

The local attainment SIP for the reconsidered ozone NAAQS will need to be completed by mid-2015. It needs to contain the measures being done to address transport and all local measures being done to meet rate-of-progress requirements (3% per annum reductions) and bring the area into attainment. These would all need to be implemented by the attainment deadline (which is set by EPA according to CAA section 181 depending on the severity of the problem).

7. EPA is considering new national rules, including Tier 3 motor vehicle standards. EPA needs to consider these programs in its final analysis, as well.

It needs to be noted that the emission reductions of these individual actions and programs are not necessarily additive. Many sources could be covered by multiple programs. For example, a power plant might have a consent decree, NOx RACT and BART requirements and also be covered under the Transport Rules. It would need to comply with all of these requirements individually and collectively.

The USEPA R3 allocation process and their current effort to promulgate the TMDL do not utilize the most up-to-date atmospheric projections. The CBP has been planning to update deposition projections using the next generation of deposition models, CMAQ. The CBP model has accounted for some of the CAA projected improvement, but only at a more general scale. Modeling on refined spatial scale (12 vs. 36 km grid) and analysis by source sector and jurisdiction are underway, but these improved model results are not available.

Even though the Chesapeake Bay program/USEPA R3 atmospheric modeling currently underestimates the likely benefits of emission reductions on deposition of nitrogen, the watershed modeled impact of those reduced nitrogen depositional loads are substantial especially in the New York portion of the watershed⁴⁴, as shown in the Table below.

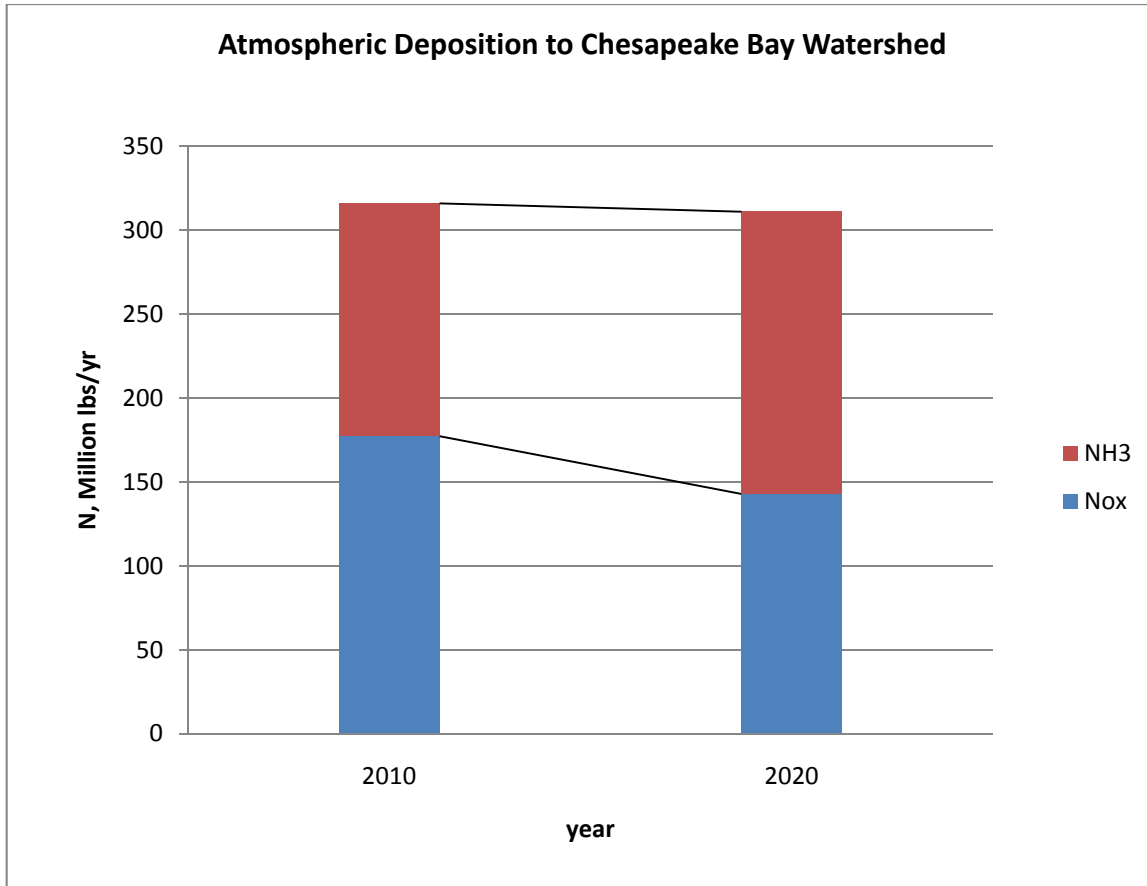
Other concerns with the current model:

