



BMP and Wastewater Data Verification 2020 Progress Scenario

Jeff Sweeney
Environmental Protection Agency
Chesapeake Bay Program Office
sweeney.jeff@epa.gov
410-533-6617

Watershed Technical Workgroup Meeting
February 4, 2021



2020 Progress Scenario

Verification

- Trying to ensure full credit of quality data
 - Jurisdictions have been provided with detailed description (standard operating procedures) of how the verification analyses are conducted
 - Includes detailed descriptions of how procedures are consistent with the CBP partnership's 2014 BMP verification framework document
 - Data analyses (workbooks) can, certainly, be provided
- Based on the analysis and questions, data needed to be corrected, or explanations are needed for POSSIBLE anomalies in the data



2020 Progress Scenario

Verification

- BMP Verification Program Plans (QAPP's) need to be up-to-date
 - QAPP needs to describe how, exactly, reported compliance levels are accounted for and calculated for each type of Nutrient Management (core and supplemental, both N- and P-based)
 - How are raw data used and calculations done to determine the degree to which landowners are following their plans?

Strengthening Verification of BMPs Implemented in the CBW:

A Basinwide Framework



On May 4, 2011, the NRC [National Research Council of the National Academy of Sciences] released the report, “Achieving Nutrient and Sediment Reduction Goals in the Chesapeake Bay: An Evaluation of Program Strategies and Implementation.” The NRC Committee reached a number of findings and conclusions about the Bay Program’s BMP tracking and accounting efforts, including:

- Accurate tracking of BMPs is of paramount importance because the Bay Program relies upon the resulting data to estimate current and future nutrient and sediment loads to the Bay.
- The current accounting of BMPs is not consistent across the Bay jurisdictions. Additionally, given that some source-sector BMPs are not tracked in all jurisdictions, the current accounting cannot on the whole be viewed as accurate.
- The committee was unable to determine the reliability and accuracy of the BMP data reported by the Bay jurisdictions.
- The committee was not able to quantify the magnitude or the likely direction of the error introduced by BMP reporting issues.

Strengthening Verification of BMPs Implemented in the CBW: A Basinwide Framework



There are local, state, and federal programs with strong BMP verification programs in place and working effectively in carrying out the principles. However, the Bay Program partners recognize none of the seven jurisdictions' existing BMP tracking, verification and reporting programs, across all sectors and habitats, fully achieves all five principles. The National Academy of Science's in-depth evaluation of the Bay Program partners' existing practice accountability systems made that very clear.



2020 Progress Scenario

Verification

- There are nine recommendations directed towards jurisdictions in documenting their BMP verification and compliance programs.
- The verification framework document encourages jurisdictions to consult the following four products developed by the BMP Verification Review Panel:
 - 1) Design Matrix (Table 5)
 - 2) Decision Steps (Table 6)
 - 3) Components Checklist (Table 7)
 - 4) Design Table (Table 8)



EPA Grant Guidance

- “In the event that data are not submitted in time, are inaccurate, or do not use the appropriate NEIEN or wastewater formats for the CBPO to calculate annual progress, Milestones, or other scenarios, CBPO will use the previous year’s QA’d data submitted by the jurisdiction or will not account for implementation of the BMP or control measures or reassign acres to other land uses in the segment.”



EPA Grant Guidance

- “In the event that the data does not follow approved CBP verification guidance or an assurance of quality of submitted BMP data is not described in an up-to-date QAPP, CBPO will use the previous year’s QA’d data submitted by the jurisdiction or will not account for implementation of the BMP or control measures or reassign acres to other land uses in the segment.”
- Grant recipients can use CBIG and CBRAP grant funds to support these data submission activities.



Environmental Data Reported to EPA

- Quality Assurance Project Plans (QAPPs) for the collection and use of environmental data are needed from signatory jurisdictions and headwater states
 - Point source data and non-point source BMP implementation levels reported annually to the Chesapeake Bay Program (CBP) office for use in the CBP Watershed Model
 - QA/R-5: EPA Requirements for Quality Assurance Project Plans
 - Important elements for nonpoint source data, under section 2.2.9 “Non-direct Measurements” and Chapter 3 “Projects Using Existing Data”



2020 Progress Scenario

Verification – Loads Assessment

- Trends of modeled nutrient loads with comparisons to goals
 - Loads reflect all changes to the historic BMP record reported by jurisdiction
 - For draft 2020 Progress scenario BMP and wastewater verification, the model run was 1/1/21, CAST19
 - Major sources with $> 2\%$ load reductions 2019–2020
 - Major sources with $> 2\%$ load increases 2019–2020



2020 Progress Scenario

Verification – Loads Assessment

- For accomplishments, e.g., >2% load reductions from 2019, Bay Program communications would like to highlight programs and practices that were strengthened over the past year through additional funding, legislative actions, etc. – along with the release of information for the annual Reducing Pollution Environmental Indicator.



