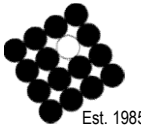
MS4 Update and BMP Maintenance

Presented by:
Shawn R. Wingrove, E.I.T.
Lennon, Smith, Souleret Engineering Inc.

April 13, 2017



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MS4 Update and BMP Maintenance

- **Current Permit Compliance Tasks**
- **PCSM BMP Maintenance**
  - Detention Basins
  - Rain Gardens/Bio-Retention Areas
- **2018 Permit Tasks**

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Current Permit Annual Tasks – Plans and Documentation

- **Implementation of Stormwater Management Program (SWMP)**
  - Detailed written plan is developed. Plan clarifies responsibilities for annual compliance tasks and documentation procedures for each.
  - Municipal Staff understands their roles in implementation of SWMP.
  - SWMP is evaluated and updated annually.

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Current Permit Annual Tasks – Plans and Documentation

- **Compliance Documentation**
  - All compliance activities identified in the SWMP must be documented.
  - Binders and GIS Asset Management Tools (TRAISR) to be used to track and document all activities.
  - Comprehensive documentation and tracking is critical to provide to DEP during MS4 Inspections and as part of annual or progress reports.
  - Accessible, organized and thorough documentation key for DEP inspections and preparation of Progress Reports.

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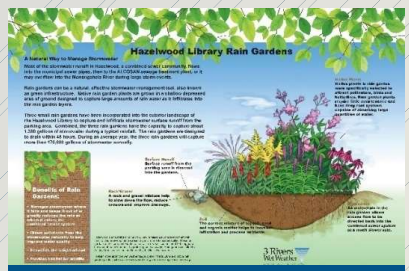
Current Permit Annual Tasks – Compliance with Permit Minimum Control Measures (MCMs)

- **MCM #1 – Public Education and Outreach on Stormwater Impacts**
  - Maintain and Update Target Audience List
  - Distribute Information to Target Audiences via website, newsletter and other distribution methods



Educational Signage at the Hazelwood Library / Website

- **MCM #2 – Public Involvement/Participation**
  - Solicit public input on stormwater policy
  - Hold an annual public meeting regarding MS4
  - Organize or support public pollution prevention events such as stream cleanups and recycling events

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Current Permit Annual Tasks – Compliance with Permit Minimum Control Measures (MCMs)

- **MCM #3 – Illicit Discharge Detection and Elimination**
  - Maintain comprehensive mapping of the entire MS4
  - Complete annual screening of MS4 outfalls. Evaluate and eliminate illicit discharges discovered during screening program
  - Resolve and track complaints and violations related to illicit discharges
- **MCM #4 – Construction Site Stormwater Runoff Control**
  - Monitor active construction site for proper E&S Control
  - Resolve and track complaints and violations related to construction site runoff

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Current Permit Annual Tasks – Compliance with Permit Minimum Control Measures (MCMs)

- **MCM #5 – Post-Construction Stormwater Management *(PCSM) in New and Re-Development Activities***
  - Maintain an inventory of all PCSM BMPs (detention basins, rain gardens, underground tanks, etc.) located within the municipality
  - Annually inspect PCSM BMPs
- **MCM #6 – Pollution Prevention/Good Housekeeping**
  - Maintain an inventory of all municipal facilities and activities
  - Maintain and implement standard operating procedures for all municipal activities to limit impact to stormwater runoff
  - Implement an annual training program

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Typical BMP Maintenance

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PCSM BMP Maintenance

- **What is a PCSM BMP?**
  - Post Construction Stormwater Management (PCSM) Best Management Practice (BMP)
  - Activities, facilities, designs, measures, or procedures used to manage stormwater impacts
  - MCM #5 primarily relates to structural PCSM BMPs such as:
    - Detention Basins
    - Retention/Wet Ponds
    - Underground Storage Tanks
    - Infiltration Facilities (sumps, trenches, galleries, etc.)
    - Rain Gardens/Bio-Retention Basins and Swales
    - Permeable or Porous Paving
    - Filter strips
    - Inlet Snouts

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PCSM BMP Maintenance

- **Every BMP should have a specific Operations and Maintenance (O&M) Plan**
- **The O&M Plan details the specific maintenance schedule for the BMP**
- **For all new privately-owned BMPs, an O&M Agreement must be executed and recorded**
  - Agreement recorded with County as part of property records
  - Agreement attachment includes copy of O&M Plan