- Although USEPA R3 Watershed model shows a substantial decrease in nontidal water deposition with atmospheric deposition controls in place, it shows no change to the nitrogen load from impervious surfaces. Because a main source of nitrogen on impervious surface is atmospheric deposition, it would be reasonable to expect a decrease in the exported loads from these surfaces. There is negligible opportunity for any biological processing of wet deposition that falls on hard surfaces which are directly piped to streams. The Chesapeake Bay watershed model estimates the combined delivered load from impervious surfaces in just two states, Virginia and Maryland to exceed 3 million lbs N/year, so any inaccuracies are not insignificant.
- The watershed model does not recognize the threshold of areal loading that forest have been shown to be able to process. Indication are that hotspots are developing near concentrated agriculture that would significantly affect the forest ability to process (denitrify) deposited nitrogen, and consequently, a majority of the excess deposition will now be transported to the Bay.

⁴⁴ Watershed model v5.3 (2009 baseline) shows a 1.4% delivered reduction bay watershed wide and a 3.7% delivered reduction in load from New York.

Agricultural emissions – nitrogen loads from nearshore agricultural ammonia

Ammonia depositional loads are increasing, such that they are projected to be greater than NOx deposition by 2020 and will offset any gains from NOx reductions (see graph below). These agricultural ammonia emissions (80% of the total ammonia depositional load) are largely attributed to concentrated agriculture such as on the eastern shore with its' high delivery and exchange factors. The projected Bay delivered load associated with deposition from agricultural emissions represents a larger allocation than NY, WV, DE and DC combined. EPA needs to fully address this major growing load to the Bay⁴⁵



Agriculture

While New York believes that adjustments in the model are needed to bridge the gap, even well developed programs such as NY's AEM and CAFO programs could be further refined.

⁴⁵Executive Order 13508 indicates that EPA may investigate ammonia emissions from agricultural sources within the Chesapeake Bay watershed.

- **Comprehensive Nutrient Management Plans**
The watershed model reveals that a full suite of agricultural BMPs associated with the implementation of Comprehensive Nutrient Management Plans in New York yields only a 10% nitrogen reduction. This stems from an assumption in the model that there is an excess of manure. While this may be true in other areas of the Chesapeake watershed it is not true in New York. It may also stem from USEPA R3 overestimating the amount of purchased fertilizer in New York by basing such information on county-level data. This is significant because more fertilizer (different soil types, types of agriculture) is used in northern parts of many counties that are outside of the Chesapeake watershed.
- **Conservation Reserve Enhancement Program**
The USDA/NRCS Conservation Reserve Enhancement Program is essential for the expansion of stream side buffers. At present its applicability is limited to certain geographic areas. Its applicability should extend throughout the Susquehanna/Chemung River Basin in New York. NYSDEC understands that USDA/NRCS must first conduct a study to justify expanding the geographic area of applicability. This study is stalled due to a lack of federal funding.
- **Enhanced Nutrient Management**
USEPA R3 baseline assumption that land grant universities all recommend fertilizer application rates 35% above agronomic needs is not true in New York. This holds true for all crops, including non-legume hay, because the Cornell nutrient guidelines are based on applied research and are actively maintained through on-going field trials with the goal of nutrient use efficiency (no insurance factors are included in the guidelines).
- **Prescribed Grazing**
The USEPA definition does not align with the suite of practices employed on such prescribed grazing sites in New York. The model needs to account for the nutrient and sediment reduction efficiencies for this practice as it is implemented in New York.
- **Alfalfa**
In New York alfalfa, over the time it is grown, is not 100% covered it is mixed with grass.
- **Stream Setbacks**
New York's CAFO permit requires stringent setbacks for nutrient applications in farmlands adjacent to New York's waters.
- **Source Control and Precision Feed Management**
The watershed model needs to recognize the decreased feed/nutrient imports as part of the management practice when implemented in New York as it results in a net decrease in nutrients within the Chesapeake Bay watershed.
- **Product Exports for Nutrient Balance**
The watershed model should be checked against watershed nutrient balancing, including accounting for crops (and milk and meat) exported out of the watershed as an additional nutrient reduction.

