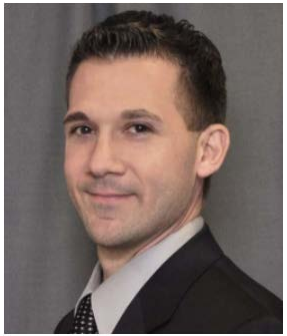



LANGAN

# WMPF – Stormwater Session

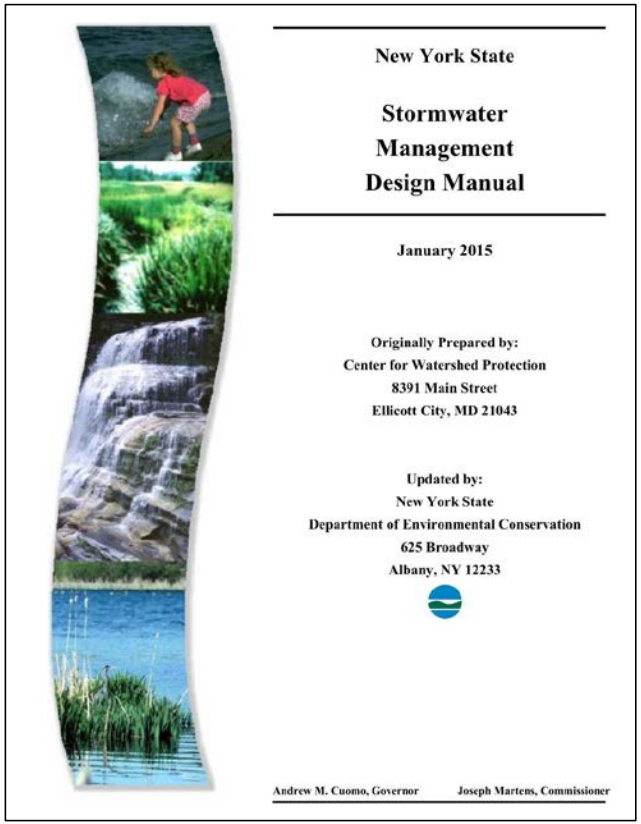
Technical Excellence  Practical Experience  Client Responsiveness

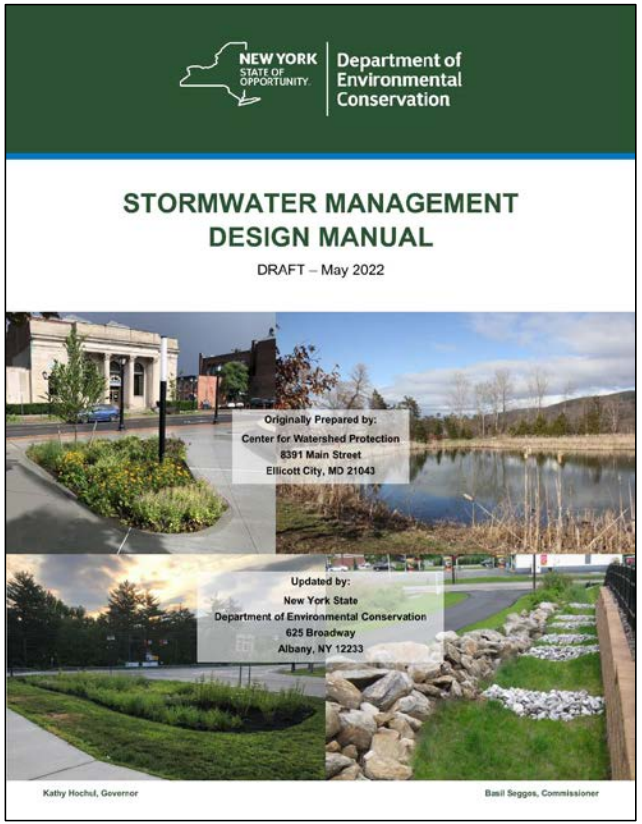
Lauren McMahon, P.E.