2020 Progress Scenario

Verification – Loads Assessment

- For 2019-2020 nutrients load changes:
 - [X]% of the reductions are attributed to [sector]
 - 2019-2020 [sector] nutrient reductions are [X] times the historic annual rate since the TMDL
 - This is the [greatest, 2nd, 3rd, etc.] annual lb. reduction from [sector] in the 35-year record of the Bay Program
 - What does [jurisdiction] attribute the record-setting 2019-2020 nutrient load reduction to, e.g., upgrades to which significant facilities (name, NPDES #, type of upgrade), change in flows, data errors, etc.?



2020 Progress Scenario

Verification – Loads Assessment

- These findings are from a preliminary verification analysis of a draft Progress scenario
- They are not what could be published as part of a final 2020 Progress numeric assessment



2020 Progress Scenario

Verification – Loads Assessment

- These findings are from a preliminary verification analysis of a draft Progress scenario
- They are not what could be published as part of a final 2020 Progress numeric assessment
 - The loads and BMP history used in the verification analyses are not the “official” versions of Progress assessments
 - The verification analysis uses reruns of historic Progress scenarios so that changes over time reflect a jurisdiction’s latest data.



2020 Progress Scenario

Verification – Loads Assessment

- The information about [X] percent of reductions from a source; [X] times the historic annual rate; [“greatest”] in the 35-year record of the Bay Program – are highlighted because they’ve been flagged by the verification analysis and need investigation and/or explanation and/or QAPP citation, etc. (generally, the more detail, the better)
- This information does not represent views of the EPA or the organizations of those assisting with the verification analysis at the CBP office.
- Verification, largely, begins with the responses from jurisdictions



2020 Progress Scenario

Verification – Loads Assessment

- The information about [X] percent of reductions from a source; [X] times the historic annual rate; [“greatest”] in the 35-year record of the Bay Program – are highlighted because they’ve been flagged by the verification analysis and need investigation and/or explanation and/or QAPP citation, etc. (generally, the more detail, the better)
 - Execution of specific WIP component, legislative action, etc.
 - Data change or data error – looking over the entire history, not just 2019–2020
 - Both or other



2020 Progress Scenario

Verification – BMP Assessment

- BMPs with a 2019-2020 implementation rate more than double the long-term annual rate
 - Like loads, BMPs reflect all changes to the historic BMP record reported by jurisdiction by 1/1/21
 - Verification analysis does not use “official” BMP history



2020 Progress Scenario

Verification – BMP Assessment

- For each BMP, please explain the significant increase in the rate of implementation between 7/1/19 and 6/30/20 compared to the longer-term annualized implementation rate since the TMDL (2009–2019).
 - Does the recent change in the implementation rate represent 1) stronger programs yielding more on-the-ground implementation, 2) new/changing source of data, 3) both, 4) other?
 - The more detail, the better



2020 Progress Scenario

Verification – BMP Assessment

- Please explain why [X]% of the year 2020 records among [X] BMPs have implementation dates of [single day]
 - NRCS and FSA data provided by USGS?
 - Other programs/practices for which implementation dates are not being tracked?
 - Are there other sources of agricultural BMP data that may have cost-shared the projects with NRCS and FSA?



