Maryland Sector Growth Demonstration

August 29, 2013

Background

Maryland's Phase I and Phase II Watershed Implementation Plans (WIPs) for the Chesapeake Bay commit to developing an offset program to address potential new loads. In addition, Maryland's 2012-2013 Programmatic Milestones include a commitment "to ensure the development of a fully implementable growth offset program in Maryland by the end of 2013."

Since the completion of the Phase II WIP, EPA has released a series of increasingly refined technical memoranda to guide states' on how to demonstrate whether offsets are needed. The EPA memoranda indicate that states must either, a) have in place an offset program for these loads, or b) demonstrate that a formal offset program is not necessary.

To date, Maryland has provided two responses to EPA's request for information. On March 7, 2013 Maryland provided its initial sector growth demonstration submittal to EPA. On May 22, 2013, Maryland provided supplemental information to EPA about the on going development of a growth offset program. This was in response to questions posed in EPA's draft interim WIP/Milestones evaluation.

On June 5, 2013, EPA provided Version 1.0 of its final guidance, entitled "Sector Load Growth Demonstration Technical Memorandum." In a July 10, 2013 email, EPA communicated "Updated Instructions if you have/plan to have offset Program(s)." EPA's Updated Instructions stated the following:

> *Based on our discussions with each jurisdiction over the past few weeks, we are confirming that EPA does not expect a numerical demonstration performed for those sectors that a jurisdiction's has developed or is in the process of developing an offset program. EPA does, however, expect each jurisdiction to address the following for each sector regardless of its offset program status:*
>
> - *A date by which the jurisdiction had or will have in place an offset program that meets the common elements of Appendix S;*
> - *A description of how the jurisdiction accounts for and manages all new or increased loads;*
> - *A description of the system in place for tracking changes in loads to ensure accountability and verification;*
> - *A description of how the jurisdiction accounts for movement among sectors to be sure that an increase in anticipated loading does not get overlooked because of the predicted movement to another sector;*

Each of these points is addressed in sections numbered 1 – 4 below under "Sector Growth Demonstration."

Sector Growth Demonstration

Maryland is developing an offset program for the development sector, consisting of waste water treatment plants (WWTPs), septic systems, and urban/suburban stormwater. A separate numerical demonstration has been conducted for the agriculture sector. The findings are provided below.

Agriculture Sector: The numerical demonstration developed for the agriculture sector shows nutrient and sediment loads are expected to decline in the future. This trend results from a combination of cropland loss due to land development and a decline in animal production in the State resulting in less manure. The agriculture sector analysis is provided in Appendix A.

The State is committed to tracking agricultural sector loads as part of the Chesapeake Bay Program annual progress reporting process to verify this analysis is correct. In the event future loads are observed to increase, the State is committed to taking steps to offset those loads. The State's concentrated animal feeding operations (CAFO) permitting program provides further means of controlling net increases in nutrients in the agricultural sector if necessary.

Development Sector: Maryland is developing its growth offset program for the development sector. This sector includes municipal and industrial water, septic systems (on-site disposal systems) and urban/suburban stormwater from new development including redevelopment. Although EPA is not requiring a numerical demonstration for sectors having offset policies developed, they do expect each jurisdiction to address the following four issues laid out in EPA's July 10, 2013 Updated Instructions:

1. **A date by which the jurisdiction had or will have in place an offset program that meets the common elements of Appendix S**

   The Accounting-for-Growth (AfG) Workgroup report[1] indicates consensus on an effective date for regulations of December 31, 2014. The manner in which each sector is addressed by the AfG report is briefly described below. The remainder of this section describes the policy development process to date and a future schedule.

   Stormwater, Forest and Agriculture: The AfG Workgroup recommendations include three stormwater load allocation options, all of which include forest in the calculations, and two of which account for pre-development loads from agricultural land[2].

[1] Final Report of the Workgroup on Accounting for Growth (AfG) in Maryland 2013.

[2] Selecting the option that doesn't include agriculture pre-development loads would not diminish the efficacy of the offset program, which is focused on loads associated with non-agricultural development.

Point Sources: Maryland currently has an offset program in place for municipal and industrial point sources, which is implemented through NPDES and State permitting authorities. That said, the AfG Workgroup recommendations reflect accounting for point sources.

Septic systems: The AfG Workgroup report indicates consensus that new septic system loads should be offset, as described below

Atmospheric Sources: Sources associated with new development were found by consensus of the AfG Workgroup report to be outside the scope of their vision of an offset program with one proviso. An environmental representative on the Workgroup specified that their support of this position is contingent on adopting a "forest baseline load."[3]

Each of these sectors, with the exception of atmospheric sources, is elaborated upon in sections 2-3 below.

