QUANTIFICATION OF BMP IMPACTS ON CBP MANAGEMENT STRATEGIES

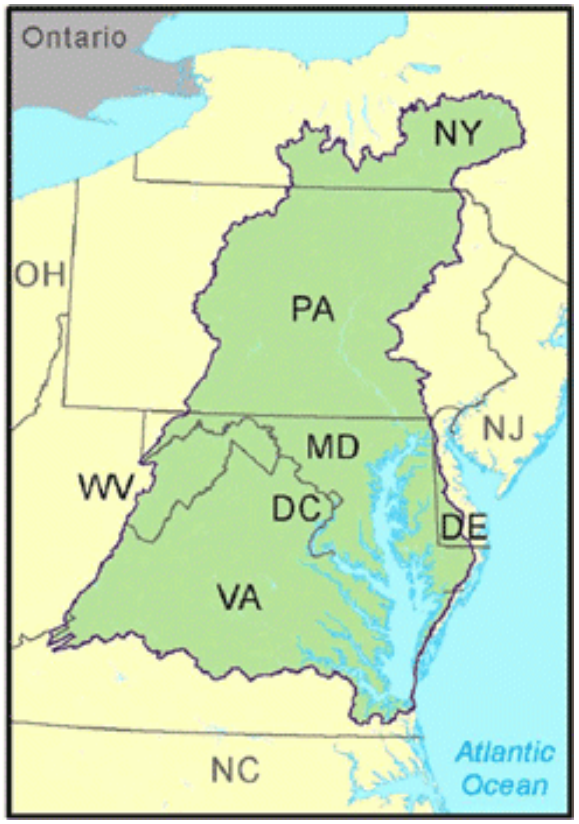
Wastewater Treatment Workgroup Meeting

August 2, 2016

Contract

- Tetra Tech awarded contract from Chesapeake Bay Trust
  - James Davis-Martin, Project Technical Lead
  - Mark Sievers, Tetra Tech Lead

Goal



To quantify the effect the Bay Model's best management practices (BMPs) have on each management strategy to better enable jurisdictions, localities, and others to assess the impact of their watershed implementation plans on all management strategies or additional goals

Intended Result

A matrix that assigns each BMP (or BMP group) an impact score for each management strategy or goal

Management Strategy	BMP 1	BMP 2	BMP 3	Etc.
A	-X to +X	-X to +X	-X to +X	-X to +X
B	-X to +X	-X to +X	-X to +X	-X to +X
C	-X to +X	-X to +X	-X to +X	-X to +X
Etc.	-X to +X	-X to +X	-X to +X	-X to +X

Management Strategies & Additional Goals – WQGIT

Management Strategy
Blue Crab Abundance
Oysters
Fish Habitat
Forage Fish
Wetlands
Black Ducks
Stream Health
Brook Trout
Fish Passage
Submerged Aquatic Vegetation

Management Strategy
Forest Buffers
Tree Canopy
Toxic Contaminants Policy and Prevention
Healthy Watersheds
Citizen Stewardship
Protected Lands
Land Use Methods and Metric Development
Public Access Site Development
Climate Adaptation

Additional Goal
Community Development/Jobs
Flood Control/Mitigation
Bacteria Loads
Property Values
Groundwater Recharge/ Infiltration
Drinking Water Protection/ Security
Biodiversity and Habitat
Air Quality
Recreation
Energy Efficiency

BMPs – Wastewater Treatment

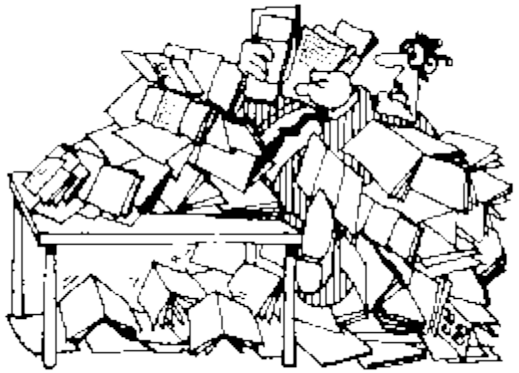
- **Constructed Wetland, Pumped Dispersal**
  - Constructed Wetland Elevated Mound
  - Constructed Wetland Shallow Pressure
- **Constructed Wetland, Gravity Dispersal**
  - Constructed Wetland Septic
- **Intermittent Media Filter, Pump Dispersal**
  - IMF Elevated Mound
  - IMF Shallow Pressure
- **Intermittent Media Filter, Gravity Dispersal**
  - IMF
- **Recirculating Media Filter, Pump Dispersal**
  - RMF Elevated Mound
  - RMF Shallow Pressure
- **Recirculating Media Filter, Gravity Dispersal**
  - RMF
- **IFAS, Pump Dispersal**
  - IFAS Elevated Mound
  - IFAS Shallow Pressure
- **IFAS, Gravity Dispersal**
  - IFAS
- **Unspecified Advanced Treatment**
  - NSF 40
  - NSF 40 Elevated Mound
  - NSF 40 Shallow Pressure
  - Proprietary Ex Situ Elevated Mound
  - Proprietary Ex Situ
  - Proprietary Ex Situ Shallow Pressure
  - Septic Denitrification
  - Septic Tank Advanced Treatment
- **Septic Connections**
- **Pumped Dispersal**
  - Septic Effluent Elevated Mound
  - Septic Effluent Shallow Pressure
- **Septic Tank Pumpout**