2020 Progress Scenario

Verification – BMP Assessment

- Thorough description of practice in BMP Verification Program Plan (QAPP) may be needed
- Identify sections and page numbers in the QAPP where there are explanations of all data sources and the quality of the data (type of inspection and compliance programs, new data source, etc.)
- BMP charts for each of the highlighted practice



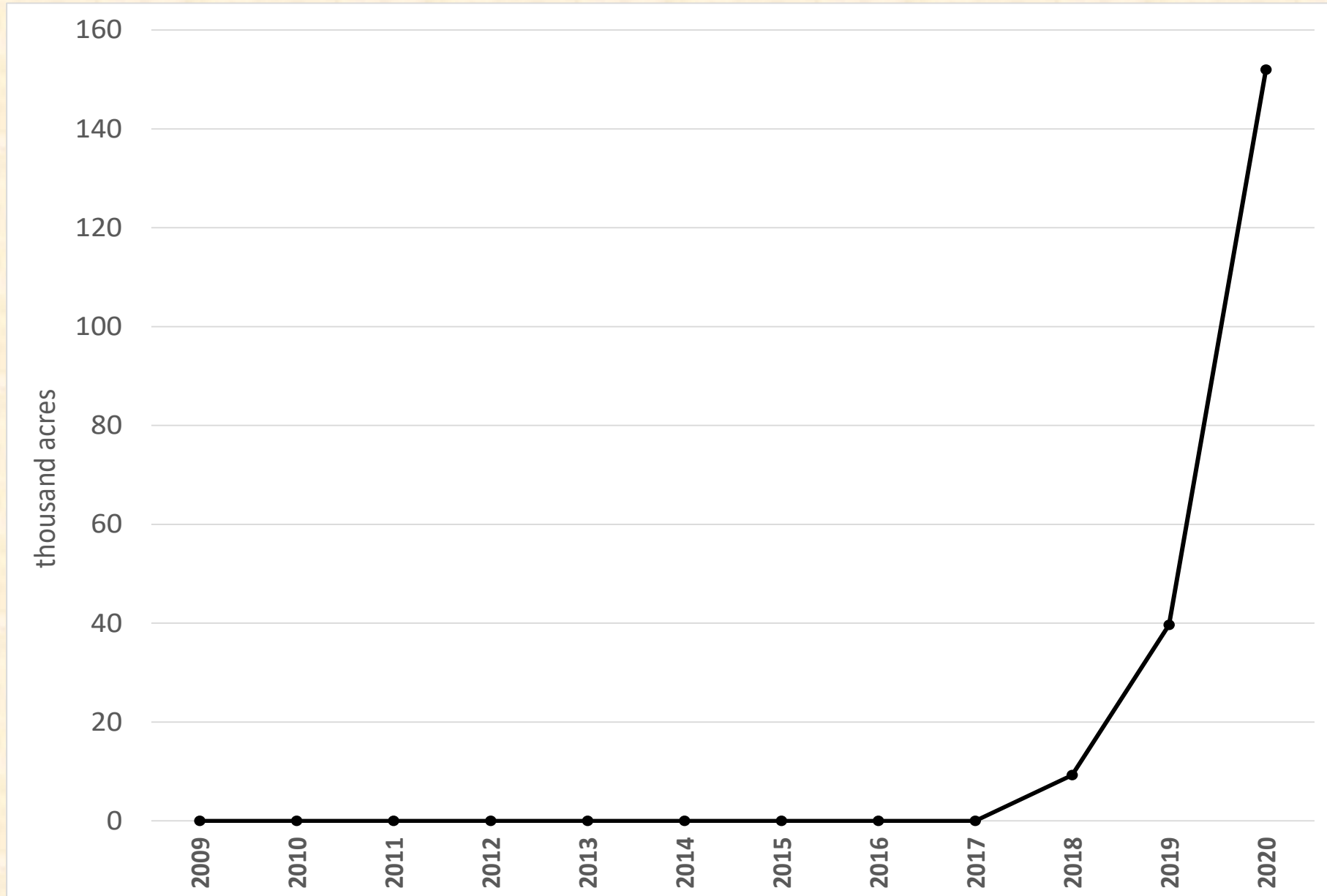
2020 Progress Scenario Verification Transparency

- Once 2020 Progress scenario is finalized, verification analyses and responses are published along with QAPPs
 - CB Program > BMP Verification > Additional Resources