AfG Policy Development Process to Date:

According to the AfG Workgroup report, "A previous draft of a proposed AfG policy was widely circulated through stakeholder meetings and documents posted online in 2012; however, extensive outreach and public comment in the summer and fall of 2012 revealed a lack of consensus on many fundamental issues. Therefore, a work group was established with key stakeholders to find common ground, clarify areas of disagreement and make recommendations for a revised AfG policy. Ten meetings of the Work Group were conducted, beginning January 18, 2013 and ending July 19, 2013."

Future Schedule for AfG Policy Development:

- Mid-August – Final Council Report on workgroup recommendations.
- Throughout August and September – MDE to develop policies and regulations, taking the AfG Workgroup recommendations into account.
- September 17 – Brief Legislative Committees – The briefing will include a report on the AfG workgroup recommendations and, to the extent we have Administration approval, what the State agencies will recommend.
- October 1 – 15 – MDE prepares formal proposed regulatory package that includes:

[3] The "baseline load", in AfG parlance, is the allocation the State would provide developers toward their stormwater load. Adopting a forest baseline would imply that developers would need to offset the difference between the lower loading forest land and the higher load from developed land.

  - The proposed regulation
  - Statement of purpose
  - Comparison to Federal Standards
  - The estimated economic impact of the proposed regulation on government, consumers, industry, taxpayer or trade groups

- October 15 – MDE submits proposed regulations to the Administrative, Executive and Legislative (AELR) Committee of the Maryland General Assembly and the Department of Legislative Services

- October 30 – Proposed regulations sent to the Maryland Register

- December 30 -- Notice of Final Adoption sent to Maryland Register

- January 10, 2014 – Notice of final adoption appears in the Maryland Register

- January 20, 2014 – Earliest possible effective date of regulations

- December 31, 2014 – Consensus effective date of regulations according to the AfG Workgroup report.

2. A description of how the jurisdiction accounts for and manages all new or increased loads;

According to the AfG Workgroup report, “The State is designing its AfG policy to account for any increased loads through a combination of on-site practices and through a nutrient trading market in Maryland that has the potential to lower pollution reduction costs for local governments, developers, tax and rate payers, and accelerate the Bay’s restoration.”

In general, given Chesapeake Bay Program model loadings for various land uses, nonpoint source accounting entails accounting for changes in land acreages and best management practices. Many of the necessary mechanisms for this are already in place, or are being developed in concert with the Bay Program initiative on BMP Verification. Permitting procedures for point sources provide the nexus to account for and manage those sources, albeit some mid-sized sources are managed in aggregate and other small sources are governed by general permits.

On the matter of which pollutants are addressed, the AfG Workgroup report voiced the following consensus position, “Offset nitrogen statewide and credit associated phosphorus and sediment reduction as to demonstrate no net load increase on a project by project basis; Offset phosphorus, nitrogen and/or sediment wherever there is a local impairment at local TMDL watershed scale.”

Forest Loads: The AfG Workgroup report identifies three nonpoint source load offset options all of which entail accounting for forest loads. In all three options, any development that displaces forest cover would receive an urban stormwater allocation equal to the Chesapeake Bay Program forest land use loading. The difference in load between the lower loading rate for forest and the higher loading rate for urban stormwater managed by Maryland's 2007 Environmental Site Design (ESD) requirements would need to be offset by the developer. (See "Baselines" recommendations in the AfG Workgroup report).

Although specific administrative procedures have not been settled, it is expected that the accounting would be integrated into a permitting process. Maryland's stormwater program and Forest Conservation Act program both involve accounting for forest cover. Therefore, both government and private sectors currently have technical and administrative experience with accounting for changes in forest that can be transferred to an AfG program. In addition, Maryland has strong land conservation programs to draw upon in addressing practical management and legal issues associated with accounting for and managing forest lands.

Agricultural Loads: Maryland's offset program is solely for the development sector; the State is making a numerical demonstration that agricultural loads are decreasing over time and thus does not need an offset program (See Appendix A).

Urban/Suburban Stormwater: The AfG Workgroup report offers three recommendations for addressing urban stormwater. All three options ensure that the stormwater load from new development projects will either offset any increases, in the case of developing on forest land, or assign an allocation that is less than or equal to the previous land loading rate, in the case of developing on agricultural land. This will ensure no net increase from the urban/suburban stormwater sector.

In addition, the AfG workgroup considered the State's existing stormwater requirements for redevelopment. Maryland's stormwater regulations define redevelopment sites to be those having 40% or greater impervious cover. Of the three loading offset options for stormwater, the Forest Load option would be the strictest, because it would require a greater offset than current stormwater requirements on redevelopment. However, in recognition of State policy to create incentives for redevelopment, two of the Workgroup recommendations include the following:

> *<u>Redevelopment</u> – Projects that meet the stormwater management regulations definition of "redevelopment" would have either a minimal or no stormwater offset requirement. Projects that do not meet that definition, but where the pre-development impervious surface was between 20% and 40% would have their stormwater offset based on a sliding scale.*

In addition, one of the options that includes the redevelopment proposal above also addresses infill development in an attempt to further promote smart growth:

> *Infill - Projects that meet the definition of "infill" would have either a minimal or no stormwater offset requirement; however, infill needs to be further defined.*

Maryland has a State stormwater law that applies to all jurisdictions, not just those with MS4 permits. It requires the development and review of stormwater management plans and the use of environmental site design (ESD) controls to the maximum extent practicable (MEP). Maryland is also adopting the volume control method developed by the Chesapeake Bay Program Urban Stormwater Workgroup to estimate load reductions associated with development.

