

# Special Meeting on CAST

October 19, 2022

9:00 AM - 12:00 PM

**Use sticky notes to add your feedback. The sticky note function is located in the toolbar on the left side of the screen (the fourth icon from the top). Please note there is a character limit.**

**Goal: Develop charge(s) for the appropriate CBP team/group to address the following PSC decisions (see slides 2-11).**

# PSC Decision 3:

Refine the process to include additional safeguards to prevent data analysis variations and to assess reasonability of modeling results after CBP protocols are applied.

## CHARGE CONSIDERATIONS (PART ONE)

Public notification of changes in CAST should be made very clear and built into the overarching process.

Provide time in the CAST update process (2-3 months) after input of new data under partnership approved protocols to examine model results.

I don't think that you can predefine illogical, unreasonable....(you know it when you see it) but the oversight group could first decide if they agree with the illogical claim

If the change results are illogical, the process should afford time to reconsider. If illogical can't be resolved, don't change.

There should be boundaries on what is reviewed and what is not. Whichever group is selected may not have expertise in every aspects of the model and data inputs.

Establish data acceptability criteria.

Establish a standard for acceptable data quality...85% +/- 10% MOE

is the charge for only developing the process or does it include signing off on the developed process

Consider having the WQGIT review and approve the QAPP for data management to have oversight of the process.

Agree on data and information that can be used to resolve a result that is unreasonable

Realistic timing is key, especially with multi-workgroup involvement and the time that is required to make any changes, and retest to determine if modification are doin

**Publish QAPP and revise on an annual basis, akin to expectations for states.**

Establish screening criteria to identify significant shifts in sector and geographic loads with updated CAST versions.

Include expectations when data does not "fit" within the model framework

Procedural activity--how can additional information or data or both resolve the problem after CAST review.

Consideration of third-party review process outside of CBP Partnership

**opportunity for local data to inform unreasonable result**

Ensure support is available for any kind of process determined as a result of this decision

Eliminate single points of failure by having process of verification spot checks on every input

Should we reserve the right in our decision today to let the people most intimately familiar with CAST to make gut calls on data outside of guidelines as long as they explai

"Unreasonable" should be defined. Part of the definition should include what % change in loads triggers a pause and review

parameters around the time or ability to adjust methods between the assessment/review and release; limit to iterations of adjustments or cutoffs for release

Be systematic about making changes to CAST so that the individual impact of each change can be quantified and evaluated

**Consider the cost, time, and source of resources.**

Should reflect on what worked and what didn't work with CAST-21 review and evaluation. Adjust as needed.

**Consider creating data usability review/report for individual datasets**

Agree with the statement of "% change in loads triggers a pause and review" - much like how EPA "flags" BMP progress, a similar "flagging" process should be included

CAST/model input should match what's on the ground locally as much as possible (rather than basin-wide assumptions)

Consider longer intervals for model updates given the time needed to vet datasets and to resolve variations adequately.

**Establish a process for defining what is "reasonable."**

Process flow diagram/decision making tree for defining what is reasonable

Consider how model results can be evaluated in light of monitoring observations as a reasonability check.

come up with objective criteria to accept data. If it doesn't meet the criteria, it is not considered "reasonable"

**what types of data and what types of supporting information**

Consider whether confidence intervals can be established for the model outputs to understand whether changes in loads are significant or simply within the "noise" of the model.

Establish in the expectations what triggers a change to processes to be consistent in future years. Clearly define who decides what results in a change to protocols.

Clarify what is "preventing data analysis variations." Data is variable. Are we referring to CAST when we say "analysis?"

considering how other data might be used to adjust projections when we have gaps or lags in our primary data sets

# PSC Decision 3:

Refine process to include additional safeguards to prevent data analysis variations and to assess reasonability of modeling results after CBP protocols are applied.

## WHO WOULD WORK ON THE CHARGE?

STAR and/or STAC participants if the group gets into specifics about how we define outliers, significance, or applying stats/math to determine "unreasonable"

Ask the Watershed Technical Workgroup develop a policy to be approved by the Management Board that will clarify as to when the technical workgroup would be engaged on issues

such as data abnormalities, unrealistic results and triggers for action. Would also suggest a review of how long we should lock out the model (e.g. moving from 2 yr to a 5 yr).