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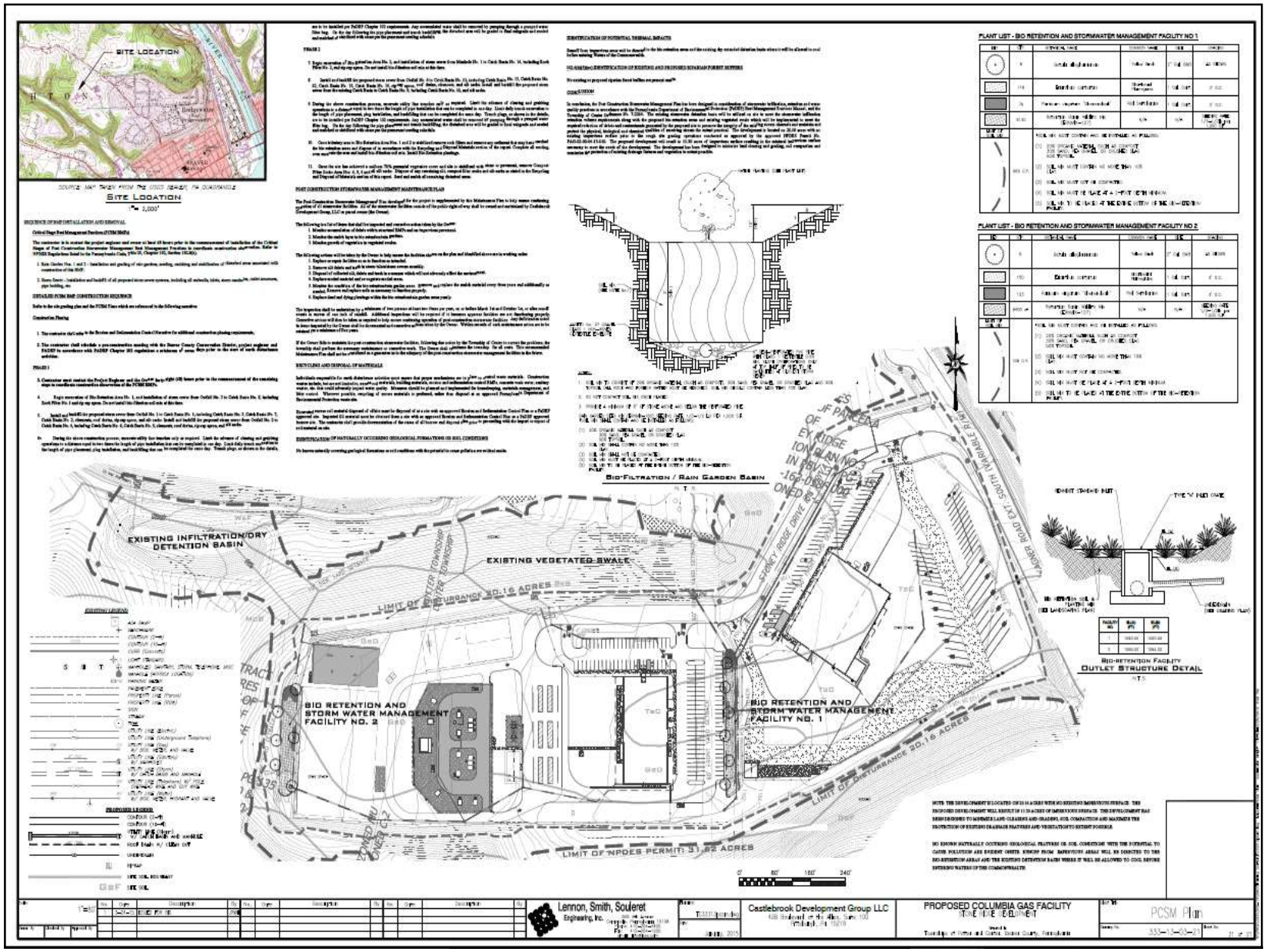
SITE LOCATION
SOURCE MAP TAKEN FROM THE USGS BEAVER, PA QUADRANGLE
SITE LOCATION
1" = 2,000'
PLANT LIST - BIO RETENTION AND STORMWATER MANAGEMENT FACILITY NO 1
PLANT LIST - BIO RETENTION AND STORMWATER MANAGEMENT FACILITY NO 2
BIO-FILTRATION / RAIN GARDEN BASIN
EXISTING INFILTRATION/DRY DETENTION BASIN
EXISTING VEGETATED SWALE
LIMIT OF DISTURBANCE 20.16 ACRES
BIO RETENTION AND STORM WATER MANAGEMENT FACILITY NO. 2
BIO RETENTION AND STORM WATER MANAGEMENT FACILITY NO. 1
LIMIT OF NPDES PERMIT 31.82 ACRES
SIDNEY RIDGE DRIVE
LARSEN ROAD EXT. SOUTH (PARALLEL RT. 18)
BIO-RETENTION FACILITY
OUTLET STRUCTURE DETAIL
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Castlebrook Development Group LLC
PROPOSED COLUMBIA GAS FACILITY
STONEMORE DEVELOPMENT
PCSM Plan

PCSM BMP MAINTENANCE

POST CONSTRUCTION STORMWATER MANAGEMENT MAINTENANCE PLAN

The Post-Construction Stormwater Management Plan developed for the project is supplemented by this Maintenance Plan to help ensure continuing operation of all stormwater facilities. All of the stormwater facilities outside of the public right-of-way shall be owned and maintained by Castlebrook Development Group, LLC or parcel owner (the Owner).