- **Agricultural Waste Management Systems**

It is not clear how the watershed model accounts for the “system-based” planning required for CNMP development in New York. For example, a waste storage system or other production area management practice, when implemented without a complementary field management practice is inappropriate and should not be credited in the model.

Urban Runoff

- The comprehensive nature of the New York MS4 and construction stormwater programs are not adequately reflected in the watershed model, particularly as they related to behavior changes
- 2010 MS4 permit renewal:
 - USEPA Contractor could not arrive at a model scenario to capture all minimum control measures, including illicit discharge detection and elimination.
 - Prescriptive requirements for compliance with design manual, including rigorous green infrastructure requirements.
 - The New York MS4 permit requires evaluation of Green Infrastructure that is efficacious when municipal systems are reconstructed.

Road side conveyances

- Watershed model does not reflect the nutrient and sediment reduction associated with potential improvement of maintenance practices and design of road side ditches for use as bio-retention structures. The large network of rural roads makes roadside ditches an important pathway and innovative opportunity to abate stormwater runoff for both quality and quantity issues.

Forest

- With a substantial amount of New York forest cover being early successional forest, it is likely that USEPA R3 watershed model underestimates the rate of nitrogen uptake.

Floodplain Management

- Watershed model has no place to incorporate water quality benefits associated with various components of floodplain management, including non-structural flood control and limiting the storage of materials and siting of waste disposal in areas prone to flooding.

B. Generic Land use Changes

- Considering the stable if not downward population trend and overall economic conditions it is reasonable to expect that the downward trend in baseline nutrient loads shown from 1985 through 2010 will continue. With 2.44 mpy less delivered nitrogen achieved over this 25 year period, it is plausible for USEPA R3 to conclude that an additional 1.46 mpy less nitrogen may be achieved over the next 15 years. Conservatively, USEPA R3 could reasonably predict 0.5 mpy less nitrogen over this period. Likewise, with 0.08 mpy less delivered phosphorus over the same 25 year period, it is plausible for USEPA R3 to conclude that an additional 0.048 mpy less phosphorus may be achieved over the next 15 years. Conservatively, USEPA R3, could reasonably predict 0.016 mpy less phosphorus over this period.
- If widespread Natural Gas extraction occurs in the Marcellus Shale in New York as is generally expected, associated land use changes could be significant. How this translates to overall nutrient and sediment loadings is a major unknown variable, and potentially will have a positive effect. Nonetheless, USEPA can reasonably expect that some, if not a high number, of large landowners,

will modify present land uses in response to income generated from natural gas. How much reduction this might yield is uncertain.

V. Commitment and Strategy to Fill Gaps

As noted throughout this document there are several areas where either the watershed model does not accurately reflect New York practices or where the model does not include particular programs or practices. A principal part of “gap closing” is to work with USEPA R3 to improve its model.

While NY believes the adjustments in model would bridge the gap, even well developed programs such as NYs could be further refined with additional resource.

Agriculture

DEC is currently working to implement enhanced technical requirements in New York including: evaluations of existing manure storage and transfers systems and vegetated treatment areas by Professional Engineers. New York State is also implementing (or considering) several practices that are believed to be better at reducing nutrient or sediment loads than the CBP defined practices and efficiencies.

- Better defined prescribed grazing (>60% cover) reflective of New York practice
- RUSLE II (should receive credit for additional benefit of implementation)
- Groundwater guidance revisions
- Enhanced P index standards using VSA hydrology⁴⁶, etc.
- Benchmarking/mass balancing
- Manure emissions controls
- AEM Tier 2 worksheets/ small scale retrofits (moving manure piles/clean water exclusions)

Variable Source Area hydrology

A cost effective and meaningful watershed approach also relies on a firm understanding of how each watershed functions in relation to its hydrological characteristics, drainage patterns, topography, land cover, land uses and misuses, precipitation events and other parameters. Targeting implementation sites using a “Variable Source Area” (VSA) hydrology concept may further increase success. Details of the VSA concept can be found at this Cornell University website:

<http://soilandwater.bee.cornell.edu/Research/VSA/extension.html>

This concept asserts that is that a relatively small portion of the watershed that influences a majority of runoff exiting a watershed. By implementing practices in these areas, substantial water quality improvements can be accomplished in a more cost effective manner.

