

# AgWVG Ag Data Input Concerns

August 19, 2021

# CAST-21 Workplan

## Workplan for CAST 2021: Aug 18 Update

**Goal:** Accommodate new data and methods with CAST 2021 for changes that have been approved by the Partnership up until COB Sept. 1, 2021

**Outcome:** A Partnership approved CAST 2021 model that uses the best available science, data and information to inform and support our shared restoration efforts and collective decision-making processes, adhering to our principals of adaptive management

\* The tasks and actions (Tasks 1-8) below represent the priority issues that have been identified by the Partnership and will receive primary focus by the participating entities. Other tasks and actions can be added to this work plan as time and resources allow, and with Partnership approval. Note that not all issues may be fully addressed by the Partnership-established deadlines for updating CAST 2021. Tasks and actions may be applicable to future versions of CAST.

\* **Timelines are the estimated completion dates (month & year) for the investigating body (e.g., CBP office technical staff) to make final presentations about options for the relevant source workgroups to consider.** Agreement about what will be included and excluded from CAST21 depends on votes of members of the workgroups and WQGIT. Approved data and method changes for CAST21 need to be finalized through the WQGIT by Sept. 1, 2021.

— **As each key action is considered and signed off by workgroups and the WQGIT, there will be no determination where and to what degree nutrient and sediment loads would be higher or lower than CAST 2019.** Additional key actions may be added to this workplan if the addition is approved by the WQGIT. CAST 2021 will accommodate all method and data changes approved through the Partnership by COB Sept. 1, 2021 and will be available for review, including loads, Nov. 1, 2021. Comments and questions from jurisdictions are due Dec. 1, 2021 with the final release of CAST21 scheduled for Jan. 1, 2022.

### **CAST 21 Schedule:**

September 1, 2021 – All data and methods approved

November 1, 2021 – CAST-21 Beta release


December 1, 2021 – Jurisdictional comments due

January 1, 2022 – Final CAST-21 release

# CAST-21 Workplan (Working Draft)

\*Approved data and method changes need to be finalized through the WQGIT by **Sept. 1, 2021\***

Questions/  
Comments?

KEY ACTION	STATUS
<b>Task 1:</b> Updates to data & methods that typically occur every 2 years.	<ul style="list-style-type: none"> <li>CAST Data Update Frequency spreadsheet on the <a href="#">CAST Progress Reporting webpage</a></li> </ul>
<b>Task 2:</b> Investigate alternative forecasting methods for ag land uses & animals ✓	<ul style="list-style-type: none"> <li>Nov 19 AgWG: CBPO presentation on 4 methods of forecasting</li> <li>Feb AgWG; See Mar AgWG decision</li> </ul>
<b>Task 3:</b> Investigate 2012-2017 Ag Census change for fallow/idle acres ✓	<ul style="list-style-type: none"> <li>AgWG Sept 17; NASS consulted; no new information; No further action; See Jan AgWG decision</li> </ul>
<b>Task 4:</b> Investigate use of latest landcover & LiDAR imagery to better define changes in total ag (& other land use) acres ✓	<ul style="list-style-type: none"> <li>Oct; Jan; Feb; Apr; New methodology approved, see May AgWG decision</li> </ul>
<b>Task 5:</b> Investigate alternatives for double-crop acre estimates ✓	<ul style="list-style-type: none"> <li>Oct 15 AgWG; NASS consulted- no new information; no recommended change to methodology, see May AgWG decision</li> </ul>
<b>Task 6:</b> Consider supplemental NM for soybeans ✓	<ul style="list-style-type: none"> <li>Dec/Jan/Mar/Apr Ad Hoc</li> <li>Updates Jan/Feb/Mar/Apr/May; See June AgWG decision</li> </ul>
<b>Task 7:</b> QA/QC'd historic & current layer pop. data for Hillandale Farms (PA) 	<ul style="list-style-type: none"> <li>Feb Ad Hoc; July 1 WTWG; Aug 5 WTWG decision tabled; <b>Aug 19 AgWG</b></li> </ul>
<b>Task 8:</b> Build-in Verification Ad Hoc Team products	<ul style="list-style-type: none"> <li>Action Team monthly meetings; <b>Aug 23 WQGIT decision to approve extend forest buffer credit duration to 15 years</b></li> </ul>

