Delaware's BMP Verification Program

BMP Verification Ad Hoc Action Team Meeting

May 14, 2021

Brittany Sturgis, NPS Program

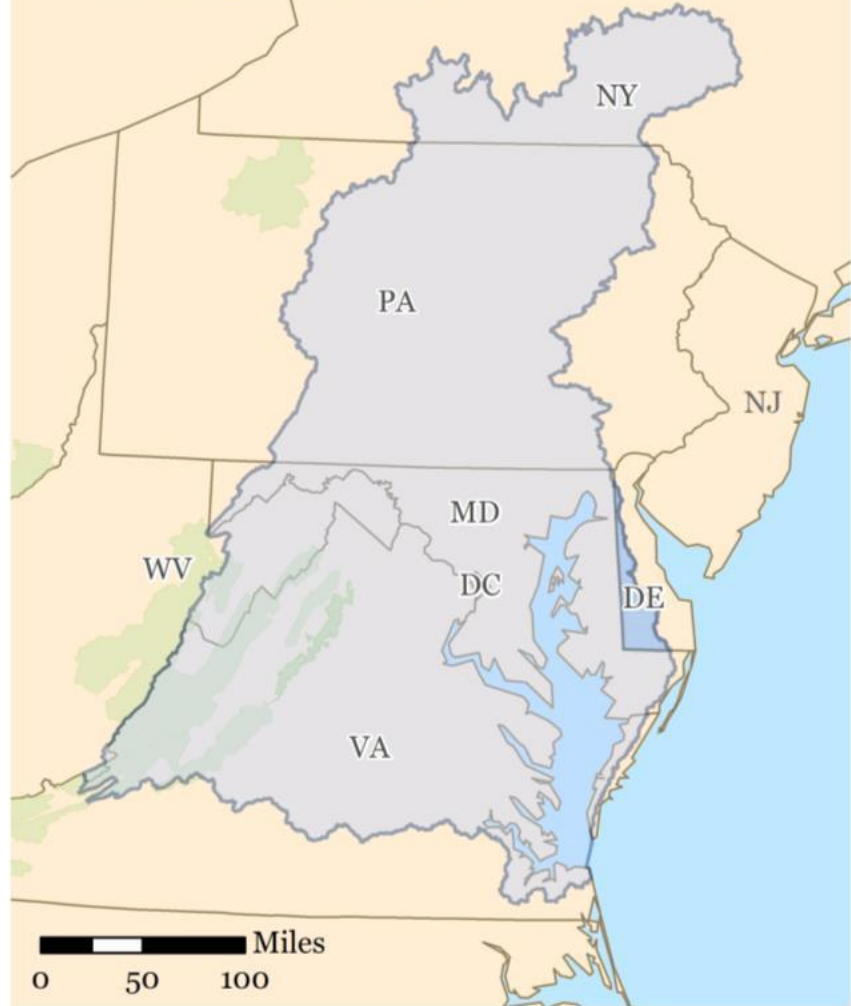Delaware Chesapeake Bay Watershed Coordinator

Goals of presentation

Review Delaware's 3 major hurdles with our BMP Verification Program:

1. Historic BMP data cleanup

2. Database to house inspection information

3. 1619 Agreement

Not getting into details of what our Verification Program looks like

Chesapeake Bay Watershed

64,000 square miles

Chesapeake Bay = 64,000 sq. miles

Delaware portion = ~700 sq. miles

~1% of total watershed!

Delaware has ~450,000 acres within watershed

Chesapeake Bay Watershed
- Municipalities
- Watershed
- Parks/Forests

~700 square miles

DELAWARE DEPARTMENT OF
**NATURAL RESOURCES AND
ENVIRONMENTAL CONTROL**

HISTORIC BMP CLEANUP RULES OF THE ROAD
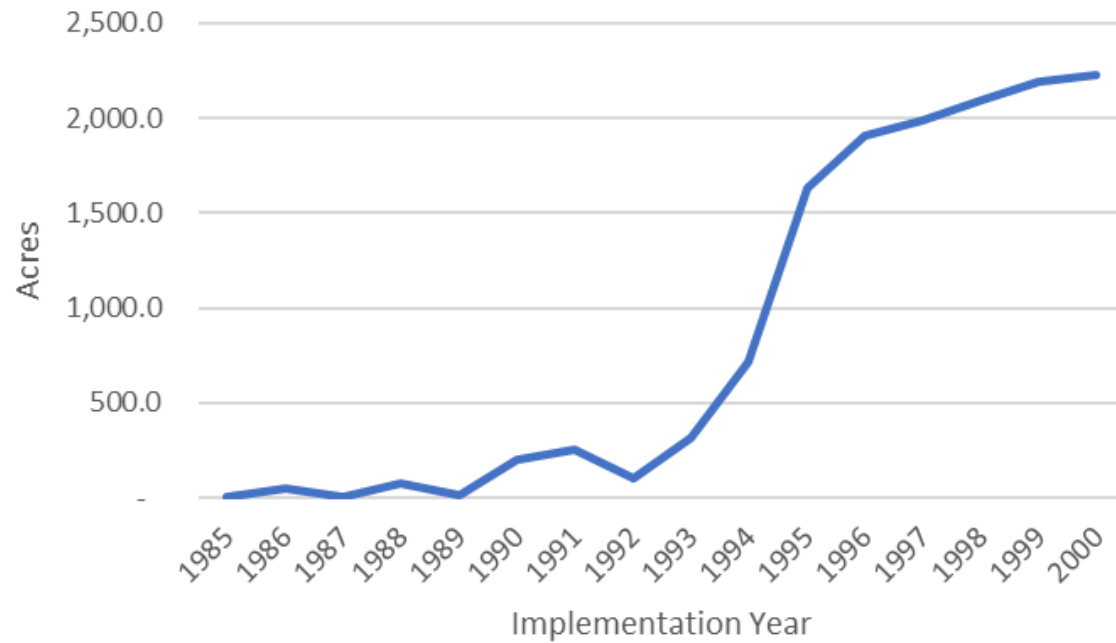
WTWG 12032014

Data Collection Period

☐ 2015 Grant Guidance will state:

- ▫ Jurisdictions should focus on collecting and submitting detailed historic data for BMPs implemented from 2000 through the present.