Septic Systems: By consensus, the AfG Workgroup's report adopts Maryland's load estimation method that has been accepted by the Chesapeake Bay Program:

> *Use area specific* [Edge of Stream] *EOS loading rate based on 3 zones (80% in Critical Area (CA), 50% within 1,000 feet of a stream but not in CA, 30% for all others)*

To assess the offset need, the AfG Workgroup report adopts the following consensus recommendation:

> *Allocation should be equal to the load from any pre-existing OSDS, adjusted as if they had been upgraded to BAT.*

In other words, if there are no existing septic systems on the land, the developer receives no allocation from the State and would be required to offset the nitrogen load from new septic systems.

Point Sources: The AfG Workgroup report recommendation reflects Maryland's existing point source offset policy:

> *If* [the treatment plant has] *BNR or ENR and/or Secondary Treatment with available nutrient capacity, no offset needed.*

That "capacity" is effectively the Bay TMDL allocation, although minor WWTPs are managed via an aggregate allocation.

New or increased loads from industrial point sources are presently required to secure an offset. Any de minimus sources can be offset for the foreseeable future via the reserve allocation included in Maryland's Phase II WIP.[4]

[4] See page 23 of Appendix G - STATEWIDE RESERVE http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Documents/FINAL_PhaseII_Report_Docs/Final_Documents_PhaseII/Appendix_G_NPDES_Dischargers_100512.pdf

3. A description of the system in place for tracking changes in loads to ensure accountability and verification;

In general, the Chesapeake Bay Program's annual progress reporting process provides a strong foundation for tracking changes in loads for all sectors. This includes loads associated with changes in land use, animal numbers, numbers of septic systems, changes in point sources and best management practices. The BMP verification process being adopted by the by the Bay Program is also prompting refinements in Maryland's existing tracking systems.

Maryland currently has a web-based tool for nutrient trading of agricultural credits. The State received a Conservation Innovation Grant to expand this tool to address loads from developed land. Once completed, this improved tool can be used both to calculate loads to be offset and track the credits purchased to satisfy the offset requirement. At this time, it is expected that this tool will be integrated into the permitting process, which will provide a vehicle for requiring the calculations and supporting documentation necessary to track changes in loads. The manner in which individual sectors are envisioned to be addressed, according to the AfG Workgroup report, is described in Section 1 and Section 2 above. The technical and administrative mechanisms by which the tracking will occur remains to be settled; however, existing programs provide a strong foundation for doing this.

Areas for which an AfG program could contribute to improved information for tracking changes in loads include the following:

- Land use change: The AfG program could allow the State to gather land use change information in near-real time. This is in contrast to the current status in which changes in land use must be estimated after the fact using a mix of data sources.
- Land disturbance: Although loads from disturbed land fluctuate annually, the trend over time does not suggest an increase[5]. Nevertheless, the AfG program could allow the State to gather information on the amount of area disturbed during land development process in near-real time. Maryland has an erosion and sediment control (E&SC) program. The State also requires Notice of Intent (NOI) information on land disturbance as part of the statewide construction permit; however, that information is limited. The NOI estimates reflect the potential amount of land to be disturbed as opposed to the actual amount disturbed. Some projects never go forward. In addition, the NOI estimates the disturbance area for a multi-year period. The AfG program

[5] If anything, the recent trend of disturbed land has decreased due to the economic slow-down starting in 2008. Any future increase associated with an economic recovery would be transient, eventually leveling off to a new near-constant rate. Within the uncertainty of the current Bay Program watershed model, Maryland's WIP accounts for this load.

would prompt more detailed reporting of disturbed areas than is currently the case, because it would be part of the offset calculation. (See references to disturbed land under “Applicability” in the recommendations of the AfG Workgroup report.)

In regard to credit generation, the AfG workgroup report includes the following recommendations (See “Credit Trading Program” recommendations in the AfG Workgroup report):

Credit Certification, Verification and Transparency

Option 1:

1. *Establish independent reviewers (that are qualified, knowledgeable and truly independent) to certify and verify credits; additional checks and balances to avoid conflict of interest*
2. *All trades to be in a publicly accessible, on-line database established by State (MDE and MDA) and used to track progress*
3. *Leverage existing MDA certification and verification policies for development of urban practices and standards by MDE*
4. *MDE is ultimately responsible for verification, enforcement and transparency of permitting process and market trading program*
   - *MDA is responsible for certification, verification, and registration of agricultural credits*
   - *MDE is responsible for certification, verification, and registration of urban credits*
5. *All Credit Verifiers receive and are up-to-date with state certification for market trading program*

Option 2:

All recommendations as Option 1 except #3 and #4. MDE should strengthen MDA’s existing verification policies. (One Workgroup member supported this position).