Didn't we just form a "Watershed Technical Workgroup"? That seems like the logical lead to begin these discussions

Workgroups/WQGIT do not approve QAPPs. But those groups can certainly discuss/approve methods or improvements to what's documented.

WQGIT decides which WGs in particular work on this. Identify roles and responsibilities of other entities (USGS, modeling team, etc.) to clarify expectations - J.W.

a collaboration of pertinent workgroups, STAR, and STAC

WQGIT with advice from STAC/STAR

WHO: Watershed Technical Workgroup oversight of CAST/Modeling Team work

Watershed Technical Workgroup, individual STAC/STAR experts, WQGIT and MB

**STAC**

whoever works on this, governance should be included in the charge

With relatively short timeline, driven by having recommendations approved and in place for CAST23 development, a F/T Team will likely need to be assigned

WQGIT should have an oversight role with input/guidance from workgroups, STAC/STAR

# PSC Decision 3:

Refine process to include additional safeguards to prevent data analysis variations and to assess reasonability of modeling results after CBP protocols are applied.

## TIMEFRAME FOR CHARGE

**This applies to all 3 of these decisions - regardless of how long it takes to resolve this, we need to report out/provide update at the next PSC meeting.**

**This ought to be iterative- as in go back to today's guidelines and edit if necessary as we refine CAST and learn from our guidelines and from the data**

**With relatively short timeline, driven by having recommendations approved and in place for CAST23 development, a F/T Team will likely need to be assigned**

**until charge is more fully developed, difficult to suggest a timeline**

**Governance component should be included in the timeline. It takes time to get things approved throughout the partnership at varying levels - E.D.**

**Ideally this is completed before going into next development cycle for CAST23 (September 1, 2023) - J.M.**

**6 months**

**timeline will need to reflect capacity and governance process. revisit timelines and adjust if needed after we have charge/timeline for all 3 decisions**

**If timeline is short, then group needs to be solely focused on this. -E.D.**

# PSC Decision 2:

Convene a committee to develop short-term, interim resolutions to fertilizer data concerns (Check in at next PSC meeting) before moving forward with CAST 2021 as well as long-term resolutions for Phase 7 model.

## CHARGE CONSIDERATIONS

what is feasible to address in short-term (CAST21)? WV non-farm phosphorus seems feasible, unsure if there are other short-term issues

is s committee needed to develop short term resolutions?

Are interim resolutions readily available?

Agree with "Framing Charge" bullets as presented on screen.

See value in convening committee to address long-term resolutions

Clarity on the charge from PSC

For P7, the evaluations already planned for the AMT and Fert Team, w/ultimate approval of new methods by the WQGIT, seem to be all that are needed for the long-term part

USWG is already working on the urban fertilizer, short-term issue.

Charge should consider the broad and the specific.

Maybe this is not solved with CAST 21 and these groups work on longer term goals for CAST 23

Identify what short-term and long-term challenges there are first, then identify who needs to take on the challenges, and what the time constraints are.

Defining solutions for this and a clear process for who is assigned the work and the approval process chain. Would workgroups report directly to the PSC or to an intermediary?

Clarity on figuring it out.

Short-term solutions should include a "hold" on certain data sets (released with CAST-19) and a release of others.

Given the tight timeline, focus on interim and create expectation for long term. Perhaps separate the two--short and long term.

1. Negotiated compromise for C21. 2. Shrt term change to data and methods for C23. 3. Long term solutions for P7

A handful of brainstorming sessions with existing committees rather than forming a new committee given the timeline?

Should have clarification of what CAST23 is used for, will it be used to assess 2025? Shouldn't the 2025 assessment have the best info possible, not wait for Phase 7?

Agree with sticky directly above.

