Appendix E
Technical Requirements for the Reporting and Crediting of the Elimination of Discovered Nutrient Discharges from Grey Infrastructure in Scenario Builder and the Watershed Model

Background: In June, 2013 the Water Quality Goal Implementation Team (WQGIT) agreed that each BMP expert panel would work with CBPO staff and the Watershed Technical Workgroup (WTWG) to develop a technical appendix for each expert panel report. The purpose of this technical appendix is to describe how the Grey Infrastructure Panel's recommendations will be integrated into the modeling tools including NEIEN, Scenario Builder and the Watershed Model.

This panel recommended two different credits for elimination of discovered nutrient discharges from grey infrastructure. The first is a credit for implementing advanced MS4 nutrient discovery programs which localities can begin using in Phase 5.3.2 of the Watershed Model.

The second credit involves the calculation of nutrient reductions associated with the elimination of individual nutrient discharges which are discovered in the field. Credit for elimination of individual nutrient discharges will begin during Phase 6 of the Watershed Model (i.e., 2017 and after).

To prevent confusion, the two credits are described separately in this appendix.

Part 1: Credit for Advanced MS4 Nutrient Discovery Programs

Q-1. What MS4 Illicit Discharge Detection and Elimination (IDDE) Programs are eligible for annual nutrient reduction credit?

A-1. The expert panel recommends that a nutrient reduction credit be granted in the 5.3.2 Model for localities that go above and beyond the minimum requirements set forth under the MS4 permit, as specifically defined in Table 7 of the report. No credit is granted to localities that are merely meeting the minimum MS4 permit requirements for an IDDE program (see Table 6).

Q-2. What is the definition for the program credit?

A-2. The panel defines the annual program credit as being equivalent to a maximum of 1% of the dry weather nutrient load within the jurisdiction, which is defined as 20% of the total annual N and P load discharged from the urban pervious land in which advanced nutrient reduction programs are targeted. Credit is contingent on documentation that the locality possess advanced program elements to target, screen, detect and correct the nutrient discharges with the highest nutrient loading risks.

Q-3. How will the reductions be calculated in Scenario Builder and the Watershed Model ?

A-3. Reductions for qualifying programs will be applied as a 0.2% percent reduction in annual nutrient load discharged from urban pervious land targeted by the programs.

Q-4. What do jurisdictions need to report to NEIEN in order to receive program credit?

A-4. Jurisdictions will need to report the following to NEIEN:

- *Practice Name:* Advanced Nutrient Discovery Program
- *Acres Treated*: Number of pervious acres in targeted catchments and/or sewersheds being treated by the advanced program
- *Approved NEIEN land uses*: Pervious urban land
- *Location*: Jurisdictions should report the location of the targeted catchments and/or sewershed being treated at the finest scale that the program is tracking, for example, latitude and longitude, HUC 12 watershed code or other geographic data. The pervious acres need to be assigned to the appropriate river-basin segment.
- *Year of Implementation*: First year in which the advanced MS4 nutrient discharge discovery program fully meets the qualifying criteria outlined in Table 7.

Q-5. How will the program credit for advanced MS4 nutrient discovery be combined with other urban BMPs in Scenario Builder or the Watershed Model?

A-5. For advanced MS4 nutrient discovery, benefits of the program are considered in the modeling tools as "additive" or exclusive of all other practices. This means that other practices cannot be applied on the same representative acre of land in the model that nutrient discovery is "treating". The calculation is that the reduction from the program is added to the reduction of other BMPs in the same segment on the same type of landuse. The opposite of "additive" BMPs in modeling terms is "multiplicative" BMPs – where the benefits of a practice can be combined (multiplied) with the benefits of other practices on the same representative acre treated in the same segment on the same landuse type. "Multiplicative" BMPs are in series or in treatment trains – where one BMP treats the load that has already been treated by BMPs previously or on top. By calculating benefits in an "additive" manner, nutrient discovery is not reducing loads that have already been reduced by other practices.

This is, in essence, how it operates in the environment. It's a flux outside the stormwater load. During dry weather, elimination of the discharge through the program credit is independent of reductions by other urban stormwater BMPs applied in the same watershed – most of which are designed to operate during wet weather conditions.

In the Phase 5.3.2 version of the model, nutrient discharges from grey infrastructure are implicit. Like all other sources, they're captured as part of loads crossing monitoring sites. Concentration and flow data from these stations is used in calibrating the model, so all source loads are captured – as well as changes to these loads through time, both positive and negative. The grey infrastructure discharges are not explicitly attributed or named to that source in Phase 5.3.2 – because of the lack of historic information about the degree of the problem and how it varies spatially and through time. For Phase 6 of the Watershed Model, nutrient discharges from grey infrastructure can be accounted for explicitly – and will be if agreed to by the partnership in relevant workgroups. This would give stakeholders a sense of the extent of the problem and the degree to which is can be remediated – as well as lessen the potential for "double-counting" benefits.