2020 Progress Scenario

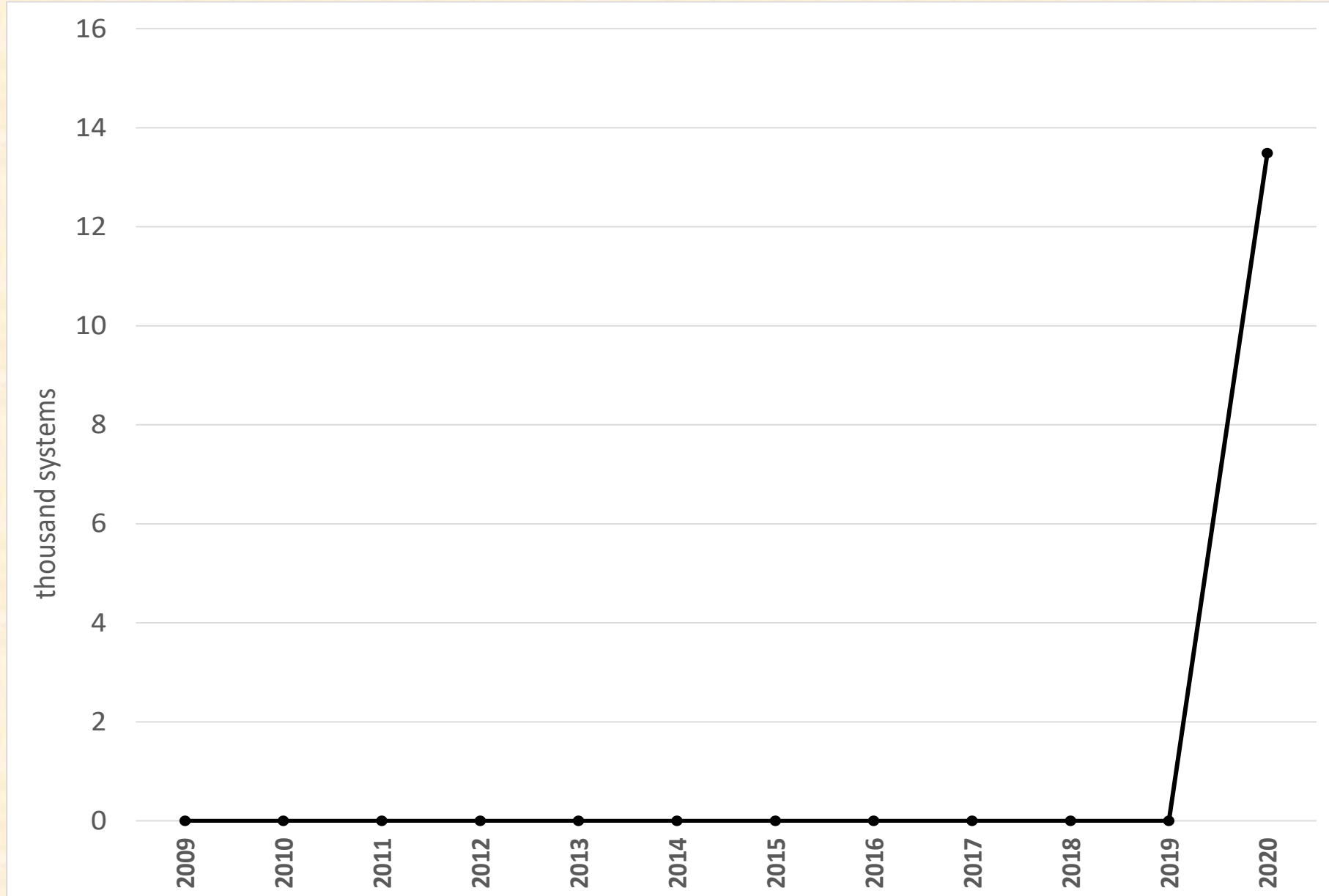
Verification Discussion





2020 Progress Scenario

Verification Discussion





2020 Progress Scenario

Verification Discussion

- BMP data needs to best reflect annual on-the-ground changes due to management action through time for as far back as possible
- If same dataset does not have any history, use others that are relevant – to best back-cast the change
 - Consider when BMP program(s) began
- If there is no history (including relevant alternative datasets), report just the change from the previous year – and add new implementation to the last point each year forward



2020 Progress Scenario Verification Discussion

- An inventory of BMPs in one year should include accurate implementation dates – to the best degree possible
- Do not submit an entire inventory performed in the current year as BMPs that were installed or implemented this year.
- Err on the conservative side