- ▫ Jurisdictions should also submit historic data for BMPs implemented from 1985 through 1999. However, this implementation may be estimated and submitted with less specific information if no detailed information is available.

- ▫ Jurisdictions should provide documentation to the CBPO explaining methods for estimating 1985 – 1999 implementation.

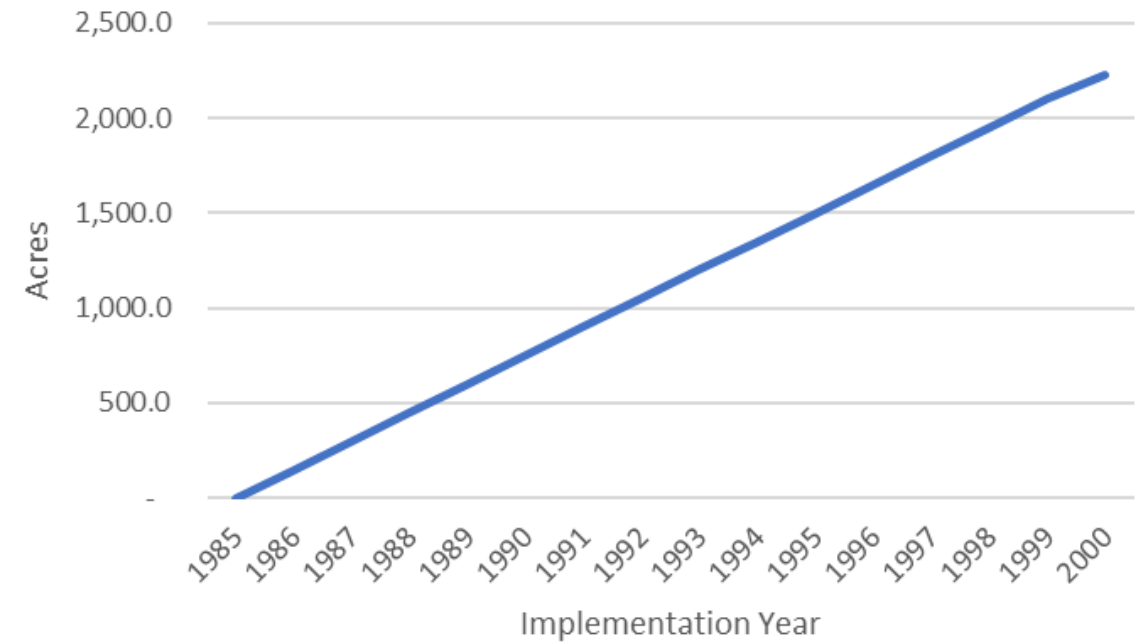# Potential Methods to Estimate Cumulative BMPs