Public review of individual projects is another aspect of assuring accountability and verification. With regard to “When do the Post-Development load offsets have to be made public,” the AfG Workgroup report reflects the following consensus position:

“At an early stage in the process, the developer must propose the amount of offsets needed and the calculations used to arrive at the offset amount.” (See “Post-Development Load” recommendations of the AfG Workgroup report).

4. A description of how the jurisdiction accounts for movement among sectors to be sure that an increase in anticipated loading does not get overlooked because of the predicted movement to another sector;

The recommendations of the AfG Workgroup envision a project-by-project assessment of loads. Point sources and nonpoint sources are accounted for to ensure no net load increase will occur.

Point Sources: Maryland has provided future allocations for many point sources in the Phase II WIP. In addition, Maryland presently has procedures to offset loads associated with point source permitting as described above.

That said, occasions may arise in which a point-to-nonpoint source trade might occur. For example, Maryland's 2008 Point Source Trading Policy, which is currently under review, laid out procedures for crediting septic systems that are connected to different types of WWTPs. Because this transfer represents an allocation among sectors, further discussion with EPA is warranted on how this should be handled from an administrative standpoint.

As another example, it is also conceivable that it would be more cost effective for a new or expanding small point source to purchase credits from the agricultural sector. The web-based nutrient trading tool, referenced in Section 3, would provide a technical means of making such a transaction. Aside from administrative matters noted above, this tool will provide a way to ensure a transparent process that would account for the movement of loads and avoid any net increase.

A special case is Combined Sewer Overflows (CSOs). As long-term management plans are implemented, the point source wasteload allocation will shift to a stormwater wasteload allocation. It is expected that the net load reduction will decrease as a result, and that any effects of population change will be addressed by point source and stormwater offset mechanisms.

Nonpoint Sources: The accounting described in the AfG Workgroup report, and summarized above, ensures no net increase in loads associated with landuse changes. Development of forest land will receive an allocation equal to the forest load, and development on cropland will receive an allocation that is less than the Bay Program estimated cropland load.

Although the AfG Workgroup recommendations ensure no net increase associated with land use conversion, they do not require a full accounting of *reductions* associated with agricultural conversion. For example, to simplify the accounting, two options proposed by the AfG Workgroup would use a statewide average pasture loading rate at 2025 loads with full WIP implementation. In practice, the pre-development agricultural loads are likely to be greater if the land contains a significant percentage of cropland and because full implementation of the WIP is unlikely on land that is being sold for development[6].

[6] There are potential accounting issues regarding the use of statewide average pasture and the conversion of some hay land, which has a lower loading rate than developed land. The AfG Workgroup did not fully address these issues to avoid getting mired in these details. The State is open to further evaluation of their potential impact on the AfG program.

Summary and Conclusion

This document provides a numerical growth demonstration for Maryland's agricultural sector and a description of Maryland's evolving offset program for the development sector. Although some specific issues remain to be worked out, Maryland believes these demonstrations are consistent with EPA's request at this point in time. That said, the State invites further discussion with EPA about the specific elements of this demonstration as we move forward with adopting regulations by the end of calendar year 2013 and implementing them during the 2014 calendar year.

The agricultural sector numeric demonstration suggests that future loads are expected to decrease due to the loss of cropland to development and anticipated decreases in farm animals and associated manure. The State is committed to continual tracking of agricultural loads and offsetting any unanticipated increases; however, at this time an offset program for the agricultural sector is not deemed to be necessary.

The description of the offset program for the developed sector reflects the recommendations of Maryland's Workgroup on Accounting for Growth (AfG). Although the final offset program is not finalized, all of the key options identified by consensus of the Workgroup are designed to ensure that future point source, septic system and stormwater loads are not allowed to increase. Significant technical and administrative issues remain to be resolved; however, the general framework identified by the AfG Workgroup recommendations is sound.

The policy development process is generally on schedule; however, there are significant challenges ahead that could delay meeting the proposed schedule. These include time for meaningful review by stakeholders and addressing their views, time for analytical and information technology tools to be developed, time for development and adoption of any local programs that might be necessary, and time for development of any guidance and training that might be necessary to implement the program. All said, given the significance of what Maryland is attempting to accomplish with its AfG program, this demonstration indicates that significant progress is being made toward the ideal of accounting for future growth in loads.

Appendix A

Agricultural Sector Growth Demonstration

Maryland conducted an analysis of agricultural data sources to determine if any growth trends are evident that would suggest an increase in the sector's loads. Consistent with EPA's guidance document information was analyzed for farm acreage, crop types and animal numbers.

