheduled as per results of this prioritization

2. Site-Specific Prioritization
   - Will be based on site assessments
   - 10-Step Process (5 steps input manually, 5 steps including results calculated by spreadsheet)

Site-Specific Prioritization: 10-Step Process

- Step 1 – Select a Site/Facility per preliminary prioritization
- Step 2 – Identify the Facility or Operation of concern at the Site/Facility
- Step 3 – Assign scores for likelihood (of contribution of pollutants) rating, based on these criteria:
    - Outdoor Material Handling or Exposure
    - Operation Frequency
    - Discharge Frequency without Treatment Controls
    - Proximity to Impaired Waters with Special Conditions
    - On-Site Trained Staff
- Step 4 – Calculate the Normalized Likelihood Rating
- Step 5 – Identify Pollutants of Concern and Potential Consequences
- Step 6 – Assign Scores for Each Pollutant and Potential Consequences
- Step 7 – Calculate the Normalized Consequence Rating
- Step 8 – Calculate the Average Likelihood and Consequence Ratings for the Site
- Step 9 – Assign the Site/Facility Averages to the Potential Impact Score Matrix
- Step 10 – Plot the Results of Each Site/Facility's Potential Impact Score on the Matrix

Prioritization sample demonstration – Fictitious site

http://water.usgs.gov/watuse/wuin.html

Fictitious facility:
Name: MS41 Waste Transfer Station

Location: Adjacent to water body impaired for floatables

Personnel: 25 Staff trained annually on stormwater management; daily briefings include environmental and safety components, good housekeeping procedures

List of activities operations at the site:

- Waste Storage – Temporary stockpiling of solid waste
- Material Storage – 20,000 gallon fuel tank for on-site use, fueling of equipment on-site and emergency equipment
- Equipment Storage – Various mechanical equipment for supporting on-site operations

Sample of scoring criteria manually entered

Sample scoring criteria for activity associated risk - Assessor selects from values below

How often are materials handled or exposed outdoors?		
Typical Exposure Period	**Score**	**Scoring Guidance**
Usually	5	Continuous for weeks and/or months annually
Sometimes	3	For multiple days periods quarterly
Rarely	1	No more than 1-2 days at a time on a bi-annual basis

Sample scoring criteria for POC specific impact-Assessor selects from values below

Category Name	Symbol	Score	Scoring Guidance
High	H	5	The POC exists in significant quantities and has been known to discharge
Medium	M	3	The POC exists on-site in small quantities and has discharged infrequently
Low	L	1	The POC exists on-site in small quantities and may temporarily be exposed
Insignificant	I	0	The POC exists on-site, but POC sources are contained/covered, discharge to environment is highly unlikely
Not Applicable	N	0	The POC does not exist on-site

Identify Operations or Activities of Concern

Operation or Activity: Waste Management

Potential Impact to Stormwater Score
SUMMARY TABLE

Identify each Operation/Activity using drop down menus in the yellow boxes. Likelihood and Consequence Ratings automatically populate.

	Operation or Activity of Concern	Description of Operation Location	Likelihood Rating	Consequence Rating
1.	Waste Management	Waste transfer operations in northwest area		
2.				
3.				
4.				
5.				
6.				
7.				
		Facility Averages	0.0	0.0

archive.defense.gov

Enter the description of operation or activity.

Operation or activity is selected using drop-down.

Drop-Down Options

- **Vehicle/Fleet/Equipment Operations**
- **Storage Facilities**
- Stormwater Collection and Conveyance System
- Paved Surface Maintenance
- Landscape and Open Space Maintenance
- **Waste Management**
- Building Maintenance and Repair
- Marine Operations

Operation Facts:

- Material is stored in a covered area
- Waste is transferred daily
- Waste transfer station located within 100 feet of the river
- Area is inspected regularly and swept three times per day