- ☐ **Method 1: Constant Yearly Implementation**
  - ☐ Jurisdiction submits best estimate of ALL **cumulative BMPs** in 2000 reflecting TOTAL amount of BMPs on the ground.
  - ☐ Jurisdiction assumes 0 BMPs on the ground in 1985.
  - ☐ Jurisdiction assumes constant yearly implementation from 1986 through 2000.
    - ■ Example: **Total** Forest Buffers in 2000 = 10,000 acres
      - ■ Annual implementation for 1986 through 2000 = 667 acres
- ☐ **Method 2: Linearly Increasing Implementation**
  - ☐ Jurisdiction submits best estimate of only those **cumulative BMPs** implemented in 2000 (not a snapshot of ALL acres on the ground).
  - ☐ Jurisdiction assumes 0 implementation in 1985.
  - ☐ Jurisdiction assumes implementation increases in a linear fashion from 1985 through 2000.
    - ■ Example: **Annual** Forest Buffers in 2000 = 1,000 acres
      - ■ Annual implementation: 1986 = 67 acres; 1987 = 133 acres; 1988 = 200 acres…2000 = 1,000 acres
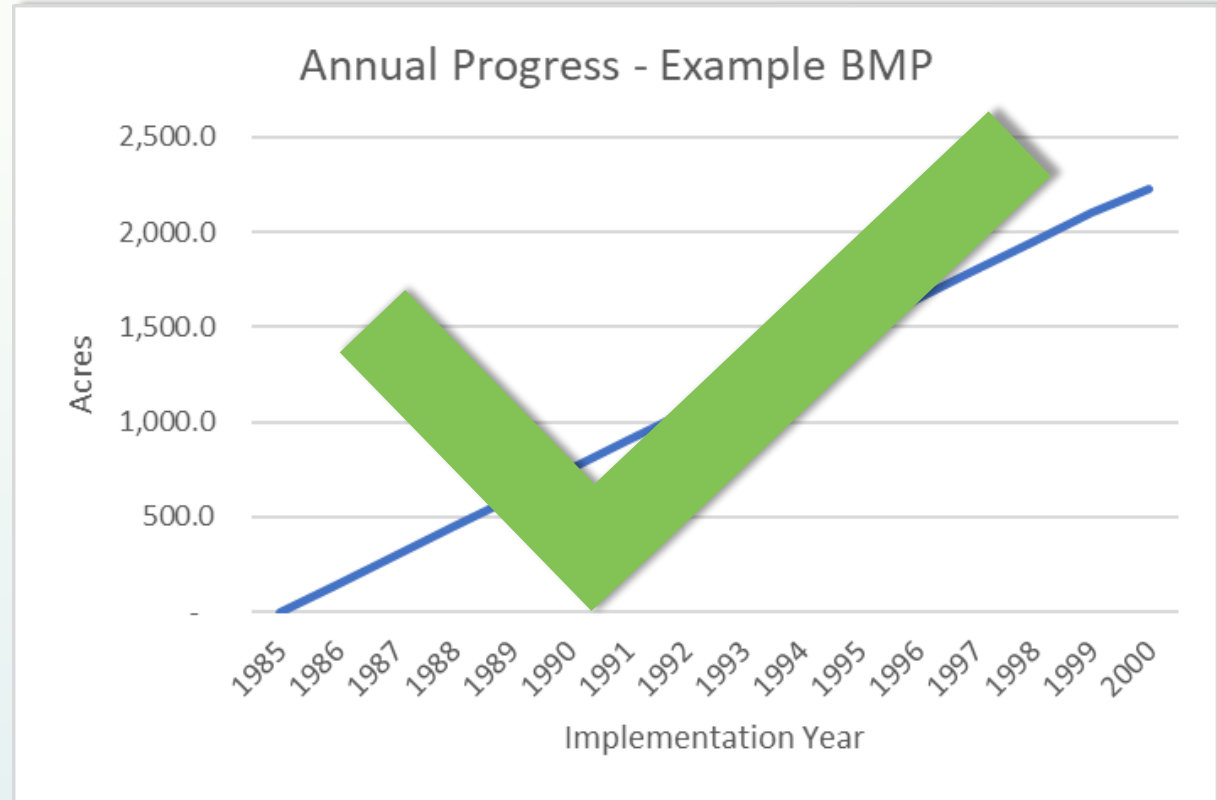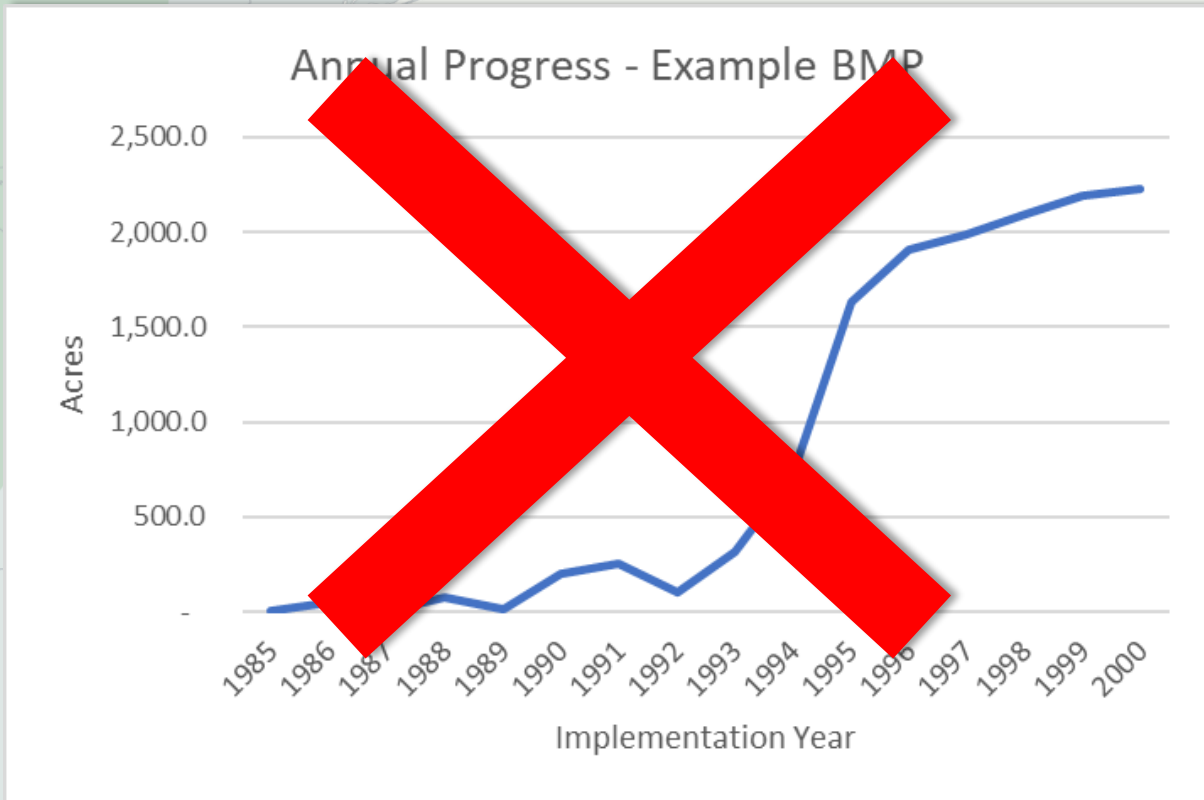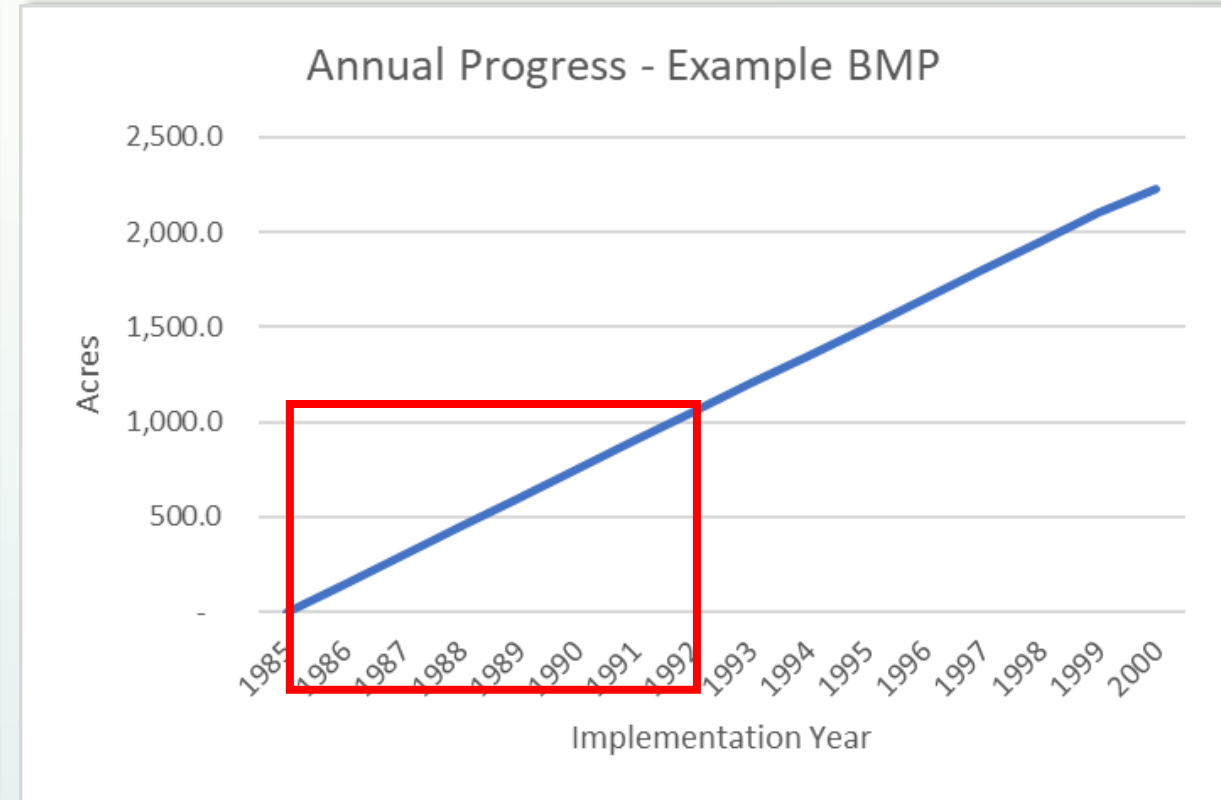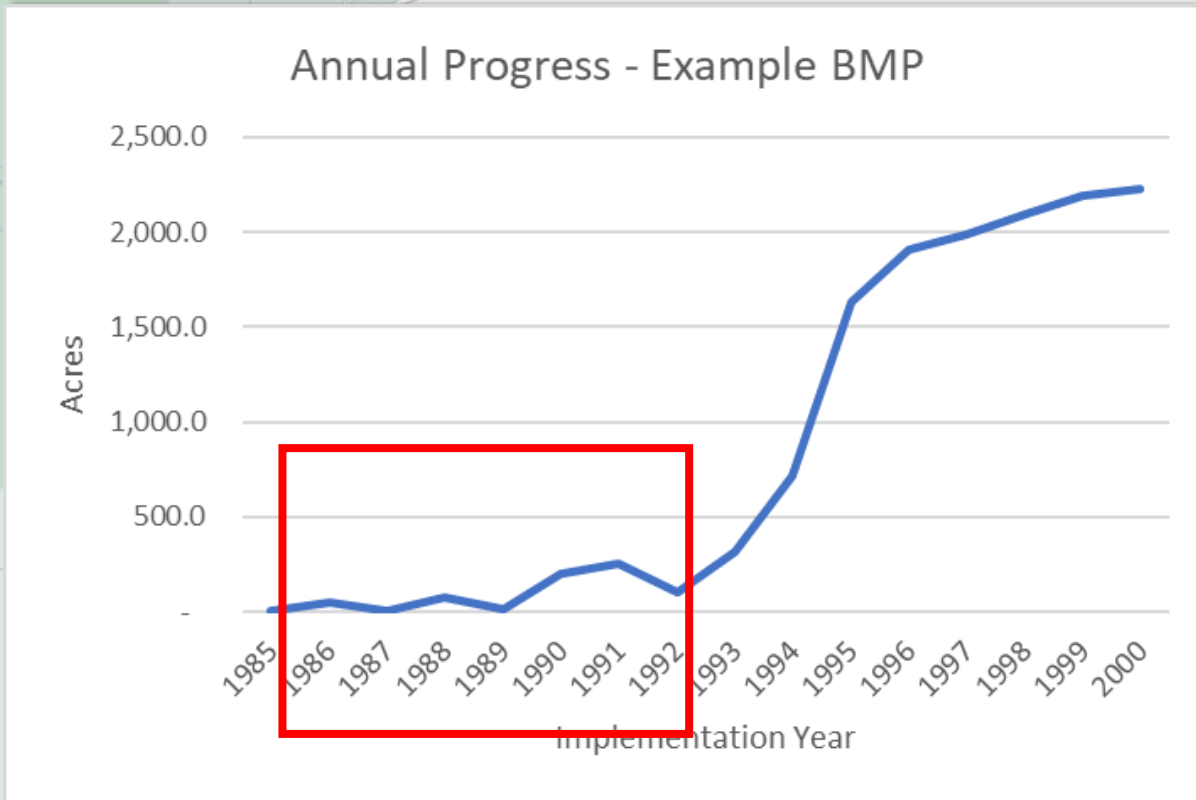
With EPA guidance, we "smoothed" the line out to accommodate model requirements