Mass Balance for Agriculture

Source control relies on understanding a farm’s nutrient budget. Mass balance analysis (difference between nutrients entering the farm through feed, fertilizer, fixation etc. and the amount leaving the farm through sales of milk, meat, animals, crops, manure etc.) can determine excess nutrients based on nutrient inputs and outputs. Mass balancing information is useful because it:

⁴⁶ Hydrologically Sensitive Areas: Variable Source Area Hydrology Implications for Water Quality Risk Assessment by M.Todd Walter, Michael F. Walter, Erin S. Brooks, Tammo S. Steenhuis, Jan Boll, Kirk Weiler

- Provides important baseline information for all planning and many implementation projects
- Prioritizes practices where excess nutrients are documented
- Has outreach potential by showing nutrient loading to farmers in a more understandable format
- Demonstrates economic and yield benefits that should attract greater farmer participation
- Can be used to develop a mass balance for a watershed
- Can be used as a tool for documentation if nutrient trading is initiated

The USC and Cornell University are conducting mass balances on 60 farms under a pilot project to streamline how to develop a more extensive application. Because this process is a precursor for precision feeding/forage management and an aid for targeting many management practices, it is a key planning tool.

CAFO

- Implement new CAFO permit requirements to help ensure that manure is applied in a manner consistent with plant uptake needs.
- Expand CAFO enforcement efforts to ensure compliance

Other

- Expand efforts to target conservation practices where they do the most good at a field-scale level
- Work with State and Federal partners to expand the use of the NYS Conservation Reserve Enhancement Program (NYS CREP). Presently resources are needed to conduct an environmental impact study to expand program eligibility.
 - CREP eligible watersheds are based on the DEC's 1996 Priority Waterbody List, which is out of date as each basin in the state is updated every 5 years on a rotational basis. Also the PWL reflects waterbodies impacts in New York. As such, the existence of a Chesapeake Bay TMDL does not mean that all the New York water body segments in the Susquehanna Basin are CREP eligible. In fact less than half of the watersheds in the Susquehanna Basin show impacts on the 1996 list. The NYS CREP Steering Committee, which includes a representative from DEC Division of Water, have recommended that we amend the current CREP Agreement to use an AEM Tier 2 Environmental Assessment of each farm as a basis for determining CREP funding eligibility. For USDA FSA to even consider that proposed change we would need to fund the preparation of a Programmatic Environmental Assessment of the potential impact to the NYSCREP of making such a change in eligibility. FSA has estimated the cost of the environmental assessment that would be prepared by a contractor selected by FSA at between \$45,000 and \$50,000.

Specific USEPA WIP Questions

The Watershed Implementation Plan guidance from USEPA R3 dated April 2, 2010 includes the following specific questions about agriculture:

1. USEPA Question: How could the Bay jurisdiction address historical phosphorus accumulation in soils that will contribute future loads to the Bay?

For CAFOs and AFOs with CNMPs (or crop farms with CNMPs) - the New York P Index would not allow for further manure applications on fields with historical phosphorus accumulations. These types of conditions are most often found in fields in closest vicinity to the farm - making education an important component. For large farms the CAFO regulatory requirements require compliance with the P index - smaller farms rarely have the same land base restrictions and therefore, with proper education, can address this problem through the AEM program.

2. USEPA R3 Question: Is the Bay jurisdiction considering modifications to methods for determining appropriate agronomic rates for the application of manure, biosolids, and/or organic byproducts, including, for CAFOs, state technical standards developed in accordance with 40 CFR 123.36? When might a New York modification occur?

Answer: The New York CAFO Program is in compliance with 40 CFR 123.36 - and has been since 2004.

3. USEPA R3 Question: How could the Bay jurisdiction work with partners to improve coordination, communication, stakeholder engagement and/or availability of financial resources to facilitate nutrient and sediment reductions from agricultural lands in general and from manure management in particular? What are proposed or expected milestones, and when might they occur?