Apply Process to Additional Site Ops and Activities

Operation: Storage Facilities (diesel fuel storage)

fedcenter.gc

2	Storage Facilities	*The criteria below only pertain to operation or activity in Summary Table Line 2*
	Activity/Element Associated Risk	
1.	Usually	How often are materials handled or exposed outdoors?
2.	50-100%	How many days a year (as a percentage) is this performed?
3.		What is the frequency of discharges that occur without treatment or control?
4.	< 1,000 ft	What is the site's proximity to any impaired waterways?
5.	Full-time trained staff	Are there Trained Staff on-site? If so, how often are they on-site?
	Potential POC-specific impact	*What is the relative quantity handled or discharged of each of the following materials? (Use the Pollutant Source Lookup Key tab if types of pollutants are unknown)*
1.	N/A	Pathogens
2.	N/A	Floatables
3.	N/A	Nitrogen
4.	N/A	Phosphorus
5.	N/A	Sediment
6.	High	Oil and Grease
7.	N/A	Hazardous Materials
8.	N/A	Deicers
9.	N/A	Herbicides or Pesticides
10.	N/A	Process Waste
11.	N/A	Leachate
12.	N/A	Vegetation Waste

Operation Facts:

- Receives fuel delivery 1 x week
- No history of discharges
- Tank is fully compliant with Petroleum Bulk Storage regulations
- Employees receive regular PBS, SPCC training

Potential Impact to Stormwater Score
SUMMARY TABLE

Identify each Operation/Activity using drop down menus in the yellow boxes. Likelihood and Consequence Ratings automatically populate.

	Operation or Activity of Concern	Description of Operation Location	Likelihood Rating	Consequence Rating
1.	Waste Management	Waste transfer operations in northwest area	4.6	5.0
2.	Storage Facilities	20k gallon tank located west of main building	3.6	5.0
3.				
4.				
5.				
6.				
7.				
		Facility Averages	4.1	5.0

Additional Site Ops and Activities

Operation/Activity: Vehicle/Fleet/Equipment Operations

3	Storage Facilities	*The criteria below only pertain to operation or activity in Summary Table Line 3*
	Activity/Element Associated Risk	
1.	Rarely	How often are materials handled or exposed outdoors?
2.	50-100%	How many days a year (as a percentage) is this performed?
3.		What is the frequency of discharges that occur without treatment or control?
4.	< 1,000 ft	What is the site's proximity to any impaired waterways?
5.	Full-time trained staff	Are there Trained Staff on-site? If so, how often are they on-site?
	Potential POC-specific impact	*What is the relative quantity handled or discharged of each of the following materials? (Use the Pollutant Source Lookup Key tab if types of pollutants are unknown)*
1.	N/A	Pathogens
2.	N/A	Floatables
3.	N/A	Nitrogen
4.	N/A	Phosphorus
5.	N/A	Sediment
6.	Low	Oil and Grease
7.	N/A	Hazardous Materials
8.	N/A	Deicers
9.	N/A	Herbicides or Pesticides
10.	N/A	Process Waste
11.	N/A	Leachate
12.	N/A	Vegetation Waste