## Reminder - CAST 21 Schedule:

- **Sept 1, 2021 - All data and methods approved**
- Nov 1, 2021 - CAST-21 Beta release
- Jan 1, 2022 - Final CAST-21 release

# Additional Ag Data Concerns

08/18/2021

## Ag Inputs into the Phase 6 Chesapeake Bay Watershed Model (CAST)

### Summary of Concerns & Ad Hoc Response

#### Updated Draft

**September 2020 AgWG Action:** The Ad Hoc Cast Concerns group will discuss and prioritize [CAST](#) concerns raised in addition to the current "[CAST-21 Draft Workplan](#)" and bring recommendations back to the AgWG.

**Ad Hoc November Recommendation:** Create a tracking mechanism for jurisdictions' wish list for 2-year CAST updates & the next model phase.

Evolving list of CAST/Phase 7 concerns available on [AgWG Homepage](#) under "Agriculture Workgroup Chesapeake Assessment Scenario Tool (CAST) Issues Tracker"

Greyed-out issues resolved

State	Cluster	Concern & Updates	CAST-21 Priority?*/Status	Action	STATUS (AUG 2021)
MD/NY	Animal Data	<b>Improve animal population estimates</b> <ul style="list-style-type: none"> <li>Explore other estimating options: Dairy, Equine, Beef</li> <li>Accounting for partial CBW counties.</li> </ul>	High/on-going with CAST updates- (CAST-21 Workplan: TASK 1)	CBPO NASS annual surveys for dairy	STATUS: In Progress Work with CBPO staff on possible use of annual NASS data for dairy and other animal groups. <i>Possible updates for CAST-23. Consideration for Phase 7 data needs.</i>
MD/PA	Crop Production Data	<b>Improve annual crop estimates</b> <ul style="list-style-type: none"> <li>Annual Implementation Reports (AIR-MD)</li> <li>USDA-FSA crop reporting</li> <li>National Commodity Crop Productivity Index (NRCS)</li> </ul>	High/on-going with CAST updates- (CAST-21 Workplan: TASK 1)	<ul style="list-style-type: none"> <li>MD will reach out to state FSA office</li> <li>Encourage assignment of USDA liaison to the CBP (how? TBD) to facilitate better communication and understanding of data options</li> </ul>	USDA-NRCS Chesapeake Bay Coordinator in place. <i>Possible updates for CAST-23. Consideration for Phase 7 data needs.</i>
MD/PA/VA/NY	Nutrient Assumptions	<b>Fertilizer Sales and Use Data:</b> engaging state chemists	High/on-going with CAST updates- (CAST-21 Workplan: TASK 1)	<ul style="list-style-type: none"> <li>State &amp; industry partners work w/ state chemist to improve submission to AAPFCO.</li> </ul>	Collaboration between MDA and industry partners working with state chemists to create template for all Bay states to improve data submissions to AAPFCO. CBPO



# Improving Ag Data

## Crop Acreage Data

Alternative methods to account for fitting Ag Census data to CBP needs?

- Adjusting methods for estimating crop acres (e.g. double crops)

Alternative/supplemental data sets

- Other data sets at the state or federal level?

Crop  
Application  
Goal

## Animal Population Data

Additional NASS Annual Survey Data may be available to inform population trends between census years (incorporated every two years)

- Dairy, Beef Cattle, Layers, Swine...

Direct from industry data can inform animal population trends between census years.

- Requires careful cooperation
- Legal, privacy assurances

Manure Generated

## Other Data Issues

Soil P data

- Gary Shenk [Sept 2018 presentation](#) to AgWG on data set incorporated into the CBWM
- **Additional soil P data is welcome and encouraged (NY & WV have made inquiries)**

Manure Nutrient Concentration Data

- Changes in management may result in changes in nutrient concentrations
- Additional manure concentration data is welcome and encouraged (see grant guidance)

Fertilizer Data

- More accurate allocation of fertilizer within the CBW?
  - **Jurisdictions working with state chemists**

Define Inorganic Fertilizer  
Available to Crops

### CRITICAL CONCEPT:

To maintain integrity of CBWM (CAST) there are two options for new data sets:

- Provide data all the way back through 1985.  
OR
- Use the trend in new data sets for the years available.

