Elimination of Discovered Nutrient Discharges From Grey Infrastructure

Expert Panel Final Report: Findings and Response to Comments

USWG September 23, 2014

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BMP Timeline to Date

- Panel deliberated for over two years.
- Expert Panel Report Released in June.
- Briefings with stormwater and wastewater workgroups in June and July.
- July Teleconference with EPA WPD.
- 18 major comments received.
- Co-Regulators Conference call (8/21).

Timeline for Approval

- USWG votes to approve report – Sept./Oct.
- WTWG votes to approve report -November
- Seek Final WQGIT approval for BMP - December *

* Opportunity for all CBP partners, federal, state and local, to comment or object

Report Summary

- Most Significant Water Quality Findings:
  - Leaky grey infrastructure produces nutrient discharges (NDs) that are much greater than previously realized.
  - Conclusive evidence that they increase N and P levels in dry weather urban stream flow.
  - Dry weather NDs collectively account for as much as 20 to 40% of the TOTAL annual nutrient load in urban watersheds, depending on the age and condition of its grey infrastructure.
  - NDs comprise 1 to 2% of the total urban wet weather load, particularly during intense or extreme storms.
- Key Definitions
  - Discovered Nutrient Discharge:
    - Existing nutrient discharge found through systematic assessment.
    - Discovered and eliminated discharges are eligible for a credit.
  - Reported Nutrient Discharge:
    - Unexpected discharges from pipe breaks, spills, leaks and overflows.
    - Require immediate emergency repairs to stop the discharge.
    - Reported nutrient discharges NOT eligible for nutrient reduction credits.

The Crediting Approach

- Elimination of a discovered nutrient discharge is only an urban BMP if:
  - Detected and physically eliminated;
  - On-site sampling conducted to define nutrient concentration, flow rate, or duration;
  - Subsequent inspections and/or monitoring confirm that discharge no longer exists.

Original Proposal: 9 Creditable Nutrient Discharges

Table 5 Data Requirements to Compute Reduction Credits					
No.	Discharge Type	Method	Nutrients	Flow Volume	Flow Duration
N-1	Laundry Wash Water	1	S or D	E or M	E
N-2	Commercial Car Wash	1	S	E or M	E
N-3	Floor Drains	1	S	E or M	E
N-4	Misc. High Nutrient Discharges	1	S	E or M	E
N-5	Sanitary Direct Connection	1	S or D	E or M	E
N-6	Sewer Pipe Exfiltration	2	S or D	M	E
N-7	Drinking Water Transmission Loss	2	S or D	M	E
N-8	Dry Weather SSOs	3	D	E	M
N-9	Chronic Wet Weather SSOs	3	D	E	M
KEY: S= SAMPLE, D=Use DEFAULT VALUE, E=ESTIMATE, M= MEASURE					

The Temporary Program Credit

- Provide incentive to re-focus local illicit discharge and sewer upgrades toward greater *nutrient reduction* without having to compute reductions for individual events.

- Only available to localities that **go above and beyond** the minimum requirements set forth under their MS4 permit (new Table 6).

Major Comments Received

- Wet Weather SSO (N-9) issues.
- IDDE programs already required by MS4 permits.
- Phasing in Panel Recommendations.
- Are these discharges part of the CBWM baseline ?
- Implications for other BMPs.
- Reporting and Verification Concerns.

Wet Weather SSOs (N-9)

Comment:

Sanitary sewer overflows are illegal and CB TMDL provides no allocation for them, therefore no nutrient reduction credit should be granted for these discharges that should never be allowed to happen in the first place (EPA WPD, VA DEQ).

Responses:

- Discovered nutrient discharges (including SSOs) represent a real, and potentially large, source of nutrient reduction for the urban sector, which is needed to meet the Bay TMDL.
- The wet-weather SSO credit protocol (N-9) is conceptually and scientifically sound.
- Legal and regulatory issues exist.
- Discharges are difficult to measure and existing sewer monitoring and modeling tools should be evaluated.
- Willing to withdraw its recommendation to credit wet weather SSOs (N-9) at this time.
- Bay Program should form a separate expert panel to include legal and regulatory experts to determine whether or not any nutrient credit should be granted in Phase 6 of the CBWM.

Changes Made to the Report:

- Removed wet weather SSO's as a creditable discharge.
- Proposed technical, legal, and policy issues be addressed in a separate panel before 2017.

IDDE Programs Required by MS4 Permits

Comment: A robust IDDE program is required under the MS4 program. Given that MS4 permittees are required by laws and regulations to establish mechanisms to identify and eliminate illicit discharges, credit for compliance with existing terms of a permit should not be provided (VA DEQ).

Responses:

- Panel evaluated the existing MS4 IDDE permit conditions in each Bay state.
  - Not resulting in measurable nutrient or sewage reductions in majority of Bay localities.
  - Compliance with IDDE program permit conditions is primarily a paperwork exercise.
- Communities that pursue an aggressive and targeted approach to discovering and eliminating nutrient discharges from grey infrastructure should be eligible for a nutrient reduction credit.
- Credit is conservative and only provides a 1% reduction to the estimated grey infrastructure loads (20% of the pervious load).
- MS4s can apply for the one-time program credit until 2017, after which they must report computed load reductions from individual nutrient discharges. The program credit is not additive, but a MS4 can increase acreage subject to targeted nutrient discharge investigations.

Changes Made to the Report:

- Revised Table 6 to clearly indicate that minimum MS4 compliance with IDDE stormwater permit conditions is not eligible for nutrient credits of any kind.
- Revised Table 7 to outline qualifications of an advanced program.
- The nutrient reduction associated with the program credit will lapse 5 years after a community first reports it in their MS4 annual report.