Potential Impact to Stormwater Score

SUMMARY TABLE

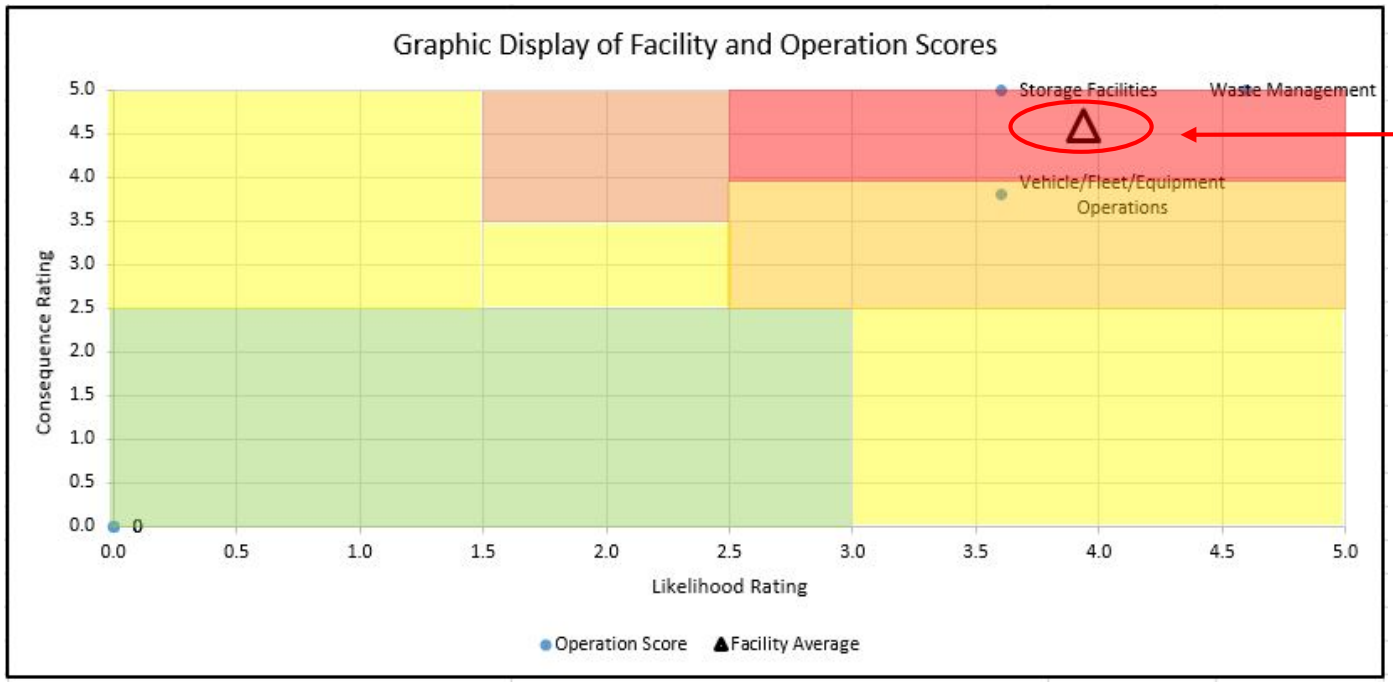
Identify each Operation/Activity using drop down menus in the yellow boxes. Likelihood and Consequence Ratings automatically populate.

	Operation or Activity of Concern	Description of Operation Location	Likelihood Rating	Consequence Rating
1.	Waste Management	Waste transfer operations in northwest area	4.6	5.0
2.	Storage Facilities	20k gallon tank located west of main building	3.6	5.0
3.	Vehicle/Fleet/Equipment Operations	Storage of operational vehicles/equipment	3.6	3.8
4.				
5.				
6.				
7.				
		Facility Averages	3.9	4.6

Operational Facts

- Maintenance vehicles and equipment are kept in covered area when not in use
- Well maintained and inspected for leaks before and after use
- Area is kept in good housekeeping

Spread Sheet Calculates and Plots Results



Site/Facility Risk Score

Color Key - Potential Impact Score
Very High
High
Medium
Low
Very Low

The nature of operations at the facility and its proximity to a priority waterbody for a POC (floatables) gives the facility a high priority despite adequate housekeeping and proper maintenance

Stormwater Control Measures (SCMs)

What is a Stormwater Control Measure (SCM)?

Stormwater Control Measure (SCM): administrative or structural controls used to reduce the quantity and/or improve the quality of stormwater runoff.

How does a SCM work?

There are two types:

- Non-Structural SCMs, also referred to as administrative SCMs, are formal procedures designed to control and reduce the discharge of POCs.

  Examples: Site sweeping

  Container management – Close covers

  Inspection and maintenance of areas

- Structural SCMs are devices that are physically installed or constructed to reduce or treat stormwater runoff.

  Examples: Oil Water separator

  Green Infrastructure

  Engineered secondary containment

9.3 Stormwater Control Measures (SCMs) for PPGH

- 38 PPGH-specific SCMs currently under development
  - Refer to handout
- SCMs for other SWMP chapters also under development could be applicable to PPGH
- Other SCMs may be developed as assessments are performed
- SCM Format – Intended to show format only, not specific content

Draft SCM Format

Vehicle/Fleet/Equipment Operations

LOGOS TO BE ADDED

Vehicle/Equipment Fueling (SCM-PP/GH-3)

Description

Spills and leaks that occur during vehicle and equipment fueling can contribute hydrocarbons, oil and grease, as well as heavy metals to stormwater runoff. Implementing the following management practices can help prevent fuel spills and leaks.