With EPA guidance, we "smoothed" the line out to accommodate model requirements

By "cleaning up" our historic data, we shifted the true implementation year of the BMPs

- Completed this process for all of our BMPs – ag & urban!

- Shifting implementation year for historic data cleanup had unanticipated impacts to inspecting to BMPs.

- BMPs fell out of lifespan earlier than they should, because we adjusted their modeled implementation year

What's the fix?

Go back to original records before BMP historic cleanup

….But you need a functioning database to be able to do that!

2. BMP Database

- DE had a BMP reporting database developed with EPA contractual assistance during Phase I WIP

- Inputting inspection records wasn't a part of the original scope, so contractor hired again to add inspection records as a column in the schema

- Database tended to be "buggy" and often required a lot of assistance from contractor and manual submittals through NEIEN

- Throughout this process, we noticed unique BMP identifiers were changing every time we re-entered data. Resubmit data 10+ times/progress period

- How do you get back to original record to enter inspection information if unique BMP ID changes with every data submission?

- Database bugs = fatal errors

- Contractor no longer willing to maintain database

New database!

- Worked expeditiously in 2019 to create new BMP Tracking and Reporting Tool for 2019 BMP Progress submission. Completed in 9 months!

- Original focus was getting database up and running for 2019 progress submission

- Would tackle historic BMP data once progress was submitted

- Winter 2020 = COVID
  - With shifting priorities, inputting extrapolated historic BMP was put on the backburner and we focused on gathering 2020 BMP progress data

2020 Progress submission

- Submitted 2020 Progress smoothly

- New database only houses 2019 & 2020 data

- How do we submit inspection information for BMPs from 1985-2018?
  - Unique BMP IDs were unknowingly edited in old database, so no easy way to link inspection information back to original record
  - True implementation year of BMP was extrapolated so model no longer reflects accurate data

DELAWARE DEPARTMENT OF
**NATURAL RESOURCES AND
ENVIRONMENTAL CONTROL**

Next steps for database

Contractual assistance to go back to original records prior to BMP historic cleanup

Input original records into new database

Input inspection records for historic BMPs

GOAL = complete by Dec. 1, 2021

What's the impact?