Answer: The Upper Susquehanna Coalition works through Soil and Water Conservation Districts to implement projects to conserve water quality within the basin, with each individual district working with citizens and agencies on a county level. Therefore New York already has the infrastructure in place to effectively provide local interaction, networking, outreach, and implementation to facilitate nutrient and sediment reductions on a watershed-wide level.

The USC has just completed a second 2-year implementation plan and has projected implementation with consistent levels of funding through 2025. Each SWCD also has an AEM strategy which is intended to move all farms through the AEM tiers. Therefore the SWCD and the USC continue to refine and update information on farm conservation needs.

At the inception of the New York CAFO program, DEC formed the CAFO work group – an active group of stakeholders tasked with developing an implementation strategy that achieved the environmental stewardship required through innovative solutions that work. This level of industry and environmental group involvement has been key to the success of the New York CAFO program. The CAFO work group will continue to work to understand the successes and failures of the current technical and regulatory framework and to make improvements at reissuance in 2014, 2019 and beyond.

4. USEPA R3 Question: If the Bay jurisdiction's NPDES regulations for CAFOs have not been revised to be consistent, at minimum, with the Federal regulations as of November 19, 2008 and are not anticipated to be approved by the applicable deadline, does the WIP include a schedule detailing the steps necessary to revise the regulations for EPA review and approval?

Answer: In New York State, the federal regulations described are included, by reference, in our State regulations (Part 750). DEC is in the process of a consensus amendment to meet this requirement.

5. USEPA R3 Question: Does the WIP demonstrate that the Bay jurisdiction's NPDES Compliance and Enforcement Program has adequate resources to conduct (1) compliance inspections of all permitted CAFOs, at least once every five years, (2) CAFO determination inspections of all unpermitted large CAFOs and all Medium AFOs at least one time [in the five years or by December 31, 2016], and (3) conduct on-site visits of AFOs for the purpose of evaluating criteria for designation. If these resources do not currently exist, when will they be available?

Answer: The current statewide target for CAFO compliance and enforcement inspections as part of the workplan with EPA R2 is an inspection of every large CAFO once other year and medium CAFOs once every five years. These targets are being met and exceeded in some watersheds of New York State – they are not, currently, being met in the Susquehanna / Chemung river basins. Additional staff resources are being sought as part of the Chesapeake Regulatory and accountability grant. Upon implementation of these resources, staff will be expected to substantially enhance the frequency of CAFO facility inspections.

6. USEPA R3 Question: If the Bay jurisdiction's WIP identifies new technologies for controlling or reducing nutrient and sediment loads from animal operations and row crop agriculture, provide proposed and expected milestones and dates for the following:
When might these technologies go through the EPA-approved peer-review process described in Element 6?
When might these technologies become available?
What is their expected likelihood of adoption based on farmer interest, technical and/or financial assistance, capacity of federal or state program to promote adoption, and other considerations?
What is a realistic timeframe for widespread adoption?

Answer: New York State is implementing (or considering) several practices that are believed to be better at reducing nutrient or sediment loads than the CBP defined practices and efficiencies

- Better defined prescribed grazing (>>60% cover) reflective of New York practice
- RUSLE II
- Groundwater guidance revisions
- Enhanced P index standards using VSA hydrology, etc.
- Benchmarking/mass balancing
- Manure emissions controls
- AEM Tier 2 worksheets/ small scale retrofits (moving manure piles/clean water exclusions)

Increasingly, New York dairy producers are conserving ammonia-nitrogen by spring incorporation of manure. When manure is incorporated in the spring, the ratio of N:P in most liquid dairy manure is reasonably well aligned with crop removal for both nitrogen and phosphorus, making for a sustainable nutrient balance. Aerator incorporation of manure is gaining and producers are considering various forms of injection as well, exploring technologies that are practical given constraints (including stony ground). While not all manure can be incorporated in a timely fashion for a variety of reasons, the data discussed in section 1 above clearly shows that New York State farms have worked hard to obtain and maintain a good land:manure balance.