Based upon the agricultural trends in Maryland the sector's overall farm acreage, crop types and animal numbers continue to decrease. No new information would suggest this trend will change.

Farm Acreage & Farm Numbers

Farm acreage is projected to decrease in the future due to land use conversion and the implementation of best management practices (BMPs). Farm acreage has decreased from 1985 to 2011 by 600,000 acres as tracked by the Ag Census and NASS (see Farm Acreage chart). The Chesapeake Bay Program watershed model projects a continued loss of agricultural acres from 2010 to 2025 of 117,479 acres. Added to this is the continued conversion of crop and pasture land for buffers from 2006 to 2012, that account for an additional 80,000 acres. Going forward we expect an additional 20,000 acres to convert to buffers.

Agricultural Land Usages

For the past decade the acres of cropland, hay land and pasture has remained the same as tracked by the Ag Census and NASS (See Agricultural Land Usage chart). As indicated above, no additional acres have been added. Buffer BMPs continue to reduce the acres in each of these categories.

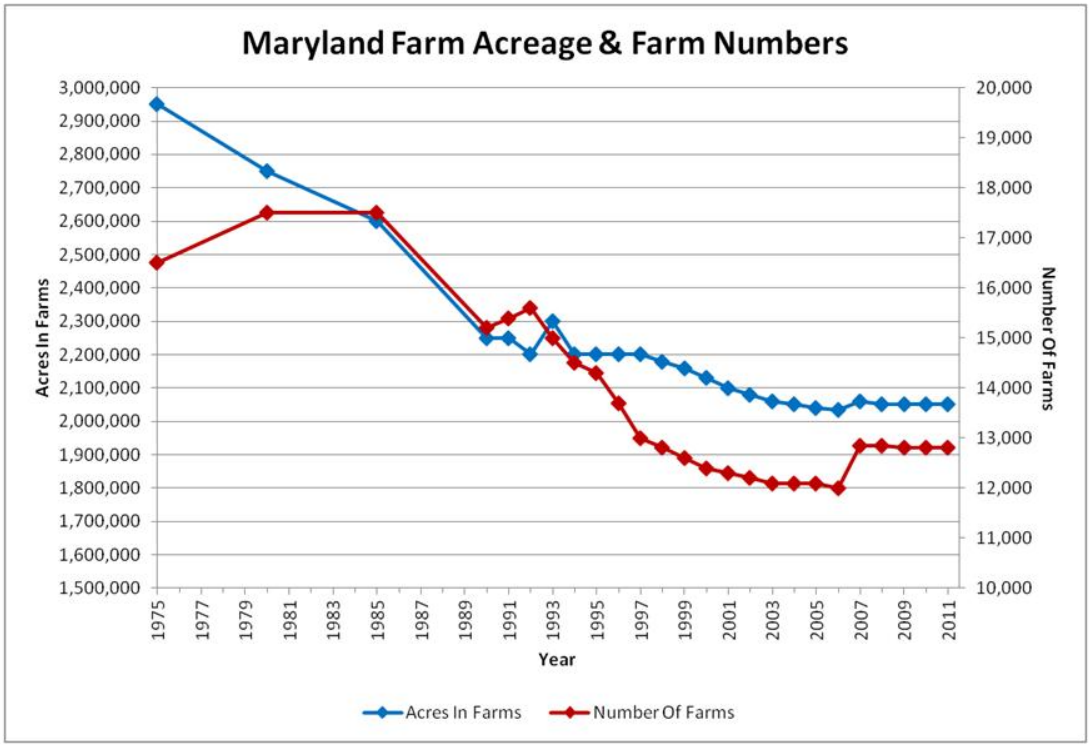
Animal Numbers

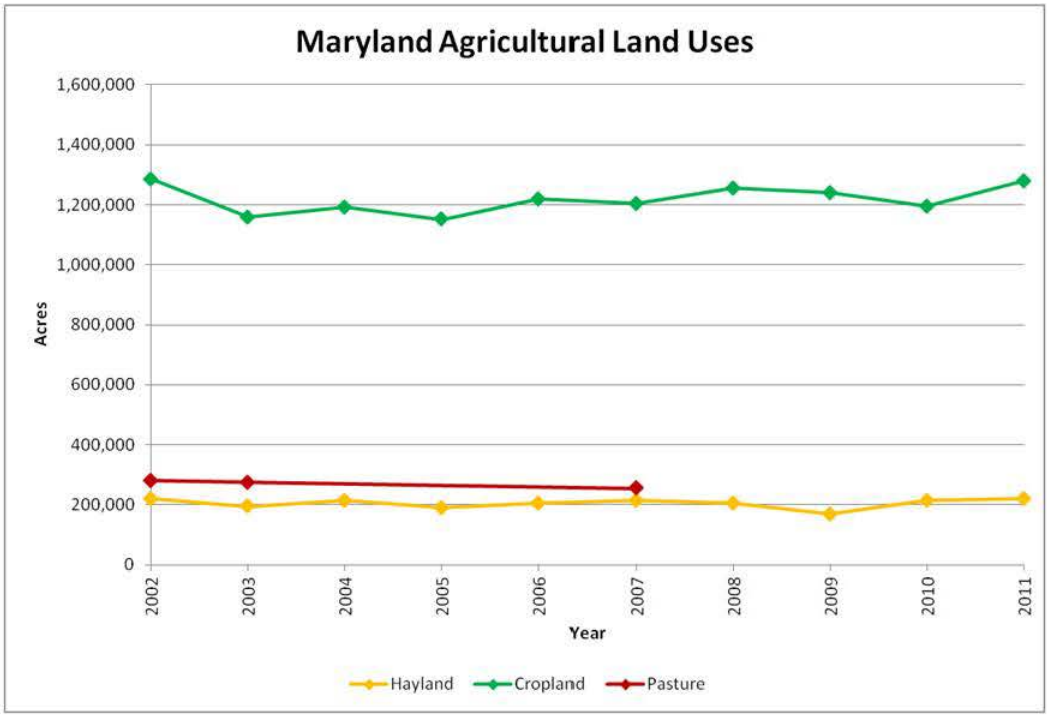
Overall, Maryland animal numbers continue to decline, with the exception of poultry broilers. Beef numbers have declined 34% since 1985. Dairy Numbers have declined by 110% since 1985. Swine numbers have declined by 350% since 1985. Layer chickens have declined by 42% since 1985 as tracked by Ag Census and NASS (see charts).