Very few inspection records for DE

Count of DE Expired BMPS

DELAWARE DEPARTMENT OF
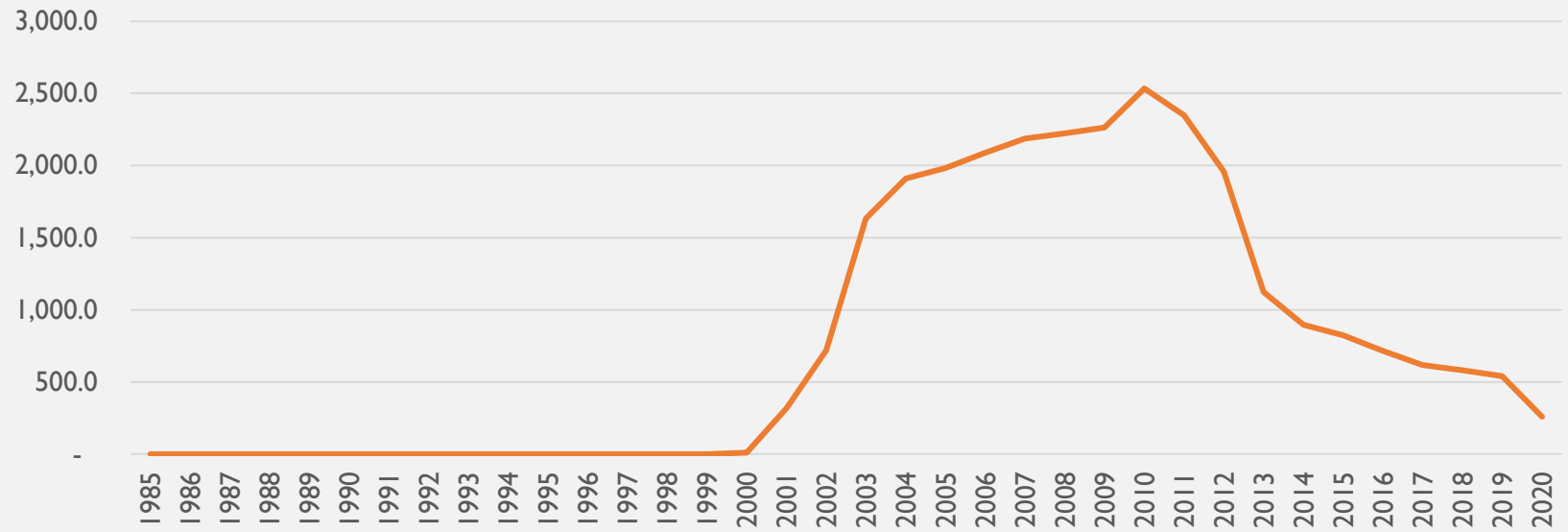**NATURAL RESOURCES AND ENVIRONMENTAL CONTROL**

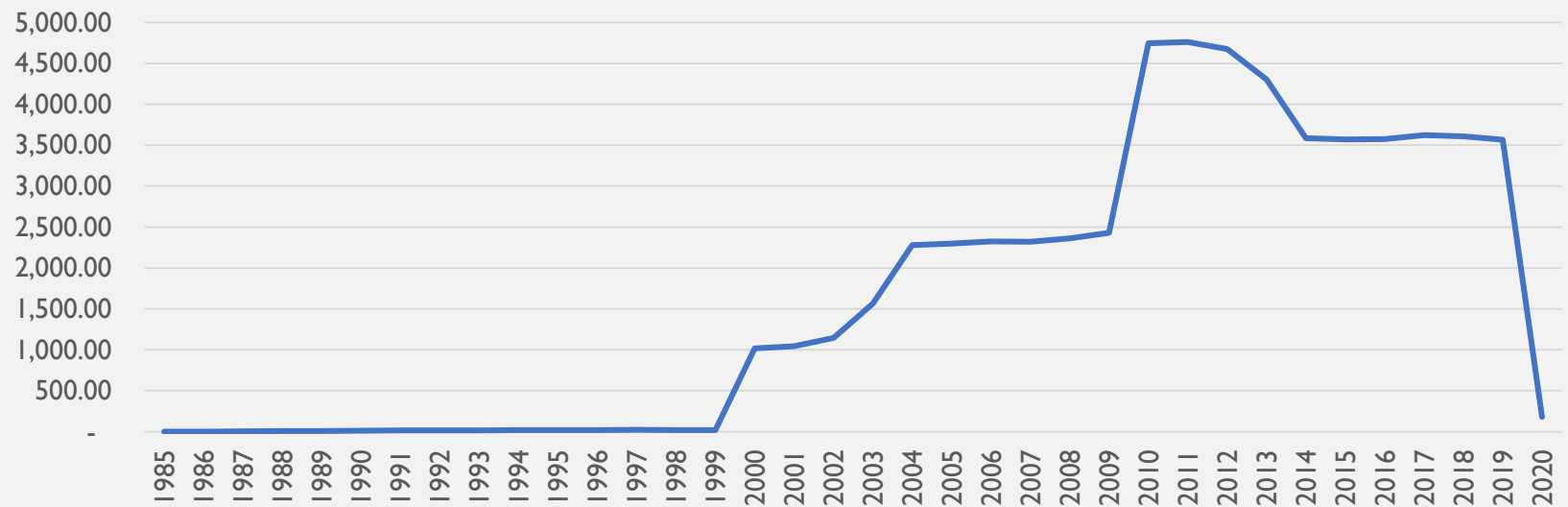|	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Grand Total
Animal Waste Management Systems (All Types)	7	11	16	18	10	31	44	29	29	16	16	20	40	25	44	24	26	19	23	8						456
Composting Facility				3	10	16	26	27	47	32	41	32	42	19	26	20	13	14	10	2						380
Conservation Plans																						7	10	10	9	36
Exclusion Fence with Grass Buffer	1	2	2	2	2	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	52
Filter Strip		1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1				2		23
Grass Buffers		1	1	2	1	2	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	25
Hardwood tree planting	1	1	1	1	1	2	1	1	1	1	1	1	2		1		2	1	1		1	1	1	2	3	29
Land Retirement										1	1	1	1	1	2	29	5	49	7	7	5	6	2	4	2	123
Permanent wildlife habitat		1						2	1		3											1	2		1	11
Riparian Forest Buffer															1	29	3	53	11	6	2	2	5	12	5	129
Riparian Herbaceous Cover														1		15	5	61	6	5		1	4	3		101
Streambank Stabilization																1	8	9	3	6	4	5	3	4		43