The following is a list of items that shall be inspected and corrective action taken by the Owner:

1. Monitor accumulation of debris within structural BMPs and on impervious pavement.
2. Monitor the mulch layer in bio-retention/rain gardens.
3. Monitor growth of vegetation in vegetated swales.

The following actions will be taken by the Owner to help ensure the facilities shown on the plan and identified above are in working order:

1. Replace or repair facilities so as to function as intended.
2. Remove silt debris and trash in storm inlets/storm sewers monthly.
3. Disposal of collected silt, debris and trash in a manner which will not adversely affect the environment.
4. Replace eroded material and re-vegetate eroded areas.
5. Monitor the condition of the bio-retention/rain garden areas. Remove and replace the mulch material every three years and additionally as needed. Remove and replace soils as necessary to function properly.
6. Replace dead and dying plantings within the bio-retention/rain garden areas yearly.

The inspection shall be undertaken by a minimum of two persons at least two times per year, on or before March 1st and October 1st, or after runoff events in excess of one inch of rainfall. Additional inspections will be required if it becomes apparent facilities are not functioning properly. Corrective actions will then be taken as required to help ensure continuing operation of post-construction stormwater facilities. Any deficiencies noted in items inspected by the Owner shall be documented and corrective actions taken by the Owner. Written records of each maintenance action are to be retained for a minimum of five years.

If the Owner fails to maintain the post-construction stormwater facilities, following due notice by the Township of Center to correct the problems, the township shall perform the necessary maintenance or corrective work. The Owner shall reimburse the township for all costs. This recommended Maintenance Plan shall not be considered as a guarantee as to the adequacy of the post-construction stormwater management facilities in the future.

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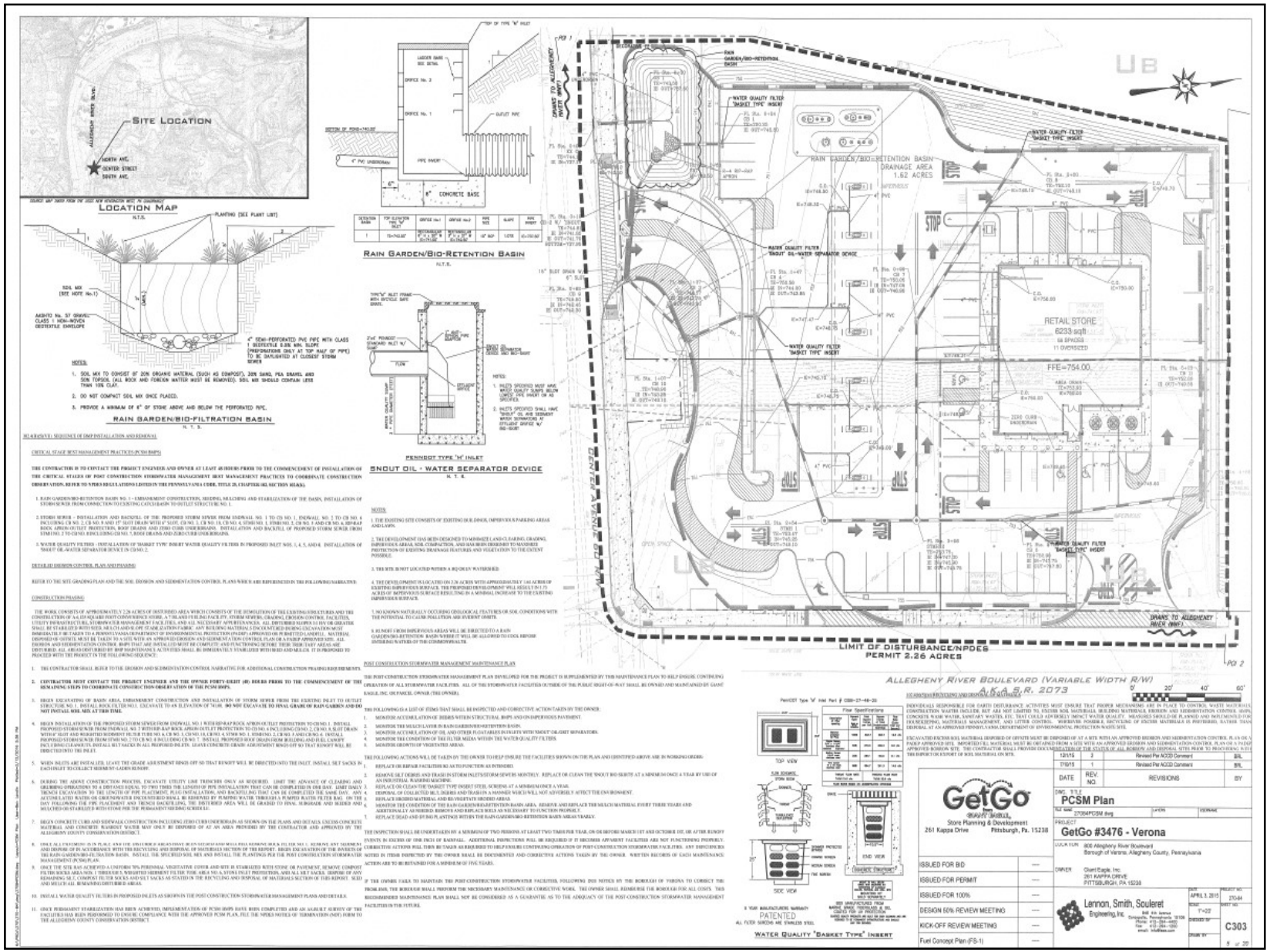
SITE LOCATION
LOCATION MAP
RAIN GARDEN/BIO-FILTRATION BASIN
RAIN GARDEN/BIO-RETENTION BASIN
SNOUT OIL - WATER SEPARATOR DEVICE
PENNDOT TYPE "M" INLET
RAIN GARDEN/BIO-RETENTION BASIN
DRAINAGE AREA
1.62 ACRES
RETAIL STORE
6233 sqft
FFE=754.00
LIMIT OF DISTURBANCE/NPDES
PERMIT 2.26 ACRES
ALLEGHENY RIVER BOULEVARD (VARIABLE WIDTH R/W)
WATER QUALITY "BASKET TYPE" INSERT
PCSM Plan
GetGo #3476 - Verona
Store Planning & Development
261 Kappa Drive Pittsburgh, Pa. 15238
Lennon, Smith, Souleret Engineering, Inc.
APRIL 3, 2015
C303