The fix for nonfarm fertilizer issue in C21 is appropriately (and in a timely manner) being addressed by the USWG

Focus on developing and incorporating data and processes for CAST23. CAST21 be considered a version where errors were ID'd. Until 23, evals consider all past CAST versions

not only a discussion about the data sources or datasets. this must include considerations of processing techniques, assumptions or methodologies

where primary datasets are considered problematic, need experts to suggest how to make projections or fill gaps with secondary or tertiary datasets.

Consideration of "no action" for some data sets should be part of the problem-solving. Questionable data sets (e.g. ag fertilizer) should consider holding at pre-approved rates.

Needs to be multi-phased charge, but should identify short term changes. Long term charge should include looking for alternative datasets. -J.M.

CONTEXT: non-farm fertilizer issue raised by WV is something that could have been avoided if charge from Decision 3 is implemented (data QAQC) - D.M.

Will the outcome of decision 3 address decision 2? with the exception that 2 is specifically for fertilizer data for CAST21?

1. Negotiated path forward for C21. 2. potential process for changes to methods and data for C23. 3. Longterm solutions

# PSC Decision 2:

Convene a committee to develop short-term, interim resolutions to fertilizer data concerns (Check in at next PSC meeting in mid-November) before moving forward with CAST 2021 as well as long-term resolutions for Phase 7 model.

## WHO WOULD WORK ON THE CHARGE?

**the  
groups/teams  
mentioned in  
background  
doc**

**only existing groups  
or new groups that  
already have  
allocated available  
staff support.**

**MB should charge WQ  
GIT with this. WQ GIT  
can charge whomever  
the feel most  
appropriate, but Ag  
and Urban Modeling  
workgroups (working  
collaboratively) seems  
best**

**1. Immediate C21 -  
MB/PSC. 2. Short  
term C23 - Urban  
SW/Ag modeling. 3.  
Long Term P7 -  
Modeling  
WG/WQGIT/Urban  
SW/Ag modeling**

**Short Term: USWG  
Fertilizer Team.  
Long Term: Ag  
Modeling Team,  
Fertilizer Expert  
Group (urban and  
ag)**

**Based on the last  
meeting, the USWG  
is already working  
on short and long  
term efforts in a two  
phased approach.**

**Given the tight turn  
around for the short  
term. Would (for  
example) the Urban  
WG report out directly  
to the PSC vs. go  
through WQGIT and  
MB? Need to define  
the elevation process.**

# PSC Decision 2:

Convene a committee to develop short-term, interim resolutions to fertilizer data concerns (Check in at next PSC meeting) before moving forward with CAST 2021 as well as long-term resolutions for Phase 7 model.

## TIMEFRAME FOR CHARGE

Next PSC meeting is in mid-late November, so this committee has to form quickly and get to work

**Multi-phased approach.**  
**Short: CAST-21.**  
**Medium: CAST-23. Long: Phase 7. - L.M.**

# PSC Decision 1:

Over the next year, as a partnership we will figure out how the unaccounted additional loads are addressed post-2025 and on what timeframe as we work to 'recalibrate' the goal line.

## CHARGE CONSIDERATIONS

The three bullets on the slide are appropriate for the charge (if we are not supposed to debate this today). The only decision is who and I recommend WQGIT.

need to reconcile PSC decision with Section 10 and Appendix S of the TMDL. What are expectations for accounting for new/increased loads if loads are "unaccounted"

Focus on the intent of the PSC as it relates to "unaccounted for loads." Review the PSC meeting transcription and meetings with EPA/State leadership

The charge should direct group to define "unaccounted loads" sufficiently so there is no ambiguity on what is expected by 2025 - including a table of lbs expected by 2025 per jurisdiction

Should we clarify how this relates to the EC's directive to the PSC to report back in 1 year about adjusting the agreement's 2025 deadlines (for WQ and other goals)

focus on creating PROCESS for unaccounted loads (now and into the future) rather than how to address specific load amounts. -J.M.

Can potentially address this in a broader sense/in the context of early planning for post-2025 targets- J. M.

Consider broader group of changes to modeling structure, such as verification requirements. - J.M.

Setting up guardrails and guidance for group or groups to pursue addressing the PSC decision. - E.D.