Only broiler chickens have shown any type of an increase in numbers from 1998 to 2011 of 9% as tracked by the Ag Census and NASS (See broiler chart). However, 2012 unpublished US Department of Agriculture's National Agricultural Statistics Service (NASS) production numbers, show a drop in birds to 305 million for an overall trend of 7% over 15 years.

While the broiler chickens have shown a slight uptick in numbers (7%) in the last 15 years, work by the Poultry Litter Subcommittee of the Bay Program's Agricultural Workgroup has documented a significant change in broiler litter volume and nutrient content. Information developed by the subcommittee, that would be utilized in the current Bay Model 5.3.2, for next year, will change the manure loading for broilers based upon the industry's work on better broiler feed management and genetics over the last 15 years. The new numbers for manure volume generation per bird will reduce tons of manure produced on the Eastern Shore of Maryland by 50%. The current Nitrogen content of the manure will reduce by 20% and the phosphorous content of the manure will reduce by 40%. Overall, the current models Nitrogen and Phosphorus loads for broilers in Maryland will drop by 60%. When calculating loads, the decreasing trend in broiler manure volume and content, since the early part of the last decade, has compensated for the relatively modest increase in overall broiler numbers when calculating loads.

Maryland cannot see any trend or growth in any of the agricultural sector sources that would necessitate a requirement for a growth offset program.