PCSM BMP MAINTENANCE

POST CONSTRUCTION STORMWATER MANAGEMENT MAINTENANCE PLAN

THE POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN DEVELOPED FOR THE PROJECT IS SUPPLEMENTED BY THIS MAINTENANCE PLAN TO HELP ENSURE CONTINUING OPERATION OF ALL STORMWATER FACILITIES. ALL OF THE STORMWATER FACILITIES OUTSIDE OF THE PUBLIC RIGHT-OF-WAY SHALL BE OWNED AND MAINTAINED BY GIANT EAGLE, INC. OR PARCEL OWNER (THE OWNER).

THE FOLLOWING IS A LIST OF ITEMS THAT SHALL BE INSPECTED AND CORRECTIVE ACTION TAKEN BY THE OWNER:

1. MONITOR ACCUMULATION OF DEBRIS WITHIN STRUCTURAL BMPS AND ON IMPERVIOUS PAVEMENT.
2. MONITOR THE MULCH LAYER IN RAIN GARDEN/BIO-RETENTION BASIN.
3. MONITOR ACCUMULATION OF OIL AND OTHER FLOATABLES IN INLETS WITH 'SNOUT' OIL/GRIT SEPARATORS.
4. MONITOR THE CONDITION OF THE FILTER MEDIA WITHIN THE WATER QUALITY FILTERS.
5. MONITOR GROWTH OF VEGETATED AREAS.

THE FOLLOWING ACTIONS WILL BE TAKEN BY THE OWNER TO HELP ENSURE THE FACILITIES SHOWN ON THE PLAN AND IDENTIFIED ABOVE ARE IN WORKING ORDER:

1. REPLACE OR REPAIR FACILITIES SO AS TO FUNCTION AS INTENDED.
2. REMOVE SILT DEBRIS AND TRASH IN STORM INLETS/STORM SEWERS MONTHLY. REPLACE OR CLEAN THE 'SNOUT BIO SKIRTS' AT A MINIMUM ONCE A YEAR BY USE OF AN INDUSTRIAL WASHING MACHINE.
3. REPLACE OR CLEAN THE 'BASKET TYPE' INSERT STEEL SCREENS AT A MINIMUM ONCE A YEAR.
4. DISPOSAL OF COLLECTED SILT, DEBRIS AND TRASH IN A MANNER WHICH WILL NOT ADVERSELY AFFECT THE ENVIRONMENT.
5. REPLACE ERODED MATERIAL AND RE-VEGETATE ERODED AREAS.
6. MONITOR THE CONDITION OF THE RAIN GARDEN/BIO-RETENTION BASIN AREA. REMOVE AND REPLACE THE MULCH MATERIAL EVERY THREE YEARS AND ADDITIONALLY AS NEEDED. REMOVE AND REPLACE SOILS AS NECESSARY TO FUNCTION PROPERLY.
7. REPLACE DEAD AND DYING PLANTINGS WITHIN THE RAIN GARDEN/BIO-RETENTION BASIN AREAS YEARLY.