Consider how the loads may be applied (or not) with Phase 7

Consider how and what will be used to evaluate 2025, acknowledge progress, re-evaluate with Phase 7.

CAST changes 2017-2019-2021-2023 are unaccounted. Climate change and Conowingo are not

Look at the broader timeframe and issues and plan accordingly acknowledging how we can be informed with updated tools and information. - B.T.

Consider lag between 2025 and when Phase 7 model will be ready (jan 1, 2028) - M.K.

charge should consider what is meant by "addressed" - E.D.

You can't address it if you don't define it.

Do not expand this to other goals/outcomes. This is about the WQ goal

Quantify uncertainty of predicted loadings so that the significance of the unexpected/additional loads can be understood.

# PSC Decision 1:

Over the next year, as a partnership we will figure out how the unaccounted additional loads are addressed post-2025 and on what timeframe as we work to 'recalibrate' the goal line.

## WHO WOULD WORK ON THE CHARGE?

**Water  
Quality  
GIT**

does this overlap  
with the EC  
directive to PSC? If  
so, do we need  
cross-partnership  
engagement since  
other outcome  
deadlines may also  
be adjusted?

**WQGIT -  
WTWG,  
Modeling  
WG**

**WQGIT**

# PSC Decision 1:

Over the next year, as a partnership we will figure out how the unaccounted additional loads are addressed post-2025 and on what timeframe as we work to 'recalibrate' the goal line.

## TIMEFRAME FOR CHARGE

**"Over the next year" - 1 year from PSC decision**

6 months. We are scheduled to have a Biennial Meeting next Spring to discuss all this. Would be extremely helpful to have this done (or close enough) to done by then for discussion.

# PSC DECISION 3: CONTINUED

## CHARGE CONSIDERATIONS PART TWO

It's essential to establish an iterative processes between data development, QA/QC and modeling to improve data quality (and models' structures) over time.  
- K.B.

**Robust system of checks and balances.**

Consider constraints on forecasting. Could be based on historical variability, data reliability, etc

Review current process for acquiring/accepting data, what is missing? why did we miss the VA fertilizer data in CAST19? what happened and how we can avoid that

**Agree with concept of QAPP for CAST process**

Use State BMP reporting and verification processes as a guide for QA/QC standards for all other model inputs

Allow anyone to make a claim that the change is illogical, unreasonable, not representative of real on the ground change.

Define/identify uncertainty in the datasets used and assumptions applied, and how to deal with changes and/or updates in model inputs (e.g. Ag Census method changes).

**Revise the framework for how we resolve differences in model inputs.**

should there be some consideration of data limitations or caveats? Should there be no consideration without those descriptions?

charge needs to include some information on expectation of whether consensus based recommendations are needed or not.

Develop process for data transparency...fully document process, show your work, allow partnership review of input data, incorporate approved data, review outputs...

illogical, unreasonable, not representative of real change needs to be considered at State scale

identify what are the additional safeguards

a result is a CAST output or something different?

# PARKING LOT: good ideas that we couldn't cover in today's agenda

Capacity issues within WQGIT and WGs to address these problems. don't have resources to dedicate towards doing this work. Large scope and limited timeline - J.M.

"We are committed to meeting the reductions that existed between progress and goal post when Phase 3 WIP (+ climate) was accepted. Anything further is "additional"

quantifying "on the ground" change for data inputs. Datasets take time to develop. So how do we consolidate anecdotal info with objective criteria for "unreasonable"

Addition to J.M concern: volunteer approach increases susceptibility to bias and anchoring (acknowledging likely without intent). - K.B.

**MB needs to decide if these are priorities since we have capacity issues. - L.M.**

A load threshold should be established for every time the partnership identifies an unaccounted load, to decide when the goal post should be adjusted and WIPs amended

Need a process to respond to predicted load changes. The TMDL does not est. future growth, but expects offsets. Significant load changes vs model noise is critical to distinguish.

Matt's idea about a policy document for how to address unaccounted loads now and in the future.

PARKING LOT (cont.): good ideas that we couldn't cover in  
today's agenda