CBWM= Chesapeake Bay Watershed Model

# Crop Acreage Data: Phase 6 Possibilities

Alternative methods to account for fitting Ag Census data to CBP needs?

- Adjusting methods for estimating crop acres

\*The AgWG supported adoption of the proposed land use methodology for determining the change in total agricultural area from 2013 to 2017.

Alternative/supplemental data sets

- Other data sets at the state or federal level?

Collaborate with fed & state agencies

# Animal Population Data: Phase 6 Possibilities

Manure  
Generated

## NASS Annual Survey Data to Inform Population Trends Between Census Years?

- Dairy, Beef Cattle, Layers, Swine...
- Partnership Approval

## Industry Data Can Inform Animal Population Trends Between Census Years.

- Requires Careful Cooperation
- Legal, Privacy Assurances, QA/QC
- Partnership Approval

## Population Distributions

- Jurisdictions Can Provide Data to Allocate State Totals to Appropriate Counties (contact CBPO staff for guidance)

### CRITICAL CONCEPT:

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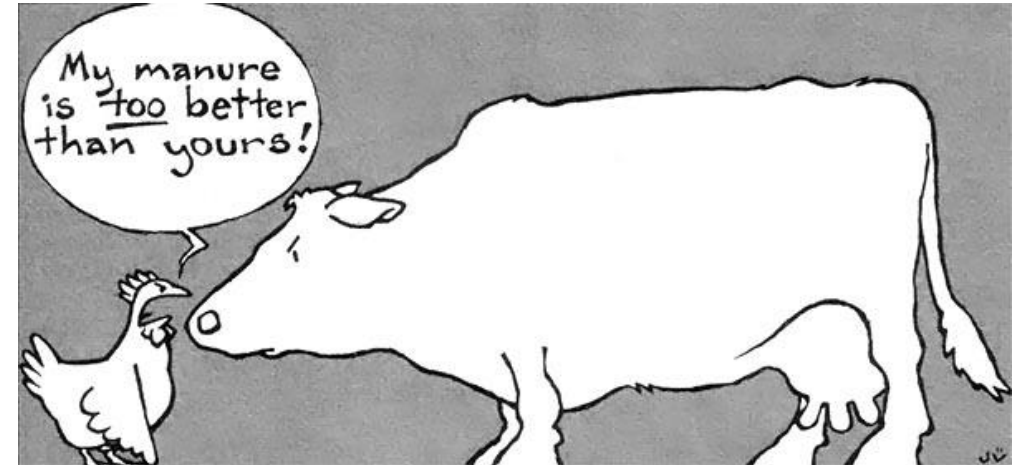
# How Do We Use the 5-Year Ag Census Data?

- **Animal Inventory & Sales**

- Estimate Populations By County
- Define Feed Space Acres
- Estimate the “Manure Bucket” for the CBW
  - Manure nutrients applied to crops, directly deposited to pasture and riparian areas, and left in the feed space.

- **Crop Acres By County**

- Used in Conjunction with
  - High-Resolution Mapped Land Cover Data to Improve Land Use Assumptions
  - Yield Data & Crop Application Goals to Allocate Annual Fertilizer & Manure Applications Across the Watershed



<https://www.motherearthnews.com/homesteading-and-livestock/manure-fertilizer-zmaz83mazraw>

# What About Annual Data?

## National Agricultural Statistics Service (NASS) Annual Surveys

- Incorporated Every Two Years (CAST-17, -19, -21, -23...)
  - When the watershed model “opens” for changes
- Yield data for the following major crops:
  - Alfalfa Hay; Barley; Buckwheat; Corn for Grain; Corn for Silage; Oats for Grain; Rye for Grain; Sorghum for Grain; Sorghum for Silage; Soybeans for Beans; and Wheat for Grain
- Broiler & Turkey Sales Data (state-level)