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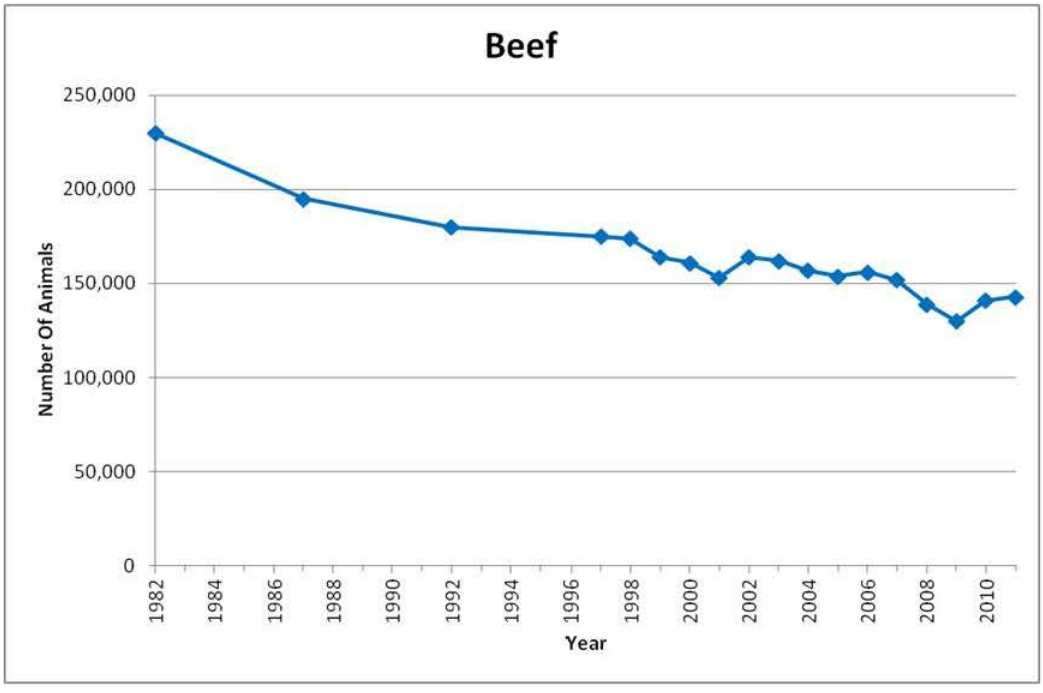
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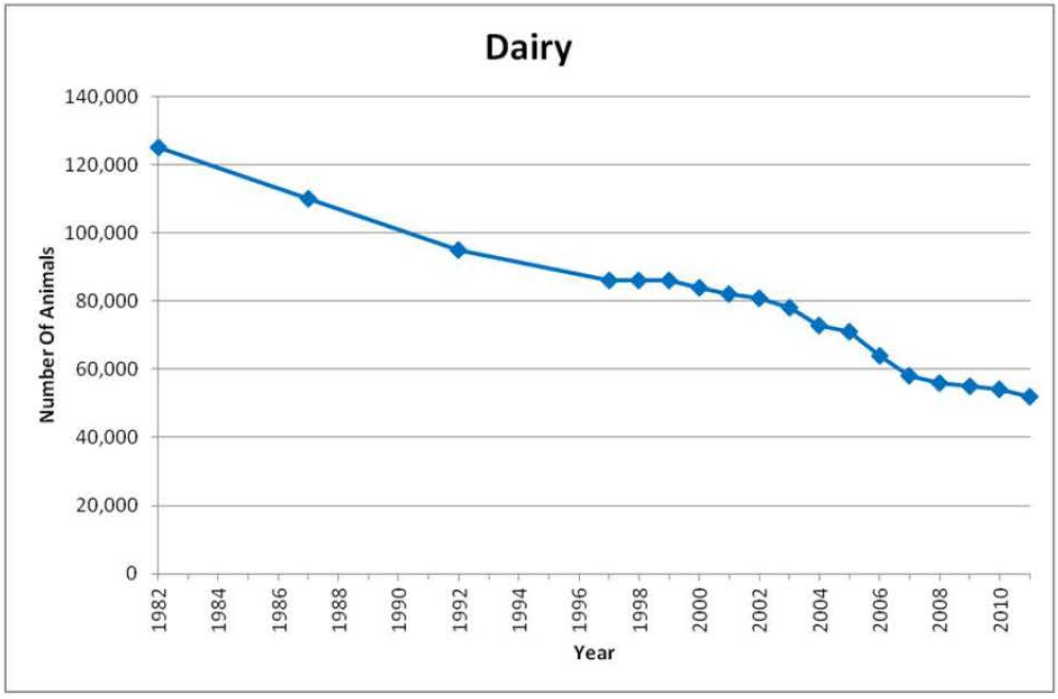
Year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Number Of Animals
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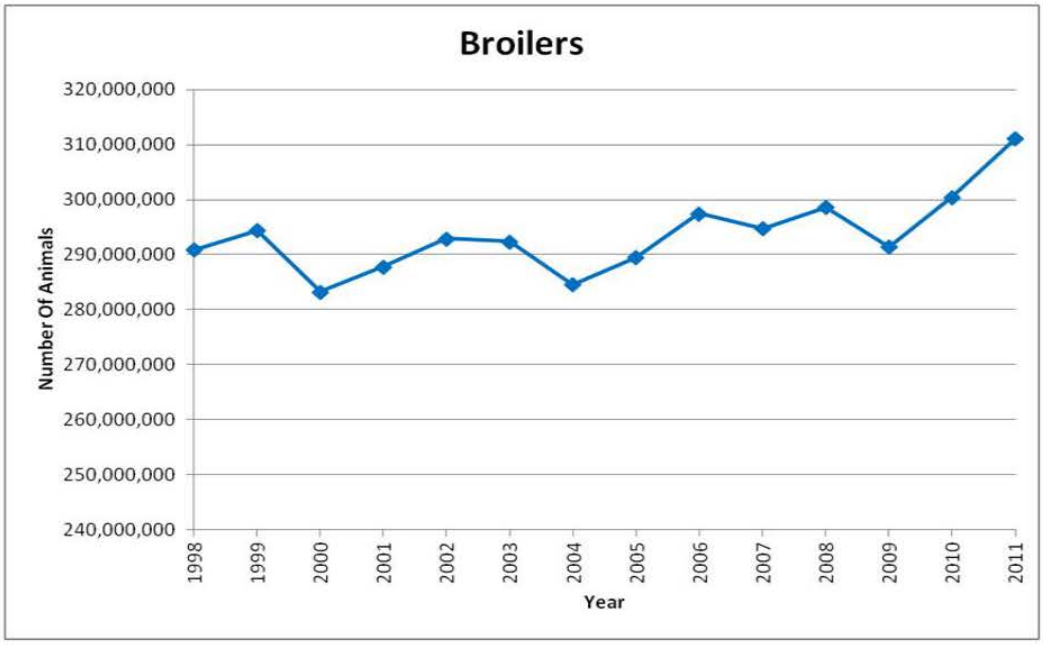