2020 Progress Scenario

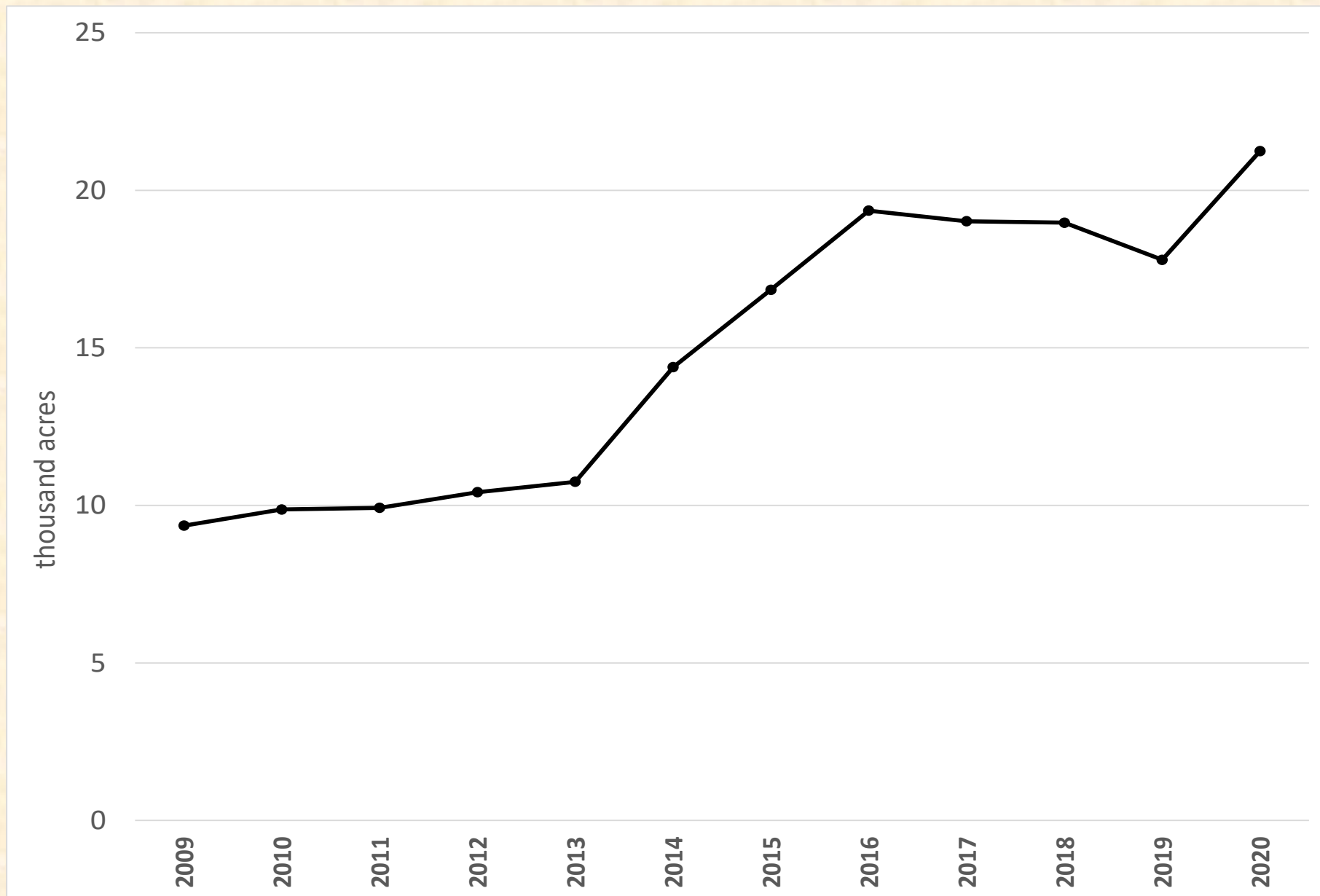
Verification Discussion

- If a BMP definition changed or new subsets were created with different definitions (approved Expert Panel reports), the entire history needs to be revised – following guidelines
- Do not shift numbers among new categories in a single year if that does not reflect annual on-the-ground management actions