Q-6. What is the first year that a locality is eligible for the advanced program credit?

A-6. Localities will be eligible for advanced program credit in 2015, assuming they meet the qualifying conditions outlined in Table 7. Most MS4s in the Bay watershed, however, will not immediately qualify for the credit by 2015.

Q-7. How many years can a locality claim the advanced MS4 nutrient discovery program credit?

A-7. The specific acres subject to the program credit lapse five years after the first year in which they are reported to the appropriate state regulatory authority. A locality may report additional acres in succeeding years if they elect to target additional storm/sewersheds for intensive nutrient discovery. The credit program for the additional acres also expires after five years.

Q-8. How is the advanced program credit verified?

A-8: The locality must certify the pervious acres subject to the credit in its annual MS4 permit report, along with supporting documentation that clearly shows how they meet or exceed the qualifying program conditions contained in Table 7. That supporting documentation must include a map showing the actual locations of the specific problem catchments and/or sewersheds being targeted for investigation. In addition, the state agency may require a locality to provide additional supporting data before granting the credit, and submitting it for Scenario Builder.

Part 2: Credit for the Elimination of Individual Nutrient Discharges

Q-9. What individual nutrient discharges are eligible for annual nutrient reduction credit in Phase 6 of the Watershed Model?

A-9. The Panel defined eight discharge types that were eligible for annual nutrient reduction credit, if they were effectively eliminated. They include:

1. Laundry Washwater
2. Commercial Car Washing
3. Floor Drains
4. Miscellaneous High Nutrient Non-Sanitary Discharge
5. Sanitary Direct Connections
6. Sewage Pipe Exfiltration
7. Drinking Water Transmission Loss
8. Dry Weather Sanitary Sewer Overflows

More information about each individual discharge type can be found in the profile sheets provided in Appendix A of the report.

Q-10. What are the definitions for each of the individual nutrient credits ?

A-10: A Discovered Nutrient Discharge refers to an existing nutrient discharge that is found through systematic assessment of a catchment, sewershed or stream corridor by the designated MS4 permittee or local sewer utility, using the screening, tracing and analysis methods described in this report. Nutrient discharges that are discovered using these methods may be eligible for a credit if they lead to the prevention or elimination of the discharge. The Panel agreed that eliminating "discovered" nutrient discharges can be considered as a urban BMP capable of producing a real change in urban nutrient loads, if they:

- Are detected and physically eliminated.
- On-site sampling of the discharge is conducted to define one or more of the following parameters -- the concentration, flow rate and/or flow duration.
- Subsequent inspections and/or sampling to verify that discharge no longer exists.

The Profile sheets in Appendix A provide more detailed information on the methods used to calculate the load reductions for each type of nutrient discharge.

Q-11. How will the reductions be calculated in Scenario Builder and the Watershed Model ?

A-11: The reduction credited in the Watershed Model will equal the aggregate nutrient load (in pounds) associated with the elimination of individual nutrient discharges within the river basin segment for that year by the MS4.

Q-12. What do jurisdictions need to report to NEIEN in order to receive credit for the elimination of individual discharges?

A-12. Jurisdictions will need to report the following to NEIEN:

Practice Name: Type of discharge eliminated (e.g. N-1, N-2, etc)

Protocol Used: Protocol 1, 2, or 3

Individual Discharge Data:

- Average Nutrient concentration (mg/l)
- Average Flow volume prior to elimination (gallons)
- Estimated flow duration (up to maximum of one year)

A*pproved NEIEN land uses*: Pervious land (or whatever land use category, overlay or sector the load is allocated to in Phase 6 of watershed model)

Location: Jurisdictions should report the location of the targeted catchments and/or sewershed being treated at the finest scale that the program is tracking, for example, latitude and longitude, HUC 12 watershed code or other geographic data. The pervious acres need to be assigned to the appropriate river-basin segment.

Year of Elimination: First year in which elimination of the discharge is confirmed.

In addition, MS4's will need to maintain records about the individual nutrient discharges that are eliminated (see page 32 for a list of documentation requirements).

Note: There is no default value for this practice.

Q-13. What is the first year that a locality is eligible to calculate nutrient reduction for elimination of individual nutrient discharges ?

A-13. Localities will be eligible for individual nutrient discharge credit when the Phase 6 model is implemented, which should be 2017.

Q-14. How many years do the individual nutrient credits exist before they expire? Can they be renewed ?

A-14 Individual nutrient credits will expire after ten years. Those credits cannot be renewed**.**

Q-15. How are the individual nutrient discharge credits verified?

A-15 The basis for verifying these credits is different from other urban BMPs in that a discharge is eliminated or prevented rather than treated. The verification methods also depend on the size and type of discharge, and may involve either post-removal

inspection, screening and/or monitoring to confirm that the individual discharge does not re-occur again. These follow-up inspections are conducted at the point of repair, and may also involve further downstream outfall screening or sampling where needed. More specific details on the verification methods for each discharge type can be found in the Profile Sheets provided in Appendix A.