Water Control Structure	1	5	3	4	3																			1		17

19

Count of Expired BMPS

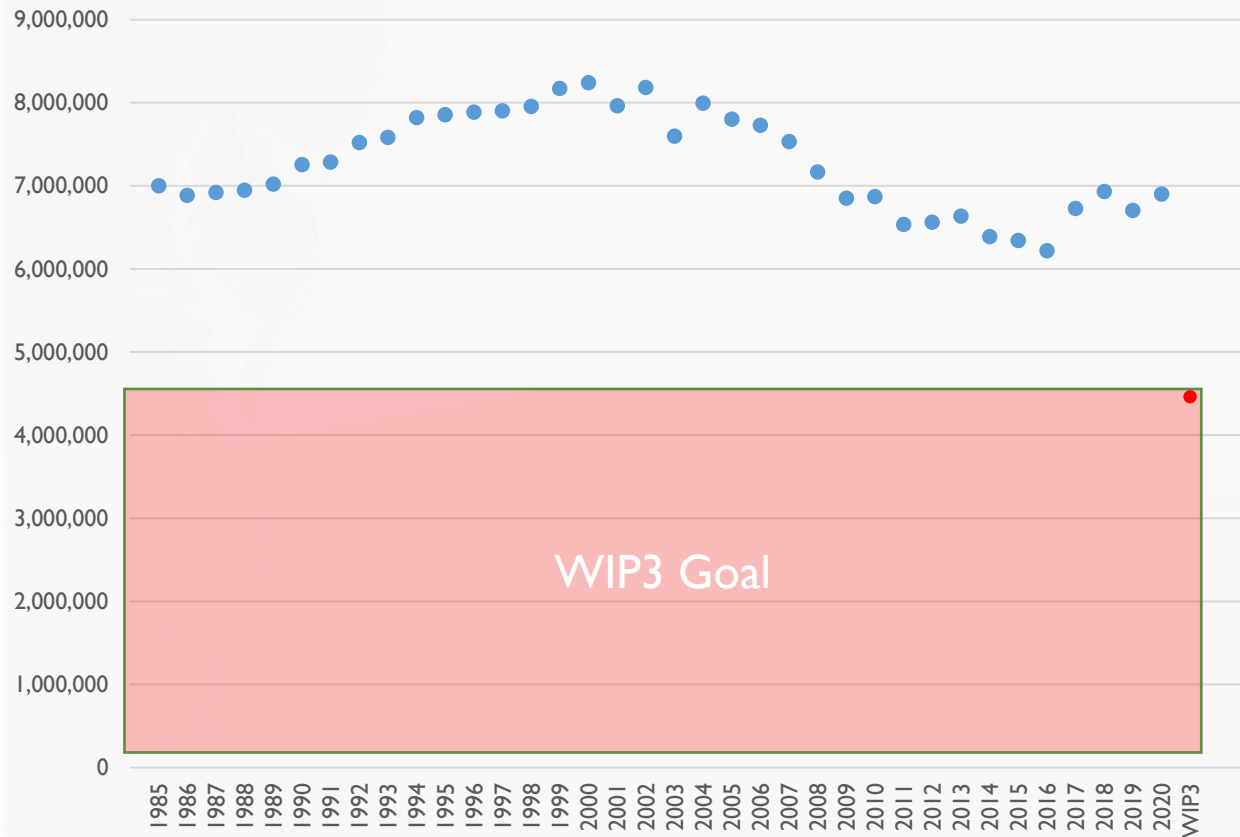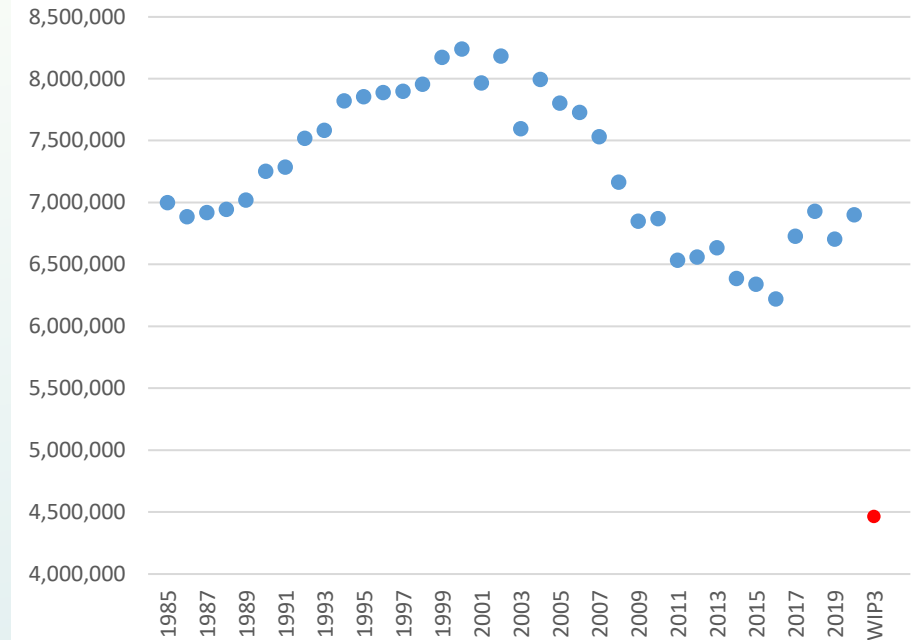|	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Grand Total
Animal Waste Management Systems (All Types)	7	11	16	18	10	31	44	29	29	16	16	20	40	25	44	24	26	19	23	8						456
Composting Facility			3	10	16	26	27	47	32	41	32	42	19	26	20	13	14	10	2							380
Conservation Plans																						7	10	10	9	36
Exclusion Fence with Grass Buffer	1	2	2	2	2	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	52
Filter Strip		1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1						2	23
Grass Buffers		1	1	2	1	2	1	1	1	1			1	1	1	1	1	1	1	1	1	1		1	1	25
Hardwood tree planting	1	1	1	1	1	2	1	1	1	1	1	1	2		1		2	1	1	1	1	1	1	2	3	29
Land Retirement										1	1	1	1	1	2	29	5	49	7	7	5	6	2	4	2	123
Permanent wildlife habitat		1						2	1		3										1	2		1		11
Riparian Forest Buffer														1	29	3	53	11	6	2	2	5	12	5		129
Riparian Herbaceous Cover														1		15	5	61	6	5		1	4	3		101
Streambank Stabilization																1	8	9	3	6	4	5	3	4		43
Water Control Structure	1	5	3	4	3																			1		17