SPDES Permit Requirement	Part IV.G., Pollution Prevention/Good Housekeeping for Municipal Operations
KEY SELECTION CRITERIA	
Targeted Activities	• Fueling of vehicles/equipment • Transfer of fuel/oil to tanks/storage containers •
Performance Goals	• Minimize/eliminate fuel spills • Minimize contaminated runoff reaching stormwater system or waterways •
Most Effective Practices (more detail on page 2)	• Covered areas • Install collection equipment • Install hold-open latches • Install oil/water separator •
RELATED CONTROL MEASURES AND REGULATIONS	
Related SCMs	• Spill prevention and response (GEN-XX) • Solid waste management (GEN-XX) • Above ground tank maintenance (PP/GH-7) • Catch basin/inlet cleaning and repair (PP/GH-11)
Other Regulatory Requirements	• A • B • C • D

POLLUTANTS/IMPAIRMENTS	
✓	Floatables
	Sediments
	Nitrogen
	Phosphorous
	Pathogens
	Oxygen Demand
	PCBs
✓	Metals
✓✓	Petroleum Products/PAHs
	Hydromodification
✓✓ = Good ✓ = Fair = Poor	

CONTROL STRATEGIES	
✓	Cover/Contain
✓	Clean Up
✓	Reduce/Minimize
✓	Product Substitutions
✓	Reduce Runoff
✓	Capture and Treat
✓	Capture and Retain
✓ = Yes	

Control Strategies/Suggested Practices
COVER/CONTAIN
Cover refueling area with a roof
Install sumps, collection tanks, containments and/or catch basin/inlets and ensure they are properly maintained according to the appropriate SCM
CLEAN UP
Keep spill cleanup materials onsite and easily accessible
Promptly clean spills using dry cleaning methods (absorbent material) and other methods outlined in Spill Prevention and Response SCM-GEN-XX
Promptly respond to and "spot clean" leaks and drips
Properly dispose of solid waste (litter, debris, used absorbent material) according to the appropriate solid waste management SCM-GEN-XX
REDUCE/MINIMIZE
Install vapor recovery nozzles and hold-open latches
Provide adequate number of trash receptacles for disposal of trash and debris
Inspect vehicles and equipment on regularly intervals for leaks
Inspect above ground tanks, nozzles, hoses, and other equipment for corrosion, damage, and indications of spills or leaks
Use labels to identify storm drains and valves; use signs to remind employees not to top-off and to perform other work outside the fueling area.
PRODUCT SUBSTITUTION
Use dry cleaning methods
REDUCE RUNOFF
Grade or use physical barriers to divert runoff from fueling area away from storm sewer drains
CAPTURE AND TREAT
Install oil/water separators in drains and keep them clean (see SCM-_____)

References

California Stormwater Quality Association, Stormwater Best Management Practice Handbook, Municipal.

Western New York Stormwater Coalition, Erie County Department of Environment and Planning Division of Environmental Compliance Services, Pollution Prevention/Good Housekeeping for Municipal Operations: A Guidance Document of Best Management Practices and Inspection Checklist

Vehicle/Equipment Fueling SCM-PP/GH-3

PPGH Program: Other Applicable SCMs

Examples of SCMs for other provisions potentially applicable to PPGH:

- Contractor Notification for MS4 Compliance
- Household Hazardous Materials Drop-off
- Material Recycling/Drop-off/Pickup
- Facility/Above-ground Inspections
- Response to Public/Agency Reporting
- Brush Barrier
- Compost Filter Berms and Socks
- Gravel/Stone Filter Berms
- Fiber Rolls
- Silt Fences
- Stormwater Drain Inlet Protectors

Examples of additional PPGH-specific SCMs:

- Green Infrastructure/ Runoff Reduction Feasibility Evaluation for Municipal Upgrades including work in the right of way
- Other SCMs will de developed if need is identified during the self-assessments

Questions

For more information, visit our website:
nyc.gov/dep/ms4

If you have questions or feedback,
please contact the MS4 Team at:
ms4@dep.nyc.gov