Process

- Develop narrative guidelines for assigning impact scores
  - Review each management strategy, focusing on the *Factors Influencing Success* section, to help identify and assess the factors for which BMP impacts are of greatest concern
    - GIT/Workgroup review

Process

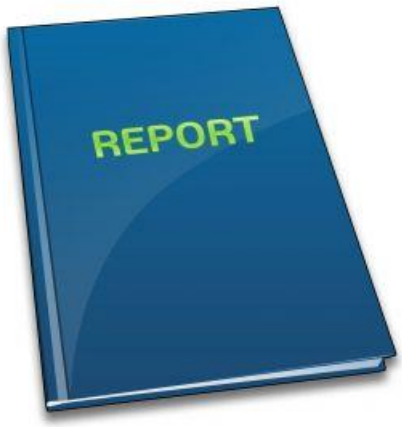
- Gather information
  - Management strategies
  - GITs/Workgroups
    - Scientific literature
    - Best professional judgment
  - BMP Panel reports
  - Toxic contaminants study



Example Draft Impact Score Guidelines

Value	Score	Score Narrative for Groundwater Recharge/Infiltration	Score Narrative for Energy Efficiency
5	Substantial Improvement	Practice maximizes infiltration at the site (e.g., replaces impervious surface area with pervious surface or captures and infiltrates runoff from developed sites or sites with low permeability).	Practice creates enough internal energy to support its operation and maintenance requirements. Practice also either provides significant additional energy for outside energy consumers or helps to reduce energy consumption for outside energy consumers.
4	Moderate to Substantial Improvement	Somewhere between 3 and 5 → BPJ	Somewhere between 3 and 5 → BPJ
3	Moderate Improvement	Practice creates increase in infiltration at the site (e.g., replaces impervious surfaces with semi-pervious surfaces or improves permeability of undeveloped sites).	Practice creates enough internal energy to support its operation and maintenance requirements. Practice also either provides limited additional energy for outside energy consumers or helps to reduce energy consumption for outside energy consumers.
2	Slight to Moderate Improvement	Somewhere between 1 and 3 → BPJ	Somewhere between 1 and 3 → BPJ
1	Slight Improvement	Practice prevents a decrease in infiltration at the site.	Practice creates enough internal energy to support its intended operation and maintenance requirements.
0	No Effect	Practice has no impact on groundwater recharge/infiltration than without the practice.	Practice neither creates additional energy nor uses an outside energy source as part of its ongoing function.
-1	Slight Worsening	Practice promotes (but does not directly cause) a decrease in infiltration at the site.	Practice uses limited energy to supports its ongoing function.
-2	Slight to Moderate Worsening	Somewhere between -1 and -3 → BPJ	Somewhere between -1 and -3 → BPJ
-3	Moderate Worsening	Practice directly decreases infiltration at the site (e.g., replaces pervious surfaces with semi-pervious surfaces).	Practice uses substantial energy to supports its ongoing function.
-4	Moderate to Substantial Worsening	Somewhere between -3 and -5 → BPJ	Somewhere between -3 and -5 → BPJ
-5	Substantial Worsening	Practice prevents infiltration at the site (e.g., adds impervious surface area without runoff capture and infiltration) or uses/removes groundwater.	Practice uses substantial energy to supports its ongoing function and creates additional energy consumption of outside energy consumers.

Process



- Assign impact scores to BMP groupings
- Develop draft project report for review and comment
- Final report
  - Final impact scores
  - Rationale behind the BMP groupings
  - Impact scoring guidelines
  - Appendix with literature list

Tentative Timeline

Task #	Task Description	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	BMP List and Groupings	✓	✓								
2	Impact Score Guidelines	✓	✓								
3	GIT/Wkgp Meetings	✓	✓	✓	✓	✓	✓				
4	Information Gathering			✓	✓	✓	✓				
5	Information Review and Scoring				✓	✓	✓	✓	✓		
6	Final Documentation								✓	✓	✓

Your Role

- Review impact score guidelines
- Score septic practices against each management strategy/goal
- Provide potential literature

Communications

- Send all information and inquiries to Mark Sievers, Tetra Tech
  - mark.e.sievers@tetratech.com
  - 703-385-2605