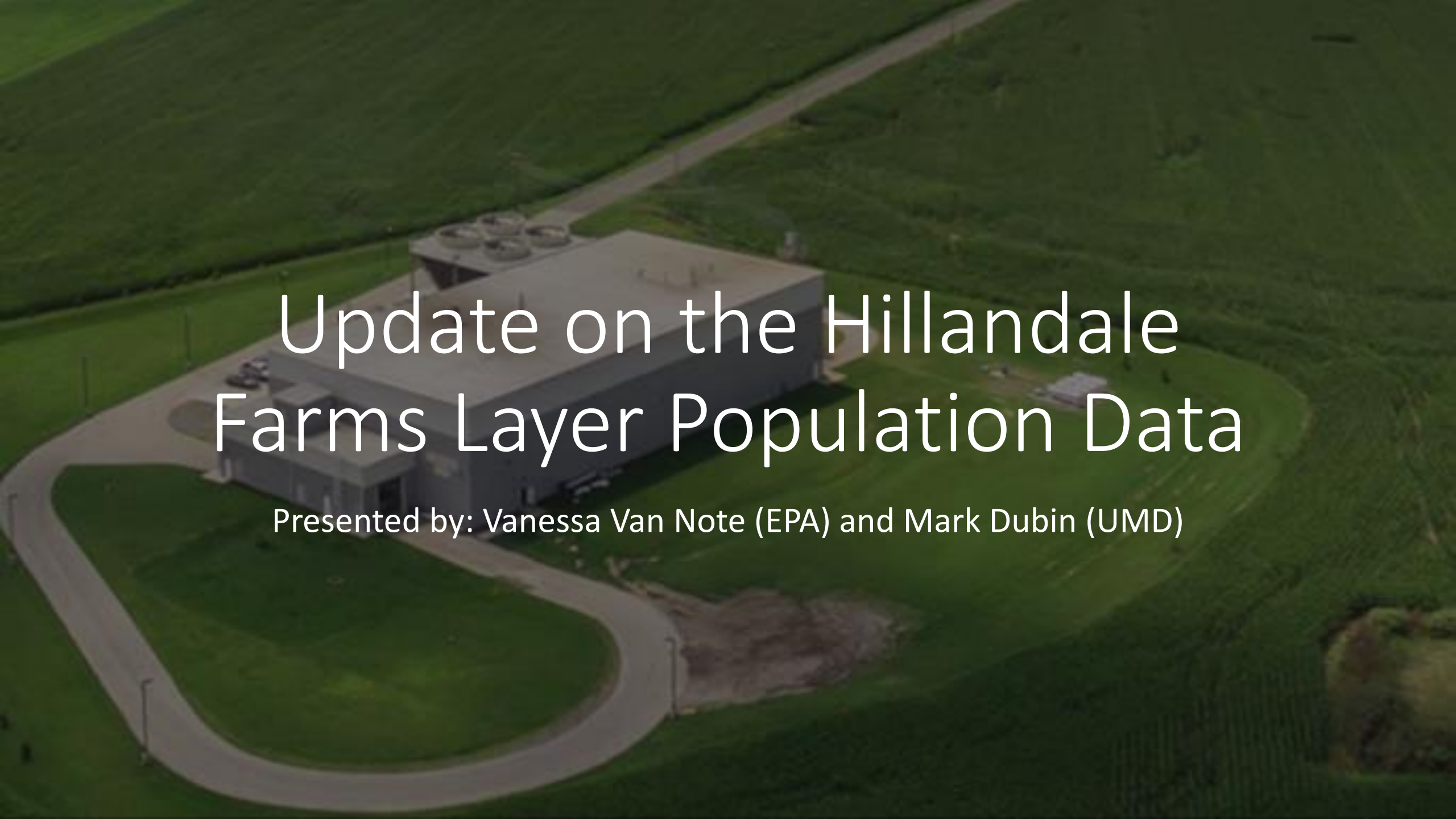

Update on the Hillandale Farms Layer Population Data

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The Problem

- **Hillandale Farms, Inc.**
  - CAFO layer facilities in Adams & York Counties are not accounted for in CAST.
  - Hillandale Farms is the largest CAFO in PA.

- **How do we know this?**
  - 2017 Ag (5-year) Census data does not indicate farm counts or population data that would indicate CAFOs of this size at the county or state scales.

- **The solution?**
  1) Collect data from all available sources
  2) Develop a methodology to incorporate the Hillandale Layer population into the Adams and York County datasets.

Topic of today's discussion

The methodology cannot be developed until all data is collected.

Why is this being brought to the WTWG?

Task 7 on the CAST-21 Workplan – AgWG and WTWG

We will need the WTWG's input on:

Approving a methodology	Developing SOPs for future incorporation of additional sources of animal population data into CAST.

Today we will cover:

The scale of the problem and what we know.	Additional data sources available to us to account for this layer operation and other commercial layer facilities in Adams and York Counties.