2020 Progress Scenario

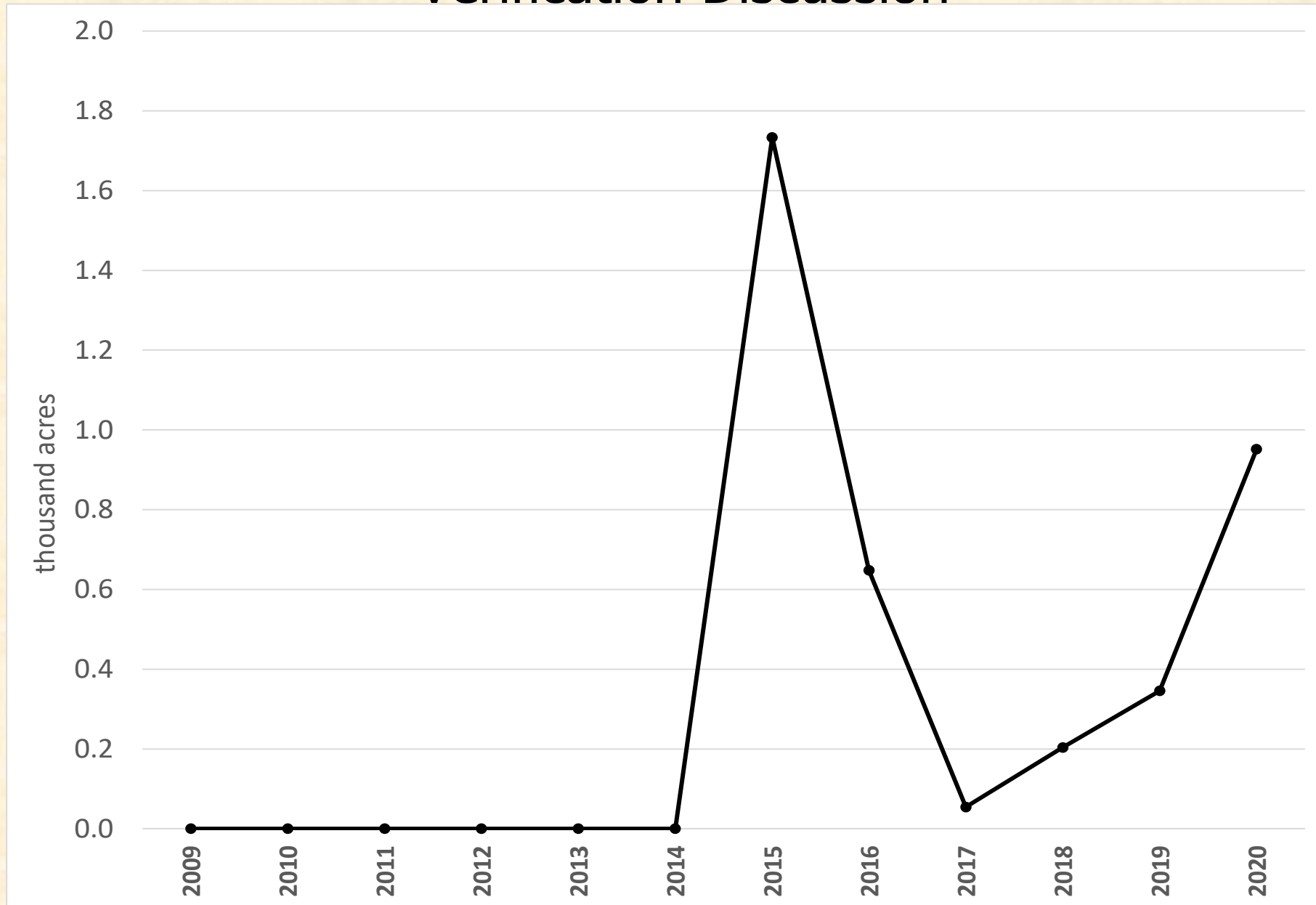
Verification Discussion





2020 Progress Scenario

Verification Discussion





2020 Progress Scenario

Verification Discussion

- Suggestion for analysis not to use 2009 and 2019 endpoints and not include years with “0” reported
 - Endpoints are the same method as used for tracking loads progress – where we are with respect to goals
 - 2009 to 2025 with 60% of reductions by 2017 midpoint



2020 Progress Scenario

Verification Discussion

- Suggestion to do analysis on data submitted to NEIEN rather than CAST output
- Suggestion to better consider nuances in the data



2020 Progress Scenario

Verification Discussion

- Suggestion to relate analysis results to programmatic accomplishments submitted as part of milestones
 - It is primarily a jurisdiction's responsibility to definitively connect programmatic accomplishments to spikes in reported data
 - That is typically not part of a QAPP which describes data sources, tracking, the strength of compliance programs, re-inspection and maintenance of projects, etc.



2020 Progress Scenario

Verification Discussion

- Other suggestions for discussion?