# Animal Population Data: Phase 6 Possibilities

Manure  
Generated

## NASS Annual Survey Data to Inform Population Trends Between Census Years?

- Dairy, Beef Cattle, Layers, Swine...
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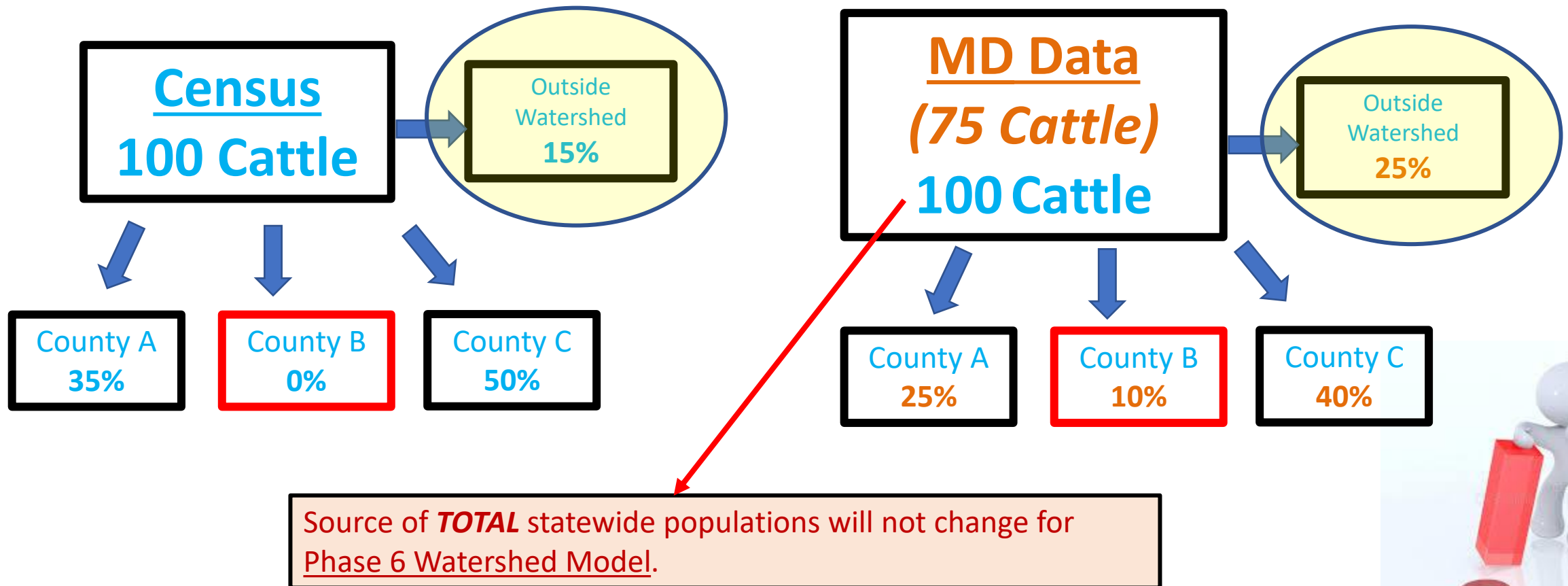
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- Use the trend in new data sets for the years available.

Source for *distribution* of statewide populations can change.

Example: MD provides fraction of cattle in every county for the year 2020, and these fractions are used to distribute TOTAL statewide cattle populations from the Census of Agriculture.



# Other Data Issues

## Soil P data

- Gary Shenk AgWG [Sept 2018 presentation](#) on Phase 6 Data

*\*Additional Soil P Data Requested from State Jurisdictions\**

## Manure Nutrient Concentration Data

- Change in Management → Changes in Nutrient Conc.

*\*Recent Manure Conc. Data is Requested from State Jurisdictions (see EPA grant guidance- contact CBPO staff)\**

## Fertilizer Data

- Improve Accuracy of Fertilizer Allocation within the CBW

*\*Jurisdictions Working with State Chemists\**

4. Define Inorganic Fertilizer  
Available to Crops

### CRITICAL CONCEPT:

To maintain integrity of CBWM (CAST) there are two options for new data sets:

- Provide data all the way back through 1985.  
OR
- Use the **trend** in new data sets for the years available.