THE INSPECTION SHALL BE UNDERTAKEN BY A MINIMUM OF TWO PERSONS AT LEAST TWO TIMES PER YEAR, ON OR BEFORE MARCH 1ST AND OCTOBER 1ST, OR AFTER RUNOFF EVENTS IN EXCESS OF ONE INCH OF RAINFALL. ADDITIONAL INSPECTIONS WILL BE REQUIRED IF IT BECOMES APPARENT FACILITIES ARE NOT FUNCTIONING PROPERLY. CORRECTIVE ACTIONS WILL THEN BE TAKEN AS REQUIRED TO HELP ENSURE CONTINUING OPERATION OF POST-CONSTRUCTION STORMWATER FACILITIES. ANY DEFICIENCIES NOTED IN ITEMS INSPECTED BY THE OWNER SHALL BE DOCUMENTED AND CORRECTIVE ACTIONS TAKEN BY THE OWNER. WRITTEN RECORDS OF EACH MAINTENANCE ACTION ARE TO BE RETAINED FOR A MINIMUM OF FIVE YEARS.

IF THE OWNER FAILS TO MAINTAIN THE POST-CONSTRUCTION STORMWATER FACILITIES, FOLLOWING DUE NOTICE BY THE BOROUGH OF VERONA TO CORRECT THE PROBLEMS, THE BOROUGH SHALL PERFORM THE NECESSARY MAINTENANCE OR CORRECTIVE WORK. THE OWNER SHALL REIMBURSE THE BOROUGH FOR ALL COSTS. THIS RECOMMENDED MAINTENANCE PLAN SHALL NOT BE CONSIDERED AS A GUARANTEE AS TO THE ADEQUACY OF THE POST-CONSTRUCTION STORMWATER MANAGEMENT FACILITIES IN THE FUTURE.

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PCSM BMP Maintenance – Detention Basin

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PCSM BMP Maintenance – Detention Basin

- **Outlet Structure**
  - Remove debris from orifices, grates and trash racks

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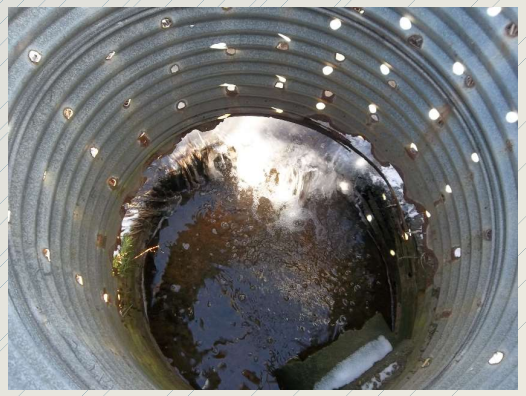
PCSM BMP Maintenance – Detention Basin

- **Outlet Structure**
  - Clear of debris or obstruction from invert
  - Repair structural damage



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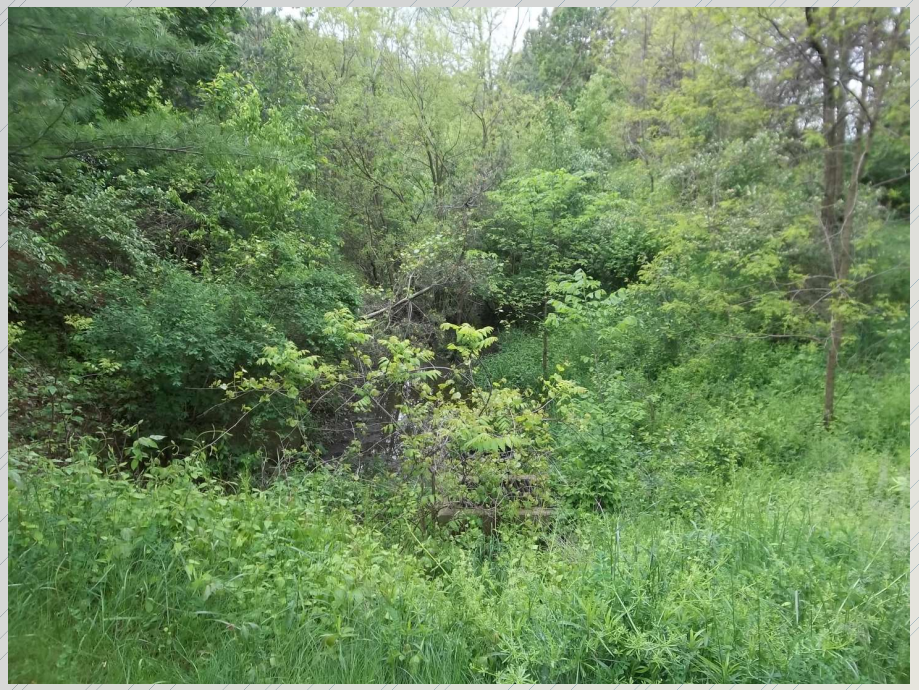
PCSM BMP Maintenance – Detention Basin