Incorporating this data is a Two Step Process

1. Change product for Phase 6

– 1995 to Present

2. Included in the calibration of Phase 7

-1984 to Present

The Scale of the Problem

- For Adams County (# of layers)

2019 Progress CAST	2017 Ag Census	Hillandale Facility (2019)
127,004	210,832	4,735,085

For York County (# of layers)

2019 Progress CAST	2017 Ag Census	Hillandale Facility (2019)
246,996	274,531	1,220,184

374,000 Layers (CAST 2019 Progress) vs 5,955,269 Layers (Hillandale Facility)

What We Know

The 2017 (5-year) Census of Agriculture does not account for the Hillandale Facility Layers.

- According to NASS, if the population was estimated, it would have been estimated at and included in the county numbers.

The NASS Annual Survey has a higher state-wide population number than the 5-year Census.

- 28.2 mil (**PA Annual Survey) -** 26.3 mil (**PA 5-Year Ag Census**) = **1.9 mil**
- **The difference of 1.9 million layers does not account fully for the reported population** from the Hillandale Farms facilities at ~5.8 million layers in 2017 and ~5.9 million in 2019 (company data).

The Challenge

- Collecting reliable sources of data that we can access on a recurring basis per the CAST schedule, preferably at no cost.

- Integrating different sources of data.

- Creating a new dataset for Adams and York Counties as a whole (not just adding the Hillandale Farms layers to the existing population in the two counties).
  - Why? Layer population data is integrated into the model at the county scale.

  - **Our Goal:** Integrate additional data, where needed, will be comparable with existing NASS population data at the county scale.

How do we currently incorporate layer data into CAST?

1. Layer Population (Total Inventory) at State/County scale are taken from the NASS (5-year) Ag Census from 1982- 2017.

2. Estimates are calculated for D Counties.
   - Counties for which inventory data is published **ONLY** as part of state-wide total to protect privacy.

3. Linear Interpolation is used to calculate data for in between years based on the reported Ag Census years.

4. Ratio for CAFO/AFO, submitted by states, is used to determine the number of Confined/Non-Confined Animal population, which in turn derives the Feeding Space Land Use.

We will incorporate the additional data using the interpolation method we currently use to forecast and estimate population numbers.

Available Layer Population Data Sources

1. 2017 NASS (National Agricultural Statistics Survey) **Census of Agriculture**
2. **NASS Annual Statistical Survey**
3. Hillandale Farms **Facility Layer Inventory Data**
4. Nutrient Management Plans **(NMPs)**
5. **CAFO** (Concentrated Animal Feeding Operation) Permits
6. Pennsylvania Manure Management Plans **(MMPs)**

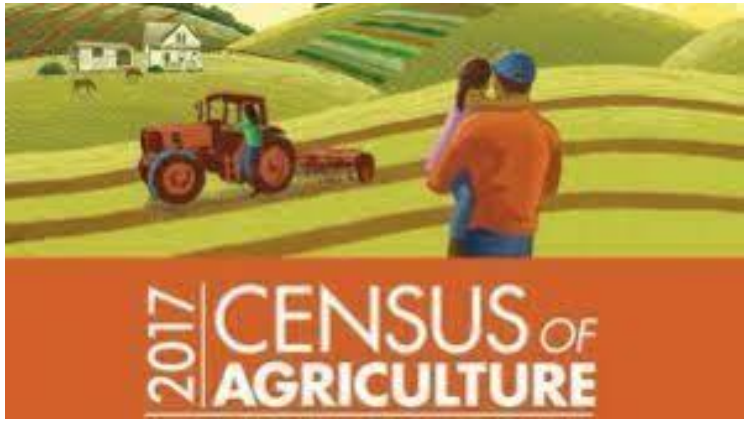
1. 5-Year Ag Census
2. NASS Annual Survey
3. Facility Inventory
4. NMPs
5. CAFO Permits
6. MMPs

Benefits of Using the Ag Census

- Current CAST data source
- **Scale:** County
- **Frequency:** every 5 years
- **Access:** Reliable (public accessibility)
- NASS methods largely maintained between Census years. Consistency is paramount.
- No cost

Cons of using (only) the Ag Census

- Data Pool: Producer self-reported
- Producer focused.
- Does not account for Hillandale Farms populations in Adams & York Counties.



1. 5-Year Ag Census
2. NASS Annual Survey
3. Facility Inventory
4. NMPs
5. CAFO Permits
6. MMPs

Benefits of Using the NASS Survey

- **Frequency:** Annual
- **Access:** Reliable (public accessibility)
- Company focused – more accurate layer count
- Accounts for more layers in PA than the 5-year Ag Census.

Con of Using (only) the Annual Survey

- Only a state-wide animal head count is provided for each state's major ag production livestock and products only.
- **Scale:** State-wide
- We cannot assign animal (layer) numbers to counties using only the 5-year Ag Census and the NASS annual survey due to the Hillandale Population not being accounted for in the 5-year Ag Census.
  - Ex. Adams makes up 0.8% of PA Layers in the Ag Census; but does not make up 0.8% of layers in the NASS Survey.