Mike Finan, P.E., LEED-AP

# NYS STORMWATER DESIGN MANUAL



# IS A STATE SPDES PERMIT REQUIRED?

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

**CONSTRUCTION ACTIVITY**

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2020 Expiration Date: January 28, 2025

John J. Ferguson
Chief Permit Administrator

Authorized Signature 1-23-20 Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

**APPENDIX B – TABLE 1 LISTS CONSTRUCTION ACTIVITIES WHERE STORMWATER CONTROLS ARE NOT REQUIRED**

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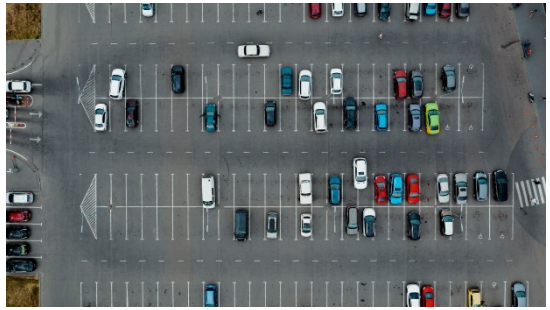

# WHY DO WE CARE ABOUT STORMWATER?

**WATER QUALITY**

**WATER QUANTITY**

# WATER QUALITY

**STORMWATER RUNOFF ACCUMULATES POLLUTANTS**

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# WATER QUANTITY


**2008**

**2024**

# WATER QUANTITY

# DRAINAGE ANALYSIS

- **COMPONENTS THAT ARE ANALYZED IN STORMWATER DESIGN:**
  - **WHERE IS RUNOFF GOING?**
  - **ONSITE SOILS - HOW FAST DO THE SOILS DRAIN?**
  - **HOW MUCH IMPERVIOUS AREA IS PROPOSED?**
  - **HOW FAST DOES IT TAKE FOR RUNOFF TO GET TO WHERE IT'S GOING?**
  - **RAINFALL DATA – VARIES ACROSS STATE**