- **Vegetation**
  - Maintain consistent vegetative growth
  - Remove trees and woody vegetation along the embankment or in the detention area
  - Seed areas with no growth to prevent erosion

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PCSM BMP Maintenance – Detention Basin

- **Vegetation**
  - Mowed periodically to prevent overgrowth of brush

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PCSM BMP Maintenance – Detention Basin

- **Vegetation**
  - Area below red line should be free of trees
  - This applies to both interior and exterior embankment

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PCSM BMP Maintenance – Detention Basin

- **Embankment**
  - Evaluate stability of slope
  - Look for signs of erosion or slides

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PCSM BMP Maintenance – Detention Basin

- **Embankment**
  - Reseed area without vegetation or where evident erosion exists
  - Address burrow holes

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PCSM BMP Maintenance – Detention Basin

- **Endwalls/Discharge Points**
  - Remove and dispose of accumulated sediment and debris

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PCSM BMP Maintenance – Detention Basin

- **Endwalls/Discharge Points**
  - Address erosion
  - Restore rip-rap aprons

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PCSM BMP Maintenance – Rain Gardens/Bio-Retention Areas

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PCSM BMP Maintenance – Rain Gardens/Bio-Retention Areas

- **Vegetation**
  - Different than detention basins, rain gardens often have specific plantings (grasses, shrubs, trees) installed as part of the BMP design
  - Maintenance of vegetation is specific to the planting and identified in the facility's O&M Plan
    - Routine mowing, like done to detention basins, should not be assumed to be the proper maintenance

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PCSM BMP Maintenance – Rain Gardens/Bio-Retention Areas

- **Vegetation**

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PCSM BMP Maintenance – Rain Gardens/Bio-Retention Areas

- **Soil Mix/Infiltrative Media**
  - Rain gardens often contain a special soil mix to promote infiltration of collected runoff
  - The soil mix should be replaced periodically as its infiltrative properties diminish

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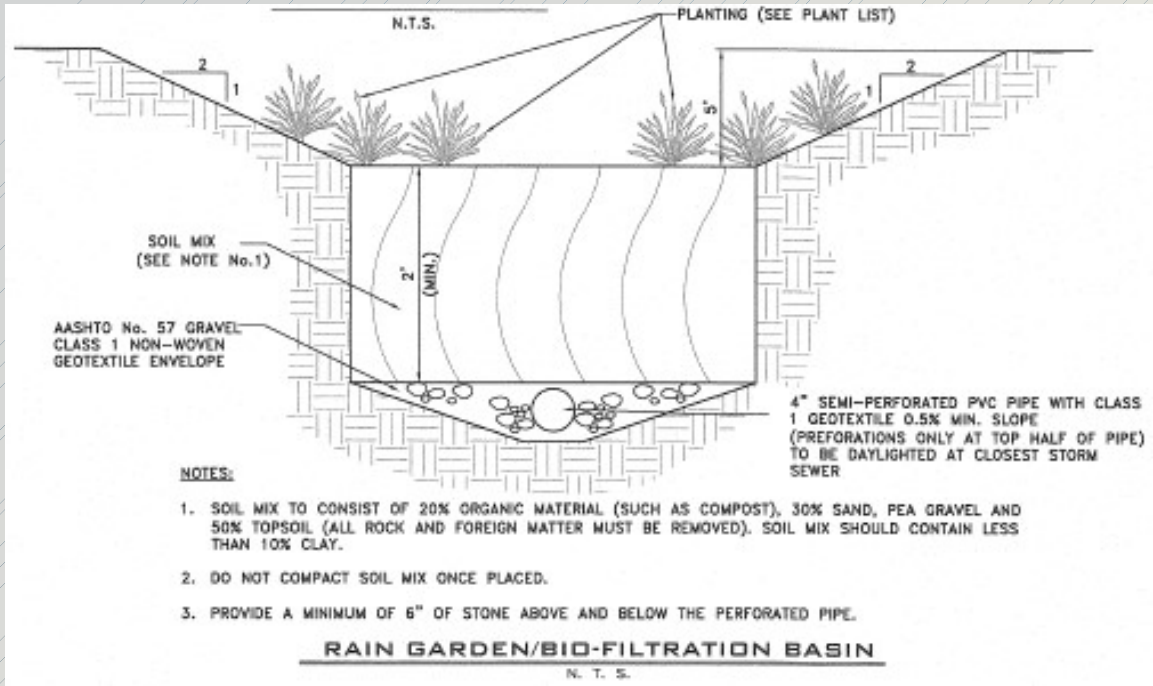
PCSM BMP Maintenance – Rain Gardens/Bio-Retention Areas