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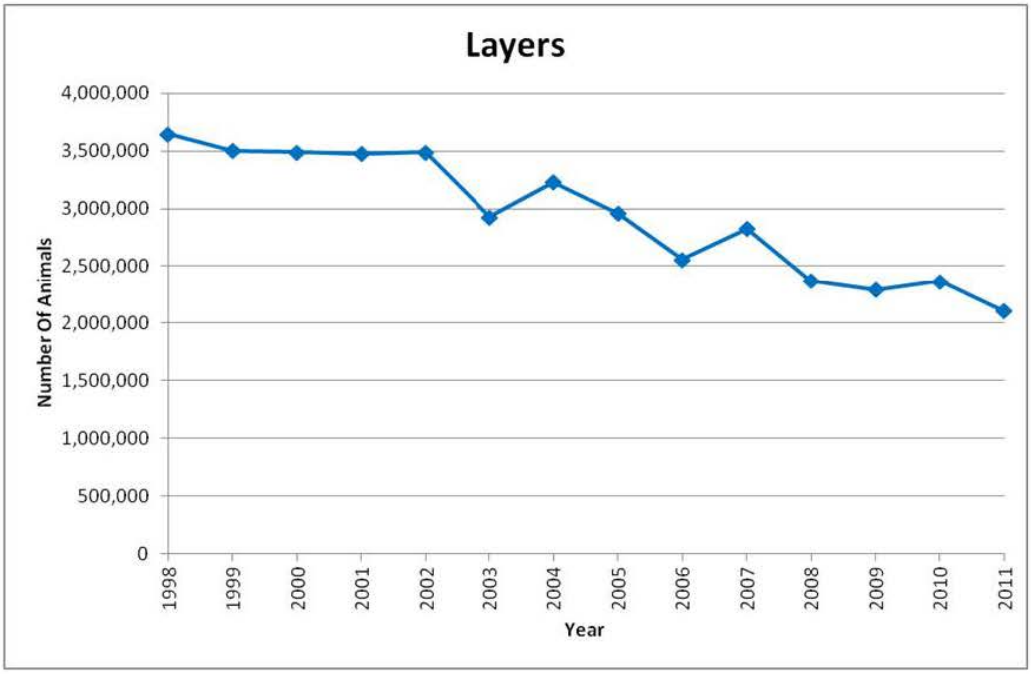
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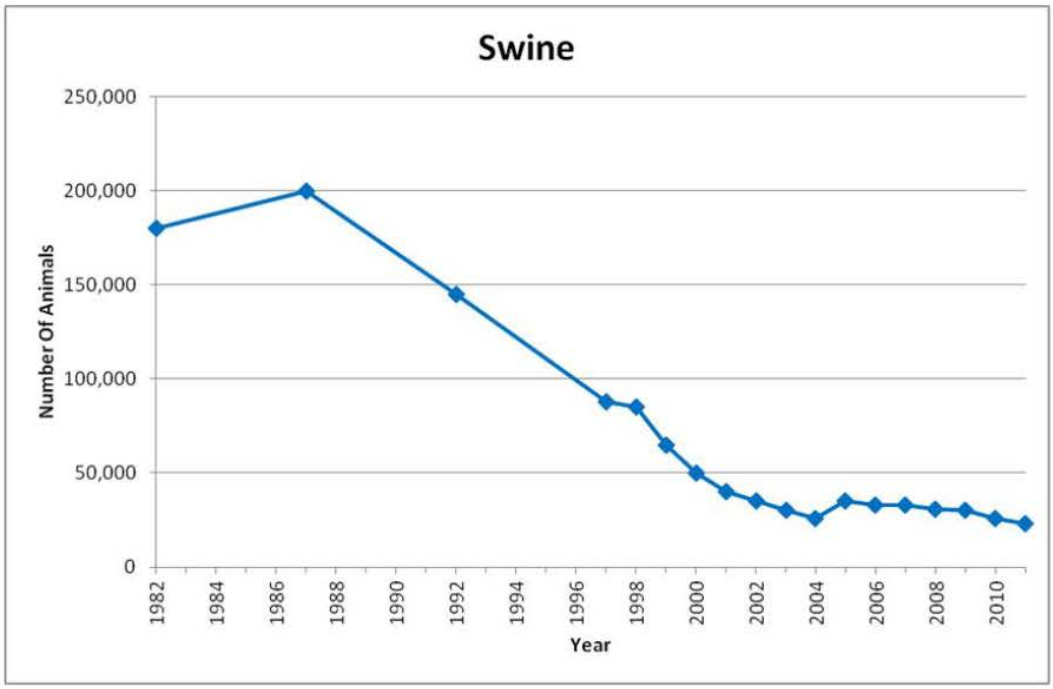
Swine
250,000
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Number Of Animals
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