Forest Buffers

Grass Buffers

Impacts to DE loads- Nitrogen
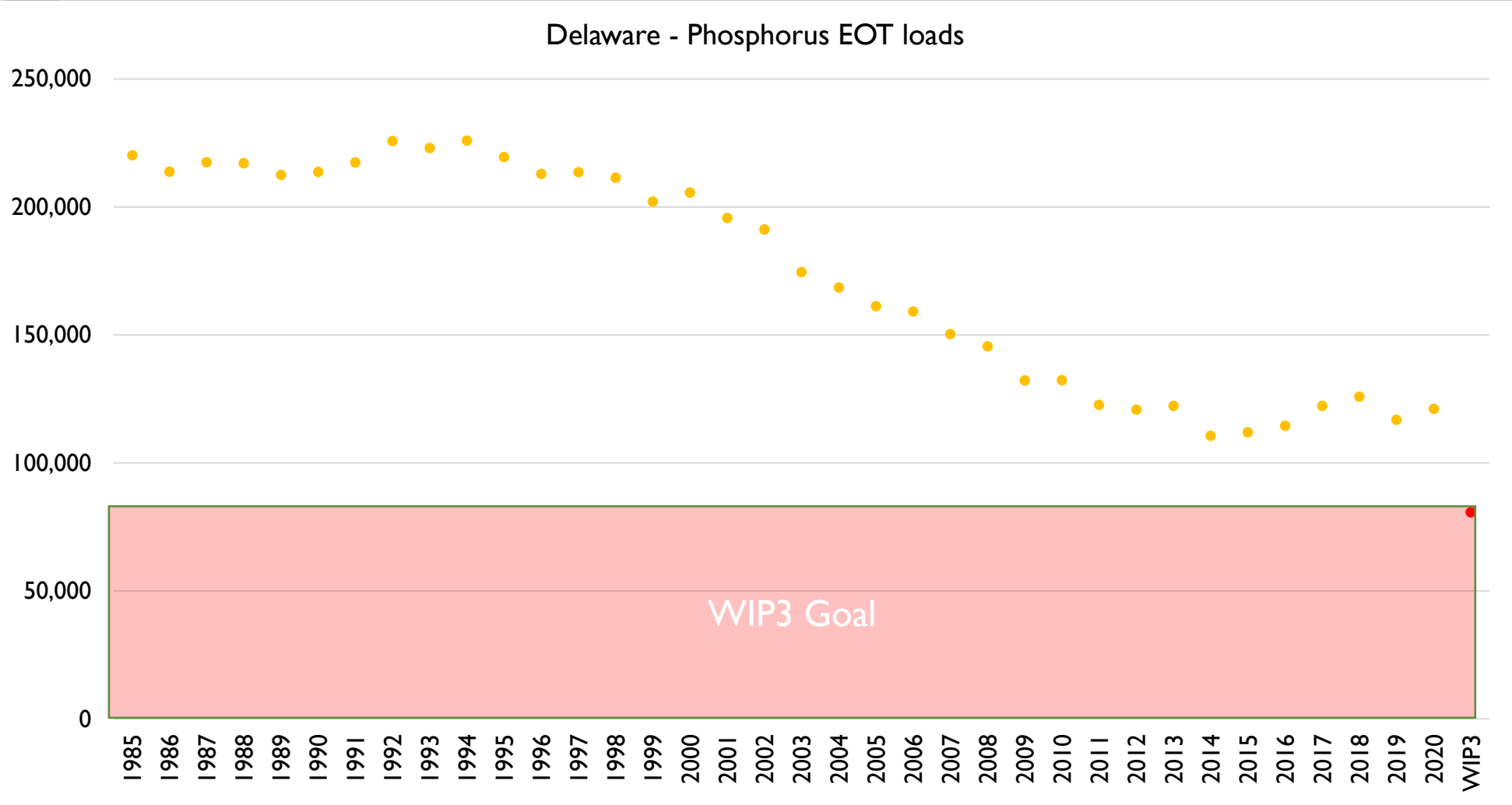

Delaware - Nitrogen EOT loads
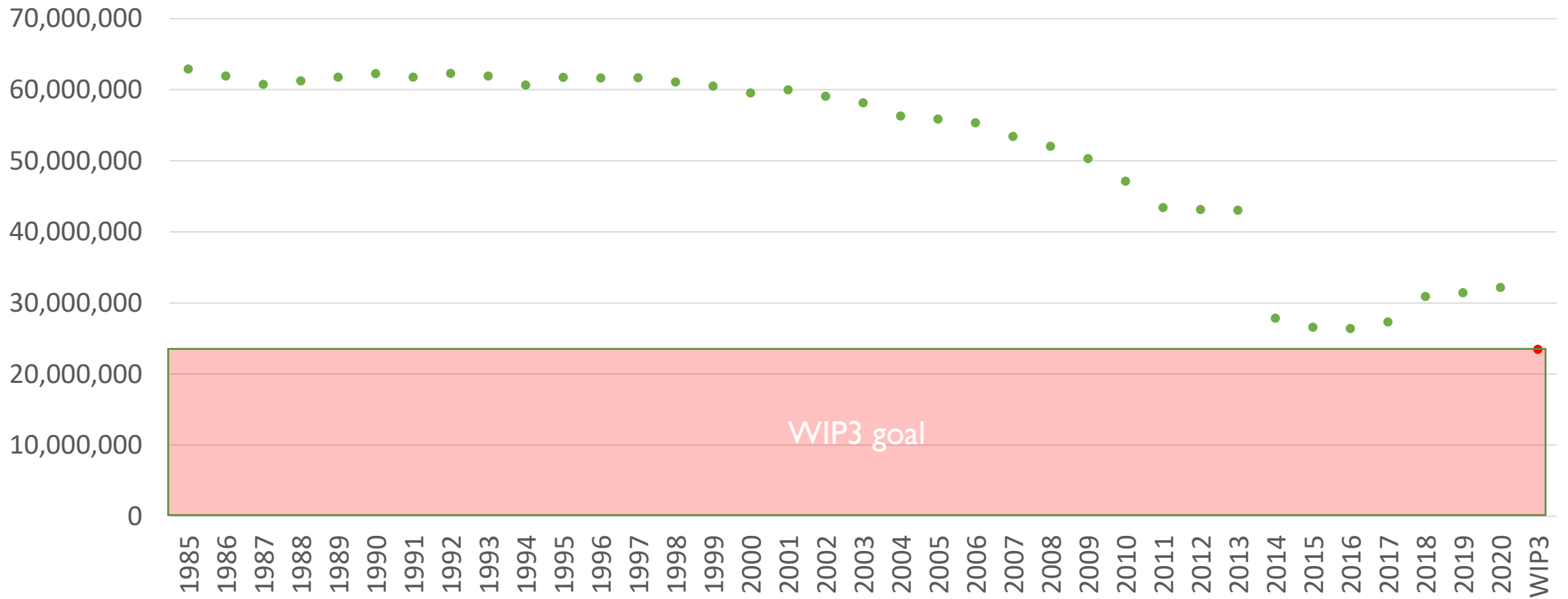
Phosphorus

Delaware - Phosphorus EOT loads

Sediment

Delaware - Sediment EOT loads

Unanticipated impacts

- Model is showing that we have a lot of available landuse for BMPs, but in reality, the BMPs are already there. This is compounding our problem.

- Model is not reflecting on the ground implementation!

- Partners are losing motivation to do more when the model is showing that we are losing acres of BMPS

Fix to database problem?

- New database that can accept inspection information ✓

- New database that houses non-extrapolated data

- Inspect BMPs!

3. 1619 Agreement

- Partners (3 Soil Conservation Districts) are inspecting BMPs, but inundated with trying to implement new BMPs

  Priority = inspections or new implementation?

- Can we hire internally/contractually to inspect BMPs?

  NO!

DE *does not* have 1619 Agreement, therefore we *do not* know exact location of our federal BMPs.

How do we inspect a BMP if we do not know it's exact location?

Delaware's hurdles

1. Historic BMP cleanup

    Fix = go back to original dataset

2. Database issues

    Fix = new database

3. 1619 Agreement

    Fix = ?

Question for the group:

Are BMP Verification Plans working as originally intended or having unexpected impacts?

Is it time to re-evaluate or adaptively manage our BMP Verification approach as a whole?

Brittany Sturgis

DE Chesapeake Bay Watershed Coordinator

302-739-9922

Brittany.Sturgis@delaware.gov