- **Soil Mix/Infiltrative Media**



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PCSM BMP Maintenance – Rain Gardens/Bio-Retention Areas

- **Soil Mix/Infiltrative Media**

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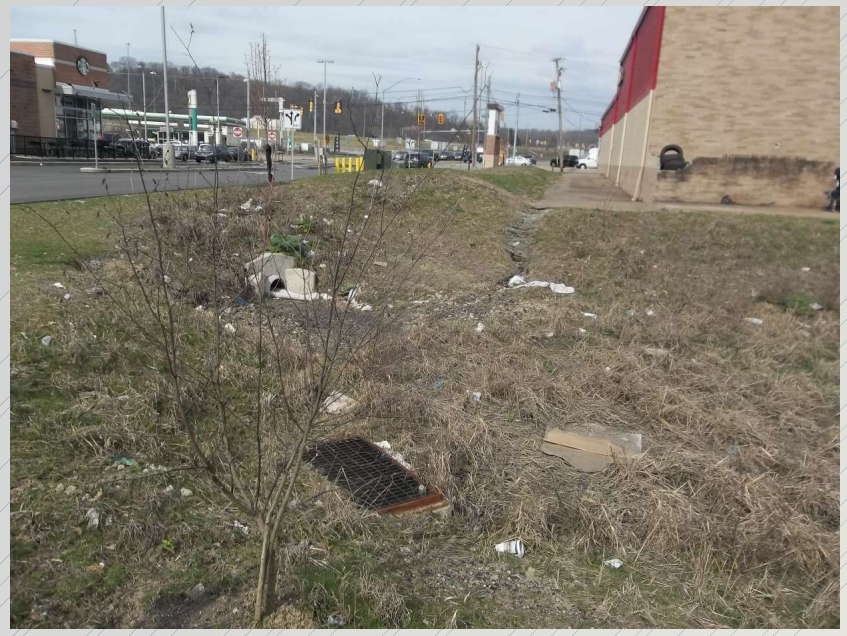
PCSM BMP Maintenance – Rain Gardens/Bio-Retention Areas



- **General Maintenance**
  - Address erosion areas
  - Remove and dispose of sediment, garbage and debris from rain garden
  - Keep outlet structure or overflow yard drain free of debris

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UNDERGROUND DETENTION FACILITIES

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UNDERGROUND DETENTION FACILITIES

- **Annual Maintenance**
  - Remove debris blocking orifice plates or outlet structures
  - Remove and dispose of accumulated debris
  - Repair corroded areas of CMP tanks

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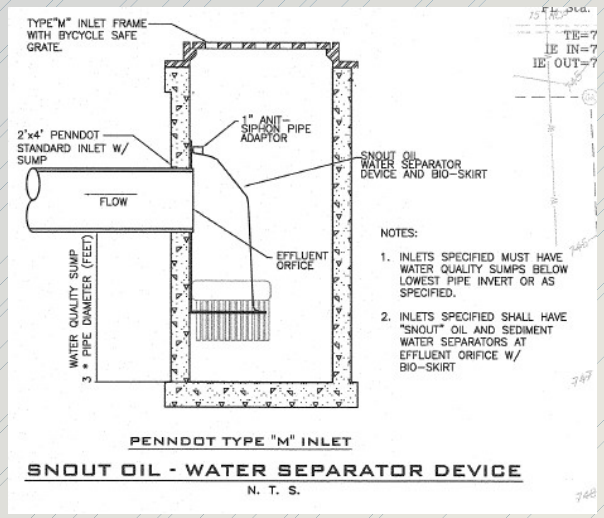
INLET SNOUT

- **Inlet Snouts**
  - Used to filter oils and pollutants from entering the storm sewer system
  - Maintenance includes periodic vactoring out of collected oil and debris



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STORMCEPTOR

- **Stormceptor**
  - Used in urbanized area where space is not available for rain gardens or surface BMPs
  - Sediment and oils trapped by bottom chamber must vactored out routinely

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2018 Permit Renewal

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2018 NPDES MS4 Permit – Permit Renewal