Table 6: Zero Credit for Basic IDDE Program

This includes MS4s that are currently in compliance with their minimum control measure for illicit discharge detection and elimination (IDDE) in their current stormwater NPDES permit, as summarized in Brown et al (2004)[1]. The basic permit conditions are as follows:

- Adopt a local **ordinance** to prohibit illicit discharges to the storm drain system.
- Develop a storm drain map, including all outfalls **36 inches** in diameter **or larger**.
- Provide IDDE **education and outreach** to public employees, businesses and the general public.
- Use **visual indicators** to screen outfalls for presence of illicit discharges.
- Develop and implement appropriate **enforcement procedures** to correct illicit discharge when they are discovered.

[1] There may be some minor differences in permit conditions among the Bay states, as well as between Phase 1 and Phase 2 MS4 communities.

Table 7: Advanced Nutrient Discovery Programs

- Methods to **prioritize the catchments** and/or sewer-sheds with the highest risk for nutrient and bacteria discharge.
- Number of **outfalls of all diameters** in the priority catchments/sewer-sheds identified during the Outfall Reconnaissance Inventory (ORI) as described in (Brown et al 2004).
- Number of outfalls in the priority areas subject to **nutrient testing**, using the Flow Chart Method (Brown et al 2004) or equivalent (**10% of flowing outfalls** should be tested annually).
- Specific **methods used to track** a suspect discharge to its source.
- Number and type of illicit discharges discovered and eliminated each year.
- Localities must also conduct at least **two** of the following activities :
  - GIS assessments to identify high risk segments for cross-connections or exfiltration.
  - Dry weather stream monitoring to prioritize the stream segments.
  - CCTV inspections, dye testing, or other methods to investigate for sewer leaks.
  - Targeted inspection and outreach to high risk businesses.
  - Detailed field assessments to identify segments with high risk of exfiltration and/or dry weather overflows.

Phasing in Panel Recommendations

Comment:

When should the specific panel recommendations be phased in the CBWM?

Response:

- Panel agrees that a phased approach would help minimize the reporting burden for state and local agencies, and lead to more widespread adoption of advanced nutrient discovery programs.

Changes Made to the Report:

- Only allow the advanced program credit in the current version of the model (V. 5.3.2) until 2017.
- Only allow calculation of credits for individual nutrient discharges in Phase 6 of the model (i.e., after 2017).

Model Baseline Questions

Comment:

- If these discharges were not part of the calibration of the Chesapeake Bay watershed model, how can their elimination be credited now?

Responses:

- Discharges from grey infrastructure are implicitly part of the watershed model calibration.
- IDDE programs implemented prior to 2005 were not producing measurable nutrient reductions (first national guidance issued in Fall 2004).
- Advanced program credit reflects a “clear change” from past and current IDDE programs.
- Most discharges occur downstream of existing urban BMPs.

Changes Made to Report:

Suggest that GI discharges be explicitly modeled in Phase 6 of the CBWM.

Implications for other Urban BMPs

Comments:

1. How do DNDs interact with other urban BMPs--is there a chance of double counting? (EPA WPD, VA DEQ)?
2. Given that expert panel notes that dry weather nutrient discharges comprise a large share of urban nutrient loads, what implications does this have for other urban BMPs?

Responses:

1. Most DNDs occur downstream of upland land uses and urban BMPs, are usually delivered via groundwater or dry weather flows, and are found within or in close proximity to the urban stream corridor.
2. Given that grey discharges may be modeled explicitly in the Phase 6 model, and the fact that localities will only receive programmatic credit for advanced nutrient discovery programs (.2% of the pervious load), the panel does not believe that crediting the removal of dry weather nutrient reductions will impact the performance of other BMPs.

Changes Made to Report:

- Only allow programatic credit during 5.3.2
- Suggest discharges be explicitly modeled in Phase 6.

Reporting and Verification Concerns

Comments:

1. The credit for eliminating any individual nutrient discharge needs to have an expiration date.
2. Verification requirements for individual discharges are vague and not consistent with other CBP-approved panel reports (MDE and EPA WPD).

Responses:

1. Agreed.
2. For the plumbing changes used to eliminate nutrient discharges, the reduction is immediate and is verified by a one-time confirmation inspection that the plumbing has been done right (N-1 to N-5). Follow-up outfall screening and/or monitoring is generally not needed, but may be useful to detect other similar nutrient discharges. The Panel concluded that while it is good practice to perform follow-up screening and/or monitoring to detect additional discharges, it should not be a required verification element for these five discharge types.
3. The Panel is comfortable with the verification requirements for the dry weather discharges (N-1 and N-8), and concedes that the requirements for wet weather SSO's (N-9) are not operationally ready (see Response to Comment 1).

Changes Made to Report:

1. Expiration Dates added:
   a) Added a ten year lifespan for any individual nutrient reduction credit, after which the credit automatically expires.
   b) Table 7 edited to clarify that the duration of the advanced nutrient discharge program credit is five years after it is first earned, and cannot be renewed.
2. Credit for wet weather SSOs removed from the report.

Summary of Major Changes to Report

1. Removed credit for wet weather SSOs.
2. Deferred individual discharge credits until 2017.
3. Only allow program credit during V.5.3.2.
4. Add 10% testing requirement to Table 7.
5. Suggested explicit simulation of grey infrastructure discharges in Phase 6.0 of CBWM.

Questions and Comments