- **RELY ON LOCAL ENGINEER**



# BIORETENTION

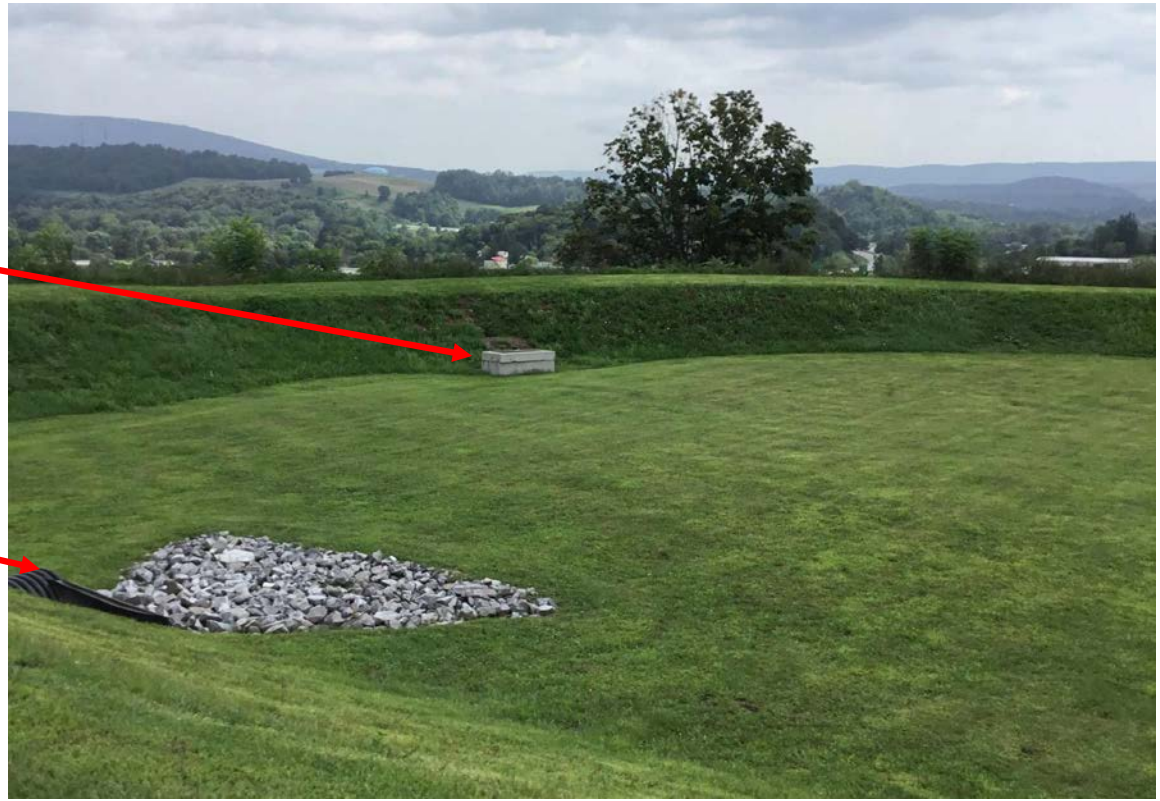
- **KEY = ENGINEERED SOIL MEDIA**

# WATER QUANTITY – OUTLET CONTROL STRUCTURE


# DETENTION BASIN

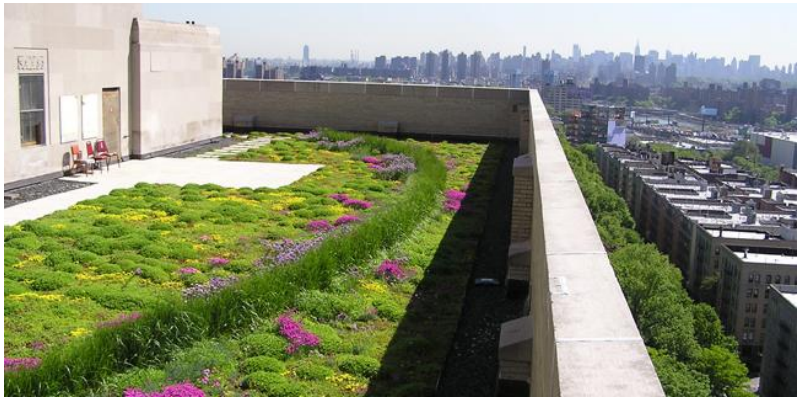
OUTLET CONTROL STRUCTURE

PIPE INLET

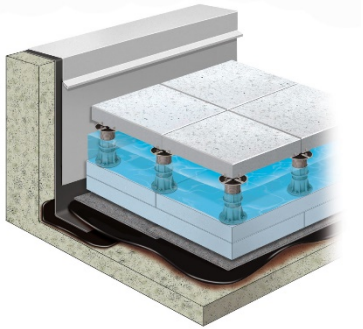


# SWALES

# GREEN ROOFS / BLUE ROOFS

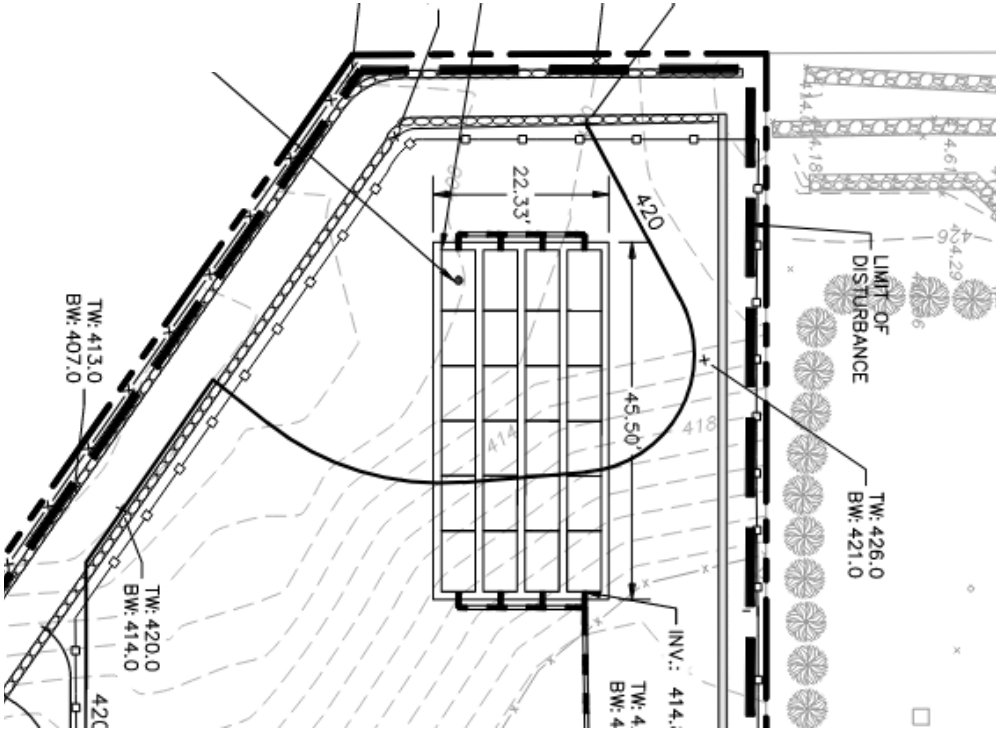


- **NEED TO DESIGN STRUCTURE FOR ADDITIONAL WEIGHT**



# POND

# UNDERGROUND INFILTRATION SYSTEMS




Bioretention
Bioretention
Wet Pond
Wet Pond

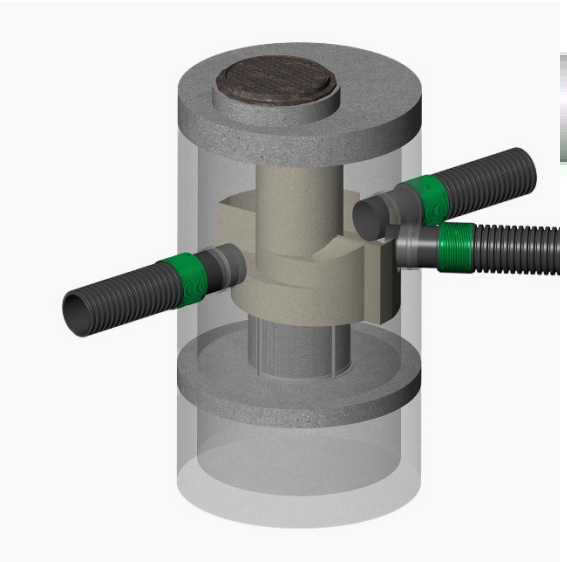
# REDEVELOPMENT – NYSSDM CHAPTER 9

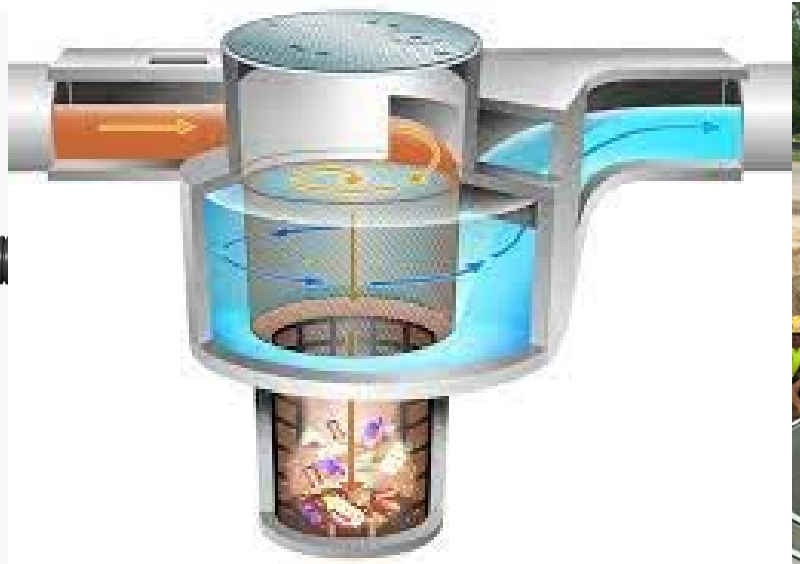