- **Permit Types**
  - Individual Permit (IP) – Required for permittees required to develop a TMDL Plan or permittees tributary to Special Protection (High Quality or Exceptional Value) waters.
  - General Permit (GP) – Municipalities not falling into the above category are eligible for coverage under the State General Permit.
- **Permit Renewal**
  - GP – Notice of Intent (NOI) due September 16, 2017, regardless of date of issuance/expiration of current permit.
    - Fee - $500 (New Permittee or Renewal Permittee)
  - IP – Individual Permit application due 180 days prior to expiration of current permit. If IP was not reissued in 2013 or later, then application is due September 16, 2017.
    - Fee - $5,000 (New Permittee), $2,500 (Renewal Permittee)

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2018 NPDES MS4 Permit – Permit Renewal

- **Items for Inclusion in Renewal Submittal**
  - Notice of Intent (NOI) or Individual Permit Application
  - Renewal Fee
  - SWMP (Written Plans)
  - Stormwater Management Ordinance
  - MS4 Map
  - PRP Plan (if applicable)
  - TMDL Plan (if applicable)
- **Due Date**
  - NOI (GPs) – September 16, 2017
  - IP Application – 180 days prior to expiration of current permit

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2018 NPDES MS4 Permit – Pollutant Reduction Plans/TMDL Plans

- **Pollutant Reduction Plans (PRPs)**
  - All permittees that discharge to waters impaired for the following pollutants require PRPs:
    - Nutrients (Nitrogen and Phosphorus)
    - Sediment
  - The following reductions must be achieve within 5 years of permit issuance (March 2023 for General Permits):
    - Achieve 10% reduction in pollutant loading of sediment
    - Achieve 5% reduction in pollutant loading of total phosphorus
- **TMDL Plans**
  - Required for waters impaired for Nutrients or Sediments with an established Waste Load Allocation (WLA)
    - Long Term Reduction – Provide general plan to achieve with WLA in the TMDL
    - Short Term Reduction – Achieve at least PRP Criteria (10%/5%) within 5 years

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2018 NPDES MS4 Permit – Pollutant Reduction Plans/TMDL Plans – 2017 Requirements

- **Pollutant Reduction Plans (PRPs) and TMDL Plans are due with the NOI (September 16, 2017 for General Permittees) or Individual Permit Application**

- **PRP/TMDL Plan Contents:**
  - Calculation of existing pollutant loadings based on DEP methodology
  - Identification of required reduction in each storm sewershed based on loading calculations

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2018 NPDES MS4 Permit – Pollutant Reduction Plans/TMDL Plans – 2017 Requirements

- **PRP/TMDL Plan Contents (cont.):**
  - Identification of BMPs to achieve pollutant reductions:
    - Construction of new BMPs by municipality
    - Retrofit of existing municipally owned BMPs
    - Construction of new BMPs by developers
      - Requires changes to Stormwater Ordinance to specifically required water quality improvements above typical NPDES Permit requirements
    - Retrofit of existing privately owned BMPs
      - May require municipality to take ownership of facility for future maintenance
    - Implementation of non-structural BMPs (i.e. street sweeping)
  - Identification of funding sources for BMP implementation

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2018 NPDES MS4 Permit – Pollutant Reduction Plans/TMDL Plans – 2017 Requirements

- **Public Involvement for PRP/TMDL Plans**
  - All PRPs and TMDL Plans must be publicly advertised at least 45 days prior to submission to PADEP.
    - Latest Date for advertisement for GPs is August 2, 2017
  - Once advertised, PRP/TMDL Plan must be on public display for comment. All comments are to be logged. Comments and permittee's response to comments must be submitted to DEP with the PRP/TMDL Plan.
  - A public hearing will be held for comment on the PRP/TMDL Plan.

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2018 NPDES MS4 Permit – Pollutant Reduction Plans/TMDL Plans – 2018-2023 Requirements

- **BMPs identified in the PRP/TMDL Plan must be constructed and the required pollutant reduction achieved within 5 years of permit issuance (March 2023 for GPs)**
- **Municipal budget for each year must include funds for:**
  - Final Design of BMPs – PRP will provide only planning level design
  - Acquisition of property, if needed for BMP construction
  - Construction costs for installation of new BMPs or retrofit of existing BMPs, including bidding costs if constructed by a contractor
  - **Annual maintenance of all BMPs**
- **Each year's annual report will include documentation and supporting calculations for reductions achieved through implementation of the PRP/TMDL Plan**

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SUMMARY – 2017 MS4 TASKS

- **Continued Compliance with Current Permit**
  - Update and implement SWMP (Written Plans)
  - Submit Progress Reports to DEP
  - DEP Inspections, if not already done
- **Submit for Renewal for 2018 Permit**
  - NOI or Individual Permit Application
  - PRP and/or TMDL Plans, where applicable
  - Adopt New Stormwater Management Ordinance
- **Beginning in 2018**
  - Update and implement SWMP (Written Plans)
  - Implement PRP and/or TMDL Plans to achieve reductions by 2023
  - Address PCM requirements
  - Submit Annual Report with $500.00 fee

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