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## Fall 2021 AgWG

- Prioritizing needs for Phase 7 Watershed Model
- Task 7: Seek resolution on Hillandale data incorporation question for CAST-23 (Phase 6) and Phase 7
- Winter BMP question (incentivizing winter cover in dairy systems)

## Oct 25/26 WQGIT

- Science needs for Phase 7



# Prioritizing Concerns (Post- CAST-21)

chesapeakebay.net/who/group/agriculture\_workgroup

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tracking and reporting mechanisms that support an adaptive management approach towards Bay restoration.

- Coordinate with WQGIT Watershed Technical Workgroup to identify, define, quantify, and incorporate pollutant reduction and conservation practices on agricultural lands and animal operations into the Chesapeake Bay Program decision support system. Provide data and support for the Water Quality Goal Implementation Team and Technical and Support Services.

**Projects and Resources**

**Agriculture Workgroup Chesapeake Assessment Scenario Tool (CAST) Issues Tracker**

The below Chesapeake Assessment Scenario Tool (CAST) Issues Tracker records concerns that have been raised by jurisdictions in relation to agricultural data inputs. The tracker is a living document and will be updated regularly as progress is made on the issues or new issues are raised. This spreadsheet serves as a starting point for setting priorities for Phase 7 Chesapeake Bay Watershed Model updates and changes related to agricultural data.

CAST Issue Tracker (08.18.21) (15.84 KB)

[https://www.chesapeakebay.net/who/group/agriculture\\_workgroup](https://www.chesapeakebay.net/who/group/agriculture_workgroup)



# Manure Generation – Nutrient Content

## Data Currently Used in the Phase 6.0 Model

Manure  
Generated

Animal Type	Manure Source	Lbs Dry Manure/Animal/Yr	Lbs TN/Lb Dry Manure	LbsTP/Lb Dry Manure
Beef	Use Beef - Cow (confinement) from ASAE* 2005 for manure values	5,475.00	0.028788	0.006467
Dairy	Use Lactating Cow, Dry Cow and Heifer from ASAE 2005 for manure values	4,404.33	0.042221	0.006764
Other Cattle	Estimated based upon weighted average combination of Beef and Dairy from Census of Agriculture	1,605.07	0.035504	0.006616
Horses	Use average of Horse- Sedentary and Horse - Intense Exercise from ASAE 2005 for manure values	3,102.50	0.031672	0.005941
Hogs for Breeding	Swine Characterization Report;	220.62	.294653	Varies
Hogs for Slaughter	Swine Characterization Report;	97.09	0.106841	Varies
Sheep and Lambs	Use ASAE 2003 for manure values	240.9	0.038182	0.007909
Goats	Use ASAE 2003 for manure values	680.91	0.034615	0.008462
Pullets	PLS Report; See Appendix A	12.95	Varies	Varies
Layers	PLS Report; See Appendix A	17.89	Varies	Varies
Broilers	PLS Report; See Appendix A	Varies	Varies	Varies
Turkeys	Turkey Characterization Report;	7.62	Varies	Varies

3-year trends (up or down) can be applied to existing values in this table.

(requires 3 consecutive years of data)

Data must be collected in a similar fashion as was done for:

- [Poultry Litter Subcommittee Report](#)
- [Swine Characterization Study](#)
- [Turkey Characterization Study](#)

Available in [Section 3](#) of Model Documentation

\*Now ASABE- American Society of Agricultural and Biological Engineers

# Chesapeake Bay Program Grant Guidance

Attachment 6: Wastewater Facility and BMP Implementation Data Submission Specifications and Requirements (page 11)

## **Reporting Animal Information:**

**Animal data will be updated in the Phase 6 Watershed Model every two years.**

- Reporting of permitted and unpermitted animals
  - Jurisdictions should provide the fraction of animal type by county that is considered “permitted” either through an EPA or state program. These data will be used to update the land use acres for permitted feeding operations and unpermitted feeding operations once every two years.
- Reporting of animal manure nutrient concentrations for poultry and swine
  - Data should be provided for the last three years, if possible, and updated each year to reflect new litter/manure samples. Jurisdictions who don’t report volume data will receive default values according to rules established by the CBP Agriculture Workgroup. These data will be reviewed by the Partnership for use in estimating manure nutrients once every two years.