Urban Runoff

- Evaluate potential MS4 Enhancements:
 - Address all municipal road ditch systems and appropriate hydrologic, sediment and nutrient control practices (not just for erosion control during construction/maintenance but long term use of ditches a bio-retention structures for nutrient reduction)
 - Consider information USEPA R3 contractor is developing regarding the cost and effectiveness of urban retrofit practices, including tree planting, riparian buffers, and green infrastructure, to provide guidance to municipalities regarding the implementation of practices that may meet the “maximum extent practicable” standard.
 - Consider information being developed by USEPA to bolster the detection and elimination of illicit connections.
- Regarding construction stormwater:
 - Consider application of Enhanced Phosphorus Design Guidance
 - Consider excluding stream setback area from General Permit coverage
- Work with USEPA R3to help ensure the comprehensive nature of the New York MS4 and construction stormwater programs are adequately reflected in the watershed model.
- Work to help ensure urban BMPS are documented and annually reported to CBP
- Work to better understand contribution from industrial stormwater

Road side conveyances

- Work with USEPA R3 to help ensure Watershed model reflects the nutrient and sediment reduction associated with potential improvement of maintenance practices and design of road side ditches for use as bio-retention structures. The large network of rural roads makes roadside ditches an important pathway and innovative opportunity to abate stormwater runoff for both quality and quantity issues.
- Although many do already, seek to expand hydro seeding and mulching capacity so that all County Soil and Water Conservation Districts have the capacity to assist local road maintenance.
 - Investigate need to develop management practice regarding disposal practices for soil excavated from roadside ditches.

Wastewater

- Work to identify innovative means of nutrient load reduction through re-use and natural treatment alternatives
- Among other things, the Chesapeake Regulatory and Accountability Grant work plan is expected to include a DEC point source regulatory oversight coordinating committee, with emphasis on wet weather operations and trucked in wastes, and an enhanced on-the-ground program, including rigorous schedules for inspections and enforcement activities.

Floodplain management

- Work with USEPA R3 to quantify water quality benefits associated with various floodplain management components
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Atmospheric Deposition

CPB has indicated that states can get credit in their WIPs for any NO_x emissions reduced beyond the 2020 CMAQ Scenario that result in reductions in delivered direct or indirect loads to the Bay including additional NO_x reductions needed in the 2013 SIPS for the new ozone air quality standard.

From the Executive Order Strategy:

“EPA will significantly reduce nitrogen deposition to the Bay and watershed by 2020 by implementing programs to remedy air pollution under the Clean Air Act that will reduce nitrogen emissions from electric utilities, other industrial point sources, and on- and off-road vehicles, including ships. EPA will account for air deposition of nitrogen in the load allocations in the TMDL. By including air deposition in the TMDL load allocations, states will benefit from federally mandated emission reductions achieved by Bay states as well as those achieved by other states within the airshed. Furthermore, states may be adopting their own regulations to reduce nitrogen emissions to meet the national ambient air quality standards as part of the state implementation planning (SIP) process. *States will also be able to take credit for nitrogen emission reductions that go beyond federal emission control measures.*”

As previously described, New York has already implemented emission controls or initiated emission controls that will be accomplished by 2020, even though USEPA R3 does not account for them in the atmospheric and watershed models, nor in the allocations. New York should receive credit. EPA has stated that States can get credit for any NO_x emissions reduced beyond the 2020 CMAQ Scenario that result in reductions in delivered direct or indirect loads to the Bay including additional NO_x reductions needed in the 2013 SIPS for the new ozone air quality standard.

Because EPA has not completed its refined analysis of atmospheric deposition, New York is faced with developing an estimate of the benefit of New York’s actions. New York conservatively assumes a credit of 100,000 to 200,000 lbs N/year of delivered load.⁴⁷

Improve Fed/State/local partnership and opportunity

For example, a coordinated effort from all levels of government will help ensure successful local government administration of existing local flood damage prevention laws (and Community Rating System enhancements) enacted for participation in the National flood Insurance Program and result in significant water quality benefits.

The New York State Department of Environmental Conservation is applying for an EPA Chesapeake Bay Regulatory and Accountability Program grant primarily for increased staff resources to accomplish these activities:

⁴⁷ Analysis was conducted using measured ammonia and NO_x wet deposition in NY and considering some minor increases in ammonia deposition. The resulting estimate fell within the range that New York expects to be credited, above.