1. 5-Year Ag Census
2. NASS Survey
3. Facility Inventory
4. NMPs
5. CAFO Permits
6. MMPs

Benefits of Using the Facility Data

- **Scale:** Facility
- **Frequency:** Inventory data going back to 1985. (One data point per year.)
- Exact head count of layers at each facility for the day of the year the data was recorded.

Con of Using (only) the Facility Data

- **Access:** Obtaining facility data requires a dedicated method and process to be able to continue providing annual data.
- The source is a direct source provider, and the data will need to be cross checked/verified with independent sources.

Differences between the 5-Year Ag Census and the NASS Annual Survey

5-Year Ag Census	NASS Annual Survey
Focused on “Contractee” or Grower/Producer	Focused on “Contractor” or Company
The resulting population is producer focused.	The resulting population is company focused.
Occurs every 5 years	Occurs Annually
Estimates County Level data	Estimates state-wide data

- NASS has informed us the most reliable data for Layer Count is the agriculture estimates in the NASS Annual Survey.

1. 5-Year Ag Census
2. NASS Annual Survey
3. Facility Inventory
4. NMPs
5. CAFO Permits
6. MMPs

Benefits of Using NMPs

- **Frequency:** Renewed every 3-years or less, which means the NMP can have a more accurate layer number than the CAFO, or 5-year permit.
- Have access to a full history for the Hillandale Farms operations.
- NMPs are available for permitted and non-permitted operations.
- **Availability:** NMPs are accessible to the state and the Bay Program and exist for all CAFOs and CAOs in PA.

Cons of Using (only) NMPs

- The data is not inventory data. The NM plan records the full capacity of the facility/site.
- The NMP data is renewed every 3-years or less.
- We do not have access to a full history of NMPs for all operations in Adams County.
- **Access:** For Hillandale Farms, the data was collected by one individual. This is not a sustainable data collection method if there is a need for obtaining historic data due to accessibility of NMP's.

1. 5-Year Ag Census
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Benefits of Using CAFOs

- The permit number is gives us perspective into the size of the layer operation.
- CAFOs (the most recent and previous permit) are accessible to the Bay Program for Pennsylvania.
- **Availability:** CAFOs are available for all large operations in a county.

Cons of Using (only) CAFOs

- **Scale:** CAFO permits provide a full capacity number, not an inventory number.
  - (The operation can adjust production during that time as long as it does not exceed the permit.)
- **Frequency:** CAFOs are renewed every 5 years or less.
- **Access:** Only have access to the most recent and previous CAFO permits, and CAFO permits are typically for larger scale operations – small to moderate scale operations may be exempt.
  - For Hillandale Farms, the data was collected by one individual.
  - This is not a sustainable data collection method if there is a need for obtaining historic data due to accessibility of permits.

1. 5-Year Ag Census
2. NASS Annual Survey
3. Facility Inventory
4. NMPs
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6. MMPs

Benefits of Using an MMP

- Allows us to obtain information on small operations.
  - Certain operations may not have a CAFO or NMP but have an MMP.

Con of Using (only) MMPs

- **Access:** MMP's are not publically accessible and should be used only if a NMP is not available.
  - The NMP are publicly accessible and independently reviewed and approved.
- For smaller operations not required to obtain a NMP or a permit, the data was collected by one individual.
  - This is not a sustainable data collection method if there is a need for obtaining data due to accessibility of MMP's.

Intersection between NMPs & CAFO Permits

NMP	CAFO Permit
Documents all crop **nutrient** needs and application of all **nutrients** (including manure) to the fields.	Per EPA, Any size AFO that discharges manure or wastewater into a natural or man-made ditch, stream or other waterway. (In PA, a layer CAFO is an operation with more than 82,000 layers.)
3-year plan	5-year permit
Full Capacity Number	Full Capacity Number
	NMPs are required to be planned and implemented for CAFO facilities.
Frequent renewal may lead to more accurate capacity numbers.	CAFOs are renewed less and therefore may not account for operation changes as often as NMPs.

How are MMPs different?

In PA, **MMPs are developed for layer operations that are neither a CAFO, nor a CAO** (a farm with more than 2,000 lbs of animals per acre available for manure application.)

- NMPs are developed for both CAFOs and CAOs.

Next Steps

- Collect
  - 1985-2020 Hillandale Farms Inventory Data
  - NMPs (and/or MMPs) for Layer Operations in Adams County
  - NMPs (and/or MMPs) for Layer Operations in York County
- Determine utility of data sources
- Develop methodology to improve accuracy of layer pop
- **Long term (Phase 7):** Develop SOPs for incorporating new sources of animal population data into the watershed model.

On-going

Dependent on Data Collection

Consideration for the Partnership

- **To consider:** This incorporation of additional data sources is setting a precedent for future data inputs.
- **To consider:** The Hillandale example demonstrates a need for improvement in ag inputs.
  - Intention: Outline a process that has utility with other state or facility data.

- What concerns are there with this task?
  - How do we resolve these concerns?