**REDEVELOPMENT**

**WITH NO INCREASE IN IMPERVIOUS AREA**


- **DOES NOT ADD TO WATER QUALITY CONDITIONS**
  - **DOES NOT INCREASE VOLUME OF RUNOFF**

# WATER QUALITY – HYDRODYNAMIC SEPARATOR





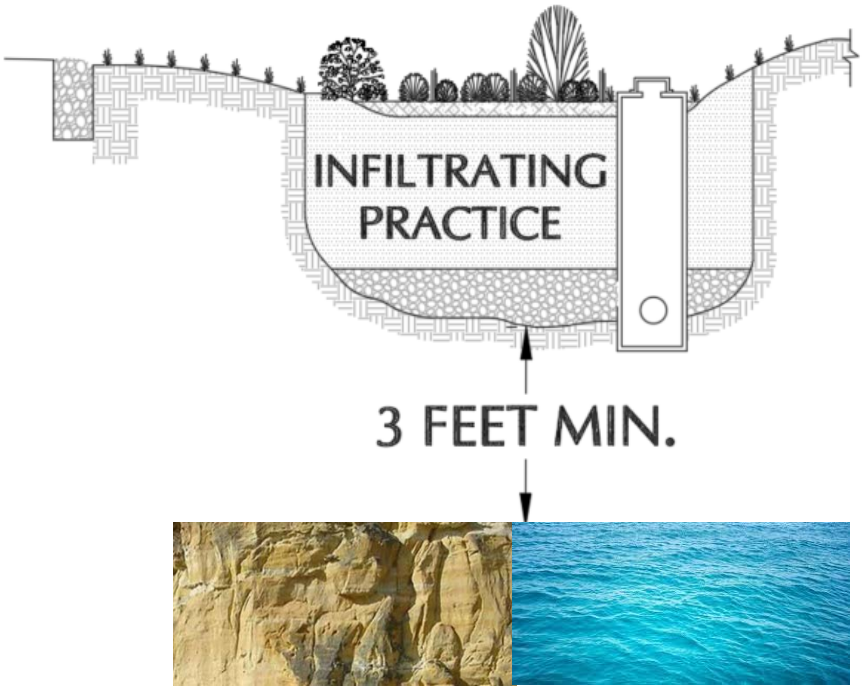
# REDEVELOPMENT – NYSSDM CHAPTER 9

**REDEVELOPMENT**

**WITH INCREASE IN IMPERVIOUS AREA**

- **REMOVES GROUNDWATER RECHARGE**
- **IMPACTS WATER QUALITY CONDITIONS**
- **INCREASES VOLUME OF RUNOFF**

# SOIL TESTING IS IMPORTANT



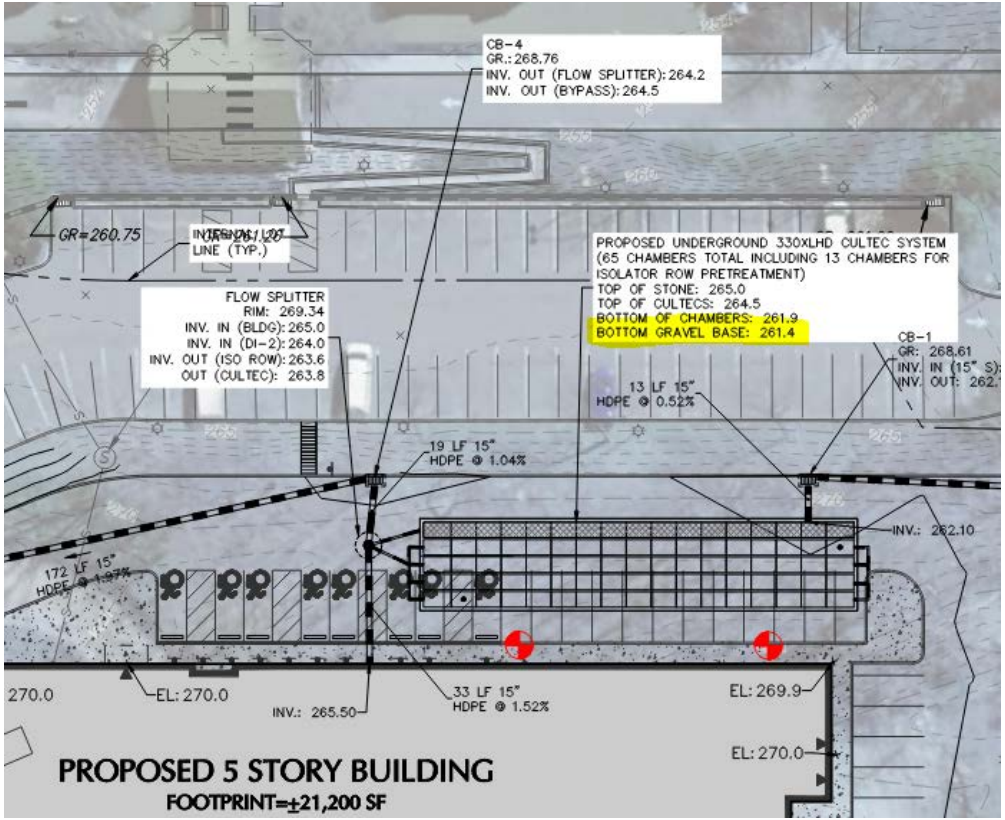

| Table 7.2 Physical Feasibility Matrix | | | |
|---|---|---|---|
| SMP Group | SMP Design | Soils | Water Table |
