BMP Excess and Loading Ratios
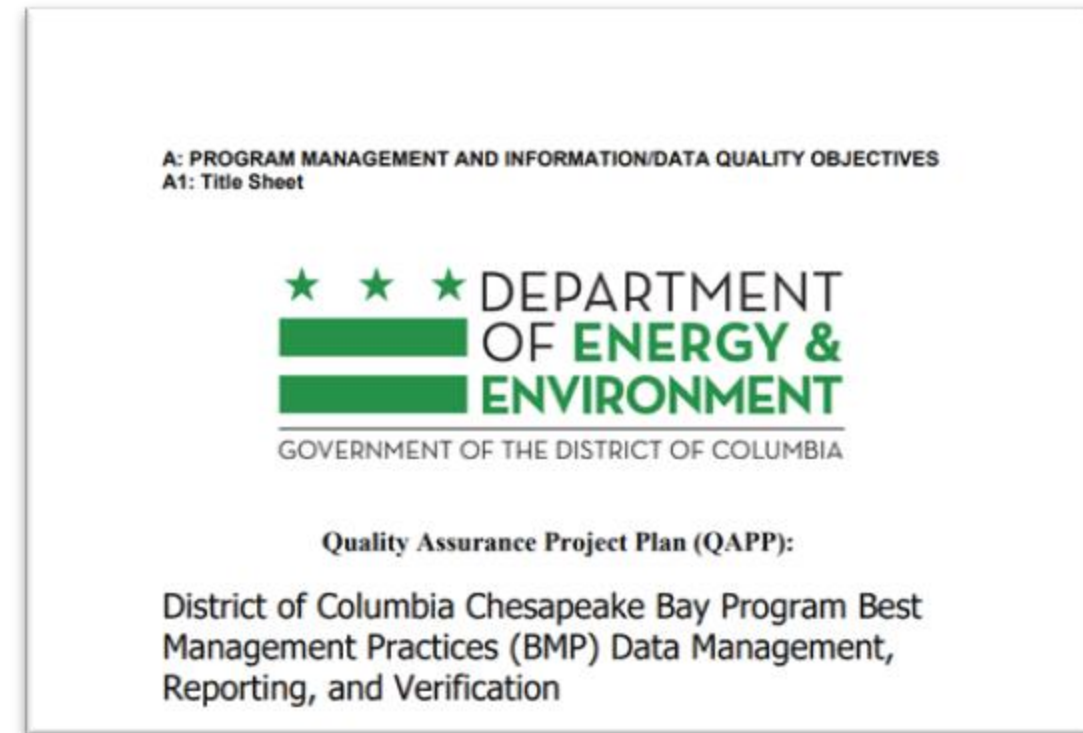
8/15/2025

BMP Submissions

- As of December 2010, all BMP information submitted to the Chesapeake Bay Program Office must be in a format compatible with the National Environmental Information Exchange Network (NEIEN) protocols that dictate the use of BMP-specific fields and units.

- This information is utilized by Chesapeake Assessment Scenario Tool (CAST) for the estimation of nutrient and sediment loads generated by different source areas within the Chesapeake Bay watershed.

- CAST is a web-based nitrogen, phosphorus and sediment load estimator tool that streamlines environmental planning.

- In the future as Phase 7 of the CAST model is released, NEIEN will be phased out with CAST serving the purpose of both information exchange and parent model.

Credit: Chesapeake Bay Program Office

BMP Excess

- Each BMP is developed following a Protocol that was approved by the Chesapeake Bay Program Partnership.

- A quick reference guide for BMPs provides general information about some BMPs and how they function within the Chesapeake Bay Program reporting and modeling structure.

- When there is a difference between the BMPs credited within CAST and those that were submitted into NEIEN, that is categorized as 'excess' when the modeled landscape cannot hold the number of BMPs submitted.
    - This can occur for different reasons, but a review of the Quality Assurance Project Plan and the associated data that was submitted is often where any necessary review begins.

- Efforts to align the modeled landscape with the BMPs present on the ground are ongoing for Phase 7.

A: PROGRAM MANAGEMENT AND INFORMATION/DATA QUALITY OBJECTIVES
A1: Title Sheet

★ ★ ★ DEPARTMENT
OF ENERGY &
ENVIRONMENT
GOVERNMENT OF THE DISTRICT OF COLUMBIA

Quality Assurance Project Plan (QAPP):

District of Columbia Chesapeake Bay Program Best Management Practices (BMP) Data Management, Reporting, and Verification

Quality Assurance Project Plan example

Initial investigation

Discussing submissions with jurisdictions

- Do BMPs with the same Lat Long and Date mean the same system duplicated?

Conversion factors:

- BMP submitted as systems gets converted to animal counts
- From phase 6
- Same for waste management and mortality disposal

Systems capacity

- CAFO permit is NOT the same as NASS population

Follow up:

Do we need to update conversion factors of Animal Units to systems for P7?

Do mortality disposal and AWMS need different conversion factors?

Are animal submissions based on max capacity?

- If not, what is the prevalence of reaching max capacity?

Exclusion fencing:

- Do we need to revisit the default conversion?
  - Wider? Narrower?

Questions?

Land Use Loading Rate Ratios

Framing the discussion

The AMT is improving the representation of Agriculture for the Phase 7 CAST update.

AND

This led to the creation of two additional Land Uses to representing pasture and hay.

BUT

The average Nitrogen coming off these Land Uses must be defined with a ratio.

THEREFORE

Ongoing discussions are being held to improve the proposed ratios for these Land Uses.

How did we get here?

Manure nutrient applications	New Land Uses created	Land Use Loading Rate Ratio
• Pasture and Hay applications were not realistic	• Pasture and Hay with Land Grant University Recommendations	• Define how Nitrogen loads into the water from the land

Phase 7 CAST Ag Land Uses

- Two new Land Uses
  - Managed Hay
  - Managed Pasture

- Need to think about differences between new Land Uses and existing ones.

Chesapeake Bay Average	
Land class	Land Use
Cropland	Double Cropped Land
	Full Season Soybeans
	Grain with Manure
	Grain without Manure: **Reference land use**
	Other Agronomic Crops
	Silage with Manure
	Silage without Manure
	Small Grains and Grains
	Specialty Crop High
	Specialty Crop Low
Pasture	Ag Open Space
	Legume Hay
	Other Hay
	Managed Hay
	Pasture: **Reference Land Use**
	Managed Pasture

Example Calculations:

- Currently proposed Loading Rate Ratios

- Example Loading Rates
  - Subject to change when model updates are completed

Land class	Land Use	Loading Rate Ratio	Loading Rate (pounds per acre per year)
Chesapeake Bay Average			
Cropland	Double Cropped Land	0.79	30.9
	Full Season Soybeans	0.71	27.7
	Grain with Manure	1.4	54.7
	Grain without Manure: **Reference land use**	1	39.1
	Other Agronomic Crops	0.45	17.6
	Silage with Manure	1.62	63.3
	Silage without Manure	1.16	45.3
	Small Grains and Grains	0.84	32.8
	Specialty Crop High	1.34	52.4
	Specialty Crop Low	0.31	12.1
Pasture	Ag Open Space	0.43	5.1
	Legume Hay	0.74	8.7
	Other Hay	1.04	12.3
	Managed Hay	1.56	18.4
	Pasture: **Reference Land Use**	1	11.8
	Managed Pasture	1.52	17.9

Where do we stand?

- Following Phase 6 methods
  - Literature review
  - Best Professional judgment of relevant experts
- Still under review
  - Possibility of elevation

Questions?