| Pond | Micropool ED | HSG A soils may require pond liner. | 2 foot separation if hotspot or aquifer |
| | Wet Pond | | |
| | Wet ED Pond | | |
| | Multiple Pond | | |
| | Pocket Pond | OK | below WT |
| Wetland | Shallow Wetland | HSG A soils may require liner | 2 foot separation if hotspot or aquifer |
| | ED Wetland | | |
| | Pond/Wetland | | |
| | Pocket Wetland | OK | below WT |
| Infiltration | Infiltration Trench | $f_c$ > 0.5 inch/hr; additional pretreatment required over 2.0 in/hr (See Section 6.3.3) | 3 feet, 4 feet if sole source aquifer. |
| | Shallow I-Basin | | |
| | Dry Well | | |
| Filters | Surface SF | OK | 2 feet[5] |
| | Underground SF | | |
| | Perimeter SF | | |
| | Organic SF | | |
| | Bioretention | | |
| Open Channels | Dry Swale | Made Soil | 2 feet |
| | Wet Swale | OK | below WT |

# SOIL TESTING IS IMPORTANT

## *Appendix D: Infiltration Testing Requirements*

- For infiltration practices a minimum field infiltration rate of 0.5 inches / hour is required

# CASE STUDY




Subsurface Investigation Result: Rock @ 264.0

Bottom of infiltration chambers would need to be raised to 267.0

NOT POSSIBLE

# CASE STUDY

- Limited Subsurface Investigation per Client Request
- $ 2 M of Additional Rock Excavation in Field
- Poor Soils – Hard to Work with When Wet – Causing Significant Construction Delays or $$$ for additive




LANGAN